

ROCHESTER NEW YORK
COASTAL ZONE RESOURCE MANAGEMENT STUDY

DECEMBER 1975

HT
393
.N7
R63
1975

11293

Coastal Zone
Information
Center

ROCHESTER NEW YORK

COASTAL ZONE RESOURCE MANAGEMENT STUDY

NOV 15 1977

COASTAL ZONE
INFORMATION CENTER

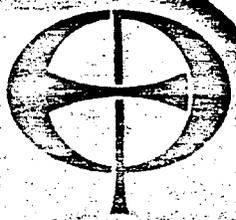
Property of CSC Library

U. S. DEPARTMENT OF COMMERCE NOAA
COASTAL SERVICES CENTER
2234 SOUTH HOBSON AVENUE
CHARLESTON, SC 29405-2413

New York Coastal Zone Management Program

*HT393-N7 R63 1975
3039560*

FEB 25 1987



ECOPLANS, INC.

ECOPLANS, INC.

January, 1976

Mr. Richard F. Sale
Assistant Director of Planning
Department of Community Development
150 State Street
Rochester, New York 14614

COASTAL ZONE
INFORMATION CENTER

Dear Mr. Sale:

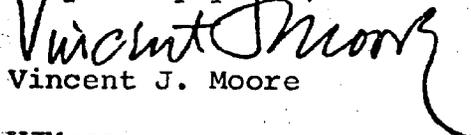
Transmitted herewith is our final report of the Rochester Coastal Zone Management Study. With this report we conclude our four-month study of the resource management and development potential for the Rochester waterfront on Lake Ontario.

The Rochester Coastal Zone is a small but important and unique resource to both the City and the metropolitan area. Threatened severely by water pollution just ten years ago, the coastal zone is ready for a rebirth of activity. Millions of dollars have been spent in recent years to abate the water pollution problems once so destructive to the coastal resources. This effective effort to clean the coastal waters should be matched by similar efforts on the land to capitalize on the intrinsic resource values of the coastal zone. We sincerely hope that this study will contribute significantly to the selection and implementation of a sound development plan that optimizes the many potentials of the coastal zone resources.

Ecoplans wishes to thank you and the Department of Community Development staff for assistance with the provision of basic resource materials. Further appreciation is extended to the Rochester Environmental Management Council; a knowledgeable and dedicated group of citizens who has reviewed and advised the City and us during the course of this study.

My very best wishes.

Very truly yours,


Vincent J. Moore

VJM:ss

ROCHESTER COASTAL ZONE RESOURCES
MANAGEMENT STUDY
FINAL REPORT

PREPARED FOR:

CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:

ECOPLANS, INCORPORATED
THE ARCADE
SARATOGA SPRINGS, NEW YORK 12866

DECEMBER 1975

FEDERAL GRANT NO. 04-5-158-50002
31 December 1975

The preparation of this report was financed through a federal grant from the Office of Coastal Zone Management National Oceanic and Atmospheric Administration, under the Coastal Zone Management Act of 1972. This report was prepared under the Coastal Zone Management Act of 1972 for the Secretary of State.

TABLE OF CONTENTS

TABLE OF CONTENTS

	<u>Page</u>
<u>INTRODUCTION</u>	i
<u>SUMMARY OF FINDINGS</u>	iii
<u>CONTEXT OF THE STUDY</u>	
COASTAL ZONE RESOURCE MANAGEMENT PROGRAM	1
THE COASTAL ZONE	2
GEOGRAPHIC BOUNDARIES OF COASTAL ZONE AREAS	3
Rochester Study Area	3
Monroe County Study Area	3
COASTAL ZONE GOALS AND OBJECTIVES	6
Federal Coastal Zone Goals	6
New York State Coastal Zone Goals	7
COASTAL ZONE ISSUES	9
Statewide Issues and Concerns	9
Issues and Concerns for the Monroe County Coastal Zone	10
Problems and Issues of the Rochester Coastal Zone	12
<u>INVENTORY AND ANALYSIS OF RESOURCES</u>	
<u>SUMMARY DISCUSSION OF COASTAL ZONE RESOURCE</u>	
POTENTIAL AND LIMITATION	18
PORT DEVELOPMENT ANALYSIS	21
Significance of the Resources	21
Historic Development	21
Current Status and Condition	22
o Commercial Activity	22
o Dredging	26
o Recreational Use of Harbor	29
o Transportation and Port Activity	29
Implications for Planning and Development	32
LAND USE ANALYSIS	35
Significance of the Resource	35
Historic Development	36
Current Status	37
o Existing Land Use	37
o Current Influences on Land Use Development ...	40
Implication for Planning and Management	41
WATER QUALITY ANALYSIS	46
Significance of the Resource	46
Historic Development	46
Current Status and Condition	47
o Recreational Concerns	47
o Biotic Concerns	50
o Other Concerns	52
Implications for Planning and Development	52

PUBLIC ACCESS AND RECREATIONAL ANALYSIS	55
Significance of the Resource	55
Historic Development	55
Current Status and Condition	56
o Land Ownership	56
o Recreational Facilities	60
o Vehicular Linkages	61
o Pedestrian Linkage	62
Implications for Planning and Development	62
LEGAL CONTROLS ANALYSIS	67
Significance	67
Historic Development	71
Current Status	73
Implications for Planning	75
FISH AND WILDLIFE RESOURCES ANALYSIS	78
Significance of the Resource	78
Historic Development	78
Current Status and Condition	79
Implications for Planning and Development	81
EROSION POTENTIAL ANALYSIS	84
Significance of the Resource	84
Historic Development	84
Current Status and Condition	85
Implications for Planning and Development	87
ELECTRIC GENERATION FACILITIES ANALYSIS	90
Significance of the Resource	90
Historic Development	90
Current Status and Condition	91
Implications for Planning and Development	91
<u>ALTERNATIVE STRATEGIES</u>	
<u>STRATEGY CONSIDERATIONS</u>	98
<u>ALTERNATIVE POLICIES</u>	99
<u>ALTERNATIVE DEVELOPMENT PLANS</u>	113
Conservation Strategy	113
Development Strategy	116
Balanced Use Strategy	119
<u>ASSESSMENT OF ALTERNATIVES</u>	122
<u>PREFERRED STRATEGY</u>	
<u>RECOMMENDED POLICIES</u>	124
<u>RECOMMENDED DEVELOPMENT PLAN</u>	129
<u>MANAGEMENT AND DEVELOPMENT ACTION PROGRAM</u>	
<u>GENERAL RECOMMENDATIONS</u>	140
<u>MANAGEMENT ACTION PROGRAM</u>	141
Management Structure	141
Organizational, Administrative Management and Specific Action Program	145
Priority, Funding and Scheduling of Organizational and Specific Program Actions ..	151

DEVELOPMENT ACTION PROGRAM	158
Required Actions and Improvements	158
Phasing Plan	162
APPENDICES	
TECHNICAL REPORT ON POTENTIAL FOR ADDITIONAL OR EX-	
PANDED RECREATION IN THE ROCHESTER COASTAL ZONE	
Introduction	166
Brief History of Recreation	166
o Durand Eastman Park	166
o Ontario Beach Park	167
Recreational Demands	167
Program Development	168
Recreation Potential of Specific Sites	183
o Ontario Beach Park	183
o Lake Ontario Shoreline	183
o Port Authority Land	184
o Stutson Street North to Railroad	184
o Genesee River Shoreline	184
o Durand Eastman Park Shoreline	185
o Durand Eastman Park and Ponds	186
General Recreation and Development Principles ..	186
TECHNICAL REPORT ON EROSION POTENTIAL ANALYSIS	
AND POSSIBLE PROTECTIVE MEASURES	
Introduction	191
Erosion Potential Factors	191
o Basic Environmental Influences	191
o Soils	192
Erosion Potential Analysis	197
o Shoreline	198
o Rochester Harbor Area	200
o Inland Areas	200
Possible Protective Measures	201
o Shoreline	202
o Rochester Harbor Area	207
o Inland Areas	207
PROPERTY OWNERSHIP AND ASSESSMENT	210
REFERENCES	232

TABLE OF GRAPHICS

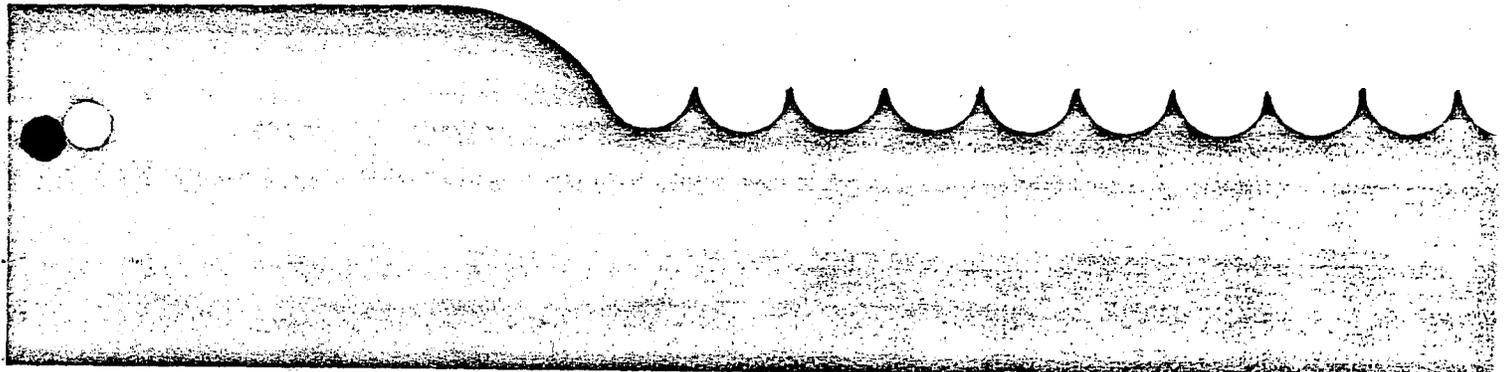
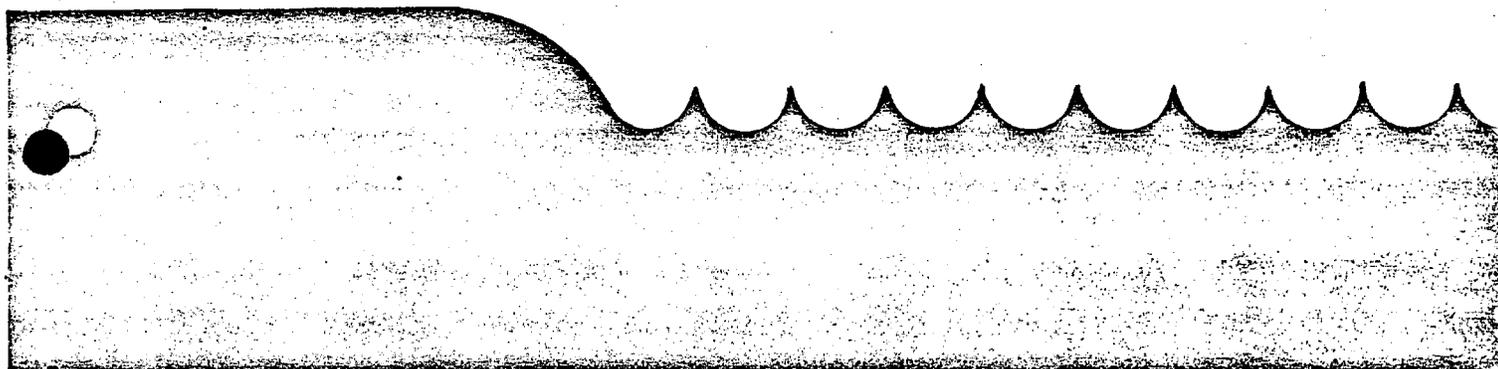


TABLE OF GRAPHICS

	<u>Page</u>
Study Area Location and Map Index	4
Coastal Zone Study Areas	5
Port and Waterfront Factors	34
Existing Land Use and Zoning	39
Development Proposal:	
Monroe County General Development Plan-1975	43
Development Proposal:	
Comprehensive Regional Development Plan-1975 ...	44
Development Proposal:	
Early Action Program-1972	45
Water Quality	54
Ownership and Public Lands	57
Ownership and Public Lands: Durand Eastman Park ..	58
Access and Visual Factors	64
Visual Analysis and Public Access	65
Visual Analysis and Public Access:	
Durand Eastman Park	66
Fish and Wildlife Resources	83
Erosion Factors	89
Electric Generating Facilities	97
Conservation Strategy-Illustrative Plan	114
Conservation Strategy-Illustrative Plan:	
Durand Eastman Park	115
Development Strategy-Illustrative Plan	117
Development Strategy-Illustrative Plan:	
Durand Eastman Park	118
Balanced Use Strategy-Illustrative Plan	120
Balanced Use Strategy-Illustrative Plan:	
Durand Eastman Park	121
Preferred Strategy-Illustrative Plan	130
Preferred Strategy-Illustrative Plan:	
Durand Eastman Park	137
Phasing of Development-Preferred Strategy	164
Phasing of Development-Preferred Strategy:	
Durand Eastman Park	165
Soils and Watersheds	194
Soil Erosion Potential	195

INTRODUCTION



INTRODUCTION

This Rochester Coastal Zone Study is a comprehensive study of resource management and land development potential for an area within the City of Rochester, located adjacent to Lake Ontario. This report is prepared as part of a series of State and national environmental coastal area planning studies initiated by the Federal Coastal Zone Management Act of 1972. This report is prepared specifically for the City of Rochester Department of Community Development and the New York State Secretary of State.

The objective of this study is to analyze the natural, built-physical, social and economic aspects of the coastal zone environment and to develop a resource and land management program which preserves the integrity of both the natural and cultural systems operating within the coastal zone.

The study has had the following two major components:

- o Resource Analysis: This part included the specifications, acquisition and evaluation of existing data, pertaining to water quality, land use competition, public access, fish and wildlife resources, electric generating facility impacts, erosion, port and waterfront development and legal controls that affect the land use of the coastal zone area. This analysis culminated with an assessment of resource potentials and constraints, and the articulation of related planning and management issues needing resolution. It should be noted that the resource selection and classification used throughout this study was prescribed by the Secretary of State in the interest of uniformity among the various State coastal zone studies.
- o Development Proposal: This part included the preparation of recommended goals and objectives to guide the preparation of alternative strategies for the development and conservation of coastal zone resources. Alternative strategies, suggesting comprehensive but practical approaches for planning and management were proposed. Ecoplans then prepared a preferred strategy and specific action program for its implementation.

This final report on the study consists of several sections organized in the following manner:

- o Context of the Study: This section establishes the framework for both the local and regional significances of the Rochester study, describing the geographic boundaries, program objectives and the major issues surrounding the coastal zone resources.
- o Inventory and Analysis of Resources: This section includes the evaluation of existing data pertaining to port and waterfront development, land use competition, water quality, public access and recreation, legal controls, fish and wildlife resources, erosion, and electric generating facilities. The analysis focuses on current status and conditions, and the implications for planning and development.
- o Alternative Strategies: This section develops a range of alternative strategies between development and conservation of the coastal zone resources. Alternative policies, programs, and development "illustrative" design plans are presented.
- o Preferred Strategy: This section presents a recommended set of policies, programs and designs suggested for the coastal zone area.
- o Management and Development Action Program: This section includes recommended planning and management programs for the coastal zone resources and an implementation schedule for the recommended development plan.

The appendix of this report contains two technical reports; one on the potential for additional or expanded recreation, and the other on erosion potential analysis and possible protective measures. The appendix also contains a parcel-by-parcel listing of property ownership and assessments, followed by a bibliography.

SUMMARY OF FINDINGS

SUMMARY OF FINDINGS

The Rochester Coastal Zone must be considered as a unique regional resource. The zone contains some of the area's finest beaches lying within the protective bay. Its central location and high accessibility, plus its existing development, offers many existing potentials for higher and better uses. While the zone no longer plays as major a port and industrial role as it once did, it does possess the potential to contribute significantly to the local economy through new or expanded recreational, residential and commercial activity. For these reasons, planning for the coastal zone should stress the remedial and rehabilitative concerns.

Due to its proximity to the urban core, the study area is one of the most intensely used segments of the Lake Ontario coast line. With the coming improvement in water quality in the Genesee River and the Rochester embayment area, the pressures on the zone will significantly increase, requiring more detailed policy and program planning and a high level of financial commitment than the less developed, outlying areas of the regional coastal zone.

While being a regional resource, the coastal zone is also a part of a Rochester neighborhood known as Charlotte. The development of facilities serving regional needs must be cognizant of the potential impacts upon the social and economic stability of the surrounding areas.

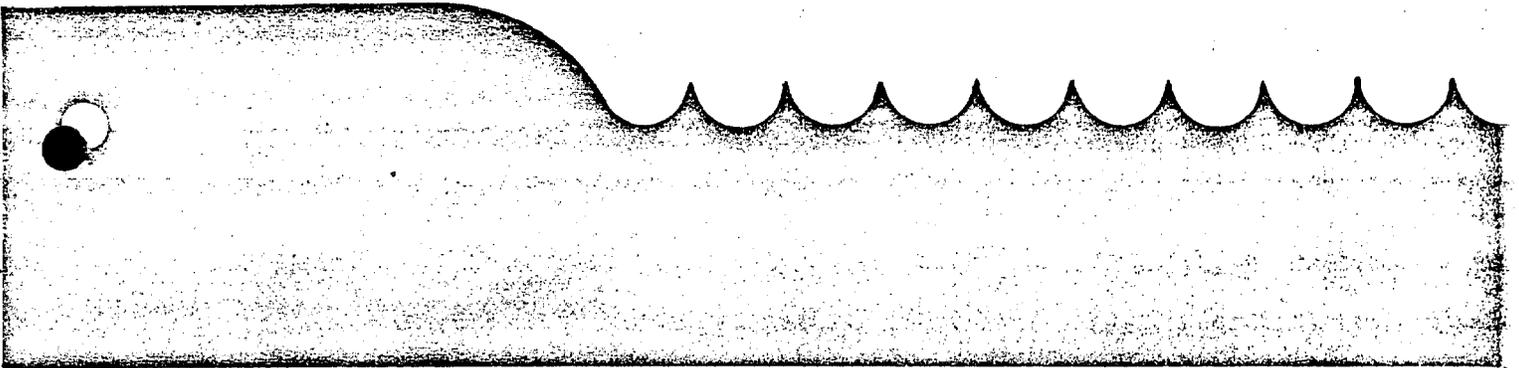
Many governmental agencies are currently involved in the management of the coastal resources. Effective action is hampered only by the absence of a coordinated and concerted effort. We believe this initiative for coordination and positive, forward-looking change should originate with the City of Rochester Department of Community Development.

Based on the findings contained in this report, we make the following recommendations:

- o A Genesee-Finger Lakes Regional Coastal Zone Policy Committee should be established to coordinate coastal policy planning for the Regional Planning Board, Orleans, Monroe and Wayne Counties, and all local municipalities. Federal and State agencies should also be represented.

- o The study area should receive high priority as a unique resource within the total Lake Ontario shoreline.
- o The Genesee River must be recognized as a more important coastal zone element and additional river area should be included in the coastal zone study area.
- o A management structure initiated and coordinated by the Rochester Department of Community Development is recommended.
- o A balanced development plan representing conservation and development issues is recommended.

CONTEXT OF THE STUDY



THE CONTEXT OF THE STUDY

COASTAL ZONE RESOURCE MANAGEMENT PROGRAMS

This Rochester Coastal Zone Study is undertaken as part of a state and national effort to establish coordinated and comprehensive planning for the coastal zones.

The Natural Coastal Zone Management Act of 1972 (P. L. 92-583) establishes the objectives as well as the primary funding for state and local coastal planning. The Congress in passing the act found that the coastal zone is vulnerable to "increasing and competing demands" and that it is in the national interest to provide for "the effective management, beneficial use, protection and development of the coastal zone."

The Congress declared that it is the national policy: "to preserve, protect, develop, ...restore or enhance" the coastal zone; to encourage the states to manage the coastal zone, giving "consideration to ecological, cultural, historic, and aesthetic values as well as...economic development"; to encourage cooperation of local, state, regional and federal agencies; and to encourage public participation in coastal zone management.

In November, 1974, New York State received a \$550,000 Coastal Zone Planning Grant from the U. S. Department of Commerce. The State has matched this grant with \$275,000 of its own. The State's program is administered by the Division of State planning under the Secretary of State. The State has given grants to Regional Planning Agencies and local governments to determine the needs, desirability and feasibility of coastal zone management approaches and methods.

The Genesee/Finger Lakes Regional Planning Board has received a contract from the State to develop a program for Wayne, Monroe and Orleans Counties, and has, in turn, contracted with the Monroe County Department of Planning to coordinate the study in Monroe County. The county's program is a three-year program. The first year's program ending December 31, 1975, involved the collection of basic data and the identification of key coastal zone issues. During the second year there will be a detailed investigation of alternative management approaches, and in the third year the county will develop a specific program for managing the coastal zone.

This study is one of three special urban pilot programs selected for New York City, Troy and Rochester.

THE COASTAL ZONE

The coastal zone is a band of land and adjacent water space. On our large continental land mass, the coastal zone is necessarily small in size and unique in character. This uniqueness is of great importance to both the human and natural ecologies which function and interact there.

Ecologically, the coastal zone is an area of dynamic biogeochemical activity but with a limited capacity for supporting vigorous human activity. Where the water meets the land high rates of production, consumption and exchange are achieved. Human use of the coastal zone often disrupts or impedes such ecological functions. The intensity of this conflict has grown with the increased recognition of the value and scarcity of the coastal zone as a human resource. It is this awareness of the ecological and human importances of coastal zone that dictates the establishment of a comprehensive rational management system.

The Rochester Coastal Zone must be viewed as a unique area resource by the region's population. Conflicts result from a combination of population pressures combined with major and multiple demands upon the Lake Ontario shoreline. Difficulties arise both because of conflicting uses and the perception that existing uses and patterns of activities are not essential or beneficial to the coastal zone in environmental terms.

It is important that the coastal zone be understood as an area where both natural and man-made systems are in operation; where the land ecology and uses directly affect the aquatic ecology and uses, and vice versa. This interaction of systems has no easily defined geographic boundaries and as such makes the selection of a special area for study and planning extremely arbitrary.

For example, the climate of the Great Lakes affects the land far from the shoreline. The sediments and pollutants entering the Genesee River and other tributaries far from the coast are carried to Lake Ontario. The littoral currents of the lake know no political boundaries. The coho salmon running the Genesee River do not stop at the tidal action but continue 3 to 4 miles beyond.

It is equally as difficult to determine geographic boundaries for the man-made systems operating in the coastal area. The demand for coastal recreation, for example, is generated in the metropolitan area far back from the shoreline.

For this study the Rochester Coastal Zone boundaries were officially defined by the Division of State Planning. The geographic area is extremely small relative to the total coastal resources of Rochester. The study area comprises less than 2 miles of the Lake Ontario shoreline.

The defined boundary is intended as the basic area of implementation programming. However, analysis of circumstances or activities outside the boundary are necessary to identify factors which are important to the basic recommendations and conclusions of this study.

GEOGRAPHIC BOUNDARIES OF COASTAL ZONE AREAS

Rochester Study Area

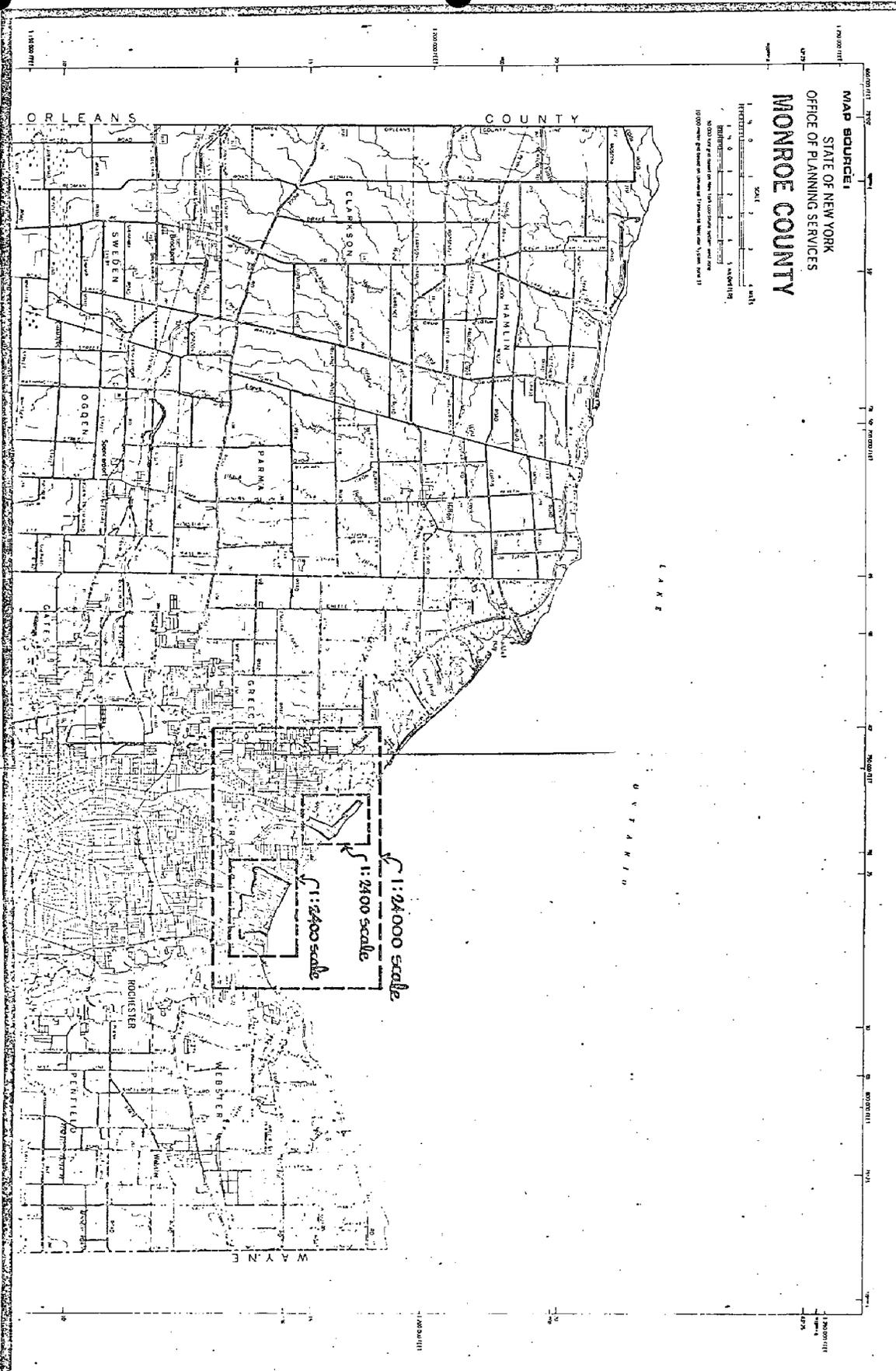
From New York State Division of State Planning:

- o That portion of the Genesee River from its terminus at Lake Ontario south to the extent of Tidal Action (approximately Stutson Street).
- o Adjacent land area located between the Genesee River shoreline and Lake Avenue on the west and the City line on the east, as far south as Stutson Street.
- o Land within the City of Rochester located between the Lake Ontario shoreline and Beach Avenue on the south.
- o Estuary type areas within Durand Eastman Park.

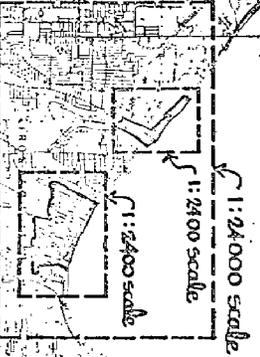
Monroe County Study Area

From Monroe County Department of Planning:

- o The coastal study area in Hamlin shall extend southward from Lake Ontario to Moscow Road between County Line Road and Lake Road West Fork, southward to North Hamlin Road between Lake Road West Fork and Walker-Lake Ontario Road, and southward to Chase Road between Walker-Lake Ontario Road and Townline Road. The study area shall also extend southward from this boundary along the banks of Yanty Creek, Sandy Creek, Brush Creek and Cowsucker Creek in order to determine the impact of various upstream land uses on the water of Lake Ontario.



MAP SOURCE:
STATE OF NEW YORK
OFFICE OF PLANNING SERVICES
MONROE COUNTY



**ROCHESTER COASTAL ZONE RESOURCES
MANAGEMENT STUDY**
STUDY AREA LOCATION & MAP INDEX

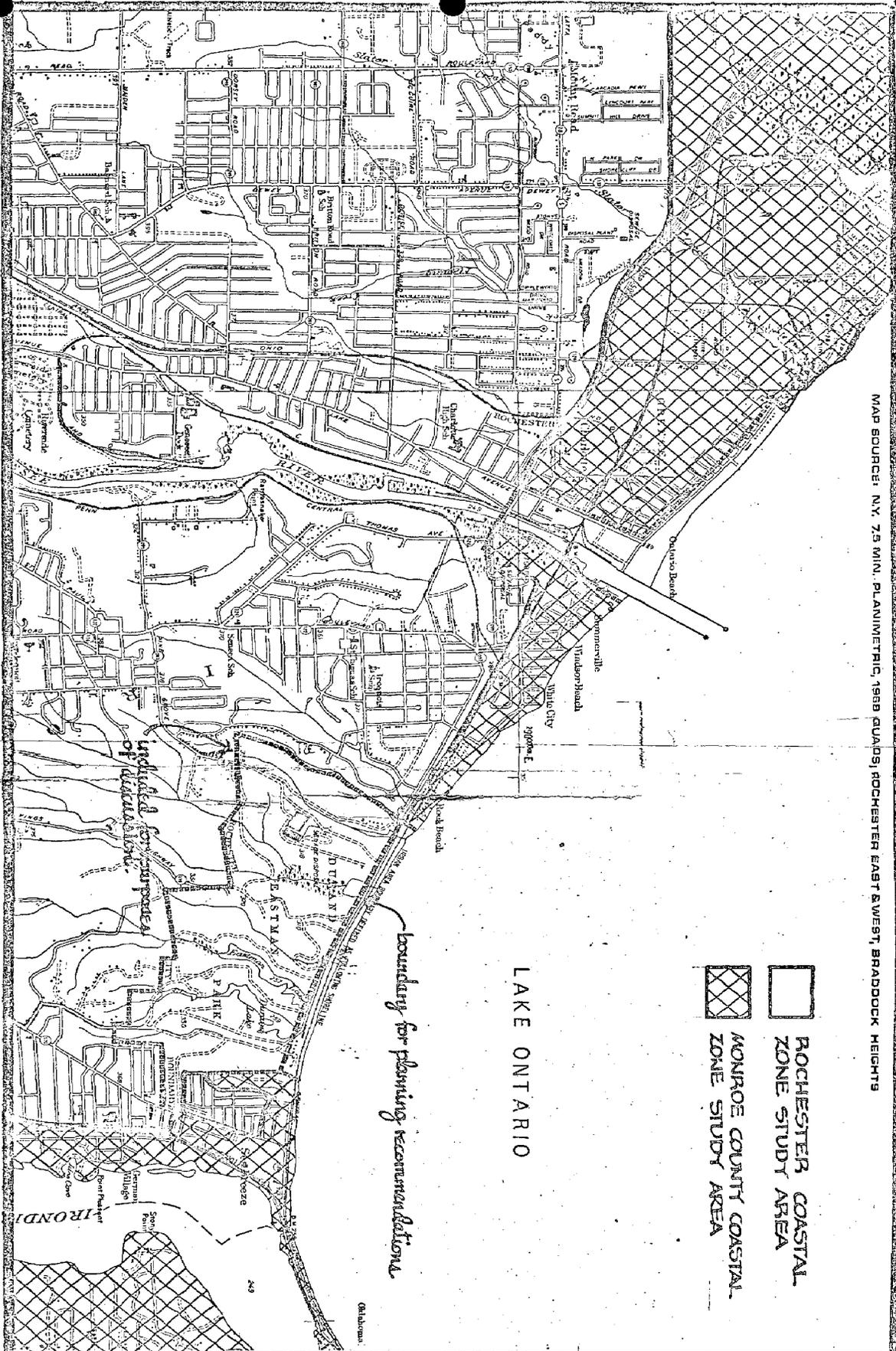
PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECODPLANS INCORPORATED
BARHATOGA SPRINGS, NEW YORK 12666
A MEMBER OF
THE BARHATOGA ASSOCIATES



SCALE
1:125000

MAP SOURCE: N.Y. 7.5 MIN. PLANIMETRIC, 1989 QUADS; ROCHESTER EAST & WEST, BRADDOCK HEIGHTS

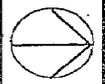


-  ROCHESTER COASTAL ZONE STUDY AREA
-  MONROE COUNTY COASTAL ZONE STUDY AREA

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY
COASTAL ZONE STUDY AREAS

PREPARED FOR:
 CITY OF ROCHESTER
 DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
 ECOPLANS INCORPORATED
 SARATOGA SPRINGS, NEW YORK 12056
 A MEMBER OF THE SARATOGA ASSOCIATES


 SCALE
 1:24000

The coastal study area in Parma shall extend southward from Lake Ontario to Moul Road between Town Line Road and Lighthouse Road, and southward to Wilder Road in an area bounded on the west by Lighthouse Road, Curtis Road, and Bennett Road and on the east by Manitou Road. It shall also include the flood hazard area of Saimon Creek which extends inland from the coastal zone.

The coastal study area in Greece will include all state lands in the Lake Ontario State Parkway right-of-way and all lands north of the Parkway. It shall also extend south to include the estuary-type areas south of the Parkway.

The coastal zone in Irondequoit shall include the land between Lake Ontario and the southern extension of the Penn-Central railroad line, with the exception of the residential area along Pattonwood Drive, Timrod Drive, and Kellwood Drive. On the eastern side of town the area shall extend southward of the railroad as far as Oberlin Street, and shall include the residential area at the northern end of the private road off of Birch Hills Drive. It shall also include the area studied under the Irondequoit Bay Plan. It shall include for some study purposes Durand-Eastman Park and the area known as the Highlands, although this area is owned by the City of Rochester. Areas which affect streams and outfalls discharging into the lake will be studied for their effect on the coastal waters.

The coastal area under study in Webster shall include the land between Lake Ontario and Vosburg Road, thence continuing easterly to Wayne County on a line approximately 2,000 feet south of Lake Road, including Webster Beach Park. The study shall also incorporate the area studied under the Irondequoit Bay Plan, and will extend southward along the floodprone areas of streams draining into Lake Ontario as designated in the Webster Open Spaces Survey.

COASTAL ZONE GOALS AND OBJECTIVES

Federal Coastal Zone Goals

From Coastal Zone Management Act of 1972 (P. L. 92-583, Title III, Sec. 303):

- o To preserve, protect, develop and, where possible, to restore or enhance the resources of the Nation's coastal zone for this and succeeding generations.

- o To encourage and assist the states to exercise effectively their responsibilities in the coastal zone through the development and implementation of management programs to achieve wise use of the land and water resources of the coastal zone giving full consideration to ecological, cultural, historic, and aesthetic values as well as to needs for economic development.
- o For all federal agencies engaged in programs affecting the coastal zone to cooperate and participate with state and local governments and regional agencies in effectuating the purposes of this title.
- o To encourage participation of the public, federal, state and local governments and of regional agencies in the development of coastal zone management programs.

New York State Coastal Zone Goals

From New York State Coastal Zone Management Program Grant Application:

- o To preserve, protect, develop and, where possible, restore and enhance natural resources of the State's coastal zone for this and succeeding generations.

Objectives:

Preservation of the Wetlands through public acquisition, enforcement of the Tidal Wetlands Act, and comparable acquisition and legislation for the protection of freshwater wetlands.

Protection, restoration and maintenance of unique and high quality wildlife and vegetation habitats, fish spawning areas, and shellfish beds.

Protection and preservation of distinct geologic formations such as dunes, barrier beaches, islands, bluffs and cliffs, and unique features.

Regulations of the use and removal of mineral resources, particularly sand and gravel, natural gas, and off-shore oil deposits.

- o To provide opportunities, for this and succeeding generations, to enjoy and to use amenities within the coastal zone.

Objectives:

Provision of opportunities for public access and for public recreation in the coastal zone.

Preservation and enhancement of high-quality and varied scenic views and vistas.

- o To promote the health, safety, welfare, and economic well-being of all citizens through wise use and management of the State's coastal zones.

Objectives:

Promotion of orderly development within the coastal zone, particularly over large tracts of undeveloped land, along beachfronts, and along shorefronts of lakes, rivers and streams, so as to avoid land use conflicts and the unnecessary degradation of natural resources.

Provision for planned development of environmentally sound statewide and regional infrastructure facilities such as deep-water and land-based ports, power generation and transmission facilities, sewage treatment facilities, facilities for the transportation, refining, storage and distribution of fossil fuels, and other water-oriented commercial and industrial developments essential to the economic viability of the State and its coastal communities.

Improvement of air and water quality in order to meet required standards.

Assurance of the adequacy of water supply, including the protection of watersheds, aquifers, and recharge basins.

Promotion of wise uses in such natural-hazard areas as flood plains, stream belts, bluffs, dunes and barrier beaches where development could unreasonably endanger life or property.

Preservation of high viability agricultural and forest lands.

- o To coordinate the plans, programs, and projects of various governmental and private interests involved in the coastal zone.

Objectives:

Effective monitoring of federal, interstate, state and local plans, programs and policies in order to avoid duplication and waste.

Assurance of opportunity for public interests to be represented in the development and implementation of a coastal zone management program.

Assurance of compatibility of a coastal zone management program with existing and future public programs and policies.

Identification of coastal zone development decisions having regional or statewide implications and the development of policies and procedures for making development decisions when local and regional or statewide interests are in conflict.

COASTAL ZONE ISSUES

Statewide Issues and Concerns

From New York State Coastal Zone Management Program Grant Application:

Water Quality

- o How may water quality be improved and waste water be handled in relation to coastal zone goals and objectives.

Competition Among Land Uses

- o How may competing land and water uses be reconciled with the need for economic and social development and preservation of natural and scenic features.

Preservation of Wetlands

- o How may further loss or degradation of the State's wetlands be prevented without causing undue economic hardship.

Public Access

- o How may opportunities for public recreation and enjoyment of coastal resources be achieved without undue adverse impact upon private property.

Protection of Fish and Wildlife Resources

- o How may fish spawning areas and other wildlife habitats be protected and restored.

Intergovernmental Cooperation

- o How may maximum voluntary cooperation among State and other levels of government be achieved.

Port and Waterfront Development

- o How may the economic advantages of existing and potential major ports and harbors be maximized.
- o How may dredging problems be minimized.
- o How may blighted waterfront areas be restored.

Economic Development

- o How may continued expansion of economic activities and employment opportunities be achieved without undue damage to or destruction of natural resources and scenic values.
- o How may the tourist and recreational value of the zone be fully realized.

Lake Level Regulation

- o How may lake levels and stream flows be regulated in a manner that reconciles different uses.

Issues and Concerns for the Monroe County Coastal Zone

From Monroe County Department of Planning:

Conservation and Preservation

- o Coordination of all planning with existing studies such as open space plans and drainage studies.
- o Coordination with appropriate groups such as Lake Plains Water Fowl Association, Ornithological Society, Sierra Club.
- o Coordination with conservation councils and boards and development of such where needed.
- o Stream water quality protection and improvement.
- o Coastal water quality protection and improvement.
- o Natural stream channel preservation.
- o Upstream erosion and sediment control standards and enforcement.
- o Protection of wildlife refuge areas.
- o Development of nature study facilities.
- o Woodlot preservation.
- o Relationship of agricultural land use to the coastal

area.

- o Funding and jurisdictional questions.

Residential

- o Flooding and erosion hazards to existing development.
- o Adequacy of flood hazard boundary delineations.
- o Effects of Flood Insurance Program on existing and future development.
- o Enforcement of erosion prevention standards.
- o Adequate provision for sanitary waste disposal and water.
- o Storm water drainage facilities.
- o Possibilities of and effects of east-west mass transit line.
- o Effects of extension of Rte. 47.
- o Effects of north-south mass transit line.
- o Effects of Pure Waters sewer interceptors on development.
- o Future use of Hojack line.
- o Redevelopment of existing residential areas.
- o Recommendations on lake level regulation mechanisms.
- o Protection of private property rights.

Recreational

- o Increasing needs to provide for fishing and boating access and services.
- o Needs for swimming, hunting, golfing, picnicking and bicycling access.
- o Possibilities of encouraging further development of state parklands in Greece and Hamlin to help meet these needs.
- o Plans for possible commercial recreational development.
- o Question of Lake Ontario State Parkway maintenance - should be maintained by Parks or D.O.T.?
- o Possibilities of recreational development along parkway right-of-way.
- o Importance of regulation, policing, and maintenance of recreational areas.
- o Possibilities of recreational development along Salmon Creek and Sandy Creek.
- o Development of lakefront facilities at Durand Eastman Park.
- o Coordination with any plans for redevelopment in the City of Rochester coastal zone.
- o Explore possibilities of further shorefront development in Webster Park.
- o Funding and jurisdictional questions.

Problems and Issues of the Rochester Coastal Zone

Port Development

Major Problems:

- o Uncertainty as to the need for and future of the port.
- o Unaesthetic and dilapidated character of port facilities, limited operation and ability for improvement.
- o Local opposition to altering the character of current port activities (e.g., development of an oil terminal or additional bulk storage).
- o Future of cement plant if dredging requirement eliminated by abandonment of the port.
- o Conflict of land use generated by port activity.
- o Pollution of water by port-related activities.

Issues:

- o Should the port be abandoned and converted to some other use?
- o If so, should future use of the area be for public access or more compatible private land uses (housing, commercial)?
- o Should redevelopment be controlled by the city or the county?

Land Use Competition

Major Problems:

- o Lack of a definitive policy and plan for the control of use and density of development of lands bordering coastal waters.
- o Increasing land market values as coastal zone quality improves.
- o Conflicts in the use of lands bordering the coastal waters (e.g., residential vs. commercial/entertainment and recreation, public recreation vs. private marinas, residential and public recreation vs. port-related warehousing and industry).
- o Private vs. public ownership and control of shoreline areas.
- o Implications of transportation improvements on the future density of development of lands bordering coastal waters.
- o Visual pollution, noise and litter associated with mixed land use development.
- o Traffic congestion and parking deficiencies.
- o Uncertainty as to the future use of lands in non-conforming or obsolete land uses.

Issues:

- o Should there be greater public control of the use and density of land development of the lands bordering coastal waters?

- o Should there be increased public ownership and control of coastal land areas?
- o Should the density of residential land development be increased?
- o Should additional areas be provided for public open space and recreation?
- o Should commercial land use (entertainment, dining, marinas) related to public recreation and open space uses be expanded?
- o Should any land areas be reserved for possible future use for port-related activities?
- o Should there be standards and review procedures for greater control of the architectural and other visual aspects of development projects in the coastal land areas?
- o Should the City of Rochester retain control of the development planning use of physical improvement of Ontario Beach and Durand Eastman Parks?

Public Access and Recreation

Major Problems:

- o Lack of adequate public access to coastal waters due to private ownership and blockage by railroad.
- o Need for boat launching and public marina facilities.
- o Inadequate sport fishing access to coastal waters.
- o Potential use of abandoned railway rights-of-way.
- o Coordination of coastal area access with the Genesee River Plan objectives.
- o Potential disruption of access due to deposition of dredge spoil off Durand Eastman Park.
- o Lack of policy for utilization of estuarine ponds in Durand Eastman Park.
- o Need for correlation of public access points with off-street parking facilities.
- o Need for improved public transportation access to coastal area.
- o Inadequate and unsafe pedestrian and bicycle circulation routes.

Issues:

- o Should public access to the coastal area be improved?
- o Should existing public open space access be expanded?
- o Should additional marinas be provided and recreational boating facilities developed by public or private interests?
- o Should the City of Rochester or Monroe County seek ownership and control of possible abandoned railroad rights-of-way in the coastal area?
- o Should improvements be made for public access for sport fishing at the mouth of the Genesee River?

- o Should a coordinated system of highway, transit, pedestrian and bicycle circulation and parking be developed to link the separate areas of the Rochester coastal zone?
- o Should access to the lake shore be improved north of Durand Eastman Park?
- o Should possible future dredging spoil be used to develop new public land area, either immediately to the east of the Genesee River mouth or off-shore of the Durand Eastman Park?
- o Should future public recreation areas in the coastal area be developed and maintained by the city, the county or the state?

Water Quality

Major Problems:

- o Overflow discharge of combined sanitary and storm sewer systems directly into the Genesee River.
- o Siltation of the Genesee River and Durand Eastman Park Lakes caused by increased turn-off from urban development and lack of control of urban development site preparation.
- o High coliform counts in potential swimming waters.
- o High nutrient levels and resultant algae (cladophora) growth in the Rochester Embayment of Lake Ontario.
- o Thermal pollution and oxygen depletion by power plant coolant discharges.
- o Turbidity and pollution generating by dredging operations.
- o Illegal discharge of marine holding tanks into the Genesee River and off-shore waters.
- o Conflicting water quality standards and regulatory authority of local, state and federal agencies.
- o Inadequate monitoring of coastal waters quality.

Issues:

- o Should current programs for pollution abatement and the improvement of coastal water quality be accelerated or upgraded?
- o Should there be a more precise set of water quality standards established for the coastal waters?
- o Should the monitoring of water quality of the coastal waters be improved?
- o Should new controls be established at city, county and state levels to prohibit the pollution of coastal waters?

Legal Controls

Major Problems:

- o No coordination among jurisdictions which share responsibility for coastal zone areas.

- o Inadequate criteria for guiding private development in coastal zone areas.
- o Need for guidelines to derive and update land use policies.
- o Need for mechanisms which address the source of coastal zone environmental problems, such as water quality, erosion, etc.
- o Need to relate coastal zone objectives to a level of control in legal instruments; is land acquisition necessary in all cases?
- o Need to improve enforcement of state and local land use controls, especially zoning, sanitary ordinances and other instruments which effect entire jurisdictions.

Issues:

- o Should state agencies such as the Department of Environmental Conservation and the Department of Health consolidate their standards and review procedures?
- o Should the state have review power over all private development in coastal zones?
- o Can and should specific criteria be developed for private development, especially commercial and industrial activities?
- o Can and should all coastal areas be subject to local and state design review procedures?
- o In addition to amortizing non-conforming uses, can existing activities which tend to degrade the coastal zone be changed?
- o Should specific guidelines for rezoning land be provided to local legislatures along with the requirement that all such changes be documented as a matter of record?
- o Can incentives be developed which influence positively the provision of green space and public access corridors?
- o Can a data base be developed which allows updating of land use controls and other legal mechanisms in a way which will support coastal zone objectives and will assist in the updating of site review criteria?
- o What simple changes can be made to existing standards (definition of open space, special permit requirements, for example) and procedures which will help protect coastal zones while new legal instruments are being developed?

Erosion Control

Major Problems:

- o Siltation of the Genesee River from upstream soil erosion and urban surface run-off.
- o No control of soil erosion from new urban developments in Irondequoit along tributary streams feeding Durand Eastman Park ponds.

- o River level flow controls which allow settlement of soil particles.
- o Basic soil structure of alluvial origin which is generally easily erodable.

Issues:

- o Should municipalities containing the river and tributaries to coastal waters develop more strict controls governing the prevention of soil erosion in new urban development projects?
- o Should the control of river flows be evaluated to determine if flow augmentation is required during low flow seasons?
- o Should developers be required to improve and maintain natural drainage courses, instead of providing artificial storm drainage systems?

Fish and Wildlife Resources

Major Problems:

- o No recognition of urban wildlife and sport fishing potential.
- o No information on trends in the quality of fish and wildlife habitat in the coastal area.
- o Destruction of fishing habitat by water pollution.
- o Need for better public awareness of urban impacts on the natural ecology and affects on fish and wildlife.

Issues:

- o Should the natural wildlife habitat potential of the coastal zone be restored?
- o Should specific fish habitat improvements be made in view of water quality improvements?
- o Should sections of Durand Eastman Park be promoted as areas for nature study and environmental education?
- o Should the state be requested to provide assistance to improve fish and wildlife habitats in the coastal area?

Electric Generating Facilities

Major Problems:

- o Thermal pollution of river and lake waters by RG&E electric generating facilities with once-through water cooling systems (Beebe and Russell Stations).
- o Impact of addition of refuse-burning boilers at RG&E Russell Station in terms of refuse material transport, visual impact of plant expansion, fly ash disposal system.
- o Control of river flows for purposes of power generation and impact on water quality.

Issues:

- o Should additional programs be established for the control of power generating facility impacts on coastal zone water quality?

- o Should any of the existing plants be phased out as RG&E provides additional capacity at more remote locations?
- o Should the visual and aesthetic impacts of plant expansions receive additional review?

**INVENTORY AND ANALYSIS
OF RESOURCES**

INVENTORY AND ANALYSIS OF COASTAL RESOURCES

SUMMARY DISCUSSION OF COASTAL ZONE RESOURCE POTENTIAL AND LIMITATION

Presented here is the basic inventory and analysis of the resources of the Rochester Coastal Zone. This analysis provides the foundation for the consideration of alternative strategies and the selection of a preferred strategy for the planning and management of the coastal zone.

The resources of the coastal zone are placed in the context of the following eight functional areas: port development, land use, water quality, public access and recreation, legal controls, erosion potential, fish and wildlife, and electric generating facilities.

This inventory is a compilation of existing information and represents only the beginning of an effort to establish environment baseline data for the coastal zone.

The Rochester Coastal Zone is an area which demonstrates the complexity of urban coastal resource management. Basically, the potentials and limitations of this area reflect the historic natural value of this particular segment of the Lake Ontario coastline as a stimulus to human settlement and industrial enterprise. Thus, the high natural potential of the area has obviously contributed to its use and development. In the past, this use and development has been characterized by an attitude of unmanaged exploitation - and has resulted in severe degradation of the qualities which originally made it attractive.

Many complex forces of change - economic, social and political - now affect the area, and the establishment of an effective management program requires a comprehensive perspective of these forces, and an understanding of how they contribute to both the conservation and development of the specific coastal zone resources. Another important aspect of management is a perception of some fundamental trends which will significantly influence the patterns of urban form and activity over the coming years.

One major trend is the concern with energy production and consumption. While this will not directly affect the Rochester Coastal Zone area, there are obvious indirect impacts generated by the efforts to conserve energy by making present urban habitats more efficient,

and the massive capital requirements involved in making the nation more independent in terms of energy supplies. Utilization of capital resources for this purpose is already responsible for a significant capital shortfall for other purposes on the east coast. Combined with the current tremors in the municipal bond market, the outlook suggests increasing difficulty in the financing of needed urban area capital improvements, and increasing concern with the priorities for allocating what limited capital resources may exist. Much of this points to demands for increased density of development in locations where they may be more efficiently serviced - either by expansions of existing urban infrastructure or by the construction of new energy efficient-systems, such as the light rail transit system proposed to link the Rochester coastal area with the center of the City.

More densely populated areas will require close-by amenities - such as the park, open space and recreational resources found in the Rochester Coastal Zone.

Another major trend is the concern with environmental quality - which, of course, becomes a prime requirement for sustaining the quality of urban living experience in high-density urban zones. Air and water pollution abatement programs will continue to be stressed because they affect our most vital resources. As these programs take effect, the now-polluted elements of the urban coastal areas will again become more attractive places for recreational pursuits. Concern with environmental quality has also resulted in a new awareness of the resource potential of the coastal zone as fish and wildlife habitat. This awareness is based not so much on the fishing, hunting and recreational potential of these resources as it is on their value as indicators of environmental quality and their value as aesthetic and educational resources.

All of these environmental quality concerns have produced the demand for more effective legal controls for the avoidance of adverse environmental impact, ranging from the assessment of the environmental implications of proposed project to the direct development of environmental criteria and standards which both existing and proposed developments must comply with. Since many environmental impacts generated by localized situations have area-wide or regional impacts, the legal control system by nature involves the participation of several levels of government. This in turn establishes the requirement for more effective intergovernmental communication and coordination.

Technological trends in industrial processes and the transportation of raw materials and products have pulled industrial uses out of the dense urban areas, where facilities have become obsolete, to more suburban locations with direct service connections to the Interstate highway systems and the primary urban arterial network. While a return to more energy-efficient modes of transport for industrial goods might suggest a rehabilitation of the rail system, the demand for water transport facility improvements remains questionable for all but the major coastal ports and those with industries requiring major bulk materials shipments.

All of these trends have decided implications for assessing the potentials and limitations of the Rochester Coastal Area. In summary, they suggest that this area has the strongest potential as a residential and recreationally-oriented urban coastal resource, and limited value as an industrial port area. This is reflected in the existing developmental quality of the area. Residential, and residentially related commercial and institutional developments are of relatively high quality - and the existing recreational and public access systems have substantial potential for expansion, even where their current qualities are not the highest.

On the other hand, the industrial and industrially-related commercial and transport components of the area are in relatively poor condition, if not altogether abandoned. Power generation facilities are not a significant element of concern.

And while water quality, and fish and wildlife resources have been degraded in the past by port-related activities - and urban influences external to the area, these basic resources are being improved and protected.

In conclusion, The Rochester Coastal Zone Area has significant potential as a unique urban environment interface with the natural amenities found in any coastal zone. Although the creation of an effective management system poses significant political and legal problems due to the need for intergovernmental legal controls and processes, the wise conservation and development of the Rochester Coastal Zone should be intensively preserved as a major community development objective.

PORT DEVELOPMENT ANALYSIS

Significance of the Resource

The existing facilities provide the opportunity for the shipping and transfer of bulk materials to the Rochester region by water transport.

The existence of the port and the offering of an alternative means of shipping may be a factor in stabilizing all forms of shipping costs.

In terms of relationships with other resources of the Coastal Zone Area, port development represents a major factor in land use competition.

Water quality is obviously related to port use and development. The relationship is usually negative - with port use degrading water quality from dredging operations, and the introduction of pollutants - toxic chemicals from spillage or leaching from bulk storage areas, and grease, oil and sewage discharged by ships and small craft using the harbor. Ports containing recreational boating facilities improve public access, but in many cases, ports pre-empt some of the most desirable waterfront areas. Due to water quality impacts, port development generally degrades fish and wildlife potential.

Legal controls affecting port development relate primarily to federal involvement in harbor maintenance, requiring environmental impact assessment under the National Environmental Policy Act, and to state enabling legislation authorizing the establishment, and defining the powers and functions, of local port authorities.

Historic Development

The Rochester harbor is classified as the lower 2½ miles of the Genesee River. The harbor channel has been continuously improved and maintained by the Corps of Engineers under the authorization of the Federal River and Harbor Acts to a depth of 21 feet in the Genesee River, 23 feet in the entrance channel and 24 feet in the approach channel (U.S. Army Corps of Engineers, 1975:34).

Major terminal and transfer facilities are operated by the Rochester-Monroe County Port Authority. These facilities were initially constructed in 1932 with another structure added in 1949 (Hedden, 1957:26). A second facility operated by the Rochester Portland Cement Corp. upstream of the Port Authority is uniquely related to bulk cement unloading.

A B & O Railroad coal dock once located at the upper end of the harbor has been phased out of operation.

Several service and storage docks for recreational craft exist within the harbor area. Due to the inherent safety provided by the harbor, and the popular growth in recreational boating, the number of boats served by the harbor has increased dramatically.

Current Status and Condition

o Commercial Activity

Recent statistics, summarized in Table 1 which follows, indicate a general decline in water commerce at the Port Authority. During the same period, however, the building cement traffic at the Rochester Portland Cement Corp. has increased in volume.

The total Rochester harbor traffic is further detailed in Table 2 and provides an indication of the amount of tonnage related to foreign and domestic trade as well as the number of vessels.

The Port Authority figures for the amount of tonnage handled annually by the public authority and the private port are presented in Table 3.

The Rochester-Monroe County Port Authority leased their current sites from the City of Rochester, for a term of 50 years, on August 26, 1960. The lease is scheduled to expire on August 31, 2010. The land area is approximately 23 acres and the three principal buildings contain approximately 91,000 square feet of storage space. The Authority, in an agreement dated October 13, 1960 and amended December 19, 1963, has subleased a portion of their facilities to the Pittston Stevedoring Corp. of New York City.

As a result of the recent decline in Port Authority activities, the facilities have physically declined

TABLE 1

Rochester Harbor - Waterborne Commerce
By Major Commodity

(short tons)

Calendar Year	Building Cement	Sand, Gravel Crushed Rock	Coal and Lignite	Newsprint Paper	Nonmetallic Minerals	Other	Total
1973	265,472	112,418		16,154	39,400	504	433,948
1972	273,399			19,637	73,100	149	366,285
1971	182,220		0	15,345	106,800	2,884	307,249
1970	174,198		169,539	14,634	66,933	23,822	449,126
1969	127,917		433,431	13,041	30,500	4,749	609,638
1968	184,712		405,427	11,127	46,261	45,635	693,162
1967	158,393		410,695	15,974	38,738	61,413	685,213
1966	150,117	5,302	568,277	16,666	63,569	55,131	839,502
1965	123,419		605,063	11,638	10,635	10,675	761,430
1964	124,825		285,658	9,167		9,722	429,372

Source: U. S. Army Corps of Engineers, 1975:37

TABLE 2

Rochester Harbor Traffic

Calendar Year	Total Tonnage	Overseas		Foreign		Canadian		Domestic		Harbor Vessels	
		Inbound	Outbound	Inbound	Outbound	Inbound	Outbound	Lakewise Receipts	Internal Receipts	Inbound	Outbound
1973	433,948	504		394,044				39,400			
1972	366,285	77		293,036	72			73,100		103	102
1971	307,249	2,882	2	197,565	0			106,800		101	100
1970	449,126	294	317	188,832	169,539			66,933	23,211	139	132
1969	609,633	3,468	1,245	140,958	433,467			30,500		149	146
1968	693,162	10,678	2,408	196,410	405,437			77,019	1,210	219	217
1967	685,213	6,332	2,471	174,367	410,709			62,109	29,225	252	249
1966	839,502	3,585	19,961	227,244	563,494			18,709	6,509	260	262
1965	761,430	5,706	4,408	144,837	606,479					290	290
1964	429,372	4,599	5,123	133,992	285,658					189	190

* All units short tons except for number of harbor vessels.

Source: U. S. Army Corps of Engineers, 1975:38

TABLE 3
PORT OF ROCHESTER TONNAGE

FACILITIES

<u>Year</u>	<u>Gen.</u>	<u>Authority Bulk</u>	<u>Total</u>	<u>Prime Bulk</u>	<u>Port Total</u>
1974	38,371	46,253	84,624	294,950	379,574
1973	39,990	312,655	352,645	288,829	641,474
1972	25,587	203,394	228,981	255,000	483,981
1971	30,890	131,900	162,798	228,000	390,790
1970	23,008	85,268	108,276	345,314	433,590
1969	21,891	50,500	72,391	536,881	609,272
1968	27,878	56,675	84,553	621,659	706,212
1967	26,942	38,100	64,042	610,113	675,155
1966	27,766	43,850	71,616	746,605	818,221
1965	25,107	37,280	62,387	751,181	813,568

Source: Rochester-Monroe County Port Authority Annual Reports

over recent years. The major factors essential to the livelihood and viability of the port are the handling of bulk materials which have, in the past, included coal and rock salt. The transfer, handling and long-term storage of bulk material has been met with opposition from the local community (Charlotte). Studies outlining the site's potential for an oil tank farm have likewise been met with opposition from both safety and aesthetic points of view. Therefore, while the potential may theoretically exist for the port facility, land use competition and social rejection have created significant limitations.

Proposals to abolish the Port Authority are currently under discussion by the County legislature. Control of the port facility might then be placed under the County's Department of Public Works at which point, the future of port operations as such are unknown.

The New York State Department of Transportation is currently conducting a study of the Upstate Public Ports through a consultant, Frederic R. Harris of Great Neck, New York. The initial phase of study is intended to define the market potential and regional benefit of the ports and preliminary conclusions are scheduled to be available in early 1976.

The Rochester Portland Cement Corporation facilities are simply a series of mooring ports with an associated pneumatic equipment capability to discharge cement to the silos located on the adjacent high bank. In 1974, the Corporation negotiated to pay the Port Authority ten cents per ton of cement which was brought into the Port of Authority by water. (Rochester-Monroe County Annual Report - 1974). This agreement was established as an expression of their concern with the continued operation of the Port Authority.

o Dredging

To accommodate the commercial port traffic the Rochester harbor channel in the Genesee River requires annual dredging to remove silt deposits created by the general drainage pattern of the river. The maintenance of the harbor is under the direction of the U.S. Army Corps of Engineers, Buffalo, N.Y. District. The following is a description of

their activities, (U.S. Army Corps of Engineers, 1975:34):

The existing project was authorized by the 1829, 1882, 1910, 1935, 1945, and 1960 River and Harbor Acts which provide for:

- a. Approach channel 24 feet deep, 300 feet wide, from deep water in the lake to opposite the outer end of the west pier, about 1,900 feet long.
- b. Entrance channel 23 feet deep, 200 feet wide between the piers flaring to a turning basin of the same depth, 600 feet in width, opposite the Rochester-Monroe County Port Authority dock, thence reducing to 270 feet in width to the downstream side of the New York Central Railroad bridge.
- c. Channel in Genesee River 21 feet deep suitably widened at bends, varying in width from 270 feet to 150 feet, except 300 feet wide adjacent to the upper turning basin, from the downstream side of the New York Central Railroad bridge to the upstream Federal project limit, a distance of about 11,800 feet.
- d. Upper turning basin, adjacent to the river channel, 21 feet deep irregularly shaped, 650 feet wide and about 10 acres in area.
- e. Two mooring dolphins located at the angle points on the south side of the upstream turning basin.
- f. Parallel piers at the mouth of Genesee River, about 450 feet apart, the west pier 3,036 feet long and the east pier 2,699 feet long.

An annual average of approximately 275,000 cubic yards of material is removed by dredging at an average annual cost of \$137,597. Table 4 presents the annual activities.

The annual dredging of the commercial harbor has been the subject of environmental concern in recent years. The dredged sediment in the river has been determined by the EPA to be polluted and unacceptable for open lake disposal. The sediments are now

TABLE 4

Rochester Harbor - Maintenance Costs

Fiscal Year	Misc. Inspection & Cond. Survey (\$)	Dredging (\$)		Breakwater Repairs (\$)	Snagging & Clearing (\$)	Material Removed (c)
1975	5,000*	507,700*				662,211
1974	18,961	123,796	L			66,914
1973	23,044	139,056	L	8,170		161,131
1972	11,364	198,921	L	14,234		289,574
1971	17,585	109,801	L	176,991		182,966
1970	14,817	291,618	L	356,332	110	437,386
1969	16,237	89,726	L	62,732		159,415
1968	10,429	81,537	L		1,198	163,423
1967	15,597	143,871	M			517,094
1966	12,088	97,292	L			225,566
1965	9,703	100,355	L			175,591

L - Dredging by U.S. Hopper Dredge LYMAN
M - Dredging by U.S. Hopper Dredge MARKHAM
* - Estimated Cost

Source: U. S. Army Corps of Engineers, 1975:42

deposited in open lake dumping one and one-half miles N60° from the harbor's west breakwater. The Corps of Engineers has proposed alternative sites for depositing the dredged sediments. Figure A illustrates seven proposed sites. The selection of a preferred site and the report on the environmental impacts is due in July, 1976.

o Recreational Use of Harbor

Eleven marina facilities are located in the Rochester harbor and their activities and services are detailed in Table 5. Approximately 800 craft are served within the harbor. The marina development has occurred primarily on the east side of the river, opposite and south of the Port Authority facilities.

In response to the substantial growth and demand for recreational boating facilities, the Genesee River Plan has recommended development of marina facilities along several areas of the Genesee River including the area occupied by the Port Authority (The Genesee River Plan, 1965:71).

Recreational craft in the narrow harbor pose a potential conflict in use with larger commercial ships. However, with the decline in waterborne commercial traffic, recreational traffic now dominates the harbor.

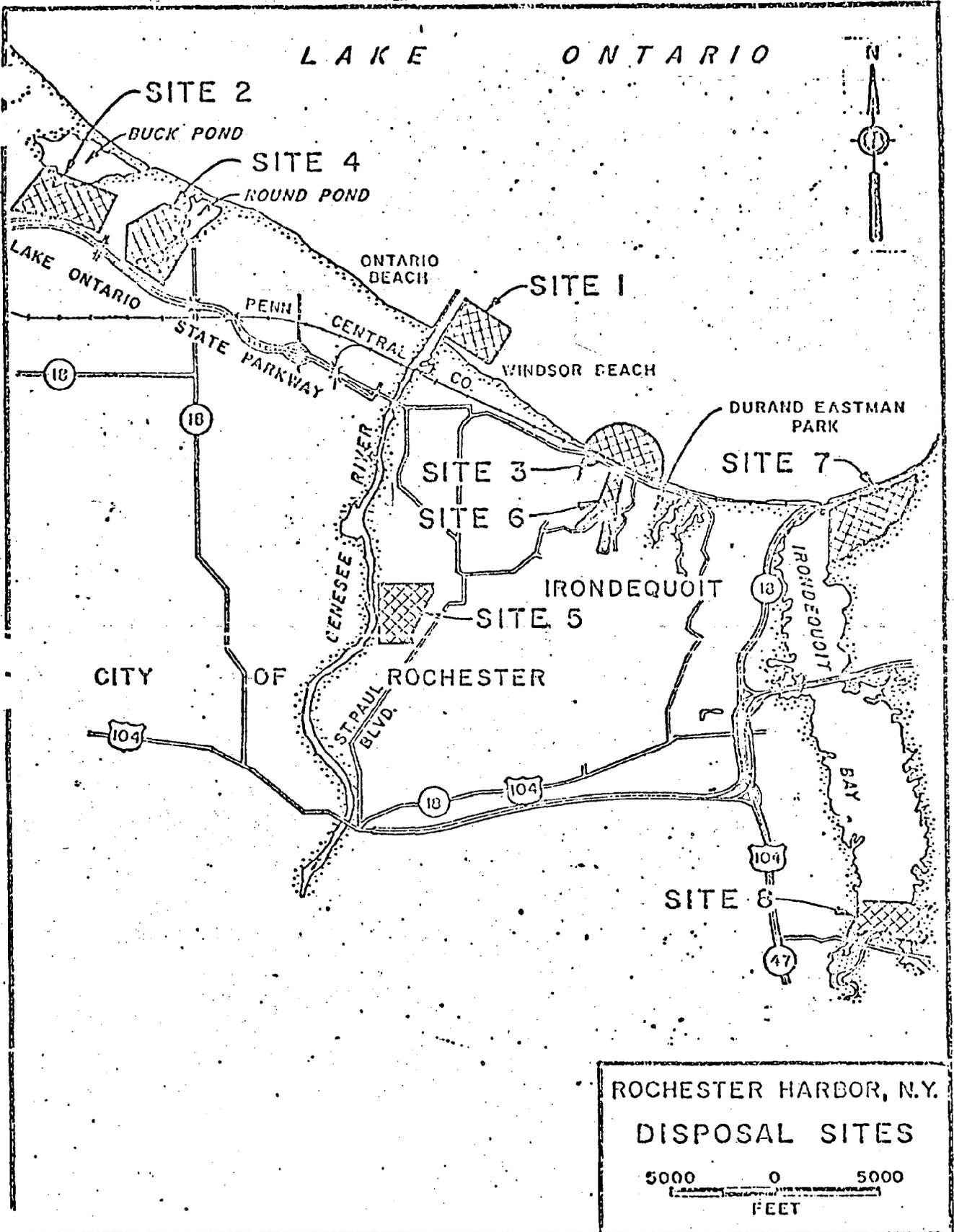
o Transportation and Port Activity

Surface transportation (highway and rail) is an important support element in the operation of a commercial port.

An intensive industrial and commercial history led to the establishment of a major railroad network in the coastal zone. A major rail line exists parallel to the Lake Ontario shoreline (crossing the Genesee River on a swing bridge) with connecting spur running south to Rochester along each side of the river.

Today, many of these rail lines are underutilized, abandoned or in disrepair. Plans for consolidation and re-use of this rail network are underway. A preliminary plan of the U.S. Railroad Administration, according to Robert Tylock, Regional D.O.T. Director (Tylock, 1975a), indicates that the Hojack line from Dewey Ave. easterly

FIGURE A



Source: U. S. Army Corps of Engineers

TABLE 5

Marina Facilities in Rochester Harbor

Name	No. Launching Ramps	No. Pier Moorings	Fuel Sold	Boat Sales	Hull and Engine Repairs
Triangle Marine		UNK	Yes		Yes
Rochester Yacht Club		75	Yes		
Vaughans Marina		UNK	Yes		Yes
Genesee Yacht Club		UNK			
Sailer Marine Service	1	200	Yes	Yes	Yes
Shurways Marina	1	175	Yes	Yes	Yes
Owens Rochester Inc.	1	14	Yes		Yes
Riverview Yacht Basin	1	200	Yes		Yes
Charlotte Yacht Club		UNK			
Anchor Marine Company		50			
The Yacht Center		0		Yes	Yes

Source: U. S. Army Corps of Engineers, 1975:39

to Rock Beach Road in Irondequoit will be continued to connect western traffic with the southern spur. But the Hojack Line from Rock Beach Road easterly, through Durand Eastman Park, to Holt Road in Webster, could be eliminated in the future since it is "not essential for continued rail purposes."

N.Y.S. D.O.T. has also preliminarily concluded that the railroad lines along River Street and the yards south of Stutson Street could be discontinued and eliminated, the west side of the river could continue to be serviced by the B & O Line, one-half mile west of the river. These two changes would still leave the port area and both sides of the Genesee River with rail freight service. More rail lines may be eliminated in the future if commercial and industrial activity in the river area continues to decline.

Service of port and industrial facilities by truck traffic poses several problems. The area around the mouth of the Genesee River is largely residential and generally intolerant to heavy commercial highway traffic. In addition, Lake Ontario State Parkway excludes commercial vehicles. The nearest interstate is 4 miles south of the coastal zone.

Industrial activity in the coastal zone may further be constrained by the proposed light rail rapid transit line planned for Lake Avenue. Good public transit to the waterfront would bring increasing demand for public access and pressure to fade out industrial uses.

Implications for Planning and Development

The potential for increased port activity and industrial development within the coastal zone largely revolves around major policy decisions and the need for further studies. In vying for the limited land resources of the zone, port development must justify its dependence on the water resources and existing railroad infrastructure. On the other hand, it must compete with an increasing demand for greater public access and aesthetic quality.

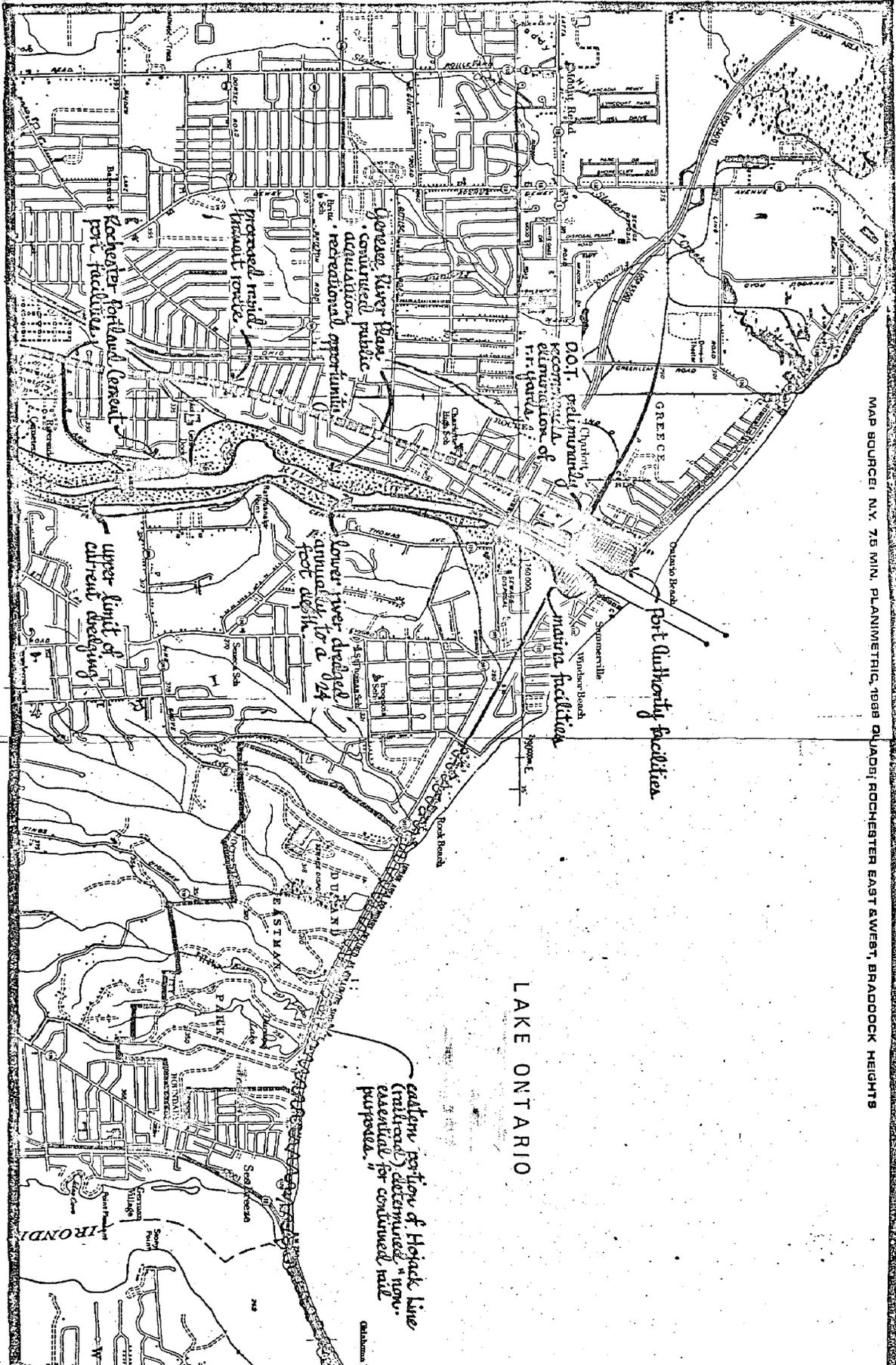
The final recommendations of the Upstate Public Ports Study are likely to have as profound an impact on the future of the Rochester port as the final political determinations as to control and management of the port facilities. In the absence of both convincing economic justification and clear public policy, planners can only evaluate the various alternatives.

The cessation of the Port Authority operations hold some implications which require consideration. The potential effects are summarized as follows:

- o Discontinued dredging or dredging depth reduced to that required for recreational craft (approximately 13 feet).
- o Effects on cement delivery by water and the subsequent increased cost of cement based upon alternative transportation costs.
- o Increased flood levels during high water periods with a discontinuation of dredging.

These effects are tempered by a preliminary analysis of cost/benefits by the Corps of Engineers (U.S. Army Corps of Engineers, 1975:43) which indicates that economic benefits of cement traffic to the region justify the annual dredging costs. If the cost/benefit ratio were to continue as preliminarily indicated, it appears that the dredging operation would be maintained.

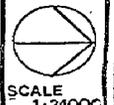
The alternatives for the future of the port and waterfront range from a development orientation on one hand to a conservation approach on the other with several intermediate stages utilizing some of both approaches. A "development" orientation would strongly support the maintenance, promotion, improvement and expansion of all port facilities while a "conservation" approach would promote the restoration of much of the land to an "open space" condition and the re-establishment of the natural vegetation. An intermediate position or "mixed use" approach might suggest compatible combinations of use which could include elements of both strategies. Such a coordinated proposal would respond to highest and best use of the land in that the strengths of each alternative would be maintained.



MAP SOURCE: N.Y. 7.5 MIN. PLANIMETRIC, 1968 QUADS; ROCHESTER EAST & WEST, BRADDOCK HEIGHTS

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY
PORT & WATERFRONT FACTORS

PREPARED FOR: CITY OF ROCHESTER
 PREPARED BY: ECOPLANS INCORPORATED



LAND USE ANALYSIS

Significance of the Resource

Within the context of the coastal zone area, land use competition is a complex situation generated primarily by the interface of land and water which establishes a series of conflicts - natural ecology against human ecology, private ownership and access against public ownership and access, industrial and transportation needs for water against recreational needs for water orientation, to name a few. The water's edge has always been the earth's most sought-after habitat.

Some of the relationships of land use competition with the other categorical areas of resource interest in the Rochester Coastal Zone are as follows:

- o Water Quality - What happens on the land generally determines the quality of the adjacent water areas. Siltation, erosion and the introduction of pollutants from domestic and industrial sewage are all due to land use - agricultural as well as urban uses.
- o Port Development - The absolute necessity for access to the water and the key land transportation facilities makes port development a major land use competition factor in the coastal zone. The basic conflict is with residential development rather than commercial and private recreational - and much of this stems from the visual aspects.
- o Public Access - in the situation where the coastal area possesses a variety of attributes including desirable residential sites, recreational potential and harbor potential (as most urban coastal zone complexes do) land use competition inevitably generates major problems of public access. Key sites are pre-empted for private development or for public development not oriented toward recreational use by the general public. But because of nearby populations, the public generally finds uncontrolled access - sometimes in the face of considerable hazard. Public ownership of key parcels with a high property tax value is often resisted by governing bodies. The growth of urban areas has also generated social conflicts in coastal zone areas due to nearby residential area proprietary feelings which generate resistance to the use of public areas by other segments of the region's population.

- o Erosion - Land use and development is the primary cause of erosion. Some land uses are more disruptive than others. Agricultural use of land for crops is the most disruptive, due to the continually exposed soil. Most urban developments will cause temporary erosion problems during construction, but these are more easily controlled by proper planning.
- o Land is habitat for terrestrial wildlife species. Land use competition is generally destructive of natural habitat, although this need not be so. Appropriate use of open space in the urban context could restore a much greater diversity and quality of wildlife in the urban area. Some species will remain highly intolerant of man's presence however, and require undisturbed sanctuaries or preserves. Wildlife values of urban lands have traditionally been disregarded but these values in association with recreational and educational values are increasing items of public concern.
- o Electric Generating Facilities - Technological advances in power production are removing these from urban coastal land use competition - and they are now of greater concern in the more remote areas of the coastal zone.
- o Legal Controls - Local zoning is the basic means of controlling land use competition in the coastal zone. Increasingly, however, the states are executing legal powers to protect so-called "critical areas" of regional or statewide concern. The new New York State Freshwater Wetlands Preservation Act is an example of such developments. New zoning techniques, such as performance criteria, incentive zoning and the transfer of development rights are providing a variety of approaches to local legal control of land use competition in the coastal areas.

Historic Development

Land use competition has always been a hallmark of the urban coastal zone, since these lands were generally the first occupied by man, dependent as he was on more primitive means of transport and domestic water supply. The wildlife food and material resources of the coastal zone were also a major determinant in settlement, as were the visual aspects and the commonly flat nature of

coastal zone topography. As the agrarian economy of early settlement gave way to the industrial revolution, water power and the need for processing water brought industrial development into the coastal zone - particularly where harbors existed to provide cheap water transport of raw materials and finished products. Economic wealth of major industrial leaders often was instrumental in the setting aside of large coastal areas - as was the case with Durand Eastman Park. In many cases, these were first residential estates which were later deeded to the public.

Current energy and transport technologies have tended to reduce industrial interest in the coastal areas, and an affluent society with considerable available time and income for recreational use has caused a resurgence of interest in the urban coastal zone as a desirable residential area - generating demands for better public access, improved water quality and visual attractiveness. These also create competition since residential populations represent commercial market potential - and conflicts often occur due to the nature of commercial entertainment and dining establishments which thrive on user populations attracted to waterfront recreation areas.

Current Status

o Existing Land Use

Land use competition in the Rochester Coastal Zone is focussed primarily in the area at the mouth of the Genesee River. The coastal zone resources at Durand Eastman Park are effectively removed from land use competition, except in terms of the public uses of that land. Sections of the park have been pre-empted for the construction of a major regional sewage treatment plant, and other areas have been used for the disposal of organic matter such as leaves and dead trees.

The land use complex at the mouth of the Genesee River is a diverse mixture reflecting the historic influences mentioned above. Commercial, industrial and port authority development occupy both banks of the river south the Stutson Street. On the west side of the river, industrial uses, port authority and railroad tracks and facilities occupy the immediate shoreline - with some service commercial uses - including bars and restaurants primarily serving this complex - mixed in. The major transition zone between this area and the low-density residential community of Charlotte to the west

is Lake Avenue. Community-oriented commercial retail establishments and public and private institutional land uses serving the lower area of Charlotte are focused around the intersection of Stutson Street and Lake Avenue. This zone is separated from the residential community closest to the Lake by a recently developed high density townhouse complex.

The most prominent land use conflicts seem to exist along Lake Avenue north of the townhouses. Here, proximity to Ontario Beach Park has generated commercial land uses associated with recreational area populations - bars, restaurants, hot dog stands, and entertainment uses which obviously impact immediately adjacent residential areas. Opposite these is a largely vacant land area under the ownership of the Rochester-Monroe County Port Authority.

Further to the west, but buffered by a city park and Ontario Beach Park, is a relatively high quality low-density residential community focused on Beach Avenue. The lakefront west of Ontario Beach Park is occupied by high value residential properties.

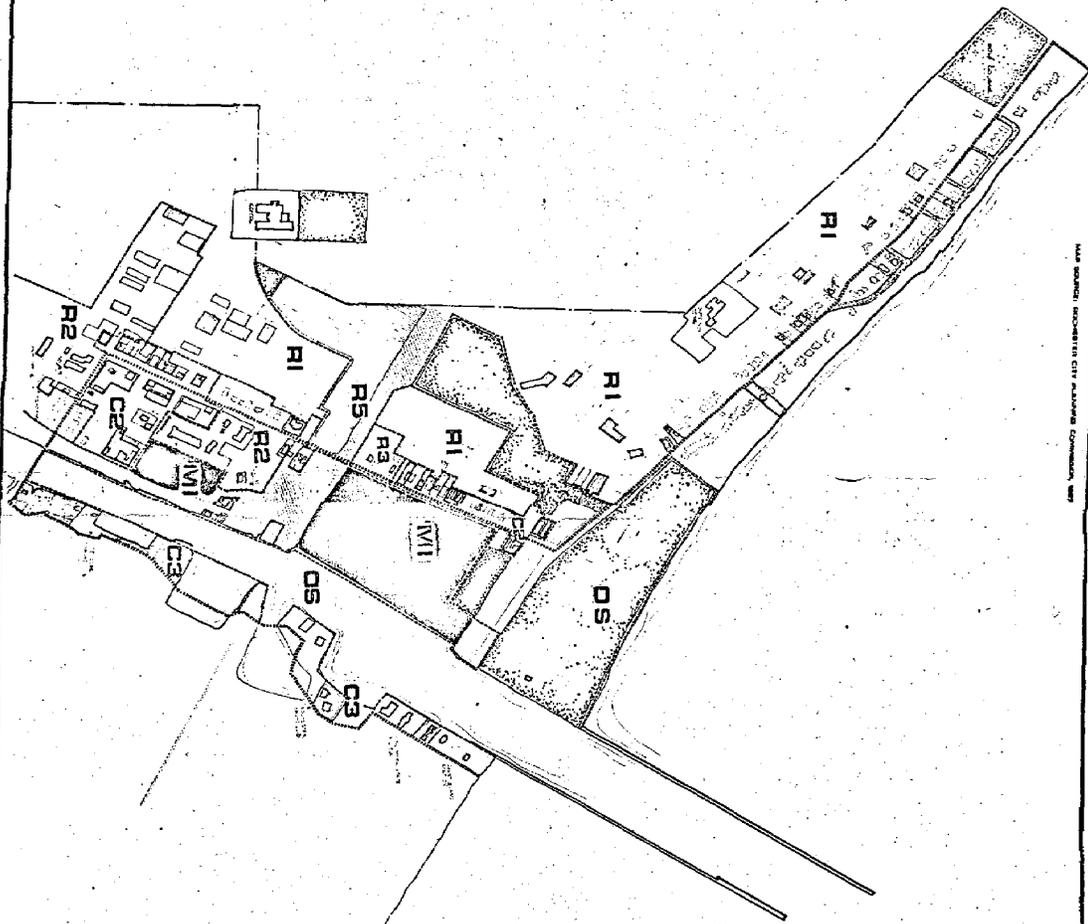
On the east side of the river, land uses are primarily institutional and commercial. The city boundary lies at an average depth of 200 feet back from the river so many land uses spill over into the Town of Irondequoit.

The U.S. Coast Guard Station occupies the strategic northern-most land. For security reasons, the grounds are closed to the public, prohibiting access to the west breakwater. The New York State Naval Militia operates on a very limited basis, at the foot of St. Paul Boulevard. Squeezed between these two dominating institutional uses exists a small commercial food concession. A third institute, the private Rochester Yacht Club, occupies the peninsular between the militia and the railroad tracks.

The shoreline from the railroad south to Stutson Street is all occupied marinas and the Genesee Yacht Club. Access to these activities is poor and unattractive. The land, within the Town of Irondequoit behind the marinas, is undeveloped and bears no relationship to existing shoreline uses.

Specific land uses and their patterns are illustrated in the map, "Existing Land Use and Proposed Zoning."

- KEY**
- ZONING**
- R1 SINGLE FAMILY RESIDENTIAL
 - R2 TWO FAMILY RESIDENTIAL
 - R3 LOW DENSITY RESIDENTIAL
 - R4 HIGH DENSITY RESIDENTIAL
 - CS COMMUNITY COMMERCIAL
 - CG GENERAL COMMERCIAL
 - M1 MANUFACTURING - INDUSTRIAL
 - OS OPEN SPACE
- LAND USE**
- SINGLE FAMILY
 - TWO FAMILY
 - MULTI FAMILY (2+)
 - OFFICE
 - COMMERCIAL
 - AUTO RELATED
 - INDUSTRIAL
 - INSTITUTIONAL
 - OPEN SPACE
 - PARKING
 - PUBLIC UTILITY



**ROCHESTER COASTAL ZONE RESOURCES
MANAGEMENT STUDY**

EXISTING LAND USE AND PROPOSED ZONING

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLAN, INCORPORATED
SARATOGA SPRING, NEW YORK 12858
A MEMBER OF
THE SARATOGA ASSOCIATES



SCALE
1" = 400'
0 100 200

In general, this land use complex represents a relatively saturated situation with little vacant land resource. Land use competition therefore is related to potential demand for amortizing or changing existing land uses, or demands for increasing the density of existing use.

This demand may increase given the decline of the market for sites in more remote areas of the region's coastal zone - a factor of distance and increasing energy costs involved in transport. Higher density residential development might also be encouraged by the construction of the proposed rapid transit system along Lake Avenue.

If this occurs, concurrent demands would be generated for additional commercial, institutional and recreational space - and accompanying municipal facilities and services. At present, however, the market appears relatively stable.

o Current Influences on Land Use Development

Three official development and land use growth policies are currently proposed for the Rochester coastal zone: (1) the Rochester new zoning ordinance; (2) the Monroe County General Development Plan; and (3) the Genesee/Finger Lakes Regional Planning Board's Comprehensive Regional Development Plan.

New Zoning Ordinance - The City of Rochester in October 1975 adopted a new zoning ordinance for the entire city. The new zoning for the Charlotte neighborhood is illustrated on the map, "Existing Land Use and Zoning." Essentially the new zoning classifies the land use to its existing use, and as such takes a conservative approach to development by requiring that new proposals be "tested" in the rezoning process.

Monroe County General Development Plan

The Monroe County Department of Planning has prepared a comprehensive plan for the entire county in accordance with Section 706 of Article VII of the Monroe County Charter. The plan (Monroe County Department of Planning, 1975) is in the process of being adopted by the Monroe County legislature. The portion of the plan pertaining to the coastal zone is presented

on the accompanying map.

High intensity urban development permits densities exceeding 12 housing units per acre. Medium intensity urban development provides for densities of nine to 12 housing units per acre, while low intensity urban development calls for densities of two to five housing units per acre. The proposed non-urban use areas are designated major resource protection areas. Finally, the plan proposes a growth center for Charlotte as a focal point to the general growth along the Lake Avenue rail transit corridor.

Comprehensive Regional Plan - As a policy guide for future growth and development, the Genesee/Finger Lakes Regional Planning Board adopted a comprehensive regional plan in June, 1975. (Genesee/Finger Lakes Regional Planning Board, 1975.) That portion of the plan pertaining to the coastal zone is presented on the accompanying map.

Earlier in 1970, the Genesee/Finger Lakes Regional Planning Board proposed an early action plan for the Lake Ontario shoreline as a prelude to its comprehensive plan. This early action program plan is also presented on an accompanying map.

Implications for Planning and Management

Available land in the Rochester Coastal Zone is a scarce resource - the competition for the remaining vacant land is strong and could be expected to increase - needing an equally strong public planning and management approach to control the level of competition below a point where major land use alterations would occur. Public ownership is obviously the strongest method of controlling the use of vacant parcels, but this also deprives the community of a property tax base. The decline of the Port Authority, and possible termination of the facility presents the largest opportunity for change in the coastal zone land use competition picture.

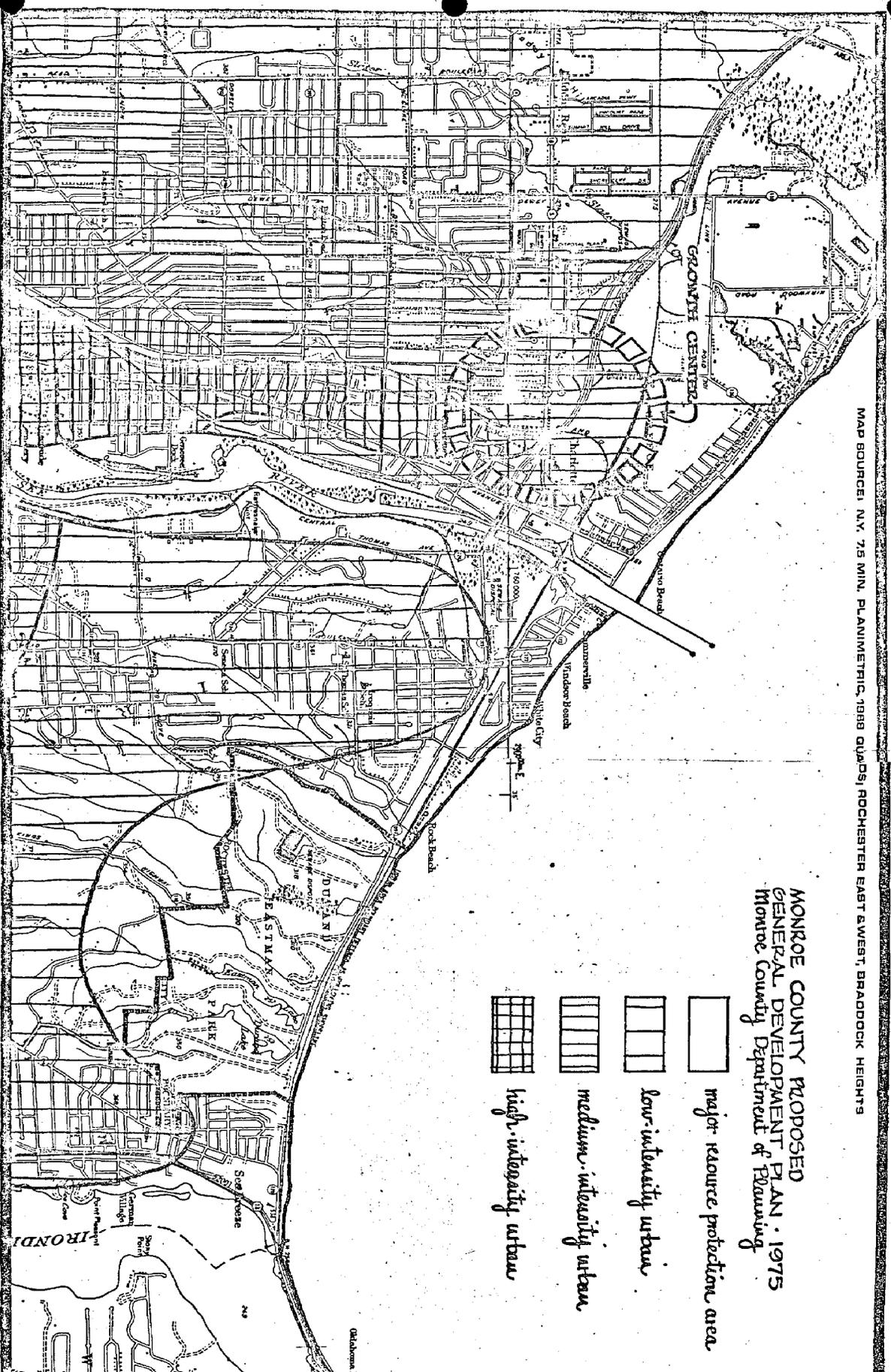
Durand Eastman Park is a major land use resource which should be retained and expanded under county jurisdiction - largely because it does serve the population of the entire county, is completely cut off from the city proper, and the county has a broader resource base to provide improvements.

The land area at the mouth of the Genesee River, while largely developed, may be subjected to more intense

land use competition in the future, particularly if additional high density residential development occurs and public recreational uses of land are expanded. The latter would increase demand for related commercial development at the lower end of Lake Avenue creating further conflicts with adjacent residential communities.

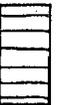
Consideration should be given to utilization of the existing Port Authority property as a joint public-private multiple use development as a planned unit containing public access to the waterfront, additional marina facilities, residential and related commercial uses within the area.

The entire land area of this section, as defined for the study area, but including the area west of Lake Avenue to the City line and south to Stutson Street should be defined as a special district, and careful monitoring performed on all proposed developments, including zoning changes, in the area.



MAP SOURCE: N.Y. 7.5 MIN. PLANIMETRIC, 1988 QUADS; ROCHESTER EAST & WEST, BRADDOCK HEIGHTS

MONROE COUNTY PROPOSED
GENERAL DEVELOPMENT PLAN - 1975
Monticue County Department of Planning

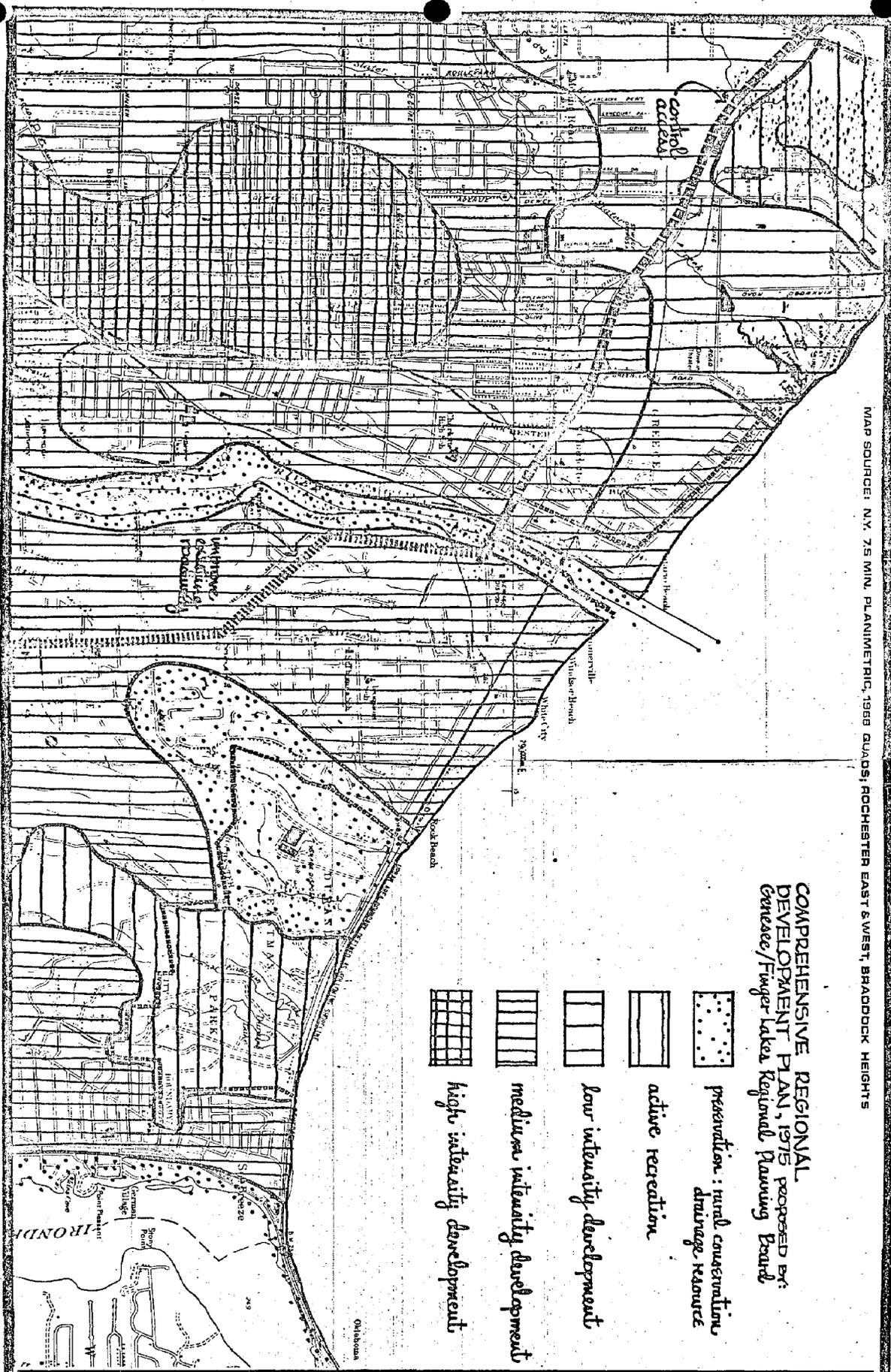
-  major resource protection area
-  low-intensity urban
-  medium-intensity urban
-  high-intensity urban

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY DEVELOPMENT PROPOSAL

PREPARED FOR: CITY OF ROCHESTER

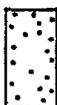
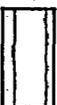
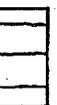
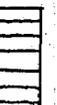
PREPARED BY: ECOPLANS INCORPORATED

SCALE: 1" = 1000'

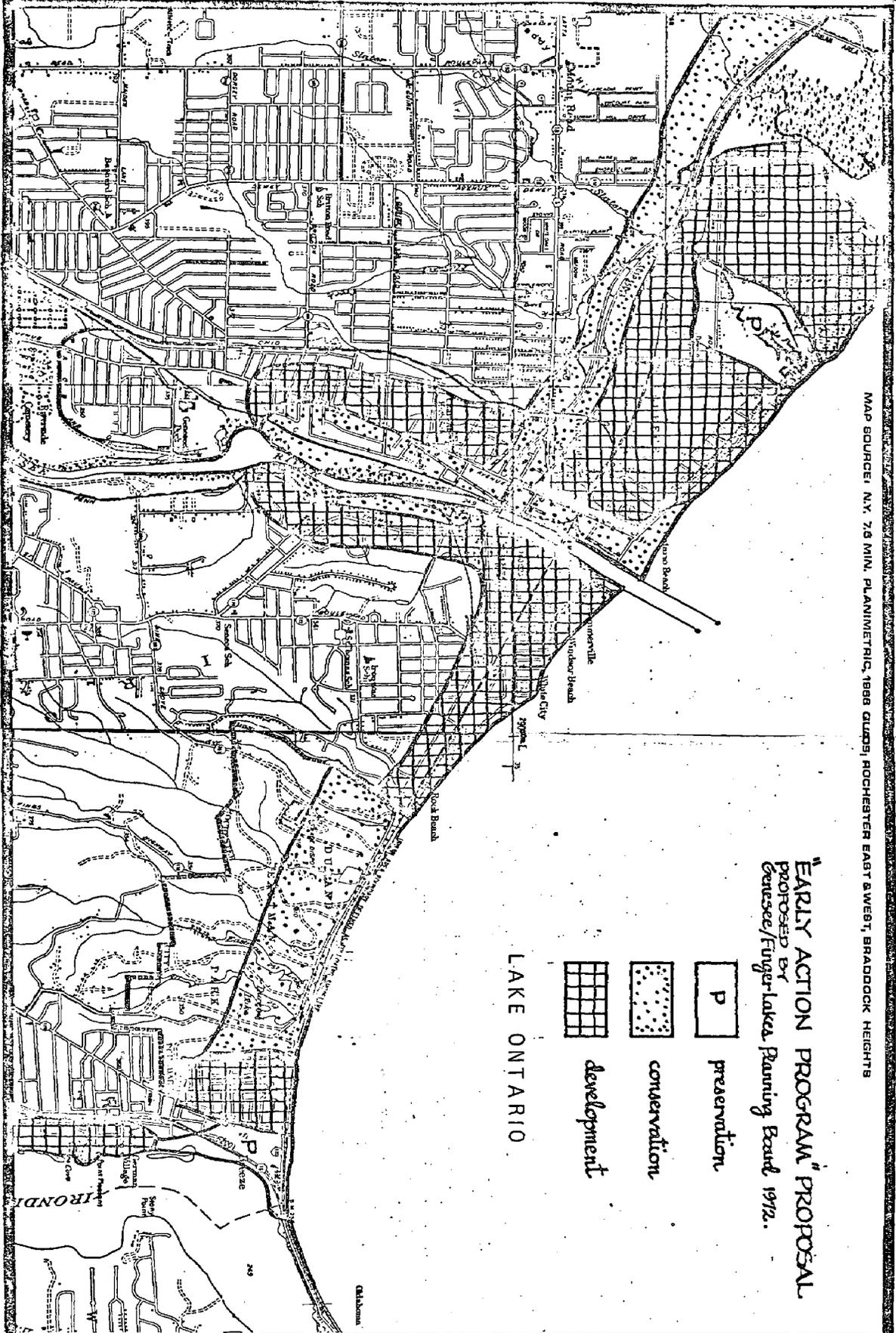


MAP SOURCE: N.Y. 7.5 MIN. PLANIMETRIC, 1968 QUADS; ROCHESTER EAST & WEST, BRADDOCK HEIGHTS

COMPREHENSIVE REGIONAL
DEVELOPMENT PLAN, 1975 PROPOSED BY:
Genesee/Finger Lakes Regional Planning Board

-  preservation: rural conservation
drainage resource
-  active recreation
-  low intensity development
-  medium intensity development
-  high intensity development

<p>ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY DEVELOPMENT PROPOSAL</p> <p>PREPARED FOR: CITY OF ROCHESTER DEPARTMENT OF COMMUNITY DEVELOPMENT</p>	<p>PREPARED BY: ECD PLANS INCORPORATED BARCLAY SPRING, NEW YORK 14660 A MEMBER OF</p> <p>SCALE 1:24000</p> 
---	---



MAP SOURCE: N.Y. 7.5 MIN. PLANIMETRIC, 1988 QUAD; ROCHESTER EAST & WEST, BRADDOCK HEIGHTS

"EARLY ACTION PROGRAM" PROPOSAL
 PROPOSED BY
 Genesee/Jugger-Lake Planning Board 1972.

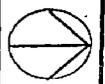
LAKE ONTARIO

-  preservation
-  conservation
-  development

**ROCHESTER COASTAL ZONE RESOURCES
 MANAGEMENT STUDY
 DEVELOPMENT PROPOSAL**

PREPARED FOR:
 CITY OF ROCHESTER
 DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
 ECOPLANS INCORPORATED
 SARATOGA SPRINGS, NEW YORK 12158
 A MEMBER OF
 THE SARATOGA ASSOCIATES



SCALE
 1:24000

WATER QUALITY ANALYSIS

Significance of the Resource

Water is the prime resource which defines the coastal zone. Water is also one of the most essential components of the ecosystem, transporting and supplying plants and animals with life supporting nutrients. Healthy and diverse biotic environments are dependent upon good quality water. In addition to its essential role in sustaining biological life water serves as habitat for aquatic and amphibian species of animal life. Water in quantity is also essential for the sustenance of submerged and emergent aquatic plant communities. Water plays a significant role in retaining optimum soil textures, assists in the conversion and exchange (recycling) of chemical elements, and moderates climate conditions.

As an element of sight and sound, water contributes beauty and aesthetic quality to the coastal zone. More importantly the interface of land and water has long been a recreational and leisure habitat for man, providing swimming, boating and fishing opportunities.

Historic Development

The Genesee River flows approximately 157 miles from northern Pennsylvania north to Lake Ontario. The river drains nearly 2,500 square miles of land (see Genesee River Basin Comprehensive Study, 1964). Water quality problems in the Genesee River basin have been largely concentrated in the lower portion of the Genesee River, as the river accumulates and transports both point and non-point sources of pollution to the river's mouth at Lake Ontario.

The general urban and industrial growth combined with universal environmental neglect in the prosperous years following World War II caused significant water quality impairment in the lower Genesee River. The coastal zone was so severely impacted by these water pollutants that by the mid 1960's the New York State Department of Health was forced to close the beaches to swimming. In spite of vast efforts to improve the water quality, the beaches still remain officially closed.

There is some historical evidence that water pollution is not solely a recent development. The late 19th

century industrialization, together with the absence of modern sanitary engineering technology, must surely have presented health problems for the coastal and river waters. As far back as 1932, prolific growths of the algae, cladophora, have been reported on the beaches, caused by the overenrichments of nutrients (Neil and Owen, 1969). However, the long-term recreational popularity of the coastal zone is evident in the extensive commitment of facilities made over the years to Durand Eastman Park and Ontario Beach.

With the advance of scientific monitoring and measuring technology and a greater understanding and concern for ecosystem structure and functioning, water quality has risen as a prominent issue in management of coastal zone resources.

Current Status and Condition

o Recreational Concerns

The environmental concern for improved water quality led to the development of a Monroe County Pure Waters Master Plan in 1971. Massive amounts of local, state, and federal funds have been spent over the last four years to implement the plan. Efforts have largely been directed at consolidating and improving municipal sanitary waste discharges. Thirty-four small and inadequate municipal primary treatment plants have had their effluent diverted to a new infrastructure series of interceptors feeding into the following four expanded secondary treatment facilities:

- Gates-Chili-Ogden Plant
- Van Lare Plant (Durand Eastman Park)
- N.W. Quadrant Plant
- Webster Plant

The latter three facilities are located on Lake Ontario and will soon have in operation newly constructed outfalls that will discharge treated wastes outside the Rochester embayment area.

Because the two basic concerns for recreational use of coastal zone are aesthetics and sanitary quality improvements in these factors generated by these Pure Water efforts can be expected to appear beginning in the summer of 1976 in the river and 1977 for the embayment area (Steinfeldt, 1975).

The critical question, of course, is when can the

beaches in the coastal zone be legally reopened for swimming. Because of a number of complex factors it is currently difficult to predict with any certainty a definitive date.

Issuance of a permit for swimming by the State Health Department is dependent upon a constant level of water quality. The New York State water quality standards for bathing beach waters (Class "B") are as follows (New York State Environmental Conservation Law, 1975).

CLASS "B"

Best usage of waters. Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.

Quality Standards for Class "B" Waters

Items	Specifications
1. Coliform	The monthly median coliform value for one hundred ml of sample shall not exceed two thousand four hundred from a minimum of five examinations and provided that not more than twenty percent of the samples shall exceed a coliform value of five thousand for one hundred ml of sample and the monthly geometric mean fecal coliform value for one hundred ml of sample shall not exceed two hundred (200) from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.
3. Total Dissolved Solids	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved Oxygen	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

Lake Ontario is classified Class "A" - Special Waters (International Boundary Waters). The Genesee River is currently classified Class "SB".

Certain biological parameters are beginning to show signs of meeting the requirements but most likely all the requirements will not be met with consistency for several more years.

The New York State Department of Environmental Conservation maintains a permanent water quality surveillance station on the Genesee River, two miles south of the Stutson Street Bridge (Station Number 09 0001 SW WQS). Complete records from this station, kept since 1966, are available from the Monitoring and Surveillance Office, Division of Pure Waters, New York State Department of Environmental Conservation, Albany, New York. Various periodic water samplings have been conducted by the State Department of Health, Monroe County Department of Health, the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers.

The Monroe County Department of Health has coordinated the establishment of a model for the lower Genesee River to estimate key water quality indicators. This model will provide base line information that will aid in the determination of when the beaches can safely be reopened.

There has been a noticeable decrease in the presence of cladophora, a form of filament green algae, along the shores of Lake Ontario over the past few years. Cladophora growth begins in the early spring and multiplies prolifically through the early summer in nutrient-rich waters. Strands of cladophora drift up onto the shore, decompose and cause strong odors and unsightly conditions at bathing areas. These algae also provide habitat for colonies of coliform, suspended solids and lake litter, hazardous to swimmers.

The continual presence of cladophora and high coliform counts in the coastal zone are indicators of over-enriched waters. The over-nutrication of Lake Ontario in the Rochester embayment area is now primarily caused by the high concentrations of nutrients entering from the Genesee River. These high concentrations have been attributed to the following major sources (O'Brien and Gere, Inc., 1975):

- o Rochester's combined sewer overflow
- o Dredging operations in the lower Genesee River
- o Agricultural non-point source contributions

An overflow abatement study program is currently reviewing emergency solutions and economically feasible methods of solving the problems. Upon completion and implementation of the program in the early 1980's additional biological water quality improvements should be realized.

The commercial harbor of the lower Genesee River is annually dredged of sediment deposits to a depth of 23 feet. Dredging causes turbidity and re-suspends sediments laden with bacteria, metals and other toxic substances. Upon the recommendations of the County and State Health Departments dredging activity, starting in 1975, will commence in the fall rather than in the summer to avoid conflict with recreational activities. In the future if Rochester should abandon its commercial port operations dredging activity may be significantly reduced.

Dredging sediments are now deposited in open lake dumping one and one-half miles N60° from the River's west pierhead light. Because the EPA has ruled that these sediments are polluted and unacceptable for open lake disposal, the Corps of Engineers is investigating alternative means of disposal. One alternative involves using diked disposal areas and the Corps of Engineers are currently preparing an environmental impact statement for one such facility off Drand Eastman shoreline. Another alternative involves continued open lake dumping, but beyond the embayment area so that pollutants are not carried shoreward by lake currents.

Non-point sources of nutrient pollution are no doubt the most difficult to control. In general these nutrients originate from agricultural fields far upstream in the Genesee River basin. It has been estimated that at least 77% of the river suspended solids originate from non-point sources. The U.S. Environmental Protection Agency is currently conducting a detailed study for the International Joint Commission on the Great Lakes which will assess nutrient transport problems in the Genesee River Basin.

o Biotic Concerns

Biologically healthy waters contain a myriad of living organisms, ranging from one cell life forms to more complex forms of fish. Clean water can

support a diversity of plant and animal life through the presence of a well structured food chain. Water pollution in the lower Genesee River has created disruptions in the vital aquatic food web. Recent data indicate a significant low diversity of pollutant-tolerant benthic organisms in the lower river, indicating artificial eutrophication, or poor water quality (O'Brien and Gere, 1975).

Industrial pollution discharging from such sources as Kodak Park Treatment Plant are still contributing significant carbonaceous and nitrogenous ultimate oxygen demand loads to the lower river.

Heavy metals and other toxic substances such as PCB's are still found in dangerously high concentrations in Lake Ontario.

Two electric generating facilities, the Russell Station in Greece and the BeeBee Station in downtown Rochester, each release thermal discharges up to 170 million gallons per day into Lake Ontario and Genesee River. These discharges create thermal plumes which dissipate their heat through either dilution with cooler waters or evaporation. Of the seventeen water cooled power facilities operating on Lake Ontario in 1974 the Russell Station has the lowest BTU output per hour. Extensive but largely inconclusive studies have attempted to assess the thermal impact on water quality. Thermal additions are generally believed to be beneficial to the major larger fish species, and to forage fish and organisms which occupy the near shore area. On the other hand there is some evidence of loss of dissolved oxygen during the plume's cooling process. Conclusive evidence on the impacts generated by thermal plumes must await further study.

Over in Durand Eastman Park there is some indication of artificial eutrophication on the ponds contributed by nutrient laden sediments carried in tributaries from suburban development south of the park. The problem is not viewed as a constraint to present park utilization activities. A program for inventorying and surveilling the water quality of these ponds should be initiated. The streams feeding the ponds are all classified "C-T" or above by the New York State Department of Environmental Conservation and protected by the Stream Corridor Protection Program.

o Other Concerns

For other resource uses such as commercial shipping or recreational boating, water quality becomes less of a critical factor. While it is true that maintenance costs on floating crafts are increased with long term exposure to polluted water, the activity in itself does not demand pure water.

The Genesee River has experienced a general decline in commercial activity, thus reducing the likelihood of major oil spills or blatant dumping of marine sanitary waste holding tanks.

While commercial shipping has decreased, recreational traffic has increased with marine development. Oil and gasoline discharges and illegal dumping of marine holding tanks are a potential water quality impairment problem affecting marine life and nearby swimming areas.

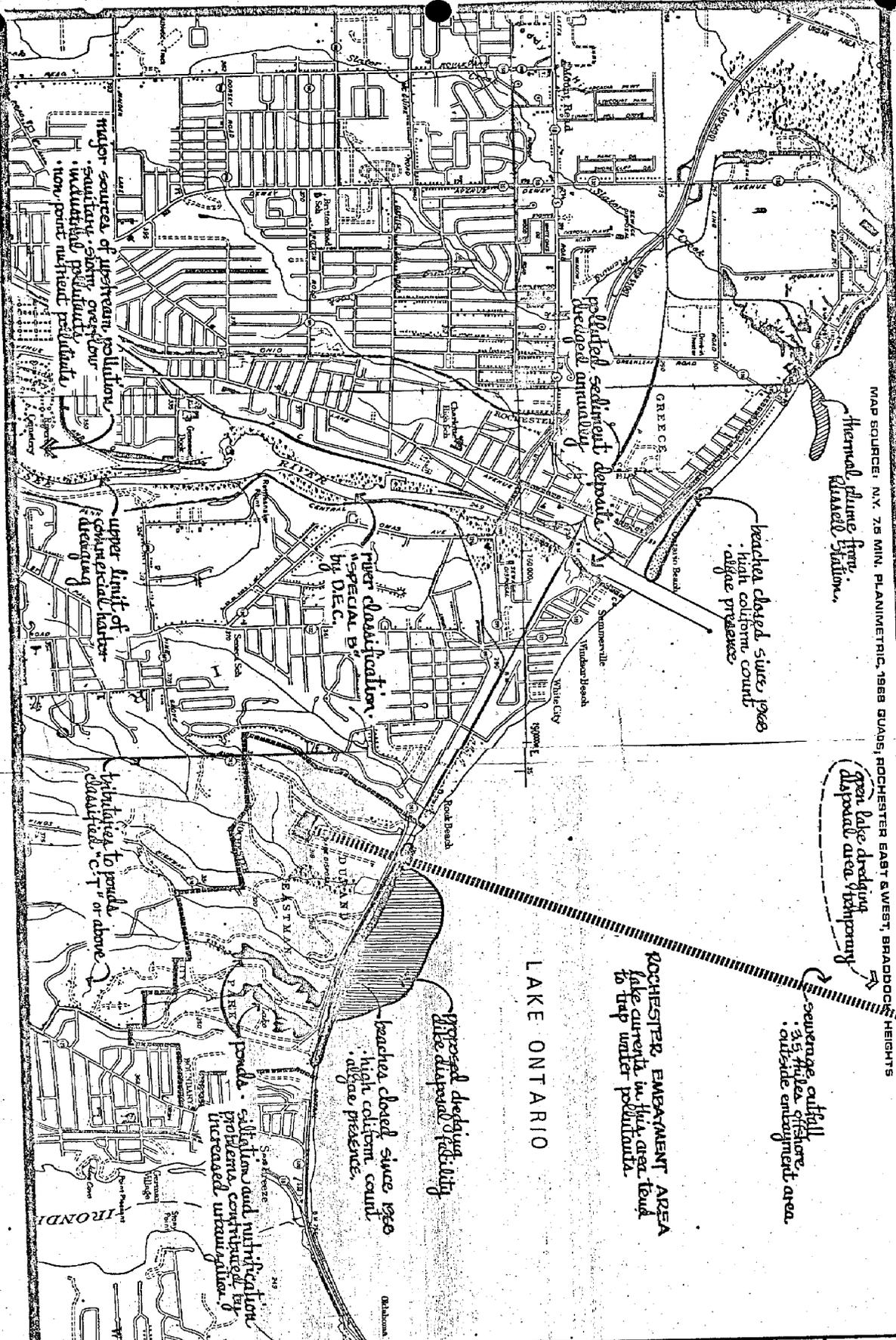
Implications for Planning and Development

The high level of energy expertise and financial resources committed over the past five years, mainly through the Pure Waters Program should soon begin to realize new potential for the Rochester Coastal Zone. The level of effort should be significant enough to permit the eventual reopening of Ontario Beach and the Durand Eastman Beach for swimming. It may even be possible to reopen these beaches with conditional permits as early as 1977.

With the improved water quality in the coming years the urban coastal zone can be an attractive recreational area, affording opportunity for swimming, boating, fishing and passive aesthetic refreshment. The degree to which this recreational opportunity will be realized is dependent, of course, upon other factors such as port development and land use changes within the coastal zone.

The above analysis of water resources in the coastal zone reveals that although the urban river and coastal area has been subject to great abuse and degradation, it has strong potential as a recreational and viable ecological resource.

Concerted efforts to clean the waters must not be relaxed. In fact, more comprehensive and interdisciplinary planning (such as the Federal 208 Program) for water resources is required.



MAP SOURCE: N.Y. Z.B. MIN. PLANIMETRIC, 1988 QUADS, ROCHESTER EAST & WEST, BRADDOCK HEIGHTS

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY

WATER QUALITY

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOSPLANS INCORPORATED
BARATOGGA SPRINGS, NEW YORK 12888
A MEMBER OF
THE BARATOGGA ASSOCIATES

SCALE
1:24000

PUBLIC ACCESS AND RECREATION ANALYSIS

Significance of the Resource

The broad definition of Public Access as used herein refers to an interdependent system of land ownership, vehicular access, pedestrian use, visual experiences and recreational use, potential or existing.

The basic access system is a primary means of linkage between existing population centers and a resource, whether at a macro or micro scale.

At the macro scale, changes in population centers, transportation system policies (public transport vs. private vehicle) and competitive (user oriented) facilities could create an impact on the broad system of public access. The changes occurring along the linkage corridors become a vital transition opportunity for the user. The aesthetic qualities and order of linkage is critical.

At the micro-scale, variations in land use, vehicle parking areas, quality and maintenance of public facilities (as complex as water quality improvement programs or as simple as the park maintenance program) to name a few, will affect the usability of the basic system. In many situations, the lack of public access creates an incomplete or ill-defined system. A proper system of public access could be likened to the nervous system of the human - a complex branching pattern which responds to natural potential of the environs.

Historic Development

In general, the development of major accessways in this area are the obvious product of linking the user with the resource. Like most road systems, the boundaries between residence and resource area have become nearly indistinguishable. Minor pedestrian systems are not developed in the area except for one lake side walk system along Beach Road running from Clements Street to Cloverdale Street - an absolutely beautiful system. Numerous minor unofficial systems have been defined by uncontrolled use. However these systems are neither complete nor beautiful as a rule.

Perhaps the most obvious influence on access was the unique foresight of three distinct groups of citizens

in the 1880's in establishing parks in Rochester - the resource most affecting access decisions. These early people and their effectiveness, as well as that of their descendants, is attested to by the fine Durand Eastman Park and the potentially significant Ontario Beach.

Current Status and Condition

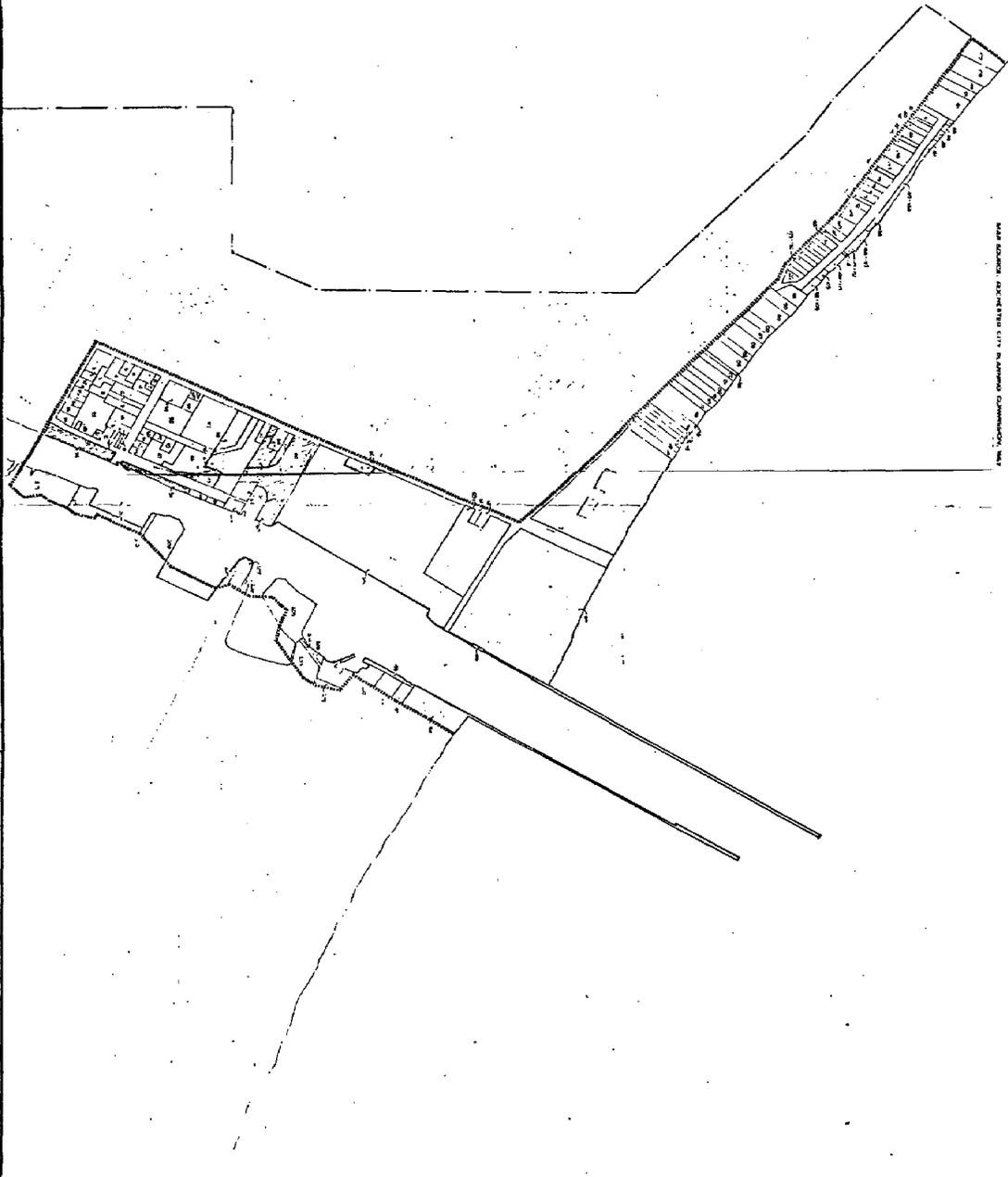
o Land Ownership

Public access is foremost dependent upon the land ownership base. The land ownership patterns for the coastal zone are presented on the two accompanying maps. Numbers for each parcel refer to a master list found in the appendix of this report, describing specific owners and assessed values.

Public ownership per se does not guarantee public access but does indicate potential for it.

Map Parcel No.	Public Parcels-River Mouth	
	Owner	Access Status
31	City of Rochester	None-Old Firehouse
33	City of Rochester	Parking & Commercial Space
38	U.S. Government	Vacant Land-Good Opportunity
40	U.S. Government	Abandoned End of Lighthouse St.- Good Opportunity
41	U.S. Government	Lighthouse & Surroundings - Underutilized land - Good Opportunity
56	U.S. Government	Coast Guard Auxiliary Unit; No Access
62a	City of Rochester	Vacant Land; Good Access
62b	City of Rochester	Sewage Pumping Station; No Access
63a	City of Rochester	Port Authority Land; No Access
63b	City of Rochester	Parking Lot for Ontario Beach Park and Water Skating Rink; Good Access

KEY
 Private Land
 Public Land
 Some Parcel Numbers Shown To Text



DATA SOURCE: ROCHESTER CITY PLANNING COMMISSION, 1987

**ROCHESTER COASTAL ZONE RESOURCES
 MANAGEMENT STUDY**

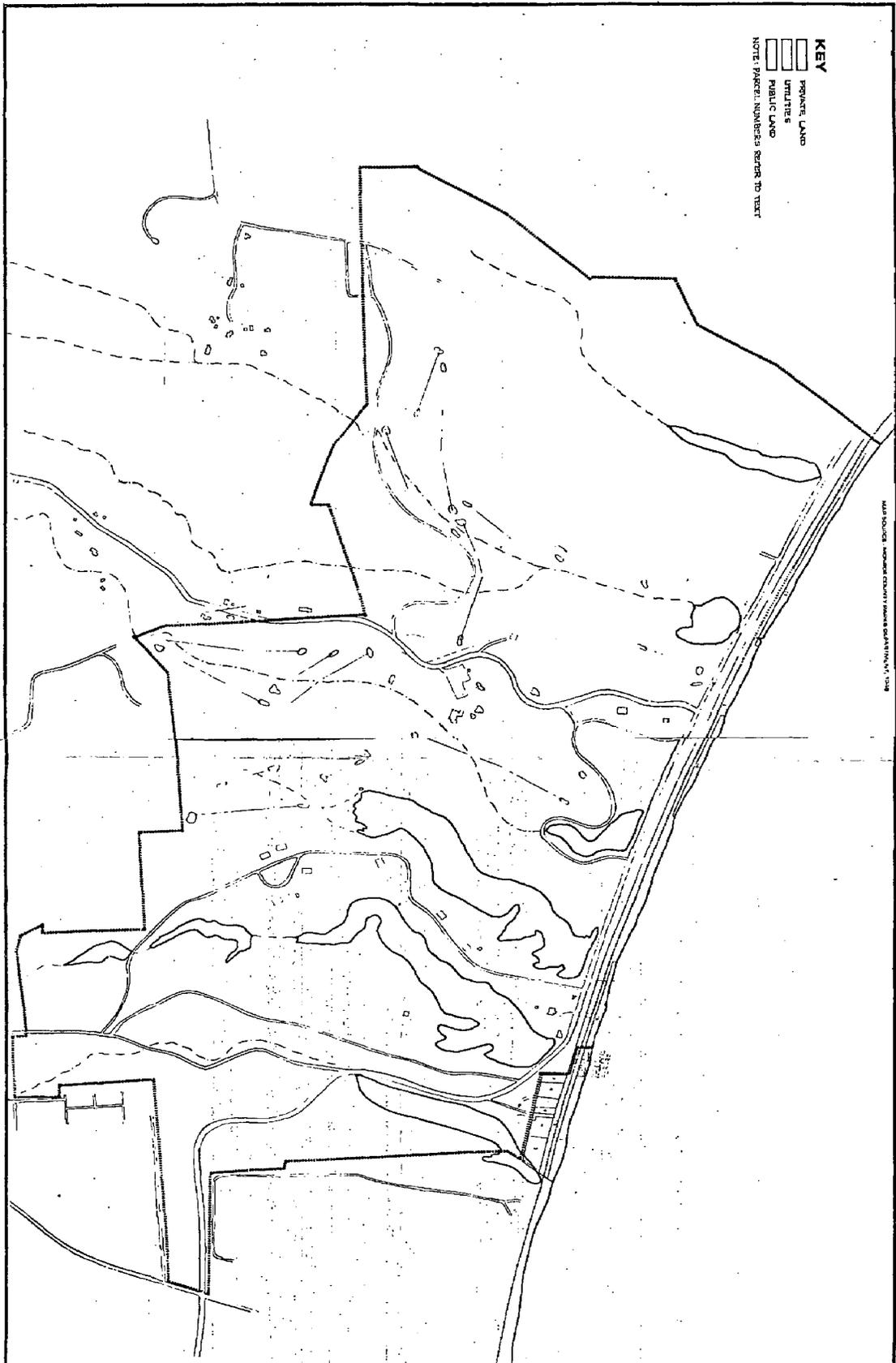
OWNERSHIP AND PUBLIC LAND

PREPARED FOR:
 CITY OF ROCHESTER
 DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLANS INCORPORATED
 SARATOGA SPRINGS, NEW YORK 12058
 A MEMBER OF
 THE GARAFIHA ASSOCIATES



SCALE
 1:2400



KEY
 PRIVATE LAND
 UTILITIES
 PUBLIC LAND
 NOTE: PARCEL NUMBERS REFER TO TEXT

MAP SOURCE: UNADMITTED COUNTY TOWN & VILLAGE DATA

**ROCHESTER COASTAL ZONE RESOURCES
 MANAGEMENT STUDY**

DURAND - EASTMAN OWNERSHIP AND PUBLIC LAND

PREPARED FOR
 CITY OF ROCHESTER
 DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
 SCOPLANDS INCORPORATED
 SARATOGA SPRINGS, NEW YORK 12858
 A MEMBER OF
 THE SARATOGA ASSOCIATES



Public Parcels-River Mouth		
Map Parcel No.	Owner	Access Status
63c	City of Rochester	Port Authority Land; No Access
66 & 67	City of Rochester	Ontario Beach Park; Excellent Access
105, 118, 125, 132, 176, 180, 190	City of Rochester	Public Way; Potential for Greater Use
196	U.S. Government	West Breakwater; Good Access; East Breakwater & Coast Guard Station, No Access
198	City of Rochester	Municipal Pier; Poor Access
199	City of Rochester	Leased to N.Y.S. Naval Militia Armory; No Access
200	State of New York	No Access
201	Monroe County	St. Paul Boulevard and Vacant Land; Good Access
202	Town of Irondequoit	Vacant Land; Access Available
210	City of Rochester	50' Way for Sewer Line; Access Available

Public Parcels-Durand Eastman		
Map Parcel No.	Owner	Access Status
1	City of Rochester	Shoreline; Good Access
15 & 16	City of Rochester	Shoreline; Good Access
22, 23, 24, 25	City of Rochester	Shoreline; Good Access
26	City of Rochester	Durand Eastman Park; Excellent Access Except Sewage Treatment Facilities

In general, private property owners on the shoreline have title to the high water mark on the beach. The State of New York owns the lake bottom starting at the high water mark. Land under the Genesee River is held by the City of Rochester.

There is no evidence of the existence of any public right-of-way easement across private land within the coastal zone.

o Recreational Facilities

The study area's two major nodes of recreational activity are Durand Eastman Park and Ontario Beach Park. These attractive facilities each draw users from outside the local geographic area. The County is now operating these parks on a revised contract (signed in July 1975), establishing a 99-year lease.

Durand Eastman Park - Durand Eastman Park is a beautiful rural setting park. Visitors are primarily attracted to the park by its 18-hole golf course and picnicking opportunities. The park is equally renowned for its horticultural collection which attracts many visitors throughout the year. Among this collection are 209 species and varieties of conifers; 63 species of Japanese cherries; 30 species and varieties of plums and apricots; 61 species and varieties of crabapples; and 22 species and varieties of poplars.

In recent years Monroe County has acquired 398 acres contiguous to the original southern boundary, bringing the total park acreage to 942. Athletic fields and intensive winter sports facilities are scheduled for development on these newly-acquired lands.

The two large ponds (Durand Lake and Eastman Lake) offer serene settings. These ponds are approximately twelve feet deep and were created when Lake Shore Boulevard and the Hojack Railroad Line were constructed. Fishing, swimming and boating are prohibited in these ponds mainly because of potential control problems.

The topography of the park in the vicinity of its waterfront area presents some difficult access problems. The thirty foot bluff is breached with an underpass at only one point. The beach front itself is narrow, ranging from 6 to 30 feet wide.

Lake levels in 1972 and 1973 were high, preventing trespass along most of the beach.

Lake Shore Boulevard parallels the waterfront, but with its heavy traffic also separates the main recreational activity areas of the park from the beach area. There are no designated pedestrian crossways

along Lake Shore Boulevard. In addition, vehicular traffic from Lake Shore Boulevard entrance and egress from the park is possible through six different park roads along Lake Shore Boulevard, creating control and security problems.

Ontario Beach Park - Ontario Beach Park is a 35 acre urban waterfront park. Its wide sandy beach has a capacity of 25,000 users per day. While swimming has legally been prohibited since 1968 because of poor water quality unauthorized bathing does occur; in fact the lifeguards in 1975 estimated that 352,230 persons used the beach during the season.

Monroe County has prepared capital improvement plans for lighting, facility restoration and recreation improvements at the park totaling \$375,000. These improvements are scheduled for 1977 and 1981 according to the Monroe County Six-Year Capital Improvement Plan.

The park used to be the terminus of a trolley line originating from downtown Rochester. Now RTS transit buses provide the same service. A light rail rapid transit line has been proposed to run from downtown Rochester along Lake Avenue to the Park.

o The Vehicular Linkages

The Ontario State Parkway connects areas to and from the west and is the most highly developed linkage in the immediate area. Its proper "parkway" image is years from significant visual impact. Lake Avenue, a main linkage from the city center, is almost totally the opposite. From the Eastman Kodak facilities out to Riverside Cemetery the visual experience is rich and parklike. From there to Charlotte High School the addition of trees and some minor sign clean-up would complete the visual image adequate to the needed experience. The next few blocks north to the Ontario Parkway are reasonably nice. From there north to the beach the strip development is gaudy and unresponsive to a proper aesthetic experience. The vehicle depositories, parking lots and public transit stops, are likewise of poor visual quality. Beach Road west from Ontario Beach Park is extremely pleasant and low keyed in scale and aesthetic appeal. Traveling east along Stutson Street and Lakeshore Boulevard to

and past Durand Eastman Park is generally pleasant. A few areas could be improved with sign control and tree planting programs.

o The Pedestrian Linkage

As previously mentioned, the city-owned walk system between the lake shore and the residences on Beach Road is quite stunning and obviously the pedestrian area of the highest quality in the entire study area. The quality of the "unofficial" systems is based on the lake shore resource and a desire to get to it for viewing, walking, swimming and so forth. Many interruptions of the potential pedestrian links exist both along the Ontario shoreline and the Genesee River which reduce the utilization of the basic resource. The normal visual experience is good when related to the basic resource but poor when defined in the actual design of the haphazard linkage system.

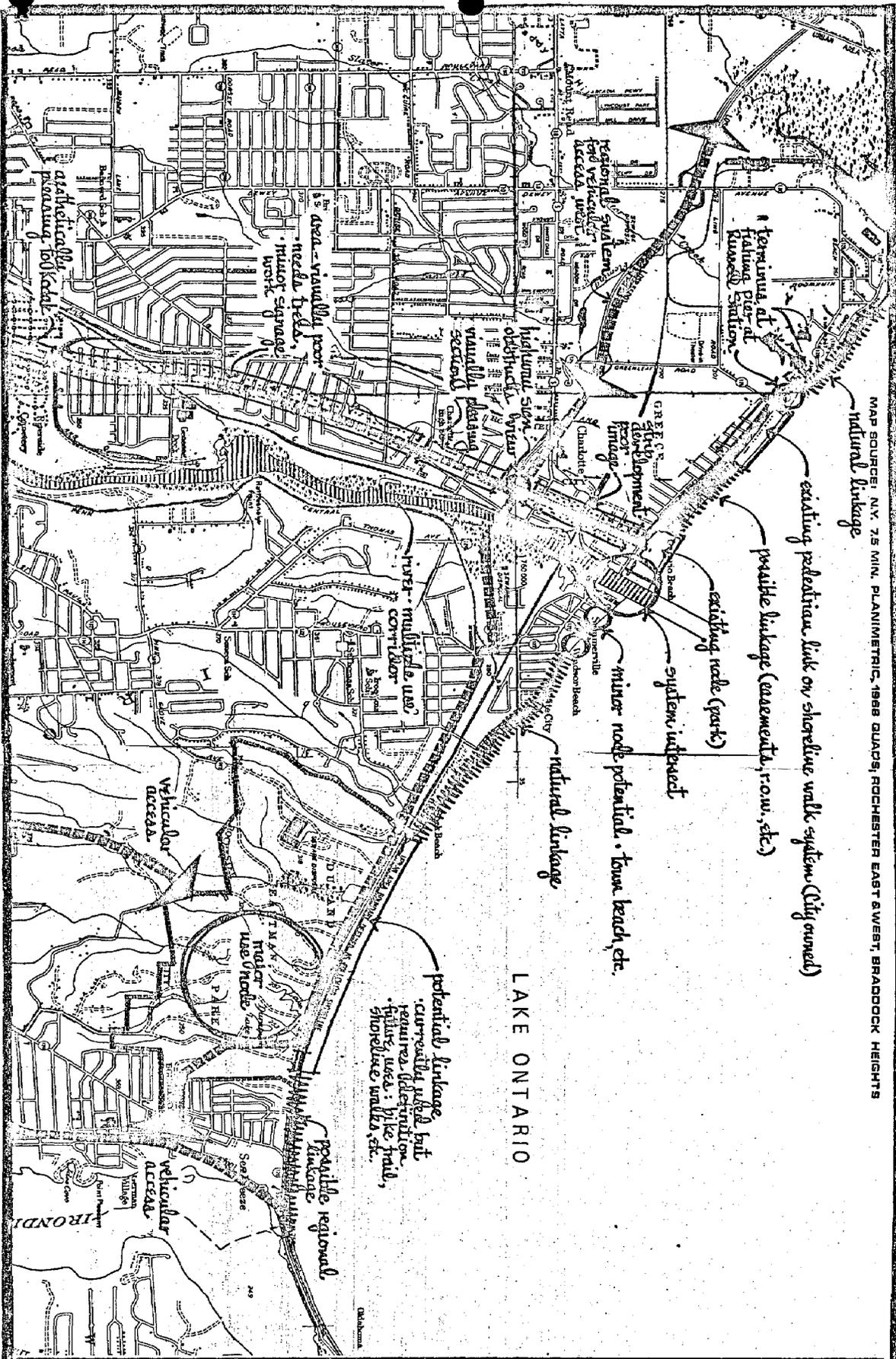
Implications for Planning and Development

The vehicular access system appears to be quite adequate bar a few aesthetic upgradings. The pedestrian linkage system requires a great deal of consideration both in program, design and implementation policies. It is obvious that an ideal system is nearly in place and a very effective system could be achieved with relatively minimum legal and financial implications. The quality of the basic resource, river or shore, is beyond question. The shoreline resource potential is best defined as a relatively simple linear system of major and minor nodes. Maintenance and upgrading of the public parks is required. A definition of the pedestrian-bicycle linkage system is a more involved task. Certain physical feasibility questions exist as well as the legal methods of implementation. However, the overall impression at this stage points to several feasible alternatives given perseverance with the nitty-gritty legal and policy questions.

The Genesee River potential is an outstanding resource but complex. First, it is apparent that a detailed plan for the area is required. Many questions and policies will require illucidation, e.g., land poacher status, lighthouse "no trespass" status, the future of major land use decisions (railroad and so forth) among others. Obvious opportunities exist for recreation, walkways, vehicle depositories, marinas, boutique retail sales, restaurants and the like. The value and complexity of

this system cannot be treated lightly and should be subject to considerable in-depth study.

A technical report on the potential for expanded and additional recreational facilities within the coastal zone is included in the appendix of this report.



MAP SOURCE: N.Y. 7.5 MIN. PLANIMETRIC, 1968 QUADS, ROCHESTER EAST & WEST, BRADDOCK HEIGHTS

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY
ACCESS & VISUAL FACTORS

PREPARED FOR:
 CITY OF ROCHESTER
 DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
 ECCOPLANS INCORPORATED
 BARATOLA SPRING, NEW YORK 11966
 A MEMBER OF
 THE BARATOLA ASSOCIATES

SCALE
 1:24000

LEGAL CONTROLS ANALYSIS

Significance

Legal controls are not a resource, per se, but tools which can be used for the management of coastal zone resources - including the planning, development, and regulatory and enforcement activities associated with management. Most legal controls are applicable to more than one functional resource area of concern. Therefore, these relationships are best described in terms of the jurisdictional responsibilities for the application of various legal controls, as described on the attached chart, and as follows:

o Local Government Legal Controls (City and Town)

Zoning has particular application to resource concerns dealing with land use competition and public access. Indirectly, zoning controls can also affect water quality and erosion (or soil resource) concerns.

Subdivision regulations have particular application to public access, erosion control and water quality.

Official map powers have specific application to public access concerns.

The recently enacted NYS Freshwater Wetlands Preservation Act will provide local governments with more effective controls on the preservation of these features which are so essential to fish and wildlife resources.

Article 12F of the General Municipal Laws provides for the establishment of local conservation advisory commissions, and specifically empowers localities to prepare inventories of open space resources. This act also provides for the establishment of conservation boards, subsequent to the preparation of an open space inventory, which can be empowered to review and comment on development proposals affecting such open space resources. This law obviously has application to public access, erosion control, fish and wildlife, and water quality concerns in the coastal zone.

JURISDICTIONAL LEGAL CONTROLS RELATING TO COASTAL ZONE

A-95 - Inter-government Coordination Act of 1968 (82 Stat 1092)

CITY/TOWN	COUNTY	STATE	FEDERAL*
LAND USE COMPETITION	Zoning (Gen. City Law Art 2A & 3); Town Law (Art 16); LEQR; Article 12F.	Sec. 239M - Zoning Review; Dev Review Comm. Subdiv Review; Article 12F.	SEQR NEPA PL-91-190
PORT DEVELOPMENT	Zoning; LEQR.	LEQR; Dev Review Comm. Subdiv Review;	River & Harbor Act 30 Stat 1151, 1152, 1153; NEPA PL-91-190.
PUBLIC ACCESS	Zoning; LEQR; GML Article 12F; Subdiv Reg's; Official Map.	Sect 239M LEQR; Article 12F; Dev Review Comm. Subdiv Review.	SEQR NEPA PL-91-190
EROSION CONTROL	Zoning; Subdiv Reg's; Article 12F; LEQR.	LEQR; Article 12F; Dev Review Comm. Subdiv Review.	SEQR NEPA PL-91-190; PL-93-251 Flood Control.
FISH & WILDLIFE	Article 12F; LEQR; Freshwtr Wetlnds Preservation Act.	LEQR; Article 12F; Freshwtr Wetlnds	SEQR; NEPA PL-91-190 PL-93-339 Fish Cons PL-93-300 Mig Bird PL-93-205 Endangered Species Act
ELECTRIC GEN. FACILITIES	None	None	Public Service Law Art VII,VIII NEPA PL-91-190
WATER QUALITY	Zoning; Subdiv Reg's; Article 12F; Freshwtr Wetlnds; LEQR.	LEQR; Article 12F; Freshwtr Wetlnds; Dev Review Comm. Subdiv Review; County Pufé Waters and County Health Department.	SEQR; NEPA PL-91-190; Fed Wtr PollControl Act PL-72-5000 River & Harbor Act

*US-Canada boundary at the center of Lake Ontario; thus no "international waters" exist for Rochester Coastal Zone.

o Local Government Legal Controls (County)

In New York State, counties have few legal powers for control of coastal zone resource quality, but the following are applicable and need to be considered in coastal zone management legal control strategies.

Zoning review powers are exercised by the county under Section 239 of Article 12-B of the General Municipal Laws. Under these provisions, counties may review and comment on local zoning decisions affecting certain county and state facilities. These legal powers have particular application to the control of land use competition and public access.

Counties may also establish County-wide Environmental Management Commissions to prepare open space inventories and review and comment on development proposals affecting open space land resources. These powers have particular application to matters of land use competition, public access, erosion control, the preservation of fish and wildlife and the protection of water quality.

In lieu of city, town or village adoption of local prerogatives to implement the Freshwater Wetlands Law, (Article 24 of the Environmental Conservation Law), a county may enact legislation to implement the law.

Counties will also be required to establish Environmental Quality Review procedures under the newly enacted State Environmental Quality Review Law.

o State Government Legal Controls

The most comprehensive legal control system now available for application to the coastal zone area exists at the state government level. Specific legal controls include:

State Environmental Quality Review Law which will require any agency of the State to provide and environmental impact assessment of any significant action affecting the environment. This will include direct developmental actions by the state, as well as the granting of required permits to applicants

(private persons including developers) who propose certain developmental actions. SEQR will apply to each of the categorical areas of concern, except that agencies such as the Public Service Commission can incorporate the SEQR rules and regulations within existing environmental impact assessment procedures such as Article VII and Article VIII of the Public Service Law regulating the developmental activities of electric generating utilities.

The state provides certain specific legal controls over port development under the Public Authorities Law, the Stream Protection Act (Environmental Conservation Law 15-0505) Marine Sanitation Devices Law (Environmental Conservation Law, Article 17, Title 13) and the Navigation Law (Section 33-C).

State laws specifically pertaining to fish and wildlife resource conservation include the Freshwater Wetlands Law (Environmental Conservation Law, Article 24) and the Tidal Wetlands Act (Environmental Conservation Law, Article 25).

Most of the above legal controls, plus the Protection of Waters Act, also have application to the protection of coastal zone water quality.

o Federal Government Legal Controls

The federal government also provides a number of legal controls over the management of the coastal zone area, including the Coastal Zone Management Act, under which this study is being provided. Section 307 of the Coastal Zone Management Act provides that the activities of federal agencies in the coastal zone area shall be consistent with the state's approved coastal zone management plan.

The River and Harbor Act of 1899 (30 Stat. 1151, 1152, 1153) is the basic authorization under which the U.S. Corps of Engineers provides for the establishment, construction, alteration and maintenance of harbors and navigable rivers.

The Federal Flood Control Act (PL93-251), The Fish Conservation Act (PL93-339), The Migratory Bird Convention (PL93-300), the Endangered Species Act

(PL93-205), the Estuarine Sanctuaries Act (PL93-583) and the Federal Water Pollution Control Act (PL72-5001) are other basic federal legal controls applicable to the coastal zone management. Pending federal legislation, such as the Toxic Substances Control Act, will provide additional legal instruments.

The National Environmental Policy Act (PL91-190) is a major legal control which requires the environmental impact assessment of federal projects or federally assisted projects significantly affecting the quality of the environment, and can be broadly applied to several areas of concern in coastal zone management.

One other federal legal control deserving mention is provided through the Intergovernmental Coordination Act of 1968 (82 Stat 1092) which is implemented through the so-called A-95 process which requires statewide and regional clearinghouse and review of a vast number of federally-assisted projects and programs.

Historic Development

Legal controls over developmental actions are based, of course, in the need to insure that the exercise of individual rights also results in an environment that attends to the common good of the community as a whole. As the urban community of man has become more complex - physically, socially and technologically, there has been a corresponding increase in the number and complexity of legal controls.

Within the context of the Rochester Coastal Zone, for example, the earliest legal controls applied were the provisions of the Rochester Zoning Ordinance. Rochester's existing zoning ordinance, like many city zoning ordinances, came largely after the fact of development and has been exercised primarily to stabilize existing land use patterns and guide change as already developed areas became subject to age, obsolescence and new economic potentials.

In recent years, the rate of change has increased in concert with the general increase in economic, technological and social change. The existing zoning ordinance in many ways presented a positive attitude

toward change, which is reflected in the extent of over-zoning of certain areas. Raw change, however, is no longer viewed as a necessary element of progress, and new concerns relating to the quality of change have arisen. The proposed new Rochester Zoning Ordinance reflects this trend both in its effort to down-zone stable areas of development and institute new procedures to guide site planning and design review of proposed developments.

Other trends in zoning which relate to this concern with the quality of change include the development of zoning codes based on performance standards, incentive zoning and the transfer of development rights.

A second major evolution in legal controls is the involvement and coordination of the various governmental jurisdictions with specific concerns in critical resource areas such as the coastal zone. The expansion of urban growth in metropolitan areas has generated the need for area-wide agency consideration of the activities of local municipalities. Although county governments are relatively weak in New York State, counties have been given the powers to review and comment on the activities of local municipalities where they affect adjacent jurisdictions or facilities provided by the county and state government. County controls on development are also exercised by county health departments which have become a major means of implementing state standards for air and water quality improvement. Monroe County's activities in planning, developing and managing the area-wide park and recreation system - including major facilities owned by the City - such as Ontario Beach Park and Durand Eastman Park is another area of county legal control of certain coastal zone resources.

While New York State for many years has exercised certain legal controls in key public health areas of environmental concern, the evolution of State legal controls is increasingly concerned with 1) areas of critical state or regional concern - such as the freshwater wetlands; and 2) broad environmental assessment of major development projects.

Basic minimum standards for maintaining the environmental quality of resources that are common to all people - particularly air and water - are largely set by federal government legislation. The federal government legislation has also moved strongly in terms of setting

basic systems for intergovernmental coordination, stimulating area-wide planning, and providing for interdisciplinary planning and management of areas such as the coastal zone.

Current Status

In the context of the Rochester Coastal Zone, the status of current legal controls is as follows:

Rochester and Surrounding Communities -

The City of Rochester has adopted a new zoning ordinance. Although this ordinance does not specifically reflect the special concerns of the Coastal Zone, its distinct definitions (including statement of "purpose") and procedural requirements (e.g., special permit uses, planned development) could be effectively applied to development in accordance with coastal zone objectives. As is the case with most zoning ordinances, there is a need for specific rezoning guidelines to assist the legislature in review of proposed map amendments, especially where commercial and industrial districts may abut residential and other low density areas.

The City also established an environmental advisory council which is empowered to review development plans as to their impact on the environment and provide advisory comments to the City government regarding such matters.

Coastal Zone issues and problems are not limited by jurisdictional boundaries; the development of areas adjacent to the coastal zone often directly impacts the coastal zone. The Town of Irondequoit is mostly developed already, but does have a zoning ordinance to guide redevelopment. The Town of Greece has a zoning ordinance, subdivision regulations, site plan review for all development larger than a 2 family residence, drainage regulations, and an interim development law, to provide a transitional basis as a new master plan for Greece is being drafted. The interim law places a moratorium on building activity which does not conform to the current master plan.

County -

The Monroe County Planning Department has proposed a Comprehensive Development Plan (February, 1975), which is currently under public review. The plan calls for

the channeling of growth into growth centers, development corridors and the protection of important natural resource areas. Specifically, one proposed growth center focuses on Charlotte; this center is linked to the City of Rochester by a proposed, "High Intensity Urban Corridor" along Lake Avenue. (See Map, "Proposed Monroe County General Development Plan - 1975".) The remaining areas near the coastal zone study areas are indicated for the coastal zone areas themselves. If the plan is approved, it will be a reference for planning advice and decisions.

The Monroe County Planning Department does provide 239m review of proposed local zoning changes within 1/4 mile of the Lake Ontario shoreline and Irondequoit Bay, and within the 100-year floodplain of the Genesee River. Although the legislature has not adopted the Subdivision Review Provision (239n), the Planning Department has been reviewing all subdivisions in an advisory capacity for approximately 15 years. This review process has now been consolidated into an interagency "Development Review Committee", including County Planning, Health (which also reviews all new commercial development), Pure Waters, Department of Public Works, Environmental Management Council, State Department of Transportation and a number of other agencies, which meets weekly to review projects together. Thus, a consolidated review by agencies concerned with various functional areas (transportation, land use, water quality, etc.) does exist for all subdivision development in the County, including the coastal zone areas.

The County has drafted a model erosion and sediment control, which will be available for localities to review and adopt.

State -

At the State level, the State Environmental Quality Review Act takes effect on June 1, 1976. Modeled after NEPA, it will require an environmental impact statement for any action by State, regional and local government agencies, or actions over which they have approval power, which could significantly affect the environment. For each municipality, it requires a formal review process, and opportunity for public participation, to be integrated into existing agency review procedures. Currently, the D.E.C., the agency responsible for implementing the Act at the State level, is seeking guidelines from all affected jurisdictions, and various industrial and environmental groups. Included is a request

to draft lists of typical activities which would or may affect the environment significantly. Public hearings on the Act are scheduled for November, with adoption planned for January 1, 1976.

The State Freshwater Wetlands Law will require state or local protection of freshwater wetlands of 12.4 acres and larger and other designated by the D.E.C. Commissioner. Starting in September 1975, a permit will be required for all actions affecting the subject wetland areas. Later, a state-wide wetland inventory, a permanent local permit program and final land use regulation are to be established. The inventory is about one-third complete, basically the area of the Adirondack Park.

Federal -

Federal regulation through the National Environmental Policy Act represents the basic reference point for most environmental regulations; it is the model for the State Environmental Quality Review Act. All federally controlled or assisted projects must comply with NEPA, which requires the identification of actions which will affect the environment, a description of the loss of irretrievable resources and a specification of measures to mitigate negative environment impact. Currently, NEPA applies to the U.S. Army Corps of Engineers dredging operations in the Genesee River, including the dike disposal operations off Durand Eastman Park. In this case, NEPA applies directly to the issues of waterfront use and water quality.

International -

The United States-Canada boundary is located at the center of Lake Ontario; thus, no international waters exist. Except for international customary law and agreements which provide for the innocent passage of foreign flagships and ships in distress, federal and state jurisdiction prevails for all of the Lake Ontario waters.

Implications for Planning

In terms of protecting natural resources, providing for orderly development, securing rights of access and fulfilling other basic coastal zone objectives, current legal controls have some strengths and weaknesses, as follows:

Rochester and Surrounding Communities -

Recent zoning ordinances, including the new Rochester ordinance, recognize the special circumstances associated

with various kinds of development; project review for cluster development, planned development and special permit uses represents a laudable effort in monitoring development in sensitive areas. Another strength of the Rochester ordinance is the level of density being proposed; the concept is to start with a minimal level of potential development, and thereby require that new proposals be "tested" in the rezoning process. This relatively new approach to urban zoning (i.e., classifying land close to its existing density), with firm criteria for rezoning, is a sound basis for implementing the future plan. The establishment of special districts and procedures could be supplemented with a coastal "overlay" zone, with special site development standards.

The Rochester zoning ordinance also does not provide re-zoning guidelines which the Council could use to maintain the environmentally-oriented quality of the initial law. As commercial activity increases, more commercial development is encouraged, creating additional environmental problems (e.g., run-off, erosion) in the coastal zone area. The new map includes a number of areas where commercial and manufacturing districts abut residential zones. Particularly for such areas, guidelines which suggest the extent and nature of possible zoning changes would be an important addition to the process of coastal zone planning. In addition to these broad changes, more specific criteria for the granting of special permit uses, limitations on gross lot coverage (buildings plus paved areas) and a more comprehensive process for amortizing non-conforming uses would be useful modifications.

Subdivision regulations do not deal with land use, per se, but rather the way in which land uses are accommodated. Erosion and water quality in coastal areas are directly affected by the run-off characteristics of subdivisions. Standards for roadway and slope design, and revegetation are elements necessary to protect coastal zone areas.

In terms of special regulations, localities are probably well-advised to develop their own freshwater wetlands protection law (after September 1, 1976), in order to further consolidate regulations under one jurisdiction. A basic strong point in the law is that the D.E.C. will continue to provide technical assistance.

County -

The current provisions for project review by the County

and the County Development Plan represent an improved base for county planning responsibility. In particular, the Development Review Commission represents the kind of interagency review group which is appropriate for coastal zone areas, since it consolidates the concerns of many functional areas, including land use, transportation, water quality and public access.

State -

The possible implications of SEQR are extensive, especially in terms of documentation of local government actions, such as zoning changes, which may have proceeded relatively unnoticed in the past. If the act survives roughly in its present form, an unparalleled recording and definition of planning activity will commence. Relative to specific guidelines, it's quite possible that some localities will suggest coastal zone "areas of concern" which would apply to impact review procedures.

As described above, current legal controls are derived from a number of concerns and apply to a variety of functional areas.

Local controls are beginning to break out of traditional bounds of passive regulations; new controls respond directly to environmental concerns and recognize the need to monitor development more closely. An effort to formalize the coastal area as a zone "district", with special review criteria, is recommended.

County responsibilities are important aspects of coastal zone protection; separate land use reviews and the County Development Plan are only advisory in nature but nevertheless provide an important geographic scope or viewpoint. Consolidated, inter-agency review should be encouraged.

At the state level, the SEQR review should result in various areas of environmental concern, including a "coastal zone", in which certain actions would apply to environmental impact analysis. Regarding the wetlands legislation, it is recommended that localities adopt an approvable review program, in order to help consolidate environmental regulations at the local level.

FISH AND WILDLIFE RESOURCES ANALYSIS

Significance of the Resource

The role that coastal fish and wildlife resources play in maintaining a high quality of environment is often overlooked - especially in an urban coastal zone environment such as Rochester's. In such cases, the concern is generally with the impact of man's activities on these resources - and herein lies the important role of fish and wildlife species as indicators of environmental quality, particularly of water quality and vegetative habitat diversity. Nature education is a second important role of fish and wildlife, particularly in the urban coastal zone. A third important role is recreationally oriented - hunting, fishing and trapping. As harvestable resources for commercial economic activity, these resources no longer have a significant role in the Rochester Coastal Zone, and the future looks dim in terms of lake fishing commercial value with the discovery of concentrated levels of PCB's and other toxic substances in such commercially valuable species as Coho Salmon. But ultimately, the role of animal species in maintaining balanced populations, and contributing to the basic ecological processes of reproduction, consumption, conversion and recycling of organic plant and animal matter is the role of highest significance.

Historic Development

Up until the advent of human settlement and industrial development of the Rochester area, fish and wildlife resources existed in a balanced relationship with the prevalent unpolluted natural environment. Changes in the prevalence and dominance of species were subject only to natural evolutionary forces even though there were relatively small impacts generated by occasional natural catastrophe and the harvesting of aboriginal and colonial man for food, pelts and other basic uses. The abundant fresh water marshlands, the grasslands and forests, and clear lake waters teemed with a wide diversity of fish and wildlife. Industrialization of the area, harnessing the water resources of the Genesee River and the resultant concentration and spread of urban growth has resulted in the destruction of vast areas of fish and wildlife habitat, and has increasingly subjected the environment to persistent toxic substances.

While the list of recorded fish and wildlife and other forms of animal life in the area will seem extensive, it represents but a small remnant of the original wildlife potential of the area. Moreover, the overall species composition has changed in favor of those species more able to tolerate the presence of man and the toxic conditions he has introduced to the natural environment.

Current Status and Condition

The most current and accurate data on fish and wildlife resources in the area have been developed by the U.S. Corps of Engineers in conjunction with the environmental impact analysis of the proposed Genesee River dredging project (U.S. Army Corps of Engineers, 1975b). These analyses indicate the following:

o Fish

Alewife and White Perch dominate in both the river and the lake embayment area off-shore of Durand Eastman Park where the samples were taken. Within the lake, however, desirable food and game fish such as Coho Salmon, Rockbass, Brown Trout, Smelt and Northern Pike are still common species, whereas in the river, with the exception of occasional spawning Northern Pike and Walleye, the species are limited to the so-called "trash" fish - Suckers, Bullheads, Carp and Goldfish which can tolerate the sediment-laden turbid waters that are low in dissolved oxygen.

No quantitative data is available on the species of fish which are present in the ponds in Durand Eastman Park, but these would be likely to contain species such as Pumpkinseed Sunfish, Largemouth Bass, Yellow Perch, White Crappie, Brown Bullhead, Bluntnose Minnow, Fathead Minnow, Brook Stickleback and Central Mudminnow.

o Avifauna

Approximately 50 species of birds, including migratory waterfowl have been recorded in the area around the mouth of the Genesee River. The list of recorded species includes 23 game species. This area however, like the remaining habitat in the study area, is not suitable for hunting, due to the proximity of urban populations. The species observed in this area are largely temporary feeding visitants

since there is little cover for shelter and nesting.

Along the shore of Durand Eastman Park approximately 140 species of birds have been recorded, including 19 waterfowl games species, and a dozen or so raptors, including unusual species such as the Golden Eagle, Bald Eagle, Peregrine Falcon and Osprey. The three former species prey mostly on waterfowl and the latter on fish. It has been reported that extensive off-shore emergent aquatic communities once existed in this area, but for some reason, current water depths are greater than the depth required to support vegetative growth. The plant habitat along the shoreline is classified as a disturbed community with pioneer successional species, so again, the waterfowl in this area are probably temporary feeding visitants or resting migratory species.

Upland, within the Park area proper, a survey of typical habitat disclosed about 160 species of birds, including 11 game species. In addition to waterfowl, the game species included 3 upland game birds - Ring-necked Pheasant, American Woodcock and Common Snipe. Marsh birds, such as Bittern, Sora, Rail and Coot have also been observed.

o Mammals

Mammal species observed in the Rochester Coastal Zone Area are fairly typical of those found in urban habitat areas. A herd of approximately 50 White-tail Deer have been reported in the Durand Eastman Park area. Muskrat and mink have also been reported, but their quantities are probably not sufficient to be of major commercial value although they are occasionally trapped by individuals (Hamber, 1975). Other small mammals including Striped Skunk, Raccoon, Weasel, Rabbits, Mice and Voles, Opposum, Shrew, Moles, Squirrels, Chipmunk and Bats have also been recorded in the area.

o Other Wildlife

It must be presumed that typical reptile and amphibian species associated with these habitats would be found, and that representative macro-invertebrate species are also present. Benthic species sampled in the lower Genesee River are dominated by those favoring low oxygen, polluted environments.

Implications for Planning and Development

The fish and wildlife resources potential of the Rochester Coastal Zone Area is obviously impacted by the proximity of urban development and the severe stresses placed upon the natural environment of the area - particularly those which have degraded the aquatic habitat. Sport fishing in the lake continues to provide recreational value, but the recent discoveries of high levels of PCB concentrations in game fish raise a serious question of regaining any commercial fishing value of substance. Because of the urban context, hunting in the land habitat area is not permitted. However, the potential does exist to recreate better off-shore habitat for waterfowl, and this could increase the hunting value of the area. Such marsh habitat might also improve the prospects for muskrat trapping.

The major potential of the fish and wildlife resources is educational, and the Durand Eastman Park would offer the best possibility for the expansion of this resource value, which has become a major interest in this era of high interest in the natural environment. Coupled with this environmental education value is the resource potential for some significant scientific research.

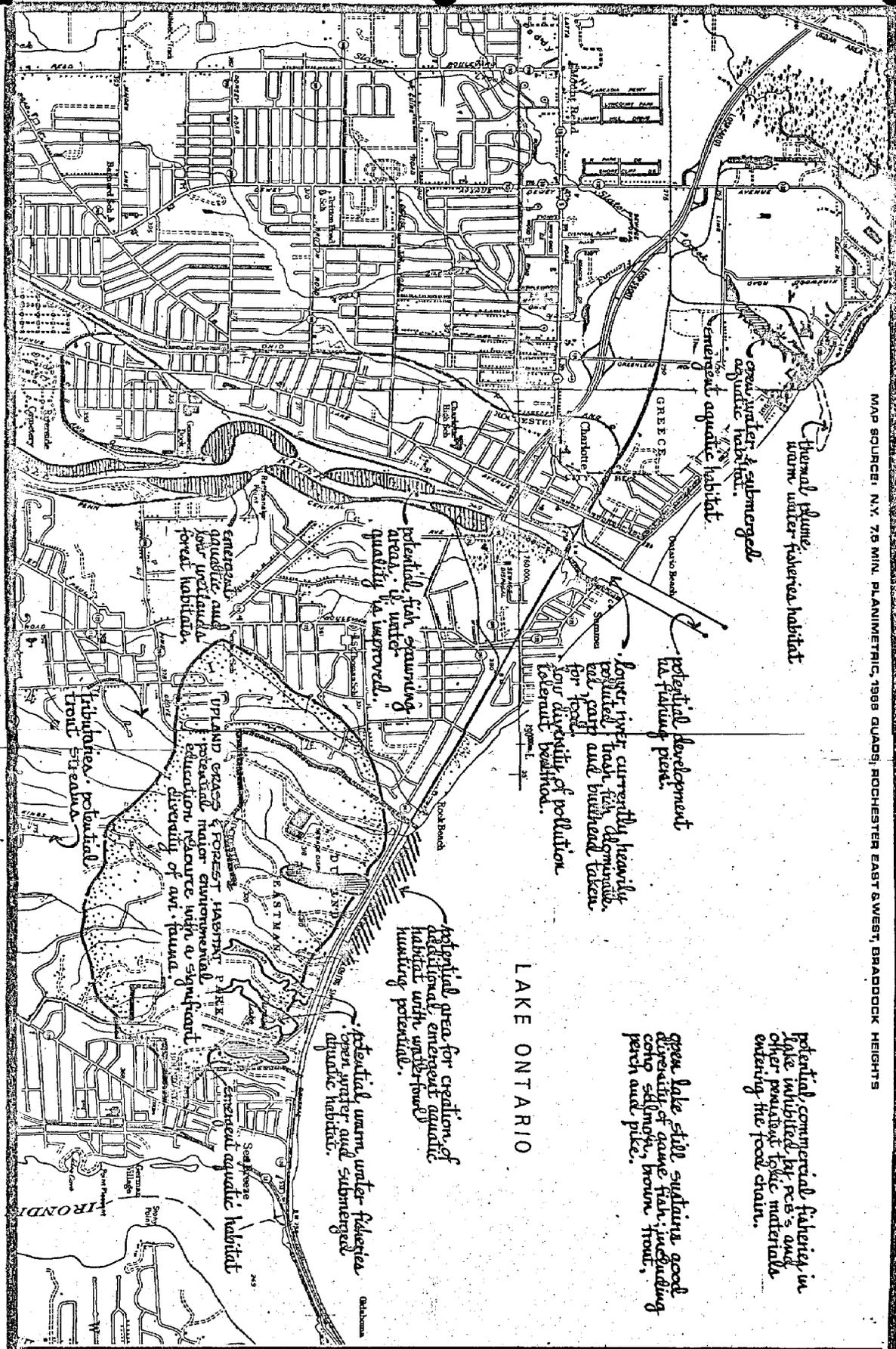
From the above analysis of the Rochester Coastal Zone fish and wildlife resources, the basic conclusion is that these resources, although severely impacted by man's activities, still retain considerable educational, recreational and commercial value and potential. More definitive investigation of this resource should be conducted with the objective of establishing better base line data on the existing ecology of fish and wildlife resources.

To focus and coordinate this research, an Environmental Education Center/Camp might be established in the Durand Eastman Park. This center could also provide expanded opportunities for nature study for the area school system and the general public. A nature trail system in Durand Eastman Park should be planned and developed in conjunction with the center.

Possibilities also exist for the expansion of emergent aquatic habitat immediately off-shore of Durand Eastman

Park. This could greatly improve the quality of the area as an attractive waterfowl habitat providing additional hunting value which need not interfere with potential recreational swimming and boating in the area.

The possibility also exists for increasing the dissolved oxygen level of the lower Genesee River. If this objective is pursued, some marsh areas adjacent to the lower river should be preserved as waterfowl habitat and spawning areas for Northern Pike and Walleye. The New York State Department of Environmental Conservation has just begun a one-year urban fisheries study of the Genesee River.



MAP SOURCE: N.Y. 7.5 MIN. PLANIMETRIC, 1988 QUADS; ROCHESTER EAST & WEST; BRADDOCK HEIGHTS

thermal plume warm water fisheries habitat

cool water & submerged aquatic habitat

emergent aquatic habitat

potential development in future years

longer term currently heavily polluted warm water aquatic habitat for food

low diversity of pollution tolerant biota

LAKE ONTARIO

potential area for creation of additional emergent aquatic habitat with waterfowl hunting potential

potential warm water fisheries habitat

emergent aquatic habitat

grassy areas & forest habitat potential major environmental education resource with a significant diversity of av. fauna

fisheries potential trout stream

emergent aquatic and forest habitat

potential fish spawning area - if water quality is improved

potential commercial fisheries in lake inhibited by PCB's and other persistent toxic materials entering the food chain

green lake still sustains good diversity of game fish; including carp, salmon, brown trout, perch and pike

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY
FISH & WILDLIFE RESOURCES

PREPARED FOR:
 CITY OF ROCHESTER
 DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
 ECOPLANS INCORPORATED
 SAUSATOGA SPRINGS, NEW YORK 14628
 A MEMBER OF THE PARATOGA ASSOCIATES

SCALE
 1:24000

EROSION POTENTIAL ANALYSIS

Significance of the Resource

The soil resource has a major role in both natural and man-made environmental systems found within the area of study affecting the Rochester Coastal Zone. Even in the dominantly urban setting of Rochester where development has drastically altered the condition of natural systems, the soil remains as the resource which supports existing vegetation and, consequently, wildlife, and serves as the host material for urban development. The unique qualities and characteristics of this resource cause a major portion of land within the area of study to have potentials of very severe or severe erosion.

The study area of the erosion control analysis is determined by the watershed boundaries of lands which drain into the Rochester Coastal Zone. Within the study area, there is a substantial amount of land covered by soils which have the potential for very severe erosion. When development occurs in areas with severe or very severe erosion potential, the problems resulting from erosion may pose serious hazards to human life and property, may bring about serious environmental deterioration and may necessitate very costly remedial action. Dangers of landsliding, clogging of natural drainage features and degradation of surface water quality, despoiling of forest lands and wildlife habitat with deposits of eroded sediment, and the expenses of cleaning-up and restoring the land to its natural condition are all reasons to prohibit development in areas with potential for very severe erosion.

Historic Development

Toward the end of the last stage of glaciation which affected the northeastern section of the United States, a series of lakes formed near the northward receding ice front in Monroe County. As the ice continued receding, the configuration of lakes and their drainage patterns changed, thus forming new lakes in different locations. The last of the lakes to form was named Lake Iroquois by geologists. Lake Iroquois covered the area of this study. The shoreline of the ancient lake was a beach ridge which today is the approximate location of Ridge Road, U.S. Route 104.

It is believed (Harnley, 1975) that, before Lake Iroquois finally evolved into present-day Lake Ontario, it received deposits of sediment from north-flowing rivers and streams. The Durand Eastman Park area, under water at this time, received sandy, coarse silt sediments apparently in the form of a delta. As the water level of Lake Iroquois dropped, these sediments were exposed to climatic conditions and the forces of erosion, producing the small, steep valleys seen today in this area. These are actually erosional features which formed as gullies originally in the deltaic sediment. The study area around the mouth of the Genesee River received silty sediments that were deposited in quieter waters on the bottom of the post-glacial Lake Iroquois. The different types of sediment deposition in Lake Iroquois thus greatly influenced present-day landforms in the coastal zone.

Current Status and Condition

Through the last 200 years of settlement in the Rochester area, soil resources of the inland areas have been altered by man's activities. Timber cutting, farming, and finally urban development have modified the landscape and affected soil characteristics of some major soil mapping units within the area of study. For example, some areas have soils in which major portions of the surface soil layer has been eroded away. The basic reasons for the eroded condition of these soils were a lack of knowledge about soil resources in general, mismanagement of the soil through inappropriate land usage, and an overall lack of concern about the environmental consequences of mismanaging soil resources.

Today, a great deal of scientific data exists which describes the soil resources and defines their potentials for various uses. Erosion potential has been determined using this data (Heffner and Goodman, 1973) (U.S.D.A. - S.C.S., Guidelines for Erosion Control in Urban Areas of New York State, no date).

Basically, four categories of erosion potential have been mapped for the study area; these are soils areas with very severe, severe, moderate or slight erosion potential (Goodman, 1975). (See Technical Report on Erosion Potential and Possible Protective Measures in Appendix for more information.)

The Lake Ontario shoreline has also been changing although there is far less documentation of this. The bluffs west of Ontario Beach and above and below the Hojack Railroad right-of-way in Durand Eastman Park are composed of material which has severe or very severe erosion potential. At the shoreline, exposure to high water levels, storms, and climatic forces in general increases the erosion potential of the bluffs. Frost action in the soil is a significant soil movement/soil erosion mechanism. Once the base or "toe" of a bluff is removed by erosion, landsliding is triggered and will in turn cause more surface erosion as soils become exposed. Current studies (Adams, 1975b) indicate that the presence of vegetation on the bluffs does not stop this process by anchoring the soil. Indeed, some experts have suggested (Higgins, 1974) that removal of large trees may reduce the load on bluff soils and slopes, thereby reducing the landsliding tendency. In any event, once the toe of the bluff has been removed, landsliding and erosion will begin to readjust the slope gradient of the bluff soil to its natural angle of repose at 45 degrees to the horizontal (Adams, 1975a) (Adams, 1975b).

A variety of structural measures, all designed to protect the toe of the bluff, have been generally successful at halting bluff erosion in these areas (Adams, 1975b). Also, preservation of beaches where practical as buffer zones appears to be an important need in protecting the bluffs from erosion.

The beach areas of the coastal zone are composed of sediments from a number of sources. Materials eroded from the immediate shoreline have been mixed with sediments transported by shoreline or "littoral" drift (in this case from west to east). As recreational interest in beach use developed and demand for beach area increased, beach sediments in the form of sand, were imported from inland sources. The mixture of these sediments makes a technical soil description which would apply to beach areas difficult because of the variability of conditions. However, some general characteristics about beach areas with respect to erosion potential are known.

Beach materials can probably be considered to have a "slight" erosion potential, based on the range from "slight" to "very severe" if viewed only as an exposed soil not affected by lake and related climatic influences. However, the beaches are periodically affected

by high water levels in Lake Ontario and/or storms producing high and very powerful waves. It is under these influences that severe or very severe erosion potential exists for beach areas.

The walls of the navigation channel projecting into Lake Ontario from the Genesee River Mouth are at 90 degree angles to the shoreline. As such, they act as a device which catches and retains sediment transported by littoral drift and retains beach sand against the force of littoral drift at Ontario Beach. Therefore, the structure acts to stop erosion and aid the build-up of sediment. However, this structure also stops the transport of sediment by littoral drift to Summerville and Windsor Beach. The influence of the channel wall at controlling erosion on the beaches to the east seems to gradually end as Windsor Beach tapers down to a narrow margin. However, scientific data is not available to provide support to this conclusion.

Implications for Planning and Development

Control of erosion should be viewed in the context of regulating man's disturbance of soil resources. In that context, the following structure of land use constraints related to soil erosion potential is offered.

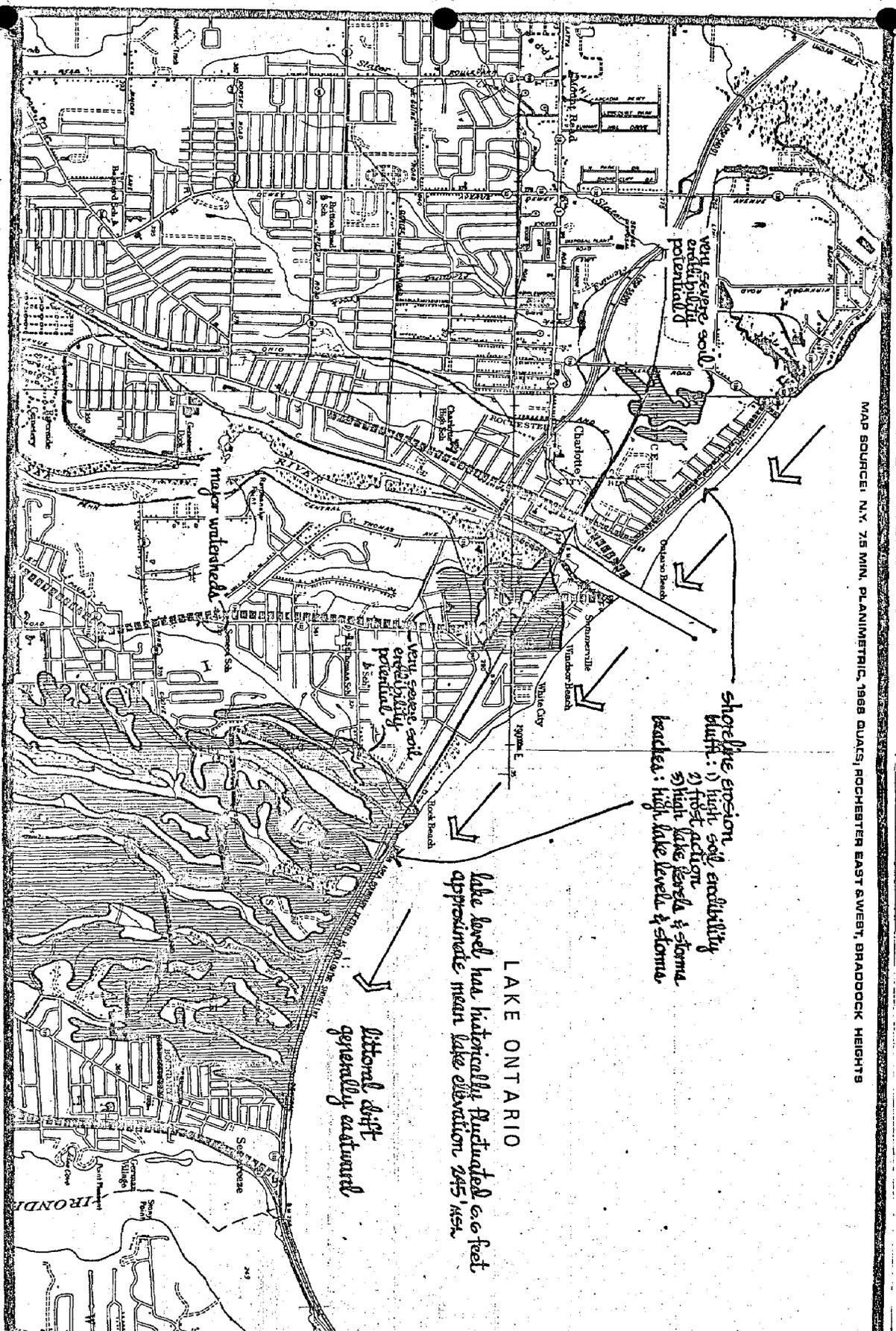
1. In areas of very severe erosion potential, development should be prohibited.
2. In areas of severe erosion potential, development should not be allowed unless all of the following are satisfied:
 - A. the necessity and desirability of the development is established;
 - B. the project is compatible with local planning objectives;
 - C. complete erosion control measures are taken;
 - D. all such erosion control measures are guaranteed by the project sponsor.
3. In areas of moderate erosion potential, development should be allowed when:
 - A. the project is compatible with local planning objectives;
 - B. erosion control measures are guaranteed.

4. In areas of slight erosion potential, development should be allowed if proper erosion control measures are planned and implemented according to standard municipal controls.
5. In areas where property loss and hazards to safety result from erosion potential, a special zone district should be established to regulate development and land use and prescribe techniques for erosion control (most applicable in the case of bluffs).
6. Beach areas and the use of structures to stabilize beach areas should receive further study and be regulated based on those findings. Initial planning for beach areas may begin based on limited data. Present uses of beach areas may continue.

Local land use decision-making groups must recognize the hazards posed by the often severely erodible soil resources in their community. Future regulation of areas with severe and very severe erosion hazards will benefit the community in terms of public safety, preservation of environmentally and aesthetically important areas, and prevention of potential remedial actions which would be necessitated by development of these areas.

Land use decision-making bodies must strive to understand the actual soil resource conditions and adopt or enact erosion control regulations which are based on the scientifically established data describing those conditions.

More study of the bluff erosion on the Lake Ontario shoreline will take place in the summer of 1976 (Adams, 1975b). Although this study will continue to provide better answers about erosion problems related to bluffs, the present level of knowledge seems adequate to effectively plan for coastal zone land use related to the bluffs. The effective planning for beach areas can begin now but must also include the development and use of more information about beach material composition, erosion and sedimentation rates, the hydro-dynamics of Lake Ontario, and the role of structures in controlling erosion and sedimentation. (A discussion of specific structures is included in the Technical Report on Erosion Potential and Possible Protective Measures found in the appendix.)



MAP SOURCE: N.Y. 7.5 MIN. PLANIMETRIC, 1968 QUADS; ROCHESTER EAST & WEST, BRADDOCK HEIGHTS

**ROCHESTER COASTAL ZONE RESOURCES
MANAGEMENT STUDY
EROSION FACTORS**

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLANS INCORPORATED
SARATOGA SPRINGS, NEW YORK 12158
A MEMBER OF
THE SARATOGA ASSOCIATES



SCALE
1:24000

ELECTRIC GENERATION FACILITIES ANALYSIS

Significance of the Resource

The power generating facilities located within the area influencing the Rochester Coastal Zone, are a major component of the Rochester Gas and Electric Corporation power generating system. As such, they are considered essential to the community, region and the New York Power Pool.

In terms of relationships with other resources of the Coastal Zone Area, electric generating facilities require land for both plants and transmission systems. Water is utilized for both power production in hydroelectric and steam generating systems, and as a coolant in nuclear systems - and each process has a different impact on water quality. Electric generating facilities can affect public access - in some cases providing additional public access through multiple-use of generating facility sites - and in other cases restricting public access or adversely affecting nearby recreational areas with air and water pollutants. Power generating facilities, through their impacts on water quality can affect fish resources, although the nature of these impacts have not been clearly established. In some cases, the impacts appear to be neutral or beneficial. For example, the warmer water resulting from thermal discharge seems to attract higher fish populations.

Transmission line rights-of-way often form natural wildlife corridors extending into the urban environment.

Legal controls affecting electric generating facilities are vested primarily at the state and federal level. As utilities, these facilities are exempted from zoning and other controls available to local governments.

Historic Development

There are electric generating facilities in the proximity of the study area: the Russell Station on Lake Ontario in the Town of Greece, and the BeeBee Station on the Genesee River close to downtown Rochester. Their locations were largely determined by their proximity to water and the ease of transfer of large amounts of water for cooling purposes. Secondly, the plants were located as near to the ultimate users of power as

practical, in order to reduce transmission requirements. Several small hydro stations have been located along the Genesee River where advantage is taken of the substantial changes in elevation on the river.

The generation capacity and type of fuel utilized at the two closest plants are as follows:

Russell Station - 256 MWe - oil and coal;
BeeBee Station - 191 MWe - oil and coal.

Schematics of these plants are illustrated on the accompanying maps.

Current Status and Condition

No plans to expand the City-located facilities are contemplated. The Russell Station, however, is currently being studied to determine the feasibility of utilizing solid wastes as a fuel which could provide up to 30% of the BTU input required by the boilers. If feasible, a minor adaptation to the plant would be developed, with the system operational by mid-1978.

Major expansion to the RG&E power generating system is being planned at a site near Fairhaven, New York known as the Sterling Site. Both coal-fired and nuclear plants are under planning in conjunction with two other New York utilities. While these facilities are located along the Lake Ontario coast, they have no effect on the Rochester Coastal Zone study area.

Transmission facilities required by the proposed plants and those existing within the coastal zone are not expected to be expanded significantly. Major overhead transmission lines within the study area generally parallel the railroad tracks back from the shoreline. The lines are placed underground or in submarine cable in the critical visual zones.

Both Russell and BeeBee Stations have received federal and state water discharge permits and are currently in the final hearing stage. A number of improvements are being planned for the plants' discharge systems which will result in improved water quality at both locations.

Implications for Planning and Development

The facilities reviewed are expected to be maintained for the foreseeable future. No plan is available relative to the phasing-out of these facilities. Since

RUSSELL STATION

LAKE ONTARIO
(CLASS A-SPECIAL)

INTAKE STRUCTURE

3700'

INTAKE TUNNEL

DISCHARGE TUNNEL

RUSSELL STA.

GENESSEE RIVER

FLEMING CREEK

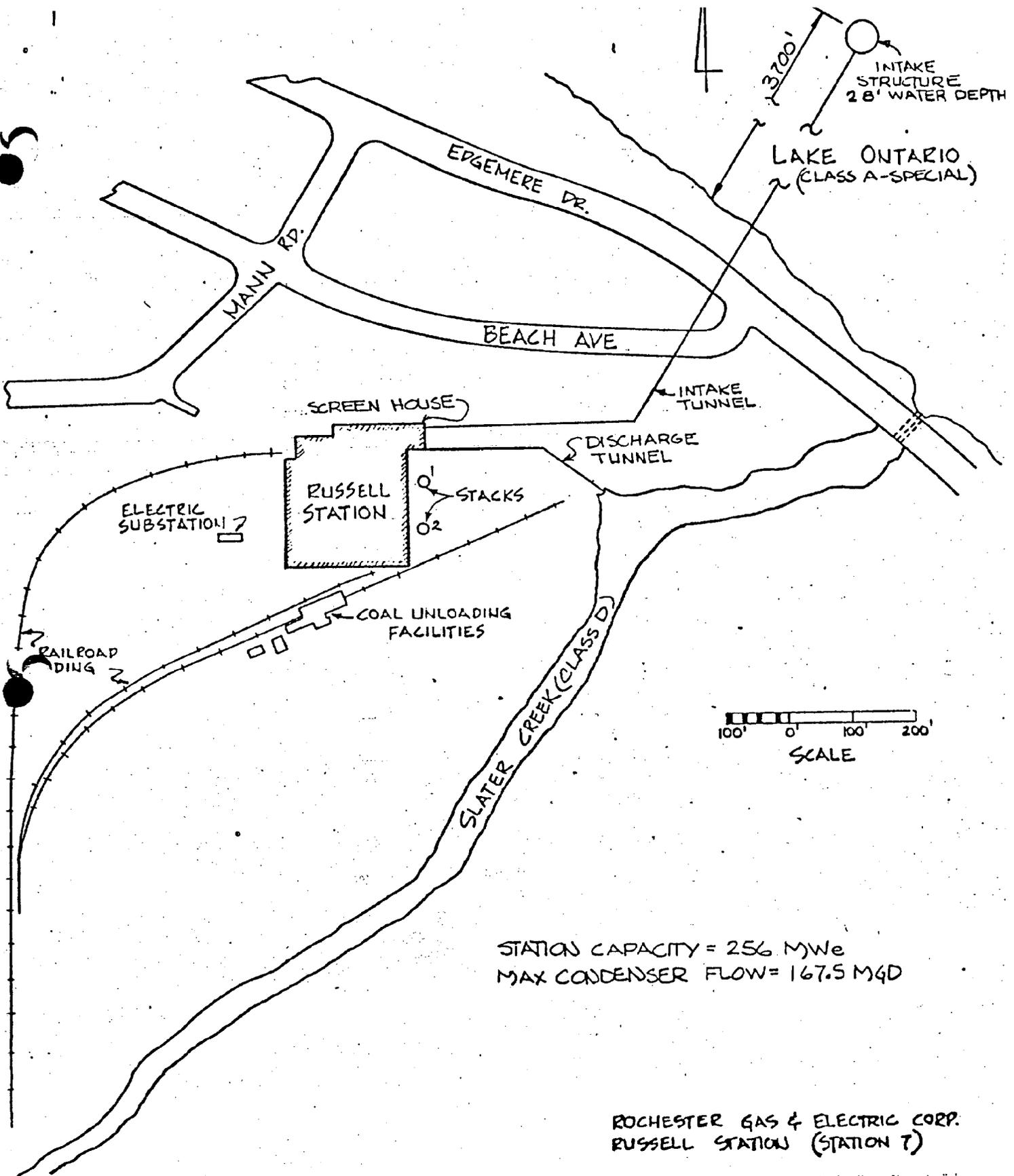
SLATER CREEK

SLATER CREEK DRAINAGE AREA = 5.4 SQ. MI.
MA 7CD $\frac{1}{10}$ = 0.1 CFS

ROCHESTER GAS & ELECTRIC CORP.
RUSSELL STATION
GENERAL LOCATION



Source: Rochester Gas and Electric Corporation

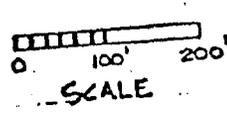
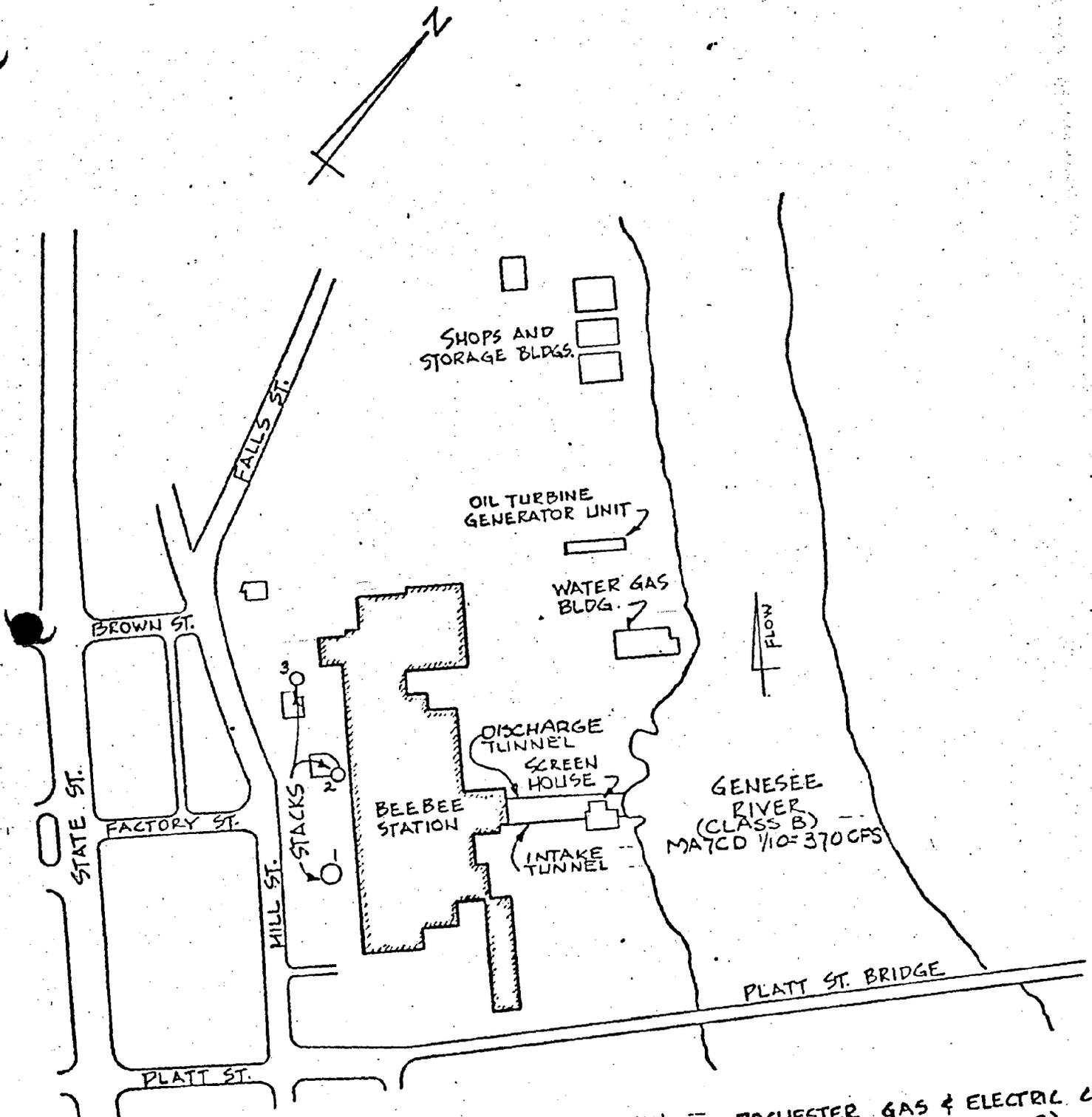


STATION CAPACITY = 256 MWe
 MAX CONDENSER FLOW = 167.5 MGD

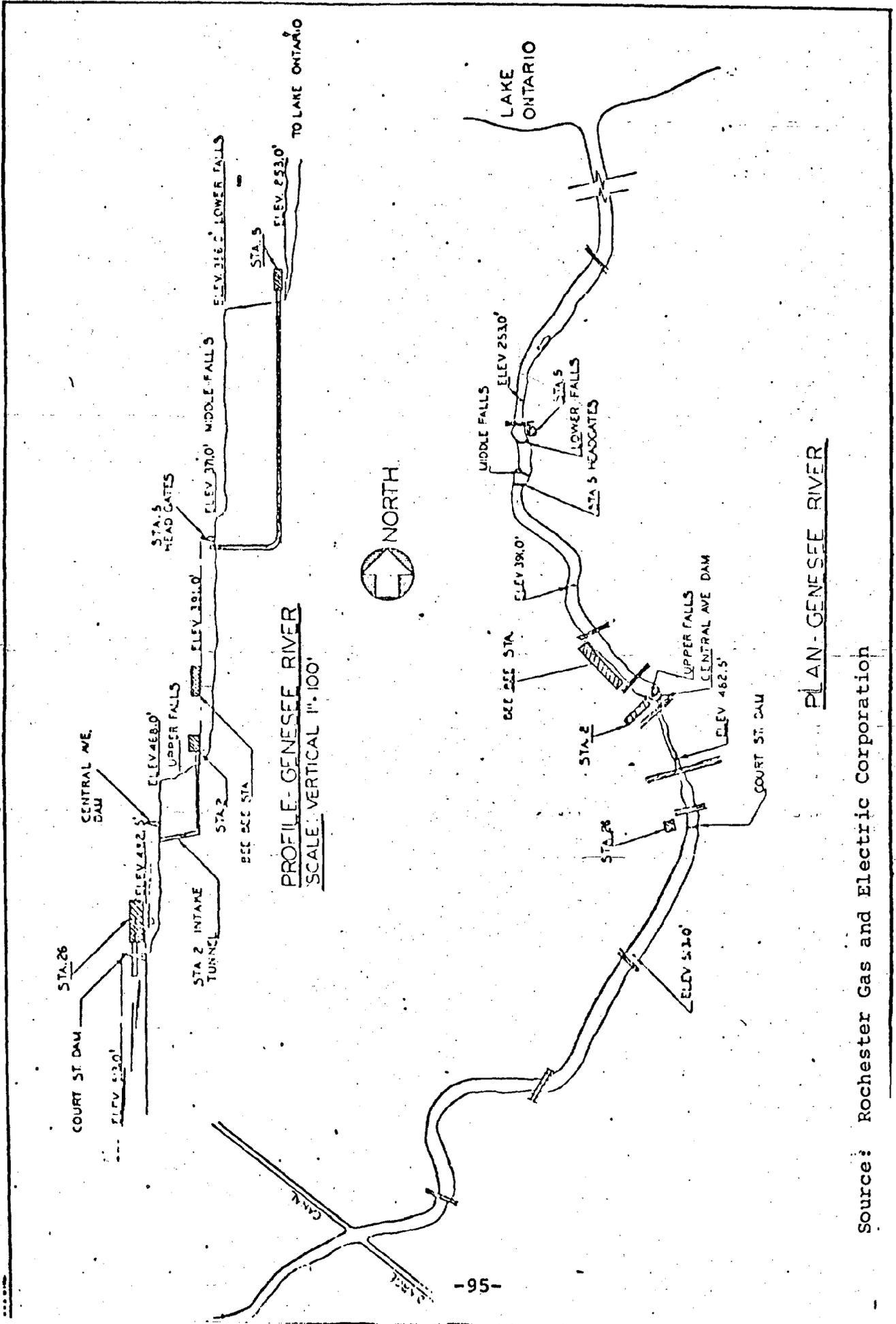
ROCHESTER GAS & ELECTRIC CORP.
 RUSSELL STATION (STATION T)

Source: Rochester Gas and Electric Corporation

BEEBEE STATION



STATION CAPACITY = 191 MWe -- ROCHESTER GAS & ELECTRIC CO
MAX. CONDENSER FLOW = 175MGD BEEBEE STATION (STATION 3)

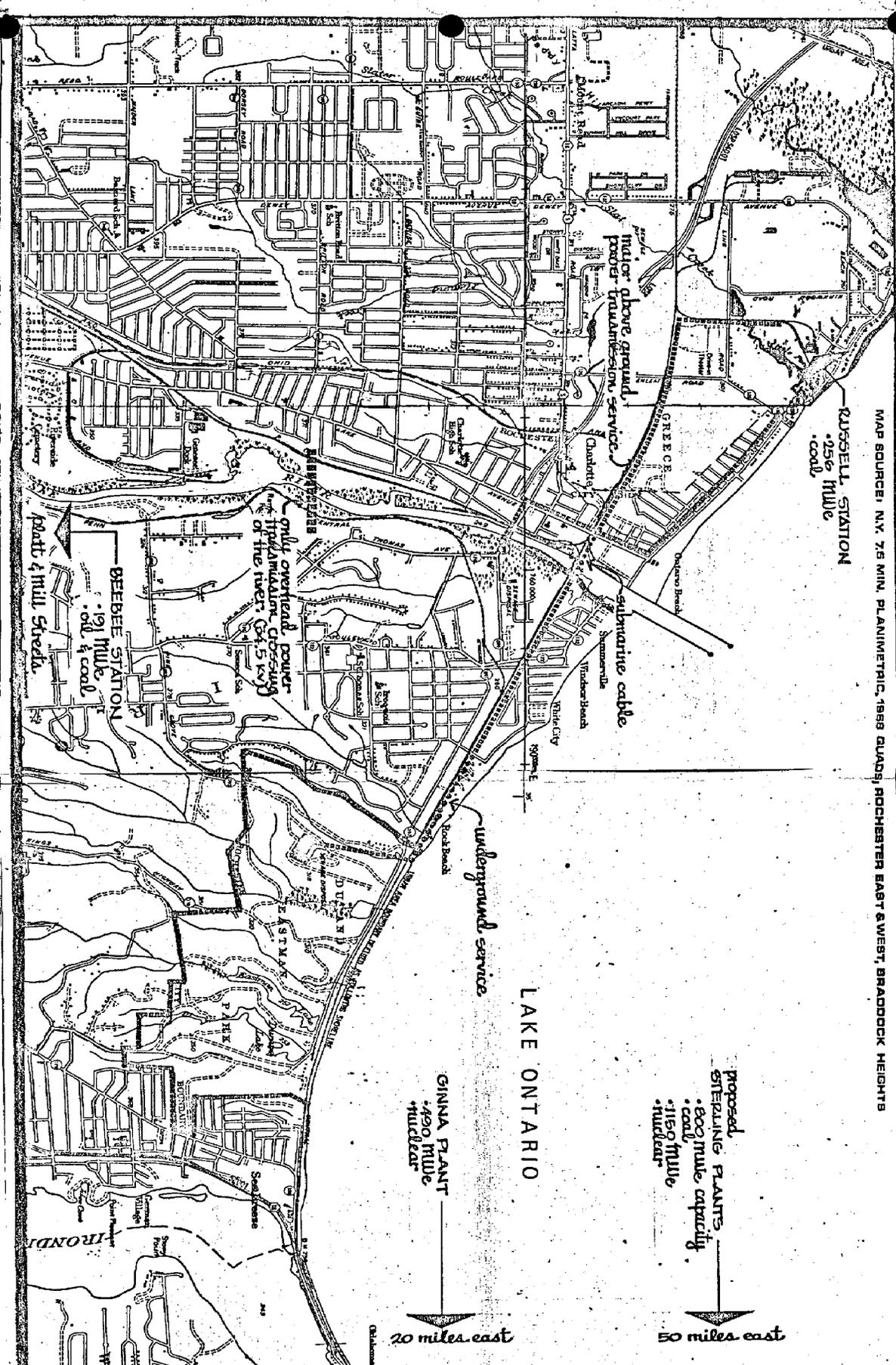


Source: Rochester Gas and Electric Corporation

these facilities are essential to the basic functioning of the community, they will be utilized in their present mode until such time as they may become economically impractical or supplanted by new facilities at remote sites in the long term.

In addition, stringent and lengthy reviews by federal and state agencies over new plant licensing applications combined with a slower growth rate in electrical demand has caused delays in new plant construction. Dependence on existing plants will therefore increase, reinforce their usefulness and extend their life.

New power facilities are not quite as dependent on the historical relationships to water and load centers due to the improved technology of large capacity power and water transmission systems. Nuclear plants are, in addition, required to be located in low population areas. As a result of these technological advances and siting requirements, power facilities locational concerns in the Rochester area are not an issue.



MAP SOURCE: N.Y. 75 MIN. PLANIMETRIC, 1968 QUADS, ROCHESTER EAST & WEST, BRADDOCK HEIGHTS

RUSSELL STATION
956 MW
coal

BEEBEE STATION
91 MW
oil & coal

GINNA PLANT
490 MW
nuclear

proposed
STEUBEN PLANTS
600 MW capacity
coal
1150 MW
nuclear

LAKE ONTARIO

20 miles east

50 miles east

**ROCHESTER COASTAL ZONE RESOURCES
MANAGEMENT STUDY
ELECTRIC GENERATING FACILITIES**

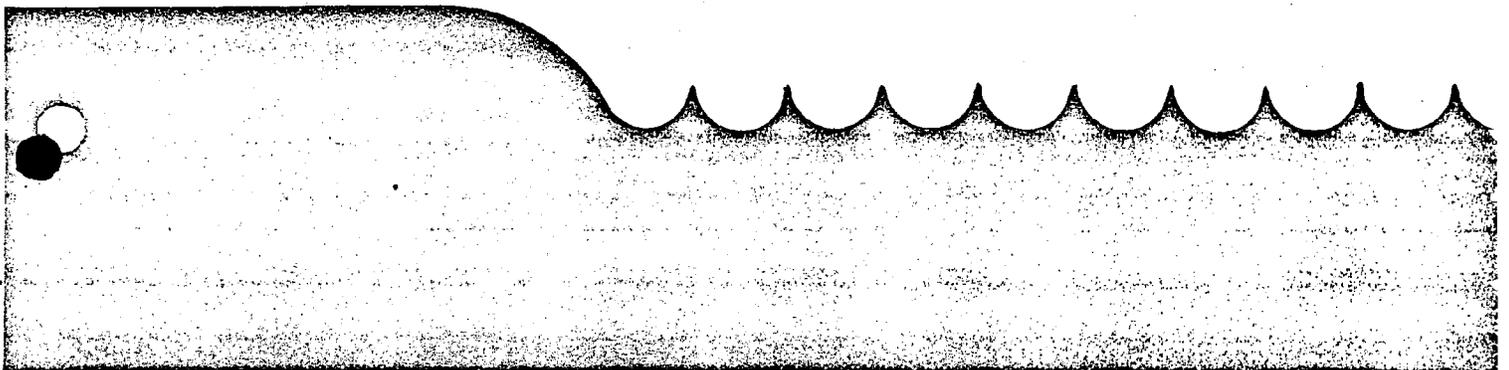
PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ESCIPLAN'S INCORPORATED
SARATOGA SPRINGS, NEW YORK 12158
A MEMBER OF
THE SARATOGA ASSOCIATES



SCALE
1:24000

ALTERNATIVE STRATEGIES



ALTERNATIVE STRATEGIES

STRATEGY CONSIDERATIONS

The preceding inventory and analysis of the major coastal zone resources has demonstrated that a large portion of the Rochester coastal zone has been impacted by human uses. The overall impression, however, is that the existing uses do not optimize the resource opportunities nor resolve conflicting and incompatible alternatives. Various alternative solutions to the problems are presented here.

In order to articulate the alternative strategies for the design, management and implementation of coastal zone plans, basic concerns of purpose (major uses in coastal area) and policy must be resolved. Briefly, all strategies should fall somewhere in the continuum between "total" conservation and "total" development. A final implementation program should be based on an evaluation of specific policies and objectives.

As a framework for defining strategies, alternative policies should focus on the following areas:

- o General Use Policy - the coastal zone can be utilized principally for conservation/preservation purposes, development or a balanced combination of these.
- o Control Jurisdiction - most coastal zone areas involve federal, state, local and private jurisdiction in terms of present ownership and control.
- o Management Locus - control of a coastal zone area and implementation of a plan may be centralized or dispersed management.
- o Specific Uses, Actions and Density - on the development side, land uses may be represented by any mixture found today on the urban scene, including residential, commercial and industrial development. On the conservation side, recreational, forest preserves and similar functions may be accommodated. Coastal zone areas may accommodate high or low densities depending upon guidelines.
- o Design Concept - the development of coastal zone uses may be accommodated as self-contained activities, or integrated with the community. It is this basic aspect of overall design which determines its impact on adjacent areas.

- o Legal Controls - legal policy may range from simple controls to complex instruments, but generally represents control over the land in terms of the way land is used and developed. The legal control may be direct (through acquisition in fee simple or lease) or indirect (through the police power which may be based on incentives, performance standards or restrictions).
- o Phasing - policies which determine whether or not coastal zones are developed as planned in one step or over a number of years have much to do with the kind of management and the level of legal control necessary to implement the plan.
- o Funding - particularly in the public sector, aspects of funding are important considerations with respect to the kind of plan developed. Obviously, a plan which requires public fee simple acquisition and development is more burdensome than one which incorporates indirect controls for various aspects of the coastal zone.
- o Evaluation System - again, in the public sector, methods for evaluating the success or failure of the coastal zone plan and its management are important policy concerns. This would include land development inspection, water quality testing and other procedures developed to insure the proper implementation of the plan.

ALTERNATIVE POLICIES

Three distinct alternative directions are developed here. First, a conservation-oriented strategy is developed, describing policies and actions necessary to maximize the preservation of natural resources in the coastal zone. At the opposite end of the continuum, a development focus is assumed, to emphasize development opportunities in the coastal zone area. Lastly, a middle-ground or "balanced use" option is defined, in an attempt to recognize the inherent advantages to a balanced plan which responds to both conservation and development opportunities.

The alternative policies for the three strategies are presented first. In the next section these policy statements are translated into schematic design representations of alternative development plans.

Port Development Policy Goals

Conservation-Oriented:

To terminate the use of the Rochester coastal zone for port purposes and reallocate existing port land resources for public open space uses.

Development-Oriented:

To reserve areas of the Rochester coastal zone for possible future port requirements, and promote the development of Rochester as a Great Lakes Seaway Port.

Balanced Use-Oriented:

To limit the expansion of commercial port activities and open port facilities to compatible multiple uses.

o Policy Implications and Potential Programs

Policies regarding port development in the coastal zone could range from 1) policies excluding potential port uses and terminating current port facilities, to 2) policies maintaining, preserving and promoting port development. Excluding port development from the coastal zone area would tend to restrict the options available for industrial and commercial development in the coastal area, but would have an obvious beneficial impact on the visual and water quality of the area.

Potential programs might include the following:

Conservation-Oriented Programs:

Redevelopment of the existing port as a public recreation area to expand Ontario Beach Park.

Development-Oriented Programs:

Maintain and promote the existing port facilities.

Maintain public ownership of the port facility lands but demolish the facilities and lease the area on a long-term basis for commercial redevelopment.

Maintain public ownership of the port areas but demolish the facilities and preserve the area as

reserved open-space for possible future port use.

Balanced Use-Oriented Programs:

Consolidate port facilities on small amount of land area thus freeing additional lands for other uses.

Develop compatible multi-use activities for port docking facilities such as excursion boating, recreation craft services and repairs.

Land Use Policy Goals

Conservation-Oriented:

To prohibit further development of coastal zone land resources and secure all remaining open lands for preservation and restoration of their potential native natural condition.

Development-Oriented:

To provide for the sound development of coastal zone land resources in accordance with the economic market values of available and developable properties.

Balanced Use-Oriented:

To contain and channel low-to-middle density development growth with a variety of economic and social uses.

o Policy Implications and Potential Programs

Policies regarding the land resources of the coastal zone could range between 1) complete natural preservation of the remaining lands, and 2) a laissez faire attitude which could lead to exploitation of the economic values of the remaining lands. Adoption of a "conservation-oriented" policy in this case would effectively exclude the "development-oriented" policy. To the degree that the adopted policy goal represents a middle range between these two conditions, some conservation-oriented, and some development-oriented objectives may be achieved. Middle-range policies would seek a balance between long-term public benefits of both conservation and development, and short-term private development benefits.

Potential management strategies might include the following programs:

Conservation-Oriented Programs:

Expansion and acceleration of programs for the acquisition of coastal zone open land resources, and obsolete and deteriorated developed properties.

Establishment of such public lands as natural preserves.

Development of an ecologically-based landscape restoration program designed to replace vegetative cover with vegetative species native to the coastal zone area.

Provision of tax incentives to owners of large private holdings to preserve lands in natural conditions.

Elimination of excess transportation routes to and through open land areas.

Termination of port facilities.

Development-Oriented Programs:

Preparation and adoption of a multiple land use plan for the coastal zone area.

Disposition of public lands not needed for public facilities and recreation for private development.

Development of a public small boat harbor and marina.

Provision of tax incentives for developers.

Conduct of design competitions for key development parcels.

Provision of increased access by public transit to the coastal zone area.

Balanced Use-Oriented Programs:

Development of a variety of housing types and densities.

Amortization and displacement of industrial activities that are not dependent upon coastal zone resources.

Promotion of public transit as the principle means of transporting day users to the coastal zone.

Establishment of neighborhood commercial center for the Charlotte community.

Water Quality Policy Goals

Conservation-Oriented:

To improve the quality of coastal zone water resources to the level necessary to sustain biological requirements for the reproduction and development of potential natural aquatic vegetative and faunal resources.

Development-Oriented:

To improve the quality of coastal zone water resources to the level required to permit effective use of the coastal zone for port development and recreational boating.

Balanced Use-Oriented:

To improve the quality of coastal zone water resources to a level necessary to sustain recreational swimming and fishing activities.

o Policy Implications and Potential Programs

Policies regarding water quality could range between the two extremes of 1) attempting to achieve improvements in water quality which would effectively restore the original ecological conditions of the coastal water resources, and 2) simple maintenance of the water resource as an open, navigable water transport system. Adoption of the conservation policy goals does not exclude the others, but more intensive controls and more effective monitoring systems and enforcement procedures would be necessary.

Potential management strategies might include the following programs:

Conservation-Oriented Programs:

Establishment of a coordinated set of water quality standards relating to the biological, chemical and physical parameters of water quality in various areas of the coastal waters.

Establishment of a permanent network of water quality monitoring stations and a routine program for sampling and testing water quality.

Establishment of an on-going analysis of trends in water quality and periodic reporting of summary water quality data and trends for the coastal waters.

Provision of an adequate system of facilities for the service of marine holding tanks and better enforcement of controls governing the discharge of pollutants by ships and boats.

Acceleration of sewage treatment facility construction and upgrading of treatment levels.

Development-Oriented Programs:

Establishment of a basic plan and program for the periodic dredging of navigable water areas and the disposition of dredging spoil.

Enactment of strict controls to prevent the exposure of highly erodible soils in areas adjacent to the coastal zone waters and their tributaries.

Separation and diversion of storm sewer discharges to outfall locations which will disperse run-off sediments in areas where they will not cause closure of navigable waterways.

Balanced Use-Oriented Programs:

Upgrading and maintaining the coastal zone water to a "B" standard of quality.

Continuation of current pollution abatement program aimed at eliminating biological and chemical pollutants.

Establishment of coordinated water quality monitoring system, including predictive models.

Public Access Policy Goals

Conservation-Oriented:

To reduce public access especially to coastal zone areas with high ecological value and sensitive tolerance of human use.

Development-Oriented:

To increase public access especially to coastal zone areas with high developmental values and recreational potentials.

Balanced Use-Oriented:

To increase opportunities of public access for both passive and active recreation.

o Policy Implications and Potential Programs

Policies governing public access to the coastal zone could range between the extremes of 1) highly restricted, limited access and, 2) unrestricted, open access. Adoption of either policy excludes the other. Unless the need for limiting access is clearly perceived and understood by the public, limited access would only be achieved by physical control measures and strong enforcement - which may not be achievable due to political pressures. Unrestricted access, on the other hand, increases use density and attendant maintenance and management requirements - as well as physical improvements, such as parking areas, bike and pedestrian circulation systems, and improved transit. It is more difficult to cut back use than expand it, however, and once an unlimited access policy is in effect, it becomes almost impossible to alter it. On the other hand, conservation-oriented policies of access can be modified if pressures increase for the use of additional areas.

Potential programs include the following:

Conservation-Oriented Programs:

Elimination of off-street parking opportunities by physical barriers.

Design of pedestrian and bike circulation systems to prevent encroachment on areas of high ecological value.

Reduction of public transit service to the coastal zone area.

Elimination of through-traffic routes in the coastal zone area.

Reduction of public areas for recreational purposes and restriction of private development (entertainment, food, marina) uses which attract the general public.

Maintenance of low density residential development.

Development-Oriented Programs:

Provision of a dispersed off-street parking system to serve the coastal area.

Encouragement of more public transit service by reduced fares and/or more frequent, faster service.

Promotion of public attractions in the coastal zone area.

Extension of the Lake Ontario Parkway from the Genesee River east.

Provision of more public recreational facilities and encouragement of private developments attracting the general public.

Increased residential land use density.

Provision of more pedestrian and bicycle circulation facilities.

Balanced Use-Oriented Programs:

Provision of increased public access systems paralleling Lake and River shorelines with linkages to external systems.

Promotion of improved public transit service.

Improved maintenance and supervision of existing recreational facilities.

Legal Control Policy Goals

Conservation-Oriented:

To maximize public ownership and control of the coastal zone area.

Development-Oriented:

To minimize public ownership and intervention in the control of development of the coastal zone area.

Balanced Use-Oriented:

To maximize a beneficial interplay between private and public control in the coastal zone area.

o Policy Implications and Potential Programs

Legal control policies could range between 1) maximum public ownership and protection of the coastal area and 2) basic reliance on the police powers of zoning and other codes to achieve public objectives in conjunction with private development. Maximum public control requires extensive initial capital outlay for the acquisition of land resources, and on-going expenses for maintenance. Tax values are, of course, eliminated. Police power controls, on the other hand, could be sufficiently effective but also contain administration and enforcement costs to the public.

Potential programs could include the following:

Conservation-Oriented Programs:

Continue and expand the current program of public land acquisition of open, unused lands.

Amortize existing non-conforming land uses and maintain such lands in public ownership.

Acquire abandoned railroad rights-of-way for public use.

Establish land controls that restrict the density and type of development and require performance to meet conservation-oriented standards.

Development-Oriented Programs:

Establish land development controls that provide incentives for private development of the coastal zone area.

Increase allowable densities for development.

Balanced Use-Oriented Programs:

Establishment of special coastal zone district provision in city zoning ordinance with special review criteria.

Application of new environmental review procedures to significant coastal zone projects.

Fish and Wildlife Resource Policy Goals

Conservation-Oriented:

To expand the fish and wildlife habitat potential of the coastal zone area and attract and stimulate the reproduction and development of natural and native species formerly found in the area.

Development-Oriented:

To maintain and develop commercially important fish and wildlife species and improve the sport fishing potential of the coastal zone area.

Balanced Use-Oriented:

To establish an urban fish and wildlife ecology.

o Policy Implications and Potential Programs

Policies governing fish and wildlife resources could range between the extremes of 1) restoration of the natural ecology and 2) development of only the commercial and recreational fish and wildlife values. Adoption of the conservation-oriented goal would also achieve the development-oriented goal. The fish and wildlife policy is, of course, tightly linked to water quality and land use policy. While the conservation-oriented policy would be difficult to achieve in totality, due to the

significant alterations that have been made to the Rochester coastal area, once such a level of habitat quality is achieved, continuing programs would not be required - except those related to monitoring habitat condition. The development-oriented policy, on the other hand, suggests continued management obligations - such as artificial stocking and continued habitat improvements (artificial "structure" for attracting fish, for example) in order to maximize recreational and commercial value.

Potential programs include the following:

Conservation-Oriented Programs:

Conduct of an on-going program of fish and wildlife research to determine the status and trends in fish and wildlife habitat quality.

Programmed introduction of additional native fish and wildlife species to broaden the diversity of faunal resources as habitat conditions improve.

Improvement of fish and wildlife habitat by selective planting of vegetative species with high food and cover value, provision of artificial fish "structure", and selective clearing and other improvements such as nesting islands and platforms for waterfowl in the Durand Eastman ponds.

Designation of nature preserve areas prohibiting public access except for controlled nature study programs.

Development of an environmental education center and program to promote public awareness of fish and wildlife potentials in the coastal area.

Development-Oriented Programs:

Conversion of the harbor entrance breakwalls to sport fishing piers.

Development of additional wetland areas for waterfowl hunting areas off Durand Eastman Park using dredging spoil.

Establishment of a fishery program and stocking of Durand Eastman Park ponds with appropriate game fish species - such as bass.

Development-Oriented Programs:

Conversion of the harbor entrance breakwalls to sport fishing piers.

Development of additional wetland areas for waterfowl hunting areas off Durand Eastman Park using dredging spoil.

Establishment of a fishery program and stocking of Durand Eastman Park ponds with appropriate game fish species - such as bass.

Balanced Use-Oriented Programs:

Promotion of fisheries program for game fish species.

Development of management program for the area's deer herd.

Improvements and protection of spawning and habitat areas.

Erosion Control Policy Goals

Conservation-Oriented:

To eliminate soil erosion due to man-caused activities in the coastal zone area and minimize soil erosion due to natural causes.

Development-Oriented:

To provide strict controls and specific guidelines governing new urban development in order to minimize soil erosion due to such activities, and enhance the value of private real estate undertakings.

Balanced Use-Oriented:

To minimize soil erosion due to man-caused activities.

o Policy Implications and Potential Programs

Policies regarding soil erosion control will, in some respects, always be conservation-oriented, since erosion is detrimental to developmental objectives as well as conservation objectives. The critical question is one of degree of public

intervention in the private development process to prevent erosion. These interventions can range from simple, non-mandatory guidelines, to strictly enforced legal controls and actual public projects (e.g., stream valley land acquisition, erosion control check-dams, etc.) paid for by assessing developers working in areas susceptible to soil erosion.

Since streams follow natural courses across political boundaries, erosion control policies have implications for jurisdictional control - assignment, for example, to the County, or cooperative agreements between municipalities.

Potential programs could include the following:

Conservation-Oriented Programs:

Public acquisition of stream valley and other natural run-off areas.

Public provision of erosion control structures in existing areas of soil erosion.

Public restoration of eroded land areas by implementation of slope adjustment and vegetative planting programs.

Development-Oriented Programs:

Development of erosion control standards in areas of high erosion potential.

Direction of land development away from areas of high erosion potential.

Requiring performance bonds from developers in areas of high erosion potential.

Balanced Use-Oriented Programs:

Preservation and stabilization of beach and bluff shoreline areas where property values of public resources are threatened.

Development and enforcement of erosion control measures on a watershed basis.

Electric Generating Facility Policy Goals

Conservation-Oriented:

To minimize the use of the coastal zone land and water resources for the purposes of electric power generation, and establish strict controls governing the discharge of thermal water pollution resulting from electric generating facilities.

Development-Oriented:

To maintain adequate coastal land and water resources for potential electric power generating needs.

Balanced Use-Oriented:

To encourage multiple use of all electric generation facilities.

o. Policy Implications and Potential Programs

Policies regarding the use of coastal zone resources for electric power generation could range between 1) policies designed to prevent further demands on land and water resources and, in addition, gradually amortize and phase-out existing power generating facilities; and 2) policies to protect and allocate an appropriate share of these resources for such use. Such policies are obviously long-term future oriented and subject to modification by technological advances which may greatly reduce power generating impacts.

Potential programs could include the following:

Conservation-Oriented Programs:

Establish a definitive coastal zone land and water resource plan that restricts power generating facilities to existing facility locations and adopt strict regulations to eliminate thermal pollution by cooling water discharges.

Develop a program for the phasing-out of existing power generating facilities not meeting acceptable standards and requiring substantial investments to upgrade operations to such levels.

Development-Oriented Programs:

Provide reserved sites in the more remote coastal zone for future electric power generating facility needs.

Balanced Use-Oriented Programs:

Encourage new electric generating facilities and transmission lines to be located back from the coastal zone and away from populated areas.

Permit public access and recreational activities where appropriate on public utilities land within the coastal zone.

ALTERNATIVE DEVELOPMENT PLANS

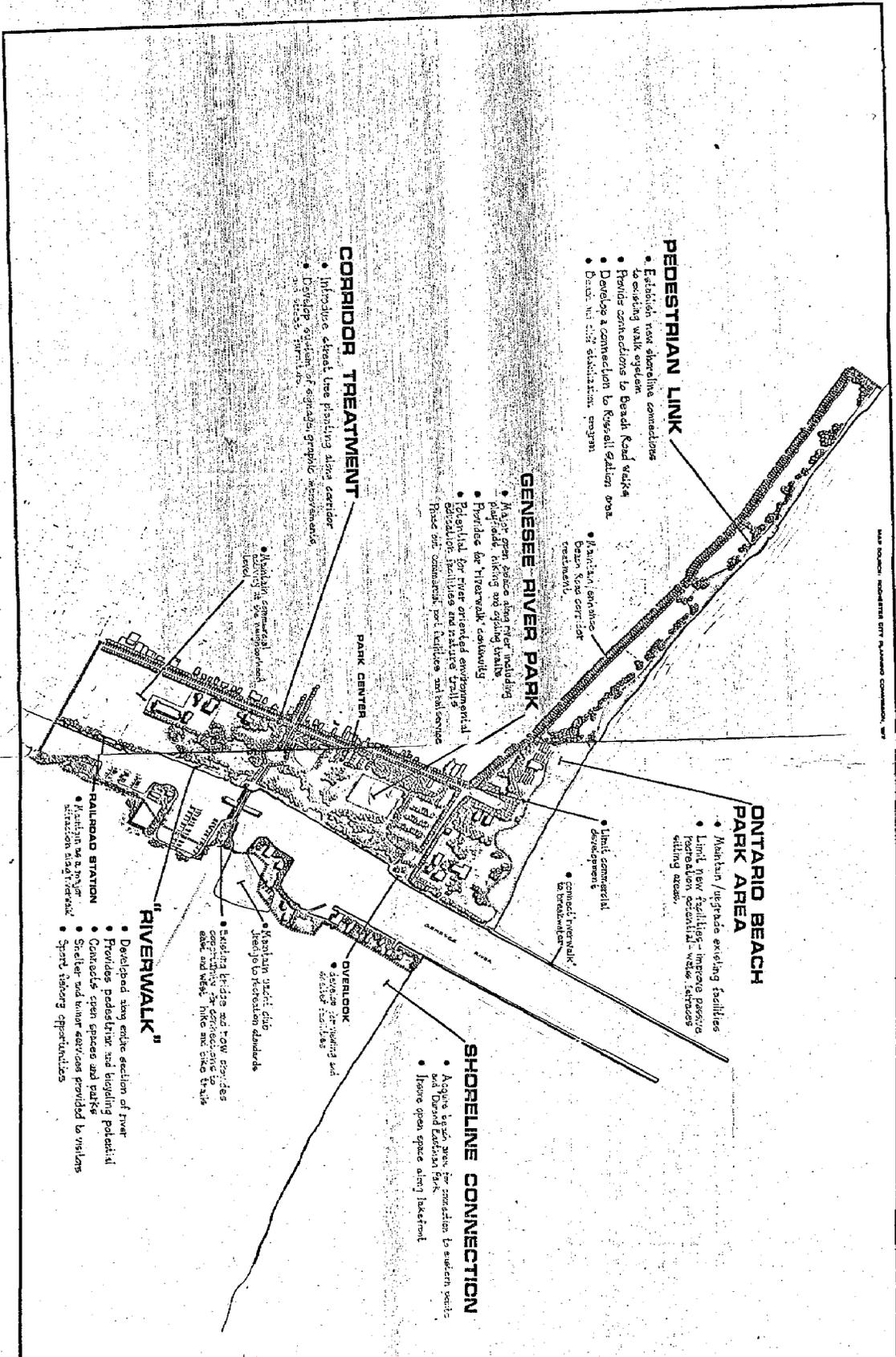
Conservation Strategy - Illustrative Plan

One basic concept for the Rochester coastal zone is that which emphasizes the preservation and management of all natural resources in the area, with a concomitant de-emphasis on commercial, industrial and port development. The primary aspects of such a plan would be: the relatively large role of public agencies and conservation groups, in terms of acquiring and managing resource areas; the public financial commitment involved in such a program, and the relatively small role of private development interests.

A schematic representation of this conservation strategy is presented in the accompanying "Illustrative Plan" graphics. The development plan shown is only a single representation of the conservation-oriented policies; other designs are possible.

The central land use change proposed in this conservation strategy is the establishment of a Genesee River park on lands currently occupied by the Port Authority. Implicit in this strategy is the amortization and removal of commercial port facilities and the railroad lines serving the port. Over fifty acres would be available as a major open space for expanded recreation facilities which might include ballfields, open play space, environmental education facilities and walking trails.

In conjunction with the Genesee River park, the west



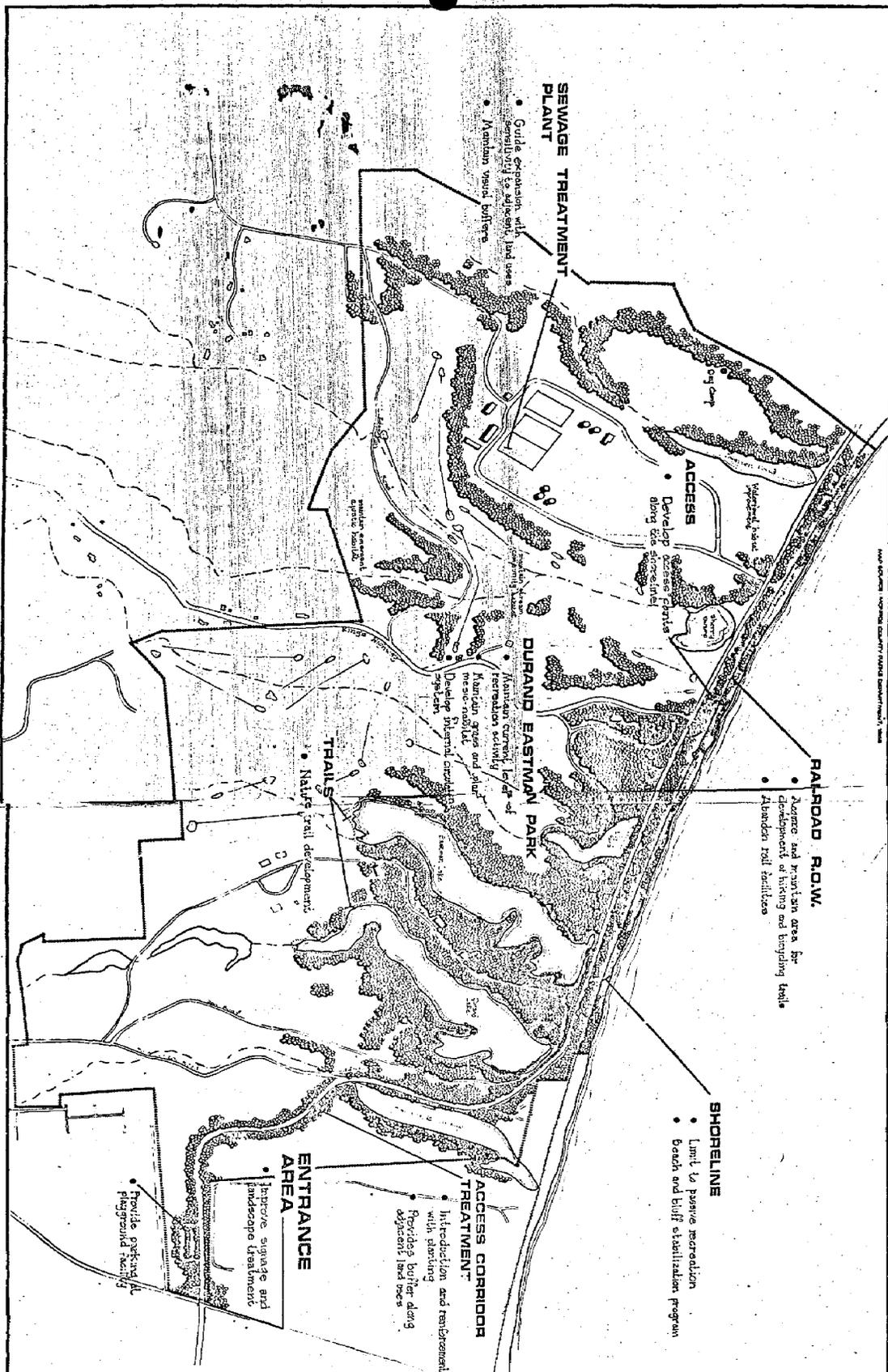
ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY

CONSERVATION STRATEGY ILLUSTRATIVE PLAN

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLANS INCORPORATED
BARATOGA SPRINGS, NEW YORK 12808
A MEMBER OF
THE BARATOGA ASSOCIATES

SCALE
1" = 800'



ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY

DURAND - EASTMAN CONSERVATION STRATEGY ILLUSTRATIVE PLAN

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLANS INCORPORATED
BARATOGGA SPRINGS, NEW YORK 14888
A MEMBER OF
THE BARATOGGA ASSOCIATES

SCALE
1" = 100'

1/14

shoreline of the River could be developed as a river-walk providing pedestrian, bicycling and fishing opportunities. The riverwalk could provide a linkage between the more intensive use areas at Ontario Beach Park and the passive use areas of the upper Genesee River wilderness park.

The major focus of the conservation plan would be on increasing public access opportunities and enlarging public open spaces without attracting large numbers of people in concentrated locations.

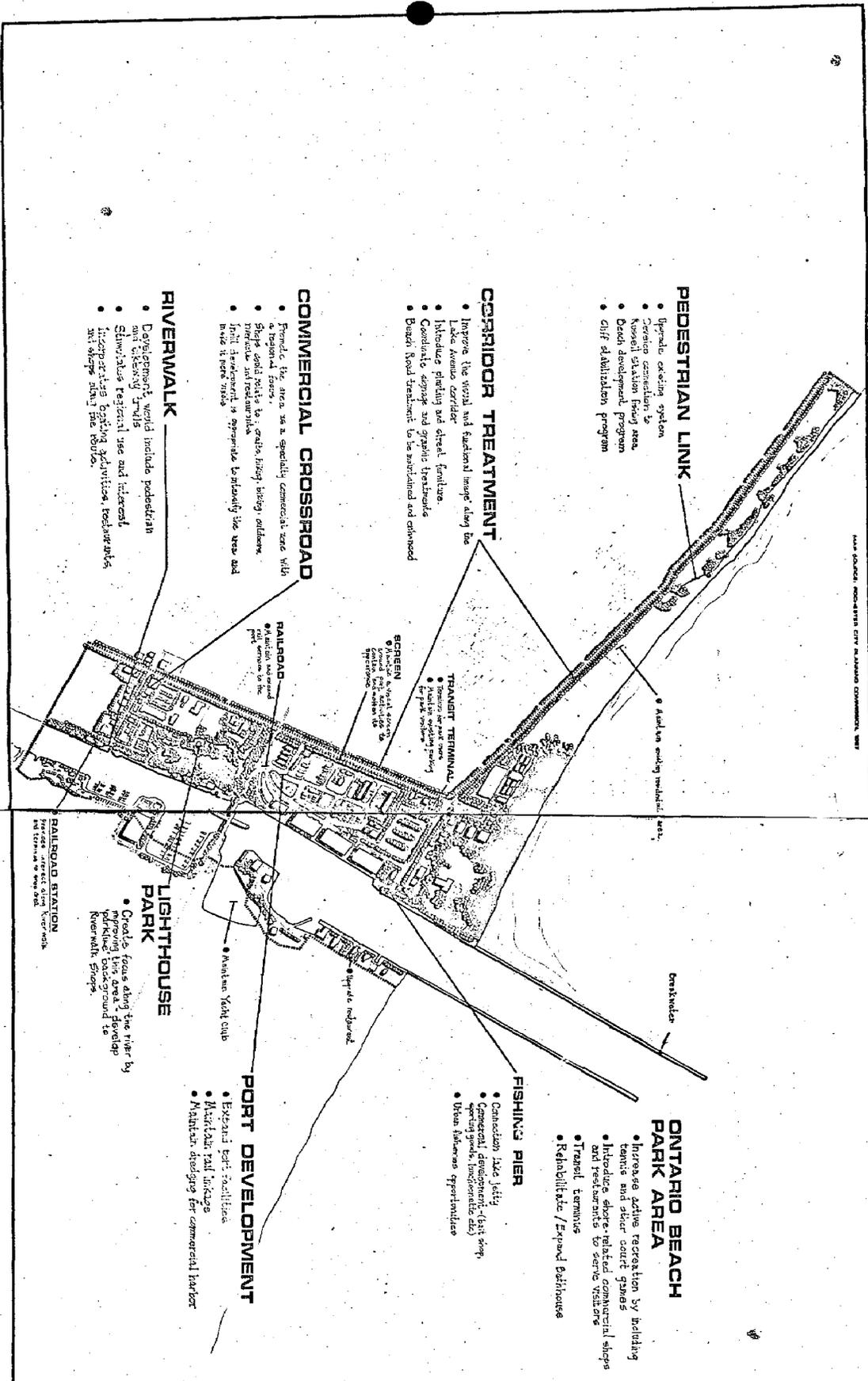
Only minimal design change is proposed in this conservation strategy for Durand Eastman Park. It is recommended that access to the park from Lake Shore Boulevard be designed to reduce and concentrate the number of park entrances. This would allow for better internal park security and permit the establishment of several relatively undisturbed wildlife sanctuary-type areas adjacent to the park ponds. Lake Shore Boulevard would also receive some regrading and landscape treatment. Under a conservation strategy, the shoreline should be available for passive recreation but devoid of any facility development.

Development Strategy - Illustrative Plan

An orientation on the development potentials of the coastal zone area does not imply a total disregard for conservation needs but places a larger environmental stress on the coastal zone by the continued development of the port, commercial growth (in Charlotte and adjacent to the river and lakeshore), and at the potential for higher levels of residential growth. One common aspect with the conservation scheme is the emphasis on recreational development. In contrast with the conservation scheme, public and private open space and natural resource efforts are not actively pursued, except as provided for in current and pending legislation; as a result, the public role and financial commitment are reduced, while private development efforts are promoted.

A schematic representation of this development strategy is presented in the accompanying "Illustrative Plan" graphics.

In direct contrast to the conservation strategy, the development strategy would encourage the expansion of



- PEDESTRIAN LINK**
- Upgrade existing system
 - Create connection to
 - Transit station facing area
 - Beach development program
 - Cliff stabilization program

- CORRIDOR TREATMENT**
- Improve the visual and functional image along the Lake Avenue Corridor
 - Introduce planting and street furniture
 - Coordinate signage and graphic treatments
 - Beach Road treatment to be maintained and enhanced

- COMMERCIAL CROSSROAD**
- Provide the area as a specialty commercial zone with a regional focus.
 - Shop and retail to include high being outdoors
 - Interactive and recreational
 - Initial development is appropriate to intensify the area and bring it new uses

- RIVERWALK**
- Development would include pedestrian and bicycle trails
 - Stimulates recreational use and interest
 - Incorporates existing and new restaurants and shops along the river

- TRANSPORT TERMINAL**
- Provide for a new
 - Transportation
 - For peak volumes

- SCREEN**
- Provide a visual screen
 - Between the
 - And the

- RAILROAD**
- Maintain and expand
 - Rail service to the

- LIGHTHOUSE PARK**
- Create focus along the river by
 - Providing a
 - Parking
 - Background to
 - Kew-Forest
 - Square

- PORT DEVELOPMENT**
- Expand port facilities
 - Maintain rail linkages
 - Maintain docking for commercial harbor

- FISHING PIER**
- Connection Lake Valley
 - Commercial development (fish shops, sporting goods, landscaping, etc.)
 - Urban fisheries opportunities

- ONTARIO BEACH PARK AREA**
- Increase active recreation by building tennis and other court games
 - Introduce shore-related commercial shops and restaurant to serve visitors
 - Transit terminals
 - Rehabilitate / Expand buildings

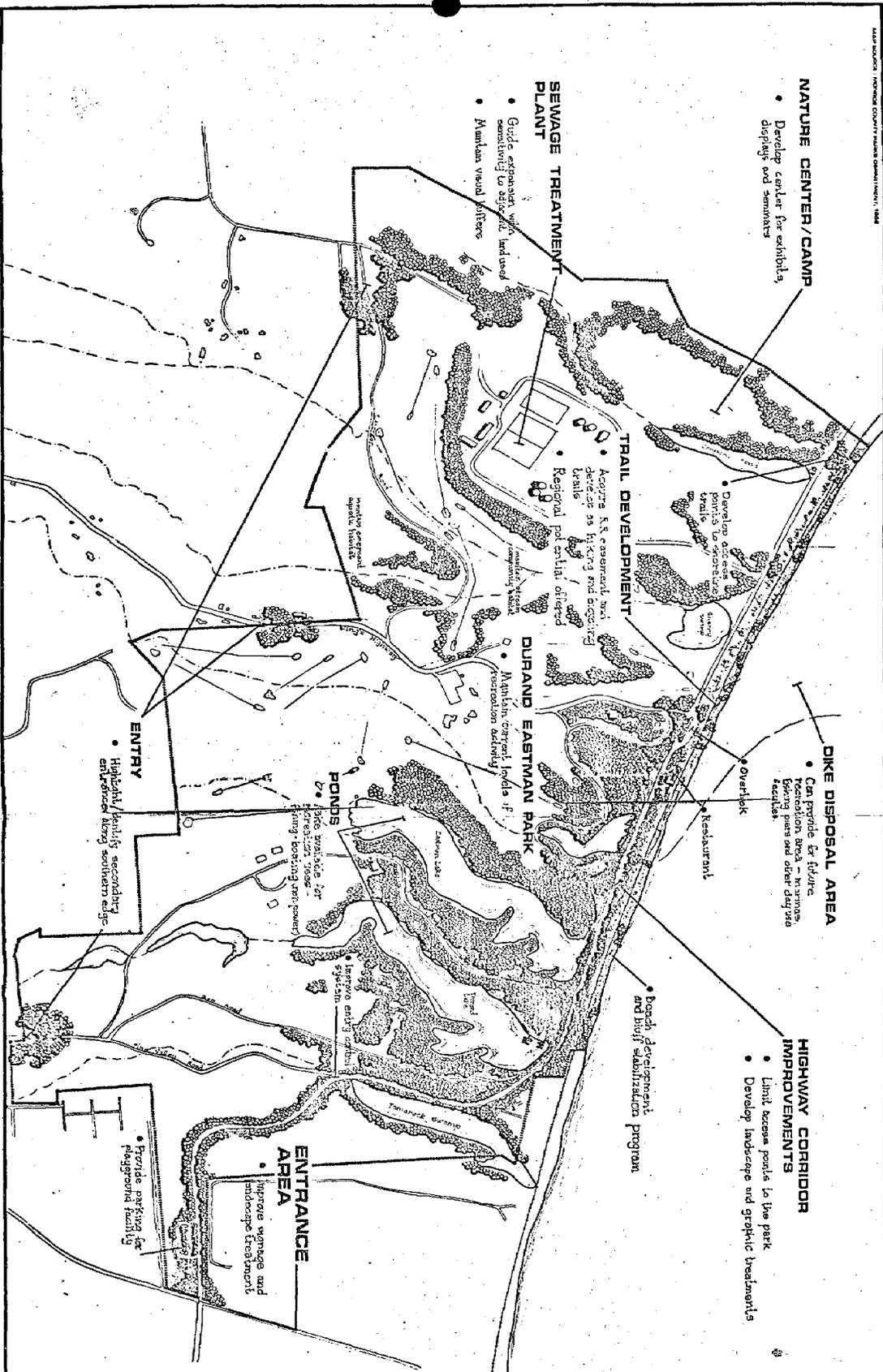
ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY

DEVELOPMENT STRATEGY (ILLUSTRATIVE PLAN)

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLANS INCORPORATED
SARATOGA SPRINGS, NEW YORK 12085
A MEMBER OF
THE SARATOGA ASSOCIATION

SCALE
1" = 2400'
DATE
1987



NATURE CENTER/CAMP

- Develop center for exhibits, displays and seminars

SEWAGE TREATMENT PLANT

- Guide expansion with land use sensitivity to adjacent wetlands
- Maintain visual buffers

TRAIL DEVELOPMENT

- Acquire 5-6 acre parcel and develop as hiking and dog-walking trails
- Regional pet exhibit offered

DURAND EASTMAN PARK

- Maintain current lands if restoration desired

DIKE DISPOSAL AREA

- Can provide for future parking areas - 10-15 acres
- Future parking area after dike disposal

HIGHWAY CORRIDOR IMPROVEMENTS

- Limit access points to five park
- Develop landscape and graphic treatments

• Beach development and bluff stabilization program

PONDS

- One pond site for future development
- One pond site for future development

ENTRY

- Highlight/identify secondary entrance along southern edge

ENTRANCE AREA

- Improve signage and landscape treatment

• Provide parking for passenger facility

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY

DURAND EASTMAN DEVELOPMENT STRATEGY ILLUSTRATIVE PLAN

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLANS INCORPORATED
BARATOGGA SPRINGS, NEW YORK 16865
A MEMBER OF
THE BARATOGGA ASSOCIATES



SCALE
1" = 1000'
GRAPHIC SCALE

the commercial port facilities. While the grounds and facilities would be screened from adjacent uses, port activity would be permitted to increase.

Ontario Beach Park would be rehabilitated to include improved recreational and service-related facilities. The park would serve as the terminus of a rail transit line from downtown Rochester. Another more passive-oriented park would be developed near the historic lighthouse with connections to a riverwalk system and neighborhood commercial center at Latta Street. A riverwalk system and some associated commercial services are also proposed on both sides of the Genesee River at the foot of the harbor breakwaters.

In this strategy the shoreline at Durand Eastman Park would be permitted to experience greater development. A formal overlook area, scattered parking areas and a restaurant would be developed on the northern side of Lake Shore Boulevard; all bringing greater focus and access for the Ontario shoreline.

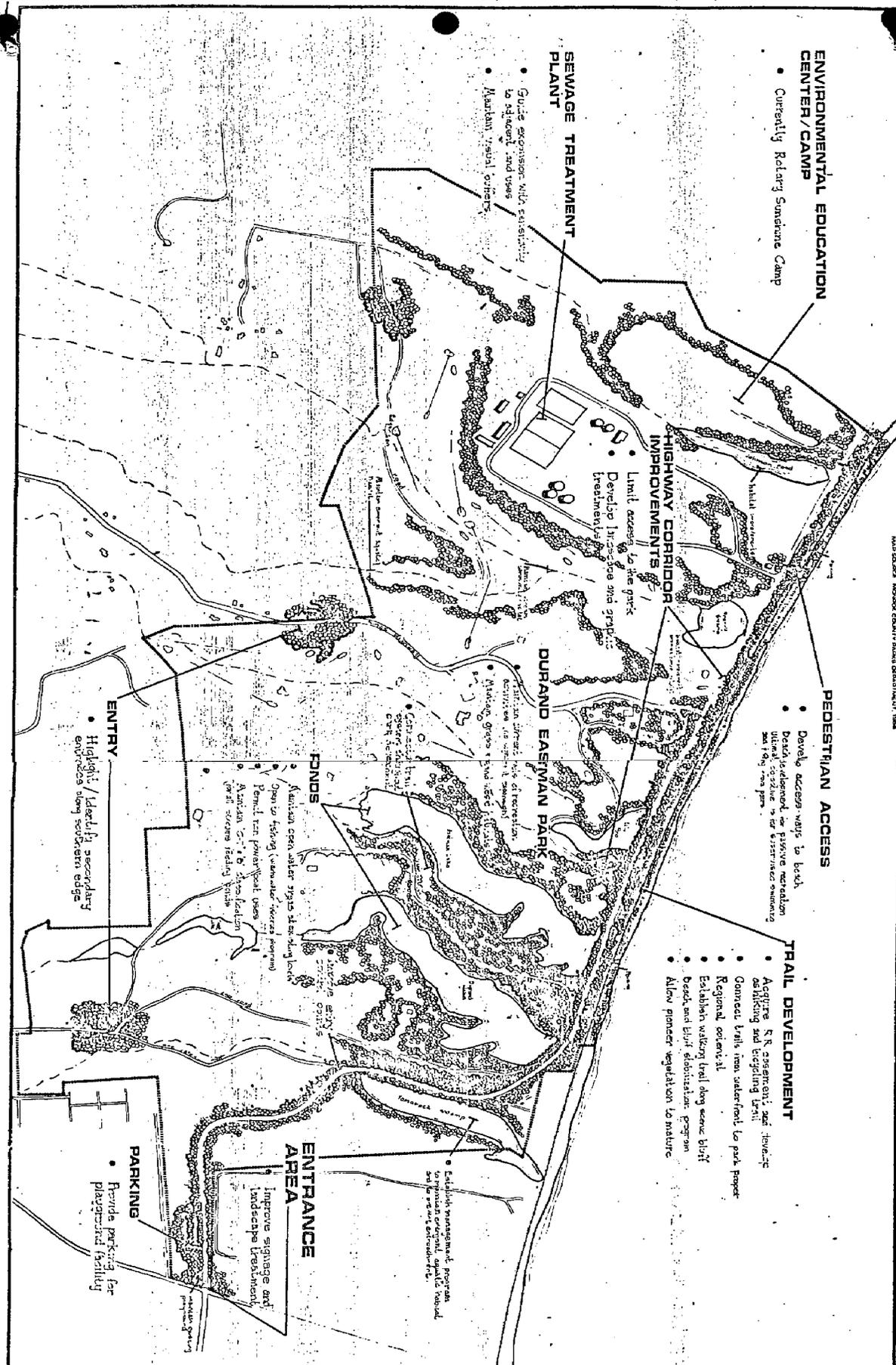
Within the park, Durand and Eastman Lakes would be opened for fishing and limited non-power boating. Furthermore, the day camp facilities adjacent to the sewage treatment plant should be considered for conversion to a nature education center/camp facility.

Balanced Use Strategy - Illustrative Plan

The consolidation of the environmental benefits of the conservation strategy and the economic advantages of the development strategy is the concept behind the balanced use strategy. Basic aspects include identification and management of the major conservation issues (e.g., water quality, public access), shore-related commercial and recreational development which incorporates the non-vehicular circulation and visual elements of the conservation program, an emphasis on recreational development of the river, a de-emphasis of port development, and a low limit to further urban development.

A schematic representation of the balanced use strategy is presented in the accompanying "Illustrative Plan" graphics.

The current port facilities would, in the balanced use strategy, be consolidated so as to occupy only one-half



MAP SOURCE: MONROE COUNTY PLANNING DEPARTMENT, 1988

ENVIRONMENTAL EDUCATION CENTER/CAMP

- Currently Rotary Sunnyside Camp

SEWAGE TREATMENT PLANT

- Guide exposure with restrictions to adjacent and uses
- Maximize visual barriers

HIGHWAY CORRIDOR IMPROVEMENTS

- Limit access to the park
- Develop landscaping and green treatment areas

PEDESTRIAN ACCESS

- Develop access ways to beach
- Detail landscape for passive recreation
- Utilize signage to direct pedestrian movement and way flow

TRAIL DEVELOPMENT

- Acquire S.R. easement; zone historic
- Acquire and improve trail
- Connect trails from water front to park proper
- Regional oriental
- Establish walking trail along scenic bluff
- Beach and bluff stabilization program
- Allow pioneer vegetation to mature

DURAND EASTMAN PARK

POND

- Maximize open water signs at existing lot
- Open to fishing (water after access program)
- Permit non power boat uses
- Allow S.R. to show fishing
- Permit viewing reading benches

ENTRANCE AREA

- Improve signage and landscape treatment

PARKING

- Provide parking for playground facility

ENTRY

- Highlight identify secondary entrances along southern edge

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY

DURAND-EASTMAN BALANCED USE STRATEGY (ILLUSTRATIVE PLAN)

PREPARED FOR: CITY OF ROCHESTER DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY: ECOPLANS, INCORPORATED BARATOGGA SPRINGS, NEW YORK 12688 A MEMBER OF THE BARATOGGA ASSOCIATES



SCALE 1:2000

its current land area. Land to the north and south of the port would be available for a variety of new housing construction. A townhouse development with a small boat harbor and related commercial space is proposed for the northern end of the existing Port Authority land. A lighthouse village housing complex is proposed south of the railroad swing bridge. An extensive riverwalk system would be developed on both sides of the river. As in the development strategy, a neighborhood commercial center would be located at Latta Street.

Facilities at Ontario Beach Park would be upgraded and a shoreline trail to the west developed.

Lake Shore Boulevard corridor improvements similar to those in the conservation strategy are proposed in Durand Eastman Park. Trail and improved access points to the beach would be developed. Durand and Eastman Lakes within the park would be opened to limited bathing and fishing. Finally, development of an environmental education center/camp is proposed at the site of the existing Rotary Sunshine Camp.

ASSESSMENT OF ALTERNATIVES

The judgment as to which strategy is appropriate for the future of the coastal zone must include consideration of environmental and economic costs and benefits which result. In addition, selection of a plan should also reflect the need to accommodate unforeseen opportunities and problems. This need "to keep the options open" is particularly important when the consumption of irretrievable resources, e.g., land, water, wildlife, is involved. To the extent that such resources are consumed, a "no-return" strategy is established. Consequently, it is recommended that actions which refrain from resource consumption be regarded as the base reference for a coastal zone strategy. In other words, it would be "safer" to start with the implementation of the conservation scheme, in terms of conserving natural resources, with the phased release of land for development, as needed. The conservation scheme requires an initial public financing program, however, which may require a more conservative approach.

Thus, the evaluation of costs is an integral part of strategy selection. Each action has some cost

associated with it. There are three criteria for the selection of program actions:

- o Is the action necessary to accomplish the related coastal zone objective, or will the objective be accomplished in the future anyway?
- o What are the total public costs associated with the program action, e.g., the title and maintenance costs associated with the land acquisition?
- o Can the actions be accomplished by private interests, rather than at government expense (e.g., public access corridors)?

As with all planning efforts, the starting point for the evaluation and selection of strategies is an identification of the costs involved in selecting no course of action, in allowing current trends to continue. The environmental and economic costs associated with the "status quo" should be compared with the costs of the strategies described above.

Each of these alternative strategies is recommended as potentially viable and practical. The selection of a preferred strategy revolves basically around value-oriented decisions.

It is our conclusion that the natural and man-made systems operating within the coastal zone can accommodate this wide range of alternatives. Several key indicators generally found in land carrying capacity concepts support this position.

First, it is recognized that the Rochester coastal zone at the north of the Genesee River is primarily an area of high human impact. Today no wetlands or natural estuary configurations are present. The banks of the river furthermore are almost entirely artificial, being lined with bulkheads and marina slips.

Secondly, the intensity of urban uses in the Rochester harbor area has led to the establishment of a well-developed infrastructure of water lines, sewers, highways and rail lines. Within limits such an infrastructure can accommodate greater capacities.

PREFERRED STRATEGY



PREFERRED STRATEGY

RECOMMENDED POLICIES

Presented here is a recommended policy strategy for the Rochester Coastal Zone Study Area. This preferred strategy represents Ecoplans' determination of the most desirable and feasible strategy for the future conservation and use of the coastal zone resources, but should not necessarily be considered as the final policy decision of the City of Rochester or the Coastal Zone Advisory Group.

In summary, this recommended strategy provides a suitable balance of conservation interests and developmental interests.

The location and existing development of the Rochester Coastal Zone Area precludes adoption of a preservation-oriented conservation policy. The term "conservation" implies management action - and, in this particular instance, refers to management actions that will establish the best use of the natural resources available in the coastal area. This includes rehabilitative measures as well as those measures needed to protect natural resources from environmental degradation.

On the other hand, the Rochester Coastal Zone Area represents a zone of considerable interest to both public and private developmental organizations, as is reflected in the pressures for utilization of the area for residential, commercial and industrial activity. Lack of decisive public policies regarding the use of the area could easily lead to uncontrolled development at densities that would cause extensive adverse environmental impacts - which in many ways could destroy the very qualities which make the coastal area attractive for development for human use.

The objective of the recommended strategy is to achieve a proper blend of management policy and action - one which will retain and improve the natural resource qualities and potentials and at the same time permit positive physical, social and economic change.

The recommended policy strategy focuses on the implications of the above general use policy in terms of more specific policies for the management of functional resources and concerns including land, water, port

development, public access, fish and wildlife, erosion control and power generation. The recommended policies for each of these functional resources and concerns follow.

Port Development

General Policy:

- o To provide for a limited level of Port activity commensurate with economic demand and maintain water transport as a viable option for goods and people movement to and from the region.

Specific Area Policies:

- o Reorganizing the port development and management function and integrating the port planning with overall regional transportation plans.
- o Designate current lands under lease to the Port Authority as a coastal area planned unit development.
- o Provision of areas and facilities for the optional use of the port area for recreational small craft.
- o Maintain harbor depths for commercial shipping as currently delineated.
- o Exclusion of bulk goods movement and storage from public port development areas.
- o Provision of visual buffers to separate the port use areas from adjacent residential and park and recreation areas.

Land Use

General Policy:

- o To maintain a balanced mixture of land use activity in the coastal zone.

Specific Area Policies:

- o Maintain low density residential character of the Charlotte community.
- o Prevent further encroachment of non-conforming commercial uses on Lake Avenue and eliminate existing non-conforming uses.

- o Provide a Charlotte Community Center and commercial/institutional district focused on the intersection of Lake Avenue and Latta Street.
- o Provide additional area for new moderate to high density residential development within walking distance of the Community Center, the Genesee River, Ontario Beach Park and existing and planned public transit stops.
- o Provide area for limited light industrial and/or port-related commercial use.
- o Retain existing public park and recreation areas and provision of new public open space areas related to potential public access points and ecologically significant wetlands and other sensitive areas.

Water Resources

General Use Policy:

- o To provide for the upgrading and maintenance of water quality commensurate with the highest and best use of the coastal waters within the best technological means available.

Specific Use Policies:

- o Prevention of pollution of off-shore waters of the Rochester Embayment.
- o Prohibition of possible sources of pollutants of shoreline waters - including diked disposal of dredging spoil and upgrading of shoreline water quality to "B" standards and criteria.
- o Upgrading of the Lower Genesee River water quality to "SB" standards and criteria.
- o Elimination of sources of pollutants in the Lower Genesee and periodic evaluation of trends in water quality conditions.
- o Protection of all ponds in the Durand Eastman Park and establishment of base line water quality data for each pond.
- o Protection of all streams and natural drainage courses tributary to the coastal waters from siltation, pollutants, or other environmental disturbance.

Public Access and Recreation

General Policy:

- o To achieve the full potential for the expansion of public access to all areas of the Rochester Coastal Zone and provide expanded active and passive recreational opportunities in suitable coastal zone areas.

Specific Area Policies:

- o Improvement of Ontario Beach Park as a major active recreational day use area.
- o Provision of linear, pedestrian and/or bicycling public access systems paralleling the Lake edge and both sides of the River shoreline.
- o Provision of linkages between the linear access system and the interior street pattern at frequent intervals, as well as linkages to major activity centers, and visual and historic points of interest.
- o Maintenance of the existing recreational facilities in Durand Eastman Park, as primarily a passive and low intensity active recreational use area.
- o Development of the potential sport fishing resources of the coastal area.
- o Prevention of further encroachment of Durand Eastman Park for public purposes other than recreation and conservation activities.

Fish and Wildlife

General Policy:

- o To protect existing fish and wildlife resources of the coastal zone area and to restore, as possible, natural habitat conditions for native fish and wildlife species.

Specific Area Policies:

- o Protection of all remaining waters, wetlands, and forest habitats from further disturbance and pollution.
- o Improve the classification of fish and wildlife habitat resources on the basis of detailed analysis of

ecological base line data.

- o Provision of wildlife management to ensure optimum population levels through controlled hunting, fishing and trapping programs.
- o Establishment of designated wildlife sanctuary zones in areas of low intensity public use.

Erosion Control

General Policy:

- o To protect the soil and beach resources of the coastal zone and prevent the siltation of waterways.

Specific Area Policies:

- o Preserve and stabilize the existing bluff shoreline areas to protect property.
- o Control erosion in the upland watersheds of Durand Eastman tributaries to preserve environmental quality and prevent siltation of natural or man-made drainage features.
- o Regulate all development and construction activity in coastal zone through legally adopted erosion control measures.

Electric Power Generation

General Policy:

- o To minimize the use of the coastal zone land and water resources for the purposes of electric power generation.

Specific Use Policies:

- o Establish strict controls governing the discharge of thermal water pollution resulting from the Russell and Beebee generating facilities.
- o Prevent the construction of overhead power transmission lines within the coastal zone.

RECOMMENDED DEVELOPMENT PLAN

Presented in this section is a description and discussion of a schematic design representation of Ecoplans' recommended development proposals for the Rochester Coastal Zone. The proposed land use activities and resource treatment/management programs for each of the major elements of design will be discussed.

Plan for the Mouth of the Genesee River

o Lake Avenue Corridor

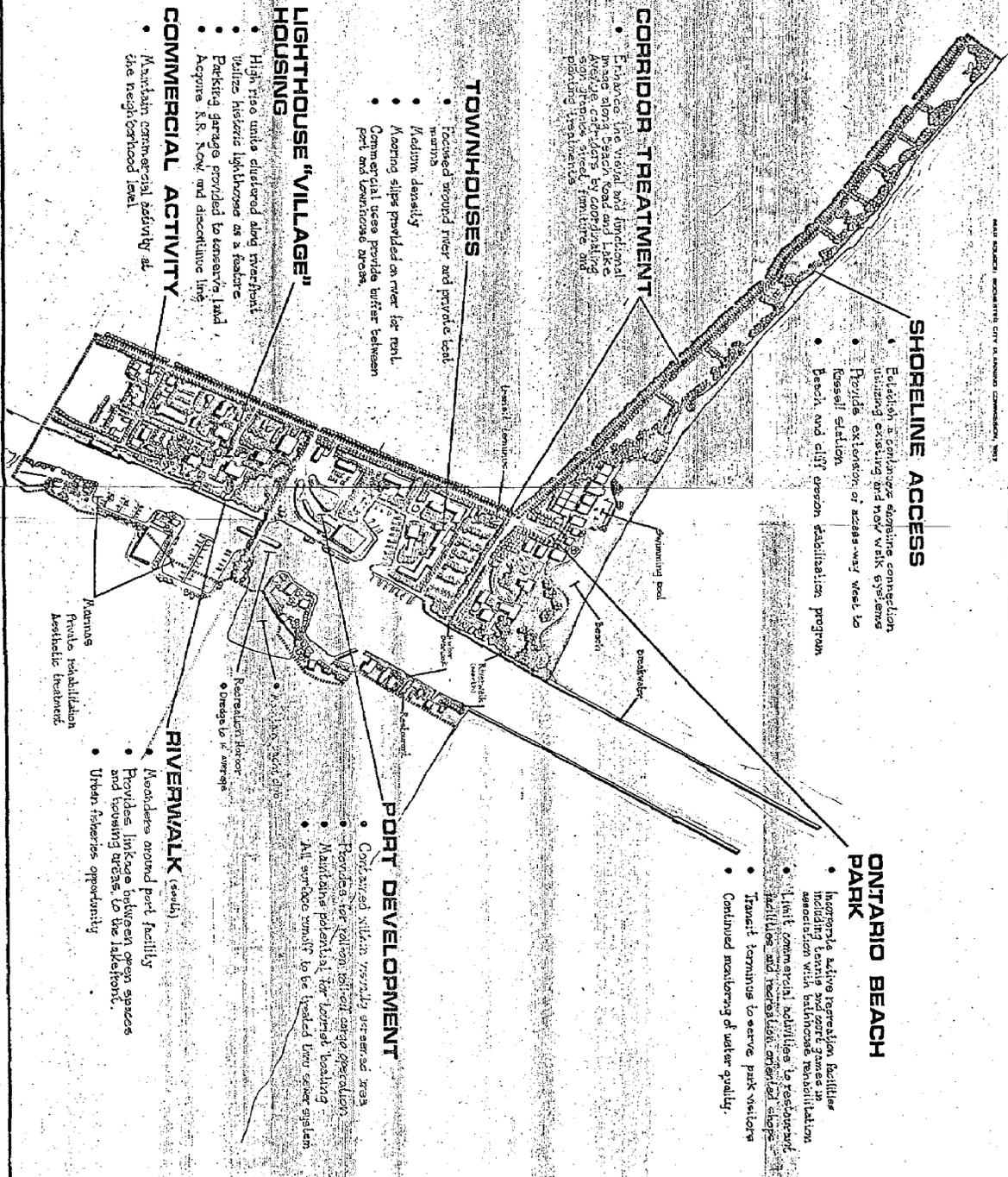
One of the most significant elements within the Rochester Coastal Zone area is the transportation or movement corridor along Lake Avenue. This activity spine provides the most direct connection between the Rochester CBD and the Lake Ontario Shore, generally paralleling the Genesee River. Its importance will be reinforced in the future since Lake Avenue is proposed as a corridor for a light rail rapid transit facility.

Lake Avenue is currently serving a wide variety of uses from manufacturing and commercial to residential. The visual impact to one passing through the corridor is one of disorder and in need of organization. A treatment is proposed along the corridor which would include: a street tree planting program; coordination of signage on storefronts and entrance drives; introduction of benches, trash receptacles and other street furniture; establishment of pedestrian shelters and kiosks at key locations along the avenue and coordination of lighting fixtures. Such a corridor treatment would lend itself to a short-term or phased self-improvement programs and is therefore dealt with as an early item in the action program.

The corridor treatment is envisioned as a unique physical expression which will enhance the area's image, improve its function and thereby benefit area residents as well as the commercial enterprises.

o Beach Avenue Corridor

Beach Avenue forms a secondary corridor parallel to Lake Ontario and extends the vehicular and pedestrian connection from the terminus of Lake Avenue



CORRIDOR TREATMENT

- Enhance the visual and functional image along Beach Road and Lake Avenue corridors by coordinating sign, phone, street furniture and parking treatments.

TOWNHOUSES

- Focused around river and private boat moorings
- Medium density
- Mooring slips provided on river for rental
- Commercial uses provide buffer between port and townhouse areas.

LIGHTHOUSE "VILLAGE" HOUSING

- High rise units clustered along waterfront
- Utilize historic lighthouse as a feature
- Parking garage provided to conserve land
- Acquire K.R. Now and discontinue line

COMMERCIAL ACTIVITY

- Maintain commercial activity at the neighborhood level

SHORELINE ACCESS

- Establish a continuous shoreline connection utilizing existing and new walk systems
- Provide extension of access-way west to Russell station
- Beach and cliff erosion stabilization program

ONTARIO BEACH PARK

- Increase active recreation facilities including tennis and game courts in relation association with bathhouse rehabilitation
- Limit commercial activities to restaurant facilities and recreational oriented shops
- Transit terminals to serve park visitors
- Continued monitoring of water quality.

PORT DEVELOPMENT

- Consolidated within vertically oriented areas
- Provide for rail and ship cargo operations
- Mandate potential for long-term loading
- All surface runoff to be treated thru sewer system

RIVERWALK (canal)

- Mandates around port facility
- Provides linkage between open spaces and housing areas, to the Lakeshore.
- Urban fisheries opportunity

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY

PREFERRED STRATEGY (ILLUSTRATIVE PLAN)

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
SCOPLANS INCORPORATED
BARATCOA SPRING, NEW YORK 10968
A MEMBER OF
THE BARATCOA ASSOCIATES



SCALE
1:6400

west toward the Town of Greece. A treatment similar to that proposed for the Lake Avenue corridor is recommended for Beach Avenue. The Beach Avenue area is essentially single-family residential in character and much of it is currently planted with street trees. It is recommended that a program be established to reinforce and maintain the street trees and that they be introduced in areas where there are none existing. The sidewalk development along the north side of Beach Avenue is currently incomplete and requires connecting sections. In addition, the incorporation of benches, pedestrian scaled graphics, kiosks and trash receptacles would further reinforce the character and use of the street.

Connections can be developed from Beach Avenue to the existing shoreline walk system as indicated on the plan. The rights-of-way are extensions of the existing street pattern and only require physical development of walks, steps and planting.

The shoreline walk system currently exists only along the westernmost section of the shoreline. It is recommended that the pedestrian system be completed to the Ontario Beach Park thus providing a continuous shoreline walk from the Genesee River west to the City limit. Future plans should also be developed to continue this system westerly to the Russell Station area, a popular fishing point.

o Ontario Beach Park

Efforts must continue on a local and regional basis to upgrade the quality of the lake in order that facilities such as this park, which focuses primarily on Lake Ontario, may begin to properly serve the public. The park has been closed to bathers for a number of years. In order to utilize the existing facilities and stimulate interest in the shore it is recommended that the bathhouses be renovated and that an outdoor swimming pool be developed. Such a development could serve as a nucleus of new activity and renewed interest in the park. A further expansion designed to promote use would include popular court games such as tennis or paddle tennis.

Once a renewal of interest in the area is established, it is proposed that several shops and restaurants be encouraged to lease space within the park. These shops and restaurants should be related to

both the active recreationists as well as to the passive recreationists who can be expected to visit the park. The following shops could be included: tennis/swim shop; hiking equipment; souvenirs; fast food and full-service restaurant.

The Beach Avenue terminus at the Genesee River should be clearly developed with a vehicular cul-de-sac which separates cars from pedestrians and provides an appropriate area for a pedestrian overlook. The area is well suited as an overlook since fine views upriver to the yacht basins and to the river mouth are available from this vantage point. Successful development can be limited to the introduction of shade trees, benches and railings for the safety of the public. This overlook area could also provide for a bait/fishing tackle shop to serve the fishermen which also frequent this portion of the park. It is recommended that a "riverwalk" be developed along the entire Genesee River edge of the park to provide walking and fishing access along the river as well as providing a connection between the overlook and the beach and breakwater.

The major parking area which serves Ontario Beach Park should be upgraded by improvement to the circulation pattern, coordination with the Beach Avenue cul-de-sac and the introduction of shade trees and perimeter earth mounds and screen planting.

A transit terminal is recommended to be located at Lake and Beach Avenues where it can serve the park population as well as the marina housing and other nearby residential areas.

o Marina Townhouses

The northern portion of the Port Authority facilities is recommended to be developed for medium density housing, commercial and recreational uses. The northernmost area would be developed for approximately 60 units of townhouses or garden apartments. Their primary focus would be the Genesee River and the marina and secondarily upon the interior courts formed by the configuration of the buildings. Vehicular access would be provided from Lake Avenue while pedestrian connections would be provided both to the Lake Avenue corridor and to the "riverwalk" along the Genesee River.

o Marina

The marina focal point will serve the residents of the adjacent townhouses as well as provide for private rentals. Mooring slips are provided along the river in addition to those within the off-river marina. Approximately 150 boats can be accommodated in the facilities described in the plans. This shelter marina affords an opportunity to include a boat launch ramp facility.

It is envisioned that commercial services can provide a buffer and transition between the marina and townhouses and the port facility. Some of these commercial facilities would be directly related to the marina and include fishing facilities, repair services and storage for boats. Additionally, food service, drugs and restaurants would be available for boaters and other visitors to the area. The "riverwalk" system should traverse the perimeter of the marina and offer access to the boat piers as well as the shops.

o Port Facilities

In recognition of the potential which exists for some degree of port operation (currently under study), the southern segment of the existing Port Authority lands is recommended to be devoted to consolidated port use. This portion of the port relates directly to the rail services which exist along the port's southern edge. The consolidated port operation is proposed to utilize one of the warehouses on the site and approximately six acres of open yards accessible to both rail and road via Lake Avenue. Depending upon a revised future operation and related program needs, several building sites are available to supplement the warehouse, if required. The potential for a roll-on, roll-off cargo operation has been suggested and it is estimated that it can operate reasonably within the remaining storage yards. Another potential associated with the port and perhaps in combination with the roll-off cargo operation is the operation of a passenger day-liner which could handle tourists between Rochester and Toronto. Such a use would provide a unique attraction to the riverfront area as well as a profitable commercial venture. The northern end of the port warehouse building near the mouth of the marina provides an ideal site for docking of the passenger ship and group fishing charter boats where it is convenient to both the commercial shops and

the riverwalk system. The northern edge of the consolidated port facilities should be defined by an earth mound screen and planting which would clearly separate the marina commercial facilities from the port operations. A similar planting screen is recommended for incorporation along the Lake Avenue side of the port facility. The existing railroad would define the southern edge.

o Lighthouse Park Housing

An opportunity exists along the area immediately south of the railroad for high density housing and passive recreation. It is recommended that four high-rise towers of housing (100 units per tower) be established for development of this area. The residential complex could take advantage of the unique riverfront location which provides panoramic views to the river and the lake as well as the interesting activity of the marinas and the port operation. Direct vehicular access is provided from Lake Avenue and parking is provided in a garage structure and within the lower levels of the tower units. Pedestrians will be provided rapid transit by the nearby transit terminal. Further connections to the Genesee River "riverwalk" are offered to the housing development.

The river side of the housing complex is largely an open space which provides a park-like setting and transition to the Genesee River as well as a reasonable buffer to the railroad along the north. An historical architectural focal point, the old lighthouse, can be maintained near the center of this facility while allowing for public access, both vehicular and pedestrian along Lighthouse Street. Direct pedestrian connections are proposed from the housing and lighthouse areas to both Lake Avenue and the riverwalk system.

o Latta Road Commercial

The existing commercial crossroads located at Lake Avenue and Latta Road should be reinforced to serve the neighborhood as it is proposed and some infill development will be required to provide the convenient shopping needs of the Lighthouse Park housing areas. Latta Road allows for a logical commercial extension from the Lake Avenue crossroad to the riverwalk where activities can terminate at the

railroad station which is recommended to be retained and rehabilitated.

This area also provides the second location within the Rochester Coastal Zone for a transit stop along its route from Ontario Beach Park to the CBD.

- o Riverwalk

The pedestrian system referred to throughout this discussion, is proposed to be developed along the entire length of the Genesee River, interrupted only by the port facilities and perhaps then only intermittently, depending upon the ultimate program. This system would provide for both pedestrians and bicycles and can be characterized as separate hard surfaced trails and walks, occasionally shaded by trees and protected at the river edge by a railing. The walks would be expanded occasionally to provide for seating areas offering views to the various river activities. Services including shelters, informational signage, kiosks and telephone should also be included at regular intervals along the riverwalk. Connections from all of the adjacent land uses should be encouraged to promote the system to realize its fullest potential.

As the Genesee River Plan in the areas south of this study area materializes, extensions of the riverwalk should be considered as an early element of implementation.

- o East Shore

Advantage should be taken of the river frontage currently in public holdings to provide public access along the east shore of the river. The few commercial parcels including a restaurant should be encouraged to be improved and serve to attract visitors from the nearby yacht club and the adjacent residential neighborhoods. The riverwalk should provide a connection to the breakwater for the use of fishermen. Future plans should consider extending pedestrian access from the riverwalk east along the Lake Ontario shore to the Durand Eastman Park.

Plan for Durand Eastman Park

- o Lakefront

The beach area affords excellent opportunities for passive recreation. The beach is narrow and intensive active recreation is not feasible unless large

sums of monies were expended to fill and widen the beach. However, with only minimal treatment the beach can be utilized for strolling, birdwatching, informal picnicing, unsupervised swimming and perhaps even duck hunting during the early winter months.

Several access points to the beach from small parking lots along Lake Shore Blvd. should be developed and formalized. Such access points can be established with a minimal amount of regrading and construction of physical structures.

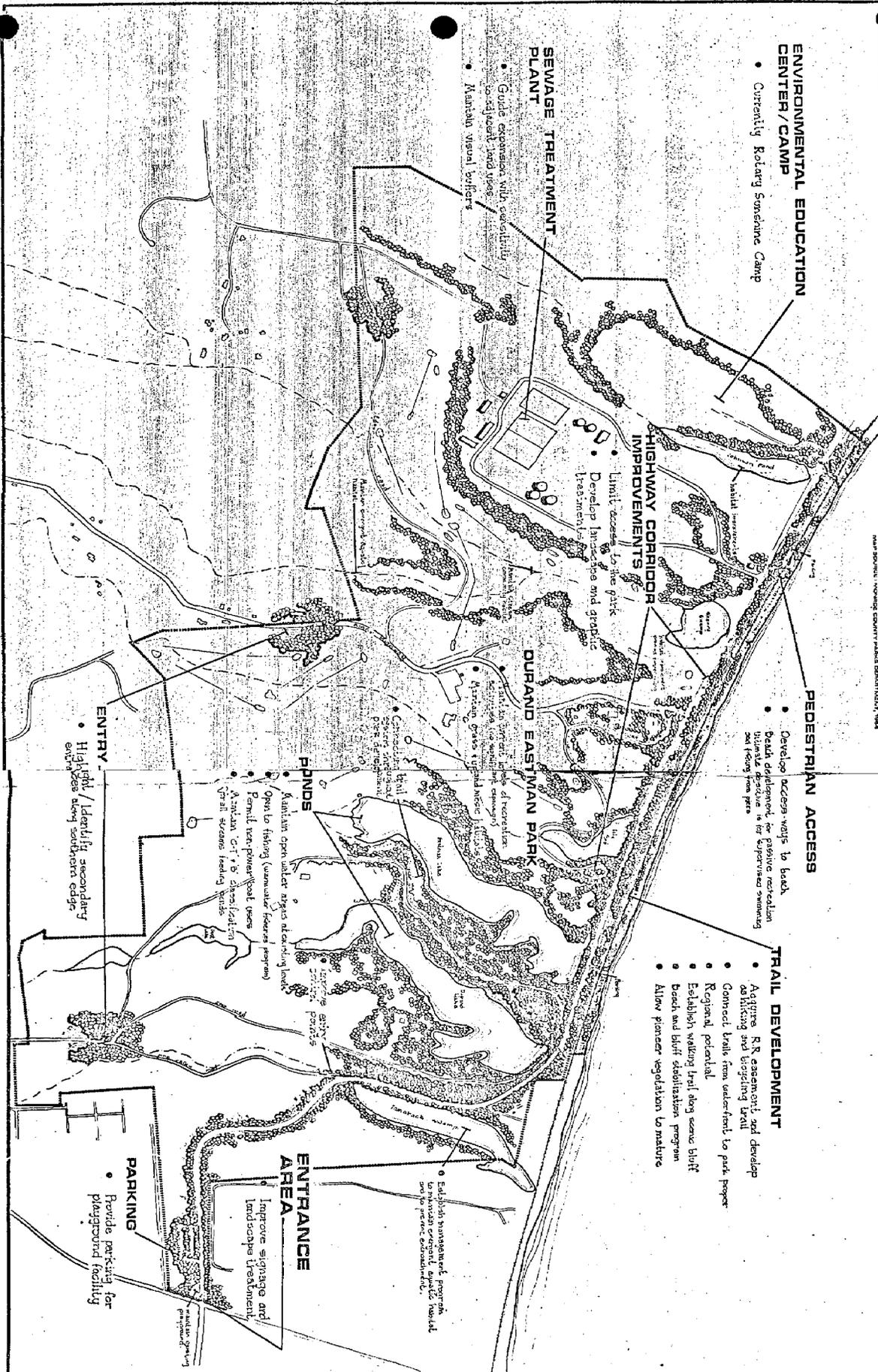
The unused Hojack railroad line should be abandoned and transformed into a linear trail/bikeway system extending from the Genesee River to Irondequoit Bay. Various vantage points along this trail present excellent vistas overlooking Lake Ontario. Short side trails leading off from the railroad bed to the higher bluff areas should be developed to capture the unique vistas.

A bluff and beach stabilization program should be established along the entire length of the shoreline to retard the current erosion and cliff undermining.

o Lake Shore Blvd. Corridor

The area along Lake Shore Blvd. recently disturbed by the construction of a sewer line should be landscaped to improve its general appearance and to reinforce the natural motif of Durand Eastman Park. Two or three small parking lots for 25-30 cars should be developed on the north side of Lake Shore Blvd. at beach and trail access points. In association with these parking areas and trailheads, clearly identified crosswalks should extend across Lake Shore Blvd. to safely link pedestrian traffic from the Park interior to the shorefront.

It is recommended that vehicular access to the park be better controlled for improved traffic safety and park security. Along Lake Shore Blvd. the existing six park entrances should be reduced to two focal points, King's Highway and Pine Valley Road. Entrances at Sunset Point Road, Horseshoe Curve Drive, Log Cabin Road and Zoo Road should be closed and where possible linked to an interior park circulation system. To accommodate the increased traffic at the primary park entrances traffic lights and/or acceleration/deceleration lanes are required.

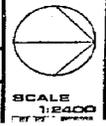


ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY

DURAND - EASTMAN PREFERRED STRATEGY (ILLUSTRATIVE PLAN)

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLAN INCORPORATED
MARATOGA SPRINGS, NEW YORK 12556
A MEMBER OF



The secondary entrances along the southern and eastern approaches to the park should be physically improved to establish an increased "sense of arrival" and to facilitate park security.

A coordinated, attractive and informative graphic system should be developed for vehicular traffic along Lake Shore Blvd.

o Park Interior and Ponds

No significant change or expansion of current levels of recreational activity is recommended in the preferred strategy plan. These existing recreational activities include: picnicing, golfing, hiking and cross-country skiing. The high quality of current maintenance and operation, of course, should continue in the park.

A management program for control and protection of the existing deer herd in the park vicinity should be considered. Such a program might provide for a short bow hunting season within the park.

The pure water sewage treatment plant may in the future need to expand its facilities. Any expansion should only occur under strong environmental and aesthetic guidelines.

To the east of the sewage treatment plant lies a day camp facility. The opportunities presented by the topography, its physical structures and its geographic separation from other park activities suggests that greater utilization should be made of facilities, such as an improved and expanded day camp or even an environmental education and research center/camp. A nature trail system in Durand Eastman Park should be planned and developed in conjunction with the latter proposal.

The following is a brief description of plans for the water bodies and wetlands within the park.

Tamarack Swamp - This cattail marsh should be preserved as a sanctuary area. A management program should be developed to maintain the emergent aquatic habitat principally preventing further vegetative encroachment.

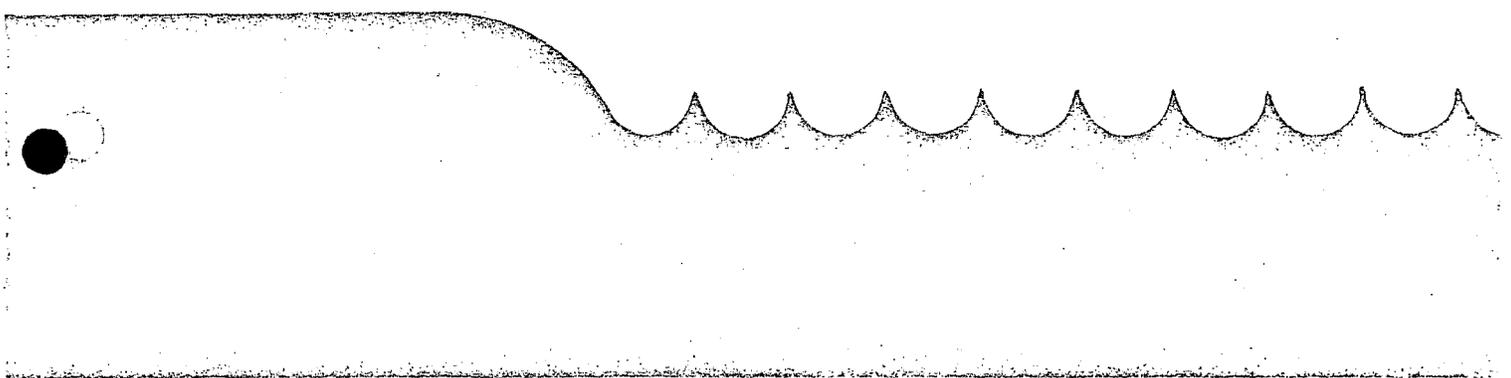
Durand Lake and Eastman Lake - These water bodies should be opened on a limited and controlled basis, for some recreational activities. Small boat docks and a rental concession for canoes and rowboats could be established at the northern end of each lake. Fishing would then be permitted on the lakes and from certain points along the shore.

In order to maintain a constant water level to protect shoreline vegetation more adequate outflow control structures should be constructed.

Lily Pond - This emergent aquatic habitat should be preserved as a sanctuary area with a management program to prevent further vegetative encroachment.

Sherry Swamp and Johnson Pond - A management program for waterfowl habitat improvement should be developed for these ponds. In addition they should be designated as sanctuary ponds.

**MANAGEMENT
AND DEVELOPMENT
ACTION PROGRAM**



MANAGEMENT AND DEVELOPMENT ACTION PROGRAM

GENERAL RECOMMENDATIONS

The policy and development plan component of the previous section presented "what" the recommended coastal strategy should accomplish. This management and action program document presents the means for implementing that policy and plan.

The Management Action Program consists of several parts:

- o Description of a management structure for implementing coastal zone strategy.
- o Organizational, administrative management and specific action programs for establishing intergovernmental coordinates and communication mechanisms, and develop capital and operating programs and regulatory approaches for legal control.
- o Effectuation Actions showing the priority, funding source and schedule for the implementation of the recommended Specific Program Actions.

The Development Action Program presents the means for implementing Ecoplan's recommended development or illustrative plan.

The following three general recommendations establish the foundation for the Management and Development Actions programs.

Recommendation
#1

We recommend the Genesee Finger Lakes Region Coastal Zone Policy Committee be established to coordinate the coastal zone policy planning of the Genesee Finger Lakes Regional Planning Board, Orleans, Monroe, and Wayne Counties and the coastal municipalities including the City of Rochester. In addition to representatives from these units, the Policy Committee should include representation from the Federal Government Departments of Commerce and Interior, and the U. S. Corps of Engineers, Environmental Protection Agency and the USDA Soil Conservation Service; and from the New York State Department of State, Environmental Conservation, and

Transportation, Parks and Recreation, as well as N. Y. State Public Service Commission.

Recommendation
#2

Within the overall regional coastal zone area, we believe the Rochester Coastal Zone represents a unique resource and should receive high priority in terms of planning. In this area, the basic concern is remedial and rehabilitative rather than preventative. Its central location, high accessibility and existing development--resulting in its intensive use--requires more detailed policy and program planning, and a higher level of financial commitment than the less developed, outlying areas of the regional coastal zone.

Recommendation
#3

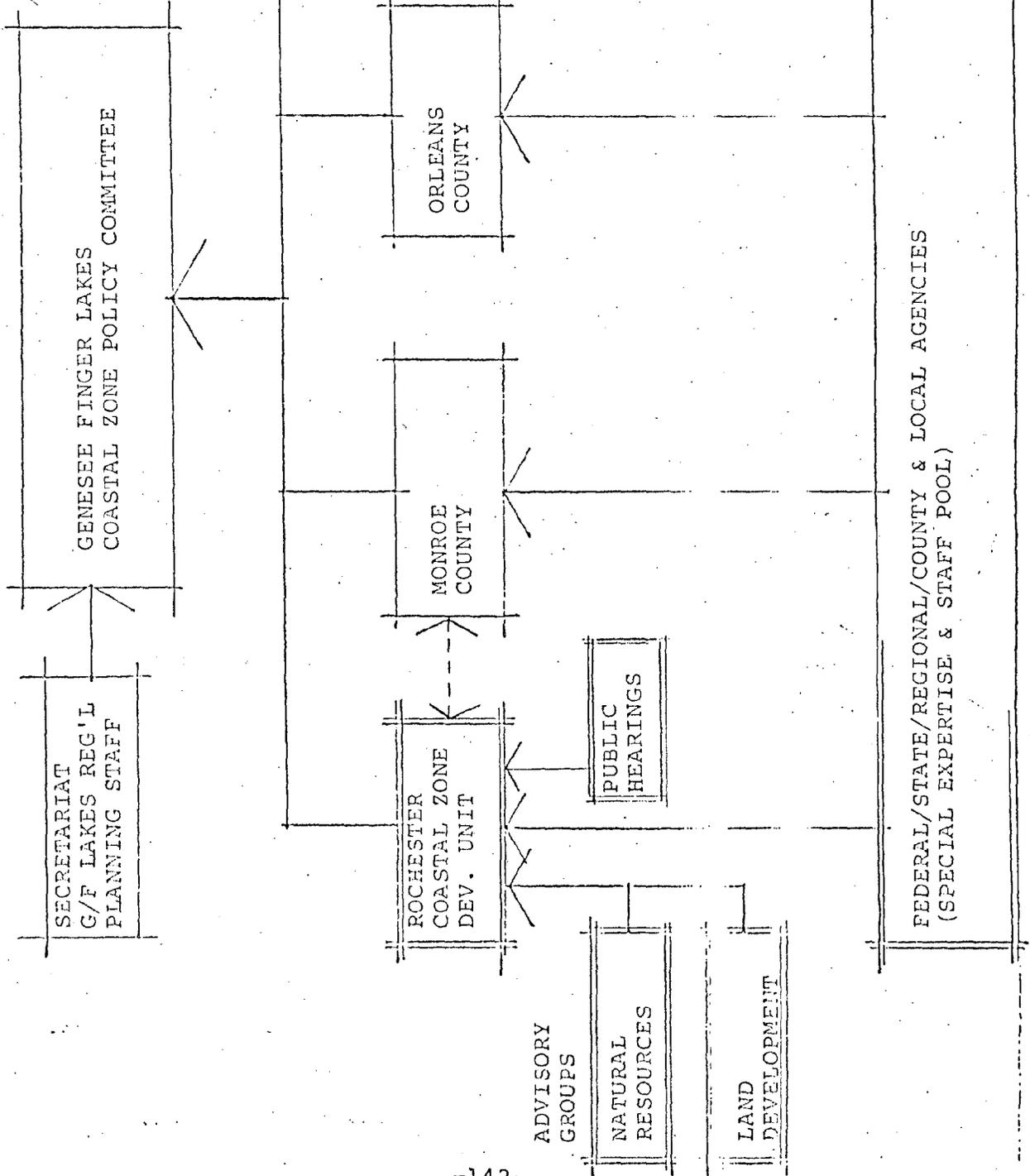
The relationship of the Rochester Coastal Zone with the region's major river body--the Genesee--is another aspect of considerable concern. We recommend that future coastal zone program sponsorship of policy and program planning in this area must take greater cognizance of the Genesee River as a major coastal zone resource, and we recommend that the coastal zone boundary definition be amended to include at least that portion of the river that extends to the Lower Falls.

MANAGEMENT ACTION PROGRAM

Management Structure

An objective of this Coastal Zone Management Program is to establish a clearly defined administrative coordination and review process to implement coastal zone policy. The coastal zone does not suffer from a lack of management activity, for there are many federal, state, regional, county and local agencies operating programs within the Rochester Coastal Zone. Rather the problem is perceived as insufficient coordination and concerted effort. The primary intent of this management program is thus not to reduce or eliminate the authority or activity of any one agency but to coordinate and increase communications between them.

A schematic representation of this coastal zone management concept is presented in the accompanying graphic.



The development of specific management programs for the various functional activities remain with the individual federal, state, regional, county, local and private groups. For the management process each are asked to establish liaison with a newly created Rochester Coastal Zone Development Unit within the Rochester Department of Community Development. This liaison is principally a communication channel that permits and encourages information flows in both directions. As an agency develops its specific plans and programs for the Rochester Coastal Zone, it should report on progress and specific decisions to the Rochester Coastal Zone Development Unit and vice versa. Mandatory liaison and reporting would involve legal and legislative difficulties. It is hoped that a voluntary, but officially designated liaison system would work, and at the same time involve minimal operational expenses.

The Rochester Coastal Zone Development Unit is envisioned as a special but permanent staff unit within the Department of Community Development, charged with initiating and reviewing management programs within an expanded Rochester Coastal Zone Area. This unit could either be established within the Departments of Bureau of Planning or Bureau of Redevelopment. Staffing would normally require only one or two personnel.

The unit would establish contact with a liaison from the other principal governmental agencies having projects or programs effecting the Rochester Coastal Zone. This unit might publish periodic newsletters reporting on activities of itself and other agencies.

As an arm of Rochester's Development Agency, this unit would be responsible for operating specific coastal zone development plans and policies. For specific development projects within its jurisdiction, the unit would seek developers and/or project funding. In addition, the unit would develop boundaries and criteria for specific development actions.

To assist the Rochester Coast Zone Development Unit in its activities, there would be the newly formed technical advisory groups; one with natural resource expertise and concerns, and another with physical, social and economic land development expertise. The technical advisory groups might meet monthly to review specific program proposals submitted by the coastal zone development unit. The groups would be composed of staff representatives from various government agencies.

The formation of two technical advisory groups are recommended because of the basic and often conflicting subject matters. It will remain the task of the coastal zone development unit to resolve separate and conflicting advice.

The Natural Resource Advisory Group might include representatives of the following agencies:

- o Rochester Environmental Management Council
- o Monroe County Environmental Management Council
- o Monroe County Department of Health
- o Monroe County Pure Waters
- o New York State Department of Environmental Conservation
- o U. S. Army Corps of Engineers
- o U. S. Environmental Protection Agency
- o U. S. Department of Agriculture - Soil Conservation Service.

The Land Development Advisory Group might include representatives of the following agencies:

- o Rochester Department of Parks and Recreation
- o Rochester Department of Public Works
- o Rochester-Monroe County Port Authority
- o Monroe County Water Authority
- o Monroe County Department of Public Works
- o Monroe County Department of Planning
- o Monroe County Department of Health
- o Monroe County Pure Waters
- o Rochester-Genesee Regional Transportation Authority
- o N. Y. State Department of Transportation
- o N. Y. State Public Service Commission
- o Genesee/Finger Lakes Regional Planning Staff.

To further assist the coastal zone development unit, liaisons with community and citizen interest groups should be established. Public hearings should also be held early in the program development process.

The Rochester Coastal Zone Development Unit might serve adequately as a model for the establishment of similar units within the County Planning Departments of Monroe, Orleans, and Wayne. Specific management structures within each of these counties are currently being evaluated within their respective coastal zone studies. In any case, the Rochester Coastal Zone Development Unit should establish immediate and close liaison with the Monroe County Department of Planning.

To coordinate all coastal policy planning activity within the region, we propose the establishment of a Genesee/Finger Lakes region coastal zone policy committee. This committee might include representatives of the following groups:

- o Genesee/Finger Lakes Regional Planning Board
- o Wayne County Planning Board
- o Orleans County Planning Board
- o Monroe County Planning Board
- o Rochester Coastal Zone Development Unit
- o U.S. Department of Interior
- o U.S. Department of Commerce
- o U.S. Army Corps of Engineers
- o U.S. Environmental Protection Agency
- o U.S. Department of Agriculture - Soil Conservation Service
- o N.Y.S. Department of Environmental Conservation
- o N.Y.S. Department of Parks and Recreation
- o N.Y.S. Public Service Commission

This policy committee could perhaps make arrangements with the Genesee/Finger Lakes Regional Planning Board for the assistance of the latter's planning staff for periodic staffing requirements.

Organizational, Administrative Management, and Specific Action Program

Port Development Program:

- o Organizational and Administrative Management Actions
 - PDO-1 Abolish the Rochester-Monroe County Port Authority.

PDO-2 Establish a Port Development unit within the Rochester Genesee Regional Transportation Authority to integrate port development and planning with other regional transportation plans and programs.

PDO-3 Designate a staff member of the Port Development unit as liaison to the Rochester Department of Community Development Coastal Zone Development Unit.

o Specific Program Actions

POP-1 Prepare a comprehensive economic market demand analysis of port requirements of the Genesee Finger Lakes Region.

POP-2 Evaluate alternate economic and site location strategies for the provision of port development facilities including bulk and general cargo, passenger ferry service, fishing and recreational needs.

POP-3 Coordinate study findings with the U. S. Corps of Engineers and New York State Department of Transportation.

POP-4 Conduct public hearings to present and review alternative and recommended strategies for port development.

POP-5 Evaluate community response and prepare and periodically update a master plan for the capital construction and operation of port facilities.

POP-6 Evaluate alternate strategies for the financing of required port facilities and for the day to day operational management of the port.

POP-7 Draft and secure federal, state and local legislation as required.

Land Use Program:

o Organizational and Administrative Management Actions

LUO-1 Designate a member of the Monroe County Planning Department as liaison to the Rochester Coastal Zone Development Unit.

LUO-2 Designate a member of the Genesee-Finger Lakes Regional Planning Board staff as a liaison to the Rochester Coastal Zone Development Unit.

LUO-3 Establishment of a Rochester Coastal Area Land Development Advisory Committee to assist the Rochester Department of Community Development Coastal Zone Development Unit.

o Specific Program Actions

LUP-1 Conduct public meetings to present and review the alternative and recommended management strategies for the Rochester Coastal Zone Area.

LUP-2 Evaluate community response and prepare and periodically update a land use plan for the Rochester Coastal Zone Area.

LUP-3 Preparation of a planned area development renewal program and market analysis for the lands occupied by the Port Authority.

LUP-4 Preparation of a planned area development program and market analysis for the Charlotte Community Center area.

LUP-5 Completion of land acquisition for the Genesee River Wilderness Park.

LUP-6 Feasibility evaluation of spot acquisition program to eliminate non-conforming uses along Lake Avenue.

LUP-7 Activation of zoning ordinance changes to provide conformance with the coastal zone land use plan.

Water Quality Program:

o Organization and Administrative Management Actions

WQO-1 Establishment of a Rochester Coastal Area Natural Resources Advisory Committee consisting of representatives of state, county and local agencies, to assist the Rochester Department of Community Development Coastal Zone Development Unit.

o Specific Program Actions

WQP-1 Prepare a coordinated program for continued periodic water quality testing to

acquire reliable baseline data on agreed-upon parameters from fixed sampling locations in the lower Genesee River, along the immediate Rochester shoreline, off-shore in the Rochester Embayment area, and the ponds and tributary streams of Durand Eastman Park.

- WQP-2 Continued development of predictive water quality models of the coastal zone waters.
- WQP-3 Periodic review and assessment of existing quality classifications of coastal zone waters.
- WQP-4 Advancement of the program to eliminate direct storm drain discharge into the Genesee River and continuation of the program to separate sanitary and storm drain systems serving the coastal areas.
- WQP-5 Provision of more accessible facilities for the discharge of marine holding tanks.
- WQP-6 Promotion of a public Water Quality Awareness Program and the encouragement of voluntary citizen activity in the location and monitoring of pollutant source points.
- WQP-7 Enactment of legal controls to prevent disturbance, degradation and siltation of streams and ponds.
- WQP-8 Continued enforcement of water pollution control and abatement legislation.

Public Access and Recreation Program:

- o Organizational and Administrative Management Actions
 - PARO-1 Designate a member of the Monroe County Parks Department as liaison to the Rochester Coastal Zone Development Unit.
 - PARO-2 Designate a member of the Rochester Parks and Recreation Department as liaison to the Rochester Coastal Zone Development Unit.
- o Specific Program Actions
 - PARP-1 Prepare specific recreational master plans for Ontario Beach and Durand Eastman Parks.

- PARP-2 Negotiate a railroad bed abandon plan with the New York State Department of Transportation.
- PARP-3 Initiation of public acquisition or right of way easement plan for expanded shoreline and riverwalk.
- PARP-4 Conduct public hearing to present and review the access and recreation plans.
- PARP-5 Coordinate with the Monroe County Sheriff's Department and Rochester City Police a public safety and police patrol program for the coastal zone.

Fish and Wildlife Program:

- o Organizational and Administrative Management Actions

- FWO-1 Establish a Rochester Area Natural Resource Advisory Committee as described above.
- FWO-2 Designate a staff member of the New York State Department of Environmental Conservation Region VII as liaison to the Rochester Department of Community Development Coastal Zone Development Unit.

- o Specific Program Actions

- FWP-1 Promote environmental education programs and faculty development within the coastal zone.
- FWP-2 Promote fishery studies for the Genesee River with the Department of Environmental Conservation.
- FWP-3 Identify habitat areas within the proposed expanded coastal zone boundaries.
- FWP-4 Prepare a coordinated program for continued monitoring of habitat areas in Durand Eastman Park in conjunction with stream protection and water quality efforts.
- FWP-5 Initiate a management program for control of deer herd in Durand Eastman Park area.
- FWP-6 Promote waterfowl habitat improvements in water bodies of Durand Eastman Park.

Erosion Control Program:

o Organizational and Administrative Management Actions

ECO-1 Establish a Rochester area Natural Resource Committee as described above.

Specific Program Actions

ECP-1 Adopt erosion and sediment control ordinances after Monroe County's model.

ECP-2 Review and monitor soil and shoreline erosion studies as they become available and promote with Sea Grant broader studies, especially for the development of bluff stabilization programs.

ECP-3 Develop a coordinated program with Town of Irondequoit for erosion control within the Durand Eastman Park Watersheds.

Electric Generation Facilities Program:

o Organizational and Administrative Management Actions

EGFO-1 Designate a staff member of the Rochester Gas and Electric Company as liaison to the Rochester Department of Community Development Coastal Zone Development Unit.

o Specific Program Actions

EGFP-1 Monitoring of program to include solid waste as fuel for the Russell Station power Facility, include the assessment of potential impacts of traffic generation and air emissions.

EGFP-2 Monitor long range plans to replace existing facilities and transmission lines for their potential impact on the coastal zone area.

EGFP-3 Monitor thermal discharges in coordination with water quantities and fisheries development effects.

Priority, Funding and Scheduling of
Organizational and Specific Program Actions

This section further describes the recommended organizational and program action in terms of:

- o Priority To what extent do other actions depend on this action, or are the actions independent activities, or both?
 - N = Necessary to support other future actions.
 - D = Dependent on prior action
 - N/D = Both necessary and dependent

- o Funding What programs are available, and what "avenues" of funding are open to support the actions?

Potential Source of Needed Funding

- F = Federal program available
- S = State program available
- L = Local program available
- P = Other, private or public sources available

Type of Needed Funding

- O = Operational costs, associated with continuous monitoring programs or similar activity.
- C = One-time capital expense, such as for facilities or program initiation.

o Scheduling

What actions are "early actions", as opposed to "follow up" activities and why, and which actions are continuous?

Timing

- I = Immediate action - start-up
- E = Early action; as part of program initiation
- F = Follow-up action, to be set in motion after other actions are started or as data and/or funds are available.

Timing Rationale

Why actions are "early actions" or "follow-up" activities.

- p = Priority, timing of action dependent on need in relation to other actions.
- f = Funding needs determine timing.
- d = Data needs determine timing.

Using the coding described above the following list indicates the priority, funding and scheduling characteristics of recommended program actions.

Action Plan - Priority/Funding and Scheduling

Functional Area	Organizational or Program Actions	Priority	Funding	Scheduling
Port Development	<u>ORGANIZATION:</u> PDO-1 Abolish Port Authority	N/D	NA	Ed
	PDO-2 Establish Port Dev. Unit within Regional Transportation Authority	N	LO	Epf
	PDO-3 Designate staff liaison	N	NA	Ep
	<u>PROGRAM:</u> PDP-1 Port feasibility study	N/D	LO	If
	PDP-2 Evaluation of economic location strategies	N	LO	Ep
	PDP-3 Coord. study finding's With US Corps and D.O.T.	N	LO	Ep
	PDP-4 Conduct public hearing	N	LO	Ep
	PDP-5 Evaluate community response and update plan.	N	LO	EP
	PDP-6 Evaluate financing strategies oper. and capital	N	LO	Ep
	PDP-7 Draft and secure approp. legislation	N	LO	Fpf

Functional Area	Organizational or Program Actions	Priority	Funding	Scheduling
Land Use	<u>ORGANIZATION:</u>			
	LUP-1			
	Designate County Liaison	N	N/A	Ep
	LUP-2			
	Designate Region Liaison	N	N/A	Ep
	LUP-3			
	Establish Land Development Advisory Committee	N/D	LO	Ip
	<u>PROGRAM:</u>			
	LUP-1			
	Conduct public meetings	N	LO	E
	LUP-2			
	Evaluation of community response, update master plan	N	LO	E
	LUP-3			
	Prep. of renewal plan and market analysis for port area	N	LC	E
LUP-4				
Prep. of renewal plan and market analysis for Charlotte Center	N	LC	Fpf	
LUP-5				
Completion of acquisition for Genesee River Wilderness Park	N	LC	Ff	
LUP-6				
Evaluation of non-conforming use elimination program	N	LO	Fp	
LUP-7				
Zoning changes to implement plan	N	LO	Fpd	

Functional Area	Organizational or Program Actions	Priority	Funding	Scheduling
Water Quality	<u>ORGANIZATION:</u> WQO-1 Establish Rochester Coastal Area Natural Resources Committee	N/D	LO	Ip
	<u>PROGRAM:</u> WQP-1 Prepare Water Quality testing program	N	SO	E
	WQP-2 Continue Dev. of Water Quality models	N	SO	E
	WQP-3 Review and Assessment of water quality classification	N/D	SO	Fd
	WQP-4 Continuation of storm drain discharge elimination program	N/D	FSO	Ep
	WQP-5 Improvement of marine discharge capability	D	FSLC	Ep
	WQP-6 Citizen participation program	D	LO	E
	WQP-7 Enactment of legislation (siltation, etc.)	D	SO	F
	WQP-8 Enforcement of regulation	D	SO	F

Functional Area	Organizational or Program Actions	Priority	Funding	Scheduling
Public Access & Recreation	<u>ORGANIZATION:</u>			
	PARO-1 Designate county parks staff liaison	N	N/A	Ep
	PARO-2 Designate city parks staff liaison	N	N/A	Ep
	<u>PROGRAM:</u>			
	PARP-1 Prepare master plans for parks	N	FC	F
	PARP-2 Negotiate for RR R.O.W.'s	N	SLC	Fp
	PARP-3 Public Acquisition	N	FSLC	Ffp
	PARP-4 Conduct public hearings	N	LO	Fp
	PARP-5 Develop public safety program	N	LO	Fp
	Fish & Wildlife	<u>ORGANIZATION:</u>		
FWO-1 Establish Natural Resource Advisory Com.		IN	LO	Ip
FWO-2 Designate DEC staff liaison		N	NA	Ep
<u>PROGRAM:</u>				
FWP-1 Promote Environmental Education		N	LO FSC	Ep
FWP-2 Promote Fisheries Studies		I	SO	Ep
FWP-3 Inventory habitats within expanded zone		N	SO	Ep

	FWP-4 Prepare habitat monitoring program	D/N	SLC	Fpd
	FWP-5 Institute deer management program	N	SO	Fd
	FWP-6 Promote waterfowl habitat improvements	I	SLC	Ep
Erosion Control	<u>ORGANIZATION:</u> ECO-1 Establish Natural Resource Advisory Com.	IN	LO	Ip
	<u>PROGRAM:</u> ECP-1 Adopt control ordinance	D	LO	Fd
	ECP-2 Review and promote research	D	LO SC	Ef
	ECP-3 Watershed planning with Irondequoit	D	LO	Id
	<u>ORGANIZATION:</u> EGFO-1 Designate RG&E staff liaison	N	N/A	Ip
	EGFP-1 Monitor solid waste burning program	N	SO	Ef
Electric Generation Facilities	EGFP-2 Monitor facility replacement	N	LO	Fd
	EGFP-3 Monitor thermal discharges	N	LO	Fd

DEVELOPMENT ACTION PROGRAM

Required Actions and Improvements

For the implementation of the preferred strategy development plan, specific actions and improvements must occur. While the preferred strategy development of "illustrative" plan represents only Ecoplan's recommended physical development program, a detailing of its required physical actions and improvements can serve as a model within which an ultimate program may be expected.

The following list describes the required physical development action for the preferred strategy illustration plan.

- o Plan for the Mouth of Genesee River

Establish Shoreline Trail Between Ontario Beach Park and Beach Avenue Walk

- o Acquire parcels 83 and 75 for access from Beach Avenue
- o Develop walk and connections at ends (stairs, etc.)

Extend Beach Avenue Shoreline Trail West

- o Future planning and acquisition

Reinforce Beach Avenue Treatment

- o Develop tree planting/maintenance program
- o Incorporate benches, trash receptacles
- o Maintain unique lights, consistent street graphics

Corridor Treatment - Lake Avenue

- o Organize neighborhood citizens group
- o Include Latta Road area
- o Develop specific or typical plans for:
 - Street tree planting
 - Storefront improvements
 - Consistent graphics
 - Parking area treatments
 - Site furniture

Ontario Beach Improvements

- o Monitor water quality
- o Develop program
- o Develop swimming pool
- o Rehabilitate bathhouse
- o Water quality improvements (continuing long-range)
- o Develop tennis courts/paddle tennis
- o Include commercial-restaurant facilities

- o Develop overlook at Beach Avenue terminus
- o Incorporate pedestrian connection to jetty
- o Improve parking area - tree planting, circulation and graphics
- o Develop pedestrian system connecting parking - transit terminal - all park elements

Develop Transit Terminal Facility

- o Coordinate with park improvements
- o Coordinate with commercial parcels 64 and 65

Townhouse Development

- o Legal changes to Port Authority Charter
- o Acquire Port Authority Land - portion of parcel 63 or long-term lease)
- o Develop 60 units (Average = 10 units/acre)
- o Develop portion of Riverwalk and mooring slips
- o Buffer at edge of property
- o Coordinate w/Marina development

Marina Development

- o Legal changes...
- o Acquire portion of Parcel 63
- o Develop Marina facility
- o Develop boat related services:
 - Fuel
 - Repair
 - Storage
- o Develop commercial shops - restaurants
- o Buffer/screen to port development
- o Coordinate w/Port Authority development

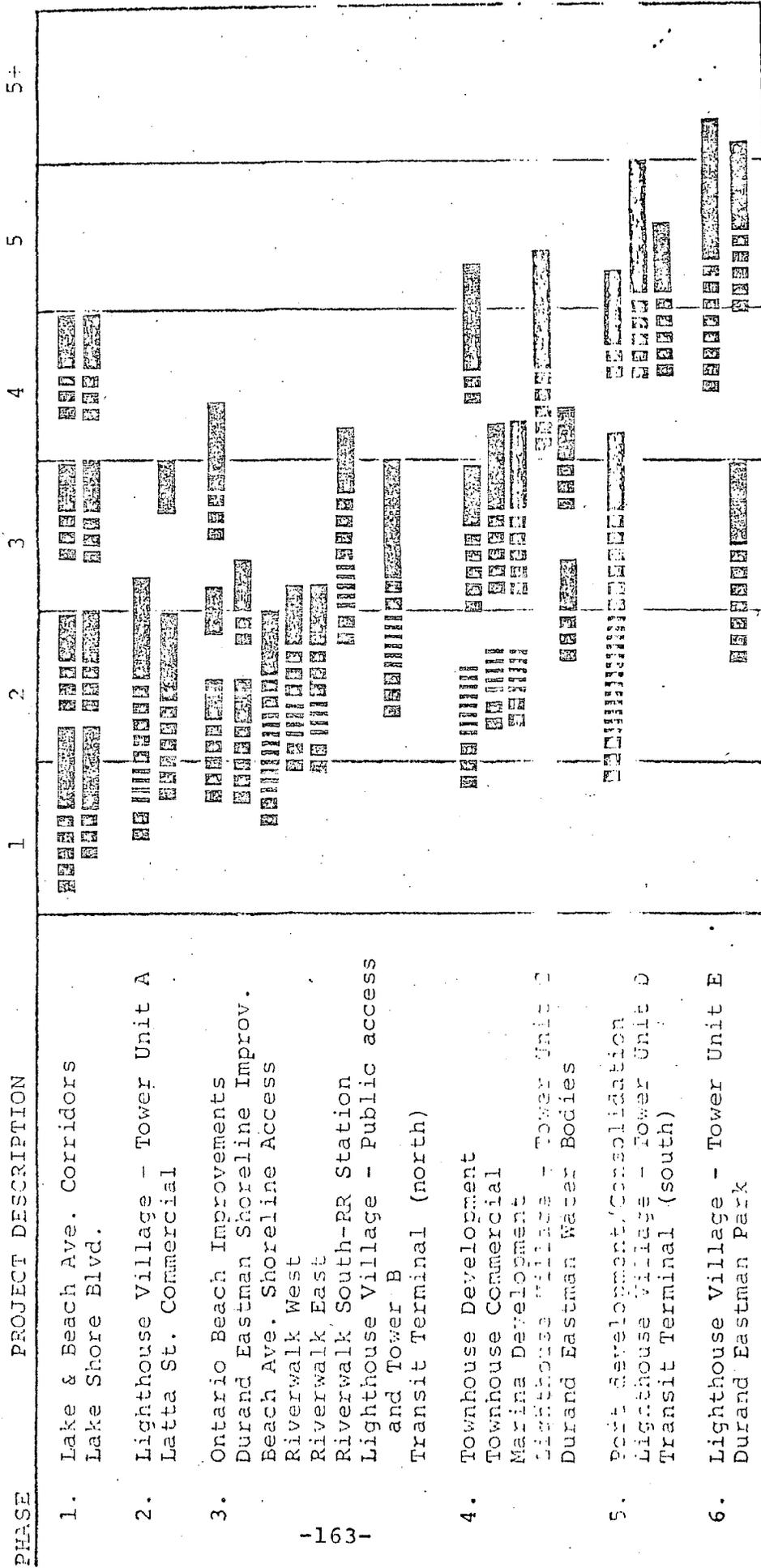
Consolidate Port Activity

- o Develop program based upon roll-on - roll-off shipping/day-liner passenger/fishing excursion
- o Consolidate storage yards, circulation system based on new program
- o Develop new facilities as required
- o Develop passenger/tourist facility in conjunction with marina
- o Buffer/screen edge of property
- o Coordination w/railroad

Lighthouse Village Housing Development

- o Acquire land (public - R. R. and private) - portions of parcels 37 through 60

YEAR



- o Environmental Education Center/camp
 - Acquire from Sunshine Rotary Camp
 - Develop educational program
- o Habitat maintenance
 - Keep stream classifications - "C-T"
 - Maintain grass and upland mesic forest and stream community, waterfront aquatic habitats
- o Entrance Improvements
 - Edgerton Road
 - Kings Highway
 - Pine Valley Road
 - Log Cabin Road

Phasing Plan

The implementation of the development actions must necessarily be spread over a period of time. In recommending a specific phasing plan, the following objectives were established:

- o Establishing and maintaining a balance of resource optimization during the implementation process.
- o Aggregating optimum construction packages in terms of dollar value, type of work and location.
- o Eliminating potential construction limit conflicts.

The phasing plan illustrated on the accompanying plans and chart indicates that the development program, as envisioned, could be completed within a five-year time span.

A sequence of activities including market analysis, acquisition, planning and construction are expressed in a logical sequence and schedule. Several projects have been described to be constructed in a phased sequence. Some activities could readily be "fast-tracked" or telescoped in time if the demand or program required.

- o Develop bluff stabilization and planting program
- o Construct beach access (4 locations)
- o Develop maintenance program for beach (passive recreation)
- o Initiate study to investigate beach enlargement program

Lakeshore Blvd. Corridor Improvements

- o Landscaping
- o Shoulder treatment
- o Signage
- o Lighting
- o Parking areas on north side at beach access points
- o Crosswalks at beach access points
- o Road-redesign access
- o Log cabin and zoo road
- o Horseshoe Curve Drive
- o Sunset Point Road

Water Bodies Management Program

- o Tamarack Swamp (sanctuary area)
 - Development management program to prevent encroachment
- o Durand Lake and Eastman Lake
 - Develop small parking area and boat livery (canoe and row boats)
 - Open lake to warm water fishing
 - Develop warm water fishing program
 - Maintain current level of lake water
 - Develop nature interpretive trails
- o Lily pond (sanctuary area)
 - Establish wildlife improvement and management program
- o Sherry Swamp (sanctuary area)
 - Prohibit further filling
 - Establish wildlife improvement and management program
- o Johnson Pond (sanctuary area)
 - Develop as focus of nature education control catwalks and nature trails, observation posts
 - Establish wildlife improvement and management program

Park Development and Management Programs

- o Sewage Treatment Plant
 - Improve planting and roadway at entrance
 - Maintain visual and topographic buffers
 - Develop review process for environmental review of any expansion

- o Develop 4 towers (phased) (Average = 100 units/tower - density 33 units/acre - 12 stories high + 50 cars at lower level)
- o Parking garage - 250 cars
- o Development of lighthouse park
 - Open space and buffer to railroad
 - Coordination with school and church properties
 - Develop portion of "riverwalk"
- o Highlight historic lighthouse
 - Maintain public access along Lighthouse St.
 - Provide off street parking
 - Develop connection to "Riverwalk"

Develop "Riverwalk South"

- o Provide connection from old railroad station north to Lighthouse Village riverwalk section
- o Plan and coordinate connection south with Genesee River Plan

Rehabilitate Old Railroad Station

- o Lease to commercial enterprise to provide services along riverwalk
- o Maintain character of the structure

Reinforce Neighborhood Commercial Area

- o Use zoning
- o Tax incentives
- o Coordinate with Lake Ave. Corridor
- o Connect area to Riverwalk and railroad station

Riverwalk East

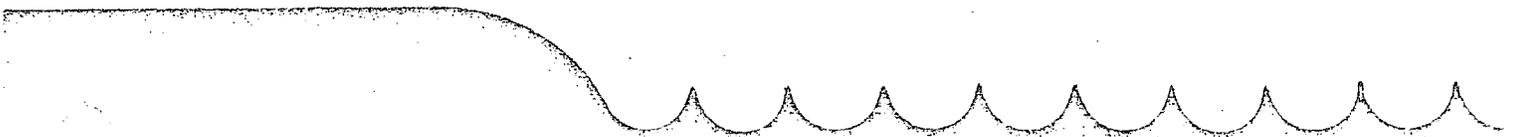
- o Acquire right of way agreements
- o Develop Walk
- o Provide connection to jetty and lakeshore
- o Plan future connection east to D-E Park.

- o Plan for Durand Eastman Park

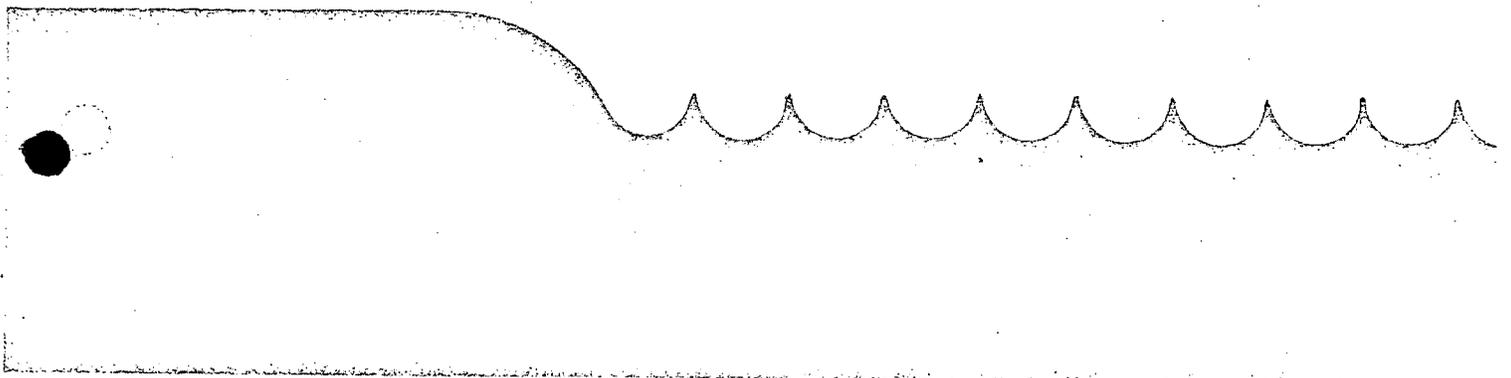
Shoreline Improvements

- o Acquire all of railroad land (parcel 2)
- o Develop trail/bikeway on railroad bed
- o Coordinate expansion of trail outside study area
- o Develop bluff trail (open vistas)

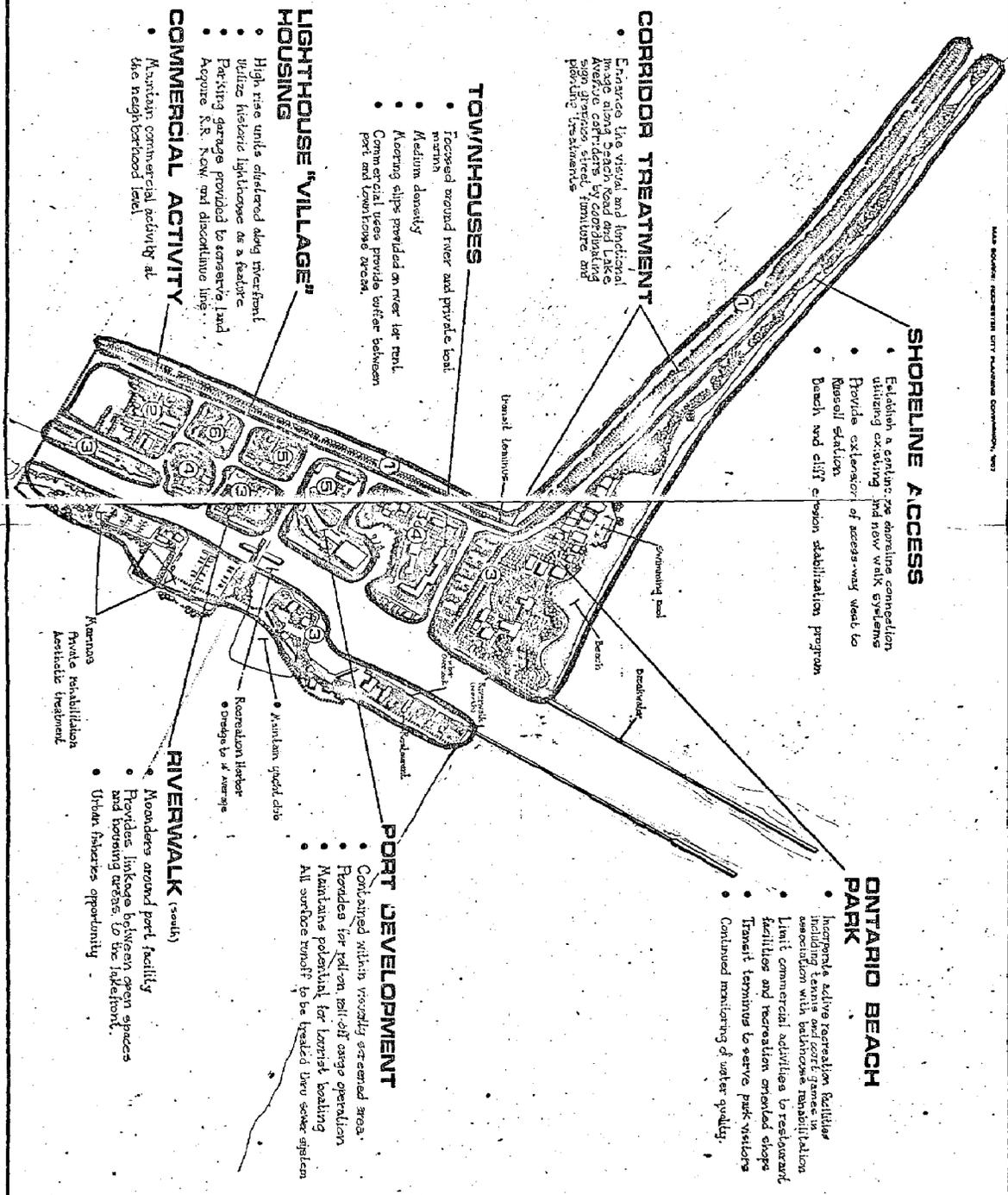
APPENDICES



TECHNICAL REPORT:
RECREATION



MAP SOURCE: ROCHESTER CITY PLANNING COMMISSION, 1971



SHORELINE ACCESS

- Establish a continuous shoreline connection utilizing existing and new walk systems
- Provide extension of access-way west to Russell station
- Beach and cliff erosion stabilization program

ONTARIO BEACH PARK

- Incorporate active recreation facilities including tennis courts
- Limit commercial activities to restaurant facilities and recreation oriented shops
- Transit terminals to serve park visitors
- Continued monitoring of water quality

CORRIDOR TREATMENT

- Enhance the visual and functional character of the corridor
- Provide a continuous pedestrian and bicycle route
- Provide a continuous street furniture and planting treatments

TOWNHOUSES

- Focused around river and private boat moorings
- Medium density
- Mooring slips provided on river for rental
- Commercial uses provide buffer between port and low-income areas

LIGHTHOUSE "VILLAGE" HOUSING

- High rise units clustered along waterfront
- Utilize historic lighthouse as a feature
- Parking garage provided to conserve land
- Acquire R.R. ROW and discontinue line

COMMERCIAL ACTIVITY

- Maintain commercial activity at the neighborhood level

PORT DEVELOPMENT

- Contained within visually screened areas
- Provides for roll-on roll-off cargo operation
- Maintains potential for launch, boating
- All surface runoff to be treated thru sewer system

RIVERWALK (south)

- Moorings around port facility
- Provides linkage between open spaces and housing areas to the lakefront
- Urban fisheries opportunity

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY

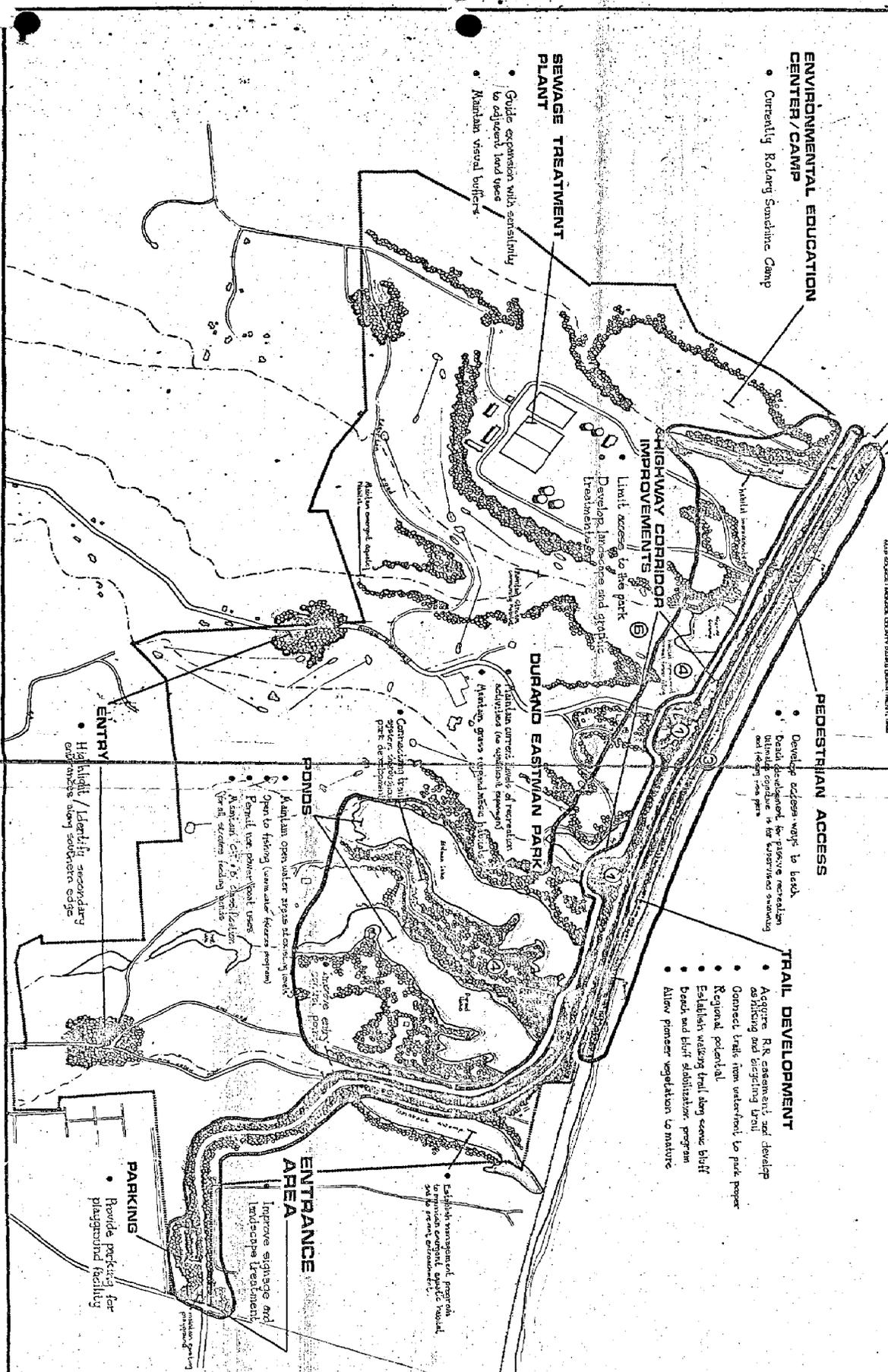
PREFERRED STRATEGY PHASING OF DEVELOPMENT

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLANS INCORPORATED
SARATOGA SPRINGS, NEW YORK 12058



SCALE
1:12,500



ENVIRONMENTAL EDUCATION CENTER/CAMP

- Currently Roland's Sensitive Camp

SEWAGE TREATMENT PLANT

- Guide expansion with sensitivity to adjacent land uses
- Maintain visual buffers

HIGHWAY CORRIDOR IMPROVEMENTS

- Limit access to the park
- Develop line of trees and shrubs
- Treatments of

PEDESTRIAN ACCESS

- Develop access ways to beach
- Detail development for passive recreation
- Ultimate goal is for extensive walking and bicycling trails

TRAIL DEVELOPMENT

- Acquire R.R. easement and develop as hiking and bicycling trail
- Connect trails from waterfront to park proper
- Regional potential
- Establish walking trail along scenic bluff
- Beach and bluff stabilization program
- Allow pioneer vegetation to mature

DURAND EASTMAN PARK

- Maintain current level of recreation activities (see equipment expansion)
- Maintain grass riparian areas
- Connect to trail system
- System expansion
- Park development

POND

- Maintain open water system
- Open to fishing (summers)
- Permit use powerboat users
- Maintain "off" of pond
- Use all existing feeding boats

ENTRANCE AREA

- Improve signage and landscape treatment

PARKING

- Provide parking for playground facility

ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY

DURAND - EASTMAN

PREFERRED STRATEGY

PHASING OF DEVELOPMENT

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLANS INCORPORATED
BARATOGGA SPRINGS, NEW YORK 12055
A MEMBER OF
THE SARATOGA ASSOCIATES

SCALE
1:2,000

APPENDICES

TECHNICAL REPORT ON POTENTIAL FOR ADDITIONAL OR EXPANDED RECREATION IN THE ROCHESTER COASTAL ZONE

Introduction

The coastal zone is a significant intrinsic or natural recreation resource. This resource is a linear system of water, shoreline and land with reasonably definable limits, particularly from the vested viewpoint of the City of Rochester. The shoreline limits can be considered to run easterly from the vicinity of the Russell Power Station to Irondequoit Bay. In addition, the Genesee River Valley from the lower falls to the Stutson Street Bridge has a valuable scenic wilderness character which adds considerable potential to a recreation system strategy. Rochester's recreational "windows" on the lake occur at the mouth of the Genesee River and at Durand Eastman Park.

The Rochester coastal zone study area unfortunately includes only a part of this resource system. For the purposes of discussing recreational potential, it would not be appropriate to limit the discussion to the study area per se. Emphasis will be placed on key public-held parcels and the study area itself in order to facilitate the inclusion of specific recommendations of this technical paper into the overall Rochester Coastal Zone Resource Management Study. However, any significant development of these resources for recreational purposes must consider the entire area described.

Brief History of Recreation

The Monroe County Parks Department has published two papers documenting the development of recreational facilities within the coastal zone (Monroe County Parks Department, 1968; and Grant, 1975).

Durand Eastman Park - The original 484 acres which formed Durand Eastman Park was a gift to the City of Rochester from Dr. Henry Durand and George Eastman in 1907. Its 4,000 foot beach immediately became extremely popular. The Sea Breeze Trolley Line was extended into the Park in 1908, making the area easily accessible for Rochester residents, six miles to the southeast. Early improvements to the Park included the construction of a wooden pier to accommodate excursion boats and the creation of small lakes by damming up old marshes. In 1919 a bathhouse equipped with lockers for 1,000 bathers was built.

The 18 hole golf course was built in 1920 and 50,244 bathers registered during 1921.

During the 1940's high lake levels closed the beach. The beach area was reopened in 1959, but closed again in 1966, this time due to pollution of lake waters.

Monroe County took over the operation of Durand Eastman Park in July, 1961, signaling the fact that the Park had become more than just a city recreational area.

Ontario Beach Park - Around 1920 Ontario Beach became a public park. The 26 acre site has long been a popular swimming and amusement area with easy access by steam car, trolley and now public bus service from Rochester.

Like Durand Eastman Park, Ontario Beach is still owned by the City of Rochester but operated since 1961 by Monroe County Parks Department.

Recreational Demands

The dynamic natural character of the coastal zone offers appeal and magnetic draw. If left in the public trust, the resources would certainly be creatively utilized by the populace with no need for extrinsic considerations. However, it must be appreciated that the very significant and unplanned human interventions of past and current generations have irreversibly scarred the possibility of such an idyllic generation of use. The restriction of public access caused by random private ownership patterns, the natural short (narrow) beaches with high banks and the current marginal water quality of the river and lake are among factors which limit such potential open utilization without a planned strategy of public recreation use.

By one estimate, the entire region of which Rochester is a major component is expected to have a 20% population increase by 1998 (New York State Office of Parks and Recreation 1972:150). This growth will consume considerable open space and agricultural lands. People residing in the city will be forced to depend less and less upon the natural resource base for their recreation. Furthermore, the poor and the elderly will tend to increase in percentage of center city residents in need of recreational facilities. For these groups with limited financial resources and restricted modes of private transportation, the recreation base must be nearby

and accessible.

Even though it is reasonably recognized that day use (versus overnight use) and local winter facilities are in the highest demand and lowest availability (New York State Office of Parks and Recreation, 1972:151), it can be quickly realized that such use is exactly what best fits the intrinsic character of the study zone. Facilities for these uses include bicycle, walking or cross-country ski trails, sledding areas, picnic grounds and beaches. The concept of use need not be limited to the active play-oriented recreation or the passive user, but with the significant natural system, particularly of the very observable river valley environment, nature study of all sorts could add relatively inexpensive but unique recreation within easy grasp of most public schools and citizens of the City of Rochester.

Program Development

Several major factors lend influence to any use consideration in the coastal zone.

Program development must take into account the intrinsic natural capability of the resource, the individual and social needs of potential users, and the quality, availability and distribution of existing uses.

The Lake Ontario shoreline is a relatively narrow band with few public beaches.

Public access through current privately held shorefront is vital to any expanded usage of the shoreline, in any but the most informal manner. Such integration of private lands with some public access is sensitive and deserving of only the most well thought-out plan. Likewise, the Genesee River valley - subject to many studies and plans - is riddled by broken ownership patterns, lack of easy access (either because of ownership or topographic constraints) and a general public "turn-the-back attitude". This latter perspective has permitted this exceptional resource to become the carrier of debris and effluent. Evidence of public investment to simply reinforce the potential recreational use is all but missing. However, such an attitudinal problem has not irreversibly sacrificed the river resource and a combination of public-private investment of dollars and pride can turn this rear yard image into the front yard ceremony it so appropriately deserves. The future

determination of railroad usage on all shores and banks will greatly influence the potential of the areas. Such railroad beds offer a valuable resource for a linkage trail system within the core of the resource.

It is fairly obvious that some lands both privately and publicly held have outlived their intended use to some major degree and a planned recycling for more contemporary use including recreation is in order. Finally, the existing vehicular system permits easy access to all parts of the intrinsic zone by both private and public transportation systems. Furthermore, thousands of people could have direct pedestrian or bicycle access to miles of trails almost from their doorsteps. Very little change need be considered to the transportation system, excepting the increase of public bus stops and small parking lots along the system. Access is the key factor affecting future use, whereas the ability of the intrinsic system to support an increase of recreational use is less critical.

The intrinsic characteristics of the study zone suggest such uses as beaches (swimming and sunbathing), shoreline walks and bike rides, fishing, boating, nature study center and the like. The use is more summer than winter oriented in its most natural sense. However, miles of trails could easily convert into cross country ski trails and specific areas or roads could easily accommodate sledding and skating.

It is for certain that almost any type of active or passive recreational use can be easily accommodated in the river valley, except perhaps large flat area uses such as ballfields. The Ontario shoreline is slightly more limited in use due to its narrow character. Certain intensive user-oriented facilities could be accommodated at Durand Eastman (and such is currently planned by the County on acreage recently purchased) and areas along the river mixed with other land uses could fill any voids in program needs.

Based on the above discussion, the accompanying list of potential recreational programs is developed.

Each of these recreational programs should have design and use standards for their site development. Numerous authorities have researched and written on the actual standards, space requirements and design considerations. A listing of some selected standards are presented following the potential program list. These standards when applied to existing recreational facilities and potential sites will aid in the determination of an actual recreational program.

POTENTIAL RECREATIONAL PROGRAM

PROGRAM	spring	summer	fall	winter	all year round	GENERAL CONSIDERATIONS
Lake Swimming		X			X	<ul style="list-style-type: none"> - appeals to wide variety of people all age and economic groups. - family activity. - a major attractive force; with fee charges and lease/rental of associated concessions, traditional deficit could be minimized.
Pool Swimming		X			X	<ul style="list-style-type: none"> - same as above. - would extend swimming season.
Picnicking (Individual)	X	X	X		X	<ul style="list-style-type: none"> - attractive to broad segment of public; all age and economic groups. - family activity. - complementary activity - allows for full day use of other park facilities.
Picnicking (Group)	X	X	X		X	<ul style="list-style-type: none"> - evidence from similar parks indicate popularity and demand. - activity for variety of organizations. - complementary park activity. - revenue producing if "pavilions" could be rented in addition to potential concession revenue.
Playgrounds	X	X	X		X	<ul style="list-style-type: none"> - offers variety to young family activity. - potential large number of users. - possible day care. - complementary accents at key locations.
Court Games	X	X	X		X	<ul style="list-style-type: none"> - appeals to wide variety of individuals young and old, families and groups. - large court games should be limited in number and be of the multi-use variety; smaller games such as shuffleboard, bocce, etc. should be more widely dispersed and associated with complementary activities.

PROGRAM

GENERAL CONSIDERATIONS

Athletic Fields

spring	summer	fall	winter	day	night
--------	--------	------	--------	-----	-------

X	X	X		X	X
---	---	---	--	---	---

- group activity or free play.
- appeal to teens.
- complementary to other park uses at minimal development costs.

Boating

X	X	X		X	
---	---	---	--	---	--

- growing in popularity.
- limited in availability to wide numbers of people.
- power boats are polluting; estimated that 1 gal. of every 3 gals. of fuel discharged into water.
- general economic benefit from slip rentals, services, maintenance and storage.

Sailing

X	X	X		X	
---	---	---	--	---	--

- same as above except pollution-free

Fishing

X	X	X	X	X	X
---	---	---	---	---	---

- appeals to widest variety of people.
- wide variety of game fish potential will exist in the lake and river.
- year round activity.
- lease/rental of fishing/bait shop will provide revenue.

Nature Education

X	X	X	X	X	X
---	---	---	---	---	---

- growing awareness and interest to wide range of public.
- consider as an obligation to promote and communicate the environmental ethic.
- entire zone can be considered as the resource with highlight and emphasis at a developed center.
- could be operated by groups such as DEC, Ed. Dept., Conservation Societies or Universities.

Bicycling

X	X	X		X	
---	---	---	--	---	--

- largest growing sport of interest to wide variety of people.
- family activity.
- discreet trails can be developed along the hiking paths at minimal cost.
- rental can provide revenue.
- motorized bikes should be excluded as an inconsistent use.

PROGRAM

GENERAL CONSIDERATIONS

Walking Trails

spring	summer	fall	winter	day	night
X	X	X	X	X	

- applicable to wide variety of people.
- family activity.
- linking element between park features.
- variety of site terrain and views adequate for this use.
- minimal development costs.

Cross Country Skiing

spring	summer	fall	winter	day	night
			X	X	

- growing in popularity.
- limited areas for practice of this sport.
- can utilize hiking trails and golf course.

Sledding/
Tobogganing

spring	summer	fall	winter	day	night
			X	X	X

- popular family activities.
- can be headquartered with other winter activities.
- minimal development costs.
- rental can produce revenues.

Hunting (Upland game and waterfowl)

spring	summer	fall	winter	day	night
		X		X	

- popular sport
- appealing to growing segment of public.
- season peaks when other uses are generally dormant.
- provides managed land use and enhances environmental quality.
- requires strong control in urban areas.

PROGRAM STANDARDS

Standards and Criteria For Site Development

Ice Skating	30 square feet/skater/day Flood 3-5 tennis courts Average skating days/season = 80
Tennis	2 players/court-singles 4 players/court-doubles Daily turnover rate = 10 Average season = 80 days
Boating	1 - 12 foot ramp/40 boats/day 3 people/boat Average season = 168 days
Sailing	2.2 people/sailboat Average season = 168 days
Fishing	2.2 people/boat 1 boat/8 acres water surface Daily turnover rate = 1.5 Average season = 168 days
Swimming (Beach)	1 acre water surface/185 swimmers 200 square feet of beach/swimmer 1 acre of beach requires 3 acres of support Daily turnover rate = 3 Average season = 60 swimming days
Swimming (Pool)	30 square feet surface water/swimmer percent of swimmers in pool at one time = 25% 4 people/party Daily turnover rate = 3 Pool:Deck ratio = 1:2 Average season = 144 days

Walking and Viewing	4 people/party Average season = 144 days
Nature Study Trails	50 people/mile at one time Daily turnover rate = 8 Average season = 144 days
Picnicking (Family style)	10 tables/acre 4.8 people/table Daily turnover rate = 1.6 Average season = 80 days
Picnicking (Group)	25 tables/acre 4.8 people/table Daily turnover rate = 1 Average season = 80 days
Parking	120 cars/acre
Parking (Cars with Boat Trailers)	80 cars/acre

Source: The Saratoga Associates, 1972
Research from Numerous Sources

A. Standards for Recreational Activities

Type of Recreational Activity	Space Requirements for Activity Per Population	Ideal Size of Space Required for Activity	Recreational Area Wherein Activity May Be Located
-------------------------------	--	---	---

Active Recreation

1. Children's Play Area (in neighborhood)	0.5 acre/1,000 pop.	1 acre	Playgrounds, Neighborhood Parks
2. Field Play Areas for Young Children	1.5 acres/1,000 pop.	3 acres	Community Parks, Schools, Playgrounds, Playgrounds in Neighborhood Parks
3. Older Children/Adult Field Sports Activities	1.5 acres/1,000 pop.	15 acres	Community Parks, Playfields, Community Park
4. Tennis Courts, Basketball Courts, Sports	1.0 acres/5,000 pop.	2 acres	District Park, Playfield, Community Park
5. Swimming	1 outdoor pool/25,000 pop.	Competition size plus wading pool	Playfield, Community Park
6. Major Boating Activities	100 acres/50,000 pop.	2 acres	District Park, Regional Park or Reservations
7. Hiking, Camping, Horseback Riding, Nature Study	10 acres/1,000 pop.	100 acres and over 500-1,000 acres	Large District Park, Regional Park
8. Golfing	1-18 hole course per 50,000 pop.	120 acres	Community Park-District Park

Passive Recreation

1. Picnicking	4 acres/1,000 pop.	varies	All parks
2. Passive Water Sports (Fishing, Rowing, Canoeing)	1 Lake or Lagoon per 25,000 pop.	20 acre water area	Community Park
3. Zoos, Arboretums, Botanical Gardens	1 acre/1,000 pop.	100 acres	Special Regional Reservations, Large District Park or Special Facility
Other			
1. Parking at Recreational Areas	1 acre/1,000 pop.	varies	Playfields, Community, District & Regional Parks
2. Indoor Recreation Centers	1 acre/10,000 pop.	1-2 acres	Community Parks
3. District Recreation Centers	1 acre/25,000 pop.	5 acres	District Parks

B. Standards for Recreation Areas

Type of Area	Acres Per 1000 Population	Ideal	Size of Site Minimum	Radius of Area Served
Playgrounds	1.5	4 acres	2 acres	0.5 miles
Neighborhood Parks	2.0	10	5	0.5
Playfields	1.5	15	10	1.5
Community Parks	3.5	100	40	2.0
District Parks	2.0	200	100	3.0
Regional Parks and Reservations	15.0	500-1,000	varies	10.0

Standard

Facility

3 supporting areas for each acre of beach. The acre of beach accommodates 185 swimmers over 12 years old, at any given time. This provides 200 sq. ft. of beach per swimmer. With an average daily turnover of 3, the acre of beach and its 3 supporting acres accommodate 555 swimmers per day.

4 supporting acres for each acre of beach. The acre of beach accommodates 370 swimmers at a time. This provides 100 sq. ft. of beach per swimmer. With an average daily turnover rate of 3, the beach area accommodates 1110 swimmers per day.

150 sq. ft. of water for each swimmer in the water
300 sq. ft. of land for each swimmer not in the water.

100 to 200 sq. ft. of swimmable water per swimmer. 50 to 100 sq. ft. of beach per swimmer.

Between 15% to 30% of swimmers are in the water at one time.

Most of the time there are more persons on the beach sunning than in the water. Since the amount of usable water space per person ranges from 50 to 100 sq. ft. the available site will determine the capacity of a particular bathing beach.

beach, rural area

beach, urban area

beaches

beach

beach

Standard

Facility

25 effective feet of shoreline for each 1000 population, accommodates 150 persons per day, and 50 persons at one time. 25 effective feet include:

- a. 5000 sq. ft. for sunbathing.
- b. 2500 sq. ft. for buffer and picnic area.
- c. 1000 sq. ft. for water area for swimming.

A 1 effective foot consists of one lineal foot of shore with 100 footwide band of water suitable for swimming; 200 foot-wide strip of beach for sunbathing; 100 foot-wide buffer zone for utilities and picnicking.

A shoreline swimming unit should have a length of 500 ft. and a width of 565 ft. (565 ft. of width is land and 100 ft. is water). Maximum shoreline length should not exceed 3600 ft.

A minimum unit of 9.2 acres (1.4 acres of water and 7.8 acres of land) has a 200 foot wide beach or play area and a 100 foot wide buffer zone for installation of utilities, tables, etc. The balance, 265 ft., accommodates 300 cars at a time. Minimum facilities are a change house, and sanitary facilities.

At any one time an optimum capacity of 1200 persons may use the minimum shoreline facility. A turnover rate of 3 is expected. This allows 3600 persons to use the area on an average summer Sunday or 461.5 user days per.

shoreline—ocean,
lake, reservoir, or
stream

beach

Facility	Standard	Facility	Standard
<u>neighborhood pool</u>	One pool for each 3200 people. Pool with 1800 sq. ft. of water surface serves 150 persons at a time.	<u>pool</u>	A minimum pool unit is one acre. It has space for a pool 75 ft. by 36 ft. or 2700 sq. ft. Facilities include bath house, filters, safety and sanitary equipment, and parking space for 90 autos.
<u>community pool</u>	One pool for each 25,000 people. Pool with 4500 sq. ft. of water surface serves 150 persons at a time.	<u>pool</u>	The pool provides space for 203 persons at one time with a turnover rate of 3; daily capacity would be 609 persons.
<u>pool</u>	Minimum of 27 sq. ft. of water surface for each swimmer with a ratio of 2 square feet of deck area per square foot of water area.	<u>pool</u>	A minimum of 27 sq. ft. of water per swimmer for recreational swimming; 45 sq. ft. per person for teaching purposes.
<u>pool</u>	Total number of pools should serve between 3 to 5% of the total population at one time.	<u>anchored fishing boats</u>	4 to 7 boats per acre of water area.
<u>pool</u>	20 sq. ft. of pool and deck area for each 10,000 people in major metropolitan areas.	<u>trolling fishery boats</u>	2 to 4 boats per acre of water area.
<u>pool</u>	15 sq. ft. of water surface for each bather; 30 sq. ft. of water surface for each swimmer. A bather is a person who does not go into water over 5 feet in depth.	<u>power and sail boats</u>	3 acres of water area per boat.
<u>pool</u>	Deck area should always equal or exceed square footage of water area since not more than 1/4 of the swimmers will be in the water at any one time.	<u>fishing</u>	Minimum of 3 surface acres per lake. Lake should be located within an hour's drive or approximately 50 miles of a city of 20,000 persons or the equivalent in smaller communities, and should be within 5 to 10 miles of a good highway with an all-weather road to property.
	For cities under 30,000 in population, the maximum daily attendance expected at pools is 5% to 10% of total population.	<u>boat fishing</u>	A fishing boat requires 8 acres of water. 13 fishing boats require 104 acres of water to support one boat ramp.
	8000 to 5250 sq. ft. of water surface per pool. There should be from 2 to 3-1/2 times more paved deck surface than water.		

Facility

Standard

Facility

Standard

hiking for one day or less

Well defined and maintained tread up to 10 ft. wide, grades not to exceed 5% average with a maximum of 15%.

Minimum parking for 25 autos at any access point. On short, scenic, well known trails this might be extended to 100 auto parking spaces.

hiking for extended trips

Well defined trail with average grades of 5% and none to exceed 15%.

Overnight hiking trails should be provided at intervals of about 5 hours hiking time. Minimum size of 3 to 5 acres.

hiking trail

Minimum of 10 acres provide a 3 mile trail, and a 1-1/2 mile trail.

designated horse trail

Generally, riding trails are ten feet in width over a distance of 20 miles, and encompass 24 acres of land. It will require two camping sites of five acres, 15 to 20 miles apart.

One horse per mile is trail capacity. People use a horse trail in groups of four or five. Since a trail of 20 miles will take about 3.3 hours to ride, a turnover of 2 is considered a reasonable capacity to produce 132 users per optimum day.

riding and hiking trails

Trails should be located to offer hikers or riders as many interesting vistas or views as possible. Interpretive signs should be used. On extended trails rest stops should be about every 3-5 miles and overnight stops about every 10-20 miles. In heavily used areas, overnight stops may be equipped with tables, fireplaces, and pit toilets. The trail should be planned with numerous access points and interconnecting links. Average sustained grades of trails should not exceed 8%: sections of 4% or less, at least 500 ft. in length, should be used every mile if practical.

Width of trails vary, depending upon use as shown below:

- a. hiking trails will be as narrow as possible to permit single file use, with widened areas every 200 to 500 yds. where terrain permits.
- b. riding trails where no pack stock is used can be a little wider than a hiking trail with more frequent passing areas.
- c. a pack trail needs 8 ft. of clearing although the tread will be considerably narrower.
- d. an interpretive footpath will be about 4 ft. wide for medium use and 6-8 ft. wide for very heavy use.
- e. multiple use trails will be designed for widest expected use.

nature trail

50 people per mile of trail. Trails are 1 to 2 miles long. With a turnover rate of 8, there are 400 people per mile of trail per day.

nature trail

A nature trail is estimated as 10 feet wide and two miles in length. The trail occupies an area of 2.4 acres.

Standard

Facility

It takes 20 acres of water to support one power boat. 13 boats in the water would require 260 surface acres of open water to support a ramp.

1 boat access unit capable of launching one boat at one time, serving 125 trailered boats or storage facilities berthing, mooring and the like for 100 non-trailered boats. 75 boats will operate from one access unit on the season's peak day and 50 boats on an optimum day.

Service radius of 25 miles for day-use boaters; 75 to 175 miles for weekend-users; 135 to 250 miles for vacation boaters.

1 ramp on 1-1/2 acres for every 125 boat owners if boaters average 8 trips a year.

21,000 sq. ft. of parking space per ramp, assuming a parking lot capacity equal to maximum ramp capacity.

A boat ramp occupies one acre of ground space and can accommodate launching and retrieving of about 40 boats per day per launching lane. 60 cars with boat trailers can be parked in area.

Ramps generally service 160 surface acres of water available for boating. Each ramp has at least one 75-foot vehicular turn-around.

motor boat area

boat access unit

boating

boat ramp

Standard

Facility

100 acres for every 50,000 population. Ideal size of 100 acres and over. May be located within a district park, regional park or reservation.

1 lake or lagoon for every 25,000 people. Ideal size of 20 acres of water area. May be located in a community park or special regional reservations.

Average number of canoes a day is 6, with 2 men per canoe. Average daily trip distance is 15 miles.

Streams must have an average flow of 100 cubic feet a second in order to be generally suitable for canoeing.

Estimating 2 persons per canoe per 1/2 mile of stream. Larger streams could probably handle one canoe per 1/4 mile of stream.

One ski boat requires 40 acres of water. therefore, 13 ski boats would require 520 acres of water to support one ski boat ramp.

1/2 acre of water for every 1000 persons. Boating area located in a county park that allows 12 acres for every 1000 population.

major boating activities

row boating and canoeing

trip canoeing

canoe area

water skiing area

boating

MARINAS

Size and Scope

The size and scope of a marina will vary, depending on the requirements of the area involved. It is suggested that knowledgeable and experienced personnel be engaged to conduct a study of the number, types, and sizes of existing boats in the area, the number and size of existing berthing facilities, and the condition of such existing facilities. The survey should also include the potential population growth in the community and surrounding area to determine the future boat ownership. An accurate and comprehensive evaluation of such a study is the first step in planning a marina.

The data in the foregoing study will determine the next important consideration in laying out a marina: that of choosing the correct number of slips of each size that will be required. In most marinas, boats of many sizes will be served, and efficient planning will forecast the necessary number of slips to accommodate boats under 15 feet long, those from 15 to 24 feet long, those from 25 to 36 feet long, and so on. The determination of the number and size of slips should be based on the needs of the community to be served.

Site Selection

Factors that will influence the final choice of a site are: foundation material in both the land and the water; area local ranges (to determine types and extent of construction); possible wave hazards; prevailing winds; existing conditions during the winter; water depth (dredging is possible but quite expensive); and highways and transportation systems near the proposed site. Without this basic information, consideration of a site could well be wasted time and effort.

Regulatory Considerations

After the site has been chosen and the type of marina determined, the planners must meet any legal requirements. A consultation with the district engineer is not only desirable but, in most cases, required. Local zoning, planning, construction, health, fire, and public-works ordinances must be satisfied before making large capital investments.

Factors to be Considered in Planning

The location, community needs, and proposed use should determine which of several types of marinas will be planned. The boating industry generally makes a distinction between the fresh-water marina and the salt-water marina. The operator of a salt-water marina must deal with the nagging problems of erosion, rust, and exposure more than the operator of a fresh-water marina, so compensation must be made for this in the initial planning. The planner must also solve the tide problem in designing the piers, slips, and ramps in a salt-water marina. Another distinction between salt-water and fresh-water marinas is that the salt-water marina must generally accommodate more of the large yachts and cruisers that are capable of seagoing trips.

Some marina operators prefer to serve the "walk-boat" owner because the initial investment in the facility is much less, as are operating costs and general maintenance. On the other hand, some marina operators concentrate on the larger craft on the basis that there is more margin of profit in serving the more expensive boats. A great many marina operators serve both small and large-boat owners and allocate space for each type of boat in planning a marina. There are basic industries that must be figured in the way of equipment and facilities. Beyond these, there are extras which can be added. The docks and piers of a marina can be constructed of wood, steel, or aluminum. They can be of the fixed, anchored type or the more popular floating type. If wood is used, it becomes subject to damage from a number of causes, such as rot, termites or other insects, or marine organisms. Preservatives are commercially available to treat these conditions, and care should be taken to treat those areas most vulnerable, such as where wood rests on wood, where wood rests on cement or on the ground, on the end grain, and in joints, cracks, or crevices. Most metal will give more satisfactory service if protected with proper finishes. Base coats of metallic oxides or aluminum paints will effectively guard against corrosion or oxidation. The fixed, anchored dock will have piles driven to a solid footing and the length of these piles will depend on the depth of water and penetration.

Most marinas have floating docks because these are more attractive and adapt more easily to expansions, changes, and rearrangement for varying boat sizes. To adequately support floating struc-

tures, a variety of materials and methods may be employed. Those most commonly used are: steel drums, wooden box floats, plastic foam, concrete in salt water, because it resists rust and corrosion, precast concrete floats, and wooden logs. In any design of flotation material, it is a big job to find a factor that will give some reserve buoyancy. For stability, long, thin, wide shapes are preferable to narrow, high shapes.

Slips are the mooring spaces for boats and extend out from either side of the dock or pier. Each has its own allotted slip that must be easily accessible to the owner. Boat slips are the main revenue-producing facility at a marina, and details depend upon the size of the boat. Each slip must be able to secure the boat at both the bow and the stern. Many marinas offer dockwalks on either side of the dock to facilitate the loading and unloading of passengers and cargo. Since many boats remain in the slips for days without being used, the marina operator may consider offering covered slips to boat owners. The coverings can be of wood, canvas, or aluminum and will vary in size with the boat being stored.

A launching ramp at a marina is a service facility that is in great demand by boating enthusiasts who prefer to keep their boats at home on boat trailers. The launching service becomes a source of revenue for the marina operator. The ramp may be of either the floating design or a permanent structure. The floating design has the advantage of being adaptable to freshwater locations by hinges or floats that enable the far half of the ramp to rise and fall with the water-level variations while the near end is anchored to the shore and is held in place by piles. The permanent launching ramps are particularly suited to municipal waterfronts. This kind of ramp should be an extension of good city roadways and be near parking facilities for automobiles and trailers. Permanent launching ramps should be constructed of concrete, precast concrete, asphalt, bricks, or gravel. Determination of the material to be used should be based on such variables as soil conditions, climate, erosion, currents, waterfront conditions, availability of materials, and costs.

In the development of launching ramps, it is often desirable to cut back into a bank away from the shoreline to form the gradual slope of the ramp. To hold the earth embankment in place on each side of the ramp, small bulkheads can be constructed. In some cases, the bulkheads should extend into the water some distance in order to protect the underwater section of the ramp from erosion by waves and wave action. Bulkheads can be constructed of wood, concrete, or corrugated metal. Each of these materials has its advantage, depending upon soil and bottom conditions, tidal variations, sea-level changes in weather, and the possibility of floods and other abnormal conditions.

At marina locations that are bulkheaded and where space is limited, the launching of smaller boats can be handled by either a monorail and trolley hoist, or a launching cradle. With these arrangements the boats are lifted directly from the trailer, placed in position over the water, and lowered. Many of the larger and more expensive marinas have a hoist over each slip to keep the boats out of the water, not in use. These can be operated either by hand or electrically.

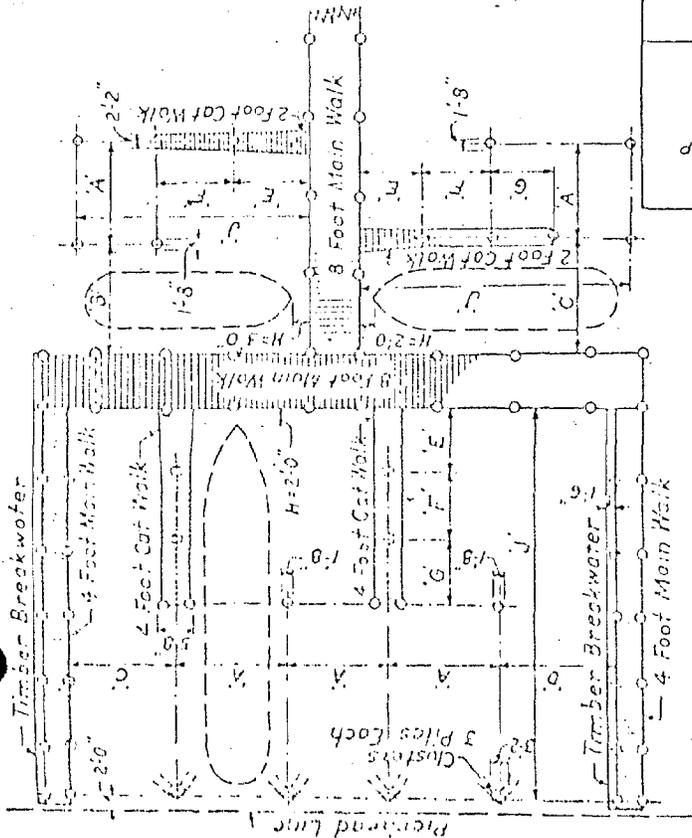
At coastal and larger lake marinas, the planners must include provision for a breakwater to lessen destructive sea waves and resulting beach erosion, and also to facilitate refueling and other no-docksido activities. The breakwater may be of the standard heavy stone-wall design or possibly the "wave traps" of floating structures of fabric and chains. In either case, breakwaters are a big job and premise work that requires consultation with professional engineers.

Another basic inclusion in a marina is some sort of structure to house administrative offices, the room for new motors and accessories, the repair shop, and perhaps a refreshment area. The exact location of this building will depend on the needs of the marina as it serves its customers, and the length of the pier. The owner-management of the marina wishes to go to provide more than basic services. Parking space for cars and trailers must not be underestimated in the planning of a marina. Too few drivers who are inexperienced at hauling trailers can cause monumental tie-ups and delays if parking space is less than the demand warrants.

The above inclusions are considered prerequisites for a successful marina operation. Beyond the planning of a marina can include numerous extras to enhance the service and beauty of the facilities. These extras include: private lockers; electricity for boats; float and ashore toilets and showers; restaurant services; overnight hotel accommodations; complete gas, oil, diesel-fuel, and electric supply service; and complete year-round, onshore sheltered storage.

Because marinas vary so greatly in their design, function, location, and capacity, it is virtually impossible to arrive at standard conclusions and judgments concerning a model marina.

TYPICAL PLEASURE BOAT BASIN
 DIMENSION DIAGRAM
 FOR
 SLIPS AND CAT WALKS
 PLATE NO. 2



-181-

TABLE I
 DIMENSIONS FOR SLIPS AND CATWALKS

NOTE: Use this tabulation in conjunction with Plate No. 2 to obtain widths of slips, lengths of Catwalks and locations of stern anchor piles. This Tabulation is based upon the use of Traveler Irons.

LENGTH GROUP FOR YACHTS	BEAM TO BE PROVIDED FOR	MIN CLEARANCE FOR BEAM	MIN CLEAR WIDTH OF SLIP	ALLOWANCE FOR HALF ANCHOR PILE	ALLOWANCE FOR HALF OF CATWALK	GROSS SLIP WIDTH TYPE "A"	GROSS SLIP WIDTH TYPE "B"	GROSS SLIP WIDTH TYPE "C"	GROSS SLIP WIDTH TYPE "D"	USABLE WIDTH OF CATWALK	1 ST CATWALK SPAN LENGTH "E"	2 ND CATWALK SPAN LENGTH "F"	3 RD CATWALK SPAN LENGTH "G"	TOTAL LENGTH OF CATWALK	DISTANCE "H" TO ANCHOR PILE
20' to 25'	7'-5"	3'-0"	10'-6"	10'	1'-4"	12'-5"	12'-5"	12'-5"	12'-5"	2'-0"	10'-0"	8'-0"	8'-0"	19'-0"	15'-0"
25' to 30'	8'-5"	3'-0"	11'-6"	10'	1'-4"	13'-5"	13'-5"	13'-5"	13'-5"	2'-0"	10'-0"	8'-0"	8'-0"	18'-0"	15'-0"
30' to 35'	9'-5"	3'-0"	12'-6"	10'	1'-4"	14'-5"	14'-5"	14'-5"	14'-5"	2'-0"	10'-0"	8'-0"	8'-0"	17'-0"	15'-0"
35' to 40'	10'-5"	3'-0"	13'-6"	10'	1'-4"	15'-5"	15'-5"	15'-5"	15'-5"	2'-0"	10'-0"	8'-0"	8'-0"	16'-0"	15'-0"
40' to 45'	11'-5"	3'-0"	14'-6"	10'	1'-4"	16'-5"	16'-5"	16'-5"	16'-5"	2'-0"	10'-0"	8'-0"	8'-0"	15'-0"	15'-0"
45' to 50'	12'-5"	3'-0"	15'-6"	10'	1'-4"	17'-5"	17'-5"	17'-5"	17'-5"	2'-0"	10'-0"	8'-0"	8'-0"	14'-0"	15'-0"
50' to 60'	13'-5"	3'-0"	16'-6"	10'	1'-4"	18'-5"	18'-5"	18'-5"	18'-5"	2'-0"	10'-0"	8'-0"	8'-0"	13'-0"	15'-0"
60' to 70'	14'-5"	3'-0"	17'-6"	10'	1'-4"	19'-5"	19'-5"	19'-5"	19'-5"	2'-0"	10'-0"	8'-0"	8'-0"	12'-0"	15'-0"
70' to 80'	15'-5"	3'-0"	18'-6"	10'	1'-4"	20'-5"	20'-5"	20'-5"	20'-5"	2'-0"	10'-0"	8'-0"	8'-0"	11'-0"	15'-0"

RECOMMENDED SURFACINGS FOR RECREATION AREAS, RELATED TO DENSITY

ADVANTAGES AND DISADVANTAGES OF VARIOUS SURFACINGS FOR RECREATION AREAS

Kind of area	Low and moderate density areas (Singles, twins, row houses, and flats)	High density areas (apartments)	Surfacing Type	Advantages	Disadvantages
General recreation area	Turf, natural soil	Bituminous concrete and sand/clay, natural soil.	Turf	Soft surface, ideal for many play purposes. Low first cost.	Cannot be used in wet weather. Muddy in dry weather.
Special play areas: Child service play yards Game courts	80% turf, 20% concrete Bituminous concrete, portland cement concrete, sand-clay, turf.	80% turf, 20% concrete. Bituminous concrete, portland cement concrete, sand-clay, cork asphalt.	Natural soil Gravel Sand-clay and clay-gravel	Low first cost. Soft surface Low first cost. Pleasing appearance Low cost when suitable material available. Reasonably soft surface.	Child throw it about to extent that it is unsuitable for any use as surface housing developments Difficult to get proper proportioned mixture.
Under playground apparatus	Light loam, sand, tanbark, sawdust, shavings, turf.	Light loam, sand, tanbark, sawdust, shavings.	Brick (on sand cushion) Stone paving blocks (on sand cushion or natural soil) Precast concrete slabs (on sand or natural soil) Flagstones (on sand or natural soil) Bituminous concrete.	Attractive appearance Low cost when salvaged from old pavements. Satisfactory appearance. Durability. Year-round utility. Satisfactory appearance. Year-round utility. Pleasing appearance. Durability. Good surface for most play purposes when properly specified and laid. Not so hard on feet as portland cement concrete. Year round utility.	Initial cost relatively high Surface too rough for use. Maintenance cost relatively high.
Crafts and story-telling	Any hard surfacing or turf	Any hard surface or turf.			
Outdoor parties, dances, roller skating, etc.	Any smooth, hard surfacing	Any smooth, hard surfacing.			
Ball play areas: For small children	Principally turf or natural earth, and smooth hard paving.	Principally a smooth hard paving and some turf or natural earth.			
For all age groups	Turf, bituminous concrete, portland cement, concrete. Bituminous concrete, portland cement concrete, brick, precast concrete slabs, flagstones.	Bituminous concrete, cork asphalt, portland cement concrete.	Cork asphalt Portland cement concrete	Resiliency. Excellent surface for many play purposes. Year-round utility. Satisfactory appearance. Year-round utility. Minimum maintenance expense. Good surface for wheel toys, roller skating and some court games.	Comparatively high (Component inspection essential to good workmanship). Softens in wet weather. Lacks resiliency. Initial cost relatively high. Large areas require expansion. Whitening and glare in large areas unattractive.

SOURCE: Adapted from Public Housing Design, National Housing Agency, Federal Public Housing Agency, 1950

Recreation Potential of Specific Sites

Ontario Beach Park - Ontario Beach Park has regional significance based on its presence as a large, natural sandy beach. However, the park has seen better days - physically speaking, the beach has been officially closed to swimming for many years by the State Health Department. Swimming does occur and the County provides lifeguards, cleans up the cladophora and supplies reasonable maintenance. Beach capacity is rated at 25,000 per day (and the park 1.5 times that). Estimated attendance figures are kept by the lifeguards. In 1973 (June through Labor Day) over 350,000 people were estimated to have used the beach. The County has prepared capital improvement plans for lighting and bathhouse restoration (the only significant building on the site) but authorization has been withheld pending improvement of the water quality. The balance of buildings and the general organization of the park is inefficient and, in general, in poor - although maintained - condition. The parking areas are considered adequate but the visual character of the area is dismal. Trees, curbs, good graphics and the like would add a great deal to the park's visual appeal. Initiation of updated master plan and implementation plan would be appropriate. The use of the park warrants such an investment. In any updated plan, several specific inclusions seem proper besides the direct improvements slated for Parcel 66, Ontario Beach Park proper. Parcel 196, the western river side jetty, which is immediately adjacent to the park, receives a great deal of use for viewing the lake and river activities, sitting, reading and other similar uses. A more direct tie to the park for safe access would be desirable. Other amenities such as binoculars and the like would be pleasant additions. Also, a very highly used area, the half-dozen parking spaces at the east end of Beach Avenue facing the river is constantly in a fast turnover use for boat watchers and sightseers. A clean-up of this area for sitting and viewing, tied into a parking lot renovation, would easily accommodate a rather nice park use.

Lake Ontario Shoreline - Parallel to Beach Avenue, the Lake Ontario shoreline is a natural pedestrian expansion of the Ontario Beach Park. The residential neighborhood offers a very quaint setting. The potential recreational use of this shoreline is limited to passive walking on a trail upon the bluff or when water heights permit walking along the water's edge. A logical western terminus

for either walk system exists at the lands of Rochester Gas and Electric Corporation and the Water Authority, which could be used for parking, fishing piers, picnic tables and simple uses of this type. At Parcel 105, a city-owned piece of land along the beach sidewalk right-of-way, an overview area could be built. It should be simple in order to grace comfortably the very pleasant residential neighborhood. Beach access at Parcel 118, another city-owned parcel, could be built in a low-keyed fashion. Street tree planting, occasional benches and a pedestrian graphic system would be helpful, especially between Parcels 68 and 91 where beach access will be limited at best.

Port Authority Land - The Port Authority land, Parcel 63c, as it exists, could receive some recreational use with little investment. At the simplest extreme, a few trees and shrubs would help establish a recreating atmosphere when approaching the beach. Benches and limited play facilities could offer even further use. Later, possible use as a marina site combined with park expansion and/or new uses would seem appropriate. This particular site's ultimate use should give due regard to Ontario Beach Park's need, since it is the only logical expansion direction.

Currently a series of recreation fields exist which visually connect with Ontario Beach Park via the parking lot west of Lake Avenue. A concerted effort should be made to connect the recreation fields (which are surrounded by year-round residences), the parking area and Ontario Beach Park with a pleasant, obvious pedestrian path. This would promote more logical use of both recreation facilities with a minimum of investment.

Stutson Street North to Railroad - The area from the swing bridge (railroad bridge) to the Stutson Street bridge has very little current recreational value excepting as marina facilities. The westerly shore is a mishmash of disorganized uses and could offer a tourist type recreation use such as boutiques, restaurants, a river walk system and the like. Further development up-river must tie into specific future decisions on the railroad right-of-way continuation and an overall river design and implementation plan.

Genesee River Shoreline - The Genesee River Valley from the higher and lower falls to the lake has been the subject of considerable discourse. It is most obvious that

considerable potential exists in this huge land area through a combination of public and private contributions to create one of the most dynamic recreational systems any major city has ever accomplished - and the quality of the basic intrinsic resource will probably permit the creation of an astounding system relatively inexpensively. The eastern edge, mostly in the Town of Irondequoit, is reasonably accessible and occasionally developed as it stands. The existing residential character of this side of the river limits the intensity of use and multitude of access points feasible, thus making a linear park tied to the railroad right-of-way, the most reasonable, overall consideration. Conversely, the western edge has considerable opportunities for numerous access points, such as the near Harborview Terrace or the Patten Street Marina. Of particular note, the Portland Cement lands at Boxart Street offer easy river access and a large park potential. The ranges of uses are almost limitless along this bountiful resource.

It would appear that the next steps to be taken in the valley constitute a solid plan of action. A detailed environmental analysis is required. Coinciding with this scientific study of the valley system, a detailed city-wide recreation program evaluation should be built in the valley. A detailed physical plan (as compared to the illustrative planning accomplished to date) must be completed along with a realistic implementation strategy and schedule.

Durand Eastman Park - Shoreline - The Ontario shoreline on the eastern side of the Genesee River could offer a series of small beaches with easy access. However, since most of the areas in question are within the township of Irondequoit, certain concerns of appropriate utilization are apparent. It would seem reasonable to create shoreline walks from Irondequoit Bay to the river. The railroad right-of-way could be a very appropriate pedestrian/bike-way linkage. The waterfront area between Durand Eastman Park and Lake Ontario offers considerable potential as a beach area. Such a proposal could be carried out by the construction of groins and other minimum efforts. Furthermore, pedestrian linkage from cliff-tops (roadside) parking and overview areas to the lower beach area is quite feasible. The creation of fishing piers and a marina in this area has some reasonableness and should be considered in long-range plans.

Durand Eastman Park and Ponds - Durand Eastman Park has no master plan nor current capital improvement plan. However, the county recently purchased a total of 398 acres contiguous to the southern park boundary. The total area of Durand Eastman Park is 942 acres. The beach area, Parcel 2B, has been closed by the State Health Department since 1966. Some authorized swimming was reestablished this year, but in 1973 and 1974 high water levels in the lake inundated the beach area.

The park is renowned for its horticultural collection and thus attracts many tourists and students each year. Currently, the recreational use of the park is substantial. Some increased uses could occur in the park proper. Athletic facilities and intensive winter sports are being considered by the Monroe County Park Department for the newly-purchased land area. As well, a comprehensive interpretive system is being contemplated for the park.

Tamarack Swamp should be preserved by way of a management program to prevent encroachment. It is a valuable recreational resource as it exists. Both Durand Lake and Eastman Lake could be developed for small boating uses (canoes and rowboats), warm water fishing and shoreline walks. The system could be fairly formal with parking areas, boat livery and a well-defined path system. The remaining water resources on the site, Sherry Swamp and Lily Pond, should remain as they exist. Johnson Pond has some potential for recreation use, but that and the adjoining land (the old Rotary Sunshine Camp) are isolated from the park by the City of Rochester Pollution Control facility. Current thoughts include a Conservation Education Center and/or a Day Camp for children.

The Pollution Control facility offers little or no potential of multiple use, especially considering future needs, security requirements and the restrictive physical sprawl of the existing facilities.

Overall, Durand Eastman Park serves important recreational needs as it exists. It should be maintained in a high quality to satisfy its current usage.

General Recreation and Development Principles

Although each area will require very specific treatment relative to the exact site constraints and program needs,

some general ideas can be offered to establish a tone for the character of the entire study zone.

Two distinct types of areas will become obvious which require compatible and yet varying treatment. The areas which will be very natural in character should be considered using "management-design" techniques to improve and yet maintain the area. In contrast, the intensive use areas such as marinas, beaches and the like, should be designed to perform their intended functions. Man-introduced elements should be limited in the former area while these elements should be utilized throughout the area with exotics and other specialized plantings limited to the entrance areas or special focal zones. Colors should be subdued, organic tones within the study zone with the palette becoming somewhat broader for focal accent or for special uses. Materials throughout the site should be limited in an effort to blend with the environment. Most structural elements including most buildings are envisioned as wood framed and clad.

The active areas in the river valley should be reinforced as distinct from the more passive areas through the use of a variety of techniques. In combination or separately they would include: barrier planting (dogwoods, hawthorns, roses), fencing, grading of mounds and maintenance of water courses.

Any new entrance roads to various intensive uses should be 18' wide with an asphaltic concrete surface. Provision should be made for car and bus parking at all intensive use areas. These areas should also be surfaced with asphaltic concrete and curbed to control drainage and direct traffic.

The site, especially near the active centers, should be served by asphaltic concrete walks from 4' to 8' wide depending on their location and function. The remainder of the trails in the area should be composed of a wood chip or sand surface, 4' in width. The slope should vary with the natural contour which should be kept reasonably level throughout most of the site. However, in any case, slopes should not exceed 8%, or very safe steps will be required. Plant materials can be utilized to advantage in trail development as means to: attract, repel, define, direct and buffer.

Bridges will occasionally be required to cross streams and afford access to certain portions of the site.

SUMMARY OF
POTENTIAL RECREATIONAL PROGRAM

Ontario Beach Park

Lake Swimming
Pool Swimming
Sunbathing
Picnicking (group)
Picnicking (individual)
Playgrounds and Tot Lots
Court Games
Open Play Areas
Ice Skating

Lake Ontario Shoreline

Walking and Viewing

Port Authority Land

Playgrounds
Court Games
Playfields
Boating (ramps and marinas)

Stutson Street North to Railroad

Playgrounds
Court Games

Genesee River Shoreline

Walking Trail
Fishing
Boating and Sailing (marinas and services)

Durand Eastman Park - Shoreline

Walking and Viewing
Lake Swimming
Fishing (off-shore)
Bicycling
Hunting (waterfowl)
Picnicking (individual)

Durand Eastman Park - Ponds

Boating (row boats, canoes, electric-powered boats)
Fishing
Nature Study
Picnicking (individual)
Picnicking (group)
Cross-country Skiing
Bow Hunting (deer)

Appropriately located bridges can provide a great deal of control to the circulation system; providing access to some areas while limiting access to others. They should be constructed of timber and wood frame treated for protection and allowed to weather to a natural gray color. Bridge design and size should consider the crossing requirements of service and emergency vehicles. As a further extension of the trail system, catwalks should allow penetration of various wetland areas for study and observation purposes. Catwalks should be of simple wood frame construction, treated with preservative and allowed to weather in the same fashion as the bridges. Blinds could be provided in association with the catwalks and for other observation areas on the site. In areas where it would not be appropriate to develop trails or catwalks, but study or observation is desired, a simple observation tower may be developed. This would permit visual penetration without physically disturbing the area of interest. Depending on the specific location, a tower of 25 to 35 feet in height would be ample to provide a filtered view to the surrounding area. This structure should be wood framed, provided with a railing and roof and simply executed. Natural weathering should be allowed once the wood is treated with preservative.

Benches will be required throughout the site, especially along the trail system and at the public areas; e.g. the beaches. Backless benches can be provided in areas where people are not expected to linger or where it may not be desirable for people to stay from a management point of view. Benches with a back are envisioned for use primarily at the developed "centers". Waste receptacles should be conveniently located throughout the site. They should be made of heavy duty woven wire and painted matte black.

Lighting should be limited to the entrances and active centers of the site and be unobtrusive in character. A "cut-off" fixture is recommended which controls light in a positive and desirable fashion and eliminates the "spill" of light. This fixture type can be established for both vehicular and pedestrian uses with appropriately sized and spaced standards.

It is important to establish a graphic program early in the development of the study zone to aid visitors in the appropriate and fullest use of the area. The graphics are used to identify, direct and inform and can be accomplished within a consistent format. A logo should be established which should be used throughout the signage

system. Once established, the logo will be the familiar identification of the zone. A verbal message need only appear on the highway trailblazers and entrance sign. The directional signs will direct people to specific areas, trails, etc., while the informational signs will impart data including uses of the site. Educational information regarding flora of the site and faunal habitats can also be imparted in the format of the informational signs described.

A specific type face must be chosen for its visibility and appropriateness in combination with the logo. The sign material should be metal with the capability of applying strip-on messages. This would allow flexibility in developing messages appropriate to the specific needs of the site.

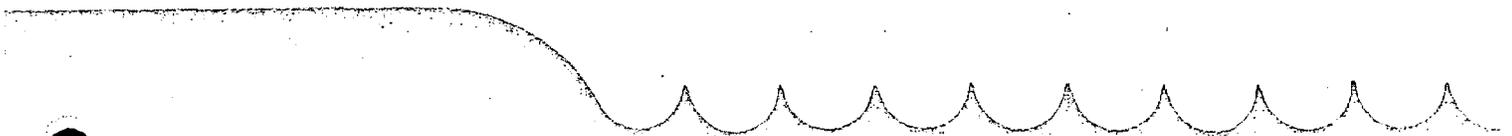
Typically, the road frontage portions of the area where seclusion is desirable can be buffered from the road through the use of planted mounds where possible. The planting chosen should be salt tolerant species which can withstand the winter road salt conditions. It is felt that a well-planted mound will provide a sufficient feeling of exclusion to the general public; will prevent vehicles from entering an area and can be used as a directional device to the proper entrance. The planting will also in time provide a sufficient screen and promote a feeling of remoteness to any given site.

It is envisioned that intensive areas or activity centers will be developed as distinct entities on a program-by-program basis and that no connection between any areas will necessarily be developed, excepting as it is obvious and desirable. All areas should provide for vehicular parking and should be developed in a manner which will support numbers of people independent from the balance of the system.

The shelters or structures envisioned for each site should be wood frames and wood clad, as feasible, in keeping with the character of the site. Some activity centers will become, by locations and use, the "gateway" to a given area and should house functions appropriate to its logical influence.

Overall year-round uses and multiple uses should be considered in all the various activity center designs as well as throughout the recreation system in general. There is no question that the study zone can and should be a fine, fully coordinated recreation area with a full complement of mixed uses and private-public investment.

TECHNICAL REPORT:
EROSION



TECHNICAL REPORT ON EROSION POTENTIAL ANALYSIS AND POSSIBLE PROTECTIVE MEASURES

Introduction

This report covers a wide range of information concerning erosion potential, erosion control measures, implementation of erosion control plans, and recommended long-range management for erosion control. The report details the summary text on erosion potential categories in the final report, describing present conditions and providing existing information, when available, in support of those designations of erosion potential categories.

In addition, for the major geographic areas of the coastal zone, the report discusses the type of planning efforts and alternate solutions which offer promise in dealing with erosion problems of the coastal zone.

The emphasis of this report is upon the presentation of a full range of considerations regarding erosion control in the Rochester coastal zone. The report is intended to provide a level of detail which can stimulate interest in further scientific analysis, planning, and management activity.

Erosion Potential Factors

The location and degree of erosion potential in the Rochester coastal zone results primarily from geologic, hydrologic, climatic, and soil conditions. This section will discuss the basic influences of these conditions upon erosion in the coastal zone. Soil conditions, for which a very well developed data base and erosion evaluation methodology exist, receive major attention.

o Basic Environmental Influences

The deposition of sediment in post-glacial Lake Iroquois produced the overlying sediment in the coastal zone which is today affected by erosion. These sediments were found (Adams, 1975a) to be primarily composed of fine grained material with some small amounts of coarse grained deposits from glacial meltwaters and some glacial till (with only 3% - 5% cobbles and boulders). Beach deposits of cobbles apparently ripped from exposed bedrock

bedrock along the shorelines during high water and storms were also observed.

Fluctuation in the level of Lake Ontario may cause a water level increase of 5 or 6 feet from the present 245 or 246 foot mean sea level elevation. Storms driving into the shoreline, especially during high water periods, establish the conditions for maximum shoreline erosion.

When storms wash out the base of bluffs along the shoreline, erosion on the upper part of the bluff begins. This is due to the fact that all sediments, including those of the bluffs, have a natural angle of repose, the maximum slope or angle at which the sediment remains stable. When the bluff's base material or "toe" is removed, sediment is pulled down to fill the void and readjust the outward slope. The bluff angle of repose is 45 degrees (Adams, 1975b). Frost action, the force of water expanding during freezing, is a significant factor in the shoreline sediment erosion process (Adams, 1975a). The moderating effect of Lake Ontario's climatic influence, coupled with a north-facing exposure in the generally cool temperate zone, indicates great potential for the freeze-thaw cycle to operate.

In conjunction with the effects of removing the toes of bluffs creating severe erosion, it is logical that erosion of bluffs bordered by wide beaches is a less critical problem. The energy of a wave is gradually dissipated as the wave moves across a wide, shallow expanse. When a wave moves from deeper to shallower water and to shore in a shorter distance and over a steeper sloping bottom, much more of its energy is received as it strikes land. Hence, bluffs which rise abruptly at the shorelines bounded by deeper water receive more destructive wave energy than do shorelines bounded by a wide, gradually sloping beach.

o Soils

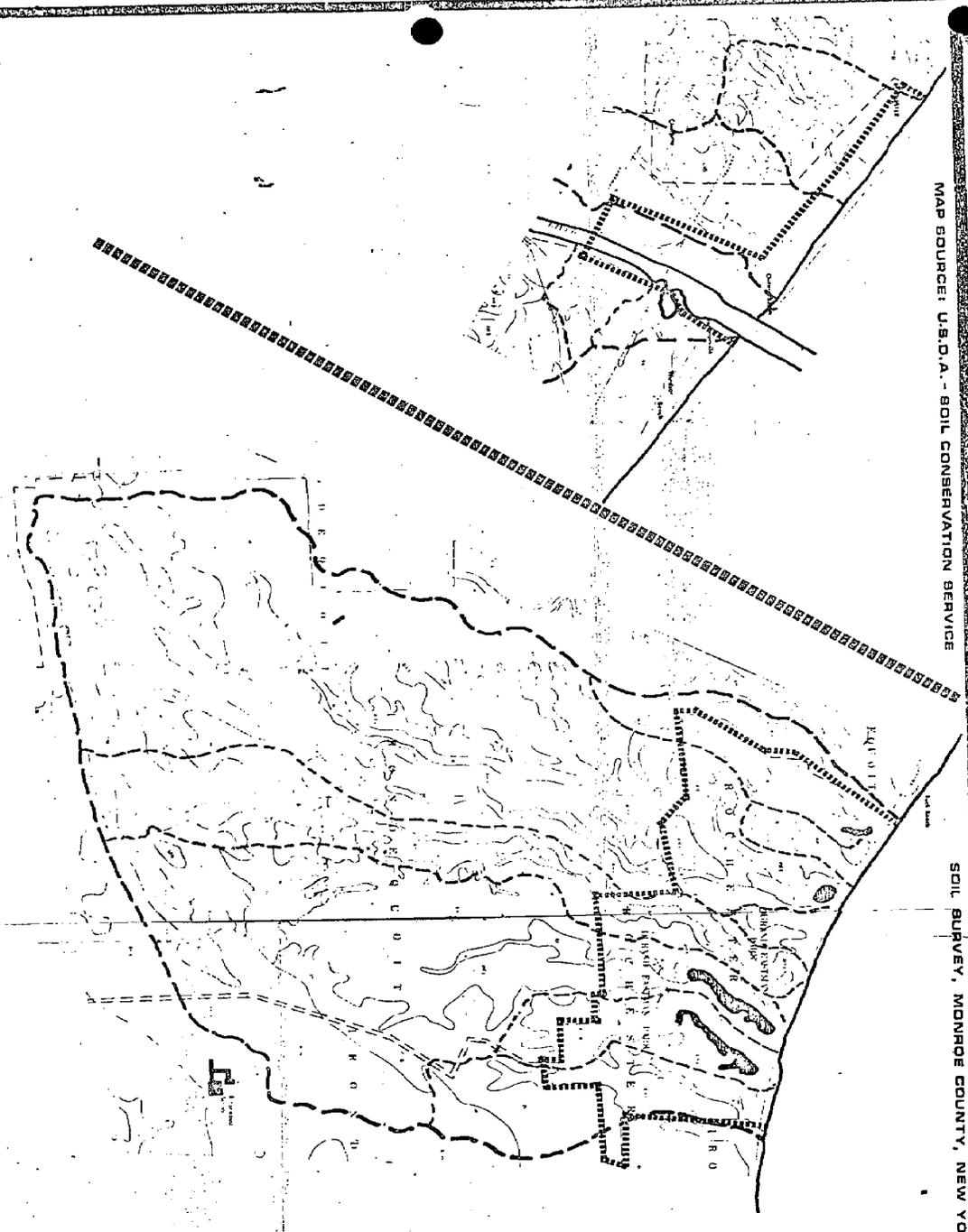
The detailed soils mapping and information available for Monroe County from the U.S.D.A. Soil Conservation Service makes it possible to define four categories of soils based on the erosion potential: categories of slight, moderate, severe, or very severe erosion potential (see Soil Erosion Potential Map). The soils are described (Heffner and Goodman, 1973) by series, a

MAPPING UNIT SYMBOL	SOIL SERIES MAPPING UNIT NAME	SOIL PHASE TEXTURE	SLOPE	K VALUE OF B HORIZON	AVERAGE PERCENT OF SLOPE	DESCRIPTION OF EROSION POTENTIAL
Al	Alluvial Land	--	--	UN ¹	--	Slight
AnB	Alton	gravelly sandy loam	3-8%	.20	5.5%	Slight
AoB	Alton	gravelly loam	3-8%	.20	5.5%	Slight
AsC	Arkport-Dunkirk	very fine sandy loam	2-12%	.43	7%	Severe
AsD	Arkport-Dunkirk	very fine sandy	12-25%	.43	18.5%	Very Severe
AtF3	Arkport-Dunkirk-Colonie	--	20-60%, eroded	.43	40%	Very Severe
CkB	Claverack	loamy fine sand	2-6%	.17	4%	Slight
CoB	Colonie	loamy fine sand	0-6%	.43	3%	Slight
Fw	Freshwater marsh	--	--	UN	--	Slight
Lm	Lamson	very fine sandy loam	--	.43	--	Slight
Ms	Muck, shallow	--	--	UN	--	Slight
Genesee River Mouth Area						
Al	Alluvial Land	--	--	Un	--	Slight
AtF3	Arkport-Dunkirk-Colonie	--	20-60%, eroded	.43	40%	Very Severe
Ca	Canandaigua	silt loam	--	.49	--	Moderate
ClB	Collamer	silt loam	2-6%	.43	4%	Severe
CmB	Collamer	silt loam, loamy subsoil variant	2-6%	.43	4%	Severe
Cw	Cut and Fill Land	unknown	--	UN	--	UN
DuD3	Dunkirk	silt loam	12-20%, eroded	.43	16%	Very Severe
Ee	Eel	silt loam	--	NA ²	--	Slight
HlB	Hilton	loam	3-8%	.17	5.5%	Slight
Lb	Lake Beaches	variable	variable	generally .17 or less	NA	UN(Slight, except during storms)
Mb	Made land	unknown	--	UN	--	UN

¹UN-Unclassified
²NA-Not Available

³Generally, Lake beaches have a low degree of erodibility and would only be subject to erosion during high water and/or storm periods.

SOIL CLASSIFICATIONS AND EROSION POTENTIAL - ROCHESTER COASTAL ZONE AREA



MAP SOURCE: U.S.D.A. - SOIL CONSERVATION SERVICE

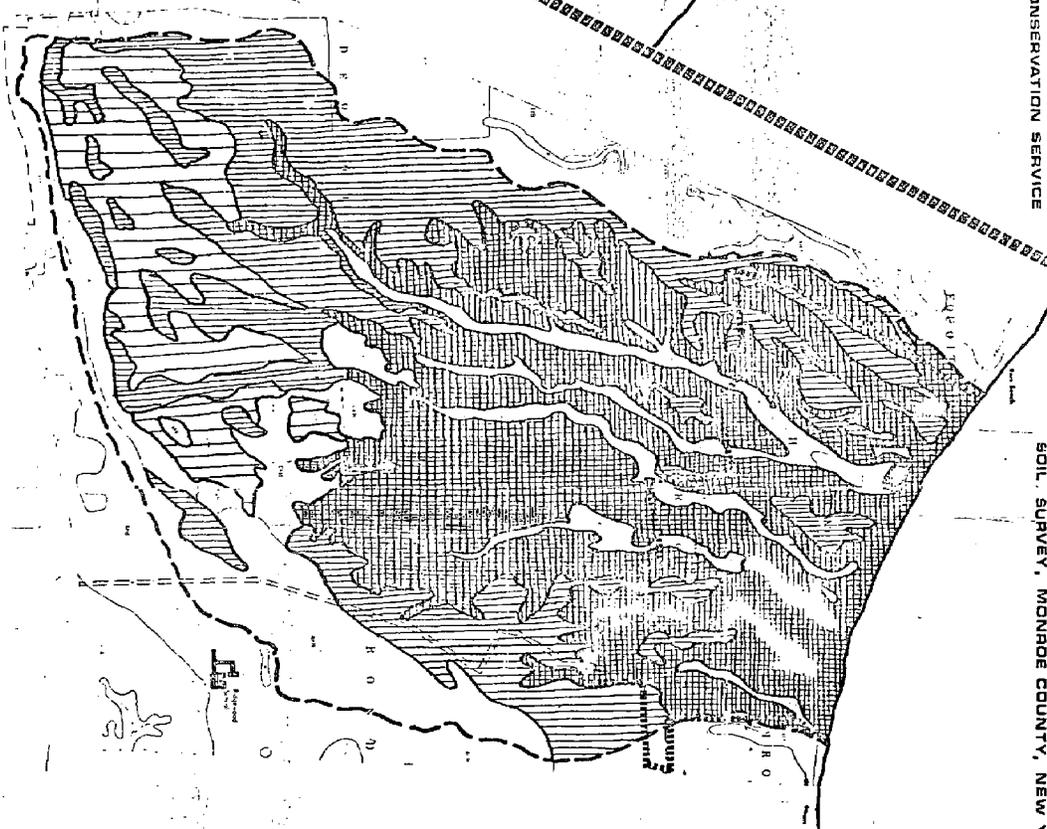
SOIL SURVEY, MONROE COUNTY, NEW YORK

(1" = 2000')

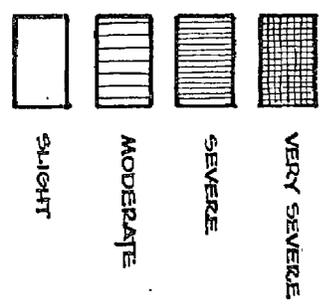
<p>ROCHESTER COASTAL ZONE RESOURCES MANAGEMENT STUDY SOILS & WATERSHEDS</p>		<p>SCALE 1:24000</p> 
<p>PREPARED FOR: CITY OF ROCHESTER DEPARTMENT OF COMMUNITY DEVELOPMENT</p>	<p>PREPARED BY: ECOPLANS INCORPORATED SARATOGA SPRINGS, NEW YORK 12606 A MEMBER OF THE SARATOGA ASSOCIATES</p> 	<p>DATE: 1987</p>

MAP SOURCE: U.S.D.A. - SOIL CONSERVATION SERVICE

SOIL SURVEY, MONROE COUNTY, NEW YORK



1:24,000



**ROCHESTER COASTAL ZONE RESOURCES
MANAGEMENT STUDY**

SOIL EROSION POTENTIAL

PREPARED FOR:
CITY OF ROCHESTER
DEPARTMENT OF COMMUNITY DEVELOPMENT

PREPARED BY:
ECOPLAN INCORPORATED
SARATOGA SPRINGS, NEW YORK 12058
A MEMBER OF
THE SARATOGA ASSOCIATES

SCALE
1:24,000

name of a geographic location where the soil was first mapped and described, and by phase, the texture, slope and characteristics related to the soil's management (see Soils Classifications and Erosion Potential Chart). The soils included in this chart are those mapped in the watershed lands which would have surface drainage (assuming the absence of man-made drainage systems) through and, thereby, influence upon the coastal zone environment (see Soils + Watersheds Map). The watershed boundaries were drawn based on the topography and drainage features of the 7.5 minute U.S.G.S. topographic maps for the Rochester East and Rochester West quadrangles.

All of the soil mapping units shown on the Soils and Watersheds map represent a phase of a soil series. For example, DuD3 is known as Dunkirk silt loam, 12 to 20 percent slopes, eroded phase. This is one phase of the Dunkirk soil series. Characteristically, the Dunkirk series and every other soil series has a number of distinct layers including the topsoil, subsoil and still deeper subsoil layers. These are observable when test pits are dug or construction activities make a vertical cross-cut through the ground.

Each of the soil layers, known as horizons ("A", "B", "C" horizons in order from top to bottom) in every soil series has been assigned a numerical factor of erodibility by the Soil Conservation Service. This is known as the "K" value.

The soil horizon most likely to be exposed to the forces of erosion during development activities is the second layer from the top, the B horizon. When soil is bared of vegetation and the upper A horizon soil layer, rainfall or water coming from any source can freely move the soil particles, organic matter, and soluble nutrients of the B horizon layer in the direction of the water's movement, thus eroding the soil.

Based on the Universal Soil Loss Equation found in the S.C.S. Guidelines for Erosion and Sediment Control in Urban Areas of New York State, it was possible to establish a range of soil erodibility potential. The range of potential is derived from the K value of the B horizon of the soil series (Warner, 1975) to which each soil mapping unit is related, and the

average percentage of slope for each mapping unit. The range of potential was based on the following matrix (Goodman, 1975):

K values	Average Slope %					
	0-3%	3-8%	8-15%	15-25%	25-35%	35+%
.17-.20	SL	SL	M	M	S	S
.24-.28	SL	M	M	S	S	VS
.32-.37	SL/M	M	M/S	S	VS	VS
.43-.64	M	S	VS	VS	VS	VS

- SL = Slight potential
- M = Moderate potential
- S = Severe potential
- VS = Very severe potential

Obviously, slope plays an equally significant role in determining the ultimate erodibility of a soil mapping unit. This is evidenced in the matrix above and is a proven factor in soil science. As slopes become steeper, erodibility increases.

In some instances, two or more soil series have been combined into a single soil mapping unit, such as the AtF3, Arkport, Dunkirk, Colonie soils, 20 to 60 percent slopes, eroded. In this case, the K value for the B horizon of the most erodible soil series (the Dunkirk K value of .43 versus the Arkport K value of .28), is used on the basis of assuming the most severe potentials for erosion might occur from the presence of soils with Dunkirk characteristics.

The Soil Classification and Erosion Potential Chart presents all of the mapping units found in the study area with their names, the K value of the B horizon, the average percent of slope, and the description of erosion potential as computed.

Erosion Potential Analysis

This section divides the coastal zone into three basic areas and analyzes erosion potential in each. The first area, the shoreline, includes the bluffs west of Ontario Beach, Ontario Beach, and the bluffs in Durand Eastman Park. The Rochester Harbor area is described next. Finally, the inland areas which influence the coastal zone, the Durand Eastman Park and watershed uplands

in Irondequoit and the land areas around Rochester Harbor are analyzed. For each area, and the sub-areas, present physical conditions and erosion potential is described, along with the basis for defining the erosion potential.

o Shoreline

The bluffs west of Ontario Beach rise approximately 20 feet above lake level. A very narrow, sometimes non-existent, beach is located at their base, and residential land use is located at their crest. The vegetation of these bluffs is sparse with some small pioneer species struggling to maintain themselves.

The erosion potential of this area is based on detailed soils information and limited geological knowledge. Soils information indicates severe erosion potential for the bluffs with moderate erosion potential in the drainageway area which roughly bisects them. Geological information indicates generally severe or very severe natural erosion potential for bluffs along the Lake Ontario shoreline (Adams, 1975b).

The soils of the bluffs are derived from fine-grained, lake-laid sediments and have a high K value on moderate to steep slopes. The geological evolution of bluffs along Lake Erie and Lake Ontario (Adams, 1975b) indicates that a severe storm could cause the bluffs to erode as much as 15 feet in one day under extreme weather and high lake water level conditions, assuming no erosion control prevention measures were taken. However, a variety of structural protective devices for the bases of these bluffs have been very effective in halting erosion during recent periods of high water and severe storms such as in 1973. The average annual rate of bluff erosion along unprotected shoreline areas seems to be about 3 feet per year (Adams, 1975b). However, this is a long-term average of highly variable conditions which might cause 20 feet of erosion in one year and no more erosion for the next ten years. Also, one area of shoreline might be drastically affected while nearby areas escape. So it is stressed that the various environmental influences causing bluff erosion make it very difficult to forecast erosion rates of bluffs along the lake.

Ontario Beach is a coastal plain located at the mouth of the Genesee River. About one-third of the land area north of Beach Avenue is lake beach, with the remaining area as grassy or paved park area. The west wall of the Rochester Harbor navigation channel stops the eastward littoral drift which would otherwise transport sediment along the shore.

The lake beach sediments are not classified in the detailed soils information because of their variable conditions. However, they are generally considered to have a relatively low K value which would ordinarily mean a low erosion potential (Goodman, 1975). However, during storms and high waters, significant erosion will occur. In the particular setting of Ontario Beach, with the channel navigation wall as a sediment trap, the loss of beach materials during storms appears minor. The grassy and paved areas are located on fill material which is also unclassified as a soil material, therefore preventing natural erosion potential from being estimated. No geologic information concerning erosion potential of this area was available.

The bluffs in Durand Eastman Park discussed here are located north, below the Hojack railroad line right-of-way. The distance between the shoreline and the railroad line varies from about 200 feet on the west side of the park down to 100 feet toward the middle and east side of the park. The beach is very narrow or non-existent. The bluffs are steeply sloping features with pioneer vegetation.

The soils information indicates very severe erosion hazards for the soils in these areas. The Arkport-Dunkirk-Colonie complex soil, with 20% to 60% slopes, is mapped for this entire stretch of shoreline and is highly susceptible to erosion, and in 75% of the area mapped as this soil unit, all or nearly all of the surface soil has been removed by erosion. The geological information on erosion rates of bluffs previously mentioned also applies to this stretch of shoreline. These bluffs have been protected to some degree by the very wide and shallow lake bottom adjacent to the shore which dissipates wave energy during storms and by a boulder blanket, apparently installed for the railroad line, which protects the toes of the bluffs at the shoreline.

o Rochester Harbor Area

The Rochester Harbor area is bounded by Beach Avenue, Stutson Street and the city boundary paralleling the east side of the Genesee River. The area has a broadening valley configuration associated with its location just above the mouth of the Genesee River with moderate slopes and occasional steep slopes. The area is completely developed with a mixture of land use including industrial, utilities, commercial, residential and institutional.

On the west side of the river, the land underlying the port and utility facilities is composed of fill material while the remaining land has soils derived from lake-laid sediment. The erosion potential of the fill material is unknown, the soils data indicate severe erosion potential for the soils derived from lake-laid sediments. On the east side of the river, all of the soils are indicated to have slight erosion potential except for a soil mapped to the south and east of the Rochester Yacht Club which has very severe erosion potential.

o Inland Areas

Durand Eastman Park and the uplands in the watershed in Irondequoit to the south form one single resource pattern which must be dealt with as such if environmental quality and erosion control are objectives. This area is dominated by a series of narrow valleys and ridges running roughly north and south. The north-flowing drainage patterns were apparently formed in pre-glacial deltaic deposits associated with the Irondequoit Creek drainage system (Heffner and Goodman, 1973). Within Durand Eastman Park small lakes are located at the ends of two of the streams. Outside of the park, urban residential development has encroached upon very steep slopes which have very severe soil erosion potential. Continued development is in prospect. Some sedimentation resulting from this development has begun to affect the stream channels and channelization structures.

The erosion potential based on detailed soils data for this area is predominantly very severe. The same highly erodible Arkport-Dunkirk-Colonie complex soil on 20% - 60% slopes described earlier for the bluffs in Durand Eastman Park is found in the steeply sloping lands throughout this area. The soil erosion

potential becomes severe or moderate only in the extreme uplands of watersheds in Irondequoit with Titus Avenue approximately the line of change. The only areas not subject to severe erosion potential are the streams and adjacent lowlands which are filled with alluvium and which receive sediments eroded from the uplands.

Areas Surrounding Rochester Harbor - Land in the Town of Greece, south of the Ontario Beach bluffs, the Charlotte section of Rochester, and land in Irondequoit bordering and draining toward the Genesee River is included. The land in Greece is predominantly the Lakeshore Country Club and some residential development near the Lake Ontario State Parkway. The Charlotte area of Rochester is a completely developed, predominantly residential area. The area of watershed in Irondequoit has industrial, residential and institutional land use.

In Greece, the detailed soils information indicates very severe erosion potential for soils of the golf course which drain directly through a lowland to Lake Ontario. The soils are located on steeply sloping land and are surrounded by areas of the same soils mapped for the bluffs west of Ontario Beach, which had severe erosion potential.

In Charlotte, although development is essentially total, detailed soils data would indicate severe erosion potential for all areas except the drainageway which runs approximately northeast from School 38 to Ontario Beach Park. The drainageway is filled with alluvial deposits and is subject to sedimentation rather than erosion.

The Town of Irondequoit has an area of soils with very severe erosion potential which has surface drainage into the Genesee River near the Yacht Club. These soils are located approximately between Lake View School and the Yacht Club.

Possible Protective Measures

Protection must be based on the nature and extent of the erosion problems. In some cases, additional study will be involved. Solutions must be based on the findings of studies or existing resource information which adequately defines the conditions causing the erosion problems. Solutions include a variety of alternatives: land

use regulations, non-structural means, and structural means may be used separately or in combination. The implementation of protective measures will require an assignment of responsibility to an agency or task force to organize the effort. A team approach should be stressed to include local regulatory officials, natural resource specialists, and engineers, as well as Planners.

o Shoreline

Planning Effort - Some group must take responsibility and initiative in organizing planning efforts for shoreline erosion. One logical choice would be the city's Department of Community Development Planning Office. The group responsible for the planning must consider it a permanent, full-time function and not an emergency situation function. Contacts and working relationships must be established between the designated planning office and the other agencies involved with shoreline erosion at the federal, state and local levels such as the Corps of Engineers, the New York State Department of Environmental Conservation, and city and county authorities.

While limited general information is available on shoreline erosion in Lake Ontario, more detailed information should be developed for the Rochester Coastal Zone shoreline to most efficiently implement shoreline protection. Therefore, additional studies will be required.

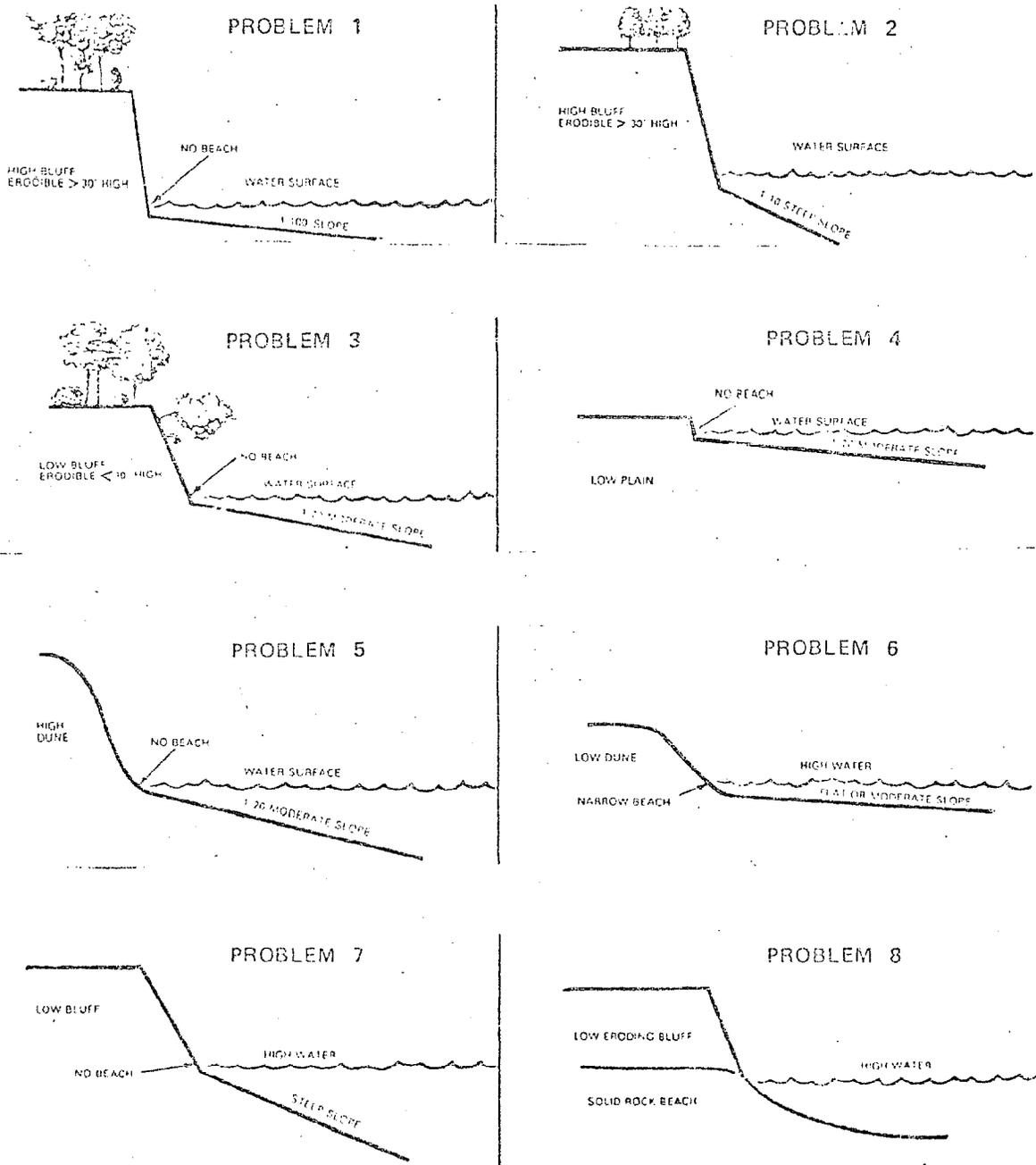
Tentatively, further studies of the Lake Ontario shoreline are being scheduled for the summer of 1976. Suggestions for sites to be considered for study next summer are being accepted by Dr. Robert Adams of SUNY College at Brockport. The possibility exists that such a study, if conducted in the shoreline area of the coastal zone, could provide the detailed data needed to establish a shoreline erosion protection plan.

Alternate Solutions - Shoreline erosion of the bluffs is the critical concern. High water levels have reduced beaches to the small or nonexistent beaches below the bluffs, thus exposing the bluffs directly to erosive wave energy. In this case, structural devices are the only solutions to erosion control.

A series of shoreline erosion problems, a chart describing appropriate engineering solutions, and a

series of illustrations discussing pros and cons of solutions is included. Problems 1 and 3 are the most typical of the bluff shoreline erosion problems.

Illustrations and charts on this and following pages excerpted from: Help Yourself, a brochure, Department of Army, North Central Division, Corps of Engineers, Chicago, Illinois, 1970.



PROBLEM NUMBER

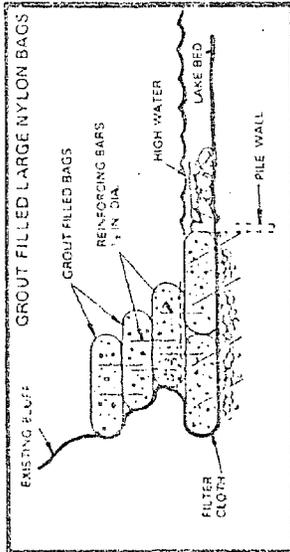
POSSIBLE SOLUTIONS	High Flat	High Steep	Low Mod	Low Mod	High Mod	Low Flat	Low Steep	Low Rock
	1	2	3	4	5	6	7	8
REVETMENTS								
Stone	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Broken Concrete Pellmell	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Handplaced	Yes	No (Mat'l Size)	No (Mat'l Size)	No (Mat'l Size)	No (Mat'l Size)	Yes	No (Mat'l Size)	Yes
Gabion	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bags--Grout Filled Large	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
BEACH ACCRETION DEVICES								
Sand Fill	No	No	No	No	No	No	No	No
Perched Beach & Sand Fill	No (Cost)	Yes	Yes	Yes	Yes	No (Cost)	Yes	No
Groins -- Short & Low	Yes ²	No (Ineffective)	Yes ²	Yes ²	Yes ²	Yes ²	No (Ineffective)	No (Ineffective)
Groins--Long	No	No	No	No	No	No	No	No

POSSIBLE SOLUTIONS	High Flat	High Steep	Low Mod	Low Mod	High Mod	Low Flat	Low Steep	Low Rock
	1	2	3	4	5	6	7	8
SEAWALLS								
Timber pile	Yes	Yes ¹	Yes	Yes	Yes ¹	Yes	Yes	No (Structural)
Steel pile	Yes	Yes ¹	Yes	Yes	Yes ¹	Yes	Yes	No (Structural)
Timber Crits Stone filled	Yes	No	Yes	Yes	Yes ¹	Yes	No	Yes
Wood Pile Wire Mesh Fence Stone filled	Yes	Yes ¹	Yes	Yes	Yes ¹	Yes	Yes	No (Structural)
Sandbag & Hogwire Fence	Yes	No (Mat'l Size)	No (Mat'l Size)	No (Mat'l Size)	No (Mat'l Size)	Yes	No (Mat'l Size)	Yes
OFFSHORE BREAKWATERS								
Low segmented	Yes ²	No (Cost)	Yes ²	Yes ²	Yes ²	Yes ²	No (Cost)	No (Ineffective)
MISCELLANEOUS								
Relocation	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

¹ Provided access to construction area is available

² Provided adequate supply of littoral materials is available.

CONSTRUCTION ALTERNATIVES. PROS, CONS AND COSTS



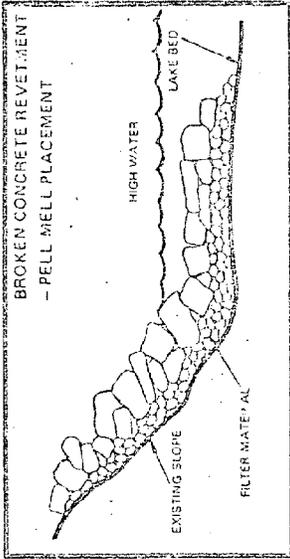
ADVANTAGES

Moderate first cost.
Adaptable to stage construction.
Suitable for all shore forms.
Can be accomplished without heavy construction equipment.

COST/LIN. FT. — \$80 to \$115

DISADVANTAGES

Subject to scour flanking and foundation failures.
More subject to cast as tropic failure unless positive toe protection is provided.



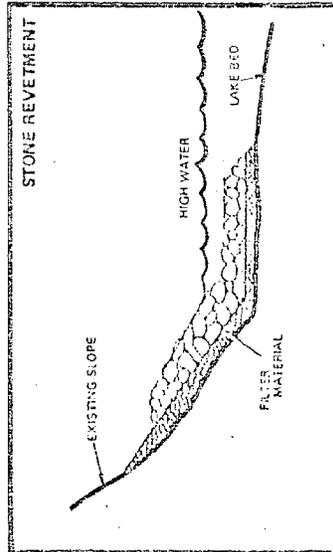
ADVANTAGES

Inexpensive.
Easy construction.
Large concrete pieces are difficult to obtain.

COST/LIN. FT. — \$25 to \$ 85

DISADVANTAGES

Large pieces required for underlying filter layer because of large void.
Extremely unattractive appearance, unless special care is taken in construction.



ADVANTAGES

Most effective structure for absorbing wave energy.
Flexible — not weakened by slight movements.
Natural rough surface reduces wave runup.
Lends itself to stage construction.

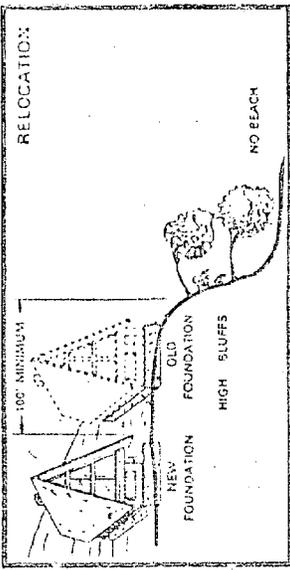
Easily repaired — low maintenance cost.

The preferred method of protection where access is limited.

COST/LIN. FT. — \$28 to \$100

DISADVANTAGES

Heavy equipment required for construction.
Subject to flanking and moderate scour.
Limits access to beach.
Moderately high first cost.
Difficult construction where access is limited.



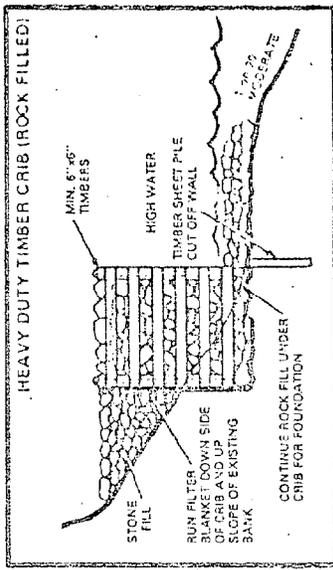
ADVANTAGES

It is permanent. In the long run it may be the best method of protection.
Adaptable to short reaches of shoreline.
Can be accomplished by the individual without coordination through contract with a house mover.

COST/LIN. FT. — \$70

DISADVANTAGES

No maintenance required.
Special skills and equipment required.
Area must be available for relocation of the house.
Does not stop erosion.



ADVANTAGES

Lends itself to protecting short reaches.
Do it yourself project. No special equipment required.
Moderate first cost.

Can be constructed of materials that are readily available.

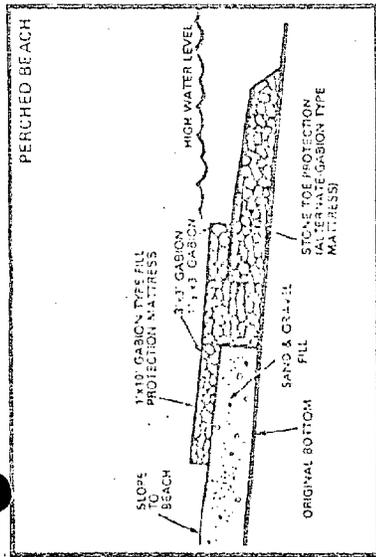
Structure can be disassembled and materials stockpiled.

Structure is easily repaired.

COST/LIN. FT. — \$40 to \$ 48

DISADVANTAGES

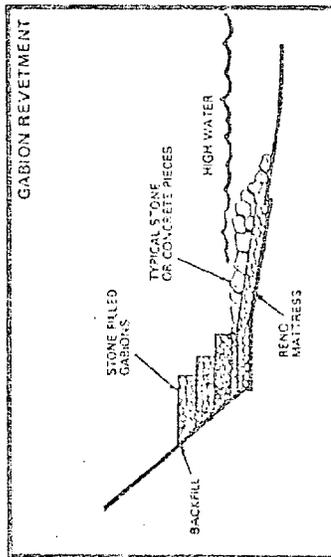
Temporary protection.
High maintenance cost. Structure is difficult to repair.
Subject to failure from flanking, scouring, or overtopping.
More subject to catastrophic failure unless positive toe protection is provided.
Limits access to beach.



ADVANTAGES
Provides a recreational beach.
Aesthetically pleasing appearance.
Requires less beach-fill than a beach-fill without a retaining structure.

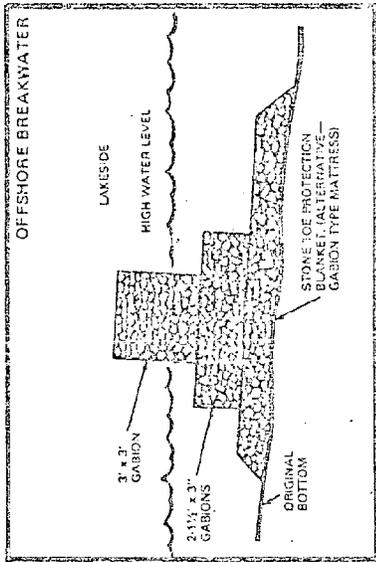
DISADVANTAGES
Beach nourishment required to maintain sand and gravel fill—
COST/LIN. FT. — \$225

ADVANTAGES
sand or gravel must be readily available.
Does not stop erosion lakeward of structure.
A navigation warning system may be required to prevent collisions with the submerged structure.



ADVANTAGES
No special construction equipment required, rated best-do it yourself type of protection.
Flexible, easily repaired after storm damage.
Low first cost, if do it yourself project.

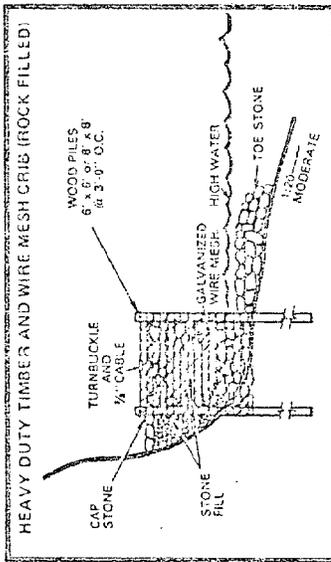
DISADVANTAGES
Subject to rusting and deterioration.
Subject to flanking and moderate scouring action.
Cuts off access to beach.
Moderate to high maintenance costs.
COST/LIN. FT. — \$30 to \$70



ADVANTAGES
Beneficial effect can extend over a considerable length of shoreline.
Maintain or enhances recreational value of a beach.
The structure is not subject to flanking — it can be built in separate reaches.

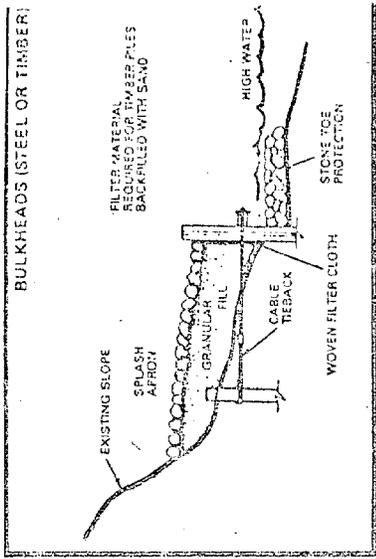
DISADVANTAGES
May modify beachline and cause erosion in downdrift areas.
Structure is subject to foundation and scour failures, floating may be required for construction.

lower than similar structures designed for other purposes.
Extremely difficult to repair.
COST/LIN. FT. — \$40 to \$50



ADVANTAGES
Lends itself to protecting short reaches. Do it yourself project.
Can be constructed of materials that are readily available.
Structures can be disassembled and materials stockpiled.
Structure is easily repaired.

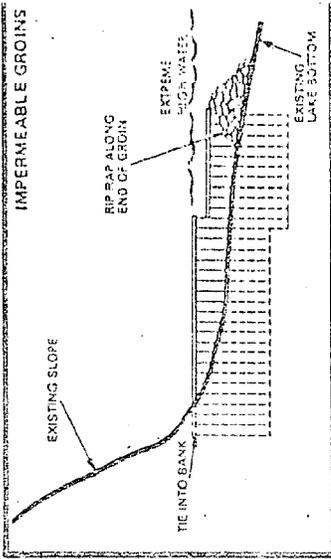
DISADVANTAGES
Temporary protection.
High maintenance costs.
Requires constant maintenance.
Subject to failure from flanking, scouring, or overtopping.
Limits access to beach.
COST/LIN. FT. — \$30 to \$140



ADVANTAGES
Provides positive protection.
Maintains shoreline in fixed position.
Low maintenance cost.
Materials are available locally.

DISADVANTAGES
Beach scouring. Adequate toe protection required.
High first cost.
Subject to flanking; bulkhead must be tied back securely.
Pile driving requires special ski and heavy construction equipment.
Complex engineering design problem.

Vertical walls induce severe beach scouring. Adequate toe protection required.
Limits access to beach.
COST/LIN. FT. — \$57 to \$105 (TIMBER) — \$200 to \$300 (STEEL)



ADVANTAGES
Resulting beach protects upland areas and provides recreational benefit.
Moderate first cost and low maintenance cost.

DISADVANTAGES
Extremely complex coastal engineering design problem. Quality of coastal engineering services are essential. Groins rarely function as intended.
Areas downdrift will probably experience rapid erosion.
Unsuitable in areas of low littoral drift.
Subject to flanking, must be securely tied into bluff.
COST/LIN. FT. — \$125 to \$150

Protection for Ontario Beach appears unnecessary at this time but further studies should be made to assure that increased lake levels or other conditions will not cause erosion there at some point. The build-up of beaches along the Durand Eastman shoreline may be possible using engineering solutions listed in the previous material such as the perched beach or offshore break water alternatives.

A large-scale plan for erosion control of bluff shoreline areas and beach build-up would probably produce the best and most effective design at the least cost per foot. Individual projects for shoreline erosion protection tend to the stop-gap in nature and ultimately more costly as failure is more likely.

o Rochester Harbor Area

Planning Efforts - Because of the developed and protected nature of this area, minimal disturbance of the land and minimal erosion problems exist. If major land use changes are to occur, the planning group with overall responsibility should: (1) determine the environmental impact which resultant sedimentation would have on other areas of the coastal zone; and (2) should establish erosion control standards for development associated with the land use change.

Alternate Solutions - Sources of sediment from river-side development or redevelopment can be controlled during the construction process.

o Inland Areas

Planning Efforts - The severe or very severe erosion potentials which exist on watershed lands draining into the coastal zone require the application of regulations and non-structural land treatment methods, primarily to control erosion. Because there is an overlap of these watershed lands into municipalities outside of Rochester, the planning group with coastal zone management responsibility must seek the cooperation and participation of Greece and Irondequoit in an erosion control program.

The basic steps in the planning process are:

- (1) Determining the level at which sedimentation planning will take place.

- (2) Conducting watershed research.
- (3) Developing erosion and sediment control provisions (or a control strategy).
- (4) Implementing control strategy by incorporating control provisions into the plans for all activities which produce erosion and sediment, including activities which are likely to cause sedimentation in the future.
- (5) Following through on control provisions at the project level.
- (6) Conducting evaluations of the success of the control program and providing for revision and updating, as required.

(Powell, et al, 1970)

The implementation of the erosion and sediment control regulations is a legislative and administrative process. Provision of erosion and sediment control regulations may be included in subdivision, drainage, grading or zoning regulations.

The basic principles on which erosion and sediment control can be based are summarized below. Land treatment measures are integrated in them.

- (1) Fitting development plans to climatic factors, topography, soils and vegetative cover;
- (2) Reducing the area and the duration of exposed soils;
- (3) Retaining and protecting natural vegetation wherever feasible;
- (4) Covering disturbed soils with mulch or vegetation;
- (5) Mechanically retarding runoff and erosion, and trapping sediment in runoff water; and
- (6) Providing effective accommodation for increased runoff caused by changed soil and surface conditions during and after development.

(Powell, et al, 1970)

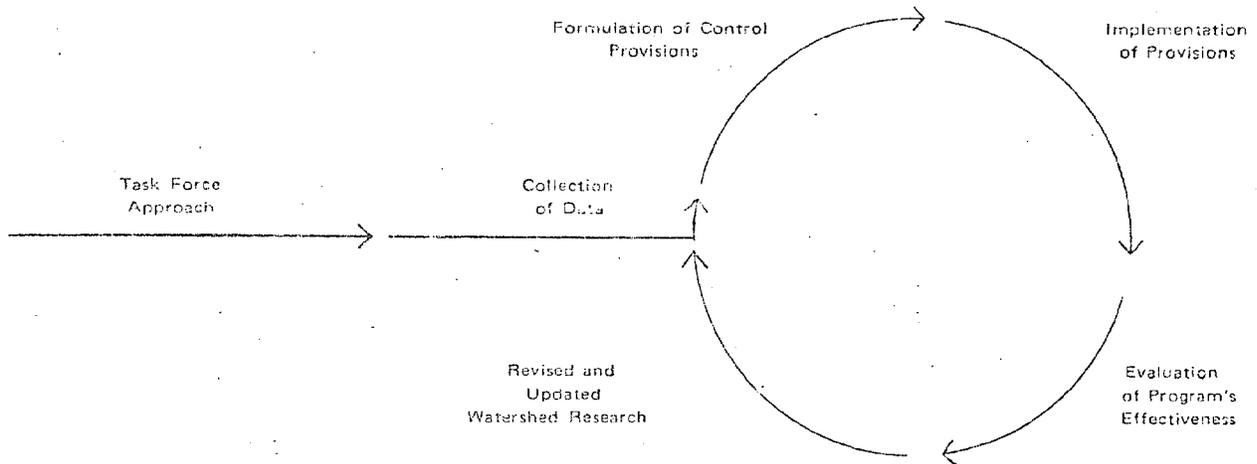
Alternate Solutions - Areas with very severe or severe erosion potential may be designated as special limited development zones. In order for development to occur in such areas, a special permit system involving an item-by-item environmental protection checklist might be required. In addition, the requirement of performance bonds to protect the municipality in case of non-compliance with erosion control standards by the developer would be essential.

A temporary moratorium on development of areas with severe or very severe erosion potential may be necessary

to study the effects of development thus far on soil resources and drainage systems, natural and man-made, in order to determine the type of environmental degradation being brought about and the best solution for the incorporation of controls into existing land use regulations.

The following chart illustrates the process of planning, action and evaluation necessary to achieve desired results of erosion and sediment control.

THE PLANNING--ACTION--EVALUATION PROCESS



(Powell, et al, 1970)

Communication between the city and Irondequoit will be especially important in producing the desired results for Durand Eastman Park.

**PROPERTY OWNERSHIP
AND ASSESSMENT**

PROPERTY OWNERSHIP AND ASSESSMENT
COASTAL ZONE MANAGEMENT STUDY AREA, OCT. 1975

MAP KEY NO.	ASSESSOR PARCEL CODES	ADDRESSES OF PROPERTIES	NAMES AND ADDRESSES OF OWNERS	ASSESSED VALUE	
				LAND	TOTAL
1	1-21-101.1	4380 Lake Ave.	Gulf Oil Corporation 1 Presidential Blvd. Bala Cynwyd, Penna.	\$7,010	\$10,000
2	1-21-102.3	21, 25 & 29 Whitney Place	Carl M. Robbins & wife 25 Whitney Place Rochester, N. Y.	\$1,050	\$ 1,800
3	1-21-102.4	21, 25 & 29 Whitney Place	Carl M. Robbins & wife 25 Whitney Place Rochester, N. Y.	\$1,150	\$ 4,580
4	1-21-104.5	4400 Lake Ave.	Sam Spagnola 4400 Lake Ave. Rochester, N. Y.	\$3,350	\$12,000
5	1-21-106.3	4410 Lake Ave.	Andrew Dimino 59 Meriden St. Rochester, N. Y.	\$3,250	\$11,800
6	1-21-107.2	4420 Lake Ave.	Robert L. Sennett 100 Scotch Lane Rochester, N. Y.	\$2,820	\$13,500
7	1-21-108.3	4424-4438 Lake Ave.	Robert L. Sennett 100 Scotch Lane Rochester, N. Y.	\$4,240	\$12,000

8	1-21-112.1	4440 Lake Ave.	Robert L. Sennett 100 Scotch Lane Rochester, N. Y.	\$2,020	\$ 4,100
9	1-21-113.1	85-89 Latta Rd.	John A. Sanna 85 Latta Rd. Rochester, N. Y.	\$ 570	\$ 5,700
10	1-21-114.1	83 Latta Rd.	John A. Sanna 85 Latta Rd. Rochester, N. Y.	\$ 510	\$ 510
11	1-21-115	75 Latta Rd.	Frank Agostinelli 75 Latta Rd.	\$1,720	\$ 4,900
12	1-21-116.1	67-69 Latta Rd.	Peter Capponi & wf 69 Latta Rd.	\$ 780	\$ 4,130
13	1-21-116.2	59 Latta Rd.	Gene Agostinelli 8 River St. Paul Agostinelli 769 Lake Shore Blvd. Irondequoit, N. Y.	\$1,360	\$ 8,800
14	1-21-117	43-47 Latta Rd.	Marshall L. Gurnee 256 River St.	\$1,970	\$ 5,000
15	1-21-118	39 Latta Rd.	Margaret Bovanzi	\$1,270	\$ 8,600
16	1-21-119.1	431 River St.	Salvatore Bonacci	\$ 560	\$ 5,500
17	1-21-120	427 River St.	The Charlotte Social Club, Inc. 427 River St.	\$ 240	\$ 2,700
18	1-21-121	423-425 River St.	Chief Petty Officers' Club of Rochester 423-425 River St. Rochester, N. Y.	\$ 290	\$ 3,100

19	I-21-122	419-421 River St.	Harry Meyers & wife	\$ 280	\$ 4,500
20	I-21-123.1	409 River St.	Chief Petty Officers' Club of Rochester 425 River St. Rochester, N. Y.	\$ 400	\$ 400
21	I-21-126.1	407 River St.	Salvatore Bonaci	\$ 460	\$ 2,690
22	I-21-127	397 River St.	Angelo Chelini	\$1,500	\$ 1,900
23	I-21-128	385 River St.	Angelo Chelini	\$ 240	\$ 3,500
24	I-21-129	8 Stutson St.	Goldie Kreger 8 Stutson St.	\$1,720	\$ 4,600
25	I-21-130	16 Stutson St.	Leo, Helen, Richard & Leo D. Witkowski	\$1,500	\$ 5,100
26	I-21-131	24 Stutson St.	Karl Anthony Navratil & wf 94 LeGrande Rd.	\$1,080	\$ 4,200
27	I-21-132	30 Stutson St.	Angelo Chelini & Peter Chelini	\$1,080	\$ 4,500
28	I-21-133	32-38 Stutson St.	Costantino Tollis & wf 241 Stutson St.	\$1,190	\$11,190
29	I-21-134	40 Stutson St.	Costantino Tollis & wf 241 Stutson St.	\$ 880	\$13,436
30	I-21-135.1	50 Stutson St.	Ralph E. LaRose & wf 19 Alonzo St.	\$ 770	\$ 7,850
31	I-21-136.1	58 Stutson St.	City of Rochester	\$1,430	\$10,500

32	*1-21-201	559 River St.	The New York Central & Hudson River Railroad Co.	See note
33	1-25-101.2	165 Latta Rd.	City of Rochester	\$9,980 \$41,500
34	1-25-101.3	4492 Lake Ave.	Holy Cross Church of Charlotte, 4492 Lake Ave.	\$8,000 \$13,000
35	1-25-102	4472 Lake Ave.	Agnes C. Bayne 551 Beach Ave.	\$1,070 \$7,900
36	1-25-103	4492 Lake Ave.	Holy Cross Society 4492 Lake Ave.	\$560 \$560
37	1-25-104	4492 Lake Ave.	Holy Cross Society 4492 Lake Ave.	\$10,550 \$116,600
38	1-25-105		U.S. Government	\$2,320 \$2,320
39	1-25-106	31 Lighthouse St.	Holy Cross Church Society	\$3,375 \$160,000
40	1-25-200		U.S. Government	\$1,000 \$1,000
41	1-25-201		U.S. Government	\$5,000 \$16,760 (including 1-25-302)
42	1-25-202	4550 Lake Ave.	Charlotte Lodge No. 1088 FM & AM 4361 Lake Ave.	\$3,390 \$8,000
43	1-25-203	503 River St.	Janice Macisak 35 Chestnut St.	\$1,120 \$7,000
44	*1-25-204.1	501 River St.	N.Y. Central & H.R.	See note
45	*1-25-204.2	North of 475 River St.	N.Y. Central & H.R.	See note

46	1-25-205.9	475 River St.	Tapecon Inc. 475 River St.	\$1,350	\$ 1,870
47	1-25-205.7	465 River St.	Tapecon Inc. 475 River St.	\$3,000	\$29,200
48	1-25-207.1	West of 465 River St.	Tapecon Inc. 475 River St.	\$ 320	\$ 320
49	1-25-205.8	North of 46 Latta Rd.	George F. Erdle 616 Van Voorhis Ave.	\$ 970	\$ 970
50	1-25-205.2	46 Latta Rd.	George F. Erdle 616 Van Voorhis Ave.	\$ 270	\$ 270
51	1-25-205.3	32 Latta Rd.	Tapecon Inc. 475 River St.	\$ 550	\$12,000
52	1-25-205.4	32 Latta Rd.	Tapecon Inc. 475 River St.	\$ 290	\$ 290
53	1-25-206.1	24-26 Latta Rd.	Tapecon Inc. 475 River St.	\$1,060	\$ 3,500
54	* 1-25-301.1		N.Y. Central & H.R.	See note	
55	1-25-301.2	504 River St.	Russell L. Clement 33 Crestfield St.	\$3,500	\$ 6,000
56	1-25-302	520 River St.	U. S. Government	Included in 1-25-201	
57	1-26-101.1	1 South of 4560 Lake Ave.	Rochester Gas & Electric Company 89 East Avenue	\$5,090	\$198,534

92	1-40-401	Florence Wallquist 490 Beach Ave.	\$ 10	\$ 10
93	1-40-402	Wilbur Lee Jacques 493 Beach Ave.	\$ 10	\$ 10
94	1-40-403	Wilbur Lee Jacques 493 Beach Ave.	\$ 10	\$ 10
95	1-40-404	Evan A. Hook & wf 26 Ruggles St.	\$ 10	\$ 10
96	1-40-405	John Ferraro & wf 294 Beach Ave.	\$ 10	\$ 10
97	1-40-406	Marie Briceland 465 Beach Ave.	\$ 10	\$ 10
98	1-40-407	Laura I. Marsh 510 Beach Ave.	\$ 10	\$ 10
99	1-40-408	Laura I. Marsh 510 Beach Ave.	\$ 10	\$ 10
100	1-40-409	Laura I. Marsh 510 Beach Ave.	\$ 10	\$ 10
101	1-40-410	Stanley R. Baird 477 Beach Ave.	\$ 10	\$ 10
102	1-40-411	Wilbur Lee Jacques 493 Beach Ave.	\$ 10	\$ 10

103	1-40-412	Lillian Hart Alexander 514 Beach Ave.	\$ 30	\$ 30
104	1-40-413	Ron L. Kilmer & wf 512 Beach Ave.	\$ 20	\$ 20
105	1-40-414	City of Rochester	\$1,800	\$ 1,800
106	1-40-415	Milton W. Mumme & wf 70 Beach Ave.	\$ 40	\$ 40
107	1-40-416	R. Reed George 534 Beach Ave.	\$ 30	\$ 30
108	1-40-417	Otto Benz & wf 546 Beach Ave.	\$ 10	\$ 10
109	1-40-418	Otto Benz & wf 546 Beach Ave.	\$ 30	\$ 30
110	1-40-419	Robert P. Lesco 528 Beach Ave.	\$ 10	\$ 10
111	1-40-420	Otto Benz 546 Beach Ave.	\$ 10	\$ 10
112	1-40-421.1	Otto Benz 546 Beach Ave.	\$ 30	\$ 30

113	1-40-421.2	John L. Lohman, Jr. & wf 556 Beach Ave.	\$ 10	\$ 10
114	1-40-422	John L. Lohman, Jr. & wf 556 Beach Ave.	\$ 10	\$ 10
115	1-40-423	John L. Lohman, Jr. & wf 556 Beach Ave.	\$ 10	\$ 10
116	1-40-424	John L. Lohman, Jr. & wf 556 Beach Ave.	\$ 10	\$ 10
117	1-40-425	John L. Lohman, Jr. & wf 556 Beach Ave.	\$ 10	\$ 10
118	1-40-426	The City of Rochester	\$ 30	\$ 30
119	1-40-427	Edward H. Carson 567 Beach Ave.	\$ 10	\$ 10
120	1-40-428	Anthony J. Agostinelli 576 Beach Ave.	\$ 10	\$ 10
121	1-40-429	Ella F. R. Fowler	\$ 40	\$ 40
122	1-40-502	Laura I. Marsh 510 Beach Ave.		
123	1-40-503	Ronald Kilmer & wf 512 Beach Ave.	\$2,510	\$ 3,500
124	1-40-504	Lillian Hert Alexander 514 Beach Ave.		
125	1-40-505	Public Alley		

126	1-40-301	528 Beach Ave.	Robert P. Lesco 528 Beach Ave.	\$2,800	\$ 4,800
127	1-40-302	534 Beach Ave.	R. Reed George & wf 534 Beach Ave.	\$2,800	\$ 6,300
128	1-40-303	544 Beach Ave.	Otto Benz & wf 546 Beach Ave.	\$1,400	\$ 1,400
129	1-40-304	546 Beach Ave.	Otto Benz & wf 546 Beach Ave.	\$2,800	\$ 7,980
130	1-40-305	556 Beach Ave.	John L. Lohman & wf 556 Beach Ave.	\$1,400	\$ 1,400
131	1-40-306	560 Beach Ave.	John L. Lohman & wf 556 Beach Ave.	\$2,800	\$ 6,300
132	1-40-307		Public Alley		
133	1-41-336		Anthony J. Agostinelli & wf 576 Beach Ave.	\$ 30	\$ 30
134	1-41-335		Anthony J. Agostinelli & wf 576 Beach Ave.	\$ 60	\$ 60
135	1-41-334		Anthony J. Agostinelli & wf 576 Beach Ave.	\$ 30	\$ 30
136	1-41-333		Anthony J. Agostinelli & wf 576 Beach Ave.	\$ 100	\$ 100
137	1-41-332		Anthony J. Agostinelli & wf 576 Beach Ave.	\$ 60	\$ 60

138	1-41-331.1	Jane E. Schmitt 590 Beach Ave.	\$ 150	\$ 150
139	1-41-327	Thomas J. O'Rourke 604 Beach Ave.	\$ 40	\$ 40
140	1-41-326	Thomas J. O'Rourke 604 Beach Ave.	\$ 10	\$ 10
142	1-41-325	Thomas J. O'Rourke 604 Beach Ave.	\$ 60	\$ 60
143	1-41-324	Eve. C. McNerney & Augustus McNerney 5 Brockton St.	\$ 10	\$ 10
144	1-41-323.2	George Martin 42 Brockton St.	\$ 30	\$ 30
145	1-41-323.1	Charles A. Collins & wf 614 Beach Ave.	\$ 60	\$ 60
146	1-41-322	James P. Cahill, Jr. 23 Brockton St.	\$ 7	\$ 7
147	1-41-321	Vincent J. Dalto & wf 620 Beach Ave.	\$ 7	\$ 7
148	1-41-320	Harry Heisley & wf 626 Beach Ave.	\$ 10	\$ 10
149	1-41-319	Vincent J. Dalto & wf 620 Beach Ave.	\$ 40	\$ 40
150	1-41-318	Harry Heisley & wf 626 Beach Ave.	\$ 30	\$ 30

151	1-41-317	Alice A. Walters 635 Beach Ave.	\$ 90	\$ 90
152	1-41-316	Alice A. Walters 635 Beach Ave.	\$ 10	\$ 10
153	1-41-315	Alice A. Walters 635 Beach Ave.	\$ 90	\$ 90
154	1-41-314	Alice A. Walters 635 Beach Ave.	\$ 10	\$ 10
155	1-41-313	Alice A. Walters 635 Beach Ave.	\$ 90	\$ 90
156	1-41-312	Hannah McGuire 642 Beach Ave.	\$ 30	\$ 30
157	1-41-311	Vito Arbore 60 Larch St.	\$ 60	\$ 60
158	1-41-310	David W. Stewart & Gretchen B.M. 675 Beach Ave.	\$ 40	\$ 40
159	1-41-309	George Carnes & wf 654 Beach Ave.	\$ 30	\$ 30
160	1-41-308	George Carnes & wf 654 Beach Ave.	\$ 70	\$ 70
161	1-41-307	Louis L. Lapi 670 Beach Ave.	\$ 10	\$ 10
162	1-41-306	Louis L. Lapi 670 Beach Ave.	\$ 120	\$ 120

163	1-41-305	Louis L. Lapi 670 Beach Ave.	\$ 40	\$ 40
164	1-41-304	Louis L. Lapi 670 Beach Ave.	\$ 10	\$ 10
165	1-41-303.1	Lloyd A. Wright 682 Beach Ave.	\$ 100	\$ 100
166	1-41-301.1	Timothy I. Maier & wf 700 Beach Ave.	\$ 30	\$ 30
167	1-41-405	Anthony J. Agostinelli & wf 576 Beach Ave.	\$ 4,200	\$ 6,000
168	1-41-404.1	Anthony J. Agostinelli & wf 576 Beach Ave.	\$ 7,340	\$ 13,000
169	1-41-402	Jane Schmitt 590 Beach Ave.	\$ 8,400	\$ 22,000
170	1-41-401	Thomas J. O'Rourke 604 Beach Ave.	\$ 2,800	\$ 10,430
171	1-41-406	Public Alley		
172	1-41-704	Charles A. Collins & wf 614 Beach Ave.	\$ 3,500	\$ 6,200
173	1-41-703	Vincent J. Dalto & wf 620 Beach Ave.	\$ 3,500	\$ 7,200
174	1-41-702	Harry Heisley & wf 626 Beach Ave.	\$ 3,500	\$ 7,100
175	1-41-701	Hannah McGuire 642 Beach Ave.	\$ 6,300	\$ 10,500

176	1-41-705	Public Alley			
177	1-41-205	George Carnes & wf 654 Beach Ave.	656 Beach Ave.	\$4,900	\$22,000
178	1-41-202.1	Louis L. Lapi 670 Beach Ave.	670 Beach Ave.	\$9,100	\$21,000
179	1-41-201	Donald M. Forster 3799 Lake Ave.	682 Beach Ave.	\$2,800	\$8,000
180	1-41-206	Public Alley			
181	1-42-506	Timothy I. Maier & wf 700 Beach Ave.		\$120	\$120
182	1-42-505	L. Lawrence Kilmer & wf 702 Beach Ave.		\$60	\$60
183	1-42-504.1	Milton L. Ferry 708 Beach Ave.		\$80	\$80
184	1-42-503.1	Rochester School of Holy Childhood 215 Andrews St.		\$150	\$150
185	1-42-502	Cloverdale Corporation 1031 Lincoln Alliance Bldg.		\$30	\$30
186	1-42-304	Timothy I. Maier & wf 700 Beach Ave.	700 Beach Ave.	\$5,600	\$12,000
187	1-42-303	L. Lawrence Kilmer & wf 702 Beach Ave.	702 Beach Ave.	\$2,800	\$6,400

188	1-42-302.1	708 Beach Ave.	Milton L. Ferry 708 Beach Ave.	\$2,800	\$ 9,160
189	1-42-305		Public Alley		
190	1-42-301.1	720 Beach Ave.	Rochester School of Holy Childhood 215 Andrews St.	\$4,900	\$10,600
191	1-42-203	730 Beach Ave.	Charles F. Seuffert & wf 730 Beach Ave.	\$7,270	\$21,000
192	1-42-202.6	760 Beach Ave.	Allison F. Taylor and Ann B. Taylor 760 Beach Ave.	\$3,660	\$11,040
193	1-42-202.5	770 Beach Ave.	Mrs. Mabel P. Shults 770 Beach Ave.	\$3,580	\$15,060
194	1-42-202.4	780 Beach Ave.	Alfred I. Hess & wf 780 Beach Ave.	\$7,400	\$13,340
195	1-42-201.1	730 Beach Ave.	Robert H. Hurdbut 11 Crestview Dr. Pittsford	\$3,450	\$ 3,450
196	4-53-104	Coast Guard Station	U. S. Government		
197	4-53-103	Summerville Drive	Francis J. O'Loughin 116 Summerville Drive	\$ 960	\$ 3,850
198	4-53-103	Pier	City of Rochester		

199	4-53-102	St. Paul Blvd.	City of Rochester (leased to N.Y. State Naval Militia Armory 7-1-58 - 6-30-83)		
200	4-53-101	St. Paul Blvd.	State of New York		
201	4-52-103.4	St. Paul Blvd.	County of Monroe Court House 39 Main St. West Rochester, N.Y.		
202	4-52-103.6		Town Board Town of Irondequoit		
203	4-52-102	St. Paul Blvd.	Ralph Brothers Automotive Corp. 15 James St.	\$7,670	\$21,250
204	4-52-110	St. Paul Blvd.	Ralph Brothers Automotive Corp. 15 James St.		(assessed with 4-52-102)
205	4-52-104 109 111 114	St. Paul Blvd.	Ralph Brothers Automotive Corp. 15 James St.		(assessed with 4-52-102)
206	4-51-102.1	St. Paul Blvd.	Rochester Yacht Club Board of Directors St. Paul Blvd.		
207	4-51-101.2		Lake Ontario Railroad Co.		
208	4-51-101.4	Stutson St. Extension	Ontario Properties, Inc. 105 Powers Building Rochester, N.Y.		
209	4-51-101.7	Stutson St. Extension	Ontario Properties, Inc. 105 Powers Building Rochester, N.Y.		

210	4-50-101.6	Stutson St. Extension	City of Rochester	\$ 280	\$ 280 Ex
211	4-50-101.9	Stutson St. Extension	Maximo Marina, Inc. 47 Westgate Drive Rochester, N.Y.	\$6,030	\$ 7,450
212	4-50-101.8	Stutson St. Extension	Genesee Yacht Club Stutson St. Extension Rochester, N.Y.		
213	4-50-101.4	Stutson St. Extension	Maximo Marina 47 Westgate Drive Rochester, N.Y.	\$4,790	\$ 7,050

* Railroad Properties in Tax District 25

Land	\$ 35,368
Total	\$119,006

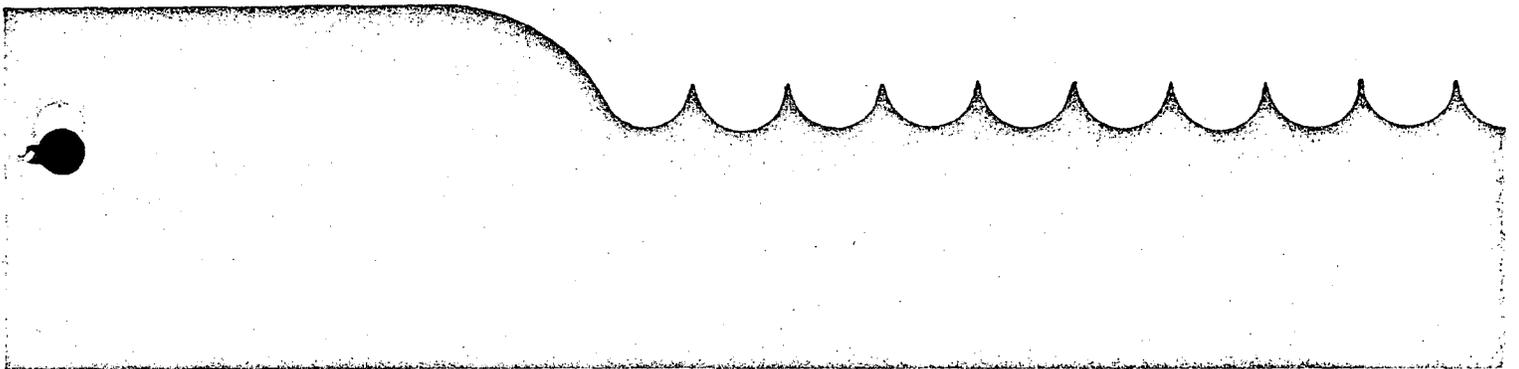
DURAND EASTMAN

MAP KEY NO.	ASSESSOR PARCEL CODES	ADDRESSES OF PROPERTIES	NAMES AND ADDRESSES OF OWNERS	ASSESSED VALUE LAND	ASSESSED VALUE TOTAL
1	2-16-117		City of Rochester		
2	2-16-111 2-17-102		New York Central R.R. Lake Ontario Shore R.R.		
3	2-16-109 2-16-108 2-16-107.1	The Highlands	Peter & Anne Spinelli 255 Clover Hills Drive Brighton, N.Y.	\$4,080 \$2,400 \$1,400	\$15,600 \$ 2,400 \$ 1,400
4	2-16-106.1	The Highlands	Edward & Elizabeth Dewey 1772 Crittenden Rd. Rochester, N.Y.	\$2,000	\$ 7,500
5	2-16-105	The Highlands	Harcourt & Virginia Sylvester The Highlands Rochester, N.Y.	\$ 20	\$ 20
6	2-16-104	The Highlands	Patricia Dutcher The Highlands Wisner Rd.	\$2,000	\$ 6,000
7	2-16-103.1	Lake Shore Blvd.	Raymond Lander, Jr. 80 Delham Rd. Brighton, N.Y.	\$2,000	\$ 8,000
8	2-16-102.5	Lake Shore Blvd.	Robert & Jacquelin Fields 702 Rock Beach Road Rochester, N.Y.	\$2,030	\$ 5,400
9	2-16-102.1	Lake Shore Blvd.	M. Demeritt 5400 St. Paul Blvd. Rochester, N.Y.	\$1,300	\$10,000

10	2-16-116	(Boat lot)	Robert & Jacquelin Fields 702 Rock Beach Road Rochester, N.Y.	(assessed with 2-16-102.5)
11	2-16-115	(Boat lot)	Robert & Jacquelin Fields 702 Rock Beach Road Rochester, N.Y.	(assessed with 2-16-102.5)
12	2-16-114	(Boat lot)	M. Demeritt 5400 St. Paul Blvd. Rochester, N.Y.	(assessed with 2-16-102.1)
13	2-16-113	(Boat lot)	Patricia Dutcher The Highlands Wisner Rd. Rochester, N.Y.	(assessed with 2-16-104)
14	2-16-112	(Boat lot)	Raymond Lander, Jr. 80 Pelham Road Brighton, N.Y.	(assessed with 2-16-103.1)
15	2-17-110		City of Rochester	\$3,000 \$ 3,000 Ex
16	2-17-109		City of Rochester	
17	2-17-108	(Boat lot)	Peter & Anne Spinelli	(assessed with 2-16-109)
18	2-17-107	(Boat lot)	Peter & Anne Spinelli	(assessed with 2-16-109)
19	2-17-106	(Boat lot)	Peter & Anne Spinelli	(assessed with 2-16-108)
20	2-17-105	(Boat lot)	Peter & Anne Spinelli	(assessed with 2-16-107.1)

21	2-17-104	(Boat lot)	Edward & Elizabeth Dewey 1772 Crittenden Road Rochester, N.Y.	(assessed w/ 2-16-106.1)
22	2-17-103		City of Rochester	\$ 160
23	2-17-111		City of Rochester	
24	N/A		City of Rochester	
25	N/A		City of Rochester	
26	2-17-101	Durand Eastman Park	City of Rochester	

REFERENCES



REFERENCES

- ADAMS, R. A. (1975a) Summary of talk presented on shoreline erosion on Lake Ontario. Monroe County Department of Planning, July, 1975.
- _____ (1975b) Personal communication with Ecoplans, Inc., December 4, 1975.
- CARR, W. (1975a) Personal communication with Ecoplans, Inc., August 26, 1975.
- _____ (1975b) Personal communication with Ecoplans, Inc., September 10, 1975.
- DI CHIARA, J. and KOPPLEMAN, L. (1975) Urban Planning and Design Criteria. (2nd edition). New York: Van Nostrand Reinhold Company.
- GENESEE/FINGER LAKES REGIONAL PLANNING BOARD (1975), Comprehensive Regional Development Plan.
- GOODMAN, S. D. (1975) Personal communication with Ecoplans, Inc., October 2, 1975, Conference Report #18.
- GRANT, A. R. (1975) "Short History of Parks in Rochester and Monroe County." Monroe County Department of parks, March, 1975.
- HARNLEY, J. R. (1975) Preliminary Site Evaluation (Soils and Geology) of Site #3 - Durand Eastman Park area. Prepared for O'Brien and Gere, Engineers, Inc., and U. S. Army Corps of Engineers. Unpublished letter dated February 20, 1975.
- HAMBER, J. (1975) Personal communication with Ecoplans, Inc., September 29, 1975. Conference Report #17.
- HEDDEN, W. P. (1957) Rochester-Monroe County Port Survey. Prepared by Monroe County and the City of Rochester.
- _____ (1963) Action Program for Port Development - A Review of progress and a look to the future, prepared for the Rochester-Monroe County Port Authority.
- HEFFNER, R. and GOODMAN, S. D. (1973) Soil Survey of Monroe County, New York. U. S. Department of Agriculture-Soil Conservation Service, Washington: U. S. Government County Office.

NEIL, J. H. and OWEN, G. E. (1964) "Distribution, Environmental Requirements and Significance of Cladophora in the Great Lakes." Proceedings, Seventh Conference on Great Lakes Research. Michigan: University of Michigan.

N. Y. STATE DIVISION OF STATE PLANNING (1974) New York State Coastal Zone Management Program Grant Application.

N. Y. STATE ENVIRONMENTAL CONSERVATION LAW (1974) Classifications and Standards of Qualifications and purity. (Article 6, Chapter 10, part 701.4).

N. Y. STATE OFFICE OF PARKS AND RECREATION (1972) People - Resources - Recreation: N. Y. Statewide Comprehensive Recreation Plan.

MONROE COUNTY DEPARTMENT OF PLANNING (1975) Proposed Monroe County Comprehensive Plan.

_____ (1968) Durand eastman Park: History.

O'BRIEN AND GERE, Engineers, Inc. (1975) Water Pollution Investigation: Genesee River and Rochester Area. EPA Report No. 905/9-74-016.

POWELL, M. D., WINTER, W. C. and BODWITCH, W. P. (1970) Community Action Guidebook for Erosion and Sediment Control. Washington: Natural Association of Counties Research Foundation.

ROCHESTER BUREAU OF PLANNING (1965) The Genesee River Plan.

ROCHESTER-MONROE COUNTY PORT AUTHORITY (1959 to 1974) Annual Reports.

STEINFELDT, P. (1975) Personal communication with Ecoplans, inc., August 26, 1975. Conference Report #8.

TYLOCK, R. (1975) Personal communication with Ecoplans, Inc., September 22, 1975.

U. S. ARMY CORPS OF ENGINEERS (1975a) States of Federal Great Lakes Harbors in New York State, prepared for the N. Y. State Department of Environmental Conservation.

_____ (1975b) Unpublished material prepared as
baseline data for environment impact statement of
proposed diked disposal area off Durand Eastman
Park.

_____ (1970) Help Yourself, North Central Division,
Chicago, Illinois.

U. S. DEPARTMENT OF INTERIOR AND N.Y. STATE DEPARTMENT
OF HEALTH (1968) Water Pollution Problems and
Improvements Needs: Lake Ontario and St. Lawrence
River Basins.

U. S. DEPARTMENT OF INTERIOR (et al.) (1969) Genesee
River Basin Comprehensive Study: Vol. I-VIII.

WARNER, J. (1975), Personal communication with Ecoplans,
Inc., September 26, 1975.

NOAA COASTAL SERVICES CENTER LIBRARY



3 6668 0001 1801