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DEPARTMENT OF NATURAL RESOURCES

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The Ohio Coastal Zone Management Program

First Year Report

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Prepared by

The Personnel of the Shoreland Management Section

A report of first year activities under a grant to the Ohio Department of Natural Resources from the Office of Coastal Zone Management (National Oceanic and Atmospheric Administration, Department of Commerce).

June, 1976

Ohio Dept. of Natural Resources

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Ohio Department of Natural Resources
Fountain Square · Columbus, Ohio 43224 · (614) 466-3770

June 1976

This report summarizes the first year activities of the Shoreland Management Section of the Ohio Department of Natural Resources under a grant from the Office of Coastal Zone Management (Department of Commerce, National Oceanic and Atmospheric Administration). It provides the informational base needed to carry forward a successful coastal management program for the Ohio shore of Lake Erie.

The Department of Natural Resources recognizes the recreational, aesthetic, and economic values of Lake Erie to Ohio. The coastal management program will assure the wise use of the shore area so that the citizens of Ohio may continue to receive the full benefits of this valuable resource. The program will address numerous problems along Lake Erie, including flooding and erosion, fish and wildlife habitat destruction, port and harbor development, water quality, access to the lake, and inconsistent, unwise use of the lake shore.

The activities of the coastal management program will provide the Department the framework studies necessary for the proper management of the resources of Lake Erie and its Ohio shorelands. This management program can now go forward in cooperation with coastal residents and their elected officials. The program will encourage rational and systematic development of the shore area recognizing that there is an optimum use of any given area based upon its physical characteristics and prior development.

This first year report sets the stage for the successful completion of a shoreland management program for the State of Ohio. It assures us and our future Ohio citizens that the unique resources of the shore area have been recognized.

Robert W. Teater

ROBERT W. TEATER
Director

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section 1

Overview: Issues and Problems

OVERVIEW: ISSUES AND PROBLEMS

The issues and problems associated with Lake Erie are as many as the natural and man-made processes in the shore zone. The entire Lake Erie basin has experienced drastic changes in the last 200 years and now shows ample evidence of deterioration. The lake has evolved from a pristine state to a condition considered undesirable by the public. People have gone so far as to label Lake Erie as "the most blatant example of the environmental crisis in the United States."[1] This created the erroneous idea that Lake Erie is "dead".

The problems that exist in the shore zone result principally from man's misunderstanding of the complexity of the shore zone and misuse of its resources. Wetlands have been altered and drained and vegetation and forests stripped from the land. Streams and rivers have been dammed and channelized. Large urban and industrial centers have grown up along the shore. Almost the entire shoreline has been developed in some manner. These changes result in enormous impacts on the area: air and water pollution, declining and/or deteriorated fish and wildlife habitat, the erosion of topsoil from the land, and loss of natural beauty.

A major aspect that confronts any program related to Lake Erie is the public's attitude concerning the lake and the shore zone. The lake has been given so much bad publicity that it is no longer considered a resource. Many perceive the lake as being dirty, oily, and dead. Such attitudes reflect distorted information. Lake Erie is still a major economic and recreational resource to the State of Ohio.

The Lake Erie Shoreland Management Program, supported by a grant from the Federal Office of Coastal Zone Management (Department of Commerce, NOAA) began in May, 1974. Under this program, a natural resource inventory assessed issues and problems in the shore zone. In the inventory, opinions and data were sought from a number of persons with diverse interests: experts in the universities, members of wildlife and conservation organizations, local government officials, private citizens, and other staff members within the Department of Natural Resources. The program reviewed many reports on resource problems in the shore zone. The Citizen Participation portion of the program and its public workshops also provided suggestions to the program.

From the first year program many issues and problems of the shore zone emerged. Each of the counties faces many of these problems. The focus of attention in the first year Shore Zone Management Program was upon the natural resources in the lake/land interface zone.

[1] Commoner, Barry, *The Closing Circle* (New York: Knopf, Inc.), 1971 p. 94.

General Issues and Problems in the Shore Zone

Land-Water Interface

- erosion of the beaches and bluffs
- flooding of lake and river plains
- preservation of natural or scenic shoreline
- low quality of beaches
- alteration of shore by construction of erosion or flood protection structures
- high water levels of Lake Erie

Declining fish and wildlife resources and habitat

- declining commercial fisheries
- decreasing amounts of forest and wetlands

Protection of unique and natural areas

Protection of historical and archeological sites

Siting of power facilities

Air quality

Harbor dredging activities

Public's negative attitude about Lake Erie

Development of key areas in the coastal zone

- prime agricultural land
- critical erosion areas
- lake and river flood plains
- wetlands and forest
- unique areas
- shoreline

Recreation facilities

- access to existing major facilities
- maintenance of facilities
- public access to lake/land interface, especially near and in urban areas
- traffic problems associated with the recreation areas

Water quality

- sedimentation of rivers and Lake Erie
- nutrients in the water
- thermal pollution
- urban and rural runoff
- anoxic areas of the lake
- funding for construction and maintenance of sewage treatment plants and storm water systems
- turbidity of the water
- soil erosion resulting from agricultural practices

Shore zone aesthetics

Possible future development of offshore oil and gas reserves

Dredging for sand and gravel

- conflict with recreation activities
- depletion of littoral sediment supply
- effects on erosion

Mineral deposits

- reclamation
- development of areas overlying mineral deposits

Certain issues and problems are more common to some areas in the shore zone than others. This can be explained by the varying physical character of the shoreline. Below is a list of specific problems and issues in each county which relate to the natural resources in the shore zone.

LUCAS COUNTY

Dredging activities at Toledo Harbor

Information on the ecological systems and significance of Maumee Bay

Severe flooding along Lake Erie

Maintenance of dikes along Lake Erie

Pollution of Maumee River

Development of agricultural land

Alteration of wetlands

8.8 miles of critical erosion

Protection of migratory waterfowl habitat

Maumee Bay Causeway Proposal

Conservation of islands in Maumee River

Problems associated with agricultural runoff

- silt and sediment runoff
- nutrient runoff

WOOD COUNTY

Pollution of Maumee River

Development of agricultural land

Conservation of islands in Maumee River

Problems associated with agricultural runoff

- silt and sediment runoff
- nutrient runoff

OTTAWA COUNTY

Severe flooding along Lake Erie

Dredging activities at Port Clinton Harbor

Public versus private development of Lake Erie islands

Nuclear power plant development

Alteration of wetlands

10.8 miles of critical erosion

Protection of migratory waterfowl habitat

Maintenance of dikes along Lake Erie

Transportation problems associated with Lake Erie islands and other recreational areas

Lack of information on the ecological systems and significance of Sandusky Bay

Problems associated with agricultural runoff

- silt and sediment runoff
- nutrient runoff

Conservation of islands in Sandusky Bay

SANDUSKY COUNTY

Severe flooding along bay

Alteration of wetlands

Nuclear power plant siting

4.1 miles of critical erosion

Protection of migratory waterfowl areas

Maintenance of dikes

Lack of information on the ecological systems and the significance of Sandusky Bay

Problems associated with agricultural runoff

- silt and sediment runoff
- nutrient runoff

ERIE COUNTY

Alteration of wetlands

Nuclear power plant development

Public versus private development on Lake Erie islands

8.2 miles of critical erosion

Severe flooding along Lake Erie

Protection of migratory waterfowl habitat

Dredging activities at:

- Sandusky Harbor: difficulty in locating potential site for spoil disposal
- Huron Harbor: site construction associated with spoil disposal
- Vermilion Harbor

Lack of information associated with Cedar Point recreational area and the Lake Erie islands

Development on Cedar Point Peninsula

Problems associated with agricultural runoff

- silt and sediment runoff
- nutrient runoff

LORAIN COUNTY

1.2 miles of critical erosion

Dredging activities at Lorain Harbor

CUYAHOGA COUNTY

Low water quality of the Cuyahoga River and the Lake shoreline

Complete development of shoreline

3.0 miles of critical erosion

Jetport proposal

Dredging activities at:

- Rocky River Harbor
- Cleveland Harbor

Development of the Cuyahoga Valley National Recreational Area

Problems associated with the Cuyahoga Valley Industrial Complex

LAKE COUNTY

Salt intrusion of Mentor Marsh

12.7 miles of critical erosion

Flooding in Eastlake area (Operation Foresight dike)

Nuclear power plant development

Dredging activities at Fairport Harbor

Continued development of shoreline

ASHTABULA COUNTY

Dredging activities at:

- Ashtabula Harbor
- Conneaut Harbor

6.3 miles of critical erosion

Potential development of a new steel plant in northeast Ashtabula County

section 2

Introduction

INTRODUCTION

The Need for Coastal Zone Management

Perhaps no area on earth is so inherently ripe for conflict as the land/water interface of the coastal zone. The coastal zone is rich in a variety of natural, commercial, recreational, industrial, and aesthetic resources of immediate and potential value to the well-being of the nation.

The increasing and competing demands on the lands and waters of our coastal zones, including requirements for industry, housing, commerce, power production, waste disposal, and recreation, have resulted in the destruction of coastal resources and permanent changes in complex coastal ecosystems.

In light of these increasing demands and in recognition of the inability of state and local governments to control their coastal zones, Congress enacted the Coastal Zone Management Act in 1972. This Act provides the coastal states with the financial and legislative incentives necessary for the proper protection and management of their coastal zones. The Act delegates to states the authority to develop management programs for their coastal zones, including unified policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance.

Coastal Zone Management in Ohio

In accordance with the guidelines of the Act, former Governor Gilligan designated the Ohio Department of Natural Resources as the lead agency responsible for developing and implementing the Ohio Lake Erie Shoreland Management Program.

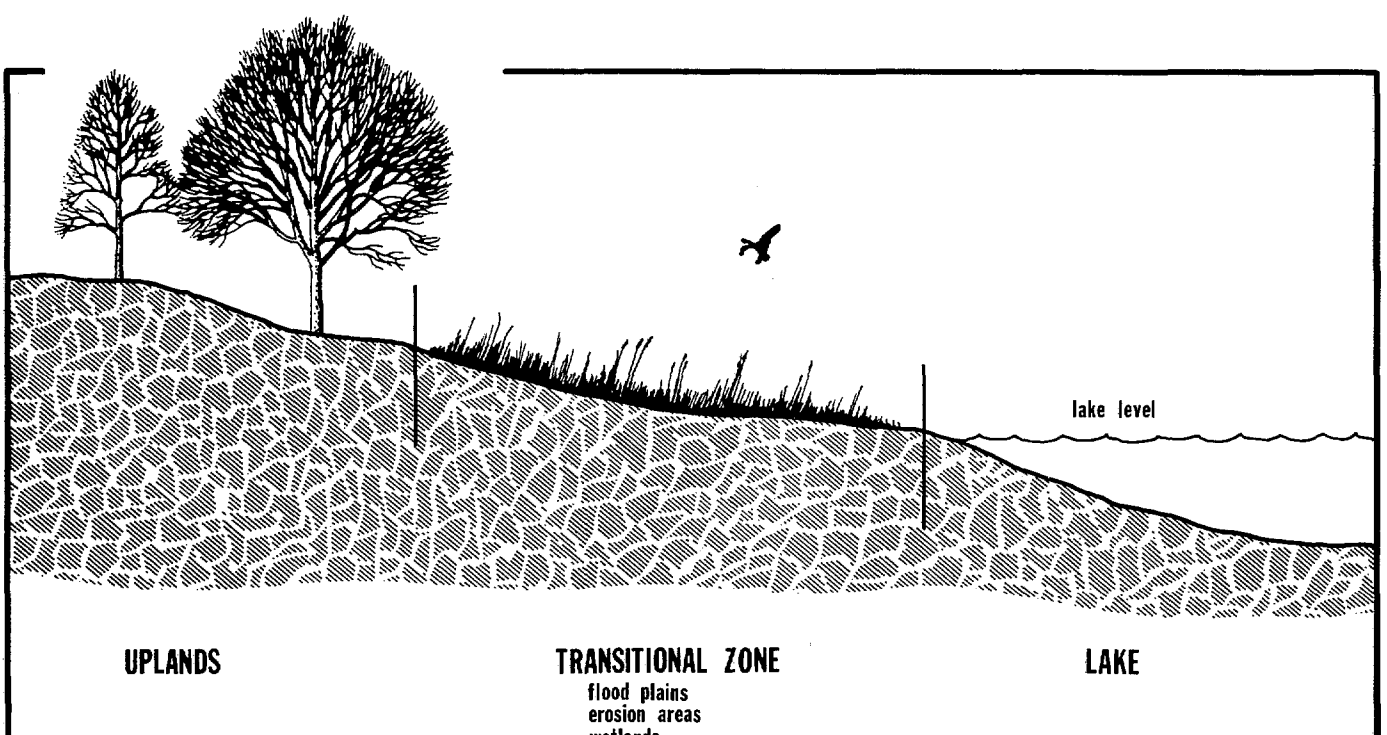
Two questions were immediately perceived as being critical to the development of Ohio's Shoreland Management Program:

1. What precisely were the coastal-related problems of Lake Erie?
2. What was a practical framework of a management response?

To respond to these questions, the project was divided into five functional areas:

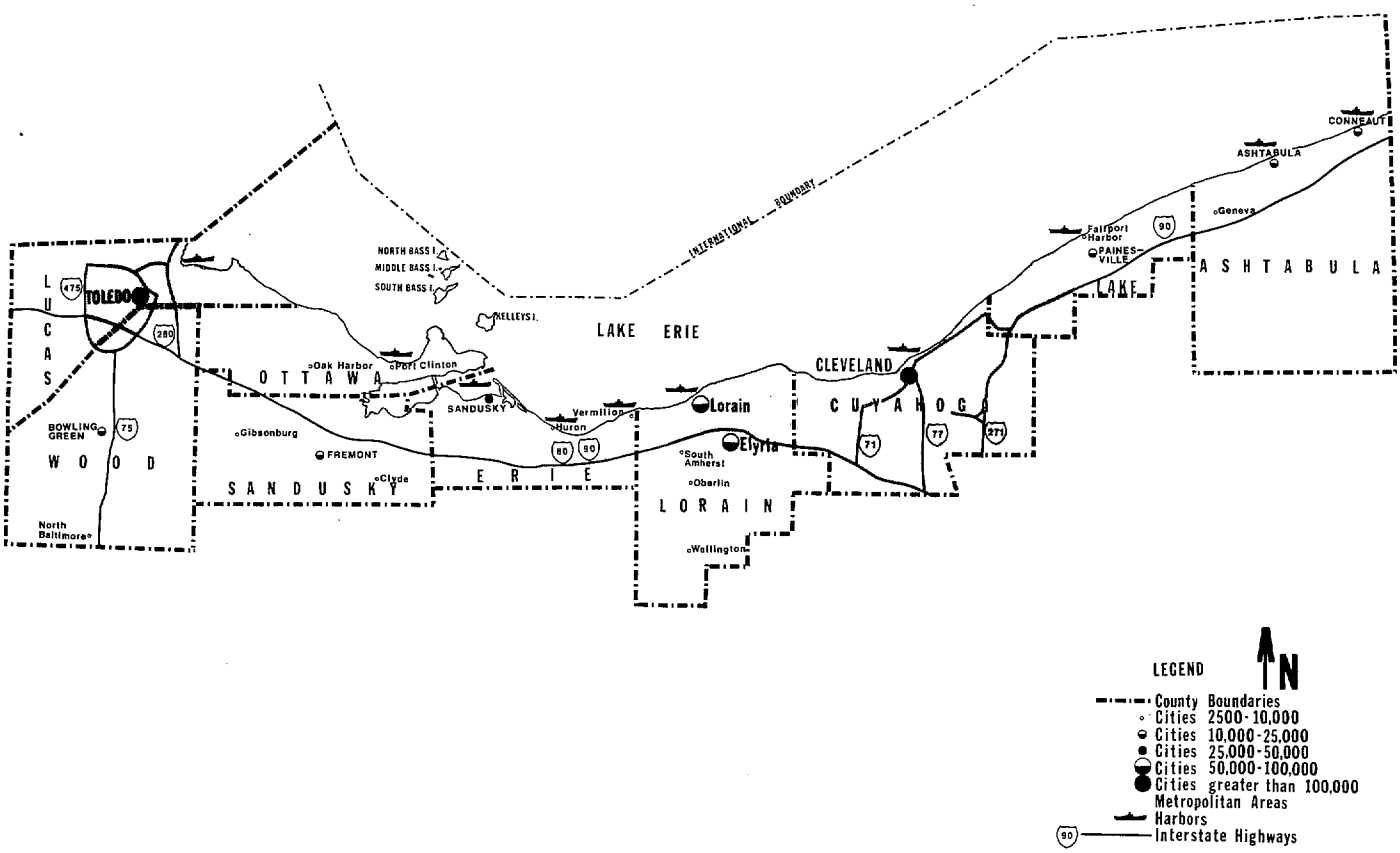
1. Natural Resources Analysis
2. Social and Economic Analysis
3. Coordination and Intergovernmental Analysis
4. Citizen Participation
5. Legal and Administrative Analysis

For the purpose of study, Ohio's coastal zone was defined as the nine counties along Lake Erie. Although the entire area of the counties is included in this zone, the Shoreland Management Program concerns itself mainly with the land/water interface of the shoreline itself, along with the associated wetlands, bays, and estuarine areas of Lake Erie, as illustrated by the following diagram



SCHEMATIC SURFACE PROFILE OF THE COASTAL SYSTEM

SHORE ZONE PLANNING REGION



section 3

History of the Shore Zone

HISTORY OF THE SHORE ZONE

Regional Context

The presence of Lake Eire on Ohio's northern border has dramatically affected the history and development of the State of Ohio. While the development patterns of most states reflect a reaction to the presence of natural barriers, few states can list such natural barriers as major competitive advantages. Ohio is fortunate to be one of these few.

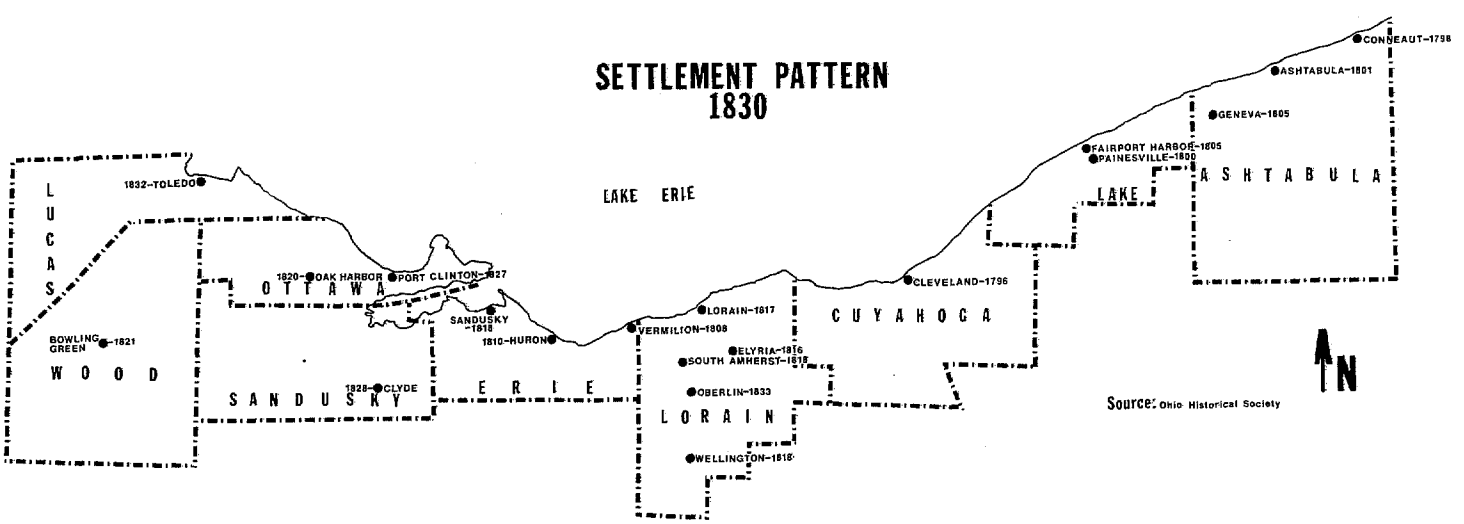
Three conditions, two of them physiographic, largely account for the developmental significance of Lake Erie. *First,* Lake Erie is a central link in the Great Lakes/St. Lawrence River basin system. This system extends inland from the Atlantic over 2000 miles and includes over 95,000 square miles of water surface. More important, the Great Lakes system includes some 37,000 miles of shoreline, not including tributaries. The *second* important physiographic condition is geologic in nature. To a westward-encroaching young nation, the Appalachian Mountains represented a significant deterrent to westward migration. Any natural route which eliminated the necessity for crossing these mountains was well received by Indians, traders, farmers, and settlers alike. Such a natural route had been formed by the Pleistocene glaciers as they carved out the Great Lakes basin, leaving gently rolling lake plains in their wake. These plains formed a natural funnel connecting the interior lowlands, still in a wilderness state, with the coastal plains of the urbanizing east. To the north lay the Laurentian uplands, to the south, the Appalachian plateau. The *third* condition was a simple fact of economics. Surface water transportation had long been recognized as the cheapest form of moving bulk-goods over long distances. While this was an important advantage to a pre-combustion or pre-steam engine society faced with moving bulk goods by foot or by animal train, the real significance of the advantage did not emerge until the development of the steel industry.

These three factors, the Great Lakes system, the lake plains funnel, and the economics of water transport were the key elements in events which led to the development of the Ohio shoreline.

Early Settlement

Three groups, the British, Indians, and the French, dominated early shore zone history. The common bond among the three groups was the fur trade. Besides having an abundance of pelt-bearing animals, northern Ohio served as a major trapping crossroads, funneling the large Canadian fur market into the southern oriented Mississippi system or the eastern oriented lake plain route. When the American Revolution firmly established the Mississippi River as the western boundary, a number of trading outposts and settlements already dotted the Lake Erie shoreline. By 1800, these included Buffalo, Erie, Cleveland, and Ft. Defiance (Toledo), with Akron and Fort Wayne highly dependent upon the lake villages for economic support.

The eastern half of Lake Erie developed faster than the western half. This was due largely to the presence of a vast glacial lake plain, known as the Black Swamp, which covered much of the western shore. It was not until the arrival of German immigrants, with their knowledge of the mechanics of swamp drainage, that the area's potential was fully recognized. Prior to the drainage of the major swamp areas, most immigrants chose to pass through the swampland in favor of the drier soils of central Ohio.



Two cities were founded on the lake shore, however, which were destined for great prominence in state and national affairs. These were Cleveland and Toledo.

In 1796, Moses Cleaveland founded an outpost, called Cleaveland (later changed to Cleveland), at the mouth of the Cuyahoga River, which by 1800 boasted around 600 inhabitants. The first settlers were primarily discontented New England farmers and Revolutionary War veterans attracted by the promise of cheap, fertile land. For generations, Cleveland and villages east had a "displaced" New England attitude, reflecting the geographic heritage of many of its inhabitants. Cleveland's growth was not remarkable in its early decades, lagging behind most of the Western Reserve counties and villages. However, with the coming of the railroads in 1837, the growth picture rapidly changed. Cleveland's potential as a major transfer point in the exchange of natural resources from the interior "wilderness" for the finished goods produced by the industrializing east was quickly recognized. The completion of the New York Erie Canal in 1856 solidified this position.

The joining of the canal with the rail system established a major transportation network which connected the northeast, the mid-Atlantic and the southeastern states with the port cities of Lake Erie. With the increasing demand for natural resources for an industrializing nation and the subsequent discovery of large iron ore deposits in the upper Great Lakes region, the foundations for Lake Erie coastal development were laid.

Toledo was the last of Ohio's large cities to develop. This was due to a complex group of factors. Among these were the presence of Indian reservations, the Black Swamp, and Federal government land sales policies. Incorporated in 1837, Toledo was little more than an outpost until the Erie Canal system reached it around 1845. After 1860, railroads took on a more prominent role in encouraging urban growth. By 1900, twenty-four railroads converged at Toledo. Grain dealers were the first to recognize the economic advantages of good canals, railroads, and lake ports located together in one urban area. Toledo rapidly became a major grain transfer point. However, the single most important event in drawing Toledo into the Great Lakes transportation/industrial complex was the formation of the Toledo-branch of Libby-Owens Glass Company in 1888. Originally attracted by the relative abundance of natural gas in the area, Libby-Owens moved into the automotive support industry, thereby establishing a solid link with the rapidly industrializing cities of Cleveland and Detroit.

Geographic location is the key word in the history of shoreline development. The geographic proximity of coal and iron ore to the lake, the emergence of Detroit as the major world automotive manufacturing center, the development of vast transportation networks in the region, and the completion of the Saint Lawrence Seaway were all important factors of development. To a large extent, the present development patterns along the coast are direct extensions of past accommodation to these interrelated urbanizing forces.

section 4

First Year Program

OHIO'S FIRST YEAR COASTAL ZONE PROGRAM

Natural Resource Analysis

The natural resource inventory of Ohio's shore zone was undertaken to establish a baseline of natural resource information and to identify the "key areas", i.e. areas of particular concern, in Ohio's shore zone. The natural resource baseline also provides data necessary to interpret the land's capability for supporting specific land uses. The inventory and the information from the land capability analyses will provide decision-makers with the necessary physical information to make sound decisions in the shore zone.

Key area identification is an integral component of Ohio's Shoreland Management Program. A major goal of the natural resource analysis subprogram was to identify and evaluate key areas in the Ohio shore zone. Key areas include:

Vital Areas - Serve functions which may be vital to maintaining biologic, hydrologic, and physiographic coastal systems (including coastal wetlands, estuaries, and selected habitat).

Unique Areas - May be ecologically, hydrologically, biologically, or geographically significant and are unique in the sense that the areas are relatively undisturbed and few such areas exist in the coastal zone (including historic and archaeologic sites, some coastal wetlands, natural areas, and scenic areas).

Key Resource Areas - Are geographic areas which contain economically significant mineral, biologic, or hydrologic resources, including oil, gas, sand, gravel, other minerals, commercial and game fish and wildlife, and potable water.

Hazard Areas - Are areas where natural processes are active or potentially active and pose a direct or potential threat to life and property, including the approximate 100 year river flood plains and the approximate Lake Erie 100 year flood prone areas as defined by the United States Geological Survey (USGS), and critical shoreline erosion areas.

The first year of this project was devoted to identifying and gathering existing information. The purpose of this initial inventory was to identify the availability and utility of existing data; to identify gaps in the necessary data, thus, suggest future studies; and to make a preliminary delineation and evaluation of the key areas in the shore zone necessary for management.

Method

An environmental analysis method was used for the natural resource inventory. Simply, environmental analysis means studying Ohio's shore zone as a natural system, recognizing that the natural elements which compose the region also have a social value. Ohio's shore zone can be described in terms of its natural elements including geology, soils, water, climate, plants, and animals. Depending upon the combination of variables at a specific location, the land's capability for use may vary. Some land areas may be better suited than others for cities, agriculture, or recreation. Similarly, some places should not be developed because they might be hazardous to life and property. The result of this method is an understanding of the resources and processes of the shore zone so that key areas from the state's perspective, can be identified and the capabilities of the land can be determined for prospective land uses.

The environmental analysis involved several steps. The first step in the inventory was to determine the types of data necessary to accomplish the objectives of the first year study. The list of data that were collected was derived from natural resource inventories completed by other states and private firms, and from experience in Ohio's shore zone.

In the second step of the natural resource inventory, the staff consulted with experts in the appropriate disciplines. Suggestions were sought concerning the overall approach to the inventory, the types of data necessary in such analysis, and, more specifically, sources of data with which these experts were familiar. Other natural resource information was collected from library research, published bibliographies, and local, regional and state agencies.

Reports were analyzed for the compatibility of the maps and the consistency of the data across the entire shore zone. The data collected were analyzed for their utility with emphasis placed on county and/or regional reports that had a description of the problems and areas involved. When compatible, the natural resource data were transferred to base maps and kept in data files.

A base map of common scale was necessary to standardize the incoming data. USGS seven and one-half minute topographic maps, at a scale of 1:24,000, or one inch equals 2,000 feet, were used as base maps. General data were delineated at a scale of one inch equals two miles on county maps adapted from the Ohio Department of Transportation map series. The 1:24,000 scale base maps were of sufficient detail for the regional study but were sometimes at too small a scale to accurately display specific information not included on the base maps.

Natural Resource Matrix

The purpose of this matrix (see Table 1) is threefold. First, the matrix illustrates the sources of information and data collected during the first year. Next, the matrix shows the availability and utility of the data for each county in the nine county study area. Also, the matrix identifies where data gaps exist and where additional research should be conducted. The utility of the available information has been classified into three categories. The explanation of the categories follows:

1. Available data are sufficient for detailed analysis:
   Data are available in a form which can be used for a detailed environmental analysis.
2. Available data are insufficient for detailed analysis:
   Data may be available but are in such a form that they cannot be directly used for a detailed environmental analysis.
3. Available data are only partially sufficient for detailed analysis:
   Data are available in various forms from one or more sources. Only some of the data are in a form which can be used for a detailed environmental analysis.

AVAILABILITY AND UTILITY OF DATA FOR DETAILED RESOURCE ANALYSES

DATA AVAILABILITY BY COUNTY; DATA SOURCES: LOCAL, REGIONAL

	DATA AVAILABILITY BY COUNTY									DATA SOURCES: LOCAL			REGIONAL					
	ASHTABULA	CUYAHOGA	ERIE	LAKE	LORAIN	LUCAS	OTTAWA	SANDUSKY	WOOD	COUNTY ENGINEERS	COUNTY &/OR REGIONAL PLNG. COMM.	METROPOLITAN PARK DISTRICTS	EASTGATE DEV. & TRANS. AGENCY	GREAT LAKES BASIN COMM.	GREAT LAKES FISHERY COMM.	NORTHEAST OHIO AREAWIDE COORD. AGENCY	TOLEDO METRO. AREA COUNCIL OF GOV.	TOLEDO REG. AREA PLAN FOR ACTION
AERIAL PHOTOGRAPHY	○	○	○	△	○	○	○	○	○	○	○					○	○	
AIR QUALITY	○	○	○	○	○	○	○	○	○									
BEACHES	○	○	○	○	○	○	○	○										
CLIMATIC DATA	△	△	△	△	△	△	△	△	△									
COLD WATER STREAMS	△		△	△				△										
CULTURAL FEATURES	△	△	△	△	△	△	△	△	△									
ESTUARIES	○	○	○	○	○	○	○	○	○									
EXISTING LAND USE	○	○	○	△	○	○	○	○	○	○	○					○		
FEDERAL LANDS	◎	◎	◎	◎	◎	◎	◎	○	○									
FISH AND WILDLIFE	◎	◎	◎	◎	◎	◎	◎	◎	◎					◎	○			
GEOLOGICAL DATA	○	◎	◎	△	○	◎	◎	○	◎		◎			○				◎
GROUND WATER RESOURCES	◎	△	◎	△	◎	◎	◎	◎	◎									◎
LAKE ERIE DEPOSITIONAL AREAS	◎	◎	◎	◎	◎	◎	◎	◎	◎									
METROPOLITAN PARKS	○	△	△	△	△	△	○	○	○			△						
MINERAL RESOURCES	○	◎	◎	△	○	◎	◎	○	○					◎				◎
NATIONAL PARK		△																
NATIONAL WILDLIFE REFUGES						△	△											
NATURAL AREAS (DESIGNATED & POTENTIAL)	◎	◎	◎	◎	◎	◎	◎	◎	◎									
NUCLEAR POWER PLANT SITES			△	△			△											
OTHER STATE LANDS	△	◎	△	△	△	◎	△	○	○									
OTHER UNIQUE ENVIRONMENTAL AREAS	○	○	◎	○	◎	◎	◎	○	○									
POLITICAL BOUNDARIES	△	○	△	△	△	△	△	△	△	◎								
PUBLIC FISHING AREAS	△		△		△	△	△	△	△									
RARE AND ENDANGERED SPECIES	○	○	○	○	○	○	○	○	○									
RECREATIONAL AREAS (OTHERS)	△	△	△	△	△	△	△	△	△									
RIVER FLOOD PLAINS	◎	◎	◎	◎	◎	◎	◎	◎	◎									
SCENIC RIVERS	△			△	△			△	△									
SELECTED WILDLIFE HABITAT	◎	◎	◎	◎	◎	◎	◎	◎	◎									
SHORE AREAS PRONE TO EROSION	△	△	△	△	△	△	△	△						○				
SHORE AREAS PRONE TO FLOODING	◎	◎	△	◎	△	△	△	△										
SLOPE MAPS	△	○	△	△	△	○	○	○	△									
SOIL DATA	△	○	△	△	△	○	○	○	△									
SPOIL DISPOSAL SITES		△	△	△	△	△	△											
STATE FOREST						△												
STATE GAME MANAGEMENT AREAS	△		△		△	△	△											
STATE NURSERIES								△										
STATE PARKS	△		△	△	△	△	△	△	△									
STATE WILDLIFE REFUGE						△	△											
STRUCTURES ON LAKE ERIE	○	○	○	○	○	○	○	○	○									
TRANSPORTATION FACILITIES	△	△	△	△	△	△	△	△	△									
UNIQUE GEOLOGICAL AREA	○	○	○	○	○	○	○	○	○									
VEGETATIVE COVER	○	○	○	△	○	○	○	○	○									
WATER QUALITY	◎	◎	◎	◎	◎	◎	◎	◎	◎									
WATER & SEWER SERVICE AREAS	○	△	○	○	△	○	○	○	○		○					△	○	
WATERSHED (BASIN) DELINEATION	○	○	○	○	○	○	○	○	○		△							
WETLANDS	◎	◎	◎	◎	◎	◎	◎	◎	◎									

DATA SOURCES: STATE

	AUDITOR OF STATE	BOWLING GREEN STATE UNIV.	CENTER FOR LAKE ERIE AREA RESEARCH	CLEVELAND STATE UNIV.	JOHN CARROLL UNIV.	OHIO ADJUTANT GENERAL	OHIO AGRICULTURAL RESEARCH & DEV. CTR.	OHIO BIOLOGICAL SURVEY	OHIO DEPT. OF IND. RELATIONS	OHIO DEPT. OF MENTAL HEALTH & RETARDATION	OHIO DEPT. OF NATURAL RESOURCES	OHIO DEPT. OF TRANS.	OHIO EPA	OHIO HISTORICAL SOCIETY	OHIO POWER SITING COMM.	OHIO STATE UNIV. MUSEUM OF ZOOLOGY	UNIV. OF TOLEDO
AERIAL PHOTOGRAPHY											◎	○					
AIR QUALITY											○		○				
BEACHES											○						
CLIMATIC DATA							△										
COLD WATER STREAMS													△				
CULTURAL FEATURES														△			
ESTUARIES			○														
EXISTING LAND USE											△						
FEDERAL LANDS																	
FISH AND WILDLIFE											◎						
GEOLOGICAL DATA		◎									◎						
GROUND WATER RESOURCES											◎						
LAKE ERIE DEPOSITIONAL AREAS											◎						
METROPOLITAN PARKS																	
MINERAL RESOURCES									◎		◎						
NATIONAL PARK											△						
NATIONAL WILDLIFE REFUGES											△						
NATURAL AREAS (DESIGNATED & POTENTIAL)											◎						
NUCLEAR POWER PLANT SITES															△		
OTHER STATE LANDS	◎	◎		△		△				○		◎					◎
OTHER UNIQUE ENVIRONMENTAL AREAS											◎						
POLITICAL BOUNDARIES											◎						
PUBLIC FISHING AREAS											△						
RARE AND ENDANGERED SPECIES											○					△	
RECREATIONAL AREAS (OTHERS)											△						
RIVER FLOOD PLAINS											◎						
SCENIC RIVERS											△						
SELECTED WILDLIFE HABITAT					◎						◎					◎	
SHORE AREAS PRONE TO EROSION											△						
SHORE AREAS PRONE TO FLOODING																	
SLOPE MAPS											◎						
SOIL DATA											◎						
SPOIL DISPOSAL SITES											△						
STATE FOREST											△						
STATE GAME MANAGEMENT AREAS											△						
STATE NURSERIES											△						
STATE PARKS											△						
STATE WILDLIFE REFUGE											△						
STRUCTURES ON LAKE ERIE											○						
TRANSPORTATION FACILITIES												△					
UNIQUE GEOLOGICAL AREA											○						
VEGETATIVE COVER											△						
WATER QUALITY													◎				
WATER & SEWER SERVICE AREAS																	
WATERSHED (BASIN) DELINEATION											○						
WETLANDS											◎						

DATA SOURCES: FEDERAL, PRIVATE, OTHERS

	FEDERAL: NAT. AERONAUTICAL & SPACE ADMIN.	U.S. ARMY CORPS OF ENGR.	U.S. COAST GUARD	U.S. DEPT. OF AGRICULTURE	U.S. DEPT. OF COMMERCE	U.S. EPA, REG. IV	U.S. FISH & WILDLIFE SERVICE	U.S. GEO. SURVEY	U.S. SOIL CONSERVATION SERVICE	PRIVATE: BURGESS & NIPLE, LTD.	FINKBEINER, PETTIS & STROUT ENGINEERS	FLOYD G. BROWN & ASSOC., LTD.	PARKINS, ROGERS, & ASSOC.	SAMBORN, STEKEETEE, OTIS & EVANS ENGR.	OTHERS	
AERIAL PHOTOGRAPHY		○		○				○	○							
AIR QUALITY						○										
BEACHES																
CLIMATIC DATA					△											
COLD WATER STREAMS																
CULTURAL FEATURES																
ESTUARIES																
EXISTING LAND USE										○	○	○	○	○		
FEDERAL LANDS	△	◎	◎					△								
FISH AND WILDLIFE																
GEOLOGICAL DATA																
GROUND WATER RESOURCES																
LAKE ERIE DEPOSITIONAL AREAS																
METROPOLITAN PARKS																
MINERAL RESOURCES								◎	◎							
NATIONAL PARK																
NATIONAL WILDLIFE REFUGES							△									
NATURAL AREAS (DESIGNATED & POTENTIAL)																◎
NUCLEAR POWER PLANT SITES																
OTHER STATE LANDS																
OTHER UNIQUE ENVIRONMENTAL AREAS																
POLITICAL BOUNDARIES																
PUBLIC FISHING AREAS																
RARE AND ENDANGERED SPECIES							△	○								
RECREATIONAL AREAS (OTHERS)																
RIVER FLOOD PLAINS		◎						◎								
SCENIC RIVERS																
SELECTED WILDLIFE HABITAT															◎	
SHORE AREAS PRONE TO EROSION																
SHORE AREAS PRONE TO FLOODING								◎								
SLOPE MAPS																
SOIL DATA																
SPOIL DISPOSAL SITES																
STATE FOREST																
STATE GAME MANAGEMENT AREAS																
STATE NURSERIES																
STATE PARKS																
STATE WILDLIFE REFUGE																
STRUCTURES ON LAKE ERIE					○											
TRANSPORTATION FACILITIES																
UNIQUE GEOLOGICAL AREA																
VEGETATIVE COVER																
WATER QUALITY							○									
WATER & SEWER SERVICE AREAS																
WATERSHED (BASIN) DELINEATION																
WETLANDS								○								

△ AVAILABLE DATA IS SUFFICIENT FOR DETAILED ANALYSES

○ AVAILABLE DATA IS INSUFFICIENT FOR DETAILED ANALYSES

◎ AVAILABLE DATA IS ONLY PARTIALLY SUFFICIENT FOR DETAILED ANALYSES

Table 1

Natural Resource Maps

Natural resource maps have been compiled to show the geographic distribution of the resource data available in the shore zone. There are nine maps in this series, one for each county at a scale of one inch to one mile. The base maps were adapted from the USGS seven and one half minute topographic maps. These maps illustrate the type of information currently available on the distribution of resources in each county.

Several problems arose in the process of delineating the existing resource data on the maps. One problem was the variability of the data, depending upon which basis the data were collected. Variability in type, amount, or quality of data was apparent across the shore zone. Another problem was that some of the information, especially for fish and wildlife, was not in a form compatible with the resource map. The wildlife maps often depicted the probability of species occurrence. Also, other information was on a general scale and not useful for our purposes.

The maps are not a final plan or inventory. They represent only the available information, often general, that has been collected to date and is in a form that is compatible with the best maps. The inventory will be continued for the next two years of the program with special studies being initiated during that time. Final inventory maps of the shore zone will be available at the end of the third year.

The natural resource maps illustrate the data for two aspects of the program. First, a substantial amount of information identifies areas of particular concern (key areas) in the shore zone. The key areas are considered to be those areas and activities that are of more than local concern and/or in which the state has an interest in their current or future use.

The other aspect of the program identifies the existing information to be used in a land capability analysis (see page 19 for an explanation of Ohio Capability Analysis Program [OCAP]). Essential to such an analysis is detailed information on physical properties, land use, land cover, and other related parameters. An OCAP study is now complete for Lake County. Detailed capability analyses will be completed for the remaining eight shore zone counties in the next two years.

The following is a list and a brief explanation of the categories that have been mapped. Twenty-seven resource units were chosen for the natural resource county maps. The natural resource data were grouped, when possible, into the twenty-seven map units and then delineated on the detailed county maps:

Cold Water Streams

- streams designated as cold water fisheries streams by the Ohio Environmental Protection Agency (OEPA)

Cultural Features

- historic, archaeologic, or cultural sites

Dedicated Natural Areas

- natural areas designated by the State of Ohio

Erosion Areas

- hazard areas where there is either a relatively high shoreline recession rate or where erosion is threatening existing development

Estuaries

- the boundary of the upstream extent of the mixing of water from the rivers and the water from Lake Erie

Estuarine Sanctuary

- proposed site for an estuarine sanctuary authorized by the Coastal Zone Management Act of 1972, Section 312

Federal Lands

- federally-owned lands in the coastal zone

Fish and Wildlife Management Areas

- fish and wildlife areas managed by the state and public fishing areas managed in cooperation with the Ohio Division of Wildlife

Flood Prone Areas

- lake and river hazard areas that are prone to flooding, delineated by the USGS

Low Water Quality Areas

- areas classified by OEPA as appropriate only for industrial water supply and secondary contact recreational uses, i.e. Lower Cuyahoga River

Marginal Lands

- areas which are of poor capability for residential-weight development based on engineering properties of the soils and bedrock; based on generalized soil maps

Mined Lands

- land currently being mined or previously mined land that has been abandoned

National Park

- Cuyahoga Valley National Recreational Area

Nuclear Power Plant Sites

Other Unique Environmental Areas

- any other unique feature not in any of the above cagetories such as caves, scientific collecting areas, and natural educational areas

Overlap Areas

- areas in which two or more of the above categories occur in the same geographic area

Potential Natural Areas

- areas that are on the registry of natural areas but are not yet dedicated

Primary Agricultural Lands

- soil associations classified as Soil Conservation Service's capability classes I and II; based on generalized soil maps

Recreation Areas (metropolitan and state parks)

- the major recreation areas

Recreation Areas (other)

- township, city, or roadside parks

Scenic River Corridors

- scenic, recreational, or wild river corridors designated by the State of Ohio

Selected Habitats

- habitat for rare and endangered species and fish propagation areas

Spoil Disposal Sites

- potential areas, areas under construction, and areas being filled

State Forests and Nurseries

State Lands (other)

- state owned and/or managed areas that do not fall into any of the above categories

Township Boundaries

Wetlands

- areas designated as wetlands by the USGS

Renewable/Non-Renewable Resources

The coastal zone resources have been categorized as renewable or non-renewable. Non-renewable resources are defined as stock resources such as mineral deposits, fossil fuels and available land which are essentially fixed in quantity and non-replenishable within a 50-year period. Renewable resources are replenishable (within a 50-year period) through natural biological and physical processes or replenishable through processes initiated by man. Renewable resources include fish, wildlife, forests, and other vegetation. The natural regeneration of resources depends on the environment remaining favorable to this process and a sufficient breeding stock remaining to replenish those consumed.

The purpose of this classification is to identify the character and the long-term availability of resources in the coastal zone. The renewable or non-renewable character of coastal resources has implications for future managerial decisions. From the state's perspective, non-renewable resources such as coastal wetlands and estuaries, coastal natural areas, and historic/archaeologic sites require strong state involvement. Renewable coastal resources require controls and performance standards to maintain their existence and environmental quality.

Renewable Resources

Fish and Wildlife
Forests and Other Vegetation
Beaches
Air (recyclable)
Water (recyclable)

Non-renewable Resources

Mineral Deposits: gas, oil, limestone, dolomite, sandstone, salt, sand and gravel, gypsum, shale, peat deposits
Unique Geological Features: reefs, shoals, caves, waterfalls, glacial grooves, "blue hole", sand , peninsulas, gorges
Historic, Archaeologic, and Cultural Sites
Wetlands and Estuaries
"Natural" Scenic Vistas
Prime Agricultural Land and Land Suitable for Development
Aquifers
Unique Environmental Resources: prairies, forests, wetlands, bogs, swamp forests

Management of Key Areas

The natural resource inventory has resulted in an initial inventory and designation of areas of particular concern (key areas) within the shore zone: vital areas, unique areas, key resource areas, and hazard areas. The basic purpose of inventorying and designating areas of particular concern is to express some measure of statewide concern about them and to include them within the scope of the Shore Zone Management Program. The program is required by the Coastal Zone Management Act of 1972 to develop policies and implement programs to manage the designated areas of particular concern. Four different management categories have been developed to satisfy this requirement. A brief description of the management categories, the areas to be included in the categories, and the possible management alternatives are explained below.

1. **Environmental Resource Areas** include geographic areas in the shore zone which serve functions that may be vital to maintaining biologic, hydrologic, and physiographic coastal systems; and those areas which may be environmentally unique or significant, including historic and archaeologic sites. Environmental resource management areas include wetlands, estuaries, natural areas, selected wildlife habitat, scenic river corridors, state wildlife refuges, state game management areas, and the Ohio waters of Lake Erie. The state is concerned with the maintenance of these environments to protect vital coastal systems and to ensure that future generations will have the opportunity to view and experience Lake Erie environments with a minimum of man-made development.

2. **Economic Resource Areas** include geographic areas in the shore zone where activities of greater than local concern occur such as commercial harbors, recreational facilities; or those areas in the shore zone where resources which are of regional economic significance occur, such as mineral deposits, state nurseries, and state forests. The state is concerned with the maintenance of the shore zone to site regional facilities where the greatest benefit will be derived and develop the resources to their full potential while maintaining and improving the quality of the shore zone environment.

3. **Hazard Areas** include geographic areas in the shore zone which have a high probability of being affected by either flooding or shore erosion. The flood prone areas include the 100 year river flood plains in the shore zone and the approximate 100 year Lake Erie flood plain. Critical erosion areas include reaches of shoreline where development is located dangerously close to a receding bluff or where recession rates are high. The state is concerned with managing these hazardous areas to protect the life and property of shore zone residents and to reduce the sedimentation of Lake Erie due to shore erosion. The management decision involves a cost-benefit analysis of the value of the land and development versus the cost and adequacy of the protection.
4. **Federal Land** includes all land in the shore zone that is owned and therefore managed by the federal government.

The management phase of Ohio's Shore Zone Program will proceed in several steps. Environmental resource areas, economic resource areas and hazard areas will first be identified and studied in detail. These areas will then be prioritized according to their ecologic, economic, or environmental significance. The state will then select the highest priority areas to be included in the management program and the most appropriate management alternative for each area. Several alternatives exist for managing or monitoring the key areas in Ohio's shore zone:

1. Public acquisition;
2. Local zoning;
3. Performance standards, specifically delineating types of uses which could occur in particular key area;
4. State permit and review system;
5. State technical assistance program, providing the necessary technical staff and/or information to help local agencies and individuals utilize coastal resources with minimal environmental degradation; and
6. No state or local action.

SHORE ZONE ECONOMY

The economic structure of a region is closely related to its social and physical base. The abundant natural resources of the Lake Erie shore zone attracted economic activities such as farming, fishing, and industry, many of which are dependent on the lake as a source of water or transportation. Taken together, these uses often reinforce each other, attracting other activities and more people. The interaction of people, economic activity, and natural resources creates an urban society. Large steel manufacturers, relying on cheap transportation for their raw materials, located their industries in the Cuyahoga River flats. The presence of the steel industry attracted various durable good manufacturers. These industries attracted a large, mainly blue collar, labor force. This interaction of economic activity, people and resources was a very important influence in shaping land uses within the shore zone.

Labor Force Profile

The employment distribution of the region is typical of a highly industrialized region. Employment is highest in the manufacturing and service sectors with significant employment also occurring in the areas of transportation, utilities, wholesale and retail trades, and insurance and real estate services.

The following shows the employment distribution of the region:

Employment Distribution

Major Code (SIC)		% Total Region
07	Agricultural services, forestry, fisheries	0.14
10	Mining	0.39
15	Contract Construction	3.86
19	Manufacturing	40.95
40	Transportation and public utilities	5.64
50	Wholesale trade	7.17
52	Retail trade	18.02
60	Services, Insurance and real estate	5.32
70	Services	28.27

More specifically, the highest employment occurs in the areas of primary metals, fabricated metals, machinery, transportation equipment and health services.

The employment distribution for the largest industries appears as follows:

SIC	Name	% Total Region
2300	Primary metal industries	5.11
3400	Fabricated metal industries	5.24
3500	Machinery, except electrical	5.47
3700	Transportation equipment	6.42
8000	Health services	5.84

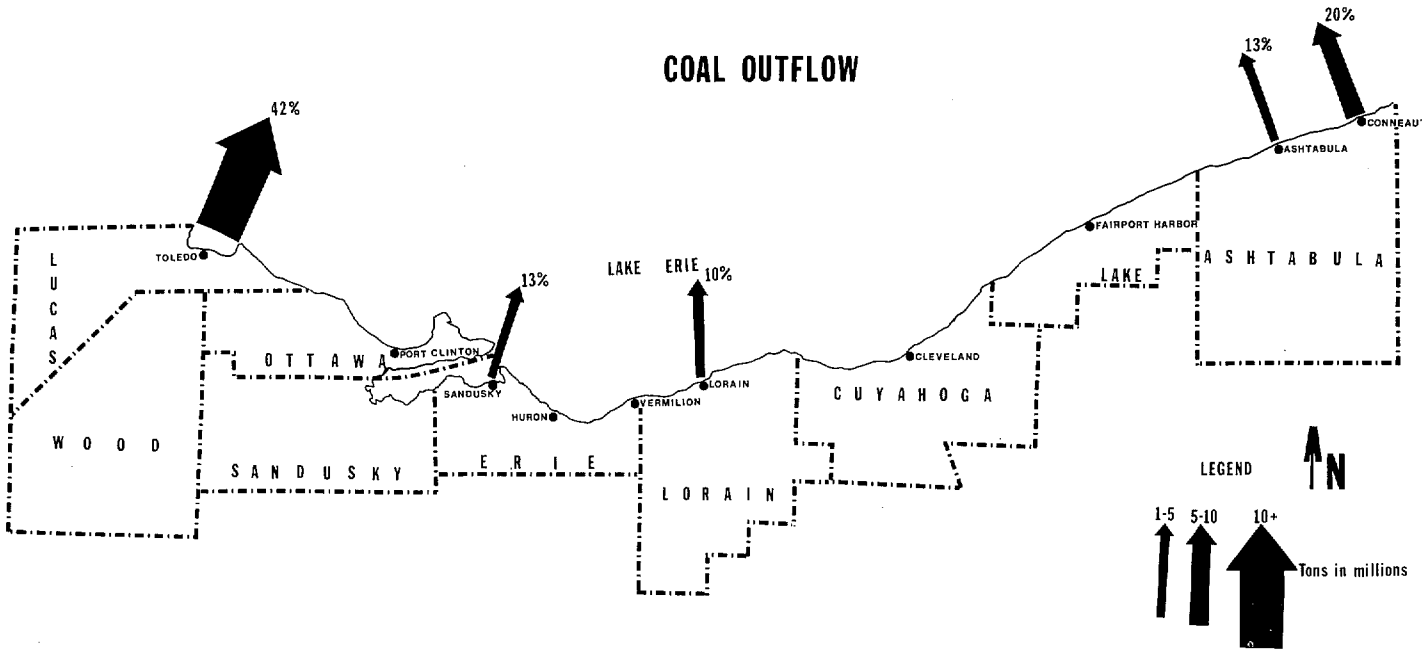
Regional specialization, i.e. employment above state and national averages, occurs in the industries listed below:

Industries of Regional Specialization

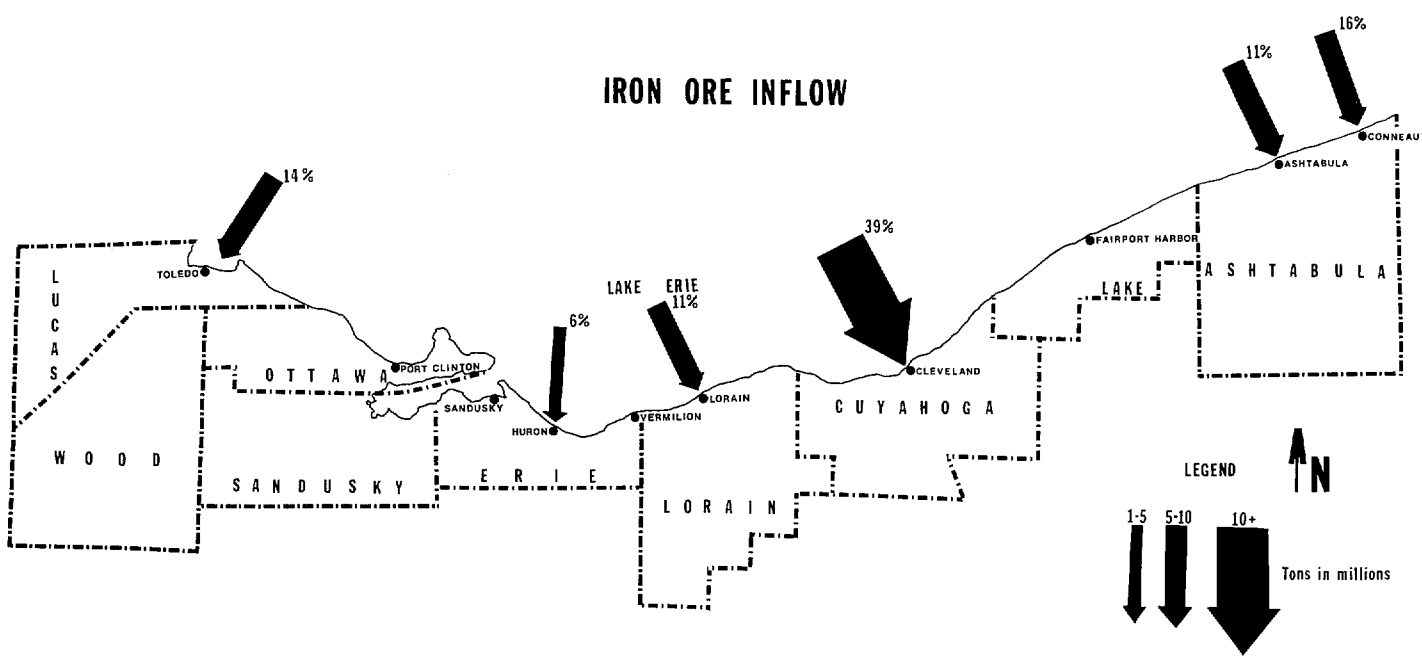
SIC	Name
2800	Chemical and allied products
2900	Petroleum and coal products
3300	Primary metal industries
3400	Fabricated metal products
3500	Machinery, except electrical
3700	Transportation equipment
3800	Instruments and related products
5000	Wholesale trade
5300	General merchandise
7200	Personal services
7300	Business services
7500	Auto repair services
7600	Miscellaneous repair services
8000	Health services

The Role of Harbors in the Regional Economy

Critical to the development of the shore zone has been the location and accessibility of the harbor system. The two major shipping commodities are coal (including lignite) and iron ore. However, a wide range of commodities, which in 1973 totaled over 100 million tons, are shipped through the 10 ports. Few of the products are consumed in the port cities and towns, most are shipped over a highly developed transportation network to major inland manufacturing cities such as Pittsburgh and Youngstown. Many industries and jobs are dependent upon this transportation network.



Total Coal Outflow = 34 million tons
Source: Waterborne Commerce of the U.S., 1973.



Total Iron Ore Inflow = 46 million tons
Source: Waterborne Commerce of the U.S., 1973.

Lake Erie Harbor Dredge Disposal Program

Dredging is the process by which most navigation channels, canals, harbors, and waterways are developed and maintained. The Corps of Engineers has been concerned with the development and maintenance of navigable waterways in the United States since Congressional authorization was given in 1824 to remove sandbars and snags from major navigable rivers. Since that time large volumes of material are removed each year from the nation's rivers and harbors. In Ohio, nearly 4,000,000 cubic yards are dredged annually from eleven waterways maintained by the Corps. These harbors, listed geographically from east to west, are as follows:

Conneaut Harbor	(Conneaut Creek)
Ashtabula Harbor	(Ashtabula River)
Fairport Harbor	(Grand River)
Cleveland Harbor	(Cuyahoga River)
Rocky River Harbor	(Rocky River)
Lorain Harbor	(Black River)
Vermilion Harbor	(Vermilion River)
Huron Harbor	(Huron River)
Sandusky Harbor	(Sandusky Bay)
Port Clinton Harbor	(Portage River)
Toledo Harbor	(Maumee Bay)

As sediments in many waterways and harbors have become polluted, concern has been increasing that dredging and disposal of dredged material may adversely affect water quality or aquatic organisms.

Following extensive study by both the Corps of Engineers and U.S.E.P.A., the sediments in all eleven harbors along the Ohio shore of Lake Erie were declared polluted. The criteria on which this decision was made were established by U.S.E.P.A. in 1970. Any sediments taken from the harbors are considered polluted if they contain one or more of the following in excess of the minimum amount given:

	(Percentage on a dry weight basis)
Volatile Solids	5
Chemical Oxygen Demand	6
Total Kjeldahl Nitrogen	0.10
Oil - Grease	0.15
Lead	0.005
Zinc	0.005
Mercury	0.0001

In order to control the disposal of polluted dredged material, Congress, through Public Law 91-611 (Rivers and Harbors Act of 1970), directed the Corps of Engineers to construct containment facilities for polluted materials dredged from the waters of the Great Lakes. The facilities must have sufficient capacity for confinement of these polluted materials for a period not to exceed ten years.

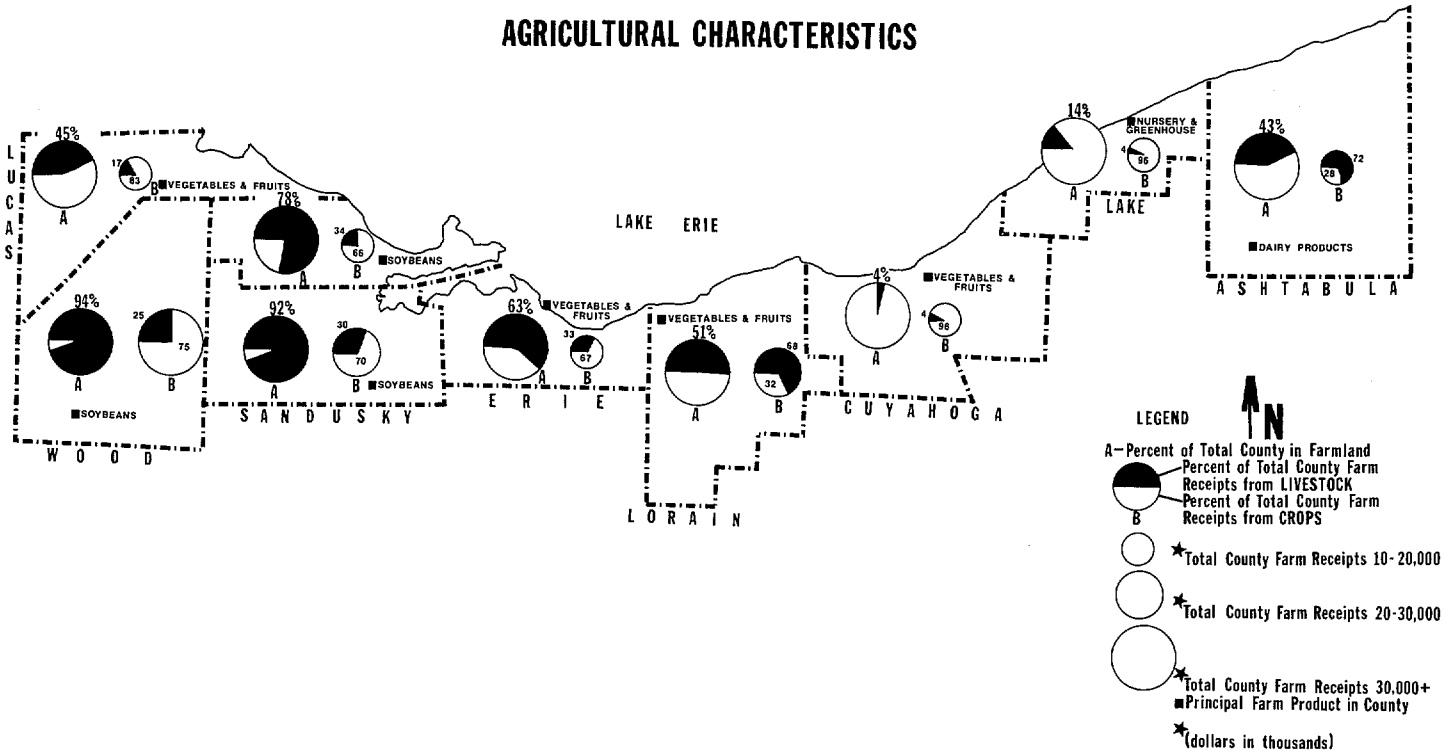
Exceptionally good progress has been made at the eleven Ohio harbors on Lake Erie. Construction is under way at Toledo and Huron, and at Cleveland a partial solution to the problem was achieved with the completion of a three-year capacity site, capable of holding dredge spoil through 1977. Construction of a second site at Cleveland is expected to start in 1976. Advanced engineering studies are in progress at three other harbors.

Agriculture

Interesting contrasts can be seen in the region's agricultural structure. The prolonged growing season along the lake, combined with the highly urbanized character of the region, make it an ideal area for growing truck produce. A variety of fruits, vegetables, and berries are grown in the region. Truck farming is most prevalent in the urban counties (Lucas, Erie, Lorain, Cuyahoga). In Lake County, the urban-oriented nursery and greenhouse business is the most important form of agriculture. Ashtabula County's soils and terrain are not ideal for growing crops. However, dairy farming occurs here because it is close to the Cleveland, Akron, and Youngstown markets.

While all shoreland counties reflect some form of an agriculturally-based economy, three counties: Lucas, Wood, and Sandusky play a vital role in overall state agricultural production. They are important producers of typical Ohio field crops, including corn, soybeans, wheat, and oats.

AGRICULTURAL CHARACTERISTICS



AGRICULTURAL PROFILE

Source	Year		Ashtabula	Cuyahoga	Erie	Lake	Lorain	Lucas	Ottawa	Sandusky	Wood
A	1	Number of Farms	1,500	272	702	306	1,354	785	979	1,488	8,498
A	2	Number of People on Farms	4,911	33	2,237	979	3,975	2,755	2,994	5,058	2,181
A	1	Average Size of Farms (in acres)	128	38	152	69	120	126	133	162	170
A	1	Percent of Total County Acreage in Farmland	42.8	3.6	63.2	14.3	51.1	44.8	77.9	92.0	93.7
B	3	Total Farm Earnings (in thousands)	$6,170	$12,971*	$6,597	$12,971*	$8,254	$61,080**	NA	$16,354	$61,080**
B	3	As percent of total County Earnings	2.11	.15*	2.19	.15*	.91	2.11**	NA	8.23	2.11**
C	3	Cash Reciepts from Farm Products – Total (in thousands)	17,883	15,082	12,942	11,923	26,743	18,786	14,277	29,507	42,626
		Percent of Total from Livestock	72	3	33	4	68	17	24	30	25
		Percent of Total from Crop	28	97	67	96	32	83	66	70	75
C	3	Average per Farm	$12,011	$55,933	$18,411	$42,704	$19,734	$23,794	$14,358	$14,358	$19,413
C	3	Average per Acre	$98	$678	$129	$703	$179	$201	$112	$126	$116
D	3	% of total cash receipts by Crop Type									
		Corn	2.4	.1	13.7	.2	3.1	15.6	5.8	13.0	25.0
		Soybeans	.3	.0	17.0	-	8.9	20.6	30.9	20.9	28.7
		Wheat	.3	.0	5.0	.0	1.6	2.8	6.2	4.4	7.3
		Oats & Hay	1.5	.2	2.0	.3	1.8	1.2	6.1	1.8	3.0
		Greenhouse & Nursery	8.3	24.6	2.4	87	5.3	13.1	.3	.8	1.1
		Vegetables & Fruit	12.8	71.9	22.8	7.6	46.5	25.1	18.0	18.6	6.0
		Other Crops	2.4	.0	3.4	.1	.2	4.5	8.9	10.9	3.6
D	3	% of total cash reciepts by Livestock Type									
		Dairy Products	50.0	.3	15.7	1.0	18.7	1.2	6.8	8.5	2.4
		Cattle & Calves	16.7	.8	8.8	1.1	7.8	5.6	6.7	10.8	14.4
		Hogs	2.2	.5	5.6	.8	2.1	5.4	3.9	6.4	5.1
		Poultry	1.8	.4	1.8	1.1	2.7	4.3	5.7	2.5	2.5
		Sheep & Wood	.2	.0	.3	.0	.2	.0	.1	.4	.3
		Other Livestock	.6	.5	.9	.1	.5	.2	.1	.4	.4

* Cleveland SMSA
** Toledo SMSA

Source A City County Date Book
Source B Bureau of Economic Analysis, Dept. of Commerce
Source C Ohio Farm Income
Source D Ohio Agricultural Statistics

Year 1 1969
Year 2 1970
Year 3 1972

CITIZEN PARTICIPATION

The shore zone is, in the final analysis, a collection of individuals each responding to unique perceptions of local conditions as they pertain to his or her own needs, wants, interests, and concerns. Precisely what these perceptions are as they pertain to shoreland issues is a very important consideration in the successful development of a coastal management program. Two programs directly addressed this consideration: a problem identification questionnaire and county "public meeting" type workshops. The results of these indicated the following:

Most Serious Problems

1. Beach and shore erosion
2. Lake level too high
3. Flooding
4. Poor quality of shoreline and beaches

Public Action Deemed Most Necessary and Acceptable

1. Protection of water quality
2. Preservation of existing shoreland areas
3. More control of development

The majority of those questioned felt that the state and federal levels of government were the most qualified to improve the condition of the shoreline. However, some special interest groups and public officials disagreed, feeling that the various county and regional governments need to more actively pursue solutions.

Another finding indicated that those not living directly on the shore were more concerned with access to the lake and with sewage and drainage problems than those who owned property on the shore. Obviously, to be complete, the Ohio Coastal Zone Management Program should address both issues.

COORDINATION PROGRAM

Many opportunities for coordination and interaction, as shown by the list on page 18 , directly relate to the development and implementation of the Lake Erie Shore Zone Management Program. Foremost among these activities has been the opportunity to interact with agencies at all levels in the project assessment phase of the program. These assessment activities include: 1) A-95 Review, 2) Environmental Impact Statements, 3) Ohio Power Siting Commission Permits, 4) Shore Erosion Control Structure Permits, 5) Lake Erie Submerged Land Leases, 6) Section 10 Permits, and 7) National Pollutant Discharge Elimination System.

Closely associated with the opportunities for coordination afforded by project assessment is interaction based on cooperative enforcement activities associated with various regulatory functions. In addition, quarterly conferences were held bringing together the four major agencies responsible for protection of the shore zone resources. These agencies are the U.S. Army Corps of Engineers, the U.S. Coast Guard, the Ohio Environmental Protection Agency and the Ohio Department of Natural Resources. The meetings included discussions of problem cases, review of past enforcement activities, and discussion of future cooperation to conserve manpower, money, and equipment in enforcement activities.

Another opportunity for the Shore Zone Management Program to meet its coordination objectives was through staff interaction with regional agencies to implement, at the local level, recent federal interagency agreements. The two more significant ones were between the Department of Housing and Urban Development (HUD) and the Department of Commerce, and between the U.S. Environmental Protection Agency and the Department of Commerce. In both cases the Department of Natural Resources staff worked with other state agencies, with the Toledo Metropolitan Area Council of Governments (TMACOG), the Northeast Ohio Areawide Coordinating Agency (NOACA), and the Eastgate Development and Transportation Authority(EDATA) to coordinate state and local planning efforts to save money by avoiding duplication of efforts and to help facilitate delivery of services.

The Great Lakes Basin Commission's Standing Committee on Coastal Zone Management was another relatively new opportunity for developing interaction among representatives from the State of Ohio and other Great Lakes States. The Standing Committee provided an opportunity for an analysis and comparison of state programs and activities, and it also developed a cooperative arrangement to facilitate exchange of information among states on grant applications and planning elements. Another function of this Standing Committee, and the Great Lakes Basin Commission as a whole, was to provide the states with information on activities conducted by the federal members of the Commission.

Similar to the opportunities for coordination offered by the GLBC Standing Committee, the U.S. Army Corps of Engineers conducts the Lake Erie Wastewater Management Study. Through this study the Department of Natural Resources maintains close coordination with various agencies interested in Lake Erie's shore zone resources. An Interagency Technical Advisory Group was formed to provide technical advice during the course of the study. Periodic meetings were held to critique progress and to determine if a shift in direction were appropriate. The group was made up of representatives from the four Lake Erie states, the Great Lakes Basin Commission, the U.S. Environmental Protection Agency, and nine other Federal agencies.

Recommendations

The results of the first year's activities are being used to develop a consensus of opinion among agencies regarding the most appropriate arrangement for providing continuous coordination among the Ohio Department of Natural Resources and all other State and local agencies concerned with Ohio's shore zone. During the second and third years of the program, the present coordination opportunities should be more intensively pursued, and additional opportunities should be sought to allow more participation by various levels of government in the development and implementation of the management program. The following is a list of agencies whose activities have been coordinated with the Shore Zone Management Program:

Intrastate Coordination

Adjutant General
Attorney Generals Office
Office of Budget and Management
Ohio Department of Administrative Services
Ohio Department of Agriculture
Ohio Department of Economic and Community Development
Ohio Department of Health
Ohio Department of Natural Resources
Ohio Department of Transportation
Ohio Environmental Protection Agency
Ohio Historical Society
Ohio Power Siting Commission
Ohio State University

Regional Coordination

Eastgate Development and Transportation Authority (EDATA-Youngstown)
Northeast Ohio Areawide Coordinating Agency (NOACA-Cleveland)
Toledo Metropolitan Area Council of Governments (TMACOG-Toledo)

Local Coordination

Ashtabula County Planning Commission
Lake County Planning Commission
Cuyahoga County Regional Planning Commission
Lorain County Planning Commission
Erie Regional Planning Commission
Sandusky County Planning Commission
Ottawa County Planning Commission
Toledo-Lucas County Plan Commissions
Wood County Planning Commission

Interstate Coordination

Ohio Commission on Interstate Coordination
Great Lakes Basin Commission
Great Lakes Commission
International Great Lakes Study Group
Great Lakes Fisheries Commission
International Joint Commission
Council of Lake Erie Ports
International Association for Great Lakes Research
Coastal States Organization

Federal Coordination

Department of Housing and Urban Development
1. Federal Insurance Administration
2. Comprehensive 701 Program

Department of the Interior
1. Fish and Wildlife Service
2. Bureau of Outdoor Recreation
3. National Park Service
4. U.S. Geological Survey
5. Bureau of Mines
6. Office of Water Resources Research

Department of Transportation
1. U.S. Coast Guard
2. St. Lawrence Seaway Corporation
3. Federal Highway Administration
4. Federal Aviation Administration
5. Federal Railroad Administration
6. Urban Mass Transit Administration

U.S. Environmental Protection Agency
1. E.P.A. 208 Planning

Energy Research and Development Agency
Federal Power Commission
Interstate Commerce Commission
Small Business Administration
Nuclear Regulatory Commission
Federal Regional Council
Department of Agriculture
1. Soil Conservation Service
2. Forest Service
3. Agricultural Research Service
4. State Cooperative Research Service

Department of Commerce
1. Bureau of Census
2. National Oceanic and Atmospheric Administration

Department of Defense
1. U.S. Army Corps of Engineers

OCAP

section 5

OCAP

The Ohio Capability Analysis Program (OCAP) is a computer information and mapping system developed by the Ohio Department of Natural Resources to generate an environmental resource data base for the State. OCAP is used in conjunction with the Land Capability Analysis program through which the Department is attempting to encourage better land use decisions in Ohio. Planners and planning commissions have traditionally relied upon social, economic, and population data when writing general development plans or zoning ordinances. When the physical environment is disregarded, the planner may find industrial parks sinking because of unstable foundation material or septic tanks failing because of impermeable soils. Development alters run-off patterns, disrupts productive agricultural land, and costs taxpayers money when it occurs in a flood plain or other hazardous area.

In Ohio, land use decisions are made at the local level. There is, as yet, no state-wide land use plan or policy. One of the only ways for the state to influence development decisions and avert wasteful and costly forms of land use is by providing technical assistance to the local and regional planning agencies. The land capability analysis program was initiated in 1973 to provide these agencies with information which can be used with traditional data to make more rational land use decisions. Environmental data should not replace social, economic, or population information, but supplement it and thereby add an important dimension to the decision process.

Land Capability Analysis is a technique for assessing the components of the physical environment in terms of its ability to support or tolerate different types of land use. Data on soils, slope, groundwater, land cover, geology, and mineral resources are combined and analyzed to determine whether an area is suited for homes, industry, recreation, agriculture, all of these forms of development, or none of them. Quantities of environmental data have been collected within the Department of Natural Resources, but this information is not always easy to use, especially by people without a technical or scientific background. Through the land capability analysis program, undecipherable soils and geology maps can be translated into a form that local or regional decision makers can readily use to understand the problems and possibilities of the area with which they must deal.

There are several phases to the capability analysis process. The first involves defining the area to be included in a project, the data to be used, the types of development to be considered in the analysis and how the final product will be presented. Extensive discussions are held with the county or regional decision makers regarding their problems and needs, and the base data upon which the analysis will be based is gathered. There is a heavy reliance on soils, slope, and land cover information, because these are mapped in great detail and more research has been done on their effect on development. Other resource data that may be used include several geologic variables, mineral resources, and groundwater availability. Data supplied by the county may include political boundaries, watersheds, census tracts, traffic zones, land use, sewer and water service areas, or any other information considered important. For the purposes of the coastal zone management program, other physical data will be considered in order to take into account the uniqueness of the area and the special problems which may be encountered in its management. These data could include estuarine areas, wetlands, areas undergoing erosion, managed fish and wildlife areas, and beach access locations. Subsequent phases of the capability analysis process involve preparing basic data files, performing an analysis, and presenting the results.

OCAP has been used to complete capability analyses for nine counties in Ohio and numerous smaller areas. In addition OCAP is being used for a NASA-sponsored land use inventory for the state using Landsat data, a 208 water quality planning project, a preferential tax assessment project, and the coastal zone management program for the Lake Erie shoreline. Because OCAP is a flexible program, it can meet the wide variety of needs that have arisen. Stark county is using an analysis which was based on development trends in the county to update their general development plan and review development proposals. The Miami Valley Regional Planning Commission is using base maps and capability maps to develop plans for several townships. All counties for which OCAP files have been created can update their data, such as land use which changes rapidly, or they may request further analyses when the need arises. The capability analysis concept and OCAP lend themselves quite well to many programs where resource assessment is involved. The goal of the program in the Department of Natural Resources is to eventually complete the entire state. With such a data base, local decision makers will be able to avert many future land use problems.

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Conclusions

CONCLUSIONS

The first year inventory provides the necessary information to proceed into the second year work program. During the second year, more specific resource inventories will be undertaken, these include: environmental areas, energy resources, sand and gravel resources, fisheries resources, island resources, and historic resources. Also, land capability analyses (OCAP) will be undertaken for three more counties. These will provide the information necessary for a more concise boundary, a guideline for permissable uses, and also a tool for local decision-makers to site various facilities.

The second year shoreland management program will also continue to concern itself with the economy of the region. Considerations will be given to economic impacts of ports, the current and future needs of the ports to remain competitive, and also social, economic, and population projections.

All of the above will be complemented by more active citizen participation and intergovernmental coordination programs.