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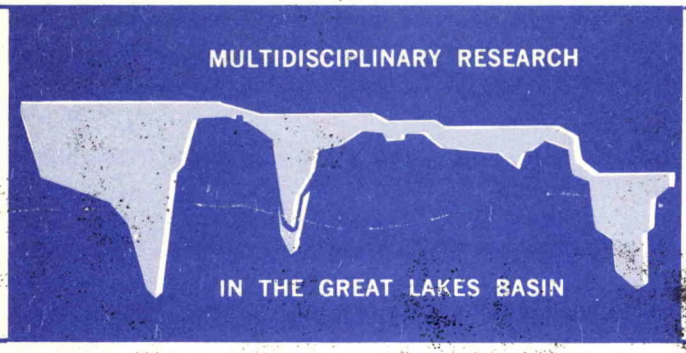

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SHORELAND PLANNING IN THE GREAT LAKES BASIN AND SELECTED COASTAL ZONES OF THE UNITED STATES

Interim Report No. 1

Kenneth Polakowski - Project Director

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Shoreland Planning in the Great Lakes Basin and Selected Coastal Zones of the United States.

SEA GRANT PROGRAM

An Interdisciplinary Program Sponsored by the University of Michigan and the National Science Foundation.

Project Director: Kenneth J. Polakowski

Research Assistants: Robert Dunblazier
John Lyons

October 1970

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PURPOSE:

The primary purpose of this research project, which is the first phase of investigating shoreland development, was to determine the status of resource planning efforts being undertaken by public and private agencies concerned with the shoreline land and water resources of the Great Lakes. The study identified the nature of the resource problems currently being investigated and the problem solving methodologies being used by planners to correct the negative conditions.

The results of the research can serve as a catalytic agent for better resource planning throughout the Great Lakes Basin. The study is intended as a contribution to the continual collection of information relative to shoreland planning and not to serve as a definitive report on the status of planning. The study format is basically a means of synthesizing shoreland planning data. Therefore, it is imperative that update and feedback information be processed periodically for the mutual benefit of all planning activities. Dissemination of research results to all planning agencies adjacent to the Great Lakes Shoreline is a prerequisitive to successful attainment of the research projects purposes.

METHODOLOGY:

The determination of shoreland planning efforts was accomplished by the following activities:

1. A literature search at the libraries of the University of Michigan, University of California, Berkeley, Bureau of Outdoor Recreation and Great Lakes Basin Commission.

2. The mailing of a questionnaire and letters of inquiry to Federal, State, Regional, City and Township agencies in the Great Lakes Basin that may be involved in shoreland planning. Planning studies were requested for review and analysis.

3. Letters of inquiry to land and water resource planning agencies on the Atlantic and Pacific Coasts requesting information on shoreland planning.

4. Interviews with planning agency personnel that were identified from questionnaire evaluation. The purpose of the interviews was to pursue work that had particular significance; it also provided the opportunity for in-depth investigation of agencies library resources.

The data from the literature search and interviews was reviewed and classified under the following framework for ease of use by a variety of planning interests.

1. Shoreland Development Plans: Problem identification, goals, objectives, inventory, analysis, trends, projections, recommendations, pilot studies, implementation and management.

II. Recreation & Conservation Shoreland Plans: Planning framework, inventory and analysis, principles, standards, user projection, details and costs, pilot studies and administrative aspects.

III. Water Resource & Quality Plans: Problem identification, pollution impact, management, recommendations, resource demands, inventories, water analysis and general resource information.

IV. Shoreland Legislation & Management: Zoning regulations, control problems, programs and inventories.

V. Planning Framework, Objectives and Programs: Methodologies, models, policies, goals, classification of problems and guidelines.

VI. Shorelands Classification: Geologic, physiographic, vegetation, shore types, land use and utilization conflicts.

VII. Shore Erosion & Sedimentation: Causes, recommendations, management and engineering aspects.

VIII. Shoreland Transportation & Industrial Development: Inventories, analysis, proposals, site selection, management, economic analysis, user demands.

IX. Resource Analysis Methodology: Ecological, land use capability, aesthetic, vegetation, geologic, soils, users, inventory techniques and analysis information.

X. Comprehensive Development Plans: Land Use Circulation, utilities, social, economic, inventories, analysis, recommendation, goal formulation and planning methods.

XI. Recreation & Conservation Plans: Inventories, analysis, proposals, user projections and management.

XII. Transportation Plans: Inventories, system analysis, recommendations.

XIII. Water Resources Inventories: Ownership, temperatures, chemical analysis, flooding data, climate, currents and pollution.

XIV. Land and Water Resource Inventories: Geology, climatology, limnology, land use, soils, economic.

XV. Land Use Inventories.

XVI. Recreation and Conservation Inventories.

XVII. Geology, Soils, Vegetation and Wildlife Inventories.

An abstract of selected studies, projects that contained some significant qualities, was prepared to present to individuals and government units concerned with the shorelands with more detailed information that may aid their planning programs.

QUESTIONNAIRE RESULTS:

A total of 669 questionnaires were forwarded throughout the Basin and 275 were returned for a response rating of 41%. The breakdown for United States and Canada is as follows:

	Mailed	Returned	% Response
Regional Agencies:	23	16	70
County Agencies:	98	44	45
Township Agencies:	484	175	36
Municipal Agencies:	64	40	63

A questionnaire sample and tabulation of results by State and Province is contained in Appendix I.

The most significant shoreline studies have been executed in areas where specific urbanization problems have emerged and there is sufficient planning funds to investigate the problem.

The rural shoreline studies are very general in nature if done by a local planning group with specific plans being developed by agencies with a specific interest (Recreation Studies by the National Park Service).

There is a large amount of data and studies relative to the shorelands but they remain ineffective towards establishing a resource development and management plan. The investigation indicates a possibility of developing planning techniques capable of determining optimum resource utilization.

FINDINGS:

The research concerning the status of shoreland planning has identified the primary issues confronting the resource planner when developing and managing the shoreland which is a limited fixed resource and a scarce commodity. The major problem is not dissatisfaction with the given natural attributes of the shoreland resources but with the effect by man-caused changes on the environment and inadequate or conflicting utilization of the resources. The primary issues are as follows:

1. Resource Destruction Issues

   a. Water pollution due to inadequate municipal and industrial sewage facilities.

b. Beach and slope erosion.
c. Sedimentation because of poor land use practices.
d. Disposal of waste materials.
e. Alteration of shoreline by filling or dredging.
f. The threat of thermal pollution.

2. Resource Utilization Issues

a. Inadequate accessibility, functional and visual, to the water's edge.
b. Land use conflicts between developer/conservationist; resource users and ownership pattern.
c. Poor quality development adjacent to shoreline.
d. Decreasing land availability for public use.
e. Congestion and inferior facilities in rec reation developments.
f. Imbalance between open shorelands in rural areas and availability near urban centers.
g. Lack of proper port facilities.
h. Conflicting ownership and user laws.
i. Inconsistency of contrasting land use characters within the shore zone.
j. Inadequate adaption of transportation systems to the shoreline zone.

3. Resource Planning Issues

a. Minor emphasis on water-oriented environmental planning by all levels of government with virtually no inter-agency cooperation.
b. A piecemeal approach to planning; solving of immediate problems with no long range comprehensive planning.
c. Lack of resource information.
d. Inadequate zoning and building regulations.
e. Lack of planning methods, goals, policies, and identification of user values.

The resolution of the preceeding issues is dependent on an accelerated effort by all concerned with shoreland resources. Hopefully, the following project reviews and bibliography will be a contribution toward the development of knowledge and a procedure for shoreland resource planning.

REVIEW OF SELECTED PLANNING PROJECTS

I. SHORELAND DEVELOPMENT PLANS

. The Urban Dunes Area: Muskegon County Shorelands Study

. A Study on the Future of Chicago's Lakefront

. Ocean Coastline Study: San Francisco Bay Area, Berkeley, Calif.

. A Reconnaissance Study of the Chesapeake Bay and Shoreline Utilization in the Baltimore Region.

. Hawaii's Shoreline

THE URBAN DUNES AREA: Muskegon County Shorelands Study

Greendie, B. & Jakobson, L.; The University of Wisconsin
Department of Urban and Regional Planning, Madison, Wisconsin
1969

SCOPE:

This study, which is a part of the counties comprehensive planning and development program, is specifically interrelated with the programs to reduce water pollution and develop effective waste disposal. The concept for "Managing Waste Water" is to use the nutrients now being discharged into the lakes to enrich the relatively barren soils and to dredge some county lakes with "bottom loads" of nutrient materials for re-use as topsoil and sanitary landfill material.

The study sets forth recommendations regarding development policies, establishes guidelines and strategies for improving the environmental quality of the shorelands.

CONCLUSIONS AND RECOMMENDATIONS:

Some interesting aspects of the project was (1) the use of an opinion survey, (2) dunes zoning classification, and (3) site development guidelines for structures and roads.

1. The Opinion Survey indicated that environmental goals are of predominate concern and substantial support shown for strong county leadership in shoreline development. A basic conclusion derived from the study is that the value of the dunes area as a recreational and environmental resource is the highest priority of land utilization.

2. The Dunes Development Zones are as follows:

   a. The Beach Area, that flat sandy portion of the shore close to the water and subject to wave action in which stabilizing vegetation is not expected to grow under most circumstances; this area to be open to the public.

   b. Dunes Conservancy Area, the windward slopes and the upper leeward slopes of the primary dunes where vegetation must not be disturbed, and the openings from the beach area into the valleys between dunes where winds may reach inland and cause erosion; this area to be traversed by the public only on designated pathways.

c. Dunes Open Space and Limited Development Area, the stabilized valley areas and lower slopes of secondary dunes where vegetation is firmly rooted and where grades exceed 12%; lot sizes to range from 6,000 sq. ft. to 1/2 acre or more depending on design and topographical conditions.

d. Dunes General Development Area, on stabilized natural topography and vegetation have been badly disturbed by mining; development to include mixed residential, recreational and recreation-oriented commercial uses on a design basis.

3. The Site Development Guidelines for structures and roads. Suggested standards are concerned with disturbance of vegetation, slope erosion, utilization of natural land forms, platform and "cluster" housing.

   The road development guidelines emphasize the need for minimum grading, and environmental disturbance consequently the speed, alignment, grades, width, drainage, planting, signs, lighting. Utilities and trails related to road development reflect this ecological sensitivity.

A STUDY ON THE FUTURE OF CHICAGO'S WATERFRONT

Johnson, Johnson & Roy, Ann Arbor, 1968

OBJECTIVES:

The progress report outlines for discussion purposes an analysis of existing conditions, a plan concept and design principles for lakefront development. The study objectives are as follows:

1. To reconfirm the manner in which the lakeshore has served the people of Chicago in the past.

2. To discover how the lakeshore is most effectively used today.

3. To discover the best possible use of the lakeshore as a recreation resource.

4. To chart the potentials for increased recreation land areas along the shore or off shore.

5. To match future potentials for use with appropriate access patterns.

6. To recommend basic action programs which would lead towards the full measure of future potential inherent in the lakeshore.

7. To establish basic principles of shoreline development which can be directly beneficial to numerous and otherwise unrelated public and private developments along the shore.

SCOPE:

The study analyzes the lakefront in its regional and local context and projects its capabilities; thereby establishing the nature of the framework for future planning. The plan takes the form of goals, principles and options to be applied to all projects that may have an impact of the shoreline. The guidelines will include:

1. Role of transportation along the lakefront

2. Density of development, ground coverage and height

3. Type of development, land use controls

4. Quality of development, aesthetics

5. Preservation and/or creation of open space

LAKEFRONT ZONE:

A zone with basic principles and goals is based on a variety of environmental conditions:

1. A set distance of one block from public land.

2. A time distance (20 minutes walking).

3. Established community boundaries.

4. A four mile zone into water area.

5. An off-shore zone beyond the four miles.

LAKEFRONT DEVELOPMENT PRINCIPLES:

The basic elements that emerged in the long range development concept are: (1) shore continuity, (2) community connection, (3) water zone development and (4) offshore land areas. The concept can be partially realized by the recognition of the following Lakefront Development Principles:

a. Strengthen Continuity of Public Lakeshore Park;

Two basic modes of experiencing continuity are analyzed, (1) automobile, bus and other motorized conveyances (2) walking, bicycle, horse, and carriages.

b. Develop Strong Physical Ties Between Community and Shore;

Development of more local parks within urban area adjacent to lakeshore zone.

Development of lakeshore opportunities reflecting total regional needs.

Development of strong linkages between the urban area parks and the lakeshore.

c. Locate Recreation Uses in Relation to Access Potential;

Principles for three types of access are formulated (1) pedestrian, (2) vehicular, (3) transit.

d. Maintain Open Space or Predominant Lakeshore Character

e. Provide Appropriate Park Base When Lakefront Building Density Increases.

f. Protect Awareness of Lakeshore Beauty for the Driver;

Several site factors are investigated to maximize the motorists experience of the lakeshore; they are: planting, topography, vertical and horizontal relationship of auto to pedestrian, parking area layout, sequence of park areas and alignment of parkways.

g. Protect and Nuture Significant Historical and Traditional Lakeshore Features

h. Design the New Shore to Protect and Enhance Lakefront Water Quality

The report is generously illustrated with schematic sketches and diagrams that support preliminary findings of the analysis and the conceptual and general lakefront development principles.

OCEAN COASTLINE STUDY: SAN FRANCISCO BAY AREA

Association of Bay Area Governments, Berkeley, California, 1970

SCOPE:

The purpose of the study is to consider San Francisco Bay Area ocean coastline problems, issues and opportunities as part of the regional planning process. The study describes the physical characteristics, land and water uses, existing and proposed governmental plans and policies, problems and issues. Regional goals and policies concerning the conservation, development, utilization and manage-

ment of the coastal zone is presented.

FINDINGS AND CONCLUSIONS:

1. The coastal zone makes a unique contribution to the quality of living in the San Francisco Bay Area.

2. Eventual deterioration and degradation is a growing threat.

3. The coastline area borders the fourth largest population center in the nation.

4. No plan and management structure exists that systematically views and integrates the full range of future interests in the region's ocean coastline.

5. The resources of the coastal area have only been dealt with on a single-purpose basis for many years.

6. In the past, little emphasis has been placed on coastal and marine-oriented environmental planning and management.

7. Little coordination presently exists between the many Federal, State and local agencies which have interests and responsibilities in the coastal zone.

8. Coastal cities and counties, in partnership with the State, are the principal trustees of the ocean coastline.

9. Local and regional appraisals of the future of the coastal zone are needed.

RECOMMENDATIONS:

1. Formulate Regional Coastal Goals, Objectives and Planning Policy.

2. Conduct a Comprehensive Ecological and Environmental Analysis of the Coastal Zone.

3. Prepare a Comprehensive Regional Ocean Coastline Development and Conservation Plan (OCDC) Plan.

4. Prepare a Five Year Regional Action Program Based on the Approved OCDC Plan.

5. Assist the State in the Preparation of the California Comprehensive Ocean Area Plan.

6. Participate in Federal-State-Local Coastal Management Considerations.

7. Seek Citizen and Private Sector Involvement in the Coastal Planning Process.

8. Encourage a Better Balance Between Land and Water Area Planning and Management at the Regional and Local Levels.

9. Encourage Early, Collaborative Planning for Multi-Purpose Coastal Developments.

10. Continue to Monitor, Process and Distribute Relevant Coastal Information, Particularly Concerning the Policies and the Activities of the State and Federal Governments' Coastal and Marine Environmental Programs.

11. Encourage Comprehensive, Integrated Statewide Policies for Urban Resource Development and Management.

COASTAL ZONE:

The coastal zone includes tidelands and ocean waters within one-quarter of a mile of the mean higher high water and it generally follows the ridge line of the coastal range of hills with some exceptions due to access topography and urbanization. The study considers the region's ocean coastline and its natural and man-made attribution as a self-contained entity, independent of the physical, social, economic and political boundaries.

ISSUE CLASSIFICATION:

The study classifies the types of issues which exist along the coastline. They are:

1. Current-General Issues which are active today and are relatively general in terms of interests involved and extent of the total coastline resources concerned.

    a. Access to the Ocean Shoreline

    b. Location and Design of New Transportation Facilities

    c. Use of the Ocean for the Disposal of Waste Materials

2. Current-Specific Issued which are now active and which are relatively limited in terms of interests involved and extent of the total coastline resources concerned.

    a. Use of Green Valley for Sanitary Landfill

    b. Recreation vs Wildlife at Pescadero Marsh

    c. Use of Sand Dune and Beach Areas

3. Future-General Issues which will become more active. This classification is interpretative, but it may serve to clarify the nature of the forces at work and how they relate to each other.

   a. Open Space

   b. Use of Ocean Waters for Energy Generation and/or Water Conversion

   c. Public vs Private Recreation

   d. Use of the Beach and Bluff Areas

   e. Development of Marine Resources

   f. Alteration of Shoreline Properties and Processes

GOALS:

The following set of goals is suggested as a starting point toward defining regional goals for the ocean coastline areas.

1. Goals for Development

   a. Use of coastal lands for permanent and seasonal residential and commercial purposes must be guided and restricted in terms of location and area.

   b. Where residential development near the shoreline is permitted, the developments must provide housing opportunities for citizens of all income groups.

   c. Relate planning and programs for coastal urbanization with inland communities, political jurisdictions and the Region to permit more emphasis on the special role of the coastal elements vis-a-vis the inland areas.

   d. Preserve and enhance individual community identity.

   e. Encourage variety and diversity in life styles.

   f. Preserve an open character where development is permitted.

   g. Emphasize the development of a recreation and tourist economy for the coastline consistent with the maximum preservation of the coastline's natural values.

   h. Permit urban development only in locations which will not alter natural ecological systems or usurp special agricultural lands.

2. Goals for Transportation

a. Provide for integrated regional and local transportation corridors, primarily for recreation travel.

b. Provide for regional and local utility corridors which will produce an efficient, integrated systems for power transmission and distribution, and communications, which will minimize disruption of inland areas.

c. Establish the Coastal Highway as a principal component in a California Tour Route System.

d. Seek frequently spaced public access over private parcels from public rights of way to the public shoreline lands.

e. Seek public access paths or roads along the length of the shoreline.

f. No public use or development, including highways, should be allowed to prevent frequent public access to tidelands, beaches or points of interest.

3. Goals for the Public Safety

a. Prohibit urban development or unstable geologic and soil areas (hillsides, ocean shoreline, etc.).

b. Establish standards to prevent pollution of coastal waters.

c. Conserve airport clear path zones.

4. Goals for Open Space

a. Resource Conservation:

1. Conserve agricultural area with emphasis on those which may have favored combinations of slopes, climate and soil condition for special crops (Brussels sprouts, cauliflower, cabbage, flowers, etc.).

2. Conserve lands used for animal products needed by residents of the region (milk, meat, wool, etc.).

3. Conserve lands used for coastside water supply (water-sheds, reservoir sites, aquifers, etc.).

4. Conserve water areas needed for fish and marine life production both for commercial and sport fishing.

b. Resource Preservation:

Set aside selected tide and submerged lands, marsh and other coastal habitats as fish and wildlife preserves and refuges.

c. Health, Welfare and Well-Being:

1. Provide an integrated system of open spaces consistent with the remainder of the Bay Area and the State.

2. Provide more shoreline public beaches, parks and recreation areas to create additional recreational oportunities, as well as to meet expected recreational demands.

3. Provide for the protection and use of nearshore waters and coastal streams for recreational purposes, consistent with vital economic, educational and ecological functions.

4. Provide as permanent open space all lands with existing slopes of 30 percent or more.

5. Preserve outstanding historical and landscape and seascape values for both cultural value and visual amenity.

5. Goals for the Improvement or Communication and Representation

a. Improvement of a sense of identity, responsibility and cooperation among citizens, organizations and governments concerned with the coastline.

1. Sponsor recurring conferences and workshops to provide opportunities to communicate concerns and opinions about coastline planning and development. Such forums would be organized to improve the communication channels and develop mutual goals for the coastline.

2. Seek intergovernmental and interagency agreement on jurisdictional agency responsibilities.

6. Goals for Environmental Quality and Visual Amenity

a. Consciously balance man-made facilities with nature through detailed planning and design.

b. Conserve the natural, physical and vegetative features which account for visual appeal.

c. Establish a design system and standards for all types of official directional and information signs to establish a unifying coastal theme.

d. Establish a task force consisting of utility representatives, public officials, and interested citizens to study and make recommendations on siting and multi-purpose planning of power plants and transmission lines, undergrounding of distribution lines, and the aesthetic appearance of electric utility structures and facilities along the coastline.

7. Other Goals

a. Establish an intergovernmental coastal management system with strong local and regional representation.

b. Increase public investment for improved intergovernmental management of the ocean coastline.

A RECONNAISSANCE STUDY OF THE CHESAPEAKE BAY AND SHORELINE UTILIZATION IN THE BALTIMORE REGION.

Farragut, P.R., Regional Planning Council, Baltimore, Maryland 1968-69.

SCOPE:

The report discusses the present and future problems involving the regions shoreline. The study recognizes the many important inter-relationships existing along the bay shoreline at the interface of land and water. Recognition of these interactions facilitates accurate and complete waterfront planning. Present water quality standards, for example, designate "zones" of water quality in different areas which exert an influence on land use; the converse is also true.

CONCLUSIONS:

The primary conclusions of the study that formed on the identification of problems associated to the Chesapeake Bay are:

1. Accessibility, water depth and quality, severity of erosion and the availability of utilities influence the desirability of shorelands.

2. The magnitude of shore erosion is great; the present piecemeal approach of corrective rather than preventative control is ineffective.

3. Sedimentation could be minimized through a control program incorporated within the subdivision regulation.

4. The dredged material, that results from channel maintenance could be used for enlarging public lands or creating artici fial islands.

5. Maintenance of adequate water quality and quantity from the Susquehana River is of paramount importance to the well being of the Chesapeake Bay.

6. The most important variables relevant to the preservation of the wildlife, finfish, and shellfish resources of the bay appear to be maintenance of the most productive wetland areas, enforcement of water quality standards and control of nutrients and sedimentation.

7. Federal regulations and research are needed concerning acceptable waste disposal systems for boats and ships.

8. A source of concern is the threat of thermal pollution by proposed generating electric plants.

The document discusses pertinent biological and physical characteristics. It describes economic indicators of the bay resource and identifies bay-oriented agencies, their policies and regulations.

SHORELINE UTILIZATION:

This study concerns itself with the present and potential use of the regional shoreline. It is basically a descriptive study focusing on the present problems and opportunities of the shoreline. Recommendations on increasing public use of the shoreline are made.

1. Lack of access by the population at large is the major problem characterizing land use of the shoreline. A lack of vista points, public park, recreation sites and commercial marinas prevents maximum utilization.

2. Residential land use parallels the shoreline with no interior development, thus preventing access to the water.

3. There are several remaining opportunities for greater public use of the shoreline if the military lands could become multiple use in nature. Also, acquisition of commercial beach areas that are in financial trouble, for county or state recreation facilities.

4. Land available for acquisition for recreational facilities is rapidly decreasing.

HAWAII'S SHORELINE

Hawaii Department of Planning & Economic Development, 1963

METHODOLOGY:

The study was prepared in the following stages:

1. Goal and Objective Formulation.

2. Collection of Relevant Shoreland Data: A special shoreline recreation survey, a study of the geophysical aspects of the shorelines, a water current study near urban centers, and site data for areas having high recreational and resort potential.

3. Establishment of Planning Principles and Standards for Shoreline Design. Review of Law and Ownership rights.

4. Synthesis of planning principles, resource potentials and limitations and use expectations.

5. Establish essential programs to meet development and conservation problems of the shoreline.

PURPOSE:

The purpose of the shoreline project was to develop strategies in order to eliminate, avoid or alleviate:

1. Health hazards created by pollution of off-shore waters.

2. Danger to life and property invited by high density development in areas vulnerable to tsunami damage.

3. Congestion of beach park facilities and overcrowding of coastal land by urban developments.

4. Inefficient location of beach facilities far removed from urban centers.

5. Ugliness produced by walling off seascapes with high density developments along the shoreline and by not allowing enough open space.

6. Chaos in random and uncoordinated development.

7. Boredom abetted by the lack of opportunity for a wide variety of recreational experiences.

OBJECTIVES:

The broad objectives of the shoreline plan are:

1. To utilize shoreline resources based on shoreline capabilities and characteristics and the needs of the economy.

2. To identify areas along the coastline which can adequately meet the needs of urban development.

3. To conserve beach resources and coastal land in the interest of the economy and public recreation.

4. To outline areas vulnerable to inundation by tsunamis.

5. To designate coastal areas for conservation so as to preserve open space or scenic areas until such time as alternatives for their development become clear.

6. To define systems of beach parks for local or State Administration.

7. To determine coastal highways which can be built to secure scenic advantages for motorists.

8. To achieve fuller understanding of possibilities for coastline development so as to promote timely programming of coastal defenses and works and to minimize potential problems which may arise.

BEACH CLASSIFICATION:

A major emphasis of the study was a coastal geology study prepared by the Hawaii Institute or Geophysics. The purpose of the study was to provide fundamental information which served as a basis for planning recommendations. The following beach classification is one relevant land use planning aspect of this collaborative effort.

A. Primary Beaches

1. Beach width and length

   a. Width of sand above water at high tide should not be less than 35 feet.

   b. Width of wading area up to five feet deep should not be less than 50 feet.

   c. The beach may be of most any length--from a small sand pocket to a beach of several hundred feet in length.

2. Sand composition

   a. Sand composition may vary from the fine grain sand of Kahana Bay to the coarser grain of Kailua Beach (on the island of Oahu).

   b. The sand should be light color and free of debris.

   c. This sand composition should predominate both above and below the high water line.

   d. The sand may be composed of detrital and/or organic components.

3. Slope of beach

   a. The slope of the beach, above and below the high water line, should be very gentle.

b. The slope should afford easy physical access and safe swimming.

4. Water characteristics

a. There should be no large shore breakers or strong currents.

b. The water should be considered safe for swimming at almost anytime during the year.

c. The water should not be polluted, and should be free of debris and free of undesirable marine life.

5. Upland area

a. In determining upland area, only the acreage which is or would be associated with public water recreation activities should be used.

b. The upland should be level to rolling and offer space for recreational development.

6. Accessibility

a. Beaches of this classification should be physically accessible.

B. Secondary Beaches

Beach areas having the same characteristics as "primary beaches" only during certain months of the year--generally summer months; often subject to severe physical changes such as loss of sand, water bottom changes, etc. during some months of the year.

C. Tertiary Beaches

Beaches which may be entirely safe for swimming but unsuitable because of off-shore coral or a gravel water bottom; may be excellent for recreational activities which do not include swimming, such as sun-bathing, picnicking, fishing, boating and scenic viewing. Some beaches may be excellent for surfing, but not safe for the average swimmer.

One of the significant concepts based on an analysis of physical, economic and social data in establishing a pattern for future shoreline land use is:

> Parks and open space, as a competing use for shoreline sites, receive major emphasis because of the importance to preserve coastline beauty and to assure broad public use of shoreline resources.

Another interesting feature of the study is the graphic expression of the existing and proposed land uses, specific recreation uses and shoreline characteristics (bedrock, gravel, sand, mud, artificial structures, seasonal change, accessibility and slope).

II. RECREATION AND CONSERVATION SHORELAND PLANS

.Shoreline Recreation Resources of the United States

.Water-Oriented Outdoor Recreation in Lake Michigan Basin

.Recreation Development and the Lake Erie Shore

.Recreation and Open Space: Palm Beach County, Florida

SHORELINE RECREATION RESOURCES OF THE UNITED STATES

ORRRC Study Report 4; George Washington University, Washington, D. C., 1962

FINDINGS:

The purpose of this report is to discuss the problems of the recreation shoreline present and future and suggest national policies and programs to deal effectively with the problems. The three primary difficulties are:

1. A large percentage of the shoreline is not close enough to where people live to be widely useful for recreation.

2. Shorelands adjacent to large metropolitan areas are overcrowded.

3. A majority of shoreline near urban areas is in private ownership and not available for public use.

The shoreline plays a very important role in satisfying the recreation needs of people. The degree of satisfaction varies according to the (a) type of shoreline, (b) accessibility and (c) availability of the accessible shoreline.

By the year 2000 most of the shoreline in the areas of the metropolitan region will be needed to satisfy recreational demands and much of it will have to be managed with greater efficiency. Shorelines in the rural zones will receive increasing pressure for recreational use, some of this shoreline has great value as superior natural environment or wildlife habitat.

SHORELINE RECREATION RESOURCES

The shoreline, a limited fixed resource and scarce commodity, has been comparitively neglected as a national recreation resource. The predominance of private control (90%) raises some important questions about the availability of the shoreline for recreation use by the public. The study does recognize the public interest in the shoreline as a natioanal boundary, and the necessity to consider the entire shoreline when policies of shoreline recreation are being formulated.

A recreation shoreline is defined with a broad context to meet the following criteria:

1. The existence of a marine climate and environment.

2. The existence of an expanse of view of at least five miles over water to the horizon from somewhere on shore.

The nature of the shoreline was investigated to determine the recreation feasibility. The shoreline was categorized as follows: length, shore type (beach, bluff, ownership and development status). Additional information is needed relative to effects of natural phenomena, kinds and extent of development and suitability of the shore for recreation development.

There is no shortage of shoreline for recreation purposes if only gross area is concerned. The primary problem is one of imbalance between the location of urban centers and accessibility to adequately develop public shorelands. The current pattern of private ownership and restricted usage modified to realize the recreation needs of people within the conflict between developers and conservation groups in relation to marsh shorelines.

STATUS OF SHORELINE RECREATION PLANNING:

Less than half of the shoreline states have arrived at the stage where they are able to determine the overall recreation needs and to develop plans and policies to meet the needs. There is inadequate recognition of the behavior of this dynami natural environment; consequently, destruction of this important natural resource has resulted. There is a lack of cooperation among governmental units in solving shoreland problems that don't conform to political boundaries.

NATIONAL POLICY FOR THE SHORELINE:

A policy is needed for the national resource that would meet the following purposes;

1. State the public purpose in the recognition and encouragement of outdoor recreation.

2. Define the roles of the various levels of government.

3. Relate recreation use of the shoreline to other valid uses.

The following programs are recommended to implement the suggested policies:

1. Shoreline use and inventory data

2. Delineation of basic natural planning units

3. Experiments in recreation use

4. Analyses of administrative arrangements and intergovernmental relationship.

5. Study of management of the recreation shoreline in metropolitan areas.

WATER-ORIENTED OUTDOOR RECREATION IN THE LAKE MICHIGAN BASIN.

Bureau of Outdoor Recreation, Lake Central Region, Ann Arbor, Michigan, 1965.

PURPOSE:

The purpose of the study is to: (1) inventory of existing water-oriented recreation facilities, (2) establish needs and goals for lands for recreational development to the year 2010, (3) identify potential recreation areas, (4) determine water quality influence on present and future activities and (5) recommend actions or programs to improve the Basins water recreation opportunities.

FINDINGS:

The two primary factors that appear to have a paramount effect on the recreational use of the Basins waters are (1) water quality and (2) the availability of the waters for use by the public. The lack of facilities is most acute near metropolitan regions. The type or nature of development is as important as the acreage necessary for recreation use; multiple use of public lands is mandatory.

Many recreational values, from body contact with water activities to aesthetic appeal, have been destroyed most notably by municipal and industrial sewage disposal facilities. The recreational activities have a polluting effect on water; therefore, it was felt that environmental education of the recreationists themselves is critical. Improvement of transportation systems will help alleviate the availability problem, but revision of ownership liability laws is necessary to encourage public use on large industrial tracts.

GOALS:

The recreational needs of the Basin shall be realized if the following goals are achieved.

1. Acquisition and development of facilities within reasonable distance of those who would use them.

2. Reduction of present pollution.

3. Proper zoning and planned development of lands within and adjacent to recreational areas.

The study includes a recreation facility inventory that indicates the location and size of the park and facilities available (swimming, boating, fishing, picnicking, tent camping, trailer camping and group camping).

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RECREATIONAL DEVELOPMENT AND THE LAKE ERIE SHORE

John N. Jackson, Niagara Regional Development Council (1967) Photos, Maps and Diagrams, 241 pages.

SCOPE:

The report is divided into the following six parts:

1. Recreation and the Lake Erie Shore
2. Characteristics of the lakeshore.
3. Waters of the Lake: Pollution, Sport and Commercial fishing, water supply, and fluctuations.
4. Recreation as a recourse.
5. Jurisdictional aspects of the lakeshore.
6. Conclusions.

Part five, Jurisdictional aspects of the lakeshore, is of prime interest because it attempts to relate the sequence of physical and human features to the legal situation (see map: Legal Aspects of a Shoreline Profile). The author discusses riparian proprietorship and property boundaries, the foreshore as a navigable waterway, code of recreational law and behavior, access and recreational space/land ownership.

FINDINGS:

This study is concerned with recreation as a land use along a portion of the Ontario shoreline of Lake Erie.

An extensive land use survey was conducted and the data was analyzed in relation to recreational and tourist potential within a regional context. An analysis of the contrasting shoreline conditions indicate many conflicts between:

- .the public use of beaches and the reservation of beaches for private use by the riparian owners.
- .the growing incidence of pollution and the future of recreational activity.
- .the expanding regional population and traditional foreign land ownership.
- .the industrial residential urban demands on land and recreational uses.
- .the increasing opportunities for leisure and slow growth rate of recreational lands.

RECOMMENDATIONS:

The primary purpose of the report "was to achieve responsible action by government to remedy a sad and deteriorating situation". The report makes three major recommendations.

1. The immediate implementation of all necessary action to secure a clean lake.
2. The resolution of present conflicts over the nature of beach ownership.
3. An examination of the means to secure a greater provision of recreational land for use by the public within a regional development framework.

A schematic outline of the major recreational proposals is presented to summarize the various arguments.

RECREATION AND OPEN SPACE: PALM BEACH COUNTY, FLORIDA

Vines, W. R., Area Planning Board of Palm Beach County, Florida 1970

SCOPE:

The report deals with the recreation and open space aspects of the Palm Beach County Comprehensive Planning Program. The primary concerns are:

1. Land and water areas, facilities, and programs which provide leisure time recreational enjoyment for the residents and visitors.
2. Open space as a structuring element of the county's urban development pattern.
3. The importance of recreation and open space to the county's environmental quality and economy.

OPEN SPACE RESOURCES:

The county's waters and shorelines are its most important natural recreation resource. It is now recognized that open space is a positive, functional land use which must be accorded a status of major importance in long range planning. Functionally, open space may be categorized as:

1. Utilitarian areas which support water supply, drainage, forestry and related activities.
2. Lands and waters which create or preserve environmental attractiveness, provide aesthetic pleasures and serve leisure time activities.

3. Corridor and landing place uses, such as streets, etc.

4. Open space which lies within or is adjacent to urbanizing areas but is not available for urban development.

The recreation and open space needs can be expected to constantly change and grow as a result of (1) continued increase in resident and visitor population, (2) increase in per capita incomes and (3) increase in urban area and agricultural land requirements.

FINDINGS:

The problems that are the result of such growth pressures, which must be overcome in accomplishing the plan objectives are:

1. Physical resource problems: water pollution, beach erosion, game and fish habitat destruction.

2. Problems of adding public and commercial recreation lands and water access points in pace with increasing user needs.

3. Problems of developing and managing recreation and open space lands and waters so as to maximize the quality of recreational experiences which they offer while expanding their use capacity in pace with increasing user pressure.

4. Problems of logically and fairly distributing the local, state and federal planning, financial and management responsibility.

RECOMMENDATIONS:

The primary recommendations submitted for approval are as follows:

1. Strengthen county governments recreation and open space role and improve intragovernmental cooperation and coordination.

2. Simultaneously eliminate beach erosion problems and acquire additional lands for public access.

3. Cessation of practices which are damaging inshore marine values, methods for restoring lost or dimished values, modifications of existing bulkhead line patterns, shoreline stabilization, acquire additional waterfront recreation lands.

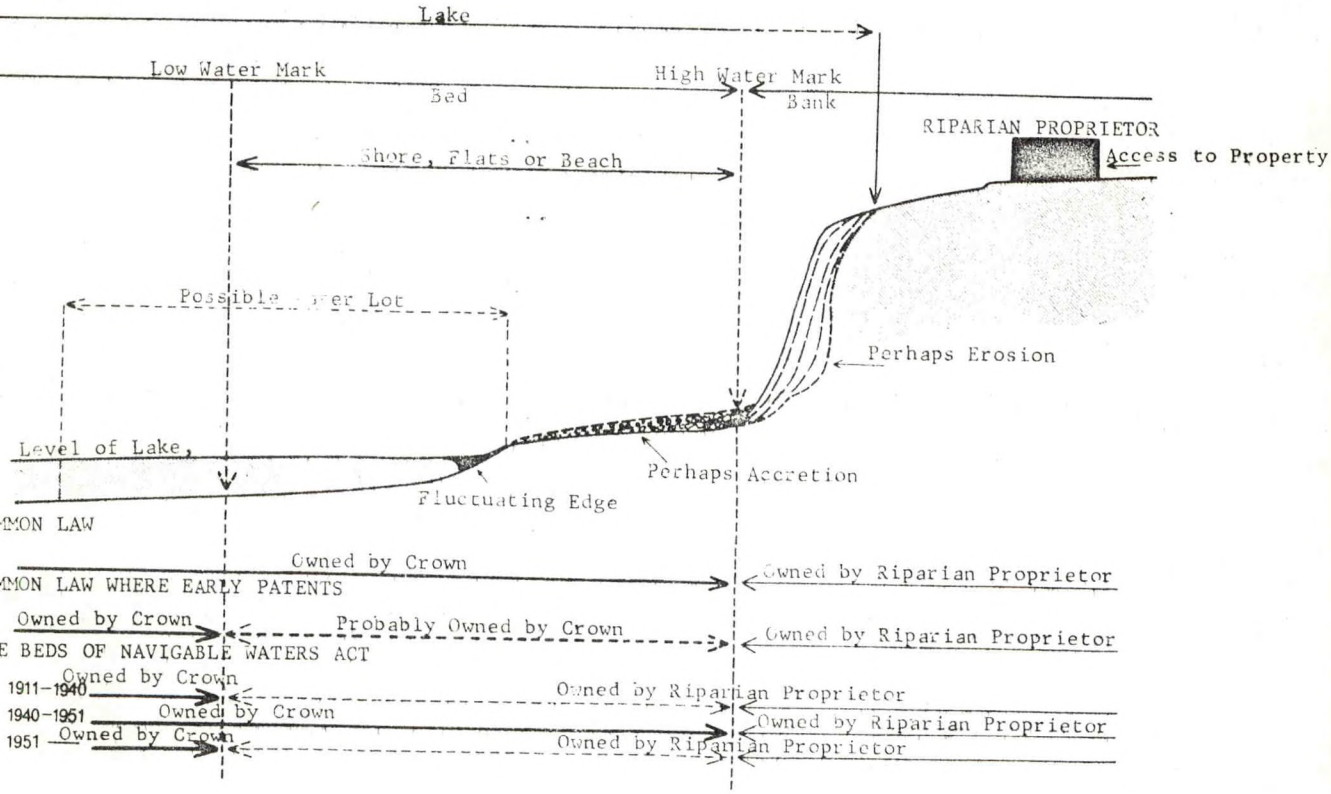
4. Integration of school system lands and facilities with county recreation and open space resources.

5. Public action which can direct private land developments such as, zoning ordinances, subdivision regulations and land development and land use controls.

LEGAL ASPECTS OF A SHORELINE PROFILE

V A

(a) TERMINOLOGY



III. WATER RESOURCE AND QUALITY PLANS

.Waterfront Renewal

.Status and Potential of the Marine Environment

WATERFRONT RENEWAL

Wisconsin Department of Resource Development
Madison, Wisconsin 1964

SCOPE:

The report investigates the application of renewal technqiues to urban waterfronts with special emphasis on how the water resources affect land use development adjacent to deep-draft navigation channels.

Urban waterfronts are blighted due to causes that are not in non-water oriented sites; such as, flooding storms, surface water pollution, excessive costs of maintenance and inability of ports to handle larger vessels. The waterfront sites offer some unique features to a renewal program as (1) design and aesthetic potential (2) public association and ownership of water resource (3) the water's edge clearly defines a boundary for renewal.

The report discusses waterfront problem and causes of blight and describes waterfront planning goals and methods for implementation of renewal plans.

CONCLUSIONS:

The primary conclusions of the study are:

1. Surface water pollution is the most important water-related cause of urban waterfront deterioration in all but industrial and cargo-handling areas. Pollution also imposes severe limitations on the reuses to which parcels of waterfront land can be put.
2. In placing expressways and other high traffic volume roads parallel to urban waterfronts, more attention must be given to reducing the extent to which these arteries sever the waterfront from the remainder of the city.
3. An almost universal problem of ports is their inability to accommodate the physical dimensions of vessels now being used.
4. Throughout the country, undeveloped shoreline is rapidly disappearing and being developed for uses ranging from heavy industry to cottages.
5. Stricter controls are needed to compel maintenance of shoreline retention structures and removal of abandoned piling.
6. Since maintaining shoreline and shoreline structures is relatively expensive, more attention should be paid to changing the total lineal footage of shoreline within any community.
7. Public ownership of shoreline parcels, or at least a strip along the shoreline should be considered.

8. Attitudes differ throughout the country about whether building should be kept out of areas prone to flooding, or whether flood protection works should be constructed.

9. A renewal project undertaken along an urban waterfront can increase the distance inland of the area enjoying waterfront benefits.

10. Billboard controls should be considered for waterfront areas since billboards may spoil both the view of the land from the water, and vice versa.

11. Waterfront planning and renewal need not become fields of specialization either of new agencies or within the planning profession.

The results of a resident survey of several Wisconsin port cities indicate that people tend to think first of the recreational and aesthetic value of the water front; even the industrial harbors ranked high as being "interesting".

RECOMMENDATIONS:

Six methods for achieving better waterfront use and halting deterioration through action by local government units are:

1. Encourage an orderly transition in waterfront land use.
2. Educate riparian owners on the forces of deterioration.
3. Enforcement of codes and regulations.
4. Improvement of municipal maintenance programs.
5. Selective clearance of structures.
6. Acquisition and clearance of total blighted areas for redevelopment according to planned uses.

THE STATUS AND POTENTIAL OF THE MARINE ENVIRONMENT

Nassau-Suffolk Regional Planning Board (Oceanographic Committee) New York 196

SCOPE:

The report expresses the result of a study that investigated the opportunities and problems growing out of the impact of the population expansion on the marine environment of Nassau and Suffolk Counties.

The report which is written in four parts, clearly states action recommendations based on discussions that separates facts and opinions relative to the marine environment. The areas of interest that were investigated are: governmental, conservation, pollution control, education and research, industrial oceanographic research and development, national marine laboratory, economic aspects relative to commercial fishing, fish meal processing, duck farming, dredging, recreation-tourism, housing, real estate, transportation and deep water ports.

CONCLUSIONS:

The primary results of the discussion section are as follows:

1. General: The complex marine environment with its extreme sensitivity to the effects of population is a factor of over-riding importance to the development and growth of Long Island. Population expansion has caused serious deterioration to the once delightful marine environment which has been a major contributing factor in the Island's attractiveness and consequential growth.

2. Pollution: The most serious source of pollution is the inadequacy of sewage systems. The most dangerous effect is the seepage of human, household and industrial wastes to the fresh water resources that underlie the Island. Other sources of contamination to the marine environment is storm runoff, duck wastes, and pleasure boats.

3. Economics: There are several industries that are directly related to the marine environment and are enhanced by improvement of the environs. Many land uses, such as residential and non-marine industrial development are dependent on an attractive marine environment for continual growth.

4. Research: The most challenging problem is to carry out a research program that will generate the knowledge necessary to manage the resources of the marine environment in face of the population explosion.

5. Administration: The results of the study indicate the need for the establishment of a marine resources planning council with the purpose of coordinating a continuous regional approach to the management and enhancement of the marine environment including:

    a. The formulation of a comprehensive plan for the management of the marine environment.

    b. The resolution of conflicting issues affecting the marine environment.

    c. The initiation of a coordinated university approach to the study of the marine sciences and ocean engineering.

d. The initiation of industrial participation in the research and development pertinent to the Long Island marine environment.

e. The initiation of a research program into the problems and potential of the marine environment.

The recommendations are action oriented and fit into four categories, (1) administrative (2) regulatory (3) operational and (4) promotional.

IV. SHORELAND MANAGEMENT AND LEGISLATION

.Water Resource Management in Wisconsin

.Shoreland Management Program

.Shoreland and Flood Plain Zoning Along The Wisconsin Shore of Lake Michigan

.South Carolina Tidelands Report

WATER RESOURCE MANAGEMENT IN WISCONSIN

Department of Natural Resources, Madison, Wisconsin 1968

SCOPE:

The report presents an overview of water resource management by describing the existing water situation such as supply, use, quality and land problems. It also states the regional use and quality patterns, as well as the institutional framework that is responsible for water resource management.

CONCLUSIONS:

The summation of the report states that planning for water resource management requires four distinct kinds of coordinated effort:

1. The collection and analysis of basic water and related land use data.
2. The development of appropriate institutional structures and processes for decision making about water resources.
3. Relating water resources planning to more comprehensive plans.
4. Development of explicit proposals for individual river basins.

RECOMMENDATIONS:

The primary proposals of the study which are directed toward the immediate needs for water resource management are:

1. Recommendation No. 1. That the Department of Natural Resources develop a comprehensive and coordinated system of water management information collection, storage, analysis, and use.
    a. Design for and installation of a total information system related to water resource management.
    b. Strengthened inventories of ground and surface waters.
    c. Analysis of existing systems for monitoring water quality and recommendation of such changes as the analysis may warrant.
2. Recommendation No. 2. That the Department of Natural Resources undertake five special studies of basic policies, structures, and processes related to planning for water resources management.
    a. Evaluation of the Wisconsin policy on state ownership and operation of water management facilities.
    b. Consideration of the terms and conditions under which interbasin transfers of water may be permitted.

c. Review of alternative forms for management of water development facilities.

d. Review of statutes governing the creation of water management districts.

e. Evaluation of procedures for maintenance and improvement of water quality.

3. Recommendation No. 3. That the Department of Natural Resources guide, assist and influence the conception and conduct of comprehensive river basin plans, in accord with standards and schedules to be developed by the Department.

SHORELAND MANAGEMENT PROGRAM

Wisconsin Department of Natural Resources, Madison, Wisconsin 1965

INTRODUCTION

The Water Resources Act requires counties to enact regulations for the protection of all shorelands in unincorporated areas by January 1, 1968. Shorelands as defined by the law are lands within 1,000 feet of a navigable lake, pond or flowage and lands within 300 feet of a river or navigable stream or to the landward side of the flood plain, which ever distance is greater.

The statute defines the purposes of regulations enacted for shoreland protection: "to further the maintenance of safe and healthful conditions; prevent and control water pollution; protect spawning grounds, fish and aquatic life; control building sites, placement of structures and land uses and reserve shore cover and natural beauty."

NATURE OF PROGRAM

The Water Resources Act requires the zoning of shorelands in the unincorporated areas of each county. Such zoning shall not require the approval of the town boards.

It is necessary for a county to enact shoreland regulations including zoning provisions, land division controls, sanitary regulations and administrative provisions ensuring enforcement of the regulations.

SHORELAND REGULATION STANDARDS AND CRITERIA

(1) Establishment of Appropriate Zoning Districts: Shoreland area development can usually be controlled by regulations appropriate to wetlands (conservancy district), recreation-residential districts and general purpose districts.

(2) Establishment of Land Use Zoning Regulations: The zoning provisions adopted must provide sufficient control of the use of shorelands to assure the protection of water quality. The provisions shall include the following:

a. Minimum lot sizes. All future lots in the shoreland area shall afford protection against danger to health and hazard of pollution of the adjacent body of water.

b. Building setbacks. The permitted location of buildings and structures shall conform to health requirements, preserve natural beauty and reduce flood hazards.

c. The cutting of trees and shrubbery shall be regulated to protect scenic beauty, control erosion and reduce the flow of effluents and nutrients from the shoreland.

d. Filling, grading, lagooning and dredging may be permitted only in accord with state law and where protection against erosion, sedimentation and impairment of fish and aquatic life has been assured.

(3) Establishment of Sanitary Regulations. The protection of health and the preservation and enhancement of water quality require sanitary regulations to be adopted by the county.

(4) Adoption of Administrative and Enforcement Provisions.

(5) Establishment of Land Suitability Review. The county shall review all land divisions which create three or more parcels or building sites of five acres each or less within a five-year period.

SHORELAND AND FLOOD PLAIN ZONING ALONG THE WISCONSIN SHORE OF LAKE MICHIGAN.

Strigel, A.R., Wisconsin Department of Natural Resources, Madison, Wisconsin 1967

The report describes the existing conditions of nine county Lake Michigan Shorelands of Wisconsin and the physical phenomena that affects the use of shorelands; such as, changes in lake levels, effects of wave action and currents and ice effects.

The primary regulations relative to shoreland zoning are:

1. Permits for Construction in Shoreland Area: No structure shall hereafter be located, erected, enlarged or reconstructed within the shoreland zoned area, and no private water supply or sewage disposal system shall be constructed in that area, without a permit from the Zoning Administrator.

2. Minimum Lot Area and Frontage: In any district where public sewerage service is not available, the width and area of all lots shall be sufficient to permit an on-site sewage disposal system.

3. Waste Disposal Requirements: No discharge of liquid wastes into Lake Michigan or any other surface waters or natural water courses within the shorelands zoning area shall be permitted.

4. Sewage Disposal: All premises intended for human occupancy shall be provided with an approved method of sewage disposal, such as a connection with a public sewer, privy, or septic tank and soil absorption system.

5. Soils with Limited Soil Absorption Characteristics: Certain soils in the shoreland zoning area have severe limitations for successful operation of soil absorption sewage disposal systems because of slow permeability, shallow bedrock, high ground water or steep slopes. The locations, descriptions and characteristic limitations for various uses of soils found in the shoreland zoning area along Lake Michigan are given.

6. Water Supply: Premises intended for human occupancy, within the shoreland zoning area, shall be provided with suitable plumbing fixtures served by a public water supply system where available.

7. Setbacks From the Water: For lots that abut the shore of Lake Michigan, or the shore of navigable streams flowing into Lake Michigan, within the shoreland zoning area, all buildings and structures, except piers, wharves, boathouses, and shore protective structures, shall be set back at least 75 feet from all points along the normal high water line.

8. Shoreline Protective Measures: Existing developments in some areas may create conditions such that the setback from the water specified in the zoning regulations is not practical or desirable. Suitable shore protecting structures may be required by the zoning administrator as a condition for granting a variance from the setback requirement.

9. Acceptable Types of Shoreline Retention Structures: Types of shoreline retention or protection structures that would be suitable under a zoning regulation to allow building construction or other improvements closer to the shoreline than otherwise would be allowable depend to a large extent on the nature of the lake bank, the extent of the frontage involved and its relation to other adjacent frontages, the exposure of the frontage, the average rate of recession of the unprotected or inadequately protected shoreline, and the frequency, range, and duration of various lake levels.

SOUTH CAROLINA TIDELANDS REPORT

South Carolina Water Resources Commission 1969

The recommendations contained in the report are intended to provide the State with appropriate criteria for making necessary decisions in respect to management, development and preservation of the tidelands. The primary recommendations are:

1. Establish or designate an Interdisciplinary Tidelands. Resources Unit accomplish the planning, preservation and management of the tidelands resources.

2. The Resources Unit should be given the legislative authority to:

   a. Provide for a system of zoning of the tidelands area according to the most desirable priority use. Multiple use shall be encouraged provided there isn't a conflict of uses.

   b. Administer construction permits and leasing arrangements for the management, development and use.

   c. Promulgate rules and regulations for building codes relative to flood control, beach erosion and estuary protection.

3. That the State declare a restatement of its claim to all lands lying between the mean low water mark and the mean high water mark.

4. The State adopt a new policy, including appropriate legislation, with regard to correcting and controlling beach erosion. This policy should consider the entire shoreline, evaluate all existing installations, and develop restrictions to protect natural shorelines.

5. Centralize disposal area responsibilities to eliminate the conflict between four existing state agencies.

6. That reasonable standards of purity of the tideland waters of the State be maintained, consistent with public health, the public enjoyment of such waters, the propagation and protection of fish, shellfish and wildlife.

The report shows the results of extensive investigation of current uses, proposed management and conservation technique as viewed by twenty state and federal agencies having tidelands related responsibilities.

V. PLANNING FRAMEWORK, OBJECTIVES AND PROGRAMS

.A Shorelands Policies Plan: Conceptual Framework

.The Plan Study: Methodology

.The Development of a Procedure and Knowledge for Marine Resource Planning: The Classification of Marine Resource Problems of Nassau and Suffolk Counties.

.The Development of a Procedure and Knowledge Requirements for Marine Resource Planning: Knowledge Requirements.

.Regional Design Study: Forms and Appearances

.Regional Design Guide

A SHORELANDS POLICIES PLAN: CONCEPTUAL FRAMEWORK

Jakobsen, Leo, The University of Wisconsin, Dept. of Urban and Regional Planning, Madison, Wisconsin, 1969.

SCOPE:

The study is a portion ofthe investigation in relation to the development potential of the Lake Michigan shoreland in Muskegon County, Michigan. The purpose of the project is to develop general policies and guidelines for the entire county shoreline. The emphasis is placed upon the establishment of a conceptual framework to serve as a base for the evolution of the study method. The sections in the report relate to the three major aspects of the framework.

Sec. 1. Discusses the nature of the planning task and the development of a planning process model adopted from a model for regional planning methods advocated by Ingrid Jussil.

Sec. 2 A goal formulation model is presented that was derived from Kristensson's model for structure and growth in the Stockholm region, which deals comprehensively with the balancing of social, environmental, economic and political conflicts.

Sec. 3 A model relating to policy formulation process evolved from the other two investigations and incorporated into the conceptual framework.

The Planning Process Model

The model was developed because of the significant changes that have taken place in public planning during recent years, such as:

1. Expanded concept of comprehensiveness
2. Increasing concern with the political environment
3. Improved analytic techniques
4. Growing demand for flexibility
5. Emphasis of policy formulation

The above trends in addition to the traditional linear process conceptualization, which cannot anticipate change and a future that may be structurally different from the present, led to an approach expounded by Ingrid Jussil. The method emphasizes greater coordination between the two processes of the theoretical and practical planning--the transformation of research findings into plan formulation.

The critical element in the model is the development of a work program divided into three components according to general objectives (1) basic data and inventories (2) technical or applied studies and (3) formulation of hypotheses concerning theoretical aspects of plan.

The Jussil model was adopted to the Muskegon planning task. The specific points of the model which warrant emphasis are:

1. A three pronged, simultaneous program with scheduled points of contact.
2. Recognition of value inputs in the formulation of hypothetical goals.
3. Incorporates non-scheduled policy concerns.
4. Testing of goals prior to policy formulation.
5. Incorporation of ideal and practical elements.

The Goal Formulation Model:

The Kristensson model which differentiates between goals of people and goals of establishments has several relevant aspects:

1. Recognizes the ways in which changes in regional structure affect the goal-oriented demands of people and establishments.
2. Recognizes emerging and changing patterns of society.
3. Permits inclusion of certain neutral factors which influence the equilibrium of demands and structural changes.
4. Accounts for the interaction and potential conflicts among goals.

The model suggested the basic conflict division lines for the Muskegon goals matrix as follows:

1. Separation of individual and institutional goals with a three-level geographic division.
    a. regional-broad general goals
    b. county-policy and program formulation goals with potential conflict between government and business
    c. shoreline-specific, mission oriented goals with implementation reality; conflict likely between user and owner in very precise concerns.
2. Grouping of social and environmental goals and separated from economic-political goals.

The goals matrix represents a hypothetical situation and is used as a methodological device that will bring out a range of responses and different levels of understanding in regard to the goals.

The Policy Formulation Model

An analysis of policy types suggested the grouping and breakdown as follows:

1. Policy content is either strategic or operational with location (place or administrative unit) providing the connection and sense of reality.
2. Policy action is grouped as either legislative or administrative with plan policy serving as the vehicle of translating programs into action.

3. The matrix then differentiates the four basic types of policy and their interrelationship (Basic, Legislative, Administrative and Technical).

The division zone of the four policy types, which is represented by locations and plan policy, constitutes the critical area of policy formulation because it represents the areas of conflict. The process of resolving the conflict and determining alternative action provides for a third type of value input of a political nature in addition to the two other value types which the planner and public formulated during the development of hypothetical goals.

A specific and relevant conclusion relative to shorelands zone states that a uniform policy set is unfeasible, therefore, the shorelands should be divided into policy zones with specific policy sets in accordance with local jurisdictional boundaries and environmental conditions.

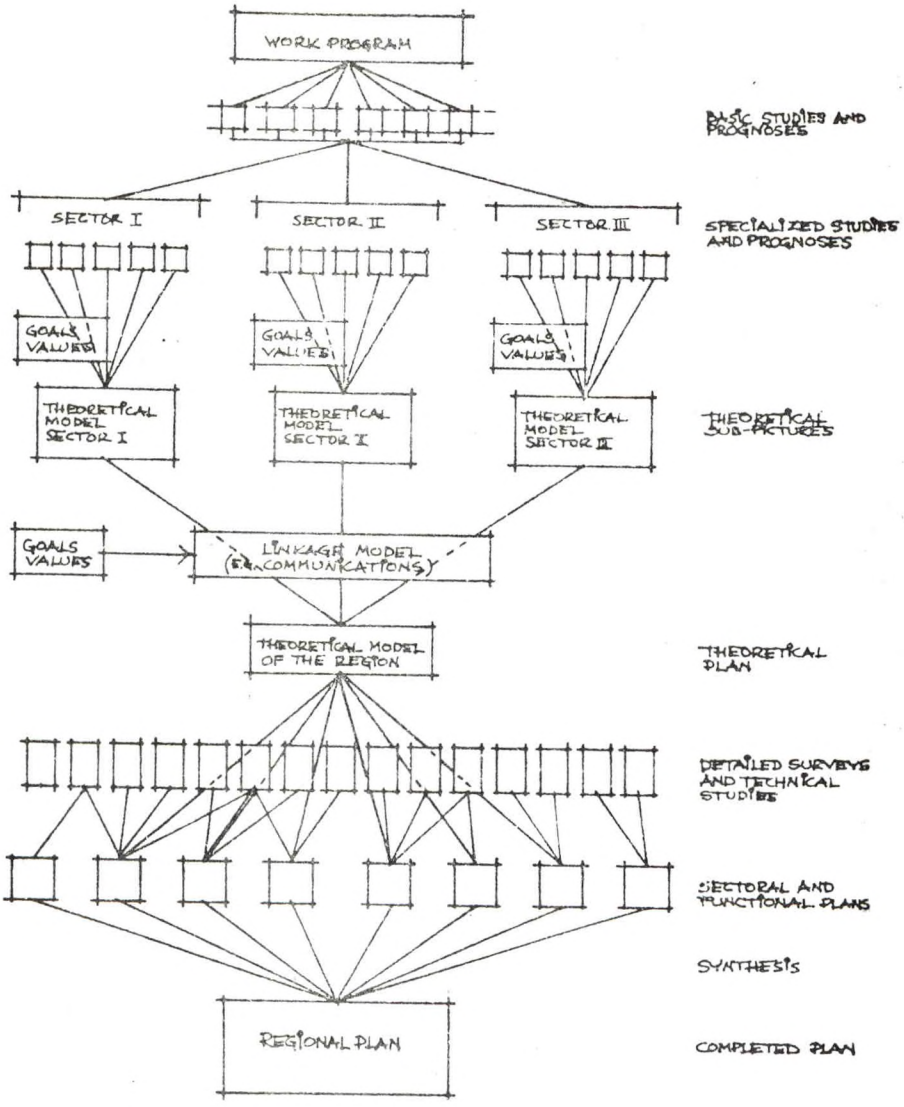


Fig. 1 Isard's Planning Process Model

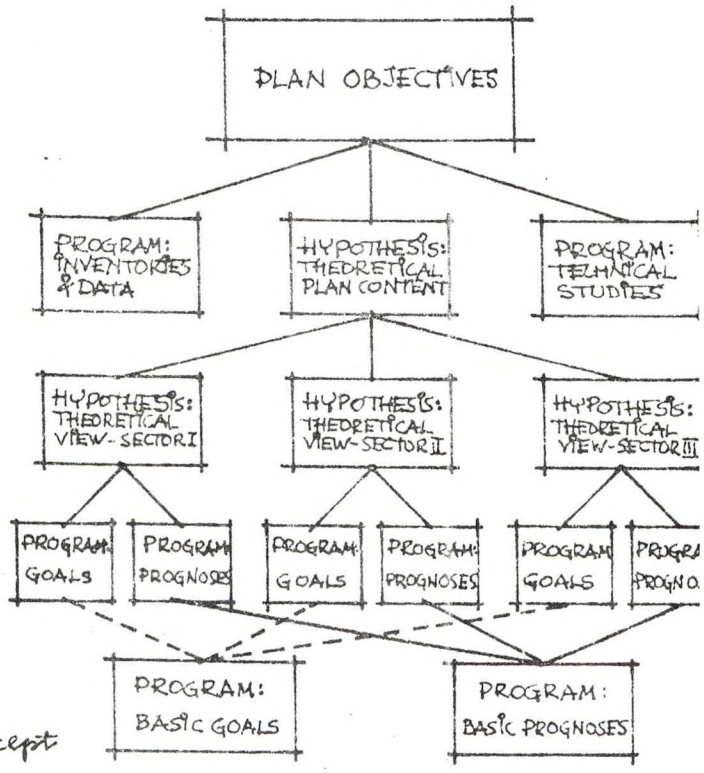
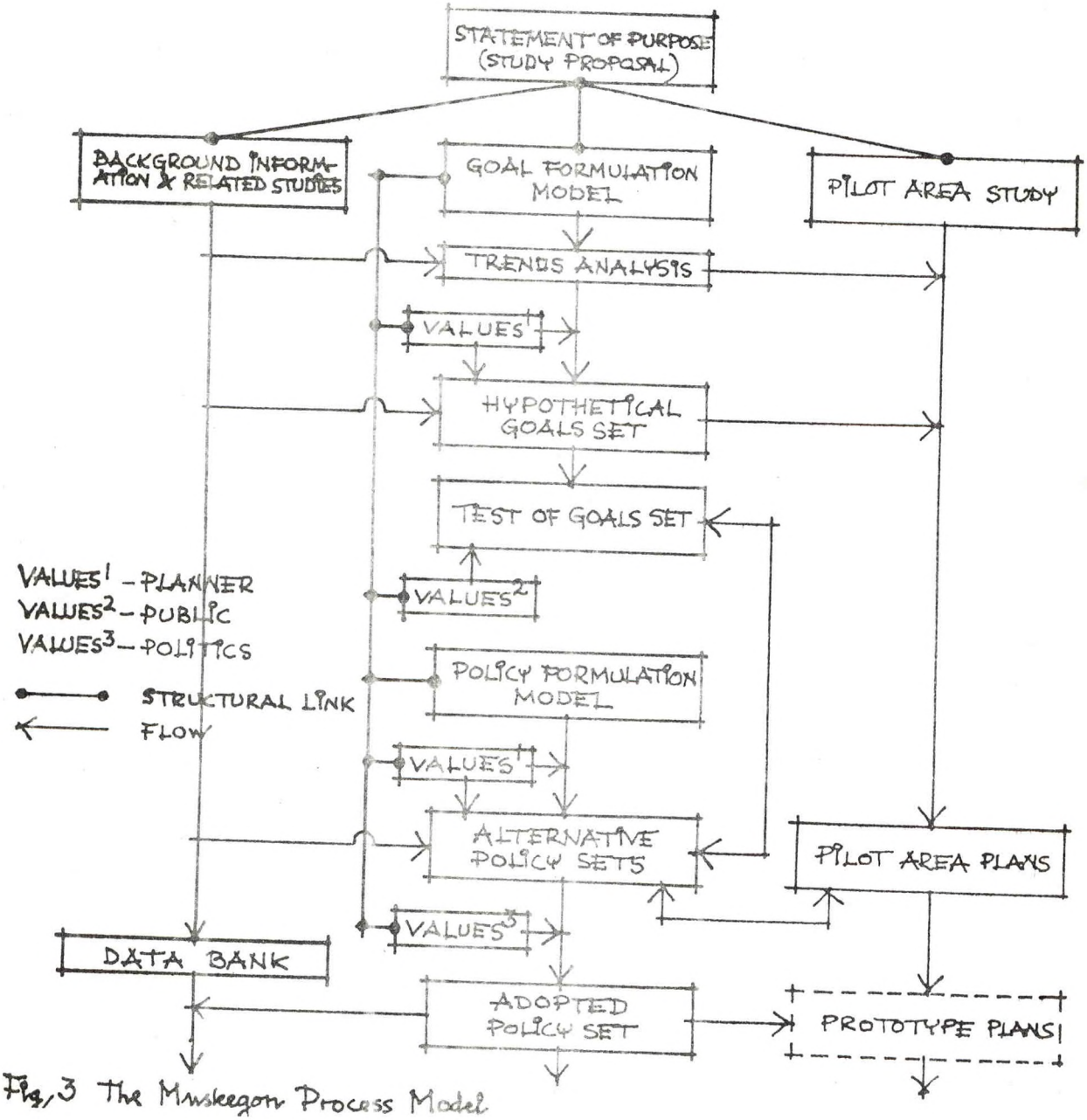
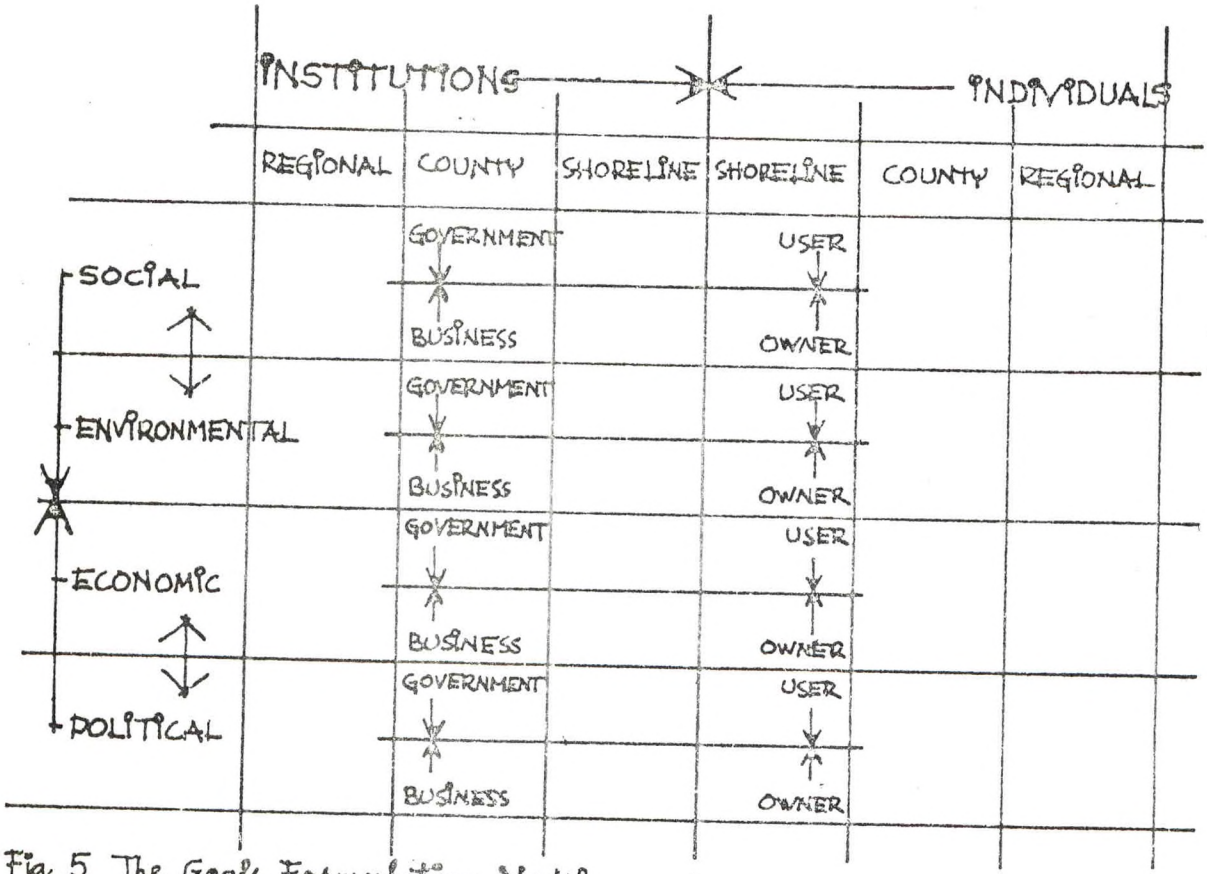


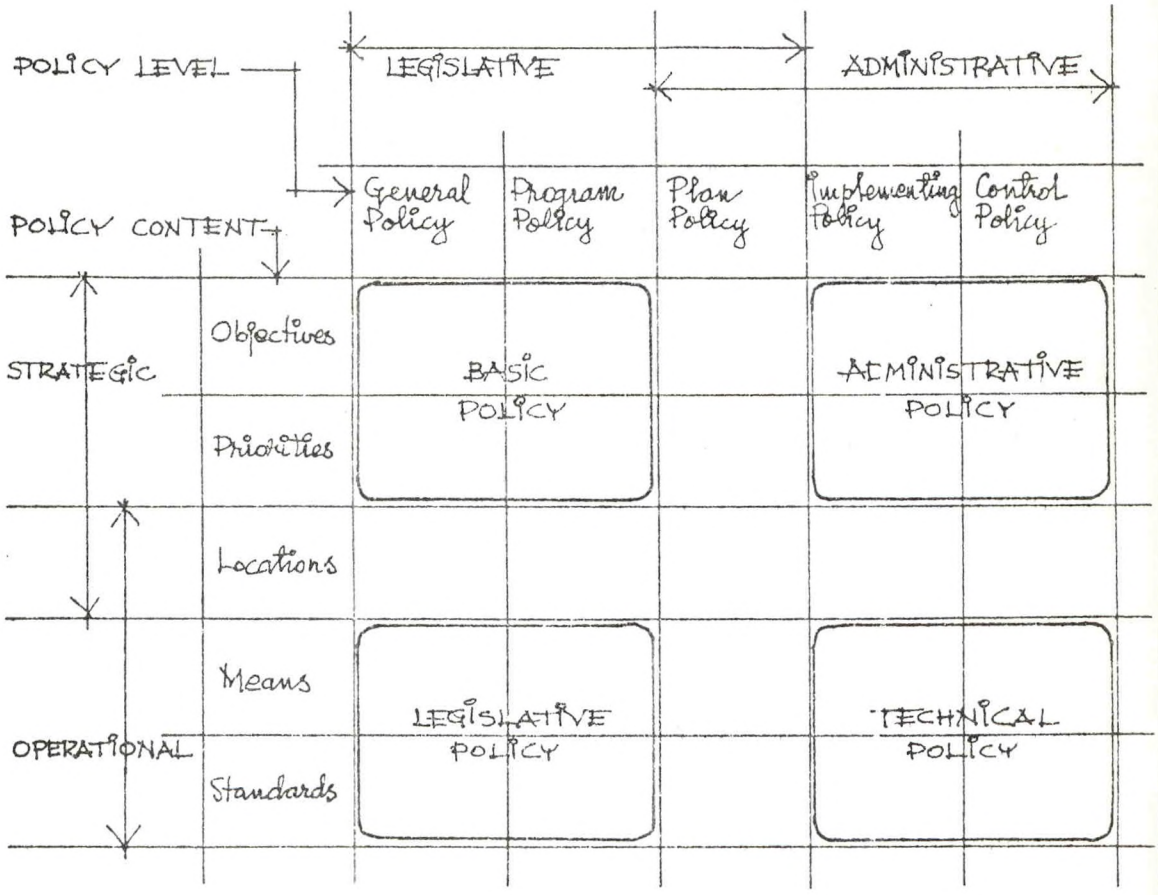
Fig. 2 Jussil's Work Program Concept



Fig, 3 The Muskegon Process Model



Fig, 5 The Goals Formulation Model



Fig, 6 The Policy Formulation Model

THE PLAN STUDY: METHODOLOGY

Northeastern Illinois Planning Commission, Chicago, Illinois 1968

SCOPE:

The report outlines the methodology employed in the preparation and evaluation of alternative development possibilities for Northeastern Illinois. The plan preparation consisted of four distinct phases.

1. Background Research.
2. Isolation of Alternative Metropolitan Forms
3. Simulation
4. Plan Revision

Figure 1 is a flow chart of the comprehensive planning process utilized by the Plan Study.

ISOLATION OF ALTERNATIVE METROPOLITAN FORMS:

This phase involved the process of isolating form and structure variables of urban growth and of systematically reducing the possible combinations to a number feasible to analyze. The result was the isolation of eleven basic models of metro form and structure which were eventually consolidated into five models of urban growth which formed the basis for development of the 1990 alternative plans.

EVALUATION AND CONSOLIDATION OF THE LONG RANGE DESIGNS:

A Goals Fulfillment Test was established to evaluate the plans; the goals used for measurement are: Economic Health, Education and Culture, Physical and Mental Health and Safety, Aesthetics, Transportation, Choice of Physical and Social Environment, Social Mobility, Participation in Decisions, Efficient Land Use and Leisure. Figure 3 represents the percentage ratings for the goals by each of the designs.

An Environment Evaluation was undertaken on each design that was based on a graphical comparison on the adaptation of the basic form concepts to the various environmental factors. Form Evaluation was accomplished by investigating the spatial allocation of the major physical elements of each plan.

The methodology used to generate the alternatives was theoretically that of gaming simulation. The simulation operation utilized by this study held two components (data and initial conditions) constant and compared the outcomes of different models (planning concepts). The purpose of such a simulation was to study the effect of various alternative plans on the regional growth during the next twenty-five years. A summary chart of the methodology used is shown in Figure 6.

EVALUATION AND TESTING OF THE 1990 ALTERNATIVES (5):

The method used was to investigate one factor or viewpoint at a time while holding all other factors constant. The evaluation and testing procedures consisted of the following:

a. Comparative analysis of the five alternative development patterns which contrasted the outcome of the alternative models, sub-area by sub-area and function by function.
b. An evaluation process in which the alternatives were subjected to the scrutiny of the public, regional agencies and professional groups.
c. Quantitative and qualitative tests to compare the performance of the alternatives in such areas as cost, accessibility, air quality, water resource management, transportation, etc.

When the testing process had been completed, there was found to be no unanimous agreement within the results which would indicate one alternative would perform best in all categories of function from all sub-areas. However, the overall performance of one alternative and its degree of acceptability made it stand out.

FIGURE 1. **Flow Chart of the Plan Study**

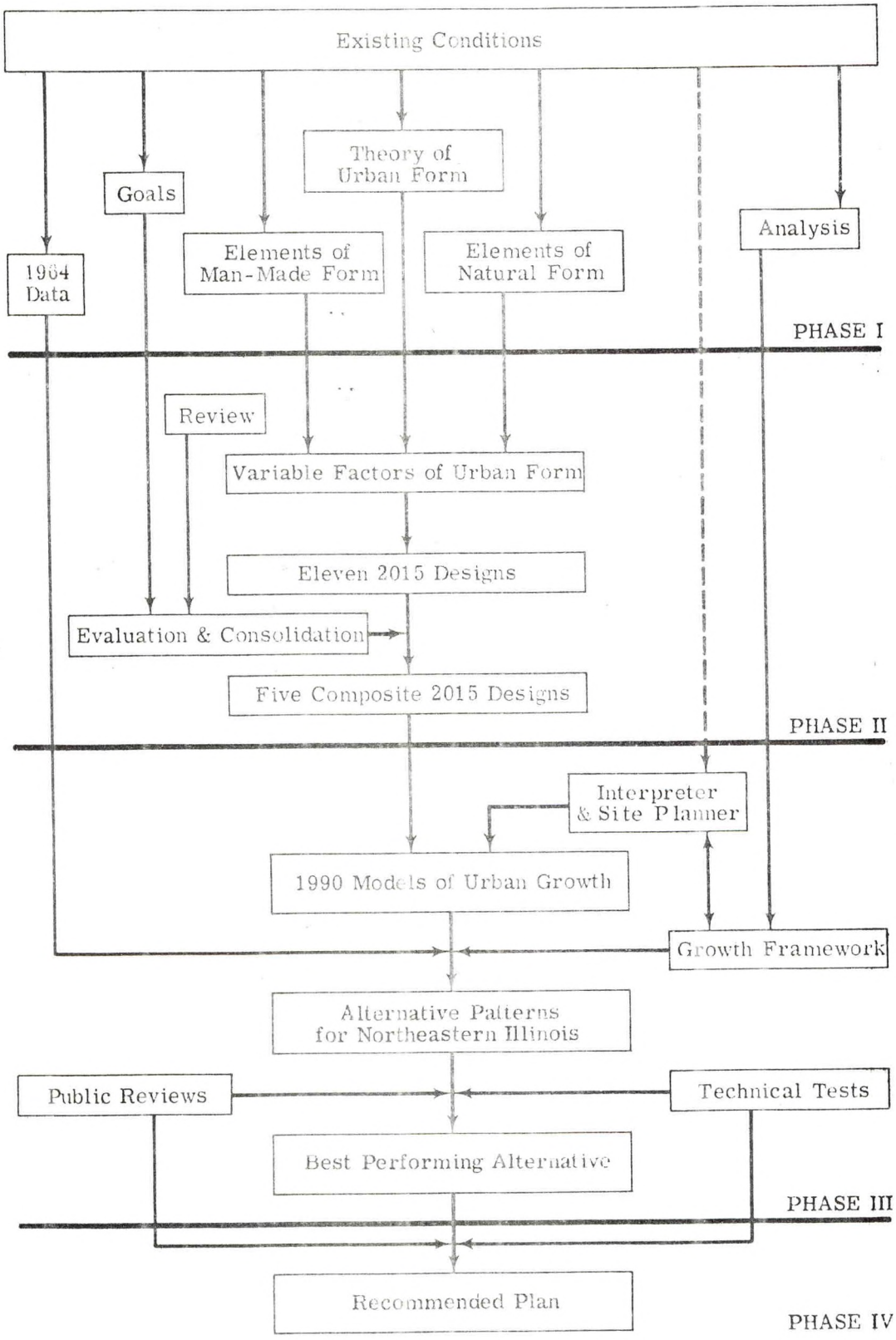


FIGURE 3. **Goals Profile**

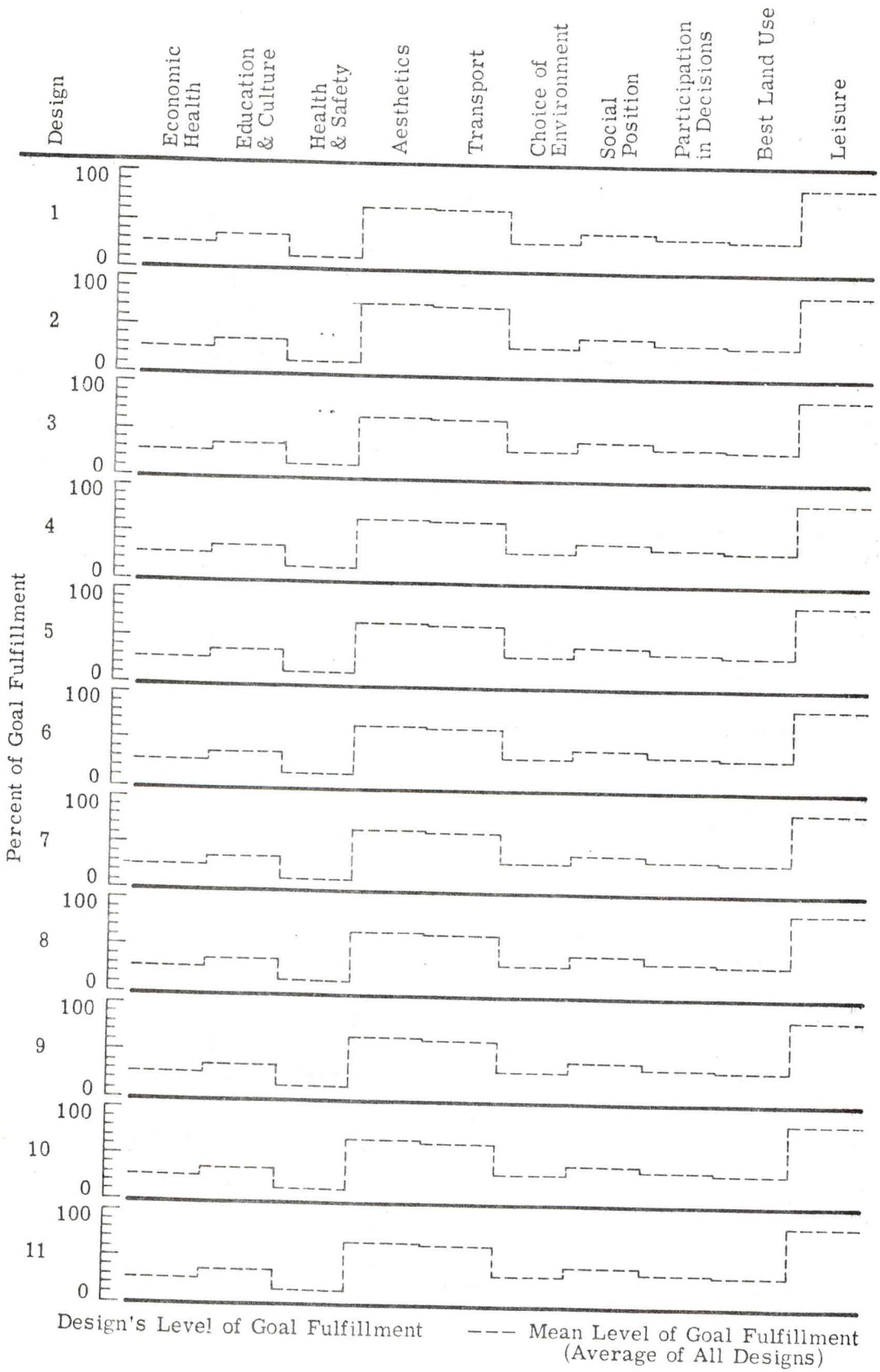
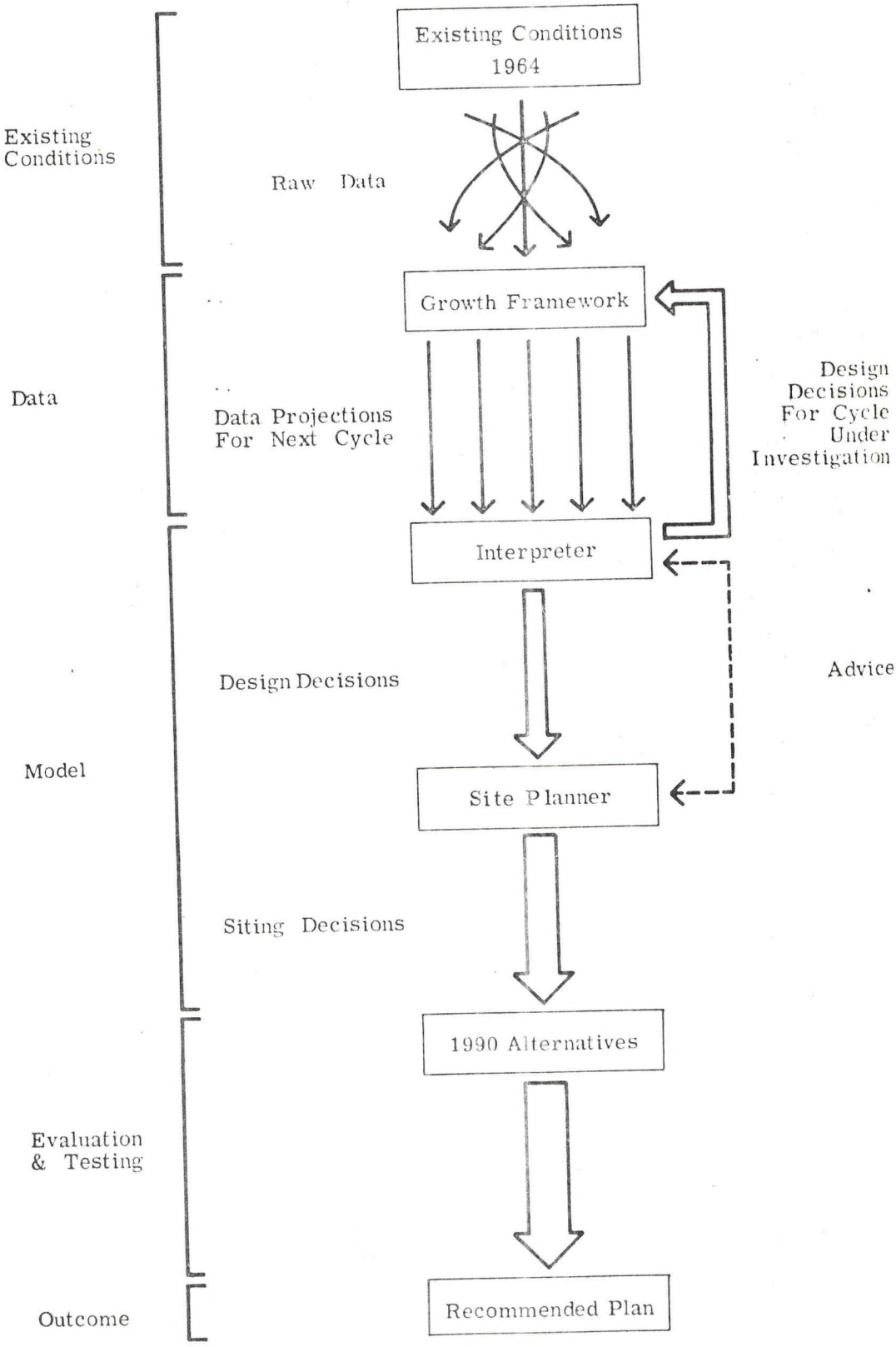


FIGURE 6. **Flow Chart of the Simulation Operation**



THE DEVELOPMENT OF A PROCEDURE AND KNOWLEDGE REQUIREMENT FOR MARINE RESOURCE PLANNING: The Classification of Marine Resource Problems of Nassau and Suffolk Counties.

Ellis, R. H. & Chency, P.B., Travelers Research Corporation, Hartford, Conn, 1969

SCOPE:

This is the first step of a six phase program to develop the methodology and the associated knowledge required for effective planning and management of the uses of the marine resources of Long Island. The six functional steps are:

1. to understand the problems associated with the marine resources of Long Island.
2. to identify the knowledge necessary for making sound decisions with regard to the Long Island marine resources.
3. to identify the availability, reliability, and applicability of existing knowledge and data.
4. to determine necessary data collection and research activities.
5. to collect required data and perform necessary research.
6. to develop a system of models, or procedure, for organizing the knowledge and data and for providing information to marine resource planners.

The first functional step has been divided into two primary tasks; (1) to design a method for classifying problems that can be used for analytical and policy formulation purposes and to develop a plan for collecting information and (2) collect information according to the plan and classify according to manner designed so that it would be relevant while proceeding to functional step two.

The sequence depicted in Fig. 2-1 illustrates where the objectives of the six functional steps fit specifically into the overall perspective of marine resource planning and management. They are directly associated with 4, 5, 6, & 7; step one is concerned with 4 (Marine resource problems). The activities of the program depicted within the dashed lines are amplified in Fig. 2-2.

MARINE PROBLEM CLASSIFICATION:

A marine resource problem is defined as a man-environment situation in the nearshore marine environment that involves human dissatisfaction of three types (1) dissatisfaction with the given natural attributes of the environment (2) dissatisfactions arising from man-caused changes in attributes of the natural environment and (3) competitive or conflicting utilization of a given spacial area.

The problem classification system is designed to incorporate relevant information required for the analysis of marine resource problems. The major dimensions and descriptors of the system include both the physical and social considerations of the problem. The dimensions are as follows:

Dimension 1: Cause-Environmental Condition-Effect Relationship.

a. Causal factors that act to change key environmental activities are of two types (1) human activities and (2) natural factors.
b. The causal factors can cause a change in environmental conditions that may be a physical, chemical or biological alteration or the pre-emption of space necessary for an activity.
c. The environmental alterations may have significant effect on man's activities. All relevant efforts are stated in terms of a human activity that is pre-empted by a changed condition or restricted to a level below that desired by the person stating dissatisfaction.

Dimension 2: Natural Environmental Characteristics.

Describes the physical attributes of those parts of the environment that are of concern, which will form the basis for identifying the areas of technical expertise that may have bearing on establishing the cause-effect linkages and also on finding alternative methods for problem mitigation.

Dimension 3: Reasons for Dissatisfaction.

The intent of this dimension is to include explicit reference to the subjective nature of human dissatisfaction that may range from aesthetic to economic considerations.

Dimension 4: Incidence of Costs, Damages or Dissatisfaction.

Relates specifically to the question of who is suffering from the problem situation.

Dimension 5: Intensity of Severity of the Problem.

Dimension 6: Geographical Location of the Problem.

Dimension 7: Time Description of the Problem.

Dimension 8: Governmental-Administrative Jurisdictions.

The marine resource problems of Long Island are identified and described through diagrams that indicate the interrelation between those problems identified (Fig. 5-1).

The development of a problem network on the concept of activity-environmental condition relationships is developed to identify and delineate the problem interdependencies as well as existing and potential sources of conflicts between desired activities (Fig. 6-1). The relationship between the marine problems, classified into the eight basic dimensions and the major components of the marine resource planning procedure is shown in Fig. 6-2.

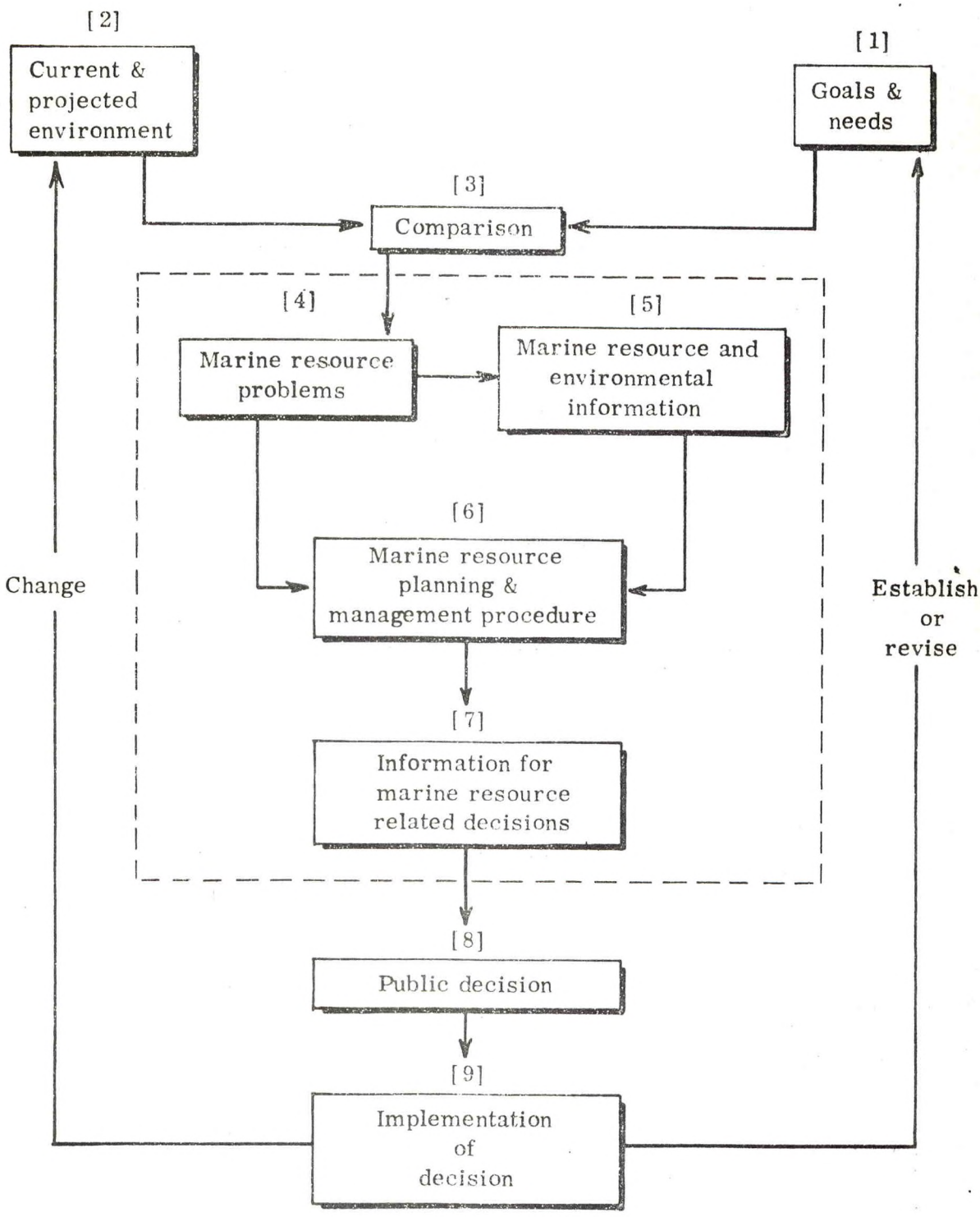


Fig. 2-1. Marine resource management sequence.

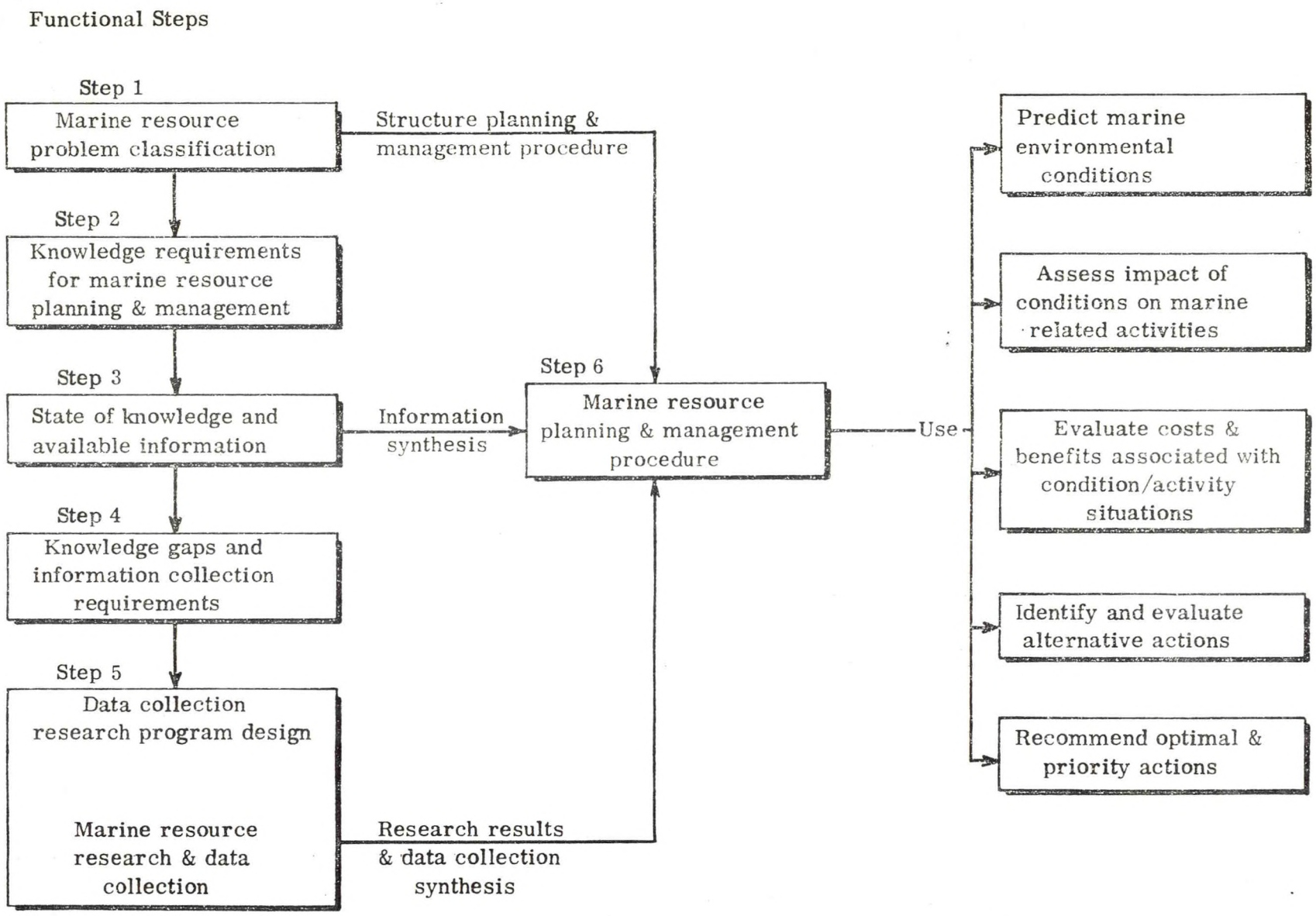


Fig. 2-2. Summary of Marine Resources Council research program.

5.2 Depletion of Sport and Commercial Fisheries

Sport and commercial fishing, two of Long Island's traditional industries, have dependent upon the abundance of sport and commercial fin and shellfish. The sport fish industry has been based on such species as the bluefish, flounder, fluke, shrimp bait, tuna, sea brass, porgy, cod, and mackerel. Commercial fishing has depended on some of these species in addition to menhaden and others used in the production of fish oil and fish meal [6].

The abundance of certain species of Long Island's fishing resource base has changed in location with time. The flounder has remained popular and plentiful. However, this specie seldom reaches maturity now along the north shore of the Island. The shrimp bait industry has declined principally because the spotted trout has disappeared from Long Island waters, and thus the need for this bait has been curtailed.

The causes of variation in the abundance of the sport fish resource are suspected to include the addition of toxic chemical and thermal water pollution, the salvaging of submerged shipwrecks, the elimination of protective and food supply plants such as eelgrass and the over-harvesting of certain species. These same causes similarly affect the commercial finfish industry.

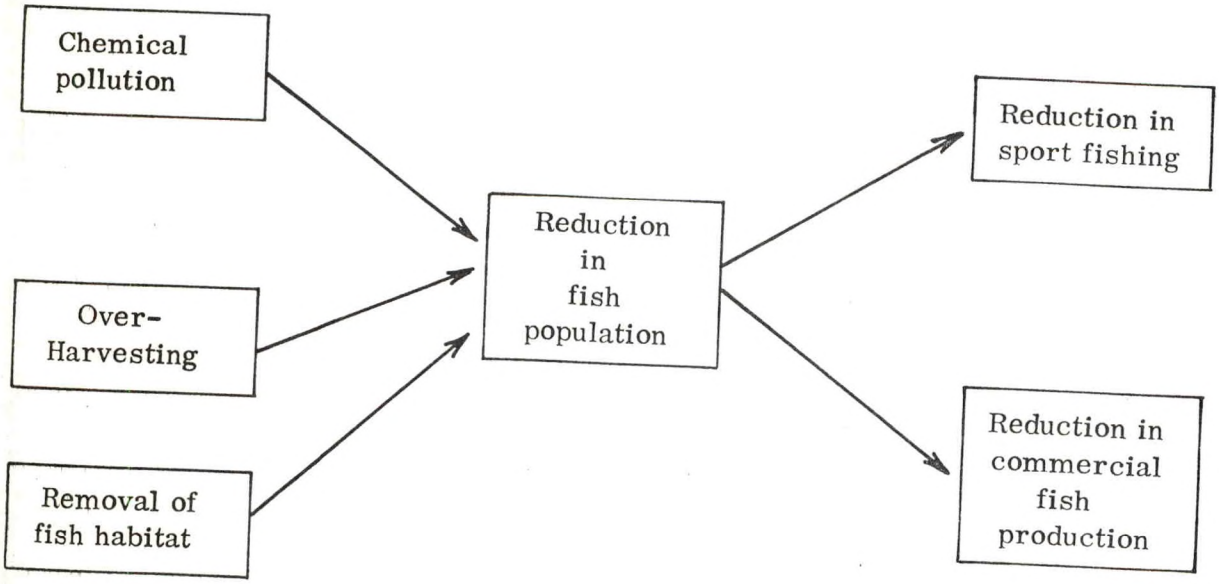


Fig. 5-1. Summary problem information.

Problem	Cause	Effect	Environmental Characteristics	Reasons	Incidence	Severity	Location & Extent	Temporal	Jurisdiction
Reduction of Shellfish Production	Dredging Duck-farming Domestic waste disposal Wetland destruction Agric. fertilizer	Decreased revenues to Shellfish industry	Turbidity Salinity Copper salts (Temperature) (Water circulation) (Water-borne pathogens) (Algae nutrients)	Economics Conservation ethic	Shellfish industry Sport Shellfishermen	Oyster production dropped from 13% to 1% from 1940—1964. 26% shellfish beds condemned.	Location and extent depends on cause; includes Great South Bay, Peconic, Moriches and Shinnecock Bays and Hempstead Harbor.	Algae blooms during summer months Apparent cyclical fluctuation in growth	FWPCA (Federal) approves water quality standards. N. Y. State Conservation Dept. enforces shellfish laws. Town and county agencies police shellfish beds. (Towns issue dredging permits).
Depletion of Sport and Commercial Fisheries	Thermal discharge Shipwreck salvages Elimination of food supplies Solid waste disposal Marine pests Over-harvesting Disposal of industrial chemicals	Decreased revenues to sport and commercial fishing industry	Change in bottom profile and topography Toxic chemicals Temperature (Water circulation) (Algae nutrients)	Economics Conservation ethic	Commercial fishing industry Sport fishermen Bait, equipment and rental services	Loss to sport-fishing industry is $4—5 million per year.	Fluke declining in South Shore Bays. Porgies declining in Peconic Bay.	Declining trend in yield of several valued species	Licenses issued by N. Y. State. Federal regulations apply to interstate waters (Beyond 3 mile limit).
Control of Insect and Related Pests	Wetland filling and draining Pesticide spraying	Reduction in fish, wildlife and pests Pollution of water supplies Altered ecological food chains	Addition of toxic chemicals	Economics Conservation ethic	Recreation industry Conservationists		Marine pest control on north shore of Nassau County. Mosquito pest control in wetlands. Gypsy moth spraying in oak and hickory stands along the north shore.	Pest control activities mostly during summer months and agricultural growing season.	County, municipal and special purpose districts.
Solid Waste Disposal	Generation of domestic and industrial solid wastes Disposal of dredging spoils	Water-Contact Sports Land reclamation Navigation improved Coastline protection Altered fin fish and shellfish production	Change in topography of bay bottom Disruption of food chain Change in water circulation (Turbidity)	Economics Conservation ethic Aesthetics	Commercial and sport fishing industry Conservationists Recreationists		Most acute in Nassau County and Western Suffolk County.	During next 35 years the current rate of solid waste disposal is expected to increase 2-3 times in Nassau County and 3-5 times in Suffolk County. Increased 2-3 times during summer in eastern areas of L. I.	Municipalities (County) (Federal: U. S. Army Corps of Engineers)
Destruction of Wetlands	Landfill operations for land reclamation Solid waste disposal sites	Increase in buildable shorefront land Improved navigation Destruction of ecological habitat Lessens impact of catastrophic storms	Change in surface or underwater topography Wetland biota Surface drainage Some migratory marine biota	Economics Conservation ethic	Developers Shorefront property owners Sport and commercial fishermen	Shellfish wetlands worth $5—60,000 per acre. 25% L. I. wetlands destroyed, 13%, 1954—9.	Inland side of South Shore Bays in Nassau County. Around Peconic Bays.	Trend in wetland destruction is increasing.	Municipalities own and manage most marine wetlands.
Development of Marine-Related Industry			(Change in fish resources) (Change in mineral resources)	Economics	(Industry)		(North Shore Suffolk County) (South Shore Nassau and Suffolk Counties)	(Seasonal demand for recreation activities).	
Coast Stabilization and Protection	Coastal storms Construction of shorefront buildings Change in offshore topography Modification of flood plain	Change in bay inlets Loss of coastal property, navigation, facilities, bathing beaches, and shellfish beds	Salinity of bay waters Change in surface and underwater topography	Economics	Property owners affected by each storm	Property damage from hurricanes and winter storms reach millions of dollars	Principal areas susceptible to storms are along South Shore, particularly on outer shore of Barrier Beach.	Principally fall and winter season.	Federal agencies, principally the Corps of Engineers, have responsibility for maintenance and protection of shoreline areas.
Dredging	Removal of underwater surface material Shoaling Eelgrass growth Siltation Demand for new harbors and waterways	Navigation Shorefront development Shellfish production Sand and gravel for construction Wetland destruction Water-Contact Sports Fin fish production	Eelgrass growth Turbidity Flushing action in bays Stabilizing inlets Changes in underwater topography Resettlement of silt Salinity	Aesthetics Economics Conservation ethic	Operators of boats Shellfishermen Fishermen Conservationists		25 million cubic yards have been removed from Great South Bay. During 1968 the Suffolk County dredge removed 1 million cu. yds. Dredging in Mount Sinai Harbor since 1955 destroyed 60% of the wetlands (140 acres).	In Suffolk County the dredging of predominantly fine particles is restricted from May 15 to October 15. Underwater dredging of sand and gravel are expected to increase because of recent zoning restrictions on upland mining of sand and gravel on Long Island.	Corps of Engineers supervise dredging in coastal waters. Dredging of intra-state waters regulated by municipalities. Disposal of dredging spoils on wetlands is subject to approval by the U. S. Fish and Wildlife Service and by N. Y. State Conservation Dept.

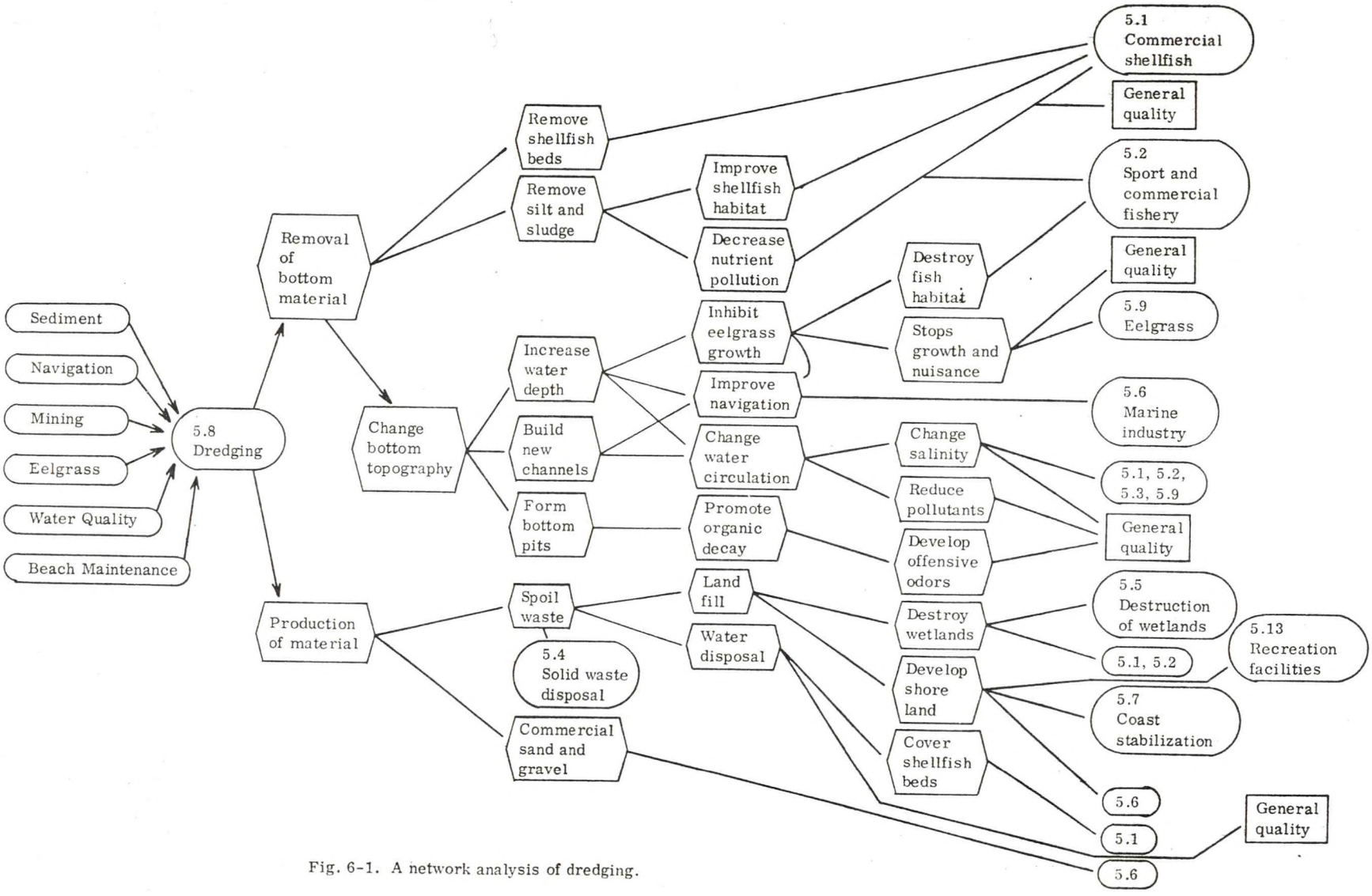


Fig. 6-1. A network analysis of dredging.

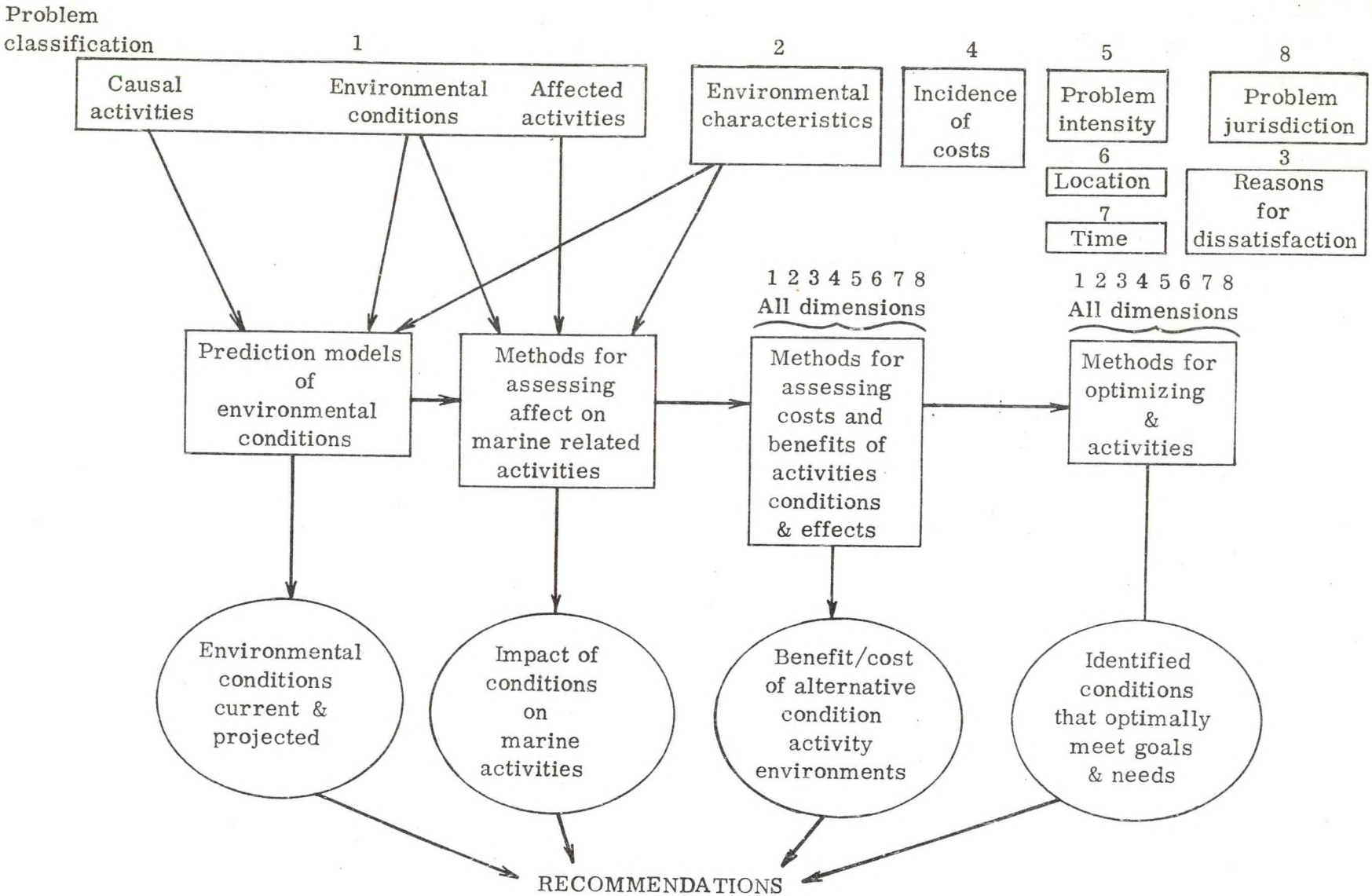


Fig. 6-2. Interaction between problem classification and marine resources planning procedure.

THE DEVELOPMENT OF A PROCEDURE AND KNOWLEDGE REQUIREMENTS FOR MARINE RESOURCE PLANNING: Knowledge Requirements.

Cheney, P.B., Travelers Research Corporation, Hartford, Conn. 1970

SCOPE:

This is the second functional step of a six phase program to develop the methodology and the associated knowledge required for effective planning and management of the use of the marine resources of Long Island.

The purpose of this project was to develop the total "ideal" set of knowledge requirements in sufficient detail and in a way that will allow scientists competent in technical areas to assess the current state of knowledge.

KNOWLEDGE CATEGORIES:

The intent of developing the following categories of specific knowledge requirements is to provide a guideline for knowledge formulation and information collection of more general applicability to costal management.

Category I: Information About Current Human Actions and Natural Forces Affecting the Environment.

a. Information pertaining to Waste Disposal and Water Quality
b. Information pertaining to Resource demand/ utilization
c. Information pertaining to Natural Forces

Category II: Information About the Current Physical and Chemical Characteristics of the Environment

a. Physical characteristics of costal and estuarine areas.
b. Chemical and physical conditions of costal and estuarine waters

Category III: Information About the Current State of the Marine Related Biota

a. Population characteristics of important shellfish and finfish species by time and location
b. Population characteristics of important marine fauna and flora including marine preadators and pests
c. Population characteristics of important migratory birds and other wildlife species.

Category IV: Information About Desired Uses of Costal Resources

Category V: Knowledge of Processes by which Actions and Forces Affected the Physical and Chemical States of the Environment

a. Physical processes
b. Chemical processes

Category VI: Knowledge of the Effects of Actions and Forces, and Physical and Chemical Conditions of the Marine Biota

Category VII: Knowledge of the Impact of Physical, Chemical Biological Environmental Characteristics on Uses of the Costal Resources

Category VIII: Knowledge of Objective Methods and Procedures

REGIONAL DESIGN STUDY: FORMS AND APPEARANCES

Tampa Bay Regional Planning Council; Candeub, Felissig & Associates
St. Petersburg, Florida 1968

SCOPE:

The study employs new concepts of "forms" and "appearances to provide a 'regional frame'" within which land use, transportation and other decisions affecting regional design can be made and tested before they become policy. The study provides a portion of the qualitative information necessary for the development of the regional development plan.

DESIGN OBJECTIVES:

The study recommended the following goal-related objectives of regional design:

1. Protection of shorefront scenic assets.
2. Use all natural land resources to their best advantage so that the future forms of development will relate and not conflict.
3. To plan and direct land development in such a manner that future regional patterns of forms and appearances will not be accidental or incidental but part and parcel of deliberate goals established for the region.

To fulfill the above goal related purpose, the following design objectives were developed:

a. Diversity: This would counteract the tendency of wasteful and monotonous urban sprawl.

b. Compatibility: This would exploit potential opportunities and avoid potential future conflicts that presently exist between two or more natural man-made design elements.

c. Compact Development: This objective would relate to all the design goals and other objectives and by effecting, would coordinate public and private development interests to accommodate existing development pressures.

METHODOLOGY:

The study method employed to identify the forms and appearances of the region was the mapping of design elements on a map of the region. The design elements, twenty-one natural or man-made features, where recorded an appropriate grid following field inspection. The grids with the highest density of elements were given a high priority rating, requiring special and immediate study.

REGIONAL DESIGN GUIDE: A handbook of design criteria and regulatory measures for improved development appearances in the Tampa Bay Region.

Tampa Bay Regional Planning Council, St. Petersburg, Fla. 1970

SCOPE:

This report represents a refinement of the "Forms and Appearance Study", for the implementation of the goal-related objectives of regional design contained therein.

A major design proposal is the recommendation of an ordinance requiring that all development proposals, public or private, should be presented in the form of a total design plan to a planning agency and a design review board. The project would be evaluated in relation to the appearances and quality of the total environment.

DESIGN STANDARD CRITERIA:

The recommended design standard criteria developed by the commission is as follows:

1. Ecological Limitations: An ecological study shall be made to determine relative uniqueness, compatible activities and intensities.

2. Protection and Enhancement of Scenic Qualities: A visual survey shall be made to identify existing and potentially unique natural or man-made features. Definition, selection and enhancement of open space areas shall be undertaken.

3. Protection of the Environment - The Prevention of Polution of Land, Air and Water: Future areas of industrial development should be planned to prevent contamination and developed for optimum shore-land use.

4. Increased Scenic Viewing: A visual survey should be made to determine visual control points to determine a sequence of visual experiences.

5. Peripheral Access and Parking: Access and parking should be designed to attain as much open space and view as possible.

6. Separation of Traffic

7. Total Planned Development: All types of development shall consider cluster and planned-unit-development.

8. Landscape Design & Planting: A landscape design and planting plan shall be developed as an integral part of the initial project plan.

9.. Control of Noise and Wave Action

10. Improvement and Control of Outdoor Advertising

11. Imageability: Development should be designed considering the resultant appearance in relation to the immediate vicinity and definite character desired.

Figure 2.1, A Summary of Development Type by Design Standard Criteria, summarizes the criteria in terms of the Regional Design Objectives put forth in the Phase 1 Study: Compatibility, Diversity, Accessibility and Compact Development.

The Design Guide presents general background data, analysis findings, regulatory measures and specific design standard criteria for seven development types.

Fig. 2.1

A SUMMARY OF DEVELOPMENT TYPE BY DESIGN CRITERIA

DESIGN STANDARD CRITERIA	DEVELOPMENT TYPES: OPEN SPACE DEVELOPMENT	SHORELINE POTENTIAL	HOUSING AND REDEVELOPMENT	COMMERCIAL DEVELOPMENT	INDUSTRIAL DEVELOPMENT	TRANSPORTATION DEVELOPMENT	MIXED DEVELOPMENT
COMPATIBILITY							
Ecological Limitations	✓	✓	✓	✓	✓	✓	✓
Intensity of Use	✓	✓	✓	✓	✓	✓	✓
Limited Development in Areas Near Airports, Floodplains and other Unsuitable Areas			✓	✓	✓	✓	✓
Buffer Strips			✓		✓	✓	✓
Underground Utilities			✓	✓	✓		✓
Parking Visually Subordinate to Shoreline and Water	✓	✓					
Utilities Underground for Optimum Viewing	✓	✓			✓	✓	
Control of Noise and Wave Action		✓			✓	✓	
Control of Signing	✓	✓		✓	✓	✓	✓
Control of Pollution	✓	✓			✓	✓	
Control of Noise				✓			✓
Urban Renewal			✓	✓			✓
Review by Total Plan Design Committee	✓	✓	✓	✓	✓	✓	✓
DIVERSITY							
Protection and Enhancement of Scenic Qualities	✓	✓	✓	✓	✓	✓	✓
Landscape Design and Planting Including Street Tree Program			✓	✓	✓	✓	✓
Architectural Flexibility: Structures, Street Furniture Etc.			✓	✓			✓
Allocation and Preservation of Open Space: Small Parks	✓	✓	✓	✓	✓		✓
Allocation and Preservation of Open Space ie., Parklike Green Belt Systems	✓		✓			✓	✓
Allocation and Preservation Open Space for Recreation Use	✓	✓	✓				

Source: Tampa Bay Regional Planning Council, 1970

Fig. 2.1 (Continued)

DESIGN STANDARD CRITERIA	DEVELOPMENT TYPES: OPEN SPACE DEVELOPMENT	SHORELINE POTENTIAL	HOUSING AND REDEVELOPMENT	COMMERCIAL DEVELOPMENT	INDUSTRIAL DEVELOPMENT	TRANSPORTATION DEVELOPMENT	MIXED DEVELOPMENT
DIVERSITY (Cont.)							
Allocation and Preservation of of Open Space	✓	✓	✓	✓	✓	✓	✓
Landscape Design and Planting	✓	✓	✓	✓	✓	✓	✓
Variety of Fill Forms for Scenic Easements		✓					
Industrial Design Flexibility					✓		
Maintain Natural Character	✓	✓					
Scenic Easements	✓	✓	✓	✓	✓	✓	✓
Imageability	✓	✓	✓	✓	✓	✓	✓
Review by Total Plan Design Committee	✓	✓	✓	✓	✓	✓	✓
ACCESSABILITY							
Separation of Traffic		✓	✓	✓	✓	✓	✓
Increased Scenic Viewing	✓	✓				✓	
Increased Public Access	✓	✓			✓		
Points of Engress and Egress Well Defined		✓		✓			
Review by Total Plan Design Committee	✓	✓	✓	✓	✓	✓	✓
COMPACT DEV.							
Total Planned Development: Cluster and Planned Unit Development	✓	✓	✓	✓	✓		✓
Common Parking Area		✓	✓	✓	✓	✓	✓
Land Use Intensity	✓		✓	✓	✓		✓
Common Terminals						✓	
Review by Total Plan Design Committee	✓	✓	✓	✓	✓	✓	✓

Source: Tampa Bay Regional Planning Council, 1970

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Prepared for the Chicago Central Area Committee and the Chicago Community Trust. Includes lakefront and air rights development studies.

THE FUTURE OF CHICAGO'S LAKEFRONT
Johnson, Johnson and Roy 1968
A study including past and present shoreline use in Chicago. Conceptual recommendations for future shoreline development.

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GENERAL PLAN FOR THE URBAN DUNES AREA REPORT #2 MUSKEGON COUNTY (MICHIGAN) SHORELANDS STUDY
Greenbie, Barrie 1969
Inventory and analysis of Dune ecology, proposed land use and standards, economic planning factors, two pilot development area studies.

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Detroit City Plan Commission 1963
A comprehensive plan for Detroit's riverfront which first analyzes existing land use and projected port needs and then develops a plan for riverfront use, keeping in mind not only economic and physical requirements but also those of site planning and visual design.

PRELIMINARY WATERFRONT MARINA STUDY TRENTON, MICHIGAN
Vilican - Leman and Associates Inc. 1969
An inventory of existing land uses and conditions; Also analyzed the visual impressions of the four major shoreline conditions (Residential, Commercial, Public, and Industrial). Recommendation is made for location and plans for a marina.

3. WISCONSIN

COORDINATED DEVELOPMENT ON THE LAKEFRONT - PROGRESS REPORT
Milwaukee City Plan Commission 1969
A review and revision of the 1941 program for lakefront development. Explains what some parts of 1941 program were-how or if accomplished-what should be done to carry out or revise 1941 program.

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SEWRPC 1968
Deals primarily with stream flooding and inland lake development guidelines. Chapters on shoreland include "Problems", "Shoreland and Water Quality Protection"; "Statutory Authority", "Floodland and Shoreland Delineations".

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Jones, M.V. and Associates 1964
A development plan to transform the Windsor's riverfront into a continuous open space system.

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Metropolitan Toronto Planning Board 1968
An abstract of the original plan giving brief summary of objectives and proposals.

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Discusses history of Toronto Waterfront Development and Planning. Mentions special action taken to implement the latest "Plan".

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A report on the lakefront conditions along the Lake Ontario Shoreline of the Niagara Region.

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Ebasco Services Inc. 1960
An initial planning guide for further planning and development of Monterey (California) waterfront.

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Comprehensive study for general design and development of waterfront (Commercial, Recreation, Business, Transportation) alternate design solution including cost estimates of development.

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San Francisco 1943
A preliminary study listing problems of shoreline development. Tentative plans and proposed action.

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Sonoma County Planning Department 1968
An analysis of the Sonoma County shore around Jenner with recommendations for development which will complement and reinforce the desirable existing character of the area.

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Sonoma County Planning Commission 1955
An inventory of recreational and scenic areas along the Sonoma County and a general guide for the orderly acquisition, development and protection of the shore.

2nd REVISION BEACH AND SHORELINE MASTER PLAN
Sonoma County Planning Commission 1960
Updates statistical data and makes some changes in acquisition priorities set down in Revised Beach and Shoreline Master Plan, 1955.

CENTRAL WATERFRONT AREA SKETCH PLANS SAUSALITO, CALIFORNIA
Spangle, William and Associates 1967
Presents inventory of current status of waterfront and offers alternate plans for development. States general objectives of each plan and tells how objectives would be accomplished.

2. HAWAII

URBAN DESIGN STUDY OF THE HONOLULA WATERFRONT
Oahu Hawaii Conference 1968
Discusses current Development proposals, trends and policies, development controls and their application - Also offers alternate waterfront designs.

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An analysis and inventory of the states shoreline. A general plan for the shoreline.

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A RECONNAISSANCE STUDY OF THE CHESAPEAKE BAY

Farragut, Paul R. Baltimore 1968

The report discusses present and future problems involving the regions shoreline and water resources such as: erosion, sedimentation, flooding, pollution etc.

CHESAPEAKE BAY: SHORELINE UTILIZATION IN THE BALTIMORE REGION

Farragut, Paul R. Baltimore 1969

A descriptive study of the present and potential use of the bay shoreline with recommendations for greater resource utilization.

4. WASHINGTON

LAKE UNION STUDY

Seattle City Planning Commission 1963

Study with inventory of current land uses and plan for future development of shorelands.

5. OTHER

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II. RECREATION AND CONSERVATION SHORELAND PLANS

A. Great Lakes States

1. INTERSTATE

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A detailed analysis of the general shoreline features of each state on the Great Lakes, including lake levels, beach types, upland character, and recreation potential. Mention is also made of the State and local agencies which have authority over administration of the shoreline, water pollution, beach erosion control, and tidelands: ownership and access.

REMAINING SHORELINE OPPORTUNITIES IN MINNESOTA, WISCONSIN, ILLINOIS, INDIANA, OHIO, MICHIGAN, PENNSYLVANIA, AND NEW YORK

U.S. National Park Service 1959

A survey of eight state's and the federal government's shoreline ownership along the Great Lakes. Recommendations for its preservation for historical, cultural, scenic, natural, and recreational reasons.

WATER ORIENTED OUTDOOR RECREATION IN THE LAKE MICHIGAN BASIN

U. S. Department of the Interior, Bureau of Outdoor Recreation, Lake Central Region Ann Arbor, Michigan 1965

A description of water usage in Lake Michigan and the effect of pollution on recreation activities. Inventory and analysis of the basins physical aspects, the residents and their recreation needs, the supply of recreation space, proposed and potential recreation areas, goals, water quality influences, and conclusions.

OUR FOURTH SHORE - GREAT LAKES SHORELINE RECREATION AREA SURVEY

United States Department of the Interior 1959

A short brochure which introduces the more technical Remaining Shoreline Opportunities. It provides a short statement of the intention of the technical study to inventory, by state, the existing opportunities for recreational, aesthetic, and conservation development along the Great Lakes shoreline.

2. ILLINOIS

JACKSON PARK, BURNHAM PARK AND LAKE SHORE DRIVE BETWEEN 47th and 67th STREET

Chicago Department of Development and Planning 1969

A statement in two parts 1) A planning framework consisting of lakefront development principles and specific proposals for Jackson Park and 2) Recommendations for improvements in the park.

JACKSON PARK

Johnson, Johnson, and Roy Chicago, Ill. 1966

Analysis and proposals for recreational development of Jackson Park. Four different alternative solutions are offered, some involving modifications of the shoreline.

3. INDIANA

A MASTER PLAN FOR INDIANA DUNES NATIONAL LAKESHORE

U.S. Department of Interior National Park Service Washington D.C. 1967

MASTER PLAN FOR THE PROPOSED MARINAS AT MICHIGAN CITY INDIANA BASIN AND HARBOR SITES DEVELOPMENT

Burke, Ralph H. Incorporation 1962

An analysis of the uses in 1962 of Michigan City's port and a design intended to meet the greatly increasing demand for docking and launching space.

AN EXPANSION PROGRAM TO MEET INDIANA'S GROWING NEED FOR CONSERVATION AND RECREATION - MASTER PLAN FOR ACQUISITION AND DEVELOPMENT

Indiana Department of Conservation 1964

A discussion of development plans for Indiana Dunes State Park.

MASTER PLAN REPORT FOR INDIANA DUNES STATE PARK

Vollmer, Ostrower Associates 1966

Includes site description, definition of planning base, program, design criteria, needed utilities, staging and estimates of development cost.

4. MICHIGAN

WATERFRONT RECREATIONAL AREAS IN THE CENTRAL BUSINESS DISTRICT TRAVERSE CITY, MICHIGAN

Bartholomew, Harland and Associates 1952

Inventory and analysis of recreational facilities of Traverse City. Includes recommendations for improvements and additions.

REPORT OF WATER RESOURCES IN MICHIGAN TO THE JOINT LEGISLATIVE COMMITTEE ON WATER RESOURCES PLANNING

Michigan Department of Conservation 1966

This report contains a section dealing with a prediction of increased use of Michigan's Great Lakes shoreline for boat docking, lauching, and riding. The report describes the State of Michigan's intentions for development of harbors of refuge and launching areas in the future.

INITIAL RECOMMENDATIONS AND PROGRAM PLAN PICTURED ROCKS PLANNING AND DEVELOPMENT PROJECT

Michigan Office of Planning Coordination 1968

General recommendations and plans for development of pictured rocks area.

PICTURED ROCKS NATIONAL LAKESHORE
Michigan Office of Planning Coordination 1968
Compliation of speeches dealing with the need for comprehensive planning in the pictured rocks area.

PICTURED ROCKS NATIONAL LAKESHORE, MICHIGAN
United States Department of the Interior, National Park Service 1966
A brochure delineating the proposal for a national area on the northern shore of Michigan's Upper Peninsula; included are economic, conservational and recreational justifications for the preservation of the area.

THE PROPOSED PICTURED ROCKS NATIONAL LAKESHORE
U.S. Department of Interior National Park Service 1963
A study of the effects of the development of a national lakeshore on the economy of Forestry and Tourism in Alger County area. Includes basic inventory data (soils, land uses, forest types etc.)

SLEEPING BEAR NATIONAL SEASHORE - A PROPOSAL
U. S. Department of Interior 1961

5. MINNESOTA

RECREATION SITE STUDY OF DULUTH - SUPERIOR HARBOR
Aguar, Jyring, Whiteman, Moser Incorporation 1969
A complete study including inventory, analysis, site selection and development plans for selected site. Includes cost estimates.

URBAN BEAUTIFICATION AND IMPROVEMENT PROGRAM- DULUTH, MINNESOTA
Aguar, Jyring, Whiteman, Moser 1966
A plan for urban beautification along the Duluth waterfront.

6. OHIO

WATER ORIENTED OUTDOOR RECREATION - LAKE ERIE BASIN
United States Department of the Interior, Bureau of Outdoor Recreation, Lake Central Region Ann Arbor, Michigan 1966
This analysis covers the following: 1) inventory of existing recreation areas, 2) establishment of goals for meeting outdoor recreation needs within the basin, 3) identification of potential recreation areas, 4) water quality influences on present and future outdoor recreation use, and 5) recommendations for action and/or programs to improve the basin's water recreation opportunities now and in the future.

7. WISCONSIN

MASTER PLAN MILWAUKEE COUNTY MARINA DEVELOPMENT
Burke, Ralph H. Incorporation 1958
A very complete master plan including inventory, analysis, recommendations and cost estimates.

LAKEFRONT DEVELOPMENT PLAN AT THE MILWAUKEE COUNTY WAR MEMORIAL CENTER

Johnson, Johnson, and Roy 1968

A design study resulting in a generalized set of design details for development of the Milwaukee County War Memorial Center area.

APOSTLE ISLANDS NATIONAL LAKESHORE - A PROPOSAL

U.S. Department of Interior 1965

Publicity publication to explain what the Apostle Island National Lakeshore is and why the proposal for its creation has been made.

PROPOSED APOSTLE ISLANDS NATIONAL LAKESHORE

U.S. Department of Interior 1965

Major report with justifications for the recommendation that areas of Bayfield and Ashland counties Wisconsin be developed into a National Lakeshore.

LAKE SUPERIOR SOUTH SHORE AREA

Wisconsin Department of Resource Development

Four volume study with maps, diagrams and photos including inventory, analysis and general recommendations for shoreline usage.

B. Great Lakes Provinces

1. ONTARIO

RECREATIONAL DEVELOPMENT AND THE LAKE ERIE SHORE

Jackson, John N. 1967

Purpose of study was to conduct extensive land use survey and to evaluate this evidence in relation to the recreational and tourist potential of the area within its regional context. Chapters include "Characteristics of the Lakeshore..." "Waters of the Lake", 'Recreation and Tourism as a resource" "Jurisdictional aspects of the Lakeshore" and conclusions and recommendations.

PEOPLE WITHOUT BEACHES

Niagara Regional Development Council 1968

A well documented plea for better recreational utilization of Lake Ontario shoreline.

C. Coastal States

1. CALIFORNIA

MASTER PLAN FOR SHORELINE DEVELOPMENT FOR ORANGE COUNTY CALIFORNIA

Santa Ana 1947

Recreation shoreline use master plan.

MASTER PLAN FOR SMALL CRAFT HARBORS

Sonoma County Planning Commission 1957

Presents proposals and plans for five new harbors and/or marinas in Sonoma County. Includes cost of development.

2. FLORIDA

RECREATION AND OPEN SPACE

Vines, William Palm Beach County, Florida 1970

An inventory of existing lands and facilities, examination of administering agencies, summary of needs and problems and recommended long range objectives and management actions.

III. WATER RESOURCE AND QUALITY PLANS

A. Great Lakes - (Multi Lake Report)

WATER QUALITY MANAGEMENT IN THE GREAT LAKES STATES AND ONTARIO

Great Lakes Commission 1966

Statements presented at an annual meeting of the Great Lakes Commission in 1966 describing state regulation and inspection of water quality as well as efforts to control water pollution.

POLLUTION OF LAKE ERIE, LAKE ONTARIO AND THE INTERNATIONAL SECTION OF THE ST. LAWRENCE RIVER

International Lake Erie Water Pollution Board and International Lake Ontario - St. Lawrence River Water Pollution Board 1969

Volume I summary: Recommendations and discussions on water quality problems, source of problems and remedial measures

Volume 2: Lake Erie

Volume 3: Lake Ontario and St. Lawrence River

Volume 2 and 3 describe region, lake characteristics, sources, characteristics and effects of material inputs; developing problems and conclusions.

INTERIM REPORT ON THE POLLUTION OF LAKE ERIE, LAKE ONTARIO AND THE INTERNATIONAL SECTION OF THE ST. LAWRENCE RIVER

International Joint Commission 1965

A general review of pollution problems, their effects and some general recommendations for improving the situation.

SPECIAL REPORT ON POTENTIAL OIL POLLUTION, EUTROPHICATION, AND POLLUTION FROM WATERCRAFT

International Joint Commission 1970

Study of adequacy of plans to deal with potential oil drilling "spills", eutropication problem and general methods of dealing with it, and thirdly the problem of waste disposal from water craft.

THE GREAT LAKES AND THEIR PROBLEMS

Langford, G. B. University of Toronto 1965

A pamphlet describing the threat to industrial, urban, transportational, and hydroelectric users of Great Lakes water by pollution and varying water levels.

WATER POLLUTION PROBLEMS OF THE GREAT LAKES AREA

U.S. Department of the Interior, Federal Water Pollution Control Administration 1966

A short description of the sources, types and extent of water pollution in the Great Lakes.

THE GREAT AND DIRTY LAKES

Hill, Gladwin — Saturday Review. October 23, 1965 p. 32-34.

A discussion of the pollution problem in the Great Lakes. Discusses lake by lake the problem, its source, and what's being done to correct it.

THE AGING GREAT LAKES

Powers, Charles F. and Robertson, Andrew — Scientific American, November 1966, p. 95-104, Volume 215

This article describes the accelerated aging process occuring in the Great Lakes due to excessive misuse due to the addition of human and industrial pollutants.

NATURAL DISPLACEMENT OF POLLUTION FROM THE GREAT LAKES

Rainey, Robert — Science, March 10, 1979, p. 1242

A simplified mathematical model of a lake system implicates that if the pollution of the Great Lakes were discontinued, the natural flow through the lower Great Lakes would be sufficient to remove about 90% of the waste in twenty years. On the other hand, hundreds of years would be required to displace the pollution from Lake Michigan and Lake Superior.

SALVAGING THE LAKES: GREAT LAKES POLUTION

Time, 89:60, April 21, 1976

A short description of the polluted Great Lakes and federal proposals to cleanse them.

RECEDING WATERS

Newsweek, p. 56, August 10, 1964

Brief report on effect of low water levels upon lake users (shore and otherwise). Also proposal by Senator Phillip Hart of diverting water into lakes from Canada.

WATER RUNS SHORT IN THE GREAT LAKES

U.S. News, September 28, 1964 , p.98

Report of low water levels and mention of what might be done to control levels.

B. Lake Erie

REPORT ON POLLUTION OF LAKE ERIE AND ITS TRIBUTARIES - PART I LAKE ERIE

U.S. Department of Health, Education and Welfare, Public Health Service, Division of Water Supply and Pollution Control — 1965

Description of the sources and effects of pollution in Lake Erie and important rivers feeding into it such as the Maumee, Sandusky, Black, Rocky, and Cuyahoga.

REPORT ON POLLUTION OF LAKE ERIE AND ITS TRIBUTARIES - PART II OHIO, INDIANA AND MICHIGAN SOURCES

U.S. Department of Health, Education and Welfare, Public Health Service, Division of Water Supply and Pollution Control 1965

Further description of industrial and municipal pollution with recommendations for its correction.

REPORT ON POLLUTION OF LAKE ERIE AND ITS TRIBUTARIES - PART III NEW YORK AND PENNSYLVANIA SOURCES

U.S. Department of Health, Education and Welfare, Public Health Service, Division of Water Supply and Pollution Control 1965

Pollution in Lake Erie and rivers flowing into it in three areas in New York and Pennsylvania.

CONFERENCE IN THE MATTER OF POLLUTION OF LAKE ERIE AND ITS TRIBUTARIES

U.S. Department of the Interior, Federal Water Pollution Control Administration August, 1965

Proceedings of the conference writers points of view expressed by many concerned including local mayors, federal agency heads, and state officials.

LAKE ERIE REPORT - A PLAN FOR WATER POLLUTION CONTROL

U.S. Department of the Interior, Federal Water Pollution Control Administration, Great Lakes Region 1968

The report describes the demand for water from industry, agriculture, tourism and recreation, municipal sewage, fish and wildlife, and commercial shipping. The pollution problem is treated by areas around Lake Erie and the sources of it are ennumerated by table and charts pinpointing the industries and cities responsible. Costs and control measures are also discussed.

PROCEEDINGS OF THE PROGRESS EVALUATION MEETING ON POLLUTION OF LAKE ERIE AND ITS TRIBUTARIES - INDIANA, MICHIGAN, NEW YORK, OHIO, PENNSYLVANIA

U.S. Department of the Interior, Federal Water Pollution Control Administration Cleveland, Ohio, 1968

Concerns a meeting of elected officials, government agency representatives, city mayors and sanitary engineers dealing with the progress of pollution control in Lake Erie.

REPORT ON POLLUTION OF LAKE ERIE AND ITS TRIBUTARIES

U.S. Department of the Interior, Federal Water Pollution Control Administration 1965

A three part report treating the sources, conditions, and extent of pollution in Lake Erie and the matter of controlling and answering this pollution.

REPORT ON WATER POLLUTION IN LAKE ERIE BASIN - MAUMEE RIVER AREA
U.S. Department of Interior, Federal Water Pollution Control Administration 1966

Analysis of water quality problems in the Toledo area.

THIRD MEETING ON THE MATTER OF POLLUTION OF LAKE ERIE AND ITS TRIBUTARIES
U.S. Department of Interior, Federal Water Pollution Control Administration 1966

Further investigation into the sources of pollution and preventative actions taken and to be taken.

NOR ANY DROP TO DRINK - 2: CLEVELAND: SAVING LAKE ERIE
Seltzer, Louis B. Saturday Review, October 23, 1965 p. 36-41

A general description of Cleveland's water pollution problem and the efforts of the state of Ohio in conjunction with the federal government to halt the deteriorative process in Lake Erie.

C. Lake Michigan

THE CLIMATOLOGY OF LAKE MICHIGAN
Ayers, John C. University of Michigan 1965

A compilation of statistics on air and water temperatures of Lake Michigan with attendant data on ice covers, cloudiness in Green Bay, and an analysis of water temperature trends in Lake Michigan.

IMPACT ON THE ECONOMY OF MICHIGAN OF PROPOSED ADDITIONAL DIVERSION OF LAKE MICHIGAN WATER AT CHICAGO
Gadzikowski, Gilbert R.

Investigates the effect on recreational boating and public beaches and puts a price on the loss.

WATER FOR ILLINOIS - A PLAN FOR ACTION
Illinois Technical Advisory Committee on Water Resources 1967

One section of this report deals with the early history and development of the Chicago water supply, describing the source of Chicago water as Lake Michigan and the problems inherent in returning sewage to the same source.

REPORT ON WATER QUALITY CRITERIA AND PLAN FOR IMPLEMENTATION
Indiana Stream Pollution Control Board 1967

The report contains both chemical water quality data of the Lake Michigan Drainage Basin and standards for water quality.

POLLUTION FOUGHT IN LAKE MICHIGAN

New York Times, February 11, 1968
p. 71, column 3

A description of the conference held in Chicago in 1968 under the auspices of one federal water pollution control administration of which pollution problems were identified and over one hundred concrete alternative solutions suggested.

POLLUTION GROWS IN LAKE MICHIGAN

New York Times, January 23, 1962
p. 19, column 1

A summary of the study of pollution in Lake Michigan by the Federal Water Pollution Control Administration noting who some of the polluters were.

POLLUTION LIKED TO U.S. STEEL PROJECT

New York Times, March 16, 1967
p. 29, column 1

A land fill operation by U. S. Steel endangered the water quality of the city of Gary, Indiana's only remaining beach.

SAVE OUR LAKE

Chicago Tribune, 1968

A series of articles published in the Chicago Tribune verbally and pictorially describing the extent of pollution in Lake Michigan.

U.S. STEEL HAILED ON WATER PURITY

New York Times, March 7, 1968
p. 37, column 1

U.S. Steel in Gary Indiana has initiated a new pollution control system which more effectively then before removes elements from water returned to the nearby river.

U.S. STEEL IS ENJOINED

New York Times, March 16, 1968
p. 51, column 7

U.S. Steel is enjoined by a Chicago circuit judge to stop discharge of oil from its calumet plant into Lake Michigan only several days after it was hailed for progress in pollution control at another of its plants in Indiana.

D. Great Lakes States and Provinces

1. ILLINOIS

PLANNING THE ENVIRONMENT: A METHOD OF ACHIEVING PUBLIC HEALTH

Lake County Regional Planning Commission

A study concerned with the planning of those services and activities which directly effect the public health.

WATER RESOURCE USES PRESENT AND PROSPECTIVE FOR THE ST. JOSEPH RIVER BASIN IN MICHIGAN AND WATER QUALITY STANDARDS AND PLAN OF IMPLEMENTATION

Michigan Water Resources Commission 1967

A water resource study including the water resource base, the demand, etc.

ILLINOIS RIVER BASINS COMPREHENSIVE STUDY - I INTERIMA REPORT ILLINOIS RIVER BASIN

U.S. Department of Health Education and Welfare, Public Health Service 1961

A discussion of pollution (with statistics) in the Chicago area, concerning the Chicago Sanitary and Ship Canal, the Illinois River and the Kankake River. Municipal, industrial, navigational, recreational, irrigational sanitary, natural, and power uses of water are also discussed.

WATER POLLUTION PROBLEMS OF LAKE MICHIGAN AND TRIBUTARIES

U.S. Department of the Interior, Federal Water Pollution Control Administration 1968

A report of pollution problems and measures taken to abate them in Lake Michigan.

FISH AND WILDLIFE AS RELATED TO WATER QUALITY OF THE ILLINOIS RIVER BASIN

United States Department of the Interior, Fish and Wildlife Service 1963

This report concerns pollution of the Chicago Sanitary and Ship Canal from the point of view of the Fish and Wildlife Service. Concerns include the flora and fauna of these waterways and the effect of water pollution and ecological change on them.

CHICAGO UNIT SUES TO FIGHT POLLUTION OF LAKE MICHIGAN

New York Times, October 22, 1967 p. 76, Column 3

The Chicago Metropolitan Sanitary District sues thirteen Indiana corporations for pollution of Lake Michigan waters under an 1889 clause preventing despoliation of waters used in public consumption.

LAKE MICHIGAN CLEANUP COST SEEN $1 BILLION

Ann Arbor News, January 24, 1970

A discussion of the state of affairs related to pollution in Lake Michigan by C Wallace Poston ex-director of the Great Lakes regional office of the Federal Water Pollution Control Administration.

NOR ANY DROP TO DRINK - I CHICAGO: KEEPING IT CLEAN

Glass, R. Saturday Review, October 23, 1965, p. 35-36

Chicago's pollution problems, remedies, etc. Discussion of the Unites States Supreme Court testing the right of the city of Chicago to remove water from Lake Michigan for municipal purposes.

THE WATER RESOURCE IN NORTHEASTERN ILLINOIS: PLANNING ITS USE

Northeastern Illinois Metropolitan Area Planning Commission 1966

A study of water quanity and quality in Northeastern Illinois as well as its current uses and future predictions as to management policies and practices.

PROSECUTING POLLUTION

Times, January 5, 1970, p. 41

The crusade by the Illinois Attorney General to reduce pollution by industrial, governmental, and other sources through the use of stricter penalties as well as the enforcement of existing laws.

2. MICHIGAN

WATER QUALITY RECORDS 1963, 1964, ETC.

Michigan Water Resources Commission

A record of chemical, bacteriological and physical analysis done on a series of Michigan's streams flowing into the Great Lakes. The record gives accurate information on the concentrations of nitrates, phosphates, coliforms, and many other substances.

WATER QUALITY STUDY OF THE SAGINAW RIVER - JULY AND OCTOBER 1965

Michigan Water Resources Commission Lansing, 1967

A pollution study of the Saginaw River discussing the extensive amount of pollution in the river due to industrial and municipal effluent discharges.

THE WATER RESOURCES OF SOUTHEASTERN MICHIGAN - AN OVERVIEW OF REGION WATER USES

Michigan Water Resources Commission 1968

An analysis of Southeastern Michigans water resources describing domestic and industrial waste disposal, irrigation for agriculture, and the extent of pollution in the area.

3. NEW YORK

COMPREHENSIVE WATER SUPPLY STUDY CHAUTAUQUA COUNTY NEW YORK

New York Department of Health 1968

A water quanity study reflecting future population increase etc.

4. OHIO

RECOMMENDED USES AND CRITERIA FOR THE STREAMS IN LORAIN COUNTY AND VERMILLION, OHIO

Lorain County Regional Planning Commission 1967

A water quality and quanity statement.

5. WISCONSIN

WATERFRONT RENEWAL TECHNICAL SUPPLEMENT

Wisconsin Department of Resource Development Madison Wisconsin, 1964

Sets down waterfront planning goals and discusses esthetics and various uses for waterfront; physical limitations of waterfronts; special problems associated with waterfront renewal and the legal control of waterfronts.

WATERFRONT RENEWAL

Wisconsin Department of Natural Resources 1966

The less detailed, publicly oriented complement to "Waterfront Renewal-Technical Supplement".

6. ONTARIO

7th ANNUAL REGIONAL CONFERENCE

Niagara Regional Development Association 1965

Speeches and papers delivered to Niagara Regional Development Association in 1965 including several water resources speeches.

WATER POLLUTION - EVERYBODY'S WAR

Ontario Department of Energy, Mines, and Resources 1968

A public information booklet describing what pollution is, why it occurs and what the citizenry can do to combat it.

E. General

WATER POLLUTION - ECOMIC ASPECTS AND RESEARCH NEEDS

Kneese, Allen V. Washington, D. C., 1962

A general description of the economic aspects of water pollution control with emphasis upon economic and social theory.

SURFACE WATERS, SUBMERGED LANDS, AND WATERFRONT LANDS

Vines, William R. Palm Beach County Florida, 1970

Report on historical development existing conditions of water and shorelands, regulatory authority of resources and impact assessment. Long range planning objectives and recommendations for conservation development and management.

BEACH AND SHORELINE AS A NATURAL RESOURCE

Sonoma County Planning Commission 1968

Inventories shoreland and makes recommendations for possible utilization both public and private. Basically a memo to encourage additonal study.

THE STATUS AND POTENTIAL OF THE MARINE ENVIRONMENT

Nassau-Suffolk Regional Planning Board 1966

A committee report in three parts 1) summary report 2) facts, opinions, and conclusions, 3) supporting data. Recommendations for action to preserve and upgrade the marine environment. Based upon the facts, opinions and conclusions reached by the committee. Action is to be administrative, regulatory, operational and promotional.

ANNUAL REPORT

South Carolina Water Resources Committee 1968

Includes briefs of ongoing water resource projects in South Carolina.

THE MAIN COAST: PROSPECTS AND PERSPECTIVES

Center for Resource Studies Bowdoin College, Maine, 1966

IV. SHORELAND LEGISLATION AND MANAGEMENT

A. Regulation and Management

INTERIM REPORT ON THE REGULATION OF GREAT LAKES LEVELS
International Joint Commission 1968

Discusses causes of level fluctuation, who is affected and how by the change in level and what the International Joint Commission study is attemping to do relative to level regulation.

REGULATIONS TO REDUCE CONFLICTS BETWEEN RECREATION WATER USES
Kusler, Jon A. 1969

A study of regulation of water surface use including some information on shoreline regulation.

A PROPOSAL FOR A LAKE MICHIGAN SHORELINE PLANNING COMMISSION
Muskegon County Regional Planning Commission 1970

A case for the formation of a five county shoreline planning commission. Counties included would be Muskegon, Ottawa, Oceana, Mason and Allegan.

SHORELAND AND FLOOD PLAIN ZONING ALONG THE WISCONSIN SHORE OF LAKE MICHIGAN
Striegl, A. R. 1968

Descriptions of shorelands of Lake Michigan, tables on Lake levels, wave size, ice effects, shorelines vulnerable to erosion. Sets forth criteria for shoreland zoning, protective measures and devices. The report is utilized by Lake Michigan counties to aid in preparation of their shoreline zoning ordinances.

PROTECTING WISCONSIN WATERFRONT DWELLERS
p. 106, American City, July 1930

Brief article with general explanation of state requirement that prior to recording of a plat boarding a lake or stream, Board of Health approval of what must be obtained.

RESEARCH REPORT - LAKESHORE LAND USE CONTROL
Vermont Agricultural Experiment Station March, 1969

Includes discussions of present practices and problems, attempts to solve problems. Also presents a model for lakeshore development and a rating of lakeshore and lakeshore controls.

WATER RESOURCES MANAGEMENT IN WISCONSIN
Wisconsin Department of Natural Resources 1968

Outlines the priority needs for information and for the examination of the legal and institutional constraints which now govern water planning in Wisconsin. Includes information on water supply, uses, quality and rights to water discussed on state wide and regional basis. Lists and discusses those institutions and agencies with interest in water resources management. Provides recommendations for action by Wisconsin Department of Natural Resources.

B. SELECTED ZONING ORDINANCES

BEVERLY SHORES INDIANA ZONING ORDINANCE

Ordinance includes a "Lakeshore District" with its own requirements and regulations - uses within this district are limited to single family, recreation and limited agriculture.

FRUITLAND TOWNSHIP MICHIGAN ZONING AND MISCELLANEOUS ORDINANCES

Ordinance #12 "Enacted to provide for conservation and protection of natural water resources...so that...lakeshore shall be left in wild condition."

SCHOOLCRAFT COUNTY MICHIGAN RURAL ZONING ORDINANCE

Includes two lake district classifications.

ST. LOUIS COUNTY MINNESOTA ZONING ORDINANCE

Includes a waterfront preserve description restricts and prevents uses on "outstanding natural areas".

PORT CLINTON OHIO ZONING ORDINANCE

A "waterfront business" category is included.

DOOR COUNTY (WISCONSIN) ZONING ORDINANCE

Attempts to preserve shore cover and natural beauty.

OZAUKEE COUNTY WISCONSIN ZONING ORDINANCE

Chapter seven deals with "shoreland protection". General purposes of this chapter are to "maintain safe and healthful conditions", "prevent and control water pollution", "protect spawning grounds, fish and aquatic life", "control building sites, structures and land use", and "preserve shore cover and natural beauty".

PLANNING FRAMEWORK, OBJECTIVES AND PROGRAMS

A. Regional

COMPREHENSIVE FRAMEWORK STUDY (TYPE I) PLAN OF STUDY
Great Lakes Basin Commission October, 1968

B. Great Lakes States

1. ILLINOIS

NORTHEASTERN ILLINOIS METROPOLITAN AREA PLANNING COMMISSION REPORT
Northeastern Illinois Planning Commission 1965
Report gives history of development of this commission as well as listing studies completed.

THE PLAN STUDY: METHODOLOGY
Northeastern Illinois Planning Commission 1968
A summary of the methodology developed and used by Northeastern Illinois Planning Commission to produce the comprehensive plan for Northeastern Illinois.

A REGIONAL ARMATURE FOR THE FUTURE
Northeastern Illinois Planning Commission 1968
A statement of policies and goals for development of six county Northeastern Illinois.

2. INDIANA

PROBLEMS OF GROWTH AND DEVELOPMENT IN THE CALUMET AREA
Purdue-Calumet Development Foundation E. Chicago, June, 1961

3. MICHIGAN

A SHORELINES POLICIES PLAN: CONCEPTUAL FRAMEWORK
Jakobson, Leo 1969
The first of three reports discussing the conceptual framework for the study of the Muskegon, Michigan shorelands. Includes an planning process model, goal formulation model and a policy formulation model.

CURRENT AND PENDING PROGRAMS
Muskegon County Metropolitan Planning Commission 1970
Description of programs and cost.

STUDY DESIGN FOR A COMPREHENSIVE TRANSPORTATION AND LAND USE PROGRAM FOR THE DETROIT REGION
Detroit, 1964
Study design presented as a tentative work program for a comprehensive plan "Talus" for Detroit.

RESOURCES AND OPPORTUNITIES IN THE SOUTHERN KEY BROAD PROGRAM AREA
U.S. Soil Conservation Service 1968
A brochure for the layman - very general with pictures.

4. OHIO

PLANNING GOALS AND OBJECTIVES --- # 4 OF A SERIES
Ottawa Regional Planning Commission 1968
The general objectives and goals as developed to provide a framework for future planning in the port Clinton, Ohio area.

5. WISCONSIN

NORTHWESTERN WISCONSIN REGION COMPREHENSIVE PLANNING PROGRAM
Northwestern Wisconsin Regional Planning Commission
Brochure abstracted from major technical report.

COMPREHENSIVE PLANNING PROGRAM DOOR COUNTY WISCONSIN
Wisconsin Department of Resource Development

C. Coastal States

CONNECTICUT: CHOICE FOR ACTION
Connecticut Interregional Planning Program 1967
A broad brush citizen oriented report on Connecticut and its future.

1. HAWAII

LANAI LAND MANAGEMENT AND DEVELOPMENT STUDY
Moore, Richard A. 1969
The report emphasizes the development of the resource planning management system based on an inventory of available information that is used to formulate long range plans.

2. NEW YORK

THE DEVELOPMENT OF A PROCEDURE AND KNOWLEDGE FOR MARINE RESOURCE PLANNING: FUNCTIONAL STEP ONE - THE CLASSIFICATION OF MARINE RESOURCE PROBLEMS OF NASSAU AND SUFFOLK COUNTIES
Ellis R. H. and Cheney, P. B. 1969
The report describes the concept of the Marine Resources Council Program, the definition and scope of marine source problems and methods used for classifying problems, A descriptive presentation on present marine resource problems.

THE DEVELOPMENT OF A PROCEDURE AND KNOWLEDGE REQUIREMENTS FOR MARINE RESOURCE PLANNING: FUNCTIONAL STEP TWO KNOWLEDGE REQUIREMENTS
Cheney, Philip B. 1970
The purpose of this report is to describe the total "ideal" set of knowledge... that will allow scientists...To assess the current state of knowledge pertaining to the specific marine problems to be studied.

5. FLORIDA

REGIONAL DESIGN GUIDE

Tampa Bay Regional Planning Council 1970

A handbook of Design Standard Criteria and Regulatory measures for improved development appearance for use by local agencies, planners and developers.

VI. SHORELANDS CLASSIFICATION

LAKE SHORE INVENTORY AND CLASSIFICATION PAPERS OF THE MICHIGAN ACADEMY OF SCIENCE, ARTS, AND LETTERS, VOLUME XXVLL

Bowers, Neal M., Kenneth C. McMurray, and K. M. Stahl 1941

Classification of the Lake Michigan shoreline in Emmet County. Sixteen different geologic types dependent upon the properties of the shoreline, i.e. sandy, rocky, pebbled, the type of upland vegetation; and the slope and depth of the water near shore.

TOPOGRAPHIC FEATURES OF LAKE SHORES

Gilbert, Grove K. Washington, D. C., 1885

A very early work on shore types; includes definition of shore terms including pictures and diagrams.

GREAT LAKES REGULATION STUDY 1966 UNTITLES, UNPUBLISHED WORK

International Joint Commission

A study done for the International Joint Commission of the Great Lakes shoreline on the American side. Information i.e. water level, beach surface, upland, etc. of the shoreline. Survey data was taken from selected sites along the shoreline and does not give complete coverage.

SHORE PROCESSES AND SHORELINE DEVELOPMENT

Johnson, Douglas W. New York, 1919

Primarily a geological explanation of shorelines with a chapter on terminology and classification of shorelands.

AERIAL PHOTOGRAPHS OF THE GREAT LAKES SHORELINE-MICHIGAN, MINNESOTA WISCONSIN, ILLINOIS, INDIANA, NEW YORK, PENNSYLVANIA, OHIO

U.S. Army, Corps of Engineers, U.S. Lake Survey Flown by U.S.N., 1964

Aerial photographs of the shoreline flown at 20,000 feet.

GREAT LAKES COMPREHENSIVE BASIN STUDY: SHORE USE AND EROSION

U.S. Corps of Engineers Preliminary, 1969

Maps of Great Lakes shoreline indicating land use, shore types, beach material, shoreline problems, and utilities.

LAKE TERMINOLOGY, WATER BULLETIN NUMBER 14

Veatch, J.O. and Humphrys, C. R. Michigan State University, East Lansing, 1964

A terminology of lakes, particularly Michigan. It includes a shoreline classification accompained by photographs, illustrating the type of shoreline.

WISCONSINS LAKE SUPERIOR SHORELINE

Zube, E. and Dega, H. Wisconsin Department of Resource Development, 1964

Shore type classification(thirteen types) and physical resource inventory of shoreline.

VII. SHORE EROSION AND SEDIMENTATION

GREAT LAKES SHORE EROSION IN MICHIGAN

Michigan Department of Natural Resources 1969

A short status report on erosion problems includes lake levels, precipitation and photos of problem areas.

WATER RESOURCES USES PRESENT AND PROSPECTIVE FOR LAKE HURON AND PROPOSED WATER QUALITY STANDARDS AND PLAN OF IMPLEMENTATION

Michigan Water Resources Commission (Department of Conservation) 1967

Describes water quality and recreational, industrial, municipal, and agricultural uses of the water.

GREAT LAKES SHORELAND MANAGEMENT AND EROSION DAMAGE CONTROL FOR MICHIGAN

Michigan Department of Natural Resources 1970

General shoreland management programs recommended for Michigan.

BEACH EROSION IN MICHIGAN

Brater, E. F. Ann Arbor 1950

A report on "How" and "Why" beaches erode. Includes information on how to prevent erosion and methods to study erosion.

REPORT OF INVESTIGATION - SEDIMENTATION AND NAVIGABILITY OR OAK CREEK GRANT PARK, SOUTH MILWAUKEE, WISCONSIN

Dames and Moore 1967

A study which analyzes sand movement and deposition, wave and wind influences, harbor and boating facilities concepts. Provides recommendations for action to allow navigation of small craft between Lake Michigan and existing Oak Creek launching facilities.

REPORT OF MILWAUKEE COUNTY COMMITTEE ON LAKE MICHIGAN SHORE EROSION

Milwaukee County Committee on Lake Michigan Shore Erosion 1945

Contains water level into Milwaukee 1860-1945. Locates area of erosion and records recession of top of bluff along Milwaukee county shore line.

SHORE EROSION IN OHIO

Ohio Department of Natural Resources 1959

Describes shore erosion in Ohio, explaining its causes and the influence of lake levels and currents. Advice to the public with reference to shore house location.

ENGINEERING GEOLOGY OF THE OHIO SHORE LINE OF LAKE ERIE - TECHNICAL REPORT #7

Ohio Department of Natural Resources, Division of Shore Erosion

Details of engineered structures for protection against erosion along the Ohio shoreline. Sections showing soil profile.

1950 INVESTIGATION OF LAKE ERIE SEDIMENTS, VICINITY OF SANDUSKY, OHIO

Pincus, Roseboom, and Humphris — Ohio Geological Survey Report, Inventory 9, 1951

Geological research concerning the composition of bottom sediments of Lake Erie near Sandusky, Ohio.

1951 INVESTIGATIONS OF LAKE ERIE SHORE EROSION

Pincus, Metter, Humphris, Kleinhampl, and Bowman — Ohio Geological Survey Report Inventory 18, 1953

Investigations into the composition, type, and character of portions of the Ohio Lake Erie Shoreline from a geological point of view.

LOW COST SHORE PROTECTION FOR THE GREAT LAKES

University of Michigan, Engineering Research Institute — 1959

A description of various methods of reducing the effect of wave, current, ice, and wind erosion of the shoreline. The report includes diagrams and photos of the various shore protection methods including sand fill, groins, revetment, sea walls, etc.

THE BATTLE TO SAVE OUR RUNAWAY BEACHES

Carlisle, Norman — Coronet, volume 48, August 1960, p. 114-115

Describes beach erosion, efforts to control it by the Corps of Engineers and shoreline residents, and a case of sand loss and return from beaches at Presque Isle State Park, Pennsylvania.

MICHIGAN'S MARCHING DUNES

Carlisel, Norman — Coronet, volume 48, June 1960, p. 159-162

A discussion of the movement of sand dunes along Michigan's eastern shore and their hazardous effect on human settlements.

LAKE MICHIGAN'S ENCROACHMENT ON ITS COAST

Maxwell, H.U. — Scientific American, June 28, 1919 p. 687

Explaination of the changing shoreline of Lake Michigan, receding western shore, advancing southern shore.

IMPROVED SHORE DEFENSES

Skerrett, R. G. — Scientific American, April 1937, p. 239

How a special type jettie is able to withstand major Lake storms and yet protect and even enlarge beach area.

SHORE AND BEACH

New Orleans (Serial)

Journal of the American shore and beach preservation association. Numerous articles concerning beach erosion on the Great Lakes.

VIII, SHORELAND TRANSPORTATION AND INDUSTRIAL DEVELOPMENT

A. Great Lakes (General)

SHIPPING AND NAVIGATION PROBLEMS OF THE GREAT LAKES AND ST. LAWRENCE SEAWAY

Princeton University, 1960

An inventory study including physical lake data, factors effecting shipping on Great Lakes and port developments.

GREAT LAKES COMPOSITION HARBOR AND LAKE SURVEY

Report of proceedings of the initial and general public hearing on the need of further improvement of deep-draft harbors on the Great Lakes. October 16, 1956.

B. Lake Erie

COMPREHENSIVE PLAN - REPORT #9

Lake County Planning Commission 1959

Contains a recommendation for future development of the Fairport County Harbor located at the mouth of the Grand River.

REPORT ON THE PORT OF BUFFALO

New York, New York, 1955

Includes description of port, facilities present, recommended improvements, economic and commodity data, management and administrative data and master plan.

C. Lake Michigan

LAKE CALUMET HARBOR DEVELOPMENT

De Leuw, Cather and Company Chicago, 1955

A report including estimates of cost, maintenance etc. for Lake Calumet Harbor development.

PORT AND TERMINAL FACILITIES ON LAKE MICHIGAN

Washington, 1943

Inventory information including data and maps.

BURNS WATERWAY HARBORS INTERIM REPORT

Suerdrup and Parker and Associates St. Louis, July 1969

WHERE TWO GREAT WATERWAYS MEET

Chicago, 1953

A very complete report on Calumet - Sag Canals, Lake Calumet, Calumet Harbor and river and commercial lakefront development in the Chicago-Gary Area.

COOPERATIVE CONSERVATION OF THE INDIANA - LAKE MICHIGAN SAND DUNES

Science, October 31, 1919, p. 405

Account of activities in Porter Lo Indiana relative to dunes conservation within that county.

MICHIGAN - SUPERIOR CANAL ISSUE

Business Week, July 14, 1945, p. 38

Brief account of proposed canal from Au Train on Lake Superior to Escanaba on Lake Michigan.

POLITICS AND LAND USE: THE INDIANA SHORELINE OF LAKE MICHIGAN

Mayor, Harold M. Annals of Association of American Geology
December 1969, pp. 508-523

A thorough view into the steel industry vs. the dunes . Including the politics of planning.

COMPREHENSIVE PLAN FOR SMALL CRAFT HARBORS - OF REFUGE LAKE MICHIGAN, GREEN BAY, AND MISSISSIPPI RIVER

Wisconsin Department of Resource Development

Discusses specific sites for harbors; reasons for selection; requirements and costs. Inventory of present facilities.

THE PORT OF MILWAUKEE

Hamming, Edward University of Chicago, Department of Geography
Research: paper #26, 1952

Study focused on the transportation function of the port and its relationships to the urban area.

HARBOR PLAN OF CHICAGO

1927

Inventory of existing facilities, transportation and land uses. Proposals for Chicago Metro area lake development.

D. Lake Ontario

DEMARCATION LINE BETWEEN THE HARBOR OPERATIONS OF THE TORONTO HARBOR COMMISSIONERS AND MUNICIPAL AND OTHER TYPES OF DEVELOPMENT

Toronto Planning Board 1969

A report dealing with the current jurisdiction of the Toronto harbor commission and the future potential growth of the actual harbor activities.

E. Lake Superior

ST. LOUIS COUNTY TRANSPORATION SURVEY AND ANALYSIS

Augar, Jyring, Whiteman, Moser Incorporation 1967

An inventory study including the port of Duluth.

PORT AND TERMINAL FACILITIES ON LAKE SUPERIOR

Washington, 1945

Inventory of facilities including data and maps.

INTERIM REPORT ON DULUTH - SUPERIOR HARBOR

U.S. Congress House Document #150
86th Congress, 1st session

U.S. Corps of engineers recommendations for navigation project in Duluth-Superior Harbor.

UNKNOWN TITLE, "LAKE SUPERIOR PORTS AND HARBORS" TITLE OF CHAPTER 9, pp. 181-239

Wisconsin Department of Natural Resources 1963

A economic analysis of the uses and conflicts of usage of Wisconsin's Lake Superior harbors including detailed outlines of deep-draft commercial harbors, small craft harbors, and refuge harbors. Plans and cost estimates for enlarging and developing harbors are included.

F. Great Lakes States (Non-Lake)

WATER RESOURCES AND PLANT LOCATION IN MICHIGAN

Blackett, Olin W. University of Michigan, 1957

A discussion of the geological and water needs of industry and the influence of the latter in the selection of a site.

THE ST. LAWRENCE SEAWAY AND THE CONNECTING CHANNELS: THEIR INFLUENCE ON PLANT LOCATION IN MICHIGAN

Dixon, Brian University of Michigan, 1957

The investigation negates the idea that the St. Lawrence Seaway will produce phenomenal port development along the shoreline.

RIVERFRONT STUDY: SELECTION OF SITES FOR AN INTEGRATED PORT FACILITY

Detroit, 1957

Presents an analysis of problems relating to the sound development of the Detroit riverfront in order that expansion of facilities can be accomplished in an orderly and logical manner.

INDUSTRIAL USES OF WATER IN MICHIGAN: A STUDY PROPOSAL FOR THE COMMISSION ON MICHIGAN'S ECONOMIC FUTURE

Wixom, Charles W. and Karl F. Ziesler Michigan Business Studies volume 17 #2
Bureau of Business Research
University of Michigan, 1966
pp. 407-422

A discussion of water user's in Michigan (industrial, municipal, agricultural, and recreational) with emphasis upon industry. The author's discuss industrial needs for water and the abundant supply available from the Great Lakes.

G. Coastal States

INLAND NAVIGATION AND THE RIVER PORT

Princeton University, 1961

An inventory study dealing with volume or traffic, types of boats etc. Discusses the development of a typical river port including factors influencing development, port authorities and trends in future development.

CITIES AND RIVERFRONT LANDS

York, Willbern — University of Alabama, 1947

A study dealing primarily with urban riverfront development within and adjacent to TVA. Includes some gerneal principles applicable to planning riverfront uses, the promotion of better riverfront development and special factors involved in riverfront development.

IX. RESOURCE ANALYSIS METHODOLOGY

THE ECOLOGICAL BASIS FOR LAND USE PLANNING

Hills, G. A. 1961

G. Angus Hills resource planning method.

LAND CAPABILITY CLASSIFICATION FOR OUTDOOR RECREATION

Department of Forestry and Rural Development Canada, 1967

A comprehensive filled manual that facilitates the classification of land for recreational use.

SELECTED RESOURCES OF THE ISLAND OF NANTUCKET

Department of Natural Resources (Massachusetts) 1966

An inventory and analysis study. Includes identification of ecological factors, shore and landscape types.

VISUAL ANALYSIS OF LANDSCAPE DEVELOPMENT

Jacobs, P. and Way, D. Harvard University, 1969

The project establishes a series of visual measures that may complement or constrain existing evaluation tests. It focuses on the visual inputs of various land uses on the environment in a time context.

THREE APPROACHES TO ENVIRONMENTAL RESOURCES ANALYSIS

Landscape Architecture Research Office Harvard University, 1967

Outline, description and summary of three different resource analysis approaches of G. Angus Hills, Phillip Lewis and Ian McHarg.

LANDSCAPE ESTHETICS

Leopold, Luna B. Natural History, October 1969, pp. 37-44.

A study showing the methods to quantify the scenic resources of a river valley. Three general categories are established 1) physical factors 2) biologic and water quality factors and 3) human use and interest factors.

FOREST LANDSCAPE DESCRIPTION AND INVENTORIES - A BASIS FOR LAND PLANNING AND DESIGN

Litton, R. Burton, Jr. Berkeley, California, 1968

Describes six analytical factors and seven compositional types useful in recognition and description of scenic resources. Illustrates their application in two inventories made to aid managers and landscape architects in planning and design.

USE OF AERIAL PHOTOGRAPHS TO EVALUATE THE RECREATIONAL RESOURCES OF THE CONNECTICUT RIVER

MacConnell W. P., and Rywell Ross, H. University of Massachusetts, 1967

A classification system on the nature of the land, land use and vegetation.

COORDINATED MAPPING OF GEOLOGY AND SOILS FOR LAND-USE PLANNING

McComas, Murray R. 1969

A report to aid planners in using geologic and soils information in planning activities.

DESIGN WITH NATURE

McHarg, Ian L. New York, 1969

The book illustrates a resource inventory and analysis on a variety of land planning projects, such as: The New Jersey Shore, Highway location, Philadelphia region, Staten Island and the Potomac river basin.

A USER-RESOURCE RECREATION PLANNING METHOD

National Advisory Council on Regional Recreation Planning
Loomis, Califronia, 1959

The method has four primary stages to determine the best use of the physical, social and economic resource, they are: Recreation user requirements, recreation potential of resources, planning guide and recreation values.

ENVIRONMENTAL MEASUREMENT AND INTERPRETATION

Platt, Robert B. and John Griffiths New York, 1964

AERIAL PHOTO-INTERPRETATION OF LANDFORMS AND RURAL CULTURAL FEATURES IN GLACIATED AND COASTAL REGIONS

Powers, William E. Northwestern V., 1959

A photo interpretation manual. Includes agricultural and shoreline features and how to identify those features from aerial photos.

EVALUATION OF RECREATION RESOURCE INVENTORY AND ASSESSMENT SYSTEMS

Roggenbuck, J. W. University of Michigan Thesis, 1969

The study establishes a recreational land classification and criteria to evaluate six resource inventory methods prevently used in the United States.

FLOOD-HAZARD MAPPING IN METROPOLITAN CHICAGO

Scheaffer, John R. David Ellis and Andrew Spieker 1970

The concept and methodology of flood hazard mapping.

NATIONAL ESTUARINE INVENTORY: HANDBOOK OF DESCRIPTORS

Wastler, T. A. and de Guerrero L.C., U.S. Department of Interior
Washington D. C., 1968

The handbook is the framework or guide for the collection of estuary information (economical, ecological, water quality, etc.)

CONTINUITY THROUGH CONSERVATION

Wilson, Polakowski, Heine and Simpson Huntingdon, Pennsylvania, 1967

A two-volume comprehensive study with interesting methodology for analysis of physical resources and interrelationship with concept development for a rural region.

X. COMPREHENSIVE DEVELOPMENT PLANS

A. Great Lakes States

1. ILLINOIS

THE COMPREHENSIVE PLAN OF CHICAGO - VOLUME I, ANALYSIS OF CITY SYSTEMS

Chicago Department of Development and Planning 1967

An inventory and analysis of four basic planning systems 1) residential, 2) recreation and public land, 3) education and 4) public safety and health. Contains data, trends, and conditions relative to each of the above systems.

THE COMPREHENSIVE PLAN OF CHICAGO - VOLUME II, ANALYSIS OF CITY SYSTEMS

Chicago Department of Development and Planning 1968

An inventory and analysis of three planning systems 1) business 2) industry and 3) transportation.

DEVELOPMENT AREA REPORT (SERIES)

Chicago Department of Development and Planning

A report for each development area as designated by Department of Developing and Planning. A total of sixteen development areas six of which are on Lake Michigan. Each report recommends action necessary to achieve the policies of the comprehensive plan for Chicago.

THE COMPREHENSIVE PLAN OF CHICAGO

Chicago Department of Development and Planning 1966

A descriptive and recommendatory plan for the future development of Chicago.

THE COMPREHENSIVE PLAN OF CHICAGO - CONDITIONS AND TRENDS: POPULATION, ECONOMY, LAND

Chicago Department of Development and Planning 1967

Report contains charts, data and maps to illustrate conditions and trends of polulation economy and land.

COMPREHENSIVE CITY PLAN FOR NORTH CHICAGO, ILLINOIS

Kincaid, Evert and Associates 1950

Includes information on land use, economics, transportation, parks and playgrounds, subdivision regulations and zoning.

INTERIM PLAN, 1969

Lake County Regional Planning Commission 1969

An update of the 1961 plan.

DIVERSITY WITHIN ORDER

Northeastern Illinois Planning Commission 1967

A report which presents the plan for Northeastern Illinois development.

2. INDIANA

A DEVELOPMENT PLAN FOR HAMMOND, INDIANA
City Planning Associates Incorporation — Mishawaks, Indiana, September, 1962

THE GENERAL DEVELOPMENT PLAN-LAKE COUNTY INDIANA
Lawrence, William S. and Associates Incorporation — Chicago

MASTER PLAN FOR THE TOWN OF OGDEN DUNES, INDIANA ORDINANCE #237
Ogden Dunes Town Planning Commission — 1958

MASTER PLAN, SUBDIVISION ORDINANCE AND ZONING ORDINANCE OF DUNE ACRES, INDIANA
O'Harrow, Dennis and Jack Noble — October, 1959, Amended January, 1960

1961 MASTER PLAN AND THOROUGHFARE PLAN FOR EAST CHICAGO INDIANA
Purdue, Calumet Foundation

MASTER PLAN - A GUIDE FOR FUTURE MUNICIPAL DEVELOPMENT IN HAMMON, INDIANA
Sheridan, Lawrence V. — Indianapolis, 1951

COMPREHENSIVE PLAN - THE MASTER PHYSICAL DEVELOPMENT PLAN FOR THE CITY OF GARY, INDIANA
Tec - Search Incorporation — June, 1969

3. MICHIGAN

A REPORT UPON THE SECOND PHASE OF THE MASTER PLAN TRAVERSE CITY MICHIGAN
Bartholomen, Harland and Associates — 1962
Continuation from first phase - An inventory study with some recommendations for airport, CBD, public service, and administration.

FINAL REPORT UPON THE FIRST PHASE OF THE COMPREHENSIVE PLAN
Bartholomen, Harland and Associates — Traverse City, Michigan, 1962
An inventory study with some recommendations for recreation, schools, streets.

GENERAL PLAN-CITY OR BENTON HARBOR
Bartholomen, Harland and Associates — 1963
Study includes economic, land use, zoning, utilities and inventory data.

COMPREHENSIVE COUNTY PLAN REPORT - MACOMB COUNTY, MICHIGAN STUDY #1
1960
A land use study with rather detailed information.

MICHIGAN PLAN - LUDINGTON, MICHIGAN
Development Planning Commission 1964
Study includes information on economic, population, tourism, transportation etc.

COMPREHENSIVE COMMUNITY PLAN EAST TAWAS - BALDWIN TOWNSHIP REGIONAL PLANNING AREA IOSCO, MICHIGAN
Mills, Raymond W. and Associates 1967
Report includes inventory, analysis and recommended development plan.

NORTHERN GREAT LAKES REGION MULTISOIL CONSERVATION DISTRICTS FRAMEWORK PROGRAM FOR SOUTHERN KEY
1968
Major thrust or study is argriculture, forestry, recreation provides data as to current land uses and activities and projects recommended land use and activities for the next twenty years.

DESIGN STUDY FOR CENTRAL BUSINESS DISTRICT RENEWAL PROJECT MICHIGAN R-146
Vilican, Leman and Associates, Incorporation Traverse City, Michigan
1968
Design Study prepared in connection with urban renewal project.

MASTER PLAN LAND USE: TRAVERSE CITY, MICHIGAN
Vilican, Leman and Associates 1967

4. MINNESOTA

PRELIMINARY COUNTY PLAN ST. LOUIS COUNTY, MINNESOTA
Aguar, Jyring, Whiteman, Moser, Inc. 1967
The last part of the nine part "701" report for the county.

UPPER MISSISSIPPI COMPREHENSIVE BASIN STUDY APPENDIX B AESTHETIC AND CULTURAL VALUES
Lewis, Philip H. Jr. 1969
Identifies and rates aesthetic and cultural values.

5. NEW YORK

THE SODUS COMPLEX COMPREHENSIVE DEVELOPMENT PLANS
Brown and Anthony City Planners 1968
Study includes inventory, analysis and recommendations for development of Sodus township and villages therein.

CHAUTAUQUA COUNTY (NEW YORK) AT MID DECADE PART I
Chautauqua County Planning Board
A study of economics population, housing and municipal finance.

PLANNING MEMO 32
Erie County Department of Planning 1968
Text from the master plan for three major elements i.e. transportation, open space, county facilities.

6. OHIO

PRELIMINARY LAND USE PLAN ... #5 OF A SERIES
Ottawa Regional Planning Commission 1969
A framework for land use development in the port Clinton area for the next twenty years.

7. WISCONSIN

NORTHWESTERN WISCONSIN REGION COMPREHENSIVE PLANNING PROGRAM
Northwestern Wisconsin Region Planning Commission 1965
A three part guideline study and inventory and analysis, general plan, and implementation.

BROWN COUNTY REGIONAL PLANNING PROGRAM
Brown County Regional Planning Commission 1967
Includes proposed land use plans - Major sections of report include land-use, transportation, school sites, parks and open space, and rail network.

SISTER BAY PRELIMINARY PLANNING REPORT
Door County Planning Department 1969
Report provides data and analyses on the village's physical setting, population, economy, land use community facilities, and transportation network, including an analysis of the harbor and waterfront.

STURGEON BAY COMPREHENSIVE PLANNING PROGRAM
Wisconsin Department of Local Affairs and Development 1969
Provides inventory of physical setting, population, economy, land use, community facilities, transportation and waterfront and harbor. A general development plan is included which makes recommendations for future development.

8. GREAT LAKES PROVINCES

THE TOWNSHIP OF NIAGARA AREA PLAN
E. G. Faludi and Associates 1960
Very complete inventory and analysis with master plan for Niagara Township, Ontario.

OFFICAL PLAN
Kingston, Planning Office 1969
A proposed official plan for Kingston Ontario. Includes general principles and policies, land uses and areas and implementation.

XI. RECREATION AND CONSERVATION PLANS

A. Great Lakes States

1. ILLINOIS

OUTDOOR RECREATION IN ILLINOIS
Illinois, Department of Business and Economic Develpment 1966
A recreation analysis of demand, resource, etc. for the purpose of clarifying goals and receiving federal aid.

OPEN SPACE IN LAKE COUNTY
Lake County Regional Planning Commission 1966
An inventory and analysis of open space in lake county along with projected needs.

2. INDIANA

AN EXPANSION PROGRAM TO MEET INDIANA'S GROWING NEED FOR CONSERVATION AND RECREATION - MASTER PLAN FOR ACQUISITION AND DEVELOPMENT - LOCAL NEEDS AND RESPONSIBILITIES SUPPLEMENT #1
Indiana Department of Conservation 1965

COMPREHENSIVE PLAN FOR PARKS AND OPEN SPACE FOR LAKE COUNTY, INDIANA
Lake County Planning Commission

3. MICHIGAN

AN APPRAISAL OF POTENTIAL OUTDOOR RECREATIONAL DEVELOPMENTS IN MENOMINEE COUNTY, MICHIGAN
U.S. Soil Conservation Service 1969
An inventory and analysis study to determine the potential of twelve various recreational activities within the county. Includes the methodology utilized to arrive at the potentials.

GUIDELINE FOR TOURISM-RECREATION IN MICHIGAN'S UPPER PENINSULA
Blank, Uel, Gunn, Clare A. and Johnson, Johnson and Roy 1966
A regional study including general development plans.

A 1980 REGIOANL RECREATION LAND PLAN FOR THE HURON CLINTON METROPOLITAN AUTHORITY
Habben, Rudolf B. Detroit, 1969
Regional recreational plan recognizing potential development areas along Detroit river and Lake St. Clair.

RECREATIONAL DEVELOPMENT PLAN
Ludington Recreation Department 1969
A general recreation plan.

AN APPRAISAL OF POTENTIALS FOR OUTDOOR RECREATION DEVELOPMENT HURON COUNTY, MICHIGAN

U.S. Soil Conservation Service 1969

An inventory and analysis study to determine the potentials of twelve various recreational activities within the county. Includes the methodology utilized to arrive at the potentials.

WILDERNESS PLAN FOR ISLE ROYLE NATIONAL PARK AND THE SURROUNDING REGION

National Park Magazine, volume 41, number 234, March, 1967, pp. 18-19

A report presented at public hearings of the National Park Service whose intent was to state the need for limitation of the number of visitors to the island in order to perserve its naturalness.

4. NEW YORK

THE FUTURE OF CONSERVATION AND RECREATION IN MONROE COUNTY

Monroe County Planning Council 1967

The purpose of this report is to identify additional sites which have exceptional possibilities for park or conservation purposes.

5. OHIO

NEW GEMS FOR THE EMERALD NECKLACE

Cuyahoga County Regional Planning Commission 1961

An inventory, analysis and recommendation to Cleveland Metro Park District. Includes survey methods (recreational study).

VERMILION, OHIO PARK AND RECREATION PLAN

Lorain County Regional Planning Commission 1963

Inventory and survey as well as generalized recreation plan.

STATE OF OHIO CAPITAL PLAN 1964-1971

Ohio, Department of Natural Resources 1965

The capital plan is a declaration of intention for recreation and preservation, in the state of Ohio. Each existing or potential area is described by its acreage, cost to purchase and develop, and type of land.

COMPREHENSIVE DEVELOPMENT PLAN FOR THE OTTAWA REGION

Ottawa Regional Planning Commission 1967

A declaration of intention for the future of recreation in Ottawa County, Ohio. Includes maps showing existing state and local recreation areas.

6. WISCONSIN

GUIDE FOR GROWTH: A PROGRAM FOR PARK LAND ACQUISITION

Milwaukee County Park Commission 1966

A master plan report for a county wide recreation and park system. Establishes a regional framework, classification and definition of spatial standards, on inventory of lands and analysis of proposals and an acquisition program.

OUTDOOR RECREATION PLAN

Door County Planning Department 1969

Analysis of outdoor recreation trends in Door County. Outlines program for future development with attention given to implementation of proposals.

KENOSHA COUNTY OUTDOOR RECREATION PLAN
Kenosha County Park Commission

COMPREHENSIVE PLAN OF COUNTY PARK AND RECREATION AREAS
Manitowoc County Planning and Park Commission October, 1963
The plan identifies five major landscape grounds - One group (Lake Michigan Shoreline) is considered major and dominant in the county.

COMPREHENSIVE PARK AND RECREATION PLAN FOR RACINE COUNTY
Racine County Highway and Park Commission 1969
Study includes action program, inventory, and characteristics of county.

SHEBOYGAN COUNTY OUTDOOR RECREATION PLAN
1968
Study includes inventory, analysis and some general proposals for development.

BLUEPRINT FOR BAYFIELD
Department of Landscape Architecture University of Wisconsin, 1969
A design study for preserving and enhancing the scenic quality of a Great Lakes community. An analysis and plan of the region with specific case studies on environmental problems.

OCONTO COUNTY RECREATION REPORT
Wisconsin Conservation Department Forests and Parks Division 1963
Study provides recreation inventory data and general recommendations for future development.

B. Great Lakes Provinces

1. ONTARIO

9th ANNUAL REGIONAL CONFERENCE
Niagrara Regional Development Council 1967
Speeches and papers presented to Niagrara Regional Development Council in 1967. All topics recreation oriented.

REPORT TO TOWNSHIP OF AMABEL (ONTARIO) PLANNING BOARD
1966
Presentation of information upon which to base the official plan.

XII. TRANSPORTATION PLANS

A. Great Lakes States

1. ILLINOIS

AN EVALUATION OF ALTERNATIVE LAND USE AND TRANSPORTATION SYSTEMS IN THE CHICAGO AREA

Chicago Area Transportation Study Chicago, 1968

The evaluation of a specific transportation scheme (called the finger alternative) for the Chicago area. Includes proposed expressway, rapidtransit, bus and rail services necessary to serve the Chicago Metro Area.

CHICAGO AREA TRANSPORTATION STUDY VOLUME II

Chicago, 1960

A report concerned with estimating the amount, kind and location of travel likely to take place within the Chicago area in 1980.

VOLUME III - TRANSPORTATION PLAN

Chicago Area Transportation Study 1962

The final report of Chicago Area Transportation Study with recommendations, plans and priorities.

AN IMPROVEMENT PLAN FOR ILLINOIS ROUTE 42 IN LAKE COUNTY

Lochner, H. W. and Company 1958

Inventory, analysis and recommendations for realignment of route 42.

AIRPORT PROPOSED IN LAKE MICHIGAN

New York Times, February 12, 1967
section V, p. 26, colume 5

Discussion of the proposal to make a jetport on either a floating island a filled island, or lake bottom along the Chicago shore of Lake Michigan.

CHICAGO JETPORT

New York Times, June 15, 1968
p. 70, colume 1

Mayor Daley releases report urging reclamation of an area of the shoreline as a site for a jetport. The jetport would be connected to the mainland by a causeway.

2. INDIANA

A HIGHWAY TRANSPORTATION PLAN FOR THE CITY OF GARY, INDIANA

Barton, George W. and Associates Evanston, April, 1958

SITE STUDY FOR A REGIONAL AIRPORT IN NORTHWEST INDIANA TO SERVE THE CHICAGO METRO AREA

Sverdrup and Parcel and Associates Incorporation St. Louis, 1968

3. MICHIGAN

TRANSPORTATION SURVEY

Macomb County Planning Commission 1967

A study of existing private and public transportation in Macomb County Michigan.

SUMMARY REPORT: A STUDY AND DESIGN TO IMPROVE PUBLIC TRANSPORTATION IN MUSKEGON COUNTY MICHIGAN

Muskegon County Metropolitan Planning Commission 1968

A report on bus service in Muskegon County. The beginning of a county wide transportation authority,

4. MINNESOTA

THE PORT OF DULUTH

Bartholmen, Harland and Associates 1958

Part of the Duluth comprehensive plan includes background, existing conditions, economic background, forecasts and a port development plan.

5. WISCONSIN

WISCONSIN SENIC ROADS AND PARKWAYS STUDY

Wisconsin State Highway Commission

B. Great Lakes Provinces

1. ONTARIO

WELLAND CHANNEL RELOCATION - LAND FORM AND PLANTING

Project Planning Associates ltd. 1968

This report is a summary of the objectives and concepts which forms the guidelines for the land form and planting aspects of the Welland Canal Re-Location.

XIII. WATER RESOURCES INVENTORIES

A. Great Lakes (Regional)

GREAT LAKES WATER LEVEL STUDY - WISCONSIN - LAKE MICHIGAN
WISCONSIN - LAKE SUPERIOR
Bureau of Outdoor Recreation

Data sheets indicating length and width of beach ownership, and type of development.

GREAT LAKES WATER TEMPS ALONG MICHIGAN SHORELINE
Lansing, 1964

Water temps and chemical analysis of municipal water supplies for twenty cities.

U.S. LAKE SURVEY
U.S. Corps of Engineers Detroit, 1939

A brief description of lake survey objectives and a listing of charts available.

WATER LEVELS OF THE GREAT LAKES
U.S. Department of the Interior, Fish and Wildlife Service
Minneapolis, Minnesota, 1963

This report concerns the effect of fluctuations in lake levels on wildlife and the shoreline.

B. Great Lakes (Individual)

1. ERIE

WATER INVENTORY OF THE PORTAGE RIVER AND SANDUSKY RIVER BASINS AND ADJACENT LAKE ERIE TRIBUTARY AREAS
Ohio Department of Natural Resources 1966

An inventory of water quality, quanity, flooding, and watershed management. Discussion of a major flooding and erosion problem. Recreational use of shoreline is recognized as of major economic importance.

2. MICHIGAN

CURRENTS AND WATER MASSES OF LAKE MICHIGAN
Ayers, Chandler, Lauff, Powers, and Henson University of Michigan, 1958

Research data pertaining to botton and surface currents, their locations intensities, and directions done with the intent of assisting in further. limnological research on the Great Lakes.

1968 LAKE MICHIGAN BEACH SURVEY OF WATER QUALITY
State of Illinois Sanitary Water Board February, 1969

3. ONTARIO

THE CURRENTS IN THE TORONTO REGION OF LAKE ONTARIO

Hamblin, P. F. and Rodgers, G. K. University of Toronto, 1967

A highly scientific investigation into the climate and currents of Lake Ontario around Toronto.

4. SUPERIOR

WATER RESOURCE USES PRESENT AND PROSPECTIVE FOR LAKE SUPERIOR AND THE ST. MARYS RIVER AND WATER QUALITY STANDARDS AND PLAN OF IMPLEMENTATION

Michigan, Water Resource Commission, Department of Conservation 1967

A natural resource analysis of Lake Superior and its connection with Lake Huron and the Saint Marys River. Contents of particular importance include shoreline recreation and harbor facilities, commercial ports, their commodities and amounts, beach eroision areas and a listing of federal facilities polluting Lake Superior

LAKE SUPERIOR STUDY

University of Minnesota School of Public Health Minneapolis, 1957

Technical data on currents, turbidity, color etc.

C. Great Lakes States

1. OHIO

WATER INVENTORY OF THE CUYAHOGA AND CHAGRIN RIVER BASINS OHIO

Ohio Department of Natural Resources 1959

An inventory of water quality, quanity, flooding and watershed management of a 1000 + square mile area.

WATER INVENTORY OF THA MAHONING AND GRAND RIVER BASINS AND ADJACENT AREAS IN OHIO (REPORT NUMBER 16)

Ohio Department of Natural Resources, Division of Water 1961

The report deals with water quality, pollution, ground water, flooding, etc.

WATER INVENTORY OF THE MAUMEE RIVER BASIN OHIO

Ohio Department of Natural Resources 1960

Presents data on water quality, quanity, flooding and watershed management for the 6000 + square miles Maumee River Basin.

XIV. LAND AND WATER RESOURCE INVENTORIES

A. Great Lakes

GREAT LAKES BASIN: A SYMPOSIUM PRESENTED AT THE CHICAGO MEETING OF THE AMERICAL ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, DECEMBER 29-30, 1959

Incus, Howard J. (ed.) Washington, D. C., 1962

A compilation of papers on historical geology, limnology, climatology, recreation land use, transportation, water pollution, and other subjects pertinent to the Great Lakes and its shoreline.

1. INDIANA

ENVIRONMENTAL RESOURCES INVENTORY

Lake Porter County Regional Transportation and Planning Commission March, 1970

Inventory study including facilities available, soils, natural areas etc.

PHYSICAL DATA: GARY INDIANA

TEC Search, Incorporation April, 1963

2. MICHIGAN

MICHIGAN TAKES STOCK

Titus, Harold New Republic, p.39, August 28, 1929

A report on the Michigan Land-Economic Survey of 1922. Gives general information as to the gathering of various data used in the survey.

PHYSICAL FEATURES AND EXISTING LAND USE TECHNICAL MEMO NUMBER 1

Vilican Leman and Associates 1969

Report includes soils, maps, topo, and existing land use map.

3. MINNESOTA

ST. LOUIS COUNTY RESOURCES SURVEY AND ANALYSIS

Augar, Jyring, Whiteman, Moser, Incorporation 1967

TOURIST AND RECREATIONAL RESOURCES - GRAND PORTAGE INDIAN RESERVATION, MINNESOTA

Aguar, Jyring and Whiteman 1963

A recreational analysis of Grand Portage Indian Reservation of the northern most portion of Minnesota's Lake Superior shoreline.

BACKGROUND TO THE GENERAL PLAN LAKE COUNTY, MINNESOTA

Lake County Planning Advisory 1964

A planning analysis of the county and projections of its needs for the future.

4. NEW YORK

A GRAPHIC COMPENDIUM OF PLANNING STUDIES

Albany, 1935

Presents graphically various inventory studies of New York State.

5. WISCONSIN

THE NATURAL RESOURCES OF WISCONSIN

December, 1956

An inventory of the economic resources of Wisconsin, dealing primarily with land and water resources.

BAYFIELD WISCONSIN PRELIMINARY PLANNING REPORT NUMBER I

1967

An inventory study focused on population and economy with some physical environment information.

WASHBURN WISCONSIN - PRELIMINARY PLANNING REPORT NUMBER I

Northwestern Wisconsin Regional Planning Commission 1970

An inventory study focused on physical environment (soils climate etc.), population and economy.

XV. LAND USE INVENTORIES

A. Great Lakes States

1. ILLINOIS

METROPOLITAN PLANNING GUIDELINES - PHASE ONE: BACKGROUND DOCUMENTS - LAND USE
Northeastern Illinois Planning Commission 1965
A land use survey study including study methodology.

THE CHICAGO - MILWAUKEE CORRIDOR
Cutler, Irving Evanston, Illinois, 1965
Contains data on shore type and use (limited description) population data, industry data, transportation etc. Includes summaries, trends and prospects for the corridor.

2. INDIANA

LAND USE SURVEY OF EAST GARY, INDIANA
Staehle, William and Associates 1966

3. MICHIGAN

EXISTING LAND USE AND DEVELOPMENTAL FACTORS
Muskegon County Metropolitan Planning Commission 1969
A report in five sections; including background, existing land use, zoning, other land use controls, and land use projections. Description of methodology used in collecting and analyzing data.

4. MINNESOTA

MINESOTA LANDWONERSHIP
Minnesota Department of Conservation 1964
Indicates federal and state ownership of land in Minnesota.

LAND USE
Duluth-Superior Metropolitan Area Planning and Transportation Study 1968
A land use inventory - analysis study of the Duluth-Superior area.

5. NEW YORK

CHAUTAUQUA COUNTY AT MID- DECADE, PART II, FACILITIES, UTILITIES AND
Chautauqua County Planning Board and Department of Planning 1968
An inventory study.

6. OHIO

EXISTING LAND USE INVENTORY ... NUMBER III OF A SERIES
Ottawa Regional Planning Commission 1969
An in depth study of land use in and around Port Clinton Ohio.

7. WISCONSIN

TECHNICAL RECORD

Southeastern Wisconsin Regional Planning Commission Serial

THE LAKE FRONT IN MILWAUKEE COUNTY

Milwaukee, 1940

A complete inventory of lake front land uses in Milwaukee with some recommendations for future use.

B. General

LAND USE INFORMATION

Clawson, Marion Baltimore, 1965

Critical survey of U.S. statistics including possibilities for greater uniformity. Includes information on what land use data is available from governmental sources and how complete that data is.

1. ONTARIO

WHO OWNS THE BEACHES OF LAKE ERIE

Jackson, John N. Ontario Naturalist, July, 1968, pp. 12-19

Provides some of the history and background involved in the very confusing issue of public vs. private ownership of the Ontario shore of Lake Erie.

XVI. RECREATION AND CONSERVATION INVENTORIES

A. Great Lakes States

1. ILLINOIS

TABLE OF PARKS AND PARK FACILITIES
Chicago Park District 1970

OPEN LAND IN METROPOLITAN CHICAGO
Miller, John J. B. 1962
Discusses need for open space in Chicago and also provides complete inventory of open space by county and township with descriptions, sizes and number of parcels.

2. MICHIGAN

PARK USERS SURVEY RECREATION IN THE DETROIT REGION, PART II
Detroit Metropolitan Area Regional Planning Commission 1959
A survey of park use in the Detroit area which treats eight parks.

3. MINNESOTA

OUTDOOR RECREATIONAL RESOURCES SURVEY AND ANALYSIS ST. LOUIS COUNTY MINNESOTA
Agur, Jyring, Whiteman, Moser Incorporation 1967

RECREATION SURVEY AND ANALYSIS - REGIONAL PLANNING AREA - MESABI AND VERMILION RANGES, MINNESOTA
Minnesota Department of Business Development 1964

PARKS AND RECREATION IN MINNESOTA MINNESOTA OUTDOOR RECREATION RESOURCES COMMISSION REPORT NUMBER XII
Minnesota Outdoor Recreation Resources Commission 1964
Site plans of parks in Minnesota.

4. OHIO

PARKS AND RECREATION - A PLAN FOR LORAIN COUNTY, REPORT NUMBER V
Lorain County Regional Planning Commission 1959
Recreation inventory and analysis for the cities, towns, and regions of Lorain County.

5. WISCONSIN

OUTDOOR RECREATION - NATURAL RESOURCE SURVEY OF BROWN COUNTY
Brown County Conservation Alliance 1963
An information report - one section includes existing water front facilities Information on number and types of boats.

B. General

LAKE ONTARIO BASIN - WATER ORIENTED OUTDOOR RECREATION

U.S. Department of the Interior, Bureau of Outdoor Recreation

Ann Arbor, Michigan,
May, 1967

A detailed and technical recreation analysis of Lake Ontario with enphasis upon water oriented and water enhanced activities and the effects of pollution on them.

XVII. GEOLOGY, SOILS, VEGETATION AND WILDLIFE INVENTORIES

A. Great Lakes Region

A NATURALIST IN THE GREAT LAKES REGION
Downing, Elliot R. Chicago, 1922
A book on the geology, flora and fauna of the Great Lakes Region.

GEOLOGY OF THE GREAT LAKES
Hough, Jack L. Urbana, 1958
A description of the geological history of the Great Lakes, including a discussion of the lakes at present (1958).

GREAT LAKES FAUNA, FLORA AND THEIR ENVIRONMENT: A BIBLIOGRAPHY
Van Oosten, John 1957
Bibliography of fishes, fishery etc. Mostly scientific papers.

B. Great Lakes

1. LAKE ERIE

ON THE CORRELATION OF MORAINES WITH RAISED BEACHES OF LAKE ERIE
Laverett, Frank Transactions of the Wisconsin Academy of Science, Arts, and Letters, 1883-1887, volume 8, pp. 233-240
Glacial geology of Lake Erie's Southern Shore.

2. LAKE MICHIGAN

RAIDED BEACHES OF LAKE MICHIGAN
Laverett, Frank Transactions of the Wisconsin Academy of Science, Arts, and Letters, 1883-1887, volume 7, pp. 177-192
Glacial geology of the southern shores of Lake Michigan.

3. LAKE SUPERIOR

MORAINES AND SHORE LINES OF THE LAKE SUPERIOR REGION
Leverett, F. U.S. Geology Survey Professional Paper 154-A, 1929
Early investigation of the shoreline of Wisconsin, Michigan's Upper Peninsula, and Minnesota for the purpose of mapping and geographical description.

C. Great Lakes States

1. ILLINOIS

SOILS OF ILLINOIS

Illinois, University and Soil Conservation Service 1967

Contains soil map of Illinois which describes the origin and type of soils throughtout the state.

2. INDIANA

THE SAND DUNES OF INDIANA

Bailey, Eli Stillamn Chicago, 1924

A book for laymen dealing with the Dunes, their formation, movement etc.

LAKE COUNTY INTERIM SOIL SURVEY REPORT AND SOIL SURVEY MAPS

Indiana Cooperative Extention Service 1966-1967

3. MICHIGAN

THE ECOLOGICAL RELATIONS OF THE VEGETATION ON THE SAND DUNES OF LAKE MICHIGAN

Cowles, Henry Chandler University of Chicago Press Chicago, 1899

An early ecological study of the sand dunes of Lake Michigan's eastern side with an emphasis upon those found in Indiana. A large number of good quality photographs with explanations.

THE CLIMAX FOREST OF ISLE ROYALE, LAKE SUPERIOR, AND ITS DEVELOPMENT

Cooper, William S. Botanical Gazette, volume 55, 1913, pp. 1-44, 115-140, 189-255

Discussion of the species and associations of forest vegetation on Isle Royale.

ISLAND LIFE

Hatt, Robert T. Bloomfield Hills, Michigan, 1948

Deals with fauna on islands in eastern Lake Michigan. Detailed listing of species and locations.

SOME REMARKS ON THE NATURAL HISTORY OF BEAVER ISLANDS

Strang, J. J. Smithsonian Report of 1854 (p. 282)

An account of the wildlife, their habit and the importance to the people of Michigan.

4. MINNESOTA

THE GEOLOGY OF THE DULUTH METROPOLITAN AREA

Schwartz, G. M. Minnesota Geology Survey Bulletin 33, 1949

Discusses the geology of the Duluth - Superior area with portions about the depth of Lake Superior, the composition of its beaches, and the origin and character of shoreline and inland land forms.

TIMBER RESOURCES OF MINESOTA - COOK COUNTY

Minnesota Office of Iron Range Resources and Rehabilitation 1962

An inventory of the types, amounts, and cuts of timber in this county bordering on Lake Superior.

THE FOREST VEGETATION OF THE APOSTLE ISLANDS, WISCONSIN

Beals, E. W., and Grant Cottam — Ecology, volume 41, pp. 743-750

A discussion of the vegetation of the Apostle Islands in Wisconsin.

THE ABANDONED SHORELINES OF EASTERN WISCONSIN

Goldthwait, James Walter — Wisconsin Geology and Natural History, Bull tin

A study of the shorelines of the lakes from which the Great Lakes evolved.

OCONTO COUNTY (WISCONSIN) SOIL AND WATER CONSERVATION NEEDS 1960-1975

U.S. Soil Conservation Service — 1959

A layman oriented inventory study.

SOIL SURVEY RECONNAISSANCE BAYFIELD COUNTY WISCONSI

U. S. D.A. Soil Conservation Service — Series, 1939 Issued, 1961

Includes profile descriptions and soils map.

D. GENERAL

POTENTIAL VEGETATION OF THE CONTERMINOUS UNITED STATES

Kuchler, August Wilhelm — Americal Geographical Society, New York, 1964

This book and the accompanying map describe vegetation which would exist today if man were removed from the scene and if the resulting plant succession were telescoped into a single moment.

SOILS AND LAND USE PLANNING

Unger, David G. — 1966

Papers presented at ASPO National Planning Conference 1966. Generalized comments on importance of soil surveys and planning.

APPENDIX I:

Questionnaire Sample and Tabulation

	MINNESOTA				NEW YORK				OHIO			
	REGIONAL	COUNTY	TOWNSHIP	MUNICIPAL	REGIONAL	COUNTY	TOWNSHIP	MUNICIPAL	REGIONAL	COUNTY	TOWNSHIP	MUNICIPAL
MAILED	3	3	4	0	1	9	45	1	3	7	29	1
RETURNED	2	1	1	-	1	5	22	0	3	4	12	1
PER CENT RETURNED	67	33	25	-	100	56	50	0	100	57	41	100
LAND USE PLANS	1		1		1	3	13		1	3	5	1
ZONING ORDINANCES	1		1		1	2	14		-	3	7	1
LAND MANAGEMENT POLICIES	1				1	-	4		-	1	-	-
CONSERVATION DISTRICTS	1					1	10		1	-	2	-
CONCERNED CITIZENS PLANNING ORGANIZATIONS	1		1		1	-	5		-	1	6	1
VEGETATION	1		1			1	3		-	-	-	-
TOPOGRAPHY	1		1		1	2	10		1	2	5	
SOILS	1		1		1	3	12		-	2	5	
WILDLIFE	1		1			-	8		-	-	-	
TRANSPORTATION AND UTILITY ROUTES	1		1		1	3	11		1	1	5	
LAND USE GROWTH PATTERNS	1		1		1	3	12		1	2	5	
ESTHETIC ANALYSIS						1	3		-	1	5	
HISTORIC AND CULTURAL FEATURES	1		1			1	9			-	-	
WATER QUALITY	1		1			2	15			1	5	
SOCIAL AND ECONOMIC CLASSIFICATION	1		1			1	6			1		

	ILLINOIS				INDIANA				MICHIGAN			
	REGIONAL	COUNTY	TOWNSHIP	MUNICIPAL	REGIONAL	COUNTY	TOWNSHIP	MUNICIPAL	REGIONAL	COUNTY	TOWNSHIP	MUNICIPAL
MAILED	1	2	6	1	1	3	6	0	5	57	197	48
RETURNED	1	0	0	1	1	1	3	-	2	23	45	27
PER CENT RETURNED	100	0	0	100	100	33	50	-	40	40	23	56
LAND USE PLANS					1				2	8	20	19
ZONING ORDINANCES					1				2	12	28	20
LAND MANAGEMENT POLICIES									1	3	8	1
CONSERVATION DISTRICTS									1	10	12	1
CONCERNED CITIZENS PLANNING ORGANIZATIONS									1	6	15	9
VEGETATION									1	3	7	-
TOPOGRAPHY					1				2	8	9	7
SOILS					1				2	11	11	5
WILDLIFE									-	1	1	-
TRANSPORTATION AND UTILITY ROUTES				1	1				2	2	5	9
LAND USE GROWTH PATTERNS				1	1				2	2	4	6
ESTHETIC ANALYSIS									1	1	2	4
HISTORIC AND CULTURAL FEATURES					1				-	6	7	3
WATER QUALITY									1	3	19	5
SOCIAL AND ECONOMIC CLASSIFICATION					1				-	5	5	3

	PENNSYLVANIA				WISCONSIN				ONTARIO			
	REGIONAL	COUNTY	TOWNSHIP	MUNICIPAL	REGIONAL	COUNTY	TOWNSHIP	MUNICIPAL	REGIONAL	COUNTY	TOWNSHIP	MUNICIPAL
MAILED	-	-	6	-	-	15	50	-	8	-	141	12
RETURNED	-	1	6	1	1	8	19	-	5	1	67	10
PER CENT RETURNED	-	100	100	-	100	53	38	-	63	100	48	83
LAND USE PLANS		1	3	1		4	6		3		15	3
ZONING ORDINANCES		1	6	1		7	15		3		19	3
LAND MANAGEMENT POLICIES		1	-	-		2	2		2		4	-
CONSERVATION DISTRICTS		1	1	-		5	8		2		15	1
CONCERNED CITIZENS PLANNING ORGANIZATIONS		1	2	1		3	2		1		1	-
VEGETATION		-	1	-		3	7		-		2	-
TOPOGRAPHY		1	2	-		4	7		1		4	1
SOILS		1	2	1		5	7		3		5	1
WILDLIFE		1	-	-		4	6		-		7	-
TRANSPORTATION AND UTILITY ROUTES		1	2	1		4	4		2		5	2
LAND USE GROWTH PATTERNS		1	3	-		4	7		2		4	2
ESTHETIC ANALYSIS		-	-	-		2	-		1		-	-
HISTORIC AND CULTURAL FEATURES		-	2	-		3	-		-		5	-
WATER QUALITY		1	3	1		2	3		2		8	-
SOCIAL AND ECONOMIC CLASSIFICATION		1	1	1		3	3		2		3	-

Identification No. _____

Please check (x) and forward in self-addressed envelope the information available or in preparation for shoreline lands within your district.

Land Use Plans	( )
Zoning Ordinances	( )
Land Management Policies	( )
Conservation Districts	( )
Concerned Citizens Planning Organizations	( )
Resource and Land Use Inventories	
Vegetation	( )
Topography	( )
Soils	( )
Wildlife	( )
Transportation & Utility Routes	( )
Land Use Growth Patterns	( )
Esthetic Analysis	( )
Historic & Cultural Features	( )
Water Quality	( )
Social & Economic Classification	( )

Please indicate other planning and resource management agencies that are involved in shoreline land planning.

_____

_____

_____

Thank you.

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