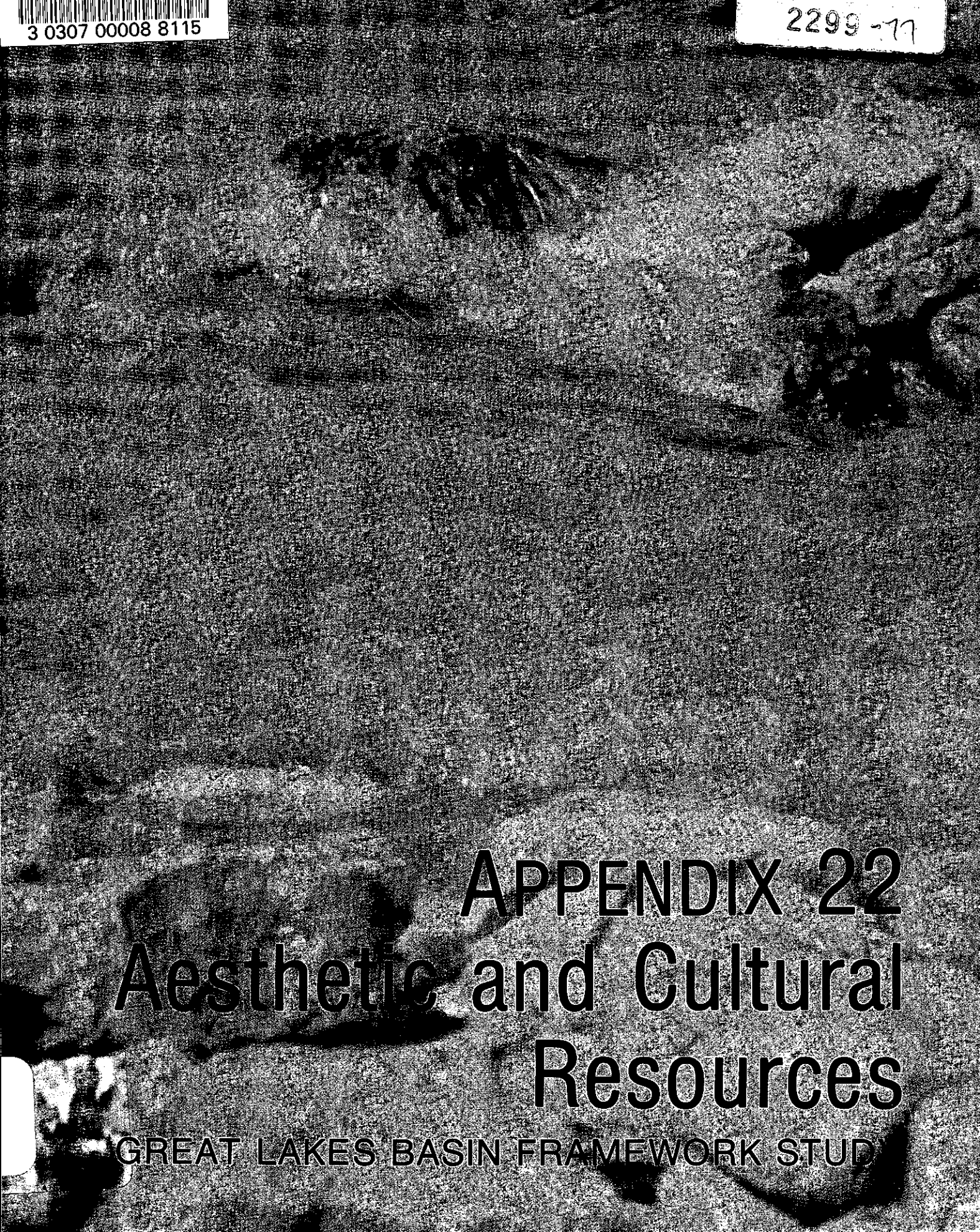


APPENDIX 22
Aesthetic and Cultural Resources

GREAT LAKES BASIN FRAMEWORK STUD

Great Lakes Basin Framework Study

APPENDIX 22

AESTHETIC AND CULTURAL RESOURCES

GREAT LAKES BASIN COMMISSION

Prepared by Aesthetic and Cultural Resources Work Group

Sponsored by National Park Service

U.S. Department of the Interior

Published by the Public Information Office, Great Lakes Basin Commission, 3475 Plymouth Road, P.O. Box 999, Ann Arbor, Michigan 48106. *Cover photo by Kristine Moore Meves.*

This appendix to the *Report* of the *Great Lakes Basin Framework Study* was prepared at field level under the auspices of the Great Lakes Basin Commission to provide data for use in the conduct of the Study and preparation of the *Report*. The conclusions and recommendations herein are those of the group preparing the appendix and not necessarily those of the Basin Commission. The recommendations of the Great Lakes Basin Commission are included in the *Report*.

OUTLINE

SYNOPSIS

This appendix provides the planner with a detailed example of resource inventory, demonstrates one method of establishing priorities for preservation of specific resources, and establishes a foundation upon which more detailed planning can be based. Institutional changes that would aid resource planners and managers have been suggested and can be achieved within existing frameworks.

The inventory is designed to recognize only those features that are outstanding, unique, or significant. Time constraints on research for the study and some subjective evaluation have probably led to exclusion of some features, but the maps, resource symbols, and procedures used in producing this report demonstrate a feasible method for more detailed inventories of planning subareas.

The priority ratings are based on imminent loss or modification of a resource through changing land use. The priority ratings do not imply value of specific resources.

Basinwide planning recommendations focus on institutional problems such as identification of custodial responsibilities for resource management and the need for greater environmental awareness in planning and development programs. The recommended changes could facilitate planning and would probably encourage faster action in resource management programs. Pending the development of stronger institutional support, the planner dealing with resources of intangible value must depend upon social conscience as a basic planning tool.

Inner city aesthetic and cultural problems are so complex that they require detailed studies and cannot be treated in this appendix.

FOREWORD

This appendix was prepared by the Aesthetic and Cultural Resources Work Group of the Great Lakes Basin Commission. Overall responsibility for preparation of the appendix rested with the National Park Service whose representatives served as work group chairman and principal appendix writers. Bruce J. Miller served as chairman from 1969 to 1971, assisted by James R. Whitehouse, and Robert S. Chandler served as chairman from 1971 through 1974, assisted by Grant Petersen.

Other individuals who served on the work group as representatives of the Great Lakes Basin States and Federal agencies were:

Robert Adams, Michigan Department of State Highways

Robert P. Adams, Pennsylvania Department of Environmental Resources

Gordon Atkins, Bureau of Outdoor Recreation, U.S. Department of the Interior

Francis J. Baker, Bureau of Outdoor Recreation, U.S. Department of the Interior

Nicholas J. Barbarossa, Division of Water Resources, New York Conservation Department

William B. Barnes, Indiana Department of Natural Resources

John G. Broughton, New York State Education Department

Edward Carl Brown, U.S. Army Corps of Engineers

Donald C. Chaput, Michigan Historical Commission

Sumner A. Dole, Jr., Bureau of Sport Fisheries and Wildlife, U.S. Department of the Interior

John Finck, New York State Department of Environmental Conservation

James M. Hane, Michigan Department of Natural Resources

Edward Hauser, Lakeland Community College, Mentor, Ohio

Robert D. Hennigan, Water Resources Center, State University of New York at Syracuse

R. K. Hogberg, Minnesota State Geological Survey

Richard L. Kerr, Forest Service, U.S. Department of Agriculture

Ellick Maslan, U.S. Department of Housing and Urban Development

David I. Moon, Tiffin, Ohio

Charles C. Morrison, Jr., New York Department of Environmental Conservation

Gordon C. Nichols, Cleveland, Ohio

Jacques J. Pinkard, Soil Conservation Service, U.S. Department of Agriculture

Norman F. Smith, Michigan Department of Conservation

Paul Solstad, Minnesota State Planning Agency

James Treichel, Wisconsin Department of Natural Resources

Wayne H. Vespoor, Michigan Department of Natural Resources

Rev. Philip H. Vogel, S. J., John Carroll University, Cleveland, Ohio (deceased)

Prof. Glenna R. Williams, Kent State University, Kent, Ohio

Arthur F. Woldorf, Ohio Department of Natural Resources

Numerous individuals throughout the Great Lakes States, especially personnel of the States' departments of conservation and natural resources, also assisted in preparing the appendix by providing data, review, and counsel.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

(Colored figures may be found in numerical order at the rear of this volume. Their figure numbers are followed by the letter "c".)

INTRODUCTION

Relation to Other Appendixes

The inventory and evaluation of aesthetic and cultural features overlaps with other appendixes of the *Great Lakes Basin Framework Study* such as Appendix 8, *Fish*; Appendix 12, *Shore Use and Erosion*, Appendix 13, *Land Use and Management*; Appendix 17, *Wildlife*; and Appendix 21, *Outdoor Recreation*.

However, there are significant differences in this appendix because it measures the value of a resource in terms of uniqueness and cultural importance, regardless of quantities. Other appendixes deal with single resources and the evaluations of supply and need are primarily quantitative. The result is a statement of gross numbers of acres available or needed to satisfy demand for a particular resource.

This appendix recognizes and emphasizes how resources complement one another, while other appendixes isolate the values of specific resources. A cluster of seemingly insignificant single features could, when aggregated, constitute a significant aesthetic or cultural resource.

Scope of the Appendix

To facilitate preparation of this appendix, the National Park Service contracted a study of the Basin with the expressed purpose of providing an environmental resource inventory, a priority rating for the planning and study of the Basin's cultural and aesthetic resources, the preparation of recommendations for preservation and enhancement of these resources within the guidelines of the Comprehensive Coordinated Joint Plan, and recommendations for further studies based on the findings.

The information and recommendations contained in this appendix are based on map inventory and evaluation of the aesthetic and cultural resources within the Basin in conjunction with a broad-scale analysis of factors that presently affect them. Recommendations have been made for proper development of planning and for further study of the most significant resources.

Section 1

GENERAL BASIN DESCRIPTION

The wealth of any nation and its people is largely a reflection of its natural, cultural, and aesthetic resources. The Great Lakes Basin, connected to the sea by the St. Lawrence, comprises an environmental system of tremendous economic and natural resource value due to its combination of diverse topographic, geologic, vegetative, and climatologic features. The Basin encompasses 300,000 square miles of which one-third is lake surface. Approximately 179,000 square miles or roughly 59 percent of the drainage basin lies within the boundaries of the United States.

1.1 History

Samuel de Champlain is credited with being the first European to discover the Great Lakes. After 1615, the Lakes served as major trade routes for Americans and Europeans. For centuries prior to Champlain's arrival the Great Lakes Basin was inhabited by Indians whose livelihood depended on animals and plants. Well-established water and limited land trade routes were already developed among the various tribal regions where hunting and trapping activities predominated. Many of the routes as well as village locations have become today's highways and cities.

As the supply of fur-bearing animals began to diminish, the economy of the early European settler turned from hunting and trapping to farming. French and English explorers were gradually replaced by central European and Scandinavian farmers who cleared the forests and farmed much of the southern portion of the Basin. As towns and cities emerged to handle farm produce, a lumber industry in the northland grew to supply needed building materials.

Accessibility to the region by way of the Great Lakes encouraged the emergence of manufacturing and industrial complexes early in the 1800s. By the early 1900s, the Lakes, which in the late 17th, 18th, and early 19th centuries had carried furs, carried iron ore and steel for a rapidly industrializing nation.

These historic land use patterns have resulted in a region rich in cultural heritage, in which the customs of many ethnic and racial groups are represented. The Basin, which had supported a small French, English, and Indian population in 1820, supported a heterogenous population of 29,000,000 in 1970, approximately 80 percent of which was classified as urban dwellers. By the year 2020, a population of more than 53 million is expected.

TABLE 22–1 Projected Population Increases by Plan Area

Plan Area	Population (1970) (In thousands)	Percent of Basin Total	Population (2020) (In thousands)	Percent of Basin Total	Percent Increase over 1970
No. 1, Lake Superior	533.5	1.8	688.8	1.3	29.1
No. 2, Lake Michigan	13,516.9	46.1	24,829.5	46.4	83.7
No. 3, Lake Huron	1,236.3	4.2	2,324.4	4.3	88.0
No. 4, Lake Erie	11,513.9	39.3	21,280.5	39.7	84.8
No. 5, Lake Ontario	2,531.6	8.6	4,393.1	8.3	73.5
Great Lakes Basin	29,332.2	100.0	53,496.6	100.0	82.3

Source: Adapted from Appendix 19, Economic and Demographic Studies

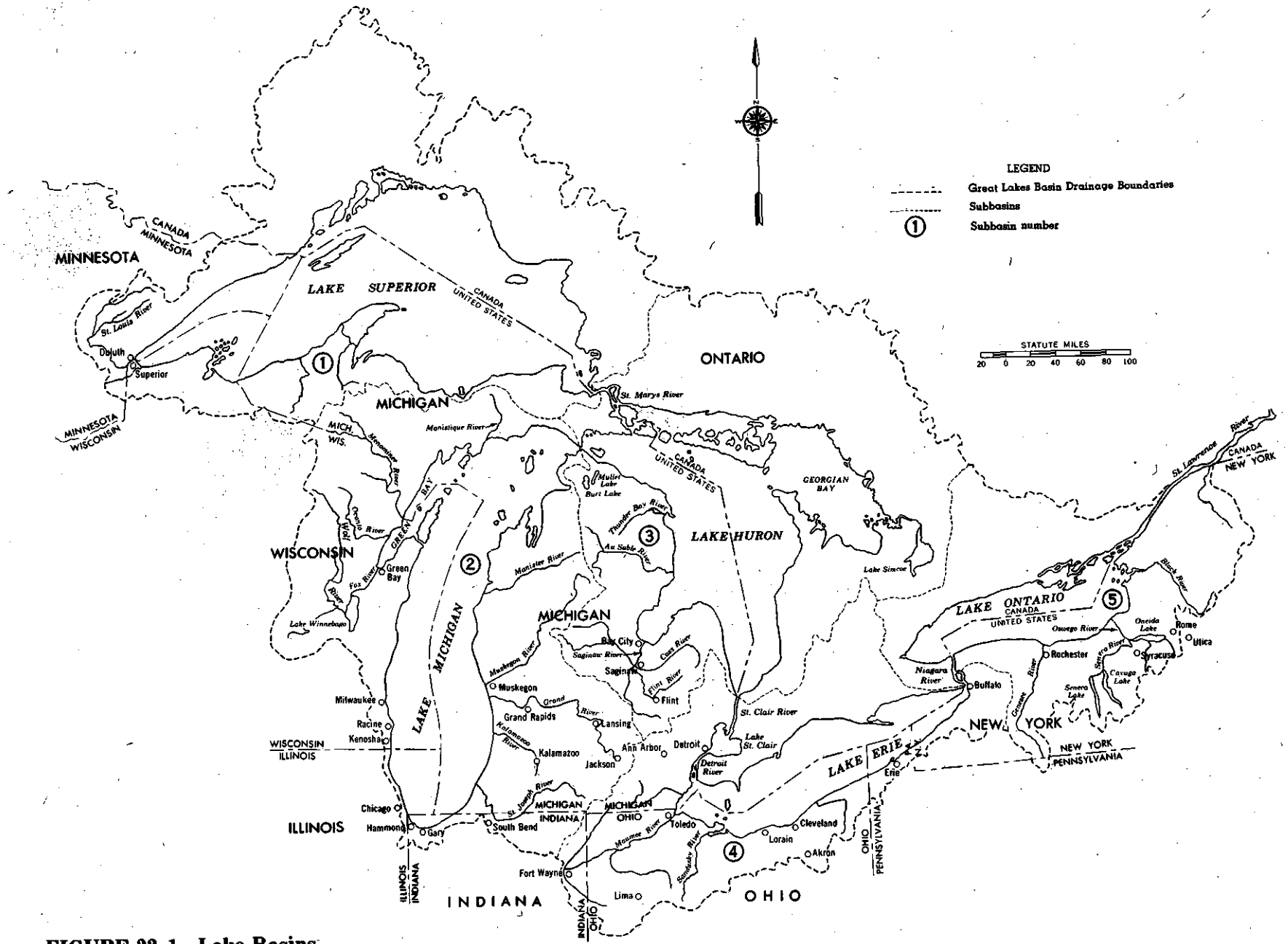
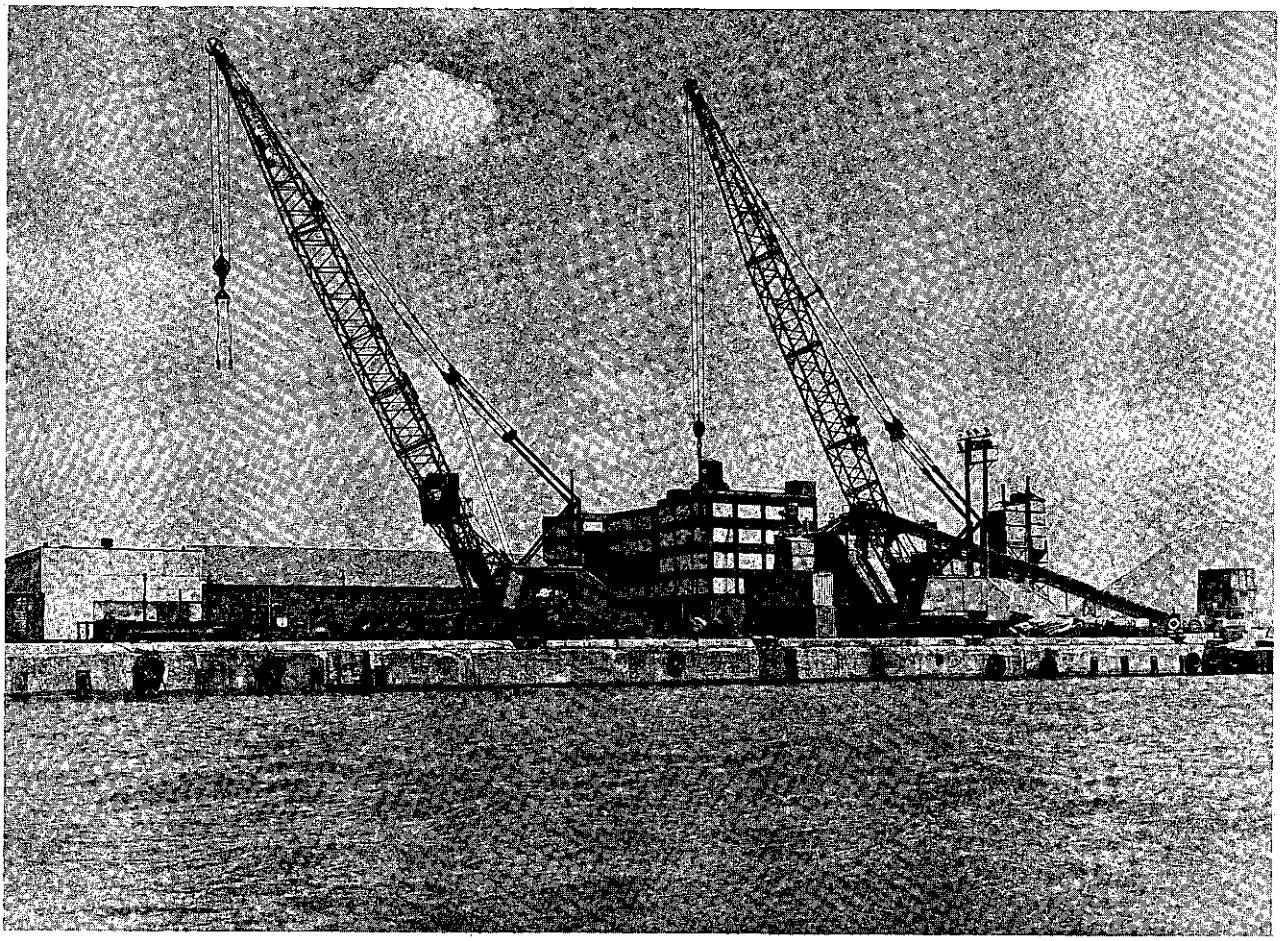


FIGURE 22–1 Lake Basins



Courtesy of Michigan Department of Natural Resources

FIGURE 22–2 Great Lakes Industry. The waters of the Great Lakes, which first attracted the voyageur and trader, today are the focal point of industry and commerce.

1.2 Topography

The varied and irregular topography of the Basin offers a broad spectrum of diverse and significant features. Its thousands of natural lakes and streams and the five Great Lakes have served as a backdrop for important historical and cultural events. Because of the rich soils and gentle topographical relief, the Basin's wide, flat prairies, grasslands, and forests have supported agricultural and industrial development. Most industrial and trade activities have been concentrated along watercourses affording a source of power, especially in the Lake Erie basin and in the southern portions of the Lake Michigan and Lake Huron drainage basins.

Hilly areas with poor soil have not been the sites of large industrial and agricultural developments, but where commercially valuable timber and mineral deposits have existed, activities have centered on harvesting these resources. The northern portions of the Lake Michigan and Lake Huron basins and the basins of Lake Superior and Lake Ontario contain the more scenic landscape patterns, particularly where there are bluffs and other strongly developed relief. Notable examples are New York's Adirondacks, the northlands of Wisconsin, and the Upper Peninsula and northern portion of the Lower Peninsula of Michigan.

1.3 Surface Features

During the Pleistocene era a series of four glacial ice sheets spread southward across the continent forming the Great Lakes, their tributaries, and thousands of small inland lakes.

Courtesy of R. F. Black, University of Connecticut

FIGURE 22–3 An Aesthetic Resource. Moraines such as these represent a significant aesthetic resource in the Great Lakes Basin.

Scouring action, deposition, and pre-glacial northward flowing streams produced the lake-dotted Adirondack and Finger Lakes regions of the Lake Ontario basin. As the glaciers melted, rich prairie and forest soils were deposited in the southern portion of the Great Lakes Basin. The resulting glacial moraines, river valleys, rock-strewn hills, bluffs, inland lakes, and streams are major focal points for outdoor recreation and study. To better understand these glacial features, the Ice Age National Scientific Reserve has been established in Wisconsin.

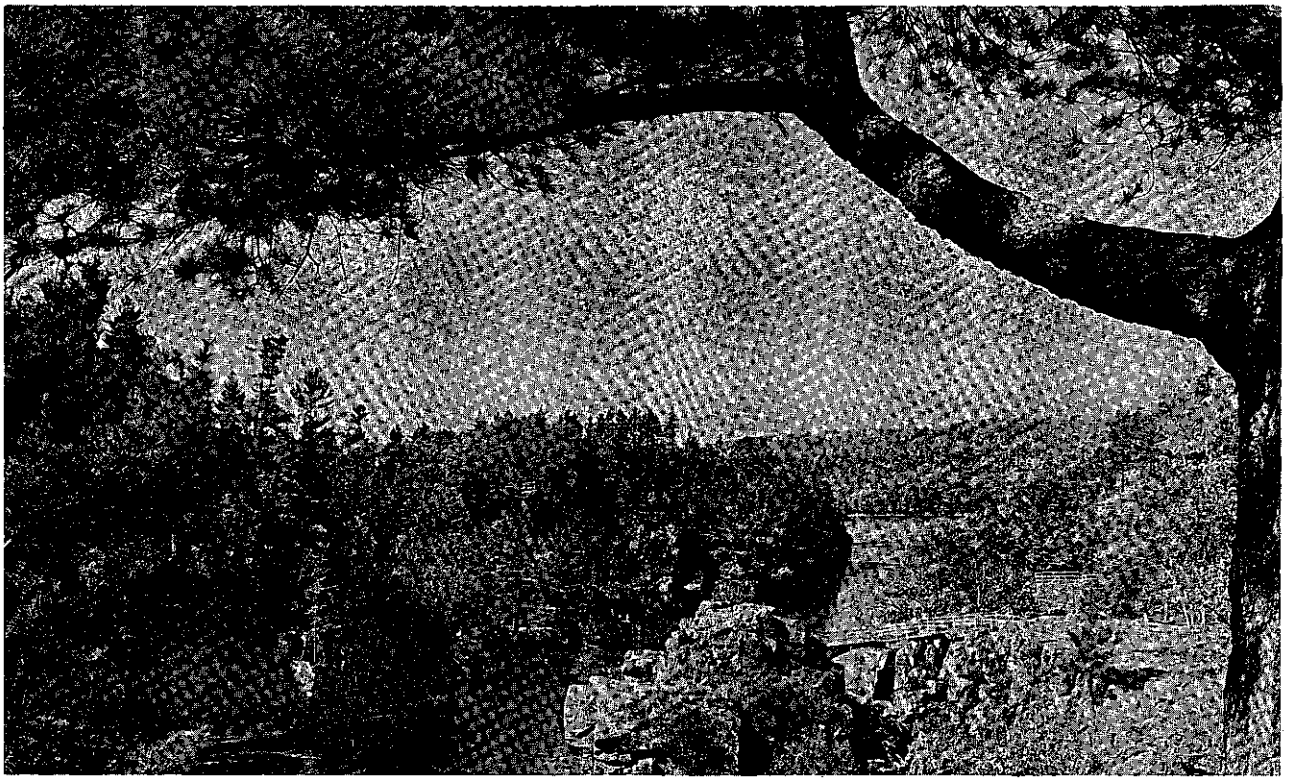
1.4 Vegetation

The natural vegetative cover of the Great Lakes Basin has been greatly altered by man's activities. With the exception of small areas within the northwoods country of Michigan, Wisconsin, and northern Minnesota, virgin forests, which once dominated the Great Lakes Basin, are today nearly nonexistent. From Lake Ontario westward to southeastern Michigan vegetation is dominated by broadleaf deciduous trees like oaks, hickories, and maples and includes approximately fifty

TABLE 22–2 Projected Urban Land Use Expansion by Plan Area

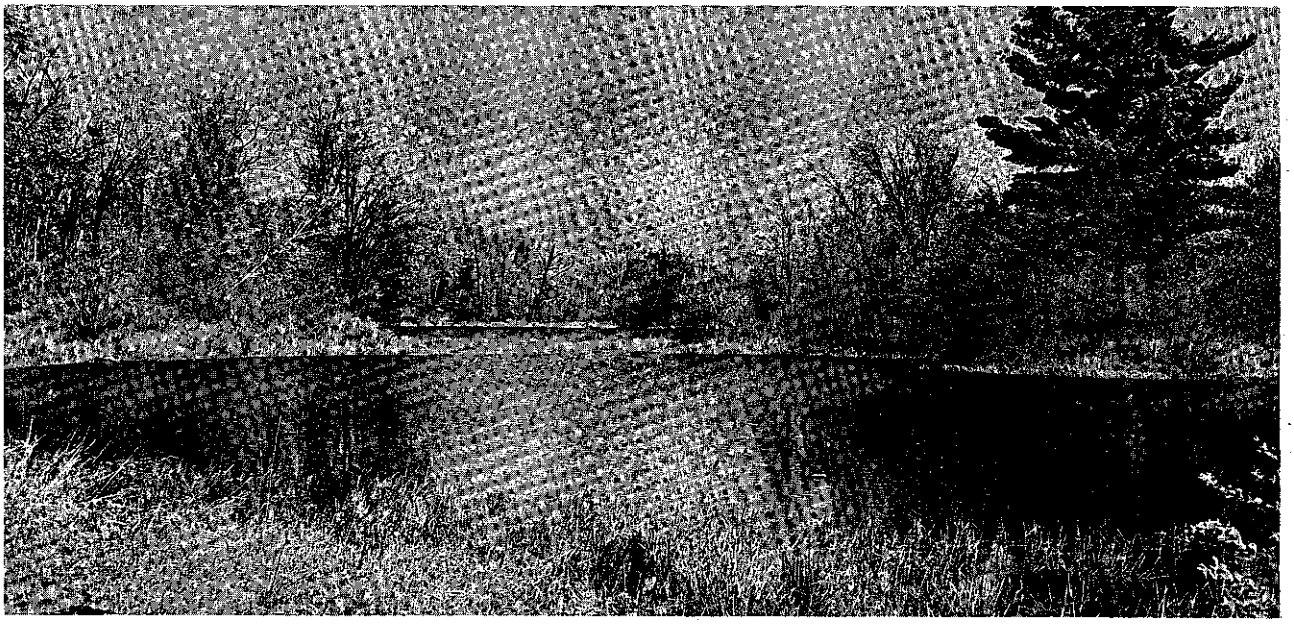
Plan Area	Total Land Acreage (In thousands)	Urban Land Acreage (1966–67) (In thousands)	Percent of Total	Projected Urban Land Acreage (2020) (In thousands)	Percent of Total	Urban Acreage Percent Increase over 1966–67
No. 1, Lake Superior	15,915.0	422.3	2.6	449.9	2.8	6.5
No. 2, Lake Michigan	32,272.4	2,907.8	9.0	5,258.0	16.2	80.8
No. 3, Lake Huron	8,441.9	568.6	6.6	781.5	9.2	37.4
No. 4, Lake Erie	15,678.3	2,421.2	15.4	4,530.1	28.8	87.1
No. 5, Lake Ontario	11,271.7	667.7	5.9	1,067.1	9.4	75.9
Great Lakes Basin	83,579.6	6,907.6	8.3	12,086.6	14.4	72.9

Source: Adapted from Appendix 13, Land Use and Management



Courtesy of R. F. Black, University of Connecticut

FIGURE 22–4 A Rich Aesthetic and Cultural Resource. Picturesque areas of strong relief containing lakes and streams are a focal point of human activity.



Courtesy of R. F. Black, University of Connecticut

FIGURE 22–5 A Focal Point. Lakes carved by Pleistocene Era glaciers represent significant aesthetic and cultural resources of the Great Lakes Basin. Many are the focal points of significant historical events as well as areas of scenic grandeur.

other species of plant life. To the south and west of Lake Michigan, the natural prairie grasslands and open forests have been altered for agricultural and residential use. Much of northern Wisconsin, the Upper Peninsula of Michigan, and the northern half of the Lower Peninsula of Michigan are now characterized by second growth coniferous and mixed hardwood forests. Throughout much of the north country the vegetation is a mixture of maple, hemlock, and pine. Great Lakes shorelines, rocky or beachlike, are also covered by indigenous vegetation.

1.5 Climate

The large surface area of the Great Lakes generally moderates summer and winter temperatures. Maximum temperatures occur during July, minimum temperatures in January or February, with an annual range from an average of 39°F on Lake Superior to 48.7°F on Lake Erie. Precipitation is heavier east of Lake Ontario and along the southern shore of Lake Superior than it is elsewhere in the Basin. The mean precipitation for the Basin is 31 inches annually.

1.6 Land Use and Ownership

Despite the presence of such large urban areas as Milwaukee, Chicago, Detroit, Toledo, Cleveland, Erie, and Buffalo, much of the basin remains open land. Agricultural lands cover 38.4 percent of the Basin, while forests, the largest single land use classification, comprise 47.4 percent. Less than one-tenth, or 8.4 percent, of the total land area is devoted to urban centers. Private individuals or firms own 67.2 million acres or 80.4 percent of the lands, while State and local governments own 10.2 million acres or 12.2 percent. These land use and ownership patterns have an important bearing on the availability of the Basin's aesthetic and cultural resources for public and private use and enjoyment.

Section 2

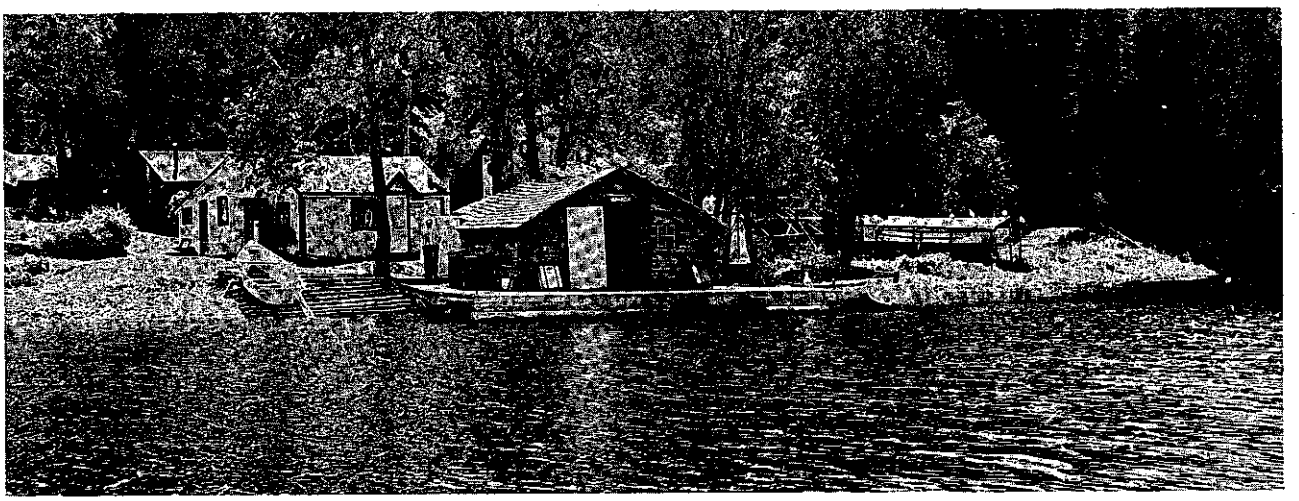
BASIN FEATURES CONSIDERED

2.1 Landscape Patterns

Within the Great Lakes Basin, there are two basic land and water landscape patterns that are referred to in this appendix as environmental systems. The first pattern is composed of landscapes oriented around natural or man-made water areas such as rivers, lakes, streams, flood plains, or wetlands. The second pattern is characterized by strongly developed relief such as ridges, bluffs, moraines, or shorelines. The identification of these patterns and the most significant aesthetic and cultural resource features encompassed in these environmental systems was the primary objective of this study.

Courtesy of New York State Department of Commerce

FIGURE 22–6 Landscape Pattern. The strong relief of these chimney bluffs along the shore of Lake Ontario represents one of the landscape patterns of many environmental systems rich in aesthetic resources.



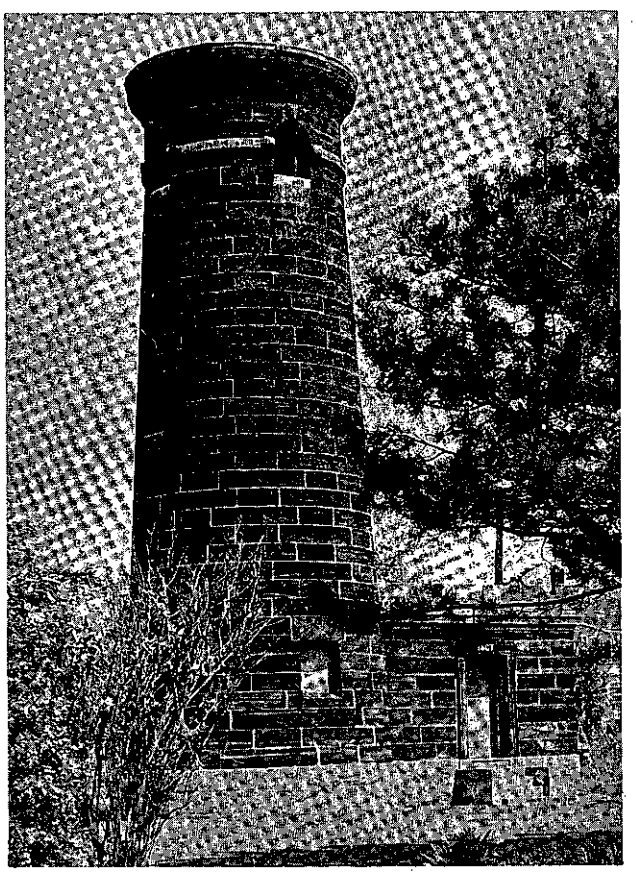
Courtesy of National Park Service, U.S. Department of the Interior

FIGURE 22–7 Waterscape Pattern. This historic fishery represents a landscape pattern centered around water. Areas such as this comprise environmental systems rich in cultural resources.

2.2 Resource Inventory Procedure: Maps and Symbols

To facilitate inventory and map-making, a commercial supplier was contracted to devise symbols for 31 "significant resources", i.e., features unique or outstanding to a region, State, or nation. Two boundaries were used: the natural watershed drainage area and planning subarea boundaries following county lines. Of approximately 200 features, those selected as the most important include geological formations, wildlife areas, local, State, and Federal parks, proposed local, State, and Federal recreation areas, archaeological and historical sites, wetlands, and other topographic characteristics. Forty-four base maps, a legend of symbols, and an index summarize this information (Figure 22–45c). Each State should maintain this inventory and provide additional descriptive information necessary for Basinwide planning purposes.

Prepared with the resource inventory maps, identified in Figure 22–45c by a Roman numeral I, was a set of composite maps (II) identifying the Basin's environmental systems (also included in Figure 22–45c). Dots represent significant resource features catalogued on the resource inventory maps, identify existing features, and indicate potential changes in environmental systems and resources which may be caused by urban expansion, highways, and existing and proposed reservoirs. Environmental systems that contain a high concentration of significant re-



Courtesy of Erie, Pennsylvania, Tourist and Convention Bureau

FIGURE 22–8 A Significant Cultural Resource. The Land Lighthouse in Erie, Pennsylvania, represents one of the 31 types of aesthetic and cultural resources identified.

source features are especially worthy of planning attention and detailed study.

Each of the 44 resource inventory maps (I) related to the Great Lakes Basin shows the topographical base. The composite maps (II), which correspond to the resource inventory maps, show forest cover in light green and environmental systems in dark green. Urban concentrations and major roads are shown in dark red. Light red represents the impact of future urban expansion on nearby environmental systems. Significant groupings of resource features are bounded by a broken black line. Environmental systems and resource features most likely to be affected by urban expansion and, therefore, most critically in need of planning attention can be identified by using these maps.

2.3 Summary of Aesthetic and Cultural Resources

An addendum containing descriptions of the aesthetic and cultural resources identified on the resource inventory maps (Figure 22–45c) was prepared for planners, developers, and managers seeking more specific information. This addendum consists of inventory maps and descriptive inventory tables for each State in the Basin. The maps are identical to those appearing in this appendix except that each resource symbol is labeled with an identifying letter and code number. These identifying letters and numbers also appear on the corresponding tables next to a description of that resource. The description includes type, location, ownership, size, and accessibility of the resource, and comments about its significance or uniqueness.

Photocopies of the addendum are available at cost from the Great Lakes Basin Commission. The following highlights only some of the features listed in the inventory.

2.3.1 Minnesota

2.3.1.1 Archaeological and Historic Sites

Ghost towns in St. Louis County, reminders of the Mesabi Range's history as a mining and lumber center, are among the historic sites that add flavor to the area. Another is the Knife River Village, which boasts copper mines and the remains of an Indian encampment. The village is located 19 miles northeast of Duluth, Minnesota. Grand Portage Catholic Church, the oldest remaining log church in Minnesota, is also in the Basin.

2.3.1.2 Geological Formations

Many waterfalls cascade through the coastal area of the State. Several are found in Judge C. R. Magney State Park, Kodonce River State Wayside, and Devil Track State Wayside. The largest cataract in the State, Baptism Falls, descends 80 feet in Baptism River State Park, 33 miles northeast of Two Harbors, Minnesota.

Castle rocks and dramatic examples of glaciation are other geological formations in the area. Le Thomsonite Beach, which is northeast of Grand Marais in Cook County, is one of the three places in the State where gem stones are found.

2.3.1.3 Parks

Minnesota's portion of the Great Lakes Basin is replete with State and Federal parks containing scenic lakes and wilderness for canoeing, camping, hiking, and picnicking. Superior National Forest, Pat Bayle State Forest, Bear Head Lake State Park, Grand Portage State Forest, and Baptism River State Park are just a few. Tower-Soudan State Park, located one mile west of Soudan, encompasses 980 acres, including Minnesota's oldest and deepest underground iron mines. Mine tours are offered. Jay Cooke State Park, only two miles west of Duluth, has a gorge and spectacular terrain. Split Rock Lighthouse State Park includes 145 acres surrounding the historic lighthouse that has become the symbol of the north shore.

2.3.2 Wisconsin

2.3.2.1 Archaeological and Historic Sites

Wisconsin's rolling timberland once nurtured generations of Indians, such as those who have left their mark at the Rock Island archaeological site and at the Oconto copper culture site. The latter was used by prehistoric Indians from 5,000 to 2,000 B.C. La Pointe, on Madeline Island, the traditional home of Chippewa Indians, can be reached by ferry. More recent historic sites in the area include

Eagle Lighthouse, one of the earliest in Green Bay, and Peshtigo Fire Cemetery, a reminder of the 1871 fire in Peshtigo, which took a worse toll than did the infamous Chicago fire.

2.3.2.2 Parks and Wildlife

Wisconsin boasts thousands of county, State, and Federal parks teeming with wildlife. Deer, snowshoe hare, pheasant, muskrat, migrating hawks, and game birds are found along the hundreds of streams and lakes, which also offer opportunities from swimming and canoeing. One of these, the St. Croix River in the upper reaches of Douglas County, has become part of the Wild and Scenic Rivers System. The highest waterfall in the State is located in Pattison State Park, 10 miles south of Superior, Wisconsin.

2.3.3 Illinois

2.3.3.1 Historic Sites

Chicago has two registered National Historic Landmarks, both of which are privately owned. One is the former home of Henry Demorest Lloyd. The other is the Willard House, which dates from 1730 when it was the home of Frances Willard of the Women's Christian Temperance Union. A Frank Lloyd Wright house in Oak Park, Illinois, is also a registered National Historic Landmark. The University of Chicago campus includes Jones Laboratory, the site of the first controlled nuclear reaction.

2.3.3.2 Parks

Illinois' only State park on Lake Michigan is Illinois Beach State Park. Numerous city and county parks offer some forest area and open space.

2.3.4 Indiana

2.3.4.1 Historic Sites

One of the oldest buildings in the area, built in 1822 for a trader, is found near the Indiana Dunes National Lakeshore on the Bailes homestead. It has been proclaimed a National Historic Landmark. The first Catholic church built in northwest Indiana, constructed in the 1830s, still stands near St. John Capuchin Seminary.

2.3.4.2 Geological Formations

The Indiana portion of the Great Lakes Basin contains several regionally significant glacial areas, including the Kankakee Outwash in the Wahob, Long, and Flint Lakes area just north of Valparaiso, and the Valparaiso Moraine, located northwest of Valparaiso in Porter City. There are glacial remains south of Lake Calumet in Lake County and in the Little Calumet River, Burns Ditch, and Salt Creek area.

2.3.4.3 Parks

The best known park in the area is the Indiana Dunes State Park with its 315 campsites and unique old Lake Chicago dunes. Other parks include Pokagon State Park and Chain O'Lakes State Park.

2.3.5 Michigan

2.3.5.1 Upper Peninsula

(1) Historic Sites

One of the many Upper Peninsula mines open to the public is the Arcadian Copper Mine, one mile east of Hancock, which offers tours and exhibits. Historic homes in Ft. Wilkins, dating from the 1840s, give insight into how miners in copper country protected themselves from Indians in the last century. There are several ghost towns of interest near Garden, Michigan, including Fayette, which is now a State park with museums and historic houses.

Those interested in museums may want to note that Henry Schoolcraft's home, built in the 1820s, now houses the Indian Agent Historic Museum, located in Sault Ste. Marie. That city offers two other museums, the Johnston house, a log cabin filled with pioneer artifacts, and the Bishop Baraga Museum of religious artifacts. The Ishpeming area features the Rope Gold Mine and the National Ski Hall of Fame. Skiing was first introduced to North America in this area.

(2) Geological Formations

The coastline of the Upper Peninsula offers several beaches of agate and chlorastrolite. Examples of these semiprecious and gem stone beaches are found north and west of Lanton, east of Agate Harbor, east of Grand Marais, and near Ft. Wilkins. Many other beaches in the area have rolling sand dunes. The coastline also offers many coves and harbors.

The Porcupine Mountains, reaching 1,985 feet at their highest point, represent the most dramatic topography in the Midwest. Mt. Curwood is the State's highest peak. North of Marquette the Huron mountain range also offers rugged terrain. The entire area is dotted with glacial remains. The most spectacular waterfall in the Upper Peninsula is west of Big Bay in Ives Lake. The water drops 150 feet through a series of narrow falls.

The Upper Peninsula is especially beautiful in the fall when mixed forests of maple, birch, beech, and conifer blaze with color. Color tours are best to the northwest of Iron River, northeast of Crystal Falls, in the Grand Marais area, and east and south of Munising. Ishpeming and Sault Ste. Marie also have colorful fall foliage.

(3) Wildlife

Wildlife is plentiful in the Upper Peninsula. Rivers are well stocked with salmon, steelhead, walleye, and lake trout. Ducks, geese, and sharptailed and ruffed grouse are found throughout the area. Cranes can be seen south of Munising and north of Escanaba. Gulls and terns nest off the Huron Islands. Eagles can be spotted north of Covington, near Otter Lake, and along the Little Carp and Union Rivers. Lake Superior State Forest is another refuge for eagles, as well as a significant nesting area for hawks.

2.3.5.2 Lower Peninsula

(1) Historic Sites

Historic sites in the Lower Peninsula include Fort St. Joseph, the second white settlement in lower Michigan, established in 1686 at what is now Gratiot Park in Port Huron, and Greenfield Village, Henry Ford's assemblage of examples of American inventiveness, in Dearborn.

The years between the establishment of these sites are partially recorded on Mackinac Island and in Mackinaw City, where the many attractions include museums and Indian relics. In addition, Holland, Michigan, has a Netherlands Museum on Dutch history, including the Dutch in Michigan. A trip along the Big Sable River, eight miles north of Ludington, affords the traveler a glimpse of life in lumber camps as it was in the 1880s. Outdoor lumber exhibits and a museum can be found seven miles northeast of Grayling at Hartwick Pines State Forest. One of Michigan's remaining covered bridges is still in use across the Flat River southwest of Smyrna. It was built in 1867.

(2) Parks

Michigan has much to offer the camper and hiker. In Sleeping Bear Dunes National Lakeshore one finds the mammoth dunes as well as virgin forest. Other stretches of untouched timber are located north of Grayling and near Traverse City. Wilderness State Park is named for the 6,925 square miles of virgin land it encompasses to the west of Mackinaw City. Hardwood State Forest on Beaver Island becomes a blaze of color in the fall, as do the areas around Mackinaw City, Petoskey, Manistee, and Frankfort.

The largest State park in Michigan is Waterloo Recreation Area. Cranes and the largest concentration of beaver in the State inhabit its 16,492 acres northeast of Jackson. Many small local parks serve the Detroit metropolitan area.

(3) Wildlife

Most of Lake Erie and Lake St. Clair are intensively-used waterfowl migration areas. The Kirtland's warbler, an endangered species, is just one of the many bird species found in Michigan parks. The warbler and wild turkey can be spotted in Huron National Forest, Au Sable River State Forest, and Ogemaw State Forest. Houghton Lake State Forest is a special nesting area for osprey and eagles.

In addition to deer and smaller animals, Michigan has a reestablished elk population roaming the largest range east of the Rockies. Elk can be seen in Pigeon River State Forest, Thunder Bay State Forest, and Hardwood State Forest.

Michigan is a fisherman's dream. Some of the species found in the State's many streams and lakes are smallmouth bass, rainbow and brook trout, perch, coho salmon, and smelt.

(4) Geological Formations

Sinkholes are found all over the Lower Peninsula, especially northwest of Alpena. Rogers City has the largest limestone quarry in the world. Good sandy beaches occur north of Frankfort and south of Manistee.

2.3.6 Ohio

2.3.6.1 Archaeological and Historic Sites

One of the oldest sites of interest in the Ohio portion of the Great Lakes Basin consists of three stone walls, remnants of a people dating from 1200 to 1600 A.D. The walls are in Ft. Madison, south of Madison. There are more recent relics—churches, county courthouses, homes—that have been designated historic landmarks. The Putnam County Courthouse, in Ottawa, is an excellent example of the style that was popular in the early 1900s. Wellington Town is an entire comminity of Victorian homes, complete with an elaborate Byzantine city hall. Several Frank Lloyd Wright homes have been marked throughout the area, and Thomas A. Edison's birthplace, built in Milan in 1841, has been preserved.

2.3.6.2 Vegetation

The many parks in this highly populated area provide open space and trees but not the tracts of untouched land found in northern Michigan and Minnesota. A small nearly unspoiled forest can be found, however, in the Shelton Woods on the Vermilion River. Castalia Prairie, a remaining section of the original prairie, displays a large variety of wildflowers.

2.3.6.3 Wildlife

Wildlife has managed to survive in places in urbanized Ohio. Kellys Island, for example, offers some of the best pheasant hunting in the State. The State-owned Rest Haven wildlife area near Castalia has been noted for game hunting. Hundreds of tourists come to Buzzard Bay each year to watch the buzzards return to their roosts.

2.3.7 Pennsylvania

2.3.7.1 Historic Sites

Of historical interest in this area are the U.S. Niagara, a wooden warship used in the War of 1812, now preserved in Erie, Pennsylvania, and Fort Presque Isle, which played a part in the French and Indian War.

2.3.7.2 Wildlife

Presque Isle is an excellent vantage point from which to watch the many migratory birds that seasonally return to the area.

2.3.8 New York

2.3.8.1 Archaeological and Historic Sites

The area is dotted with Indian culture sites, where archaeologists have discovered evidence of early woodland Indians dating from 841 B.C. Sites have been discovered north of Watertown along the Indian River, near Oakfield, east of Niagara Falls, and near Rochester.

The first customs house on the U.S.–Canada border still operates in Ogdensburg. Tourists can also visit Fort Niagara, built in 1879, which has been restored to house a colonial museum. Buffalo has several political memorials, including President Millard Fillmore's home and grave and a monument to William McKinley, who was assassinated in that city while welcoming visitors to the Pan-American Exposition. The Albright-Knox Art Gallery is also located in Buffalo.

2.3.8.2 Geological Formations

The New York portion of the Great Lakes Basin draws thousands of tourists each year because glaciation has carved the area into beautiful lakes and gorges. The Thousand Islands, an extensive island complex in the St. Lawrence River, Niagara Falls, and the moraine-formed Finger Lakes are evident examples. Watkins Glen, near Seneca Lake, is only one of many scenic gorges throughout the area. The highest waterfall east of the Rocky Mountains, Taughannock Falls, cascades toward Cayuga Lake in the Finger Lakes region.

The most outstanding drumlin area in North America is found between Weedsport and Lyons. Another example of glaciation is Irondequoit Bay, originally a glacial channel. The coastline of Mexico Bay and north is famous, not for glaciation, but for the spectacular effects of erosion.

Fossil hunters will find unusually well-preserved and abundant fossils in Yawgers Woods near Cayuga Lake.

2.3.8.3 Wildlife

There are many wildlife management areas in this part of New York State, including Perch River Game Management Area, north of Brownville; Howland Island Game Management Area, northwest of Auburn; Montezuma Federal Wildlife Refuge, northeast of Geneva; and Cicero Swamp Wildlife Management Area, north of Syracuse.

Gull Island in Lake Ontario off Shed Island is a major gull nesting colony. Eldorado Shores is another point of interest to bird watchers as it is used by migratory birds.

Section 3

RESOURCE INVENTORY FINDINGS

3.1 Location of Significant Resources—Environmental Systems

More than 90 percent of the Great Lakes Basin's significant aesthetic and cultural resource features are in environmental systems that parallel water systems or in areas of strong physiographic relief. These systems are:

(1) urban buffer zones: environmental systems that because of their proximity to existing urban concentrations serve as natural buffers to urban expansion

(2) linkage corridors: those environmental systems that link urban areas

(3) shore zones: environmental systems that parallel or encompass portions of the shorelines of the Basin's lakes, streams, and wetlands

(4) other zones: environmental systems that do not fall into the first three categories, such as significant groupings of resources or single resource features

(5) resource clusters: groupings of similar of dissimilar resource features that are considered important enough to be identified either as part of the environmental systems or separate from them. Individually these features might not be important, but when four or more are close together they warrant special planning and management consideration.

(6) single scattered resource features: resource features located outside environmental zones, corridors, or clusters that are important because, although they are not as important a planning consideration as environmental systems, they could affect their surroundings.

3.2 Critical Planning and Study Patterns—Priority Ranking

Certain environmental systems, by virtue of their location, are likely to be affected by existing and potential human impacts. For this reason, some are in more critical need than others of planning attention and more detailed study. Although the priority of planning importance varies slightly from one plan area to another (Section 4), Basinwide planning attention and a study priority ranking for these environmental systems are suggested. In this priority ranking, zones not treated are not likely to be immediately affected by human impacts, but if existing and projected impact patterns change, these zones will require increased planning attention.

3.2.1 First Priority: Buffer Zones

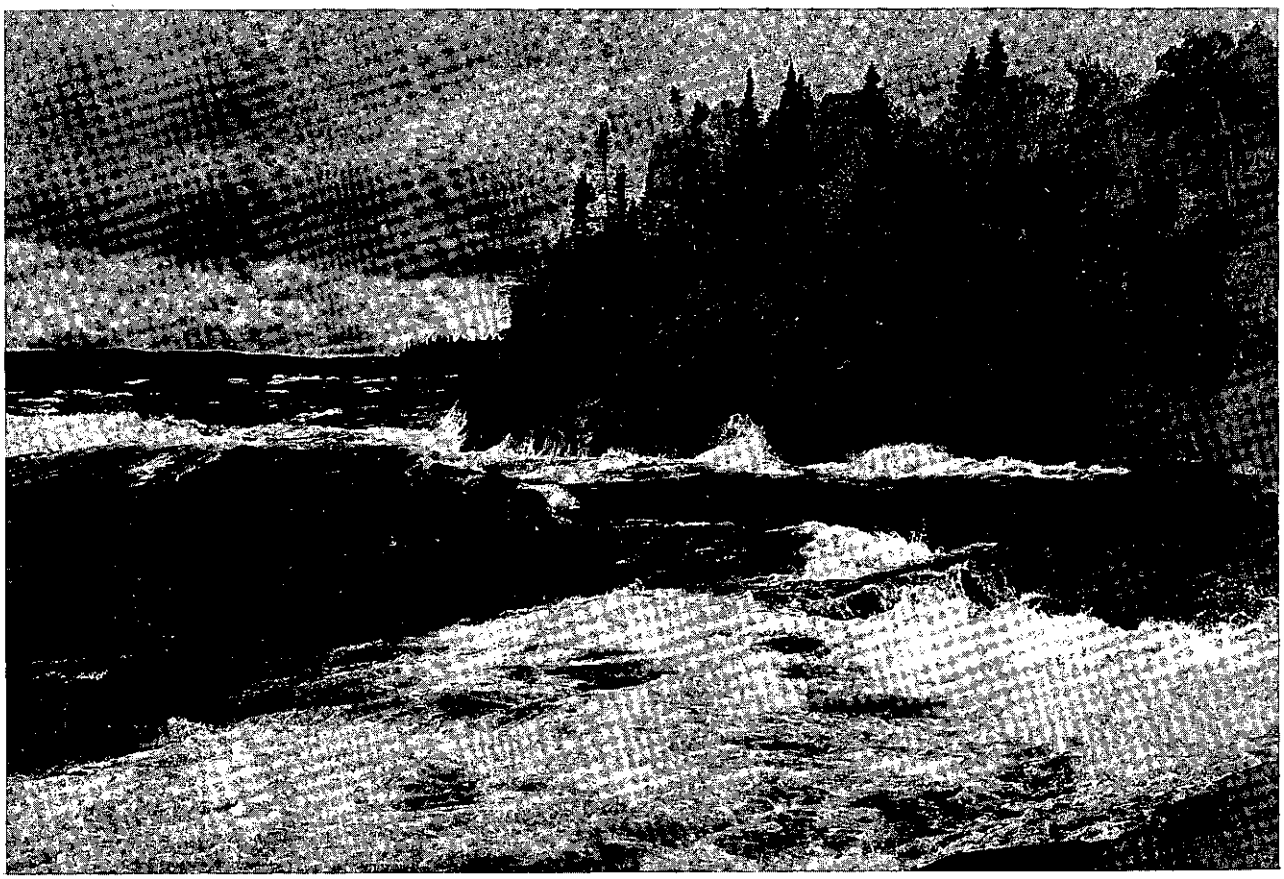
Imaginative planning in the past resulted in the establishment of park districts, or buffer zones, which urban residents without cars depend upon for relaxation and recreation. Because these buffer zones lie next to expanding urban centers they may lose their integrity as environmental systems. Buffer zones that surround Chicago, Milwaukee, Detroit, Cleveland, Toledo, and Buffalo block the merging of rapidly growing urban centers and unless they are preserved, by the year 2000 one massive urban concentration could exist from Milwaukee to Chicago to Detroit to Cleveland, and eastward to Buffalo and Rochester.

3.2.2 Second Priority: Linking Corridors

Linking corridors prevail south from Green Bay to Milwaukee and Chicago, and northward along the eastern shore of Lake Michigan. A major pattern of east-west corridors links Detroit with Lansing, Lake Michigan, and with the more northern cities of Flint, Saginaw, Grand Rapids, and Bay City. Because they link urban centers, they unfortunately are ideal locations for highways and other transportation systems.

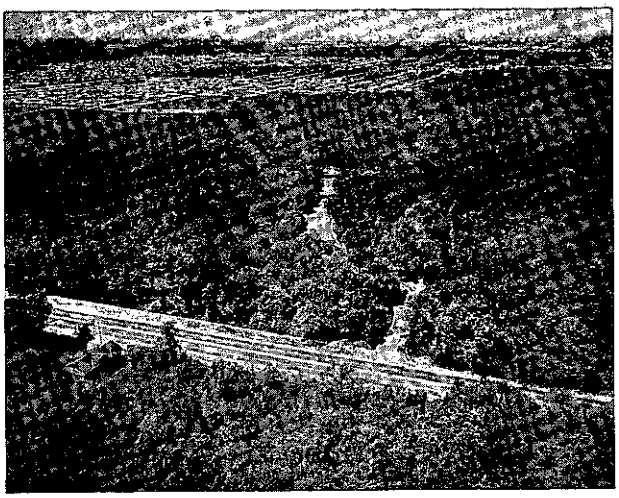
3.2.3 Third Priority: Shore Zones

The recent authorization of such Federal recreation areas as Apostle Islands, Sleeping Bear Dunes, and Indiana Dunes National



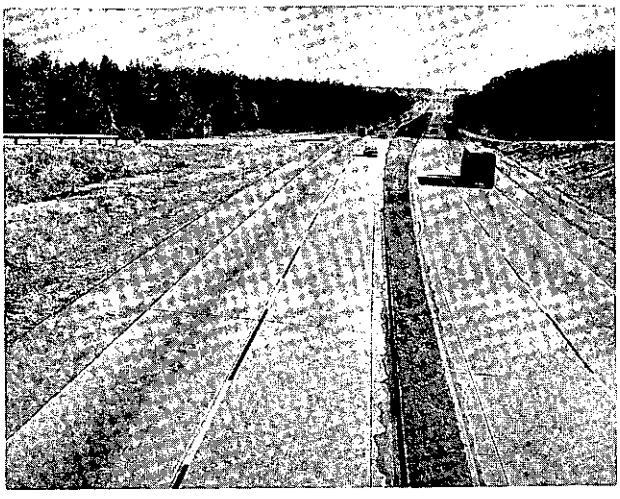
Courtesy of National Park Service, U.S. Department of the Interior

FIGURE 22–9 Significant Shore Zones. Many aesthetically significant shore zone areas of the Great Lakes Basin are being lost due to improper land and water use. These areas require increased planning attention and study.



Courtesy of Chicago Aerial Survey

FIGURE 22–10 Critical Buffer Zones. The buffer zone environmental systems are most in need of immediate planning attention. This portion of the Cook County Forest Preserve in Illinois is an example of an effective buffer zone.

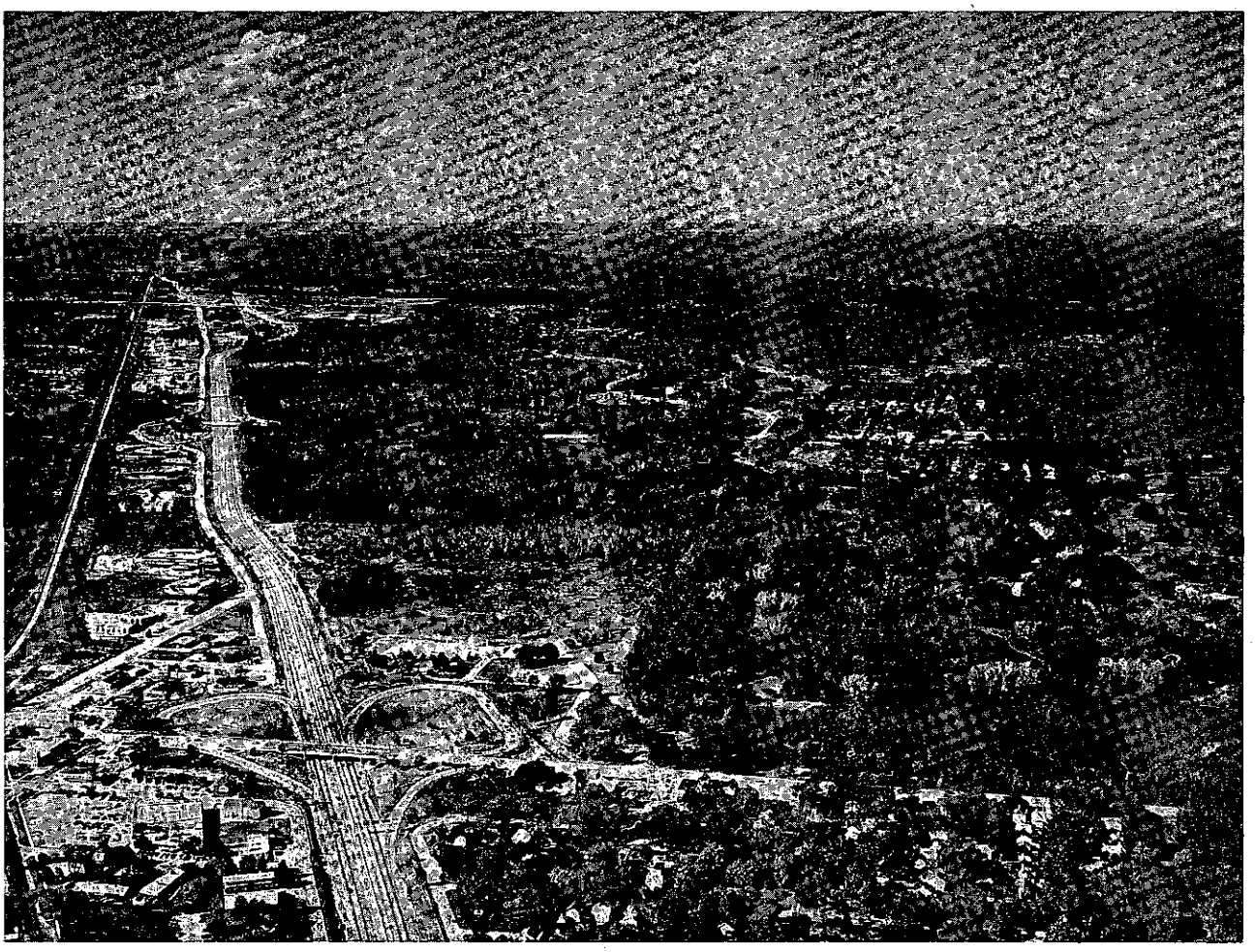


Courtesy of Soil Conservation Service, U.S. Department of Agriculture

FIGURE 22–11 A Majqr Human Impact. Transportation networks such as these have the potential of exerting a major impact on the integrity of the Basin's environmental systems and resources.

TABLE 22–3 Federal Funding Programs Applicable to Aesthetic and Cultural Resources

Assistance Program	Objectives	Eligibility	Assistance Provided	FY 72 Est. Funding Level
Soil Conservation & Domestic Allotment Act PL 74-46	Improved land, water, and wildlife conservation practices/pollution abatement	Farmers, ranchers (owner, landlord, tenant)	Project grants 90% max.	$140 million
Food and Agriculture Act PL 87-703	Loan assistance for resource conservation, development and use, land use shifts	Sponsoring agencies	Direct loans	$3.3 million
Smith-Lever Act 7 USC 341-49	Improve recreation, wildlife, and natural beauty through evaluation service for landowners	Land grant colleges	State-Federal matching	$1.4 million
Food and Agriculture Act PL 87-703, PL 91-343, and PL 74-46	Assist public in development and initiation of resource conservation programs	Public agencies	Matching project grants	$14.2 million
Open Space Land Program Title VII, HUD Act of 1970	Community aid to acquire and develop land for open space	Public bodies project must be part of comprehensive plan	Matching grants	$200 million
Recreation and Public Purposes Act of June 14, 1926, as amended	Permit lease or acquisition of available public land for historical monuments and recreation	Fed., State, and local political subdivisions	Sale, exchange, or donation of property	N/A
Land & Water Conservation Fund Act of 1965 as amended	Assistance for acquisition and development of outdoor recreation areas	Through designated State agency Federal agencies	Grants-in-aid 50% max.	$148.5 million
Federal Aid in Wildlife Restoration Act of 1937 (Bittman-Robertson)	Restore, manage, and preserve wildlife habitat and populations	State fish and game departments	Project grants (Max. 75%)	$42.2 million
Federal Aid in Fish Restoration Act of 1950 (Dingell-Johnson)	Research, acquisition, coordination, and development of fishery-related properties and activities	State fish and game agencies	Project grants (Max. 75%)	$14.3 million
National Historic Preservation Act of 1966 PL 89-665	Prepare Statewide historic surveys and plans (funds can be used for property acquisition and development)	National Trust of Historic Preservation and States	Matching grants	$5.9 million
Inter-Agency Archaeological Salvage Program PL 74-292, 86-523, 89-665	Investigate and salvage archaeological remains threatened by Federal water developments (by contracts)	Contracts to qualified educational or scientific institutions	Award of contracts	$10 million
Highway Beautification Act PL 89-285 Landscaping and Scenic Enhancement	To aid State highway departments in landscaping and rest area development	State highway departments	Grants. Matching funds not required for landscaping/scenic enhancement	$10 million



Courtesy of Chicago Aerial Survey

FIGURE 22–12 Linking Environmental Systems. Stretching northward from Chicago toward Milwaukee, Wisconsin, this ribbon of Cook County (Illinois) Forest Preserve represents an important linkage corridor. Such environmental systems are considered second in overall importance for immediate planning attention.

Lakeshore reflects a growing awareness of the importance of proper development of Great Lakes shorelines. However, many inland lakes as well require planning attention and detailed study to prevent loss or damage through improper land and water use. Serious problems already exist due to poor planning or the lack of any planning. In the absence of adequate setback and other restrictions, widespread resource degradation has resulted. Many scenic shorelines are today on the verge of loss because of improper sewage disposal on surrounding lands and poor land use practices. As greater numbers of people flock to second homes along the Basin's lakes and streams for recreation, human impact on resources will soon grow critical. Uses and problems of Great Lakes shorelines are discussed in detail in Appendix 12, *Shore Use and Erosion.*

3.2.4 Fourth Priority: Resource Clusters

Although major emphasis has been placed on environmental zones and corridors, there are clusters of significant resource features that require planning attention. Groupings could be included in a comprehensive land and water use plan for an adjacent environmental zone or corridor.

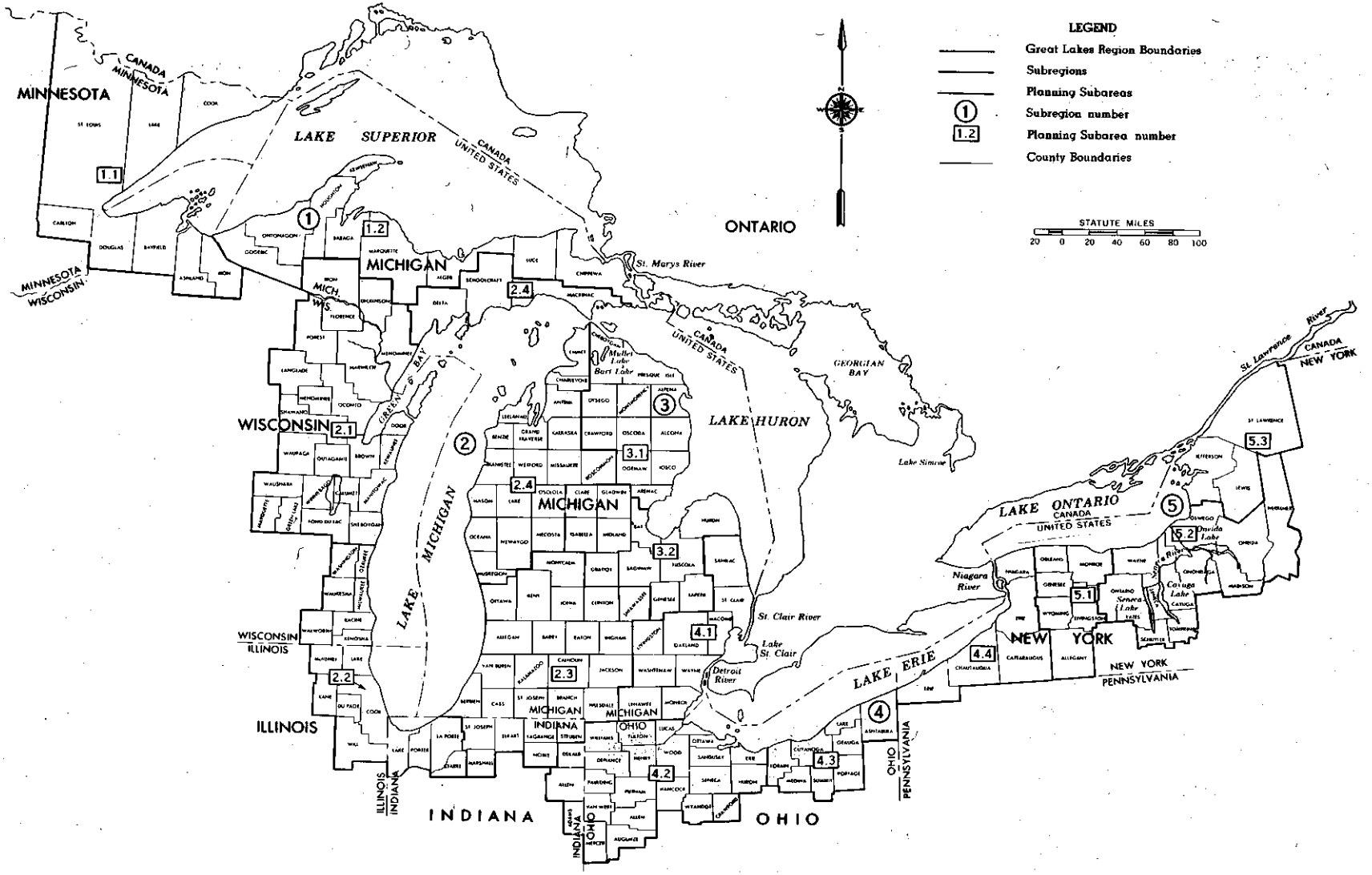


FIGURE 22–13 Great Lakes Region Planning Subareas

3.2.5 Fifth Priority: Single Scattered Resource Features

Single features could be the stimuli for smaller subregional comprehensive plans such as public or private recreation and historical or cultural complexes. Often these features can serve to highlight an otherwise uninteresting landscape pattern.

3.3 Factors Affecting the Corridors and Resource Features

The human impacts that most seriously threaten the Basin's significant aesthetic and cultural resources are:

(1) intensified land use
(2) transportation networks
(3) water use
(4) energy management

Each is a direct manifestation of a growing and more demanding population. Impact is greatest within and adjacent to expanding urban centers where the effects of transportation networks along with those of poor land and water use planning are first felt.

3.4 Financial Factors Affecting Aesthetic and Cultural Resources

The availability of funds for the planning, protection, and development of aesthetic and cultural resources has usually been a constraining factor. Grant programs, such as the Historic Preservation Act of 1966 (PL 89–665) and the Inter-Agency Archaeological Salvage Program, which could be used to protect or enhance aesthetic and cultural values, have not been funded at a sufficient level to meet existing needs. Table 22–3 lists present Federal funding means applicable to planning, protection, and management of aesthetic and cultural resources. Many States have comparable programs and funding authorities.

Section 4

CONCLUSIONS AND RECOMMENDATIONS

4.1 The Great Lakes Basin

The maps in this appendix identify thousands of aesthetic and cultural features which have been assigned a priority ranking for planning attention. But these are only the first steps toward planning proper use and development. Specific planning recommendations indicating how the resources might be used and aimed at reducing or eliminating barriers to their proper use must still be formulated.

Jurisdictional problems arise because there are so many governmental levels involved in water resource planning and management throughout the Basin. Zoning standards and their enforcement vary from one political subdivision to another, causing problems when a resource or an environmental system is located in more than one county, municipality, or State.

Each year many significant aesthetic and cultural resources are lost because private property owners faced with heavy tax obligations sell or lease their properties. As land prices and property taxes increase, more and more owners become less able to allow their lands or buildings to go unused merely for the sake of retaining their aesthetic or cultural integrity. All too often, a buyer converts his purchase into a quick dollar through intensive land development or property redevelopment that destroys significant resource features. Planning and action would eliminate these problems.

Planning recommendations that transcend plan area boundaries should be presented as overall Basin recommendations. In addition, each set of plan area recommendations must complement and expand upon those for the other four plan areas if a truly Basinwide plan is to result. Viewing the Basin as a whole, this appendix offers 15 general recommendations for the planning and use of its aesthetic and cultural resources.

4.1.1 Basinwide Planning Recommendations

(1) The States, through the Great Lakes Basin Commission, should strengthen coordination among all public agencies having responsibilities for preservation, enhancement, and management of aesthetic and cultural resources, and should give greater consideration to the Basin's aesthetic and cultural features in the formulation of resource management programs.

(2) States should strengthen and enforce land use zoning laws. All zoning plans should meet State standards. This requirement would insure that land use plans are based on a good analysis of land use potential. It would also help prevent perpetuation or expansion of current poor land use practices.

(3) Federal and State authorities should develop policies and guidelines for preserving the character of environmental systems through fee simple acquisition or other means. Use of the power of eminent domain, fee or less than fee purchase, gifts, exchanges, and donations should be considered.

(4) Tax reforms that would encourage environmentally beneficial use of the Basin's aesthetic and cultural resources should be initiated. Such reforms include tax reduction or elimination for uses that are beneficial and tax levies for nonbeneficial practices.

(5) Maximum use should be made of available Federal and State programs to assist in the planning, protection, and development of the Basin's aesthetic and cultural resources. Funding of these programs should be expanded to meet current and future needs.

(6) State and Federal agencies should cooperate in developing a Basinwide historical-archaeological site preservation and use plan, concentrating on the most outstanding landmarks that are related to man's history and his impact on the Great Lakes Basin.

(7) Using existing roads or abandoned railroads, a Basinwide system of "cultural trails" should be designated to connect its historical-archeological sites. The trails should meander

Courtesy of National Park Service, U.S. Department of the Interior

FIGURE 22–14 An Historic Trail System. Minnesota's Grand Portage is one of the historic fur trade routes that crossed the lands and waters of the Lake Superior basin. These early travel routes could provide the basis for a system of trails linking significant aesthetic and cultural resources in the basin.

through areas of significant aesthetic and cultural resources.

(8) Instead of more highways, public transportation systems to nearby significant aesthetic and cultural resources should be provided for urban dwellers, especially those without automobiles.

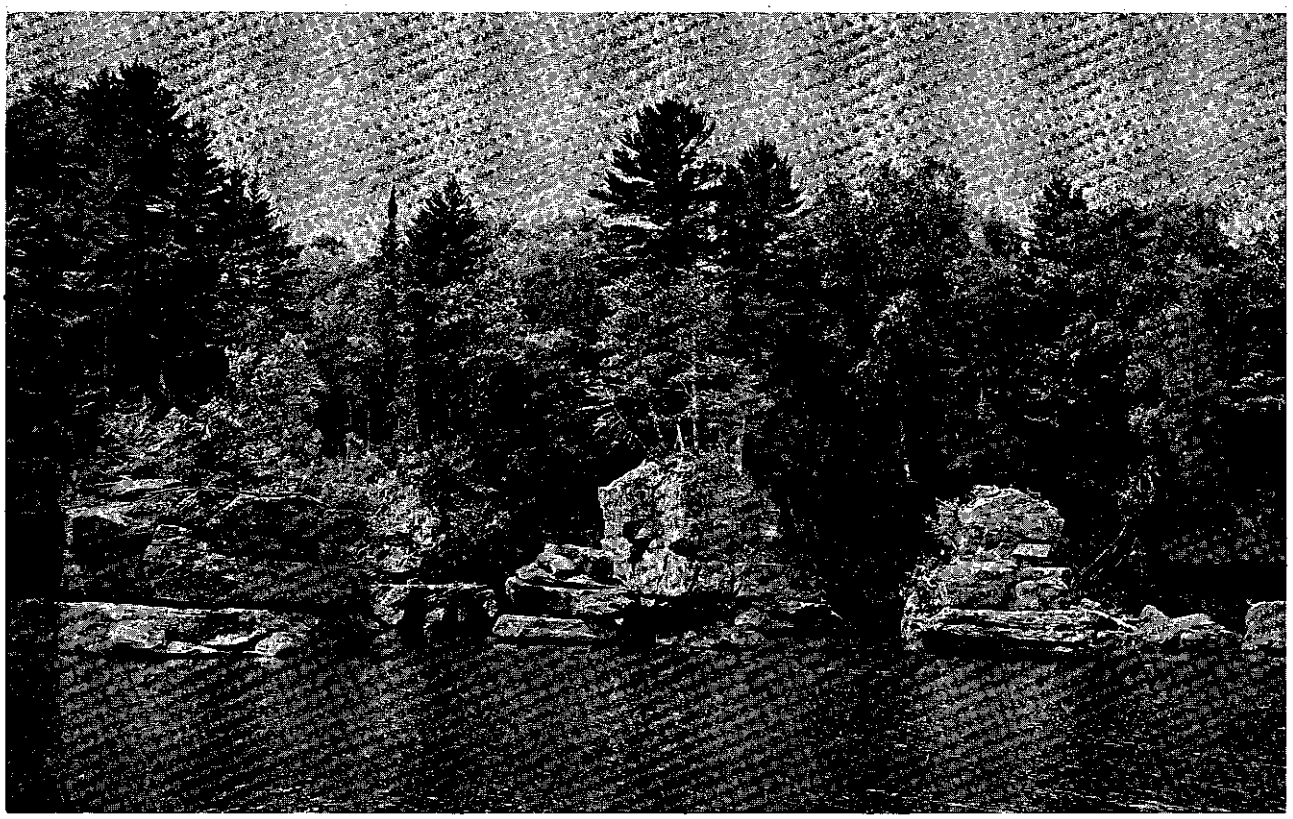
(9) Increased attention should be given to the identification, development, and use of the many remaining aesthetic and cultural resources located in the Basin's major cities.

(10) Detailed inventory information helpful for planning, development, and use of resources should be obtained. Appropriate studies should be conducted as necessary. Some of this information has been compiled for State recreation and historic preservation plans.

(11) Where appropriate, international agreements should be established with Canada to assure joint planning, protection, and development of aesthetic and cultural values of concern to both nations.

(12) Outdoor classrooms for school groups and the general public should be located in the environmental systems and at resource features that best exemplify the Basin's aesthetic and cultural resources. Environmental study areas should be in or near urban centers.

(13) Common jurisdictional boundaries should be established to insure unified and



Courtesy of National Park Service, U.S. Department of the Interior

FIGURE 22–15 Critical Shore Zones. Many shorelines in Plan Area 1 have been identified as having the most critical need for planning attention. For the Great Lakes Basin as a whole, shore zones are rated third priority.

coordinated action by planning and management agencies.

(14) Additional legislation needed to implement aesthetic and cultural resource management plans and programs should be formulated.

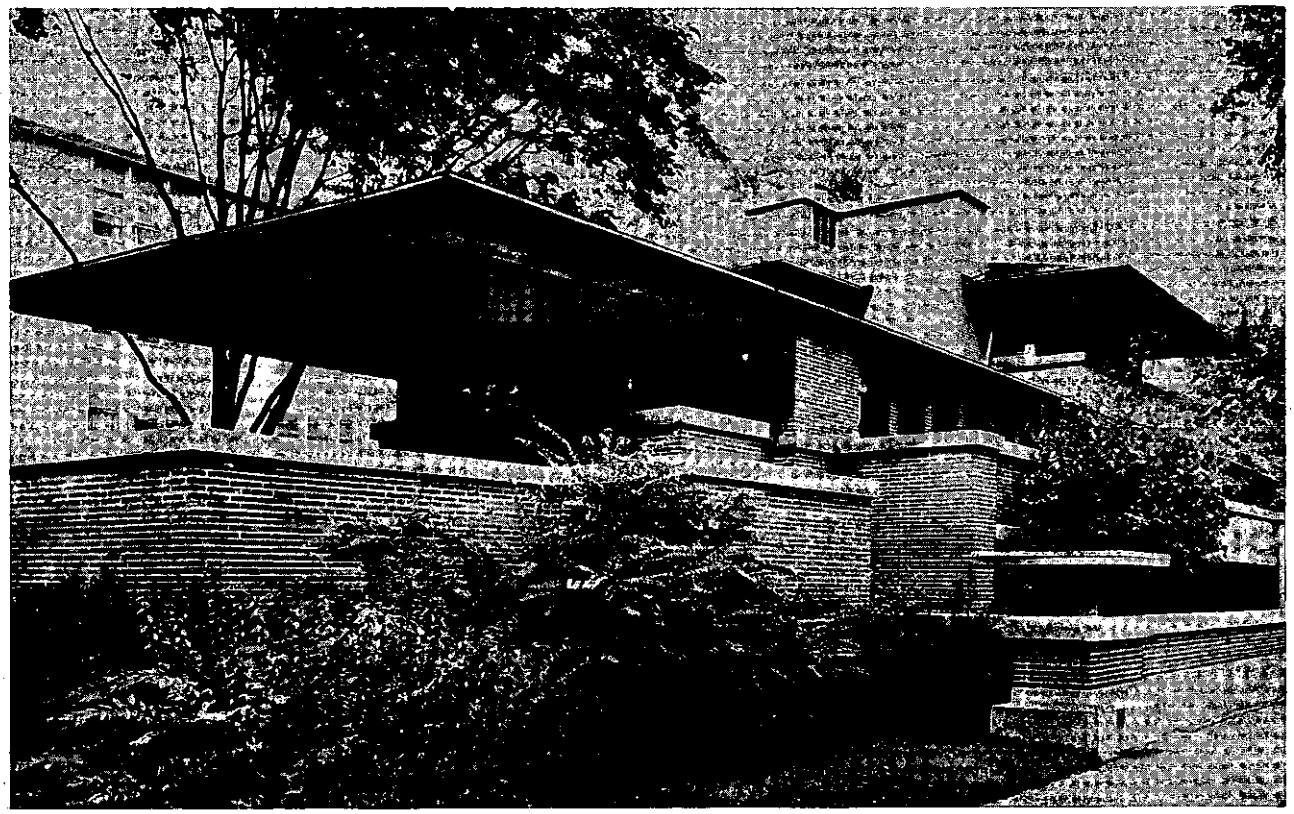
(15) An institution or commission should be established to coordinate research pertaining to the Basin's natural and human resources and to develop a comprehensive, computerized Basin resource management model which would aid the decision-making process.

4.2 Plan Area 1—Lake Superior Basin

Comprising 15,915,300 acres of land, the United States portion of the Lake Superior basin is the least urbanized of the five Great Lakes basins. Projections indicate urban expansion will be minimal between now and the year 2020. It is anticipated that urban acreage will increase by only 27,600 acres from 412,300 acres in 1966–67 to 449,900 acres in the year 2020.

Despite this fact, there is a need for careful planning of certain environmental systems within the Lake Superior basin. A series of Plan Area 1 maps identifies the environmental systems of the basin in the most critical need of planning attention. Arranged in order of priority, the maps show shore zones, buffer zones, linkage corridors, and resource clusters (Figures 22-16c through 22-19c). The buffer zones of Duluth, Superior, Ashland, Bayfield, and other cities have as critical a need for proper planning as those of large cities.

This nonurban basin is rich in resources. Numerous isolated features and resource clusters attract many recreationists and casual visitors. The shore zones of Lake Superior and the basin's inland lakes and rivers are especially appealing. Proposals for new and improved transportation systems must be carefully analyzed in light of their possible impact on resource features. If transportation



Courtesy of National Park Service, U.S. Department of the Interior

FIGURE 22–20 Recognizing the Significant. A registered National Historic Landmark, the Robie House in Chicago, Illinois, designed by Frank Lloyd Wright, is typical of the significant cultural resources of Plan Area 2.

networks leading to these resources are not properly planned, the very reason for which they are built could be destroyed. To prevent this problem, shore zones deserve a high priority in planning studies.

4.2.1 Planning Recommendations

There are several specific planning recommendations for development of the aesthetic and cultural resource features in Plan Area 1:

(1) Formulate recommendations for planning and study of shore and buffer zones and related linkage corridors that are in critical need of attention (Figures 22–16c through 22–18c).

(2) Develop plan area recommendations for the proper use and development of these resource clusters and scattered resource features identified as being in critical need of planning attention (Figure 22–19c).

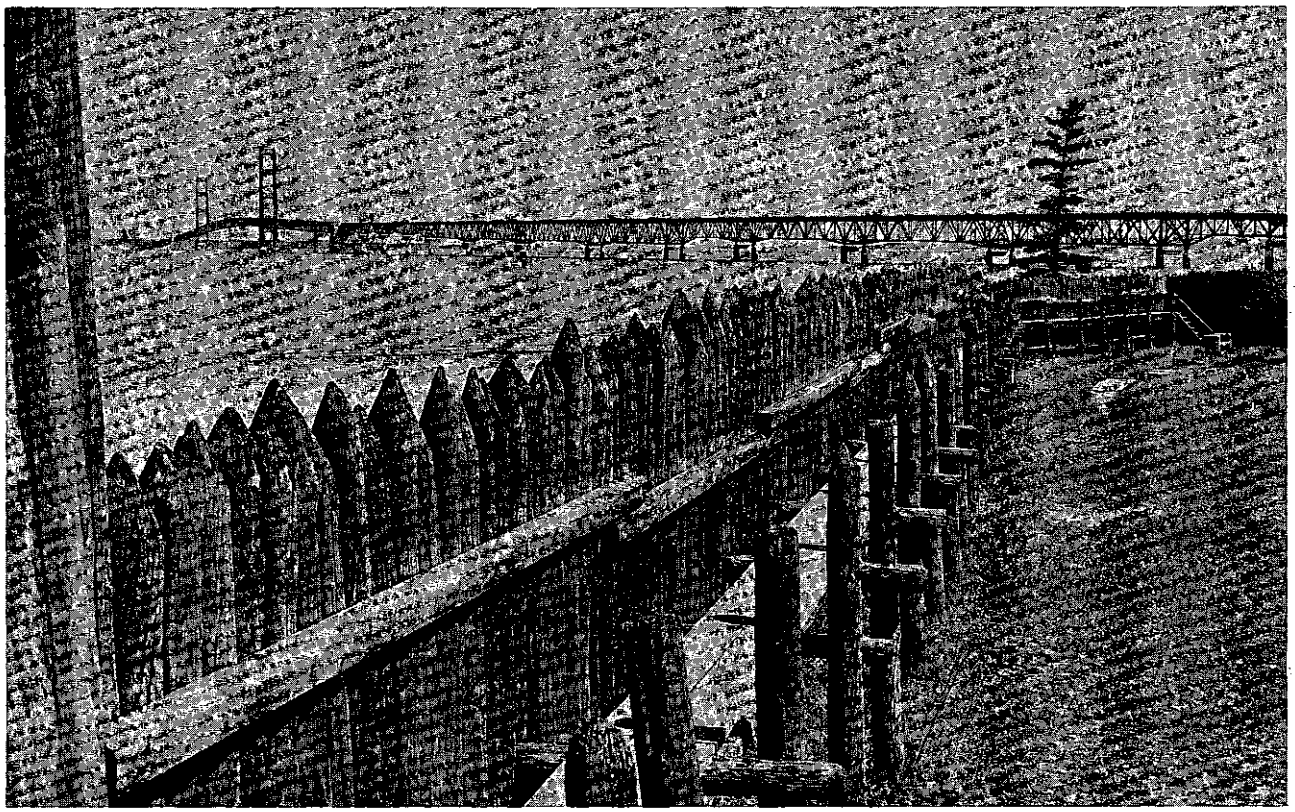
(3) Develop an archaeological site preservation, study, and use plan for the Great Lakes Basin copper culture and significant archaeological features.

(4) Establish a system of water trails encompassing the historic fur trade and Indian canoe routes of the plan area.

(5) Establish a system of bicycle and foot trails linking significant aesthetic and cultural features of the plan area for the express corollary purpose of creating greenbelts of open space.

(6) Designate and mark a system of routes solely for leisurely, unhurried automobile travel, along trails that link areas containing significant resource features. To maintain a balance between the resource base and usage, existing roadways or abandoned railways should be used wherever possible.

(7) Identify, maintain, and protect environmental systems that are undeveloped or in a wilderness state.



Courtesy of National Park Service, U.S. Department of the Interior

FIGURE 22–21 A Combination of the Aesthetic and Cultural. Ft. Michlimackinac, a combination of aesthetic and cultural values, is a significant identified resource in Plan Area 2.

4.3 Plan Area 2—Lake Michigan Basin

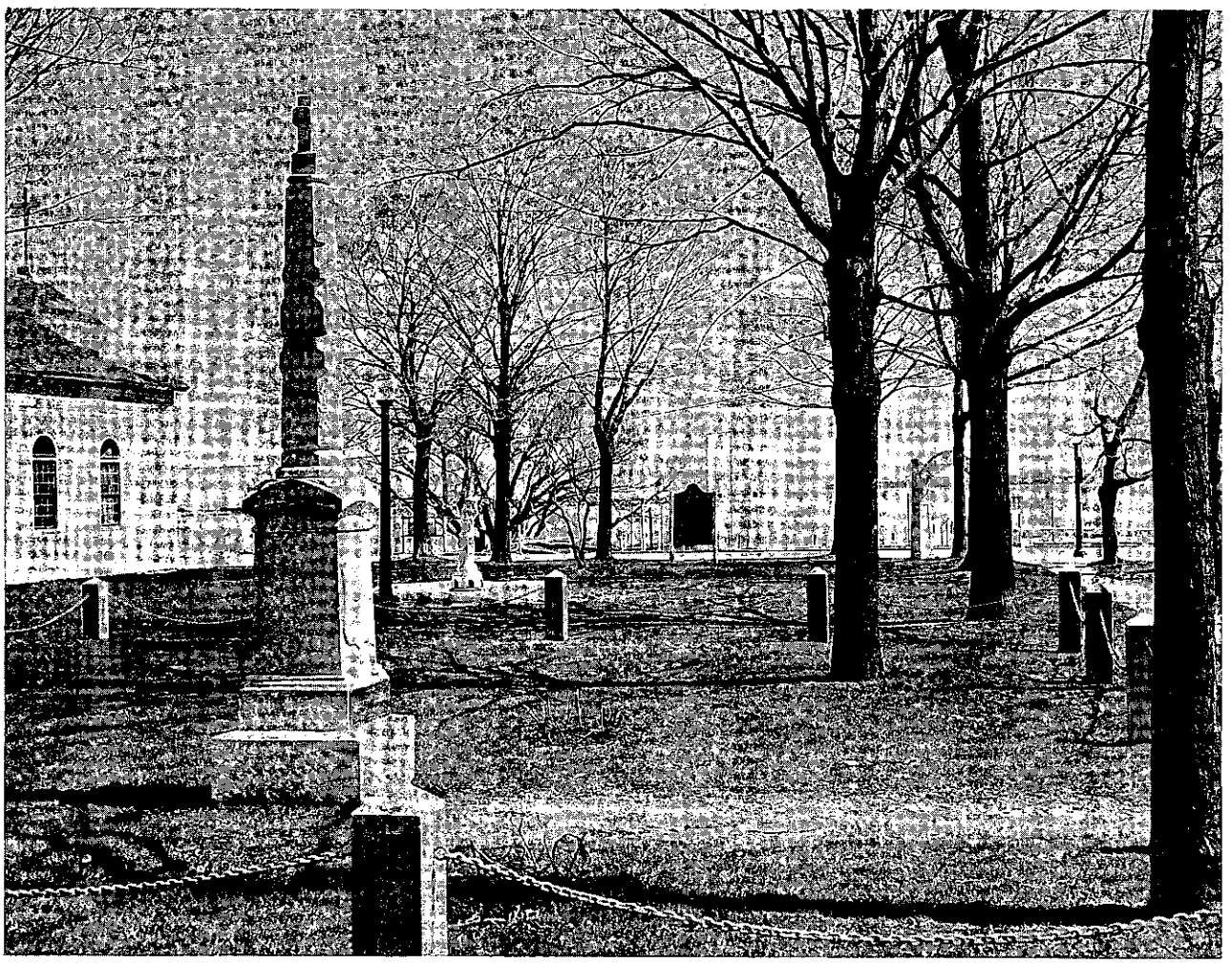
The Lake Michigan basin, consisting of 32,272,400 acres, is the largest of the five Basin plan areas. If present growth projections are correct, 16 percent or 5,258,000 acres will be classified as urban by the year 2020, compared with 2,907,800 acres or nine percent of the total land base in 1966–67.

Urbanization will increase most in the Milwaukee-Chicago-Calumet metropolitan area of Planning Subarea 2.2. Projections indicate that this region will use an additional 1,692,100 acres of land, double the existing urbanized land area, for urban development by the year 2020.

Planning Subarea 2.3, encompassing South Bend, Elkhart, Kalamazoo, Grand Rapids, Holland, and Lansing, will also face a relatively rapid rate of urban expansion. By the year 2020 it is estimated that 1,279,900 acres, an increase of 450,000 acres over the 1966–67 figures, will be devoted to urban use. Significant resource features located within Plan Area 2 face immediate loss due to human impact.

A series of Plan Area 2 maps identifies the environmental systems of the Lake Michigan basin in the most critical need of planning attention. Arranged in order of priority, the maps show buffer zones, shore zones, linkage corridors, and resource clusters (Figures 22–22c through 22–25c).

Environmental buffer zones adjacent to expanding urban centers are in immediate need of study and planning attention to insure proper use of their significant resource features. This is especially true for Chicago, Milwaukee, and their suburbs. Linkage patterns between these two major cities are in equal need of attention, as well as linkage corridors between Flint and Detroit, located in Plan Areas 3 and 4. Planners and other decision-makers studying current and future transportation networks for portions of these corridors should be aware of the significant resource



Courtesy of National Park Service, U.S. Department of the Interior

FIGURE 22-26 An Historic Resource. St. Ignace Mission in Michigan, a registered National Historic Landmark, is a significant cultural resource in the Lake Huron basin. Planners, developers, and managers are encouraged to incorporate such resource features in their land and water development planning.

features located there. To do this, detailed studies of these environmental systems are required.

4.3.1 Planning Recommendations

There are seven planning recommendations for resource features in the most critical need of attention in the Lake Michigan basin:

(1) Give immediate study and planning attention to buffer and shoreline zones, especially in Planning Subareas 2.2 and 2.3 (Figures 22–22c and 22–23c).

(2) Give attention to linkage corridors when planning proper use of buffer and shoreline zones. Conduct detailed studies of their resource features as necessary (Figure 22–24c).

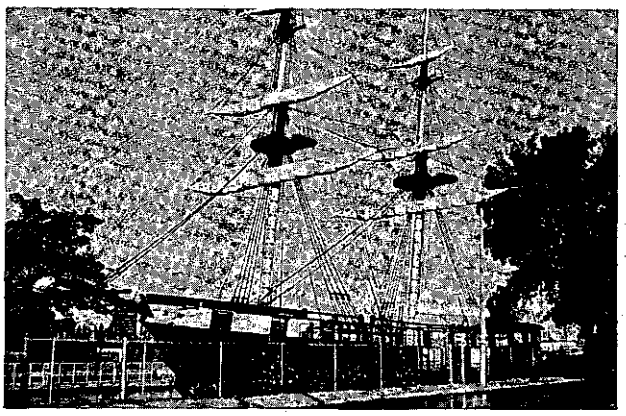
(3) Review transportation network proposals and provide recommendations to lessen their detrimental effect on inherent resource features of buffer zones and linkage corridors.

(4) Encourage planners, developers, and managers to incorporate the significant resource features of the plan area—including those of the resource clusters—in their land and water development planning.

(5) Establish systems of greenbelts and open spaces that incorporate foot and bicycle trails, parkways, and recreational waterways encompassing significant resource features of

Courtesy of Michigan Department of Natural Resources

FIGURE 22–27 Worthy of Preserving. These virgin white pine in Hartwick Pines State Park, Michigan, represent a significant aesthetic resource in Plan Area 3.



Courtesy of Erie, Pennsylvania, Tourist and Convention Bureau

FIGURE 22–32 A Step into the Past. In 1970 more than 70,000 people viewed the War of 1812 Warship U.S.S. Niagara, perhaps reliving for a moment a period of the nation's history.

the plan area within or near corporate limits. Where possible these corridors of new open space should complement and expand upon existing park districts and regional park areas.

(6) Encourage development and increased use of public transportation systems to carry the residents—especially those not owning automobiles—of cities like Chicago and Detroit to and from environmental systems around these cities.

(7) Prepare an inventory of private and public natural areas that have significant aesthetic and cultural features for preservation and management purposes.

4.4 Plan Area 3—Lake Huron Basin

In terms of total land acreage within the United States portion of the Great Lakes Basin, Plan Area 3 is the smallest with 8,441,900 acres. In 1966–67, 568,000 acres were devoted to urban use. It is estimated that by the year 2020 urban acreage will be 781,500 acres, an increase of 37 percent. This urban expansion will occur around cities such as Flint, Saginaw, and Bay City.

The environmental systems of the Lake Huron basin in the most critical need of planning attention are identified in a series of Plan Area 3 maps. These maps, arranged in order of priority, show linkage corridors, resource clusters, buffer zones, and shore zones (Figures 22–28c through 22–31c).

Because recreational activities in the northern portion of the basin will continue to attract visitors, improved and less environmentally detrimental transportation networks should be provided. Linkage corridors, especially those serving as buffer zones for cities such as Flint and Saginaw to link this basin with Detroit, Grand Rapids, and Lansing, also deserve critical planning attention.

Many resource clusters and significant scattered resource features in the northern basin are already somewhat protected by planning attention because of their location within State and national forests and other publicly-owned lands. However, resources within the Saginaw Bay area south of Standish, Michigan, are in critical need of planning attention. If guidelines are provided, these resources might be incorporated into regional comprehensive development plans.

4.4.1 Planning Recommendations

There are several recommendations for Plan Area 3:

(1) Provide immediate planning and study attention to linkage corridors, particularly those related to transportation and other urban expansion proposals (Figure 22–28c).

(2) Incorporate resource clusters and scattered resource features into land use and development plans in the area's rapidly developing northern recreational area. Detailed studies are necessary to accomplish this (Figure 22–29c).

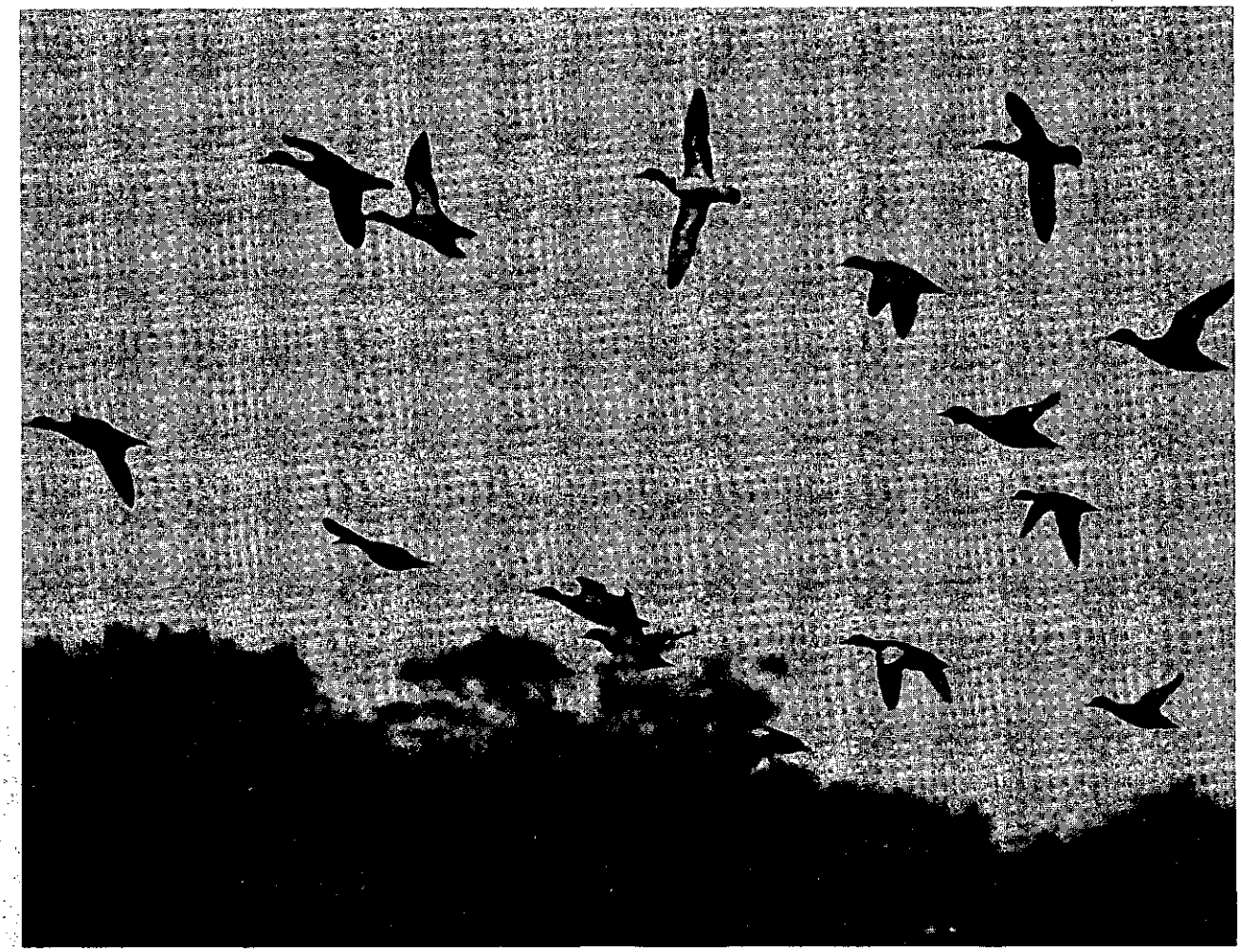
(3) Review transportation network proposals and provide recommendations to decrease their detrimental effect on inherent resource features of buffer zones and linkage corridors (Figure 22–30c).

(4) Encourage planners, developers, and managers to incorporate the significant resource features of the plan area in their land and water development planning.

(5) Establish systems of greenbelts and open space incorporating foot and bicycle trails, parkways, and recreational waterways. These systems should encompass significant resource features of the plan area within or near corporate limits. Where possible, these corridors of new open space should complement and expand existing park district and regional park areas.

4.5 Plan Area 4—Lake Erie Basin

The Lake Erie basin, the third largest Great



Courtesy of Pennsylvania Department of Environmental Resources

FIGURE 22–33 The Sound of Beauty. Waterfowl rising from the marshes of Presque Isle provide a refreshing contrast to the nearby urbanized areas.

Lakes plan area, consists of 15,678,300 acres of land. In 1966–67, 2,421,200 acres were classified as urban, but by 2020 an estimated 4,530,100 acres, or one-third of the land, will be needed for urban purposes. By that date, the Lake Erie basin will be the most urbanized region of the Great Lakes Basin.

Four maps of Plan Area 4 indicate the environmental systems of the Lake Erie basin in the most critical need of planning attention. Arranged in order of priority, these maps show buffer zones, linkage corridors, shore zones, and resource clusters (Figures 22–35c through 22–38c).

Thoughtful and imaginative planning in the past has provided fringes of cities like Detroit and Cleveland with a system of buffer zones and linkage corridors. Increased planning efforts and foresight are required to insure the existence of such environmental systems on the fringes of tomorrow's expanded urban centers. Many environmental systems, today considered linkage corridors between urban centers of Plan Area 4, will tomorrow be the buffer corridors of a rapidly developing megalopolis that will parallel the southern shore of Lake Erie. For this reason, buffer zones and linkage corridors are in the most critical need of detailed study and planning attention.

4.5.1 Planning Recommendations

There are seven specific recommendations for Plan Area 4:

Courtesy of New York State Department of Commerce

FIGURE 22–38 A Nation's Heritage. The Lake Ontario basin is an area rich in the history of the American Indian. Villages such as this one, located near Auburn, New York, are outstanding cultural resources which should be incorporated in comprehensive land use and development plans.

(1) Give immediate planning attention to buffer zones and linkage corridors and undertake studies to obtain more detailed information as required (Figures 22–35c and 22–36c).

(2) Give special land and water use planning attention to linkage corridors and shore zones encompassing tributary valleys that would be affected by suburban expansion, especially in the metropolitan areas (Figures 22–37c and 22–38c).

(3) Encourage mixed mode transportation planning as the best alternative for environmental protection and enhancement. Linkage corridors should not be replaced by transportation systems.

(4) Encourage preservation of open space next to existing and future city boundaries. Buffer zones and linkage corridors should be reserved for recreation.

(5) Additional expressways should not be constructed. Instead, aesthetically appealing low-speed parkways should be planned to link significant resources.

(6) Develop a coordinated historical preservation and interpretation plan for the area.

(7) Encourage the immediate implementation of stringent antipollution and pollution clean-up programs to curtail degradation of aesthetic and cultural resources and foster full Federal participation and funding to accomplish these tasks.

Courtesy of New York State Department of Commerce

FIGURE 22–39 Journey Through Yesterday. Combining history and scenic beauty, the Seneca-Cayuga Branch of the New York State Barge Canal represents a significant environmental system in Plan Area 5.

4.6 Plan Area 5—Lake Ontario Basin

The U.S. portion of the Lake Ontario basin, consisting of 11,271,700 acres, is the second smallest of the five plan areas. Only six percent (667,700 acres) is now urbanized, but by the year 2020 an increase of 9.5 percent (1,067,100 acres) is expected. Urbanization is concentrated in Utica-Rome, Syracuse, Rochester, and Niagara Falls. Buffalo, New York, lying to the south of Niagara Falls, outside Plan Area 5, also affects the basin's urbanization pattern.

The area's primary attractions are the forest-covered, lake-dotted Adirondack Mountains, Finger Lakes regions, Niagara Falls, and the New York State Barge Canal. Wildlife is plentiful. Recreational activities north of Utica attract visitors from highly urbanized areas such as New York City, Boston, and Hartford.

The environmental systems of the Lake Ontario basin in the most critical need of planning attention are identified in a series of Plan Area 5 maps. These maps, arranged in order of priority, show buffer zones, shore zones, linkage corridors, and resource clusters (Figures 22–41c through 22–43c).

The Lake Ontario shoreline, critically in need of study and planning, is rich in cultural resources and historical sites. Buffer and linkage corridors along this shoreline from Niag-

ara Falls to Syracuse and Utica and Watertown also warrant attention (Figures 22–41c through 22–43c).

Planning should emphasize resource clusters and scattered single resource features because they attract visitors (Figure 22–43c). Lack of consideration could cause degradation and loss. As in the northern portion of Plan Area 1, transportation systems should be carefully planned to protect resources people enjoy.

4.6.1 Planning Recommendations

There are six specific recommendations for Plan Area 5 based on the environmental systems maps.

(1) Give immediate planning attention to buffer and shore zones (Figures 22–41c and 22–42c).

(2) Establish hiking trails throughout the plan area especially in its northern portion so that open spaces and environmental systems can be enjoyed.

(3) Encourage the incorporation of resource clusters and isolated single resource features in comprehensive land use and development plans (Figure 22–43c).

(4) Encourage the establishment of scenic, low-speed parkways to surround and link the plan area's major cities.

(5) Continue regional comprehensive planning in the area's northern recreational sites to encourage proper land and water use and development.

(6) Give special attention to proper planning, development, and protection of linkage corridors and shore zones in tributary valleys affected by suburban expansion, especially near Rochester, Ithaca, and Syracuse.

SUMMARY

Most of the Basin's significant aesthetic and cultural resources are in environmental systems that parallel water courses or land areas characterized by strong relief. Systems near or between urban concentrations, systems of shore zones, and resource clusters are in critical need of planning attention.

Maps (Figure 22–45c) provide planners, resource developers, and managers with an inventory of thousands of significant aesthetic and cultural resource features in the Basin. They can serve as a basic locational reference to be supported by more detailed studies when questions about Basin resource use alternatives arise.

Based on this inventory, recommendations were prepared for each of the five Basin plan areas to provide a framework for putting these aesthetic and cultural resources into comprehensive planning for each area and the Basin as a whole. Basin residents and visitors will benefit from sound measures made to protect, develop, and manage the environmental resources.

Specific programs such as systems of hiking trails, bicycle paths, and parkways are suggested to link together appropriate resources for greater user enjoyment. Also needed are archaeological and historic preservation plans as well as improved funding programs for aesthetic and cultural resource planning and development. Greater local, national, and international coordination is required to best use and develop Basin resources. Improved and expanded public transportation systems are recommended instead of additional motorways. For educational purposes, environmental resource study areas should be established.

There are several recommendations to improve public and private coordination and cooperation in the protection, development, and use of identified resources.

(1) Identify levels and extents of resource management responsibilities.

(2) Establish common jurisdictional responsibilities.

(3) Establish common jurisdictional boundaries.

(4) Establish an institute or commission to coordinate research of natural and human resources.

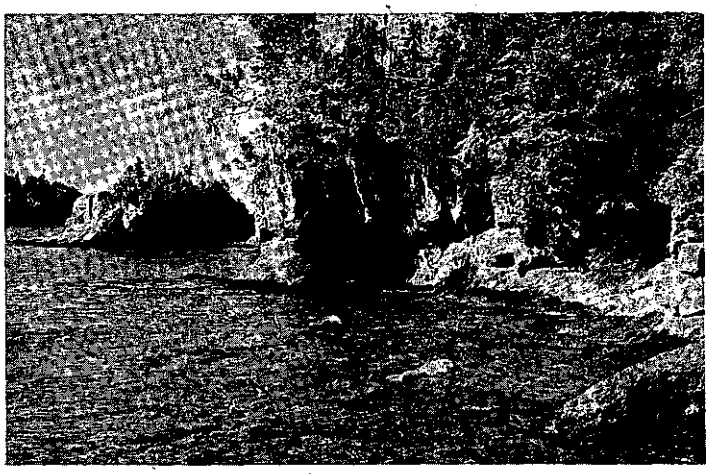
(5) Develop zoning plans that meet State standards in order to strengthen and enforce land use laws.

(6) Coordinate resource use policies and management programs.

Parks

Habitat

Vegetation



Land and Water

Cultural Resource

(Photos courtesy of National Park Service, U.S. Department of the Interior; Soil Conservation Service, U.S. Department of Agriculture; and Cook County, Illinois, Forest Preserve District.)

FIGURE 22–44 A Variety of Valuable Resources. The Great Lakes Basin possesses a variety of significant resources which enrich it aesthetically and culturally. Without careful planning attention and consideration for their proper use, these highly valued resource features will be lost.

GLOSSARY

environmental system—an interrelated combination of land, water, and resource features.

linkage corridor—environmental systems that link urban areas.

resource feature—one of 31 significant aesthetic or cultural sites, structures, or areas inventoried for purposes of this appendix.

shore zone—an environmental system which parallels or encompasses portions of shorelines.

significant resource—a feature State representatives identify as outstanding or unique to the region, State, or nation.

urban buffer zone—an environmental system serving as a natural barrier to urban expansion.

BIBLIOGRAPHY

Butrico, F. A. (ed.), "Resource Management in the Great Lakes Basin," Battelle Memorial Institute, Lexington, Massachusetts, Health Lexington, 1971.

Great Lakes Basin Commission, *Great Lakes Basin Framework Study*, Appendix 12, *Shore Use and Erosion*. Expected Publication, November 1974 through June 1975.

———————, *Great Lakes Basin Framework Study*, Appendix 13, *Land Use and Management*. Expected Publication, November 1974 through June 1975.

———————, *Great Lakes Basin Framework Study*, Appendix 17, *Wildlife*. Expected Publication, November 1974 through June 1975.

———————, *Great Lakes Basin Framework Study*, Appendix 19, *Economic and Demographic Studies*. Expected Publication, November 1974 through June 1975.

———————, *Great Lakes Basin Framework Study*, Appendix 21, *Outdoor Recreation*. Expected Publication, November 1974 through June 1975.

Gunn, Clare A., "A Concept for the Design of a Tourism-Recreation Region," Mason, Michigan, The BJ Press, 1965.

Herring, Frances W. (ed.), "Open Space and the Law," Institute of Governmental Studies, Berkeley, California, University of California, 1965.

Hills, G. A., "The Ecological Basis for Land-Use Planning," Ontario Department of Lands and Forests, Ottawa, reprinted 1963.

Landsberg, Hans H., "Natural Resources for U.S. Growth," Resources for the Future, Inc., Washington, D.C., Johns Hopkins, 1964.

Litten, R. Burton, "Forest Landscape Description and Inventories," USDA-Forest Service, Berkeley, California, 1963.

Little, Charles E., "Challenge of the Land," Open Space Action Institute, New York, 1968.

Morse, Eric W., "Fur Trade Canoe Routes of Canada—Then and Now," Ottawa, Queen's Printer and Controller of Stationery, 1969.

Society of American Foresters, "Forest Cover Types of North America," Washington, D.C., 1954.

Suggitt, F.W., "The Planning Process as it Relates to the Water Resources of Michigan," Lansing, Michigan, Water Resources Commission, 1966.

U.S. Department of Agriculture, "A Place to Live—the Yearbook of Agriculture, 1963," Washington, D.C., Government Printing Office, 1963.

Wormington, H. M., "Ancient Man in North America," Denver Museum of Natural History, Denver, Peerless Printing, 1957.

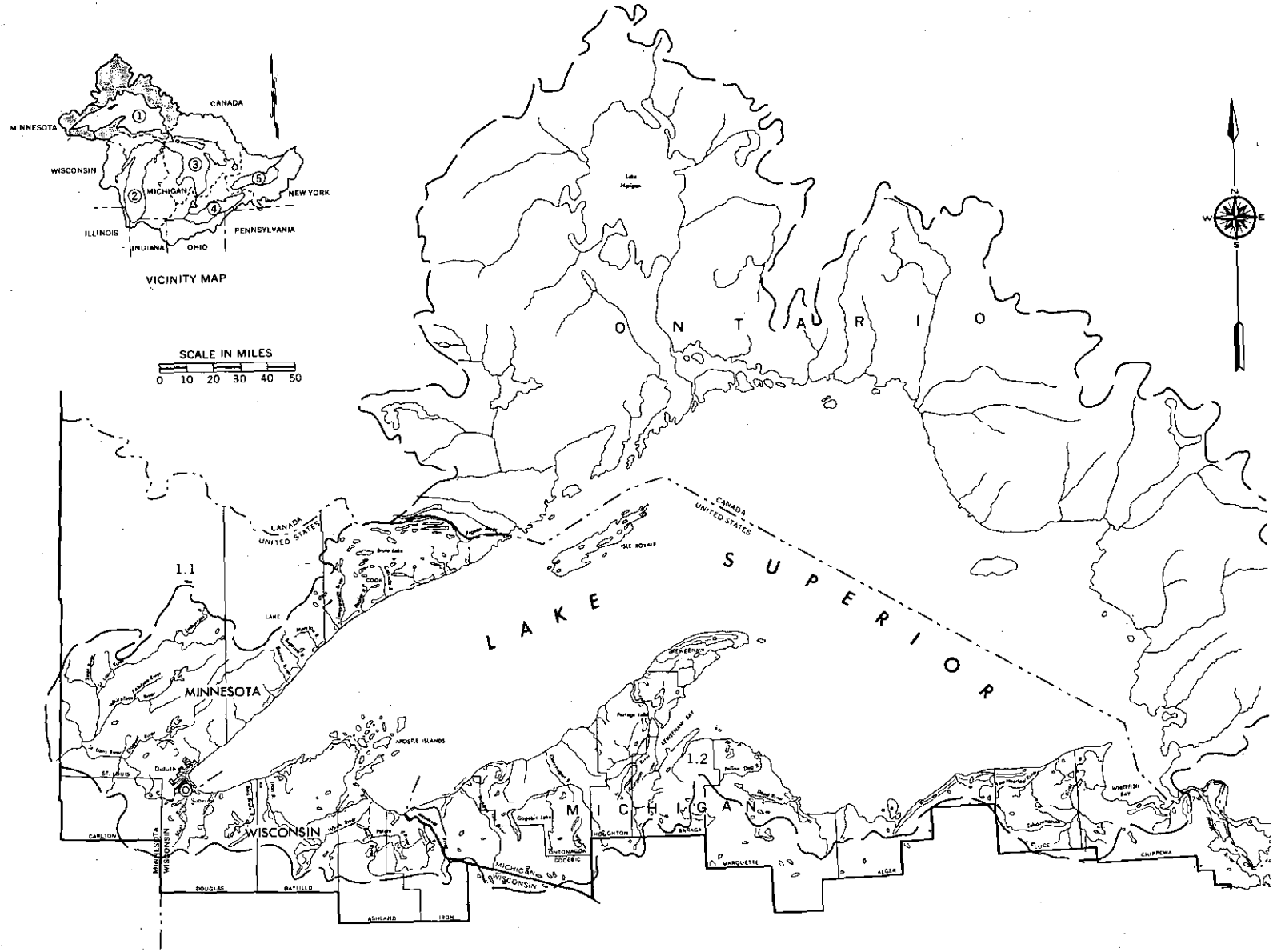


FIGURE 22–16c Shore Zones in Plan Area 1

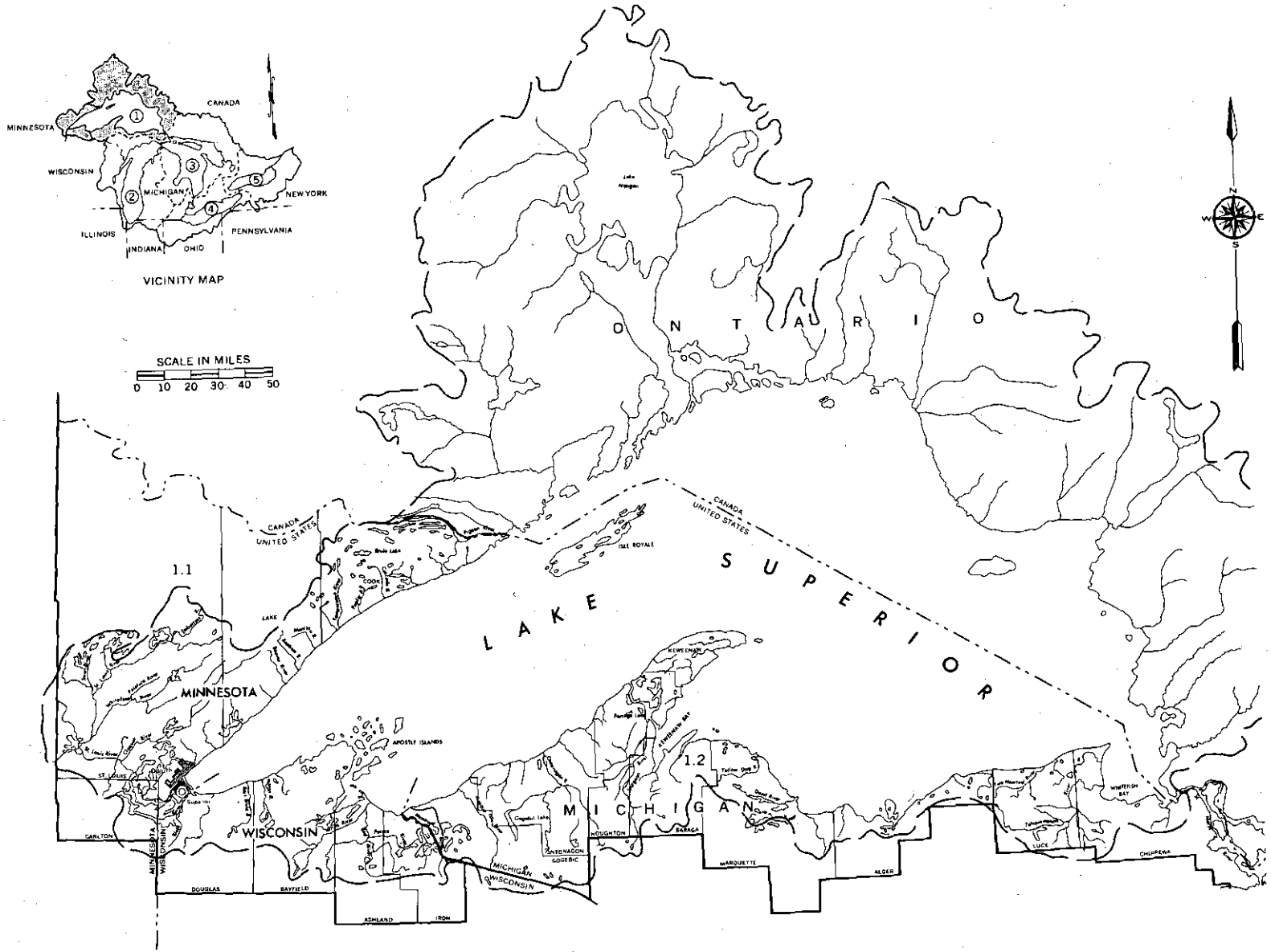


FIGURE 22–17c Buffer Zones in Plan Area 1

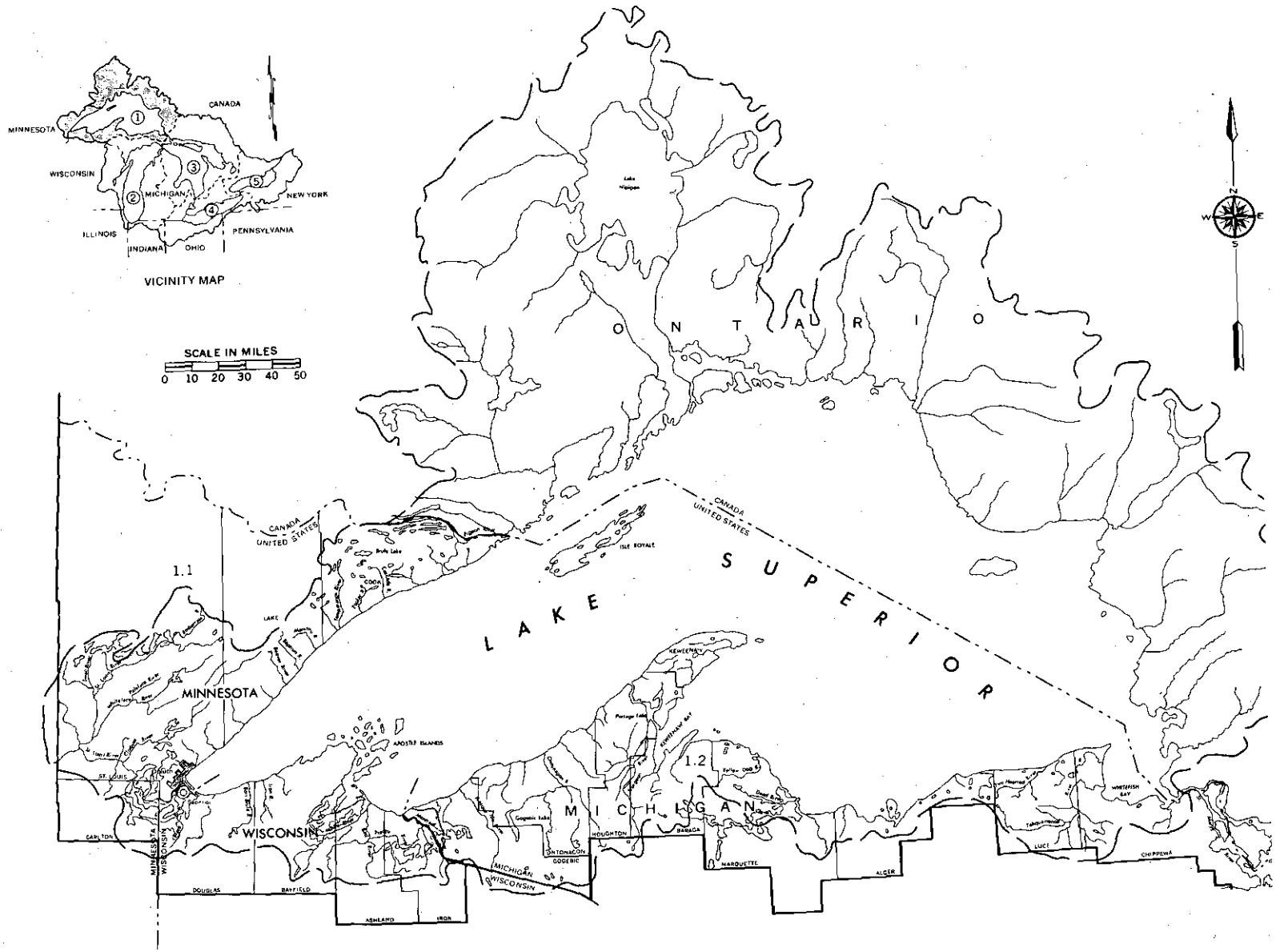


FIGURE 22–18c Linkage Corridors in Plan Area 1

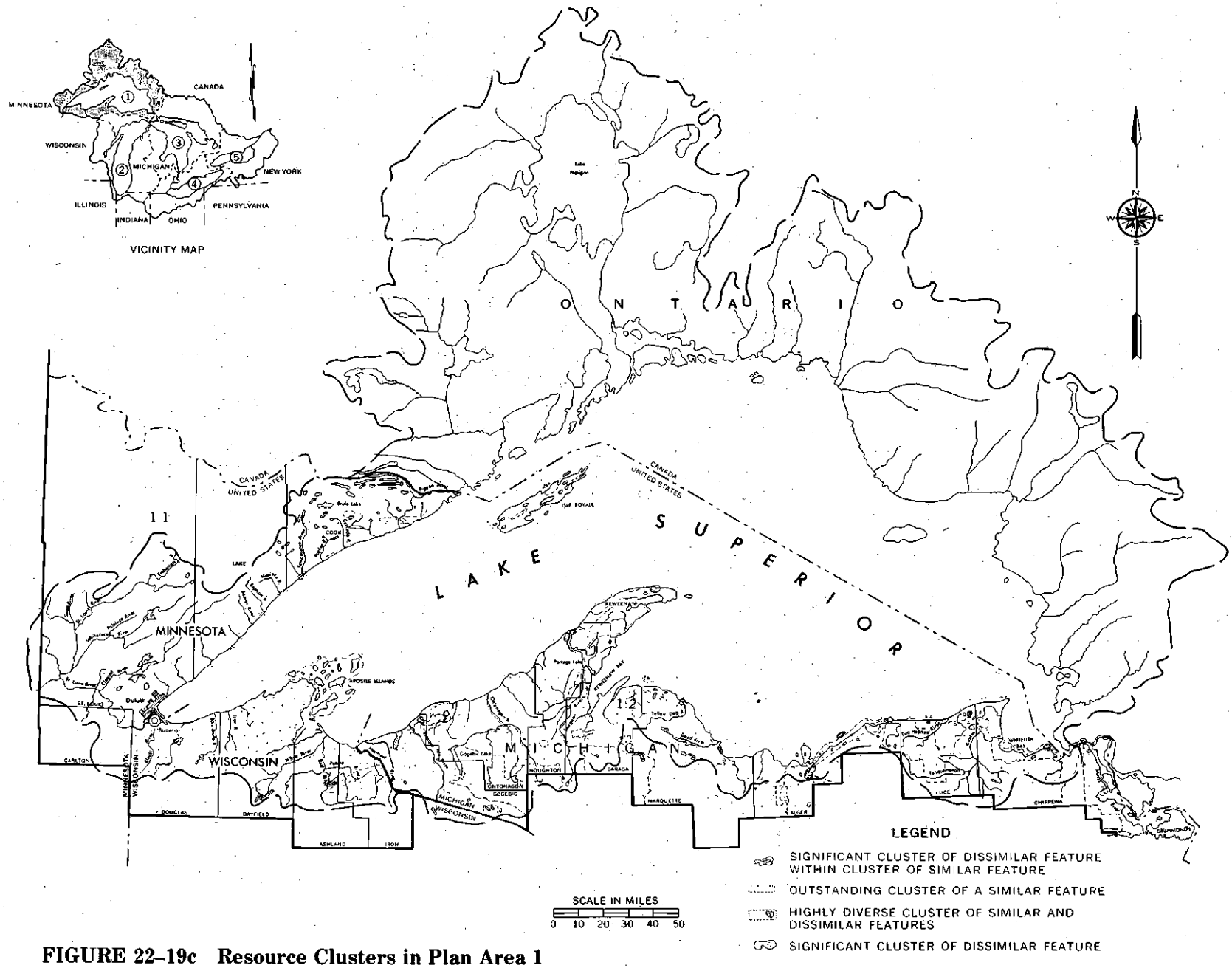


FIGURE 22–19c Resource Clusters in Plan Area 1

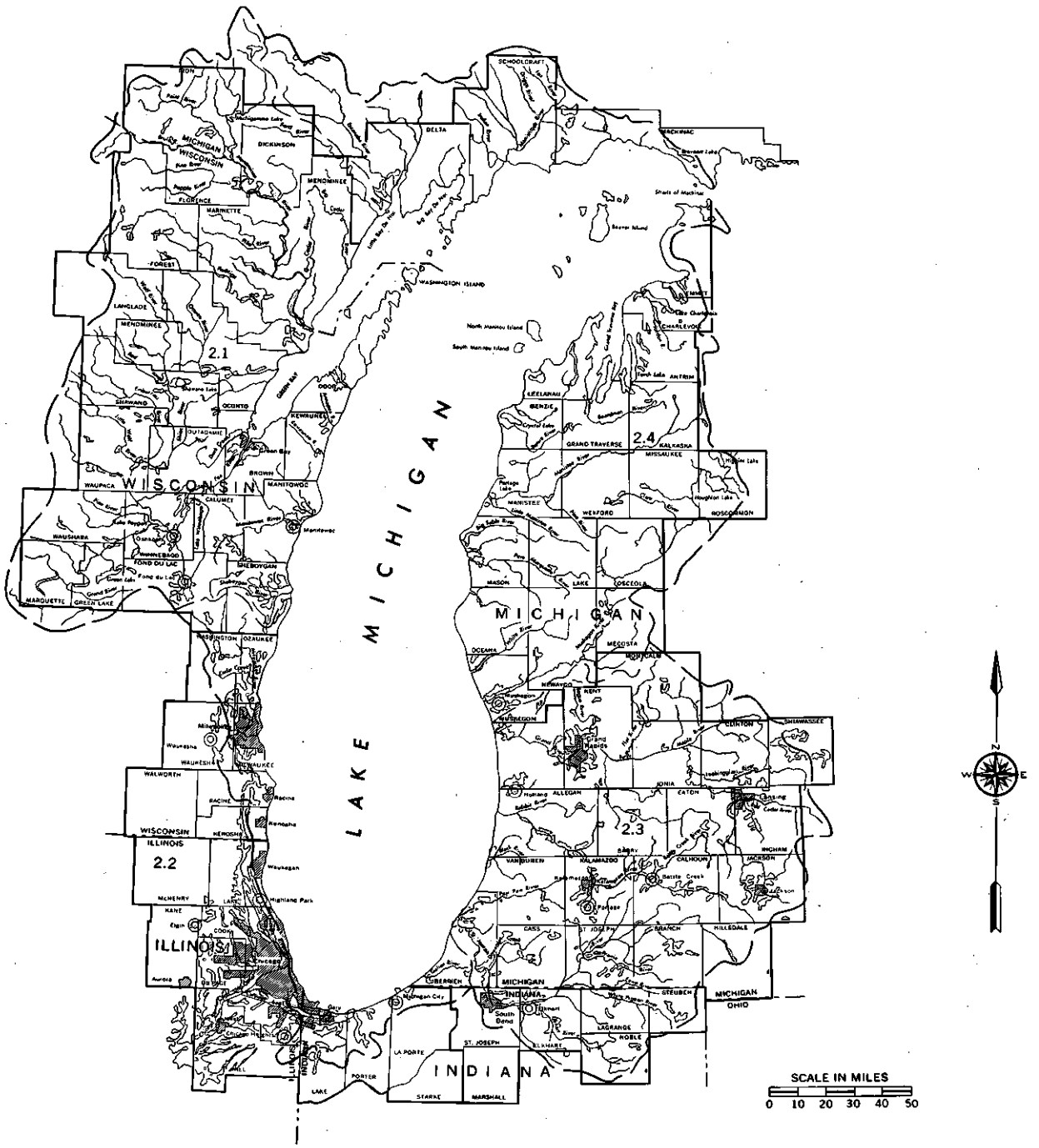


FIGURE 22–22c Buffer Zones in Plan Area 2

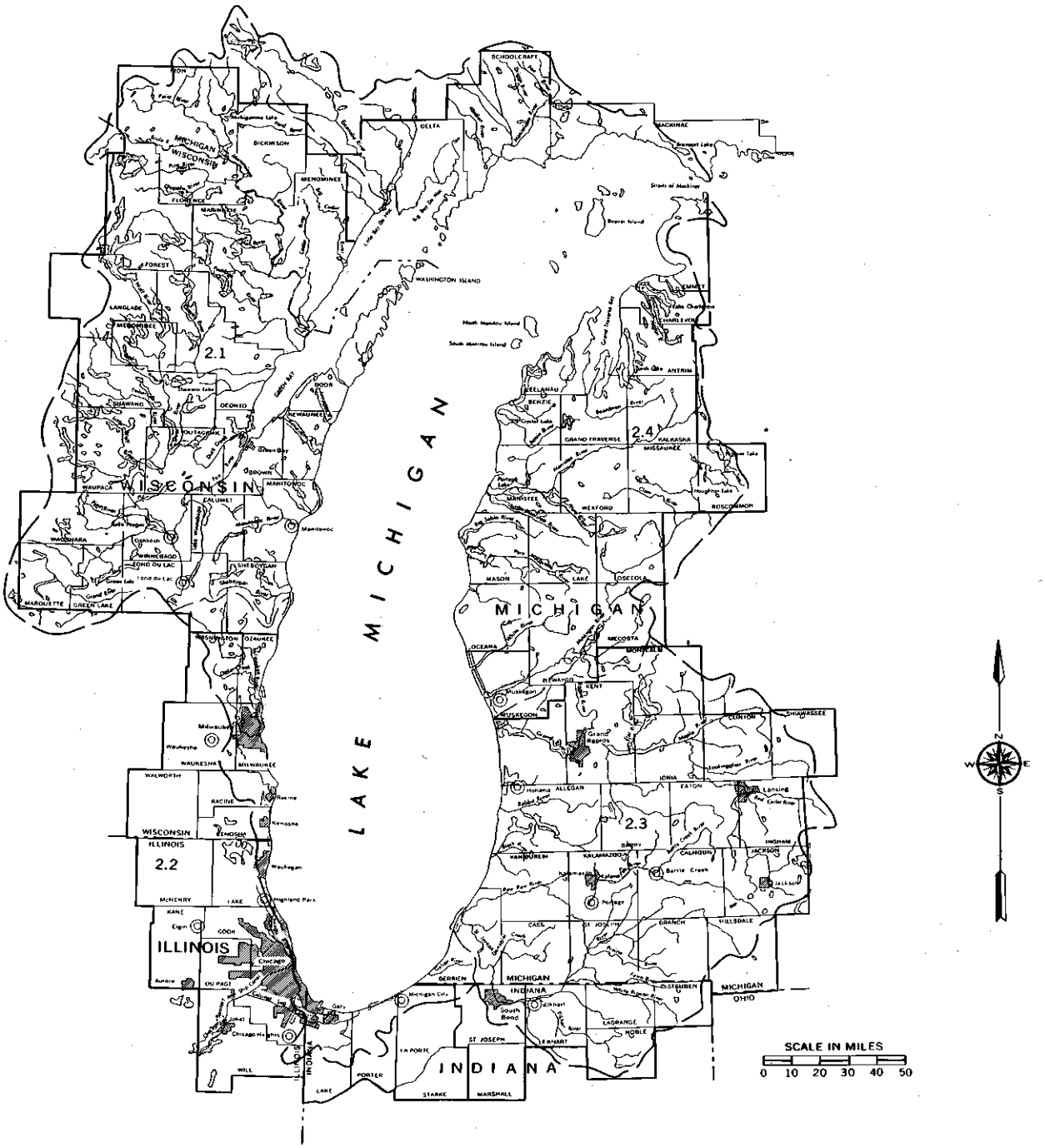


FIGURE 22–23c Shore Zones in Plan Area 2

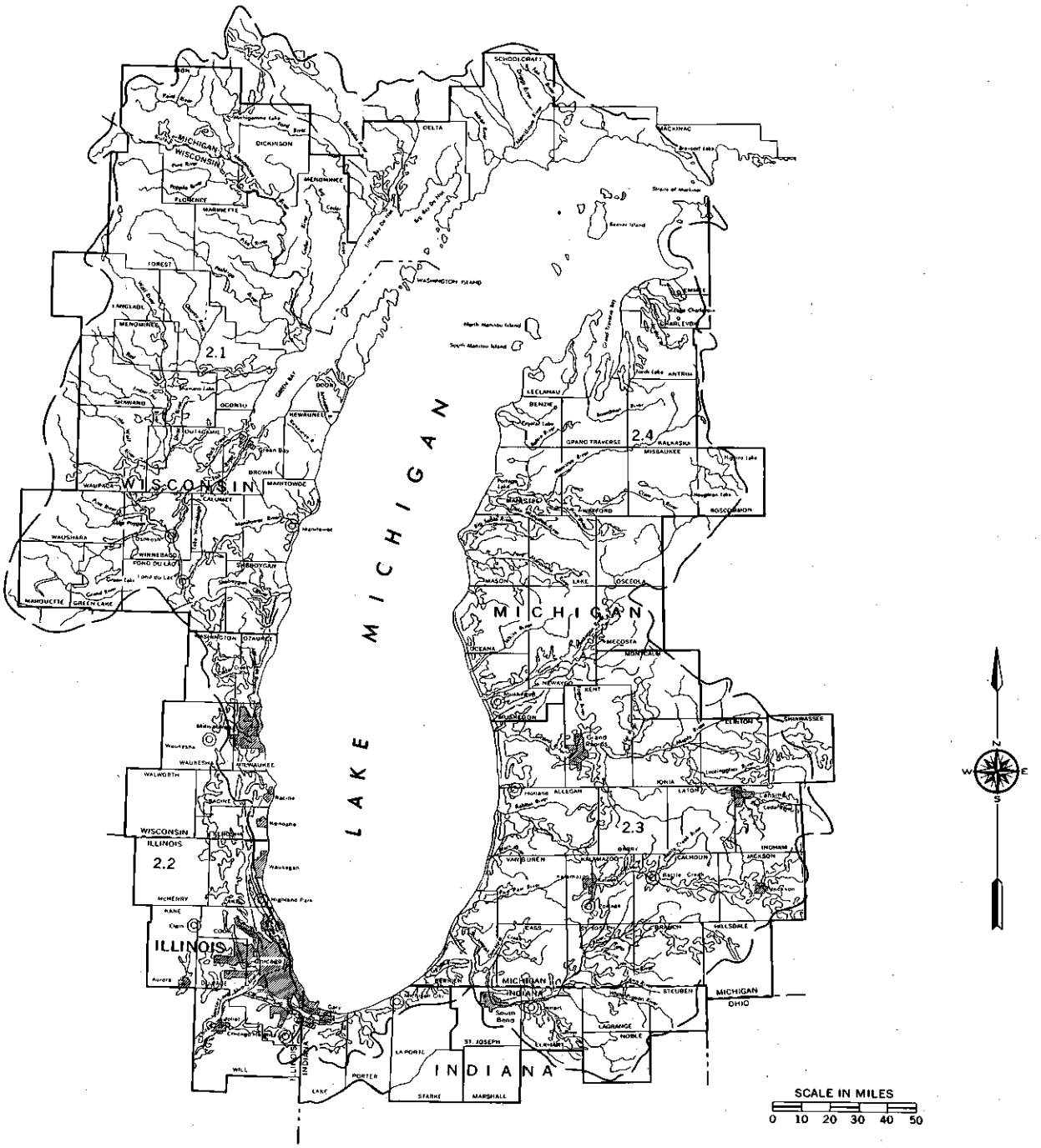


FIGURE 22–24c Linkage Corridors in Plan Area 2

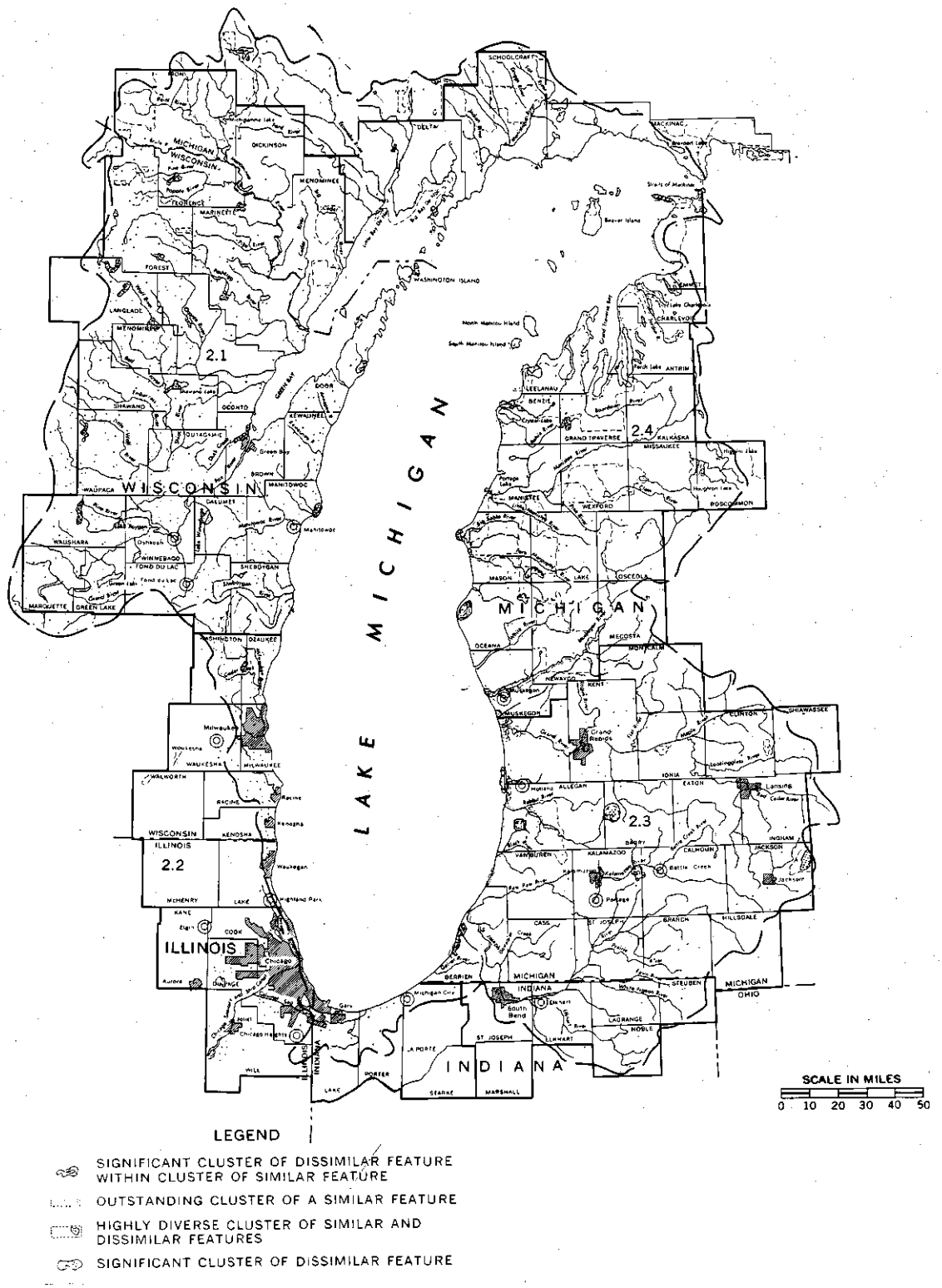


FIGURE 22–25c Resource Clusters in Plan Area 2

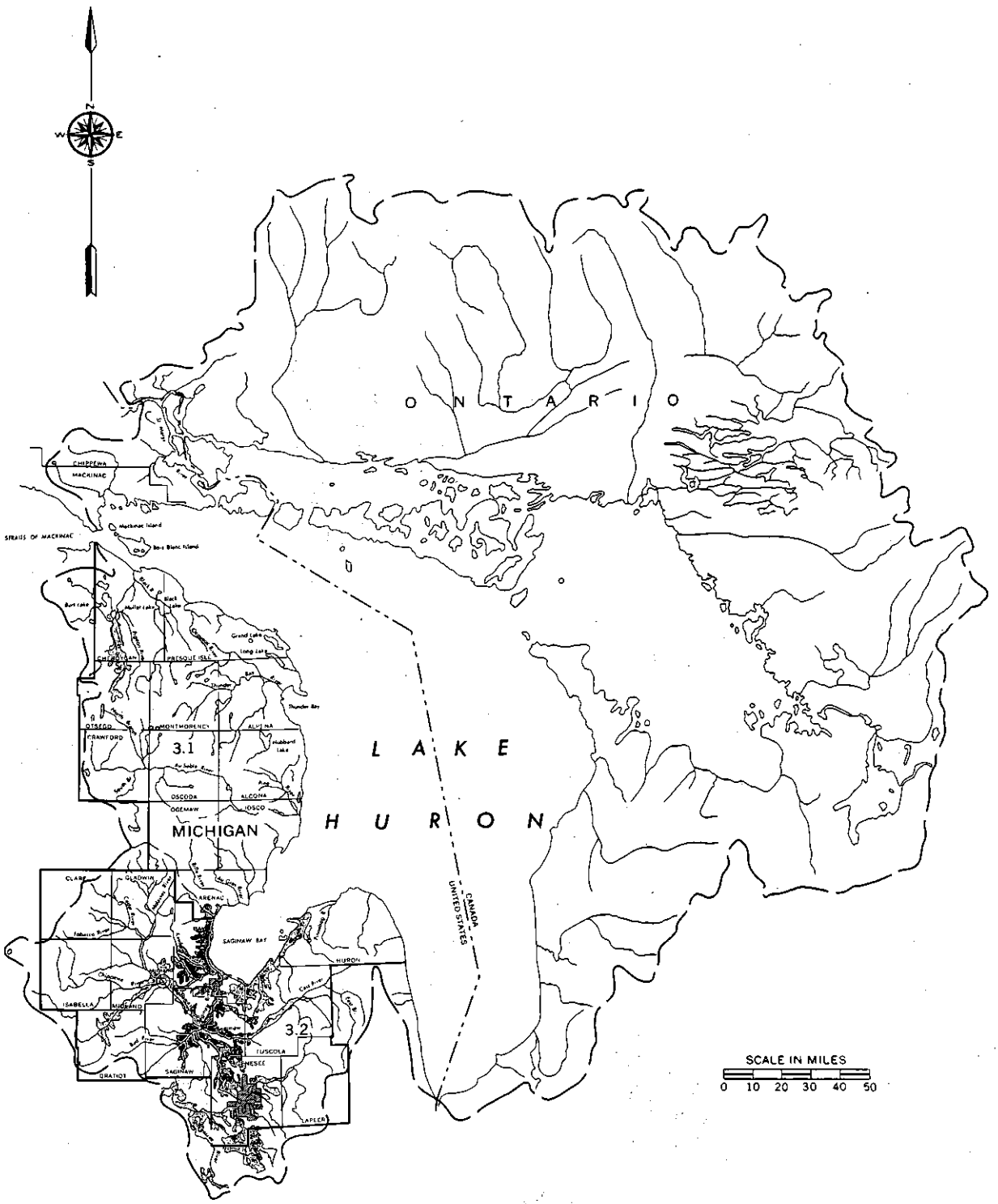


FIGURE 22–28c Linkage Corridors in Plan Area 3

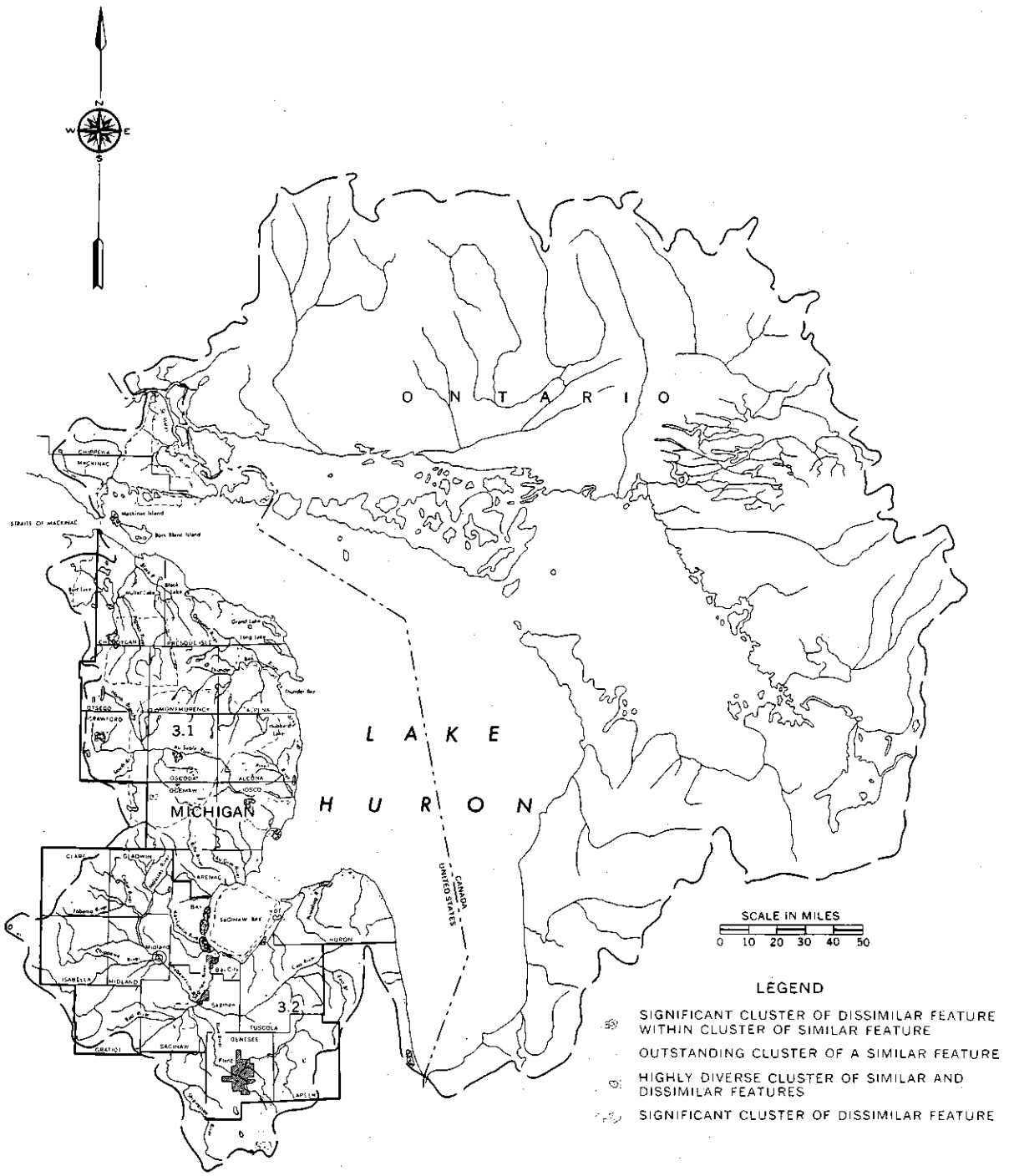


FIGURE 22–29c Resource Clusters in Plan Area 3

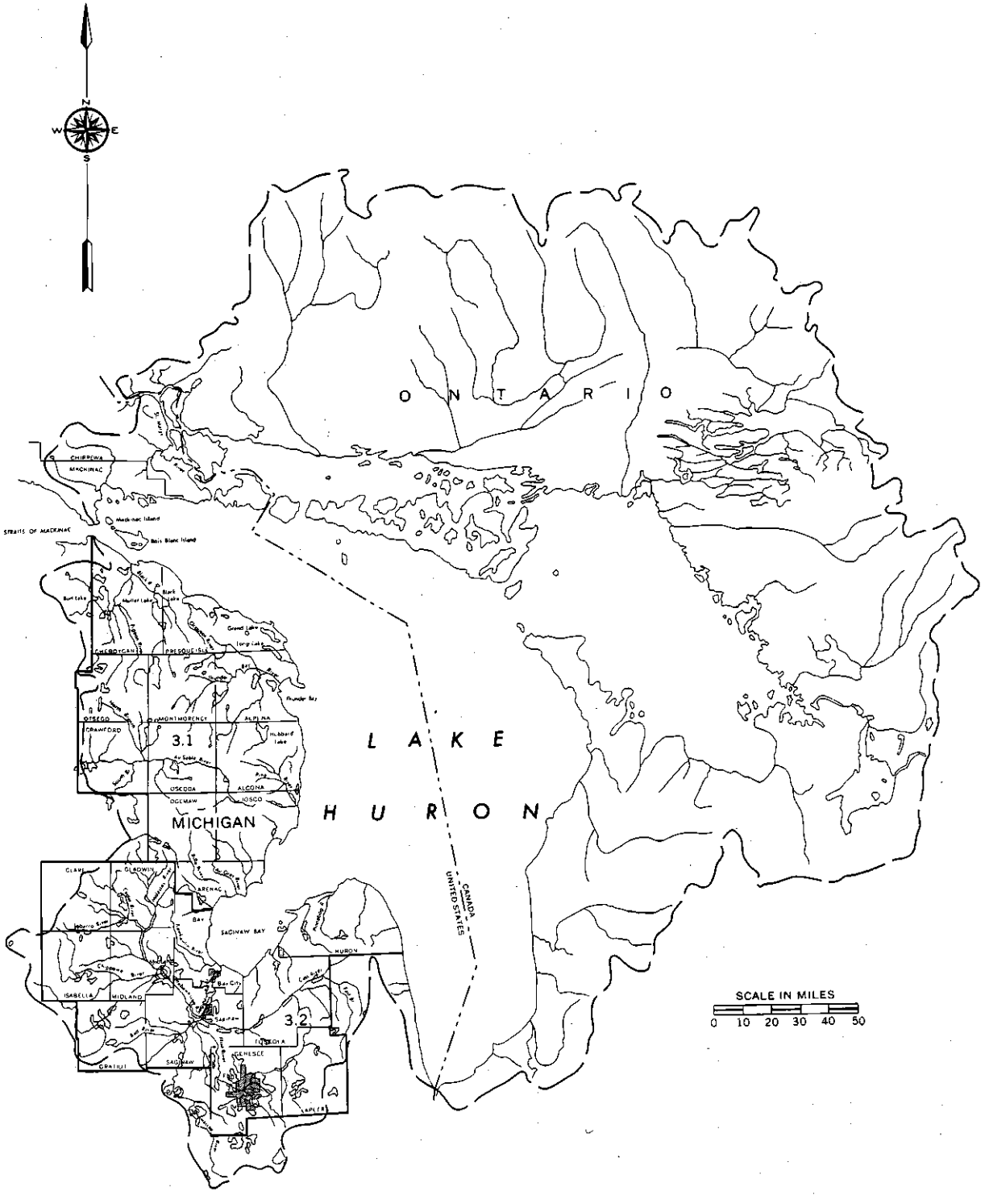


FIGURE 22–30c Buffer Zones in Plan Area 3

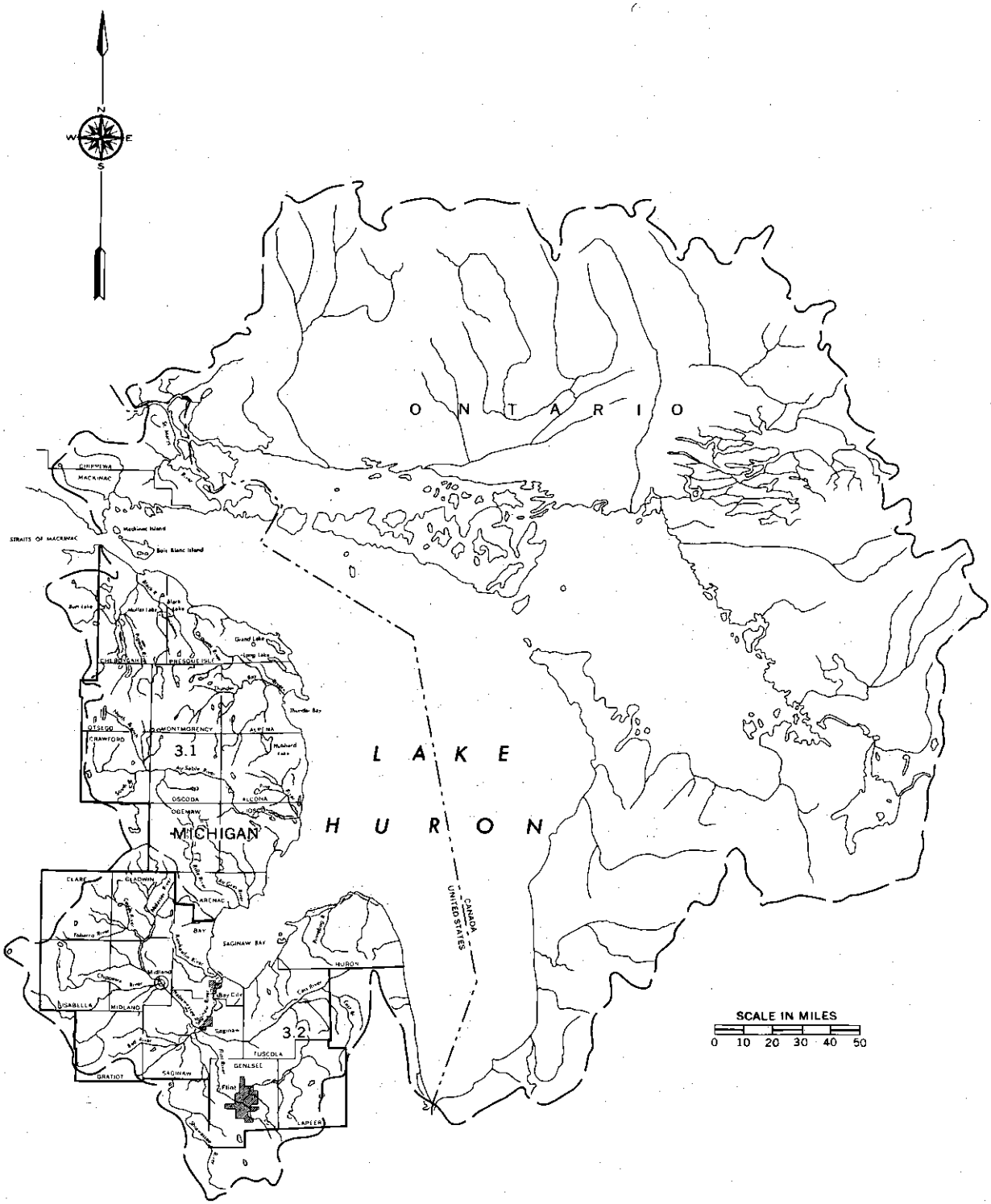


FIGURE 22–31c Shore Zones in Plan Area 3

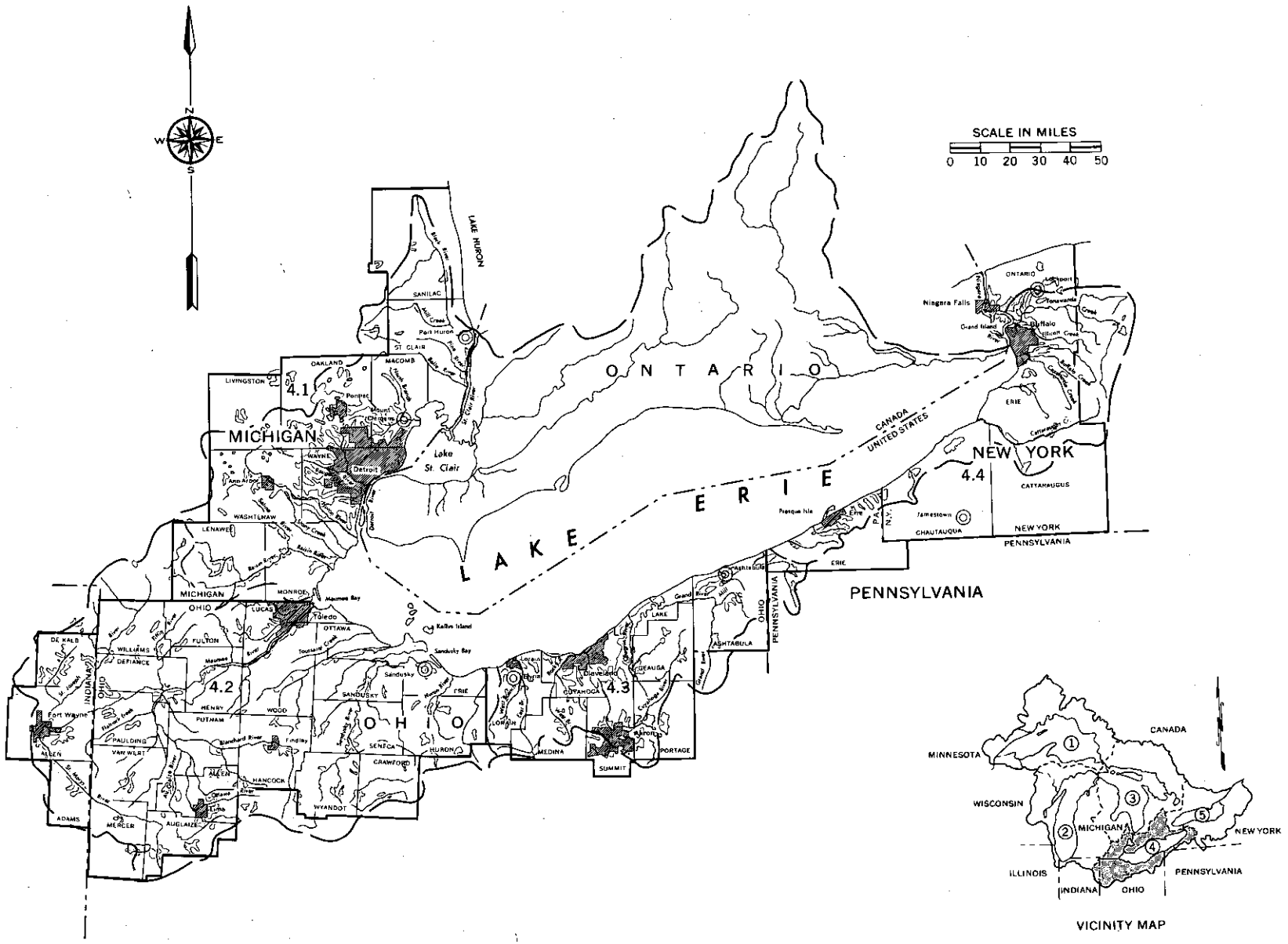


FIGURE 22–34c Buffer Zones in Plan Area 4

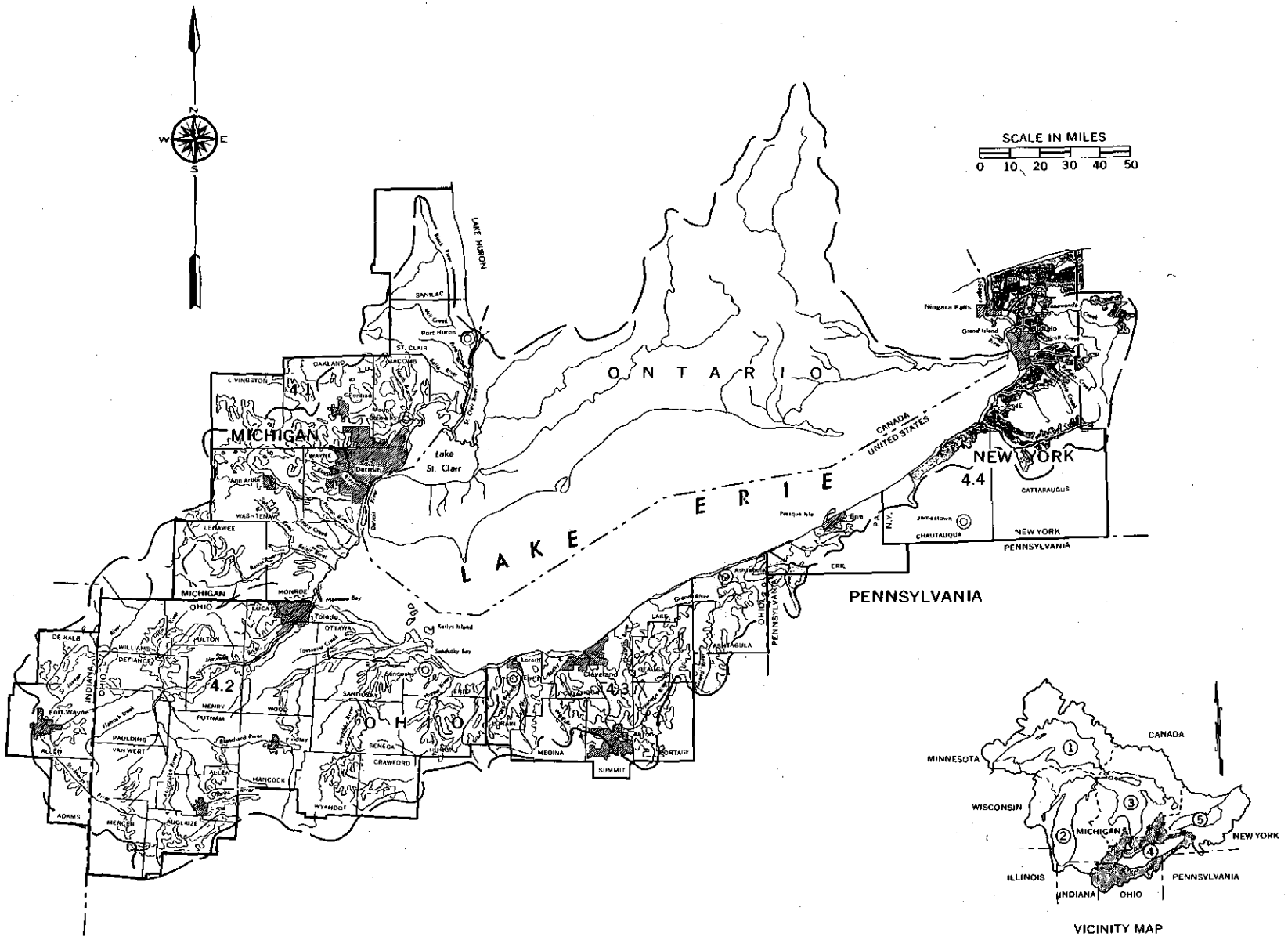


FIGURE 22–35c Linkage Corridors in Plan Area 4

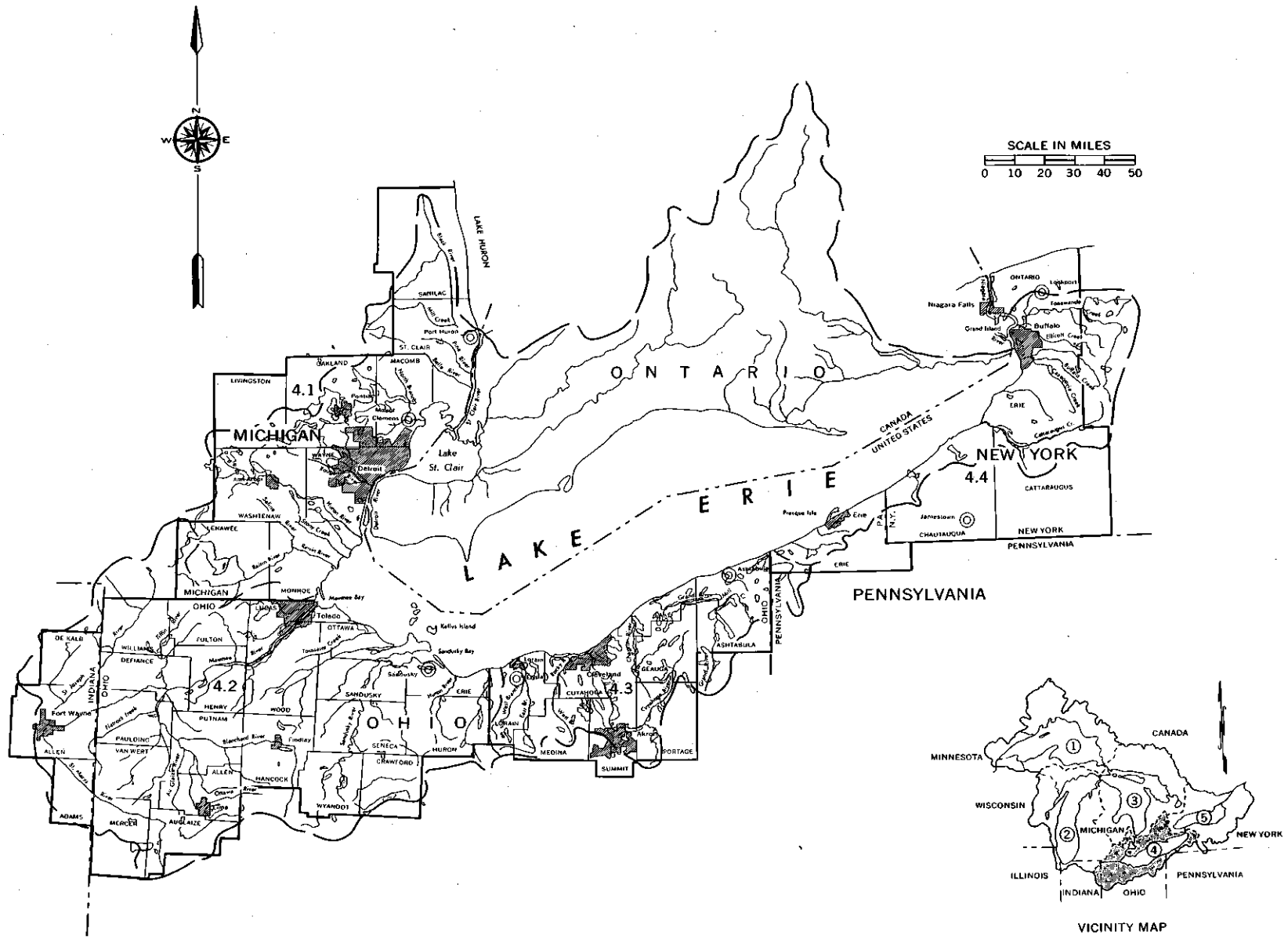


FIGURE 22–36c Shore Zones in Plan Area 4

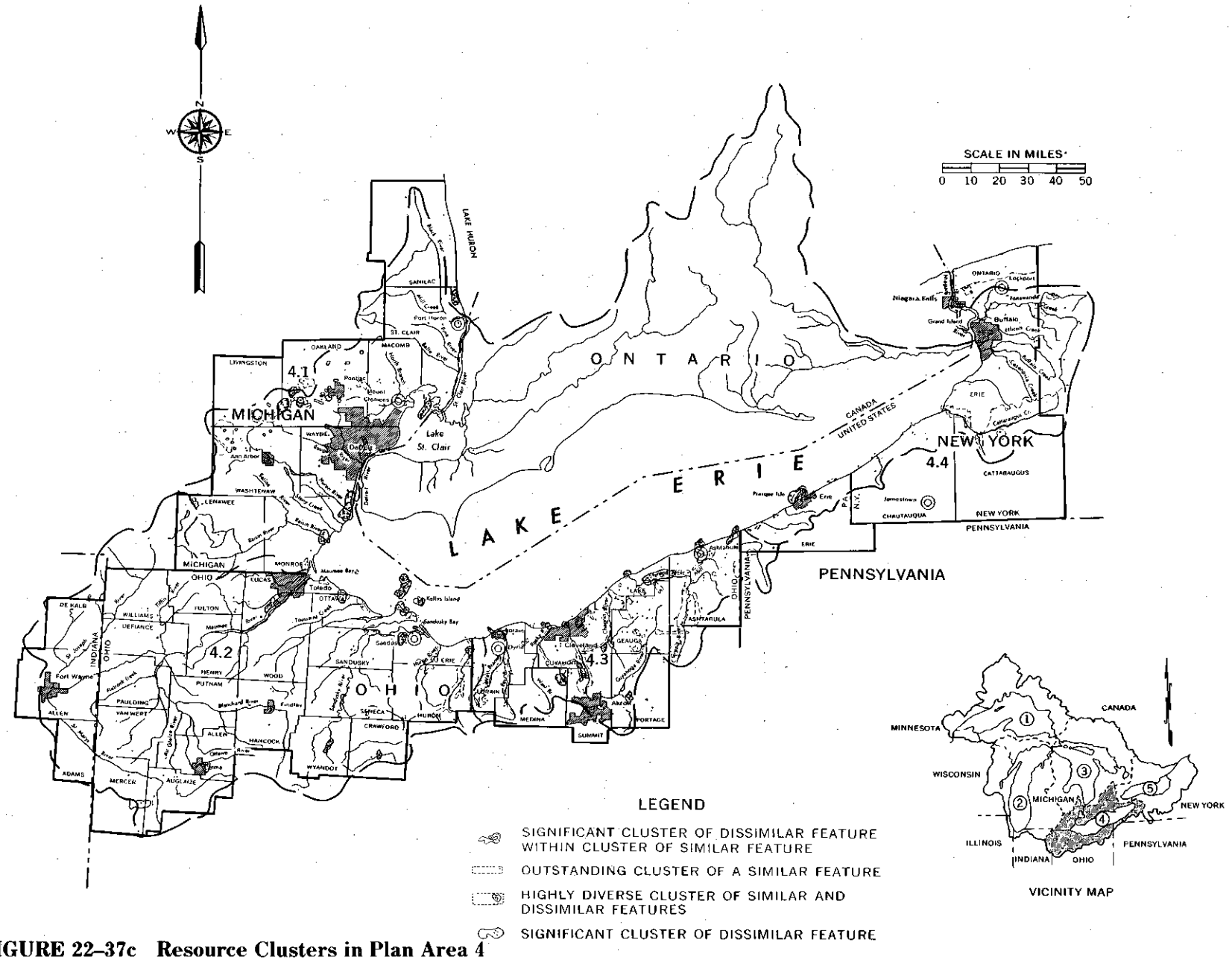


FIGURE 22–37c Resource Clusters in Plan Area 4

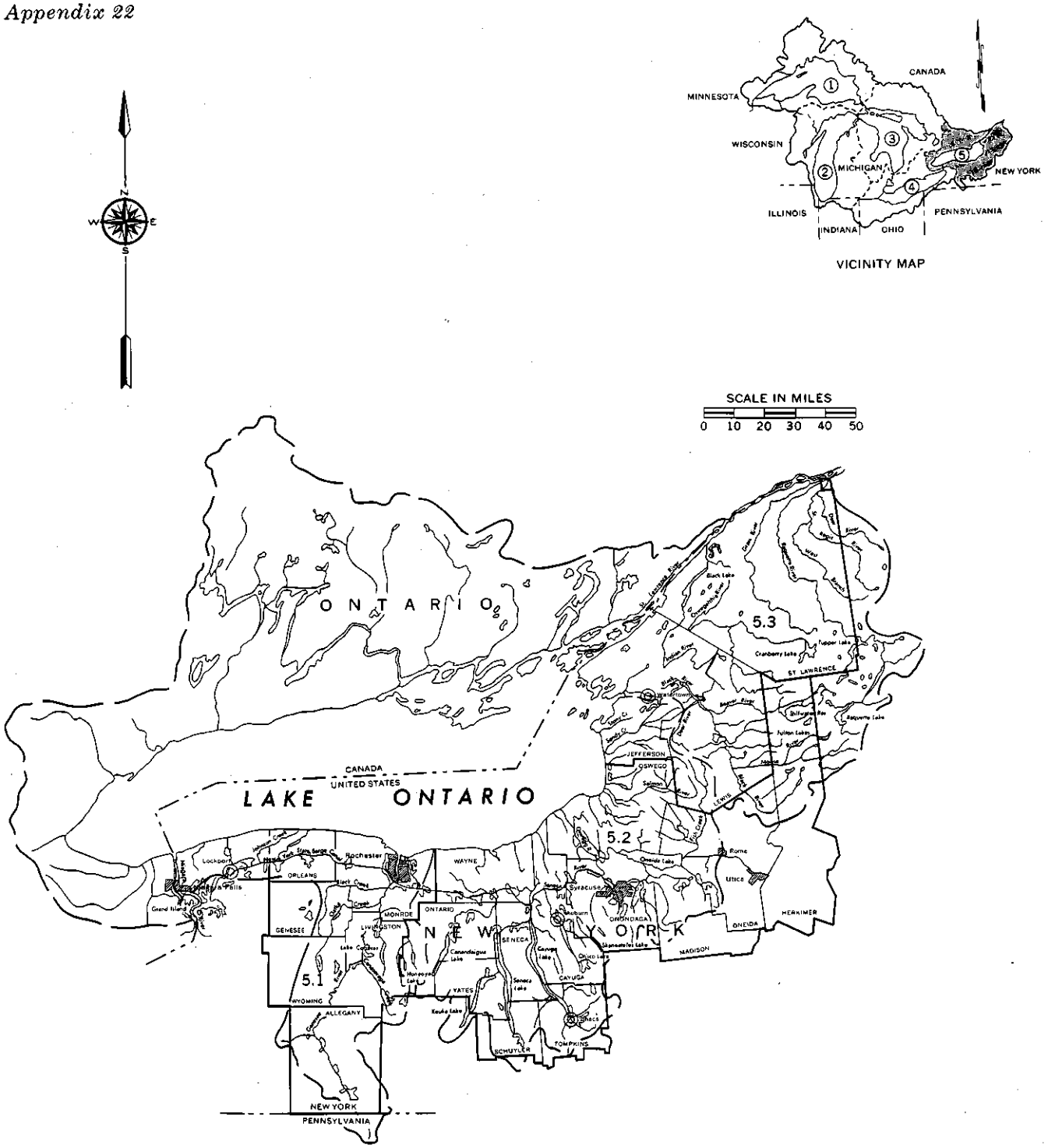


FIGURE 22–40c Buffer Zones in Plan Area 5

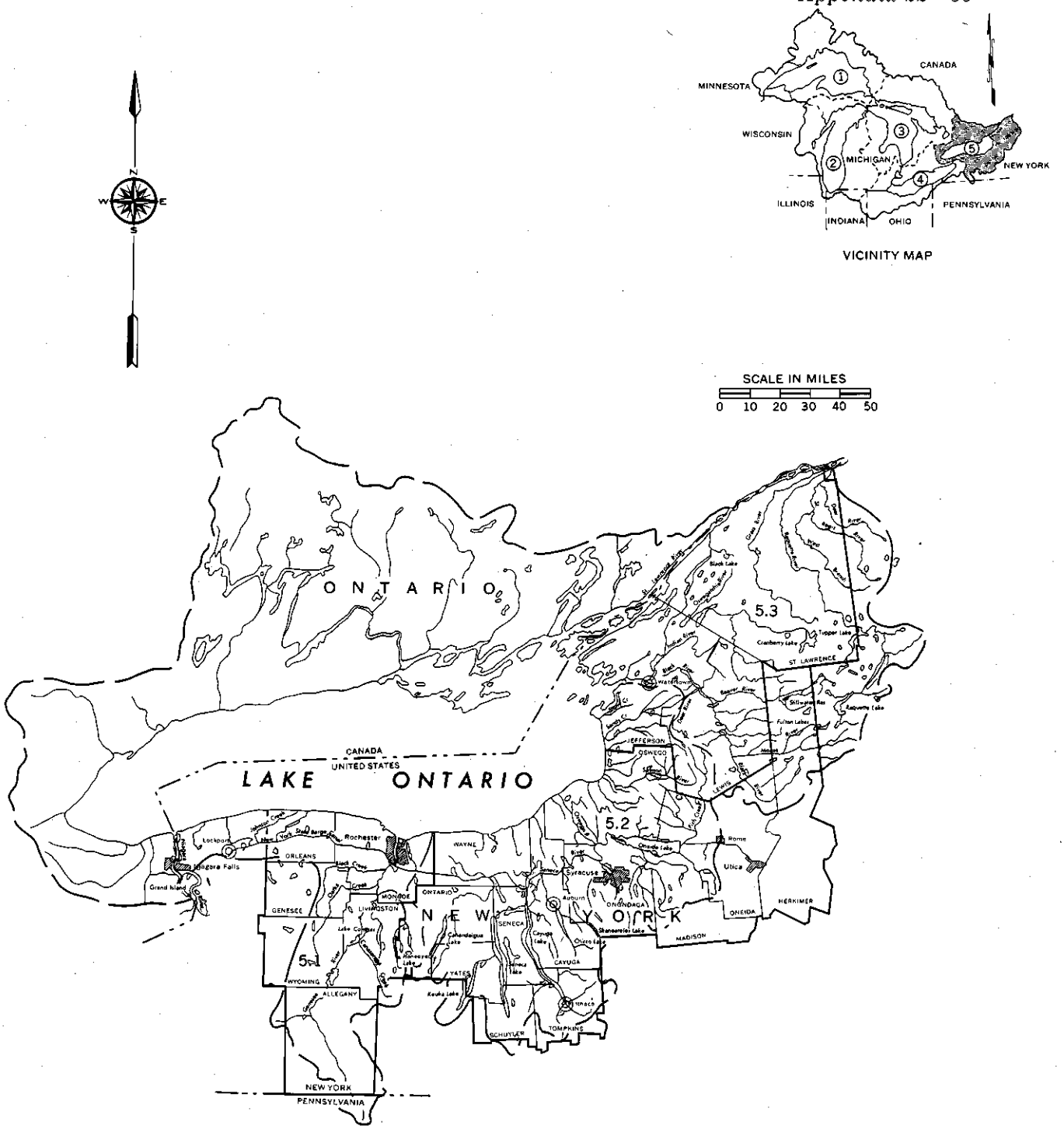


FIGURE 22–41c Shore Zones in Plan Area 5

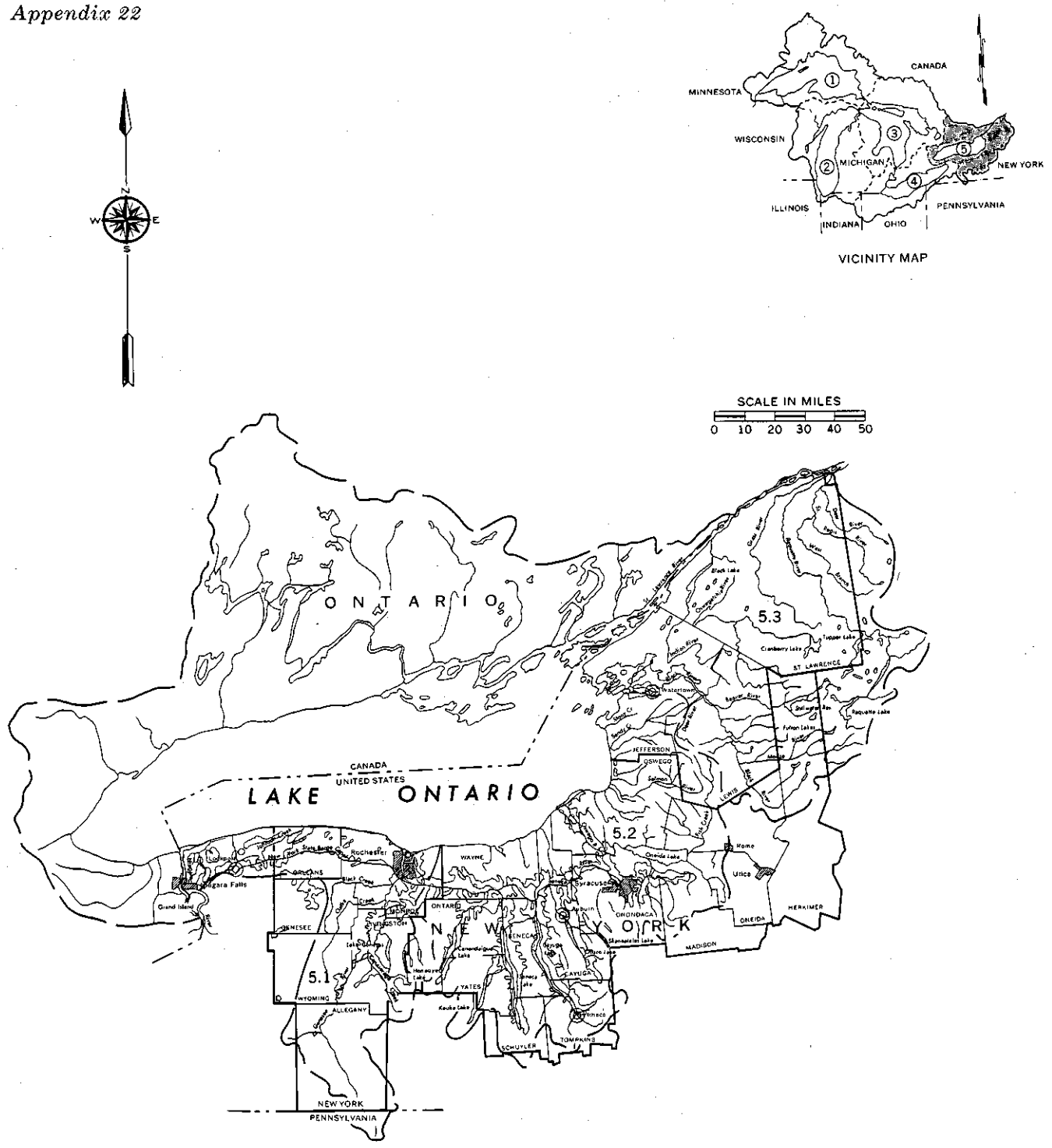


FIGURE 22-42c Linkage Corridors in Plan Area 5

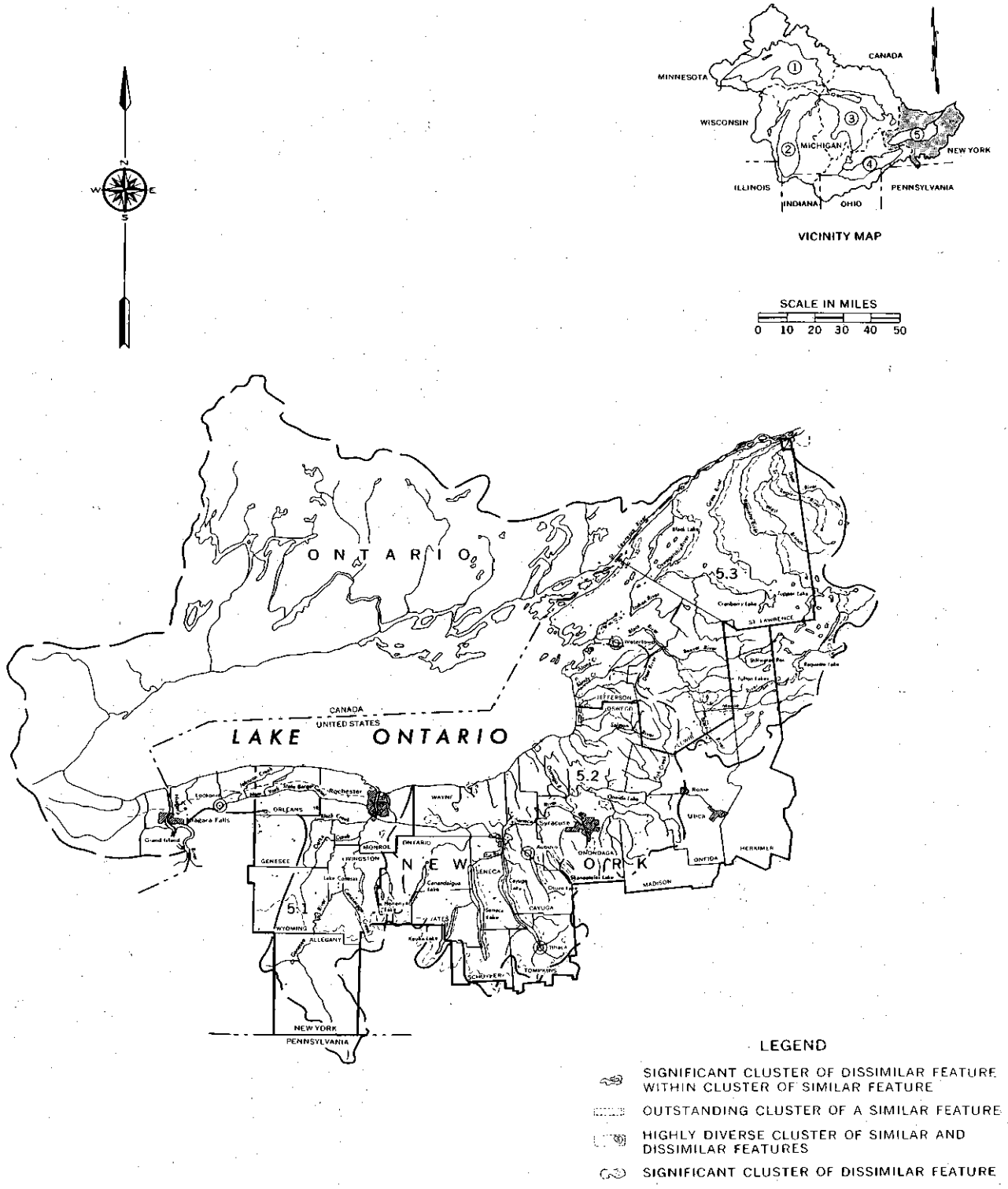


FIGURE 22–43c Resource Clusters in Plan Area 5

TYPE I MAPS

1. WATER AND ITS ENVIRONS

A. Water in Motion

B. Beaches

C. Wetlands

2. LAND FORMS

A. Rock Formations

B. Glacial Remains

C. Castle Rocks

D. Underground Caves

E. Stones & Fossil Areas

3. VEGETATION

A. Trees & Shrubs

B. Wildflowers

C. Aquatic Plants

D. Grasses

E. Wildberries

4. WILDLIFE HABITAT

A. Animals

B. Birds of Prey

C. Upland Game Birds

D. Songbirds

E. Waterbirds

F. Fish Habitat

5. CULTURAL RESOURCES

A. Historical Structures and Places

B. Sites and Objects Pertaining to Early Indian Culture

C. Modern Structures

D. Day Camps

6. PARKS

A. Proposed Federal Park

B. Proposed State Park

C. Proposed County Park

D. Proposed Municipal Park

E. Existing Federal Park

F. Existing State Park

G. Existing County Park

H. Existing Municipal Park

7. DAMS & RESERVOIRS

A. Existing Conservation Dams (S.L.S.) (S.C.S.)

B. Proposed Conservation Dams

C. Existing Corp Dams

D. Proposed Corp Dams

TYPE II MAPS

8. NATURAL-CULTURAL SYSTEMS

Black dots--environmental texture; exact location of symbols

Light broken black line--resource cluster outline

Heavy broken black line--hydrologic basin boundary

Light green--forest cover

Dark green--environmental system

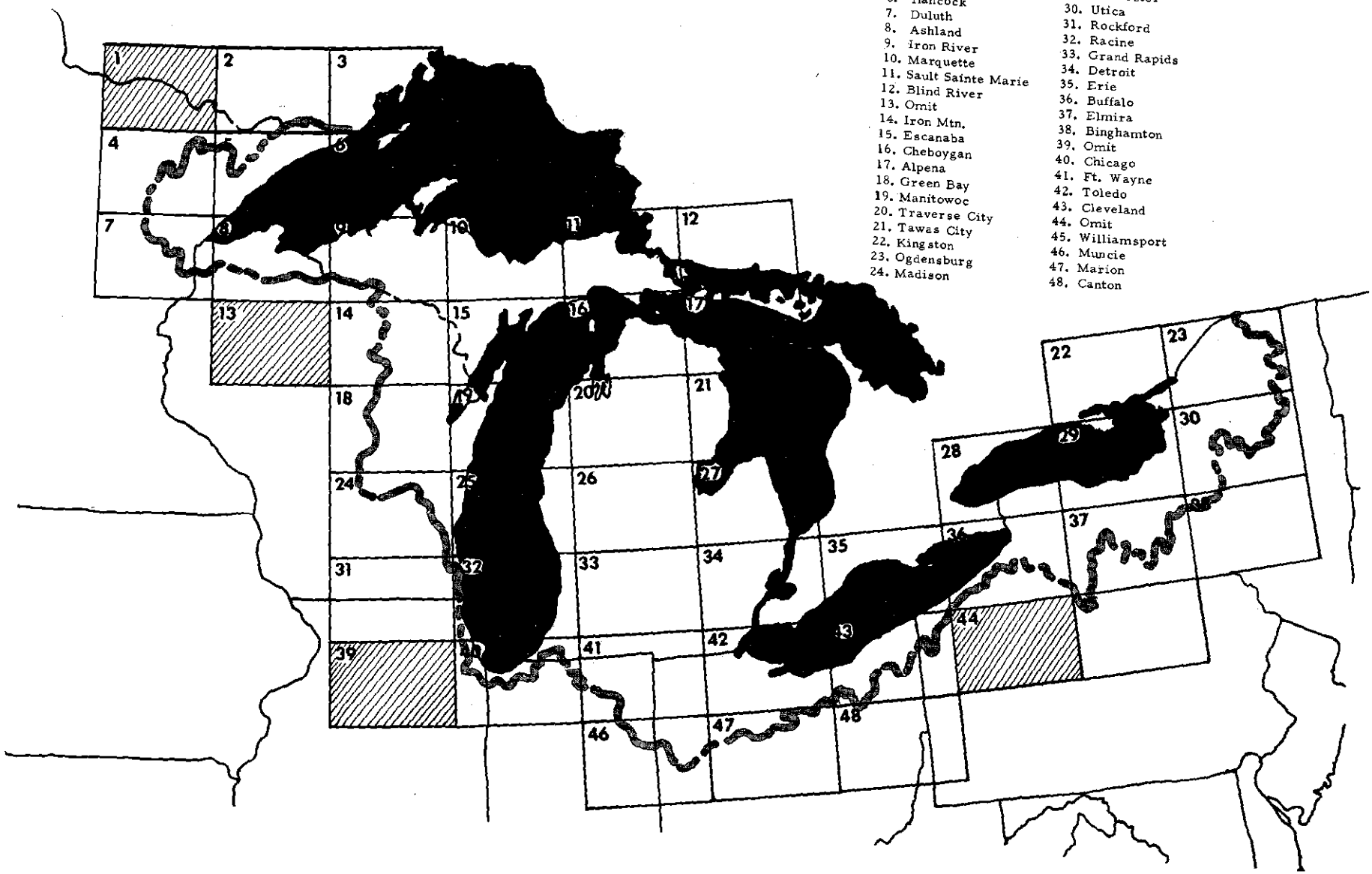
Red solid--existing human impact

Heavy grey line--PSA boundaries

Solid red line--primary highway

Broken red line--secondary highway

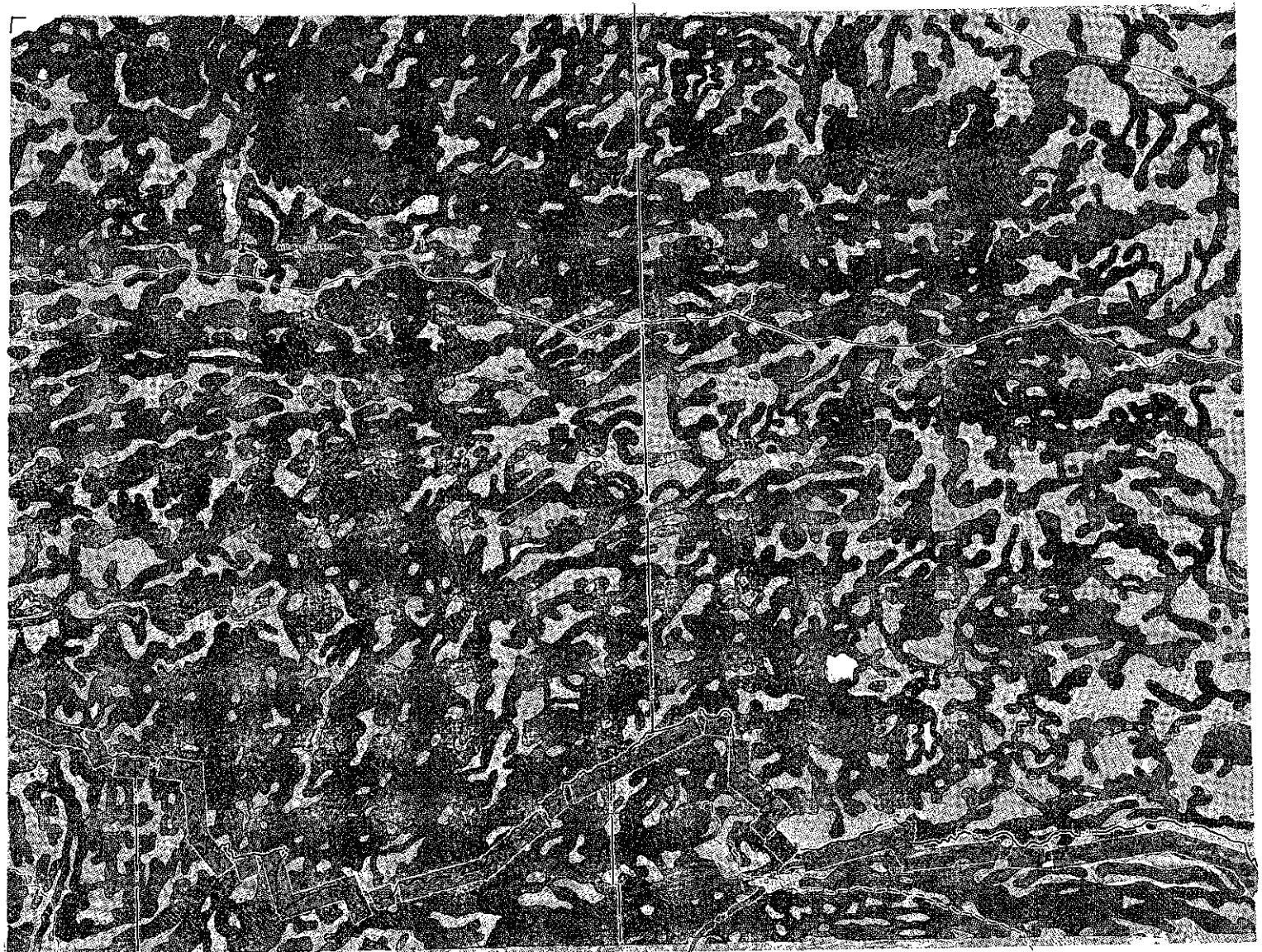
FIGURE 22-45c Inventory of Aesthetic and Cultural Resources. The following maps identify outstanding, unique, or significant resource features, symbolized above.


1. Omit
2. Quetico
3. Ft. William
4. Hibbing
5. Two Harbors
6. Hancock
7. Duluth
8. Ashland
9. Iron River
10. Marquette
11. Sault Sainte Marie
12. Blind River
13. Omit
14. Iron Mtn.
15. Escanaba
16. Cheboygan
17. Alpena
18. Green Bay
19. Manitowoc
20. Traverse City
21. Tawas City
22. Kingston
23. Ogdensburg
24. Madison
25. Milwaukee
26. Midland
27. Flint
28. Toronto
29. Rochester
30. Utica
31. Rockford
32. Racine
33. Grand Rapids
34. Detroit
35. Erie
36. Buffalo
37. Elmira
38. Binghamton
39. Omit
40. Chicago
41. Ft. Wayne
42. Toledo
43. Cleveland
44. Omit
45. Williamsport
46. Muncie
47. Marion
48. Canton

INDEX MAP

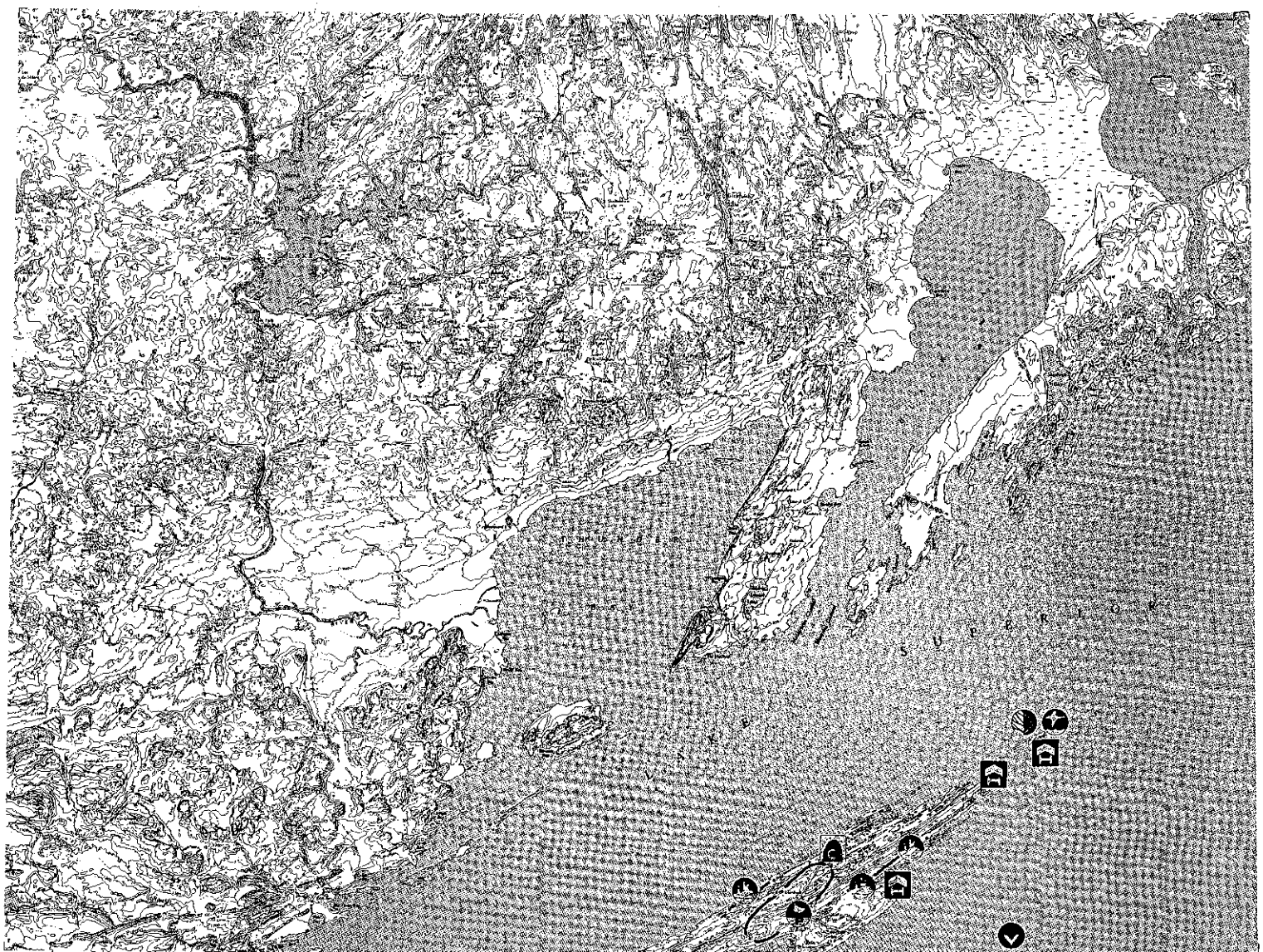
I

Map 2



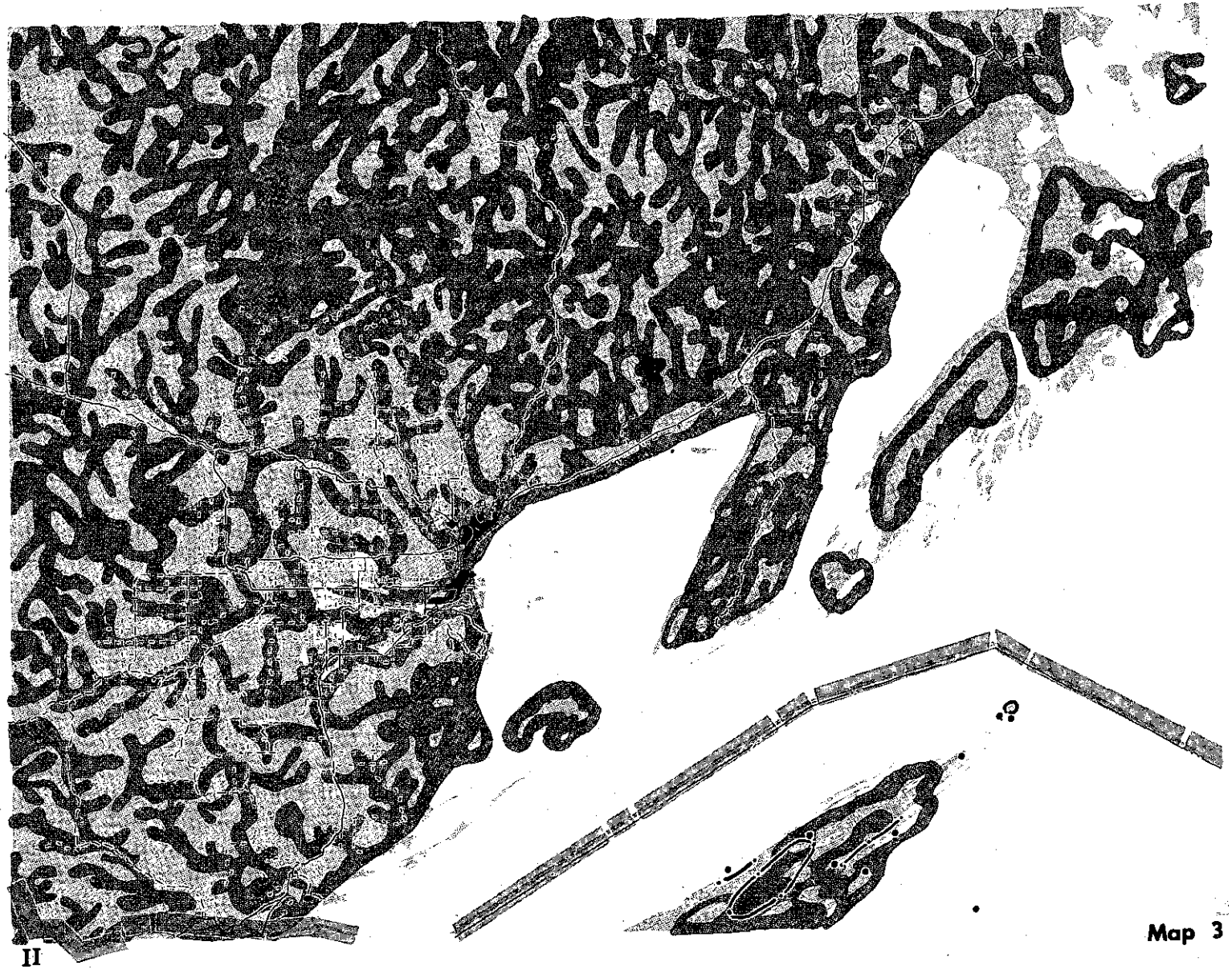
II

Map 2

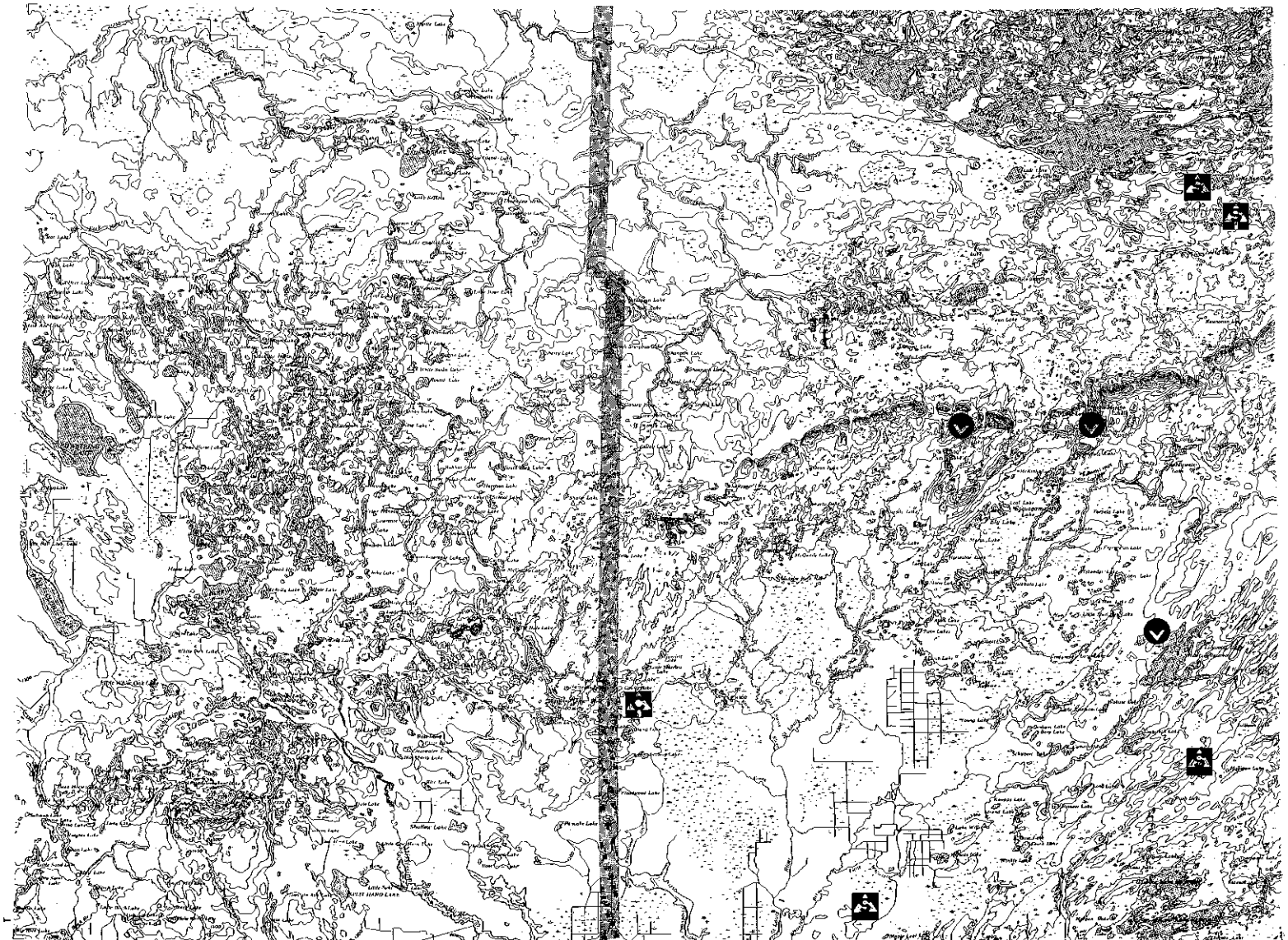


I

Map 3

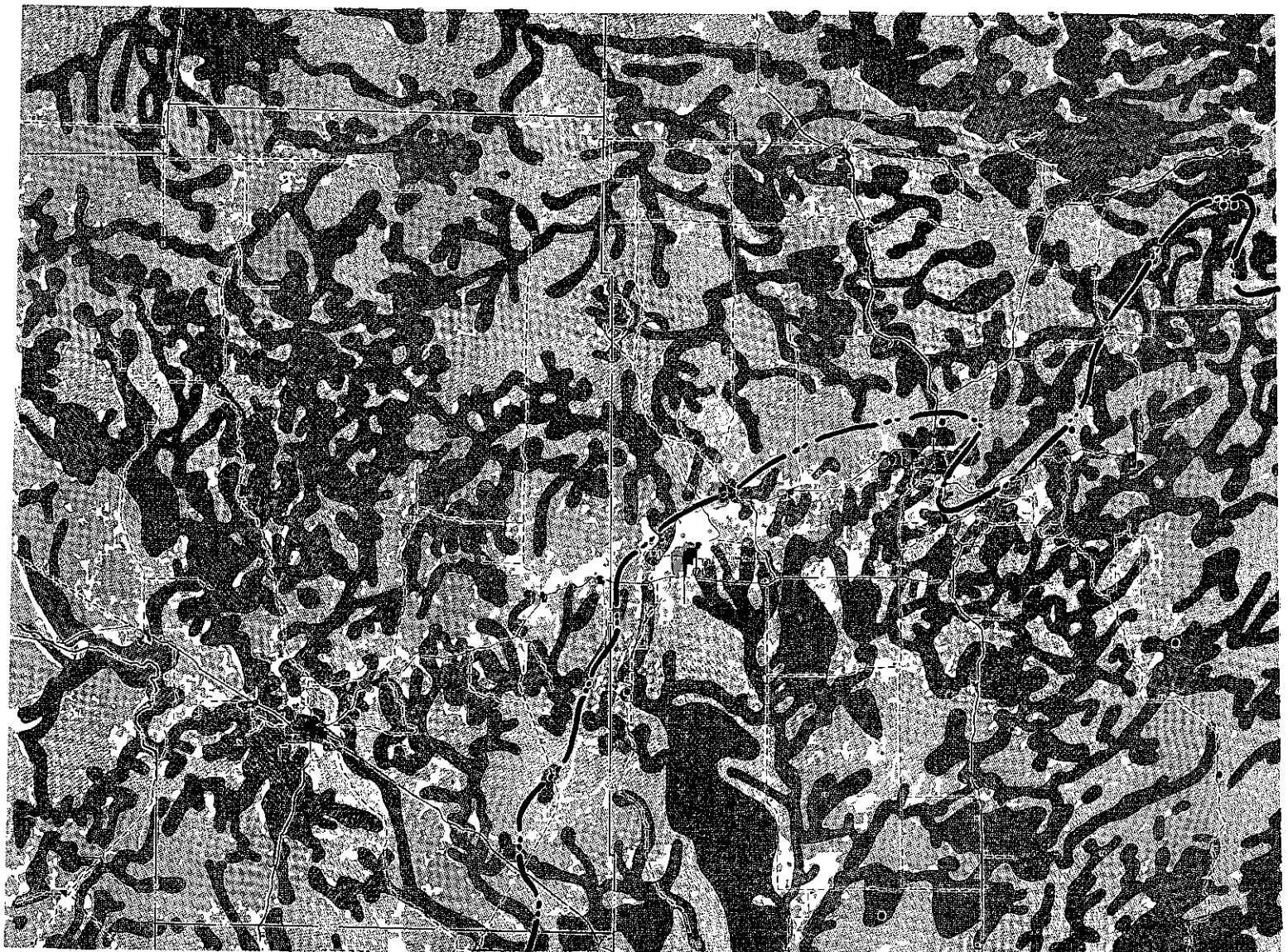


Map 3



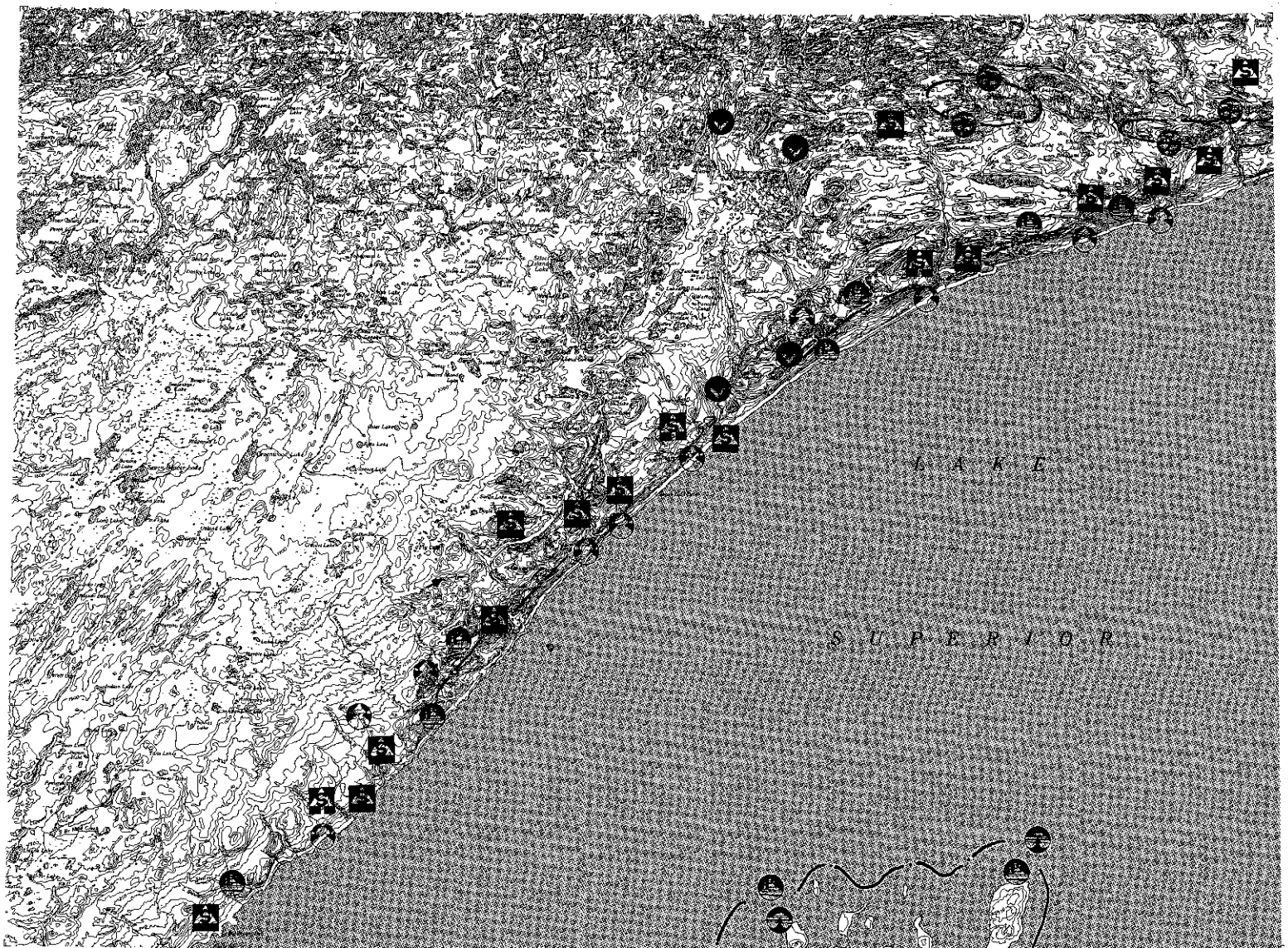
1

Map 4



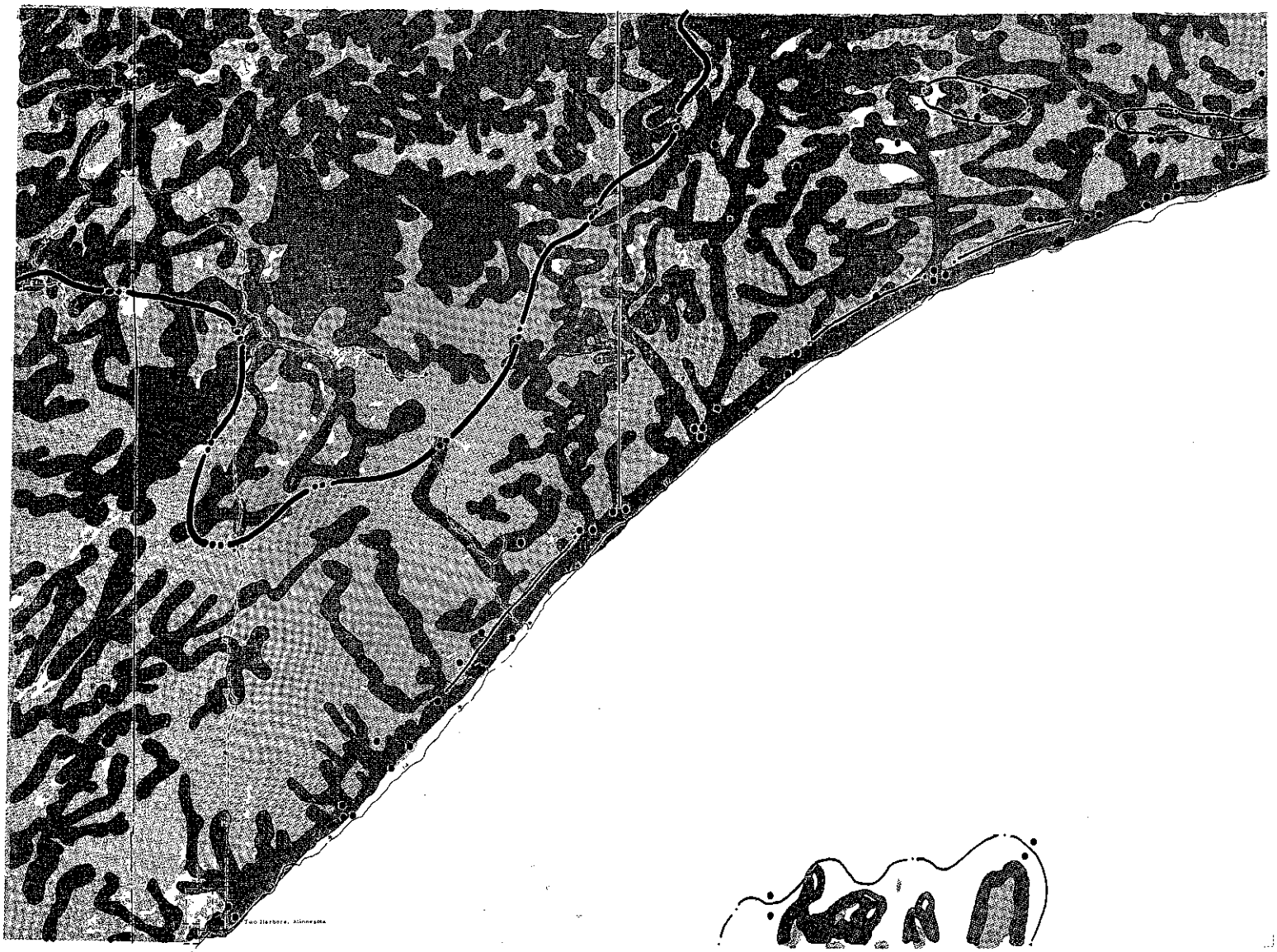
II

Map 4



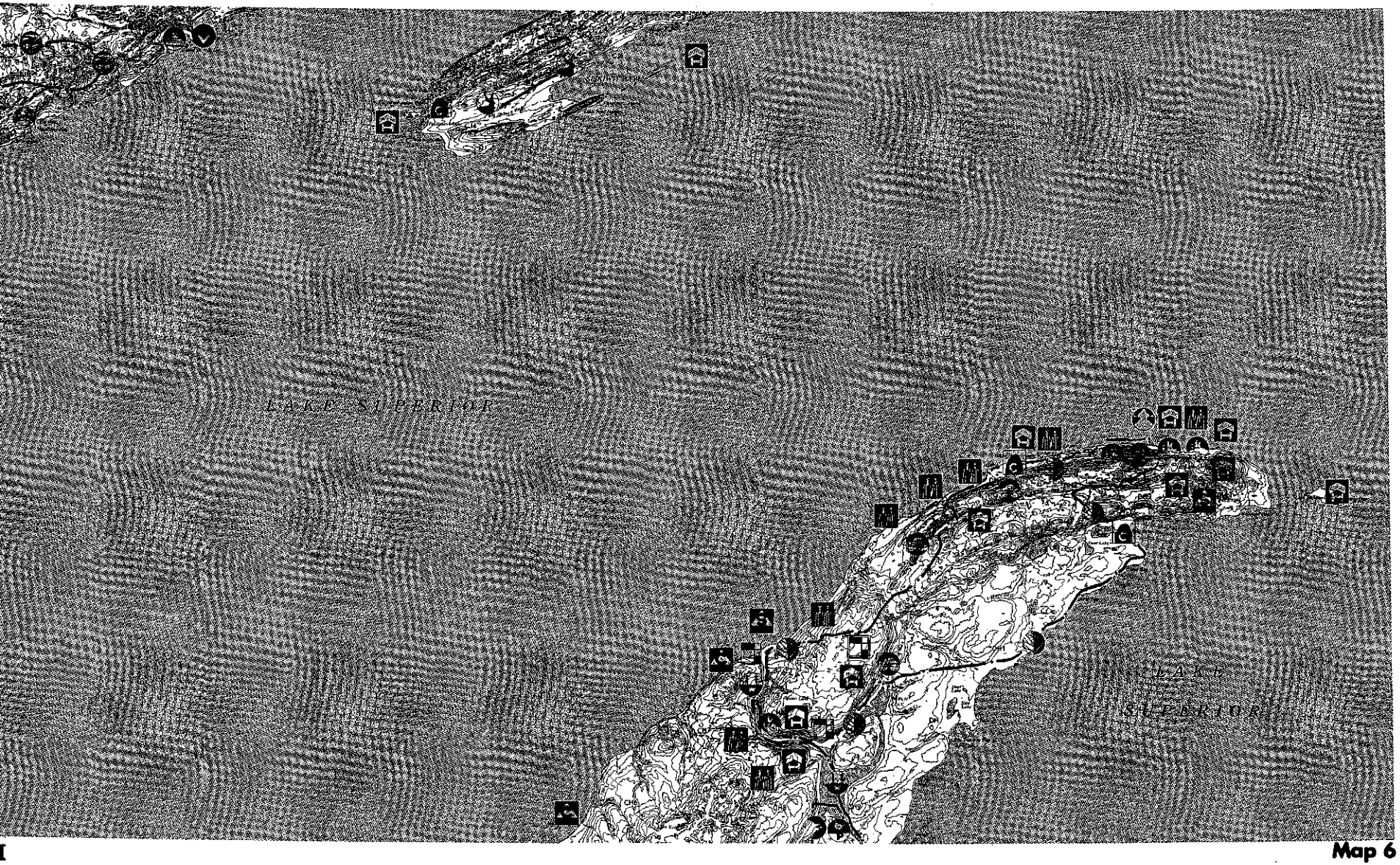
1

Map 5



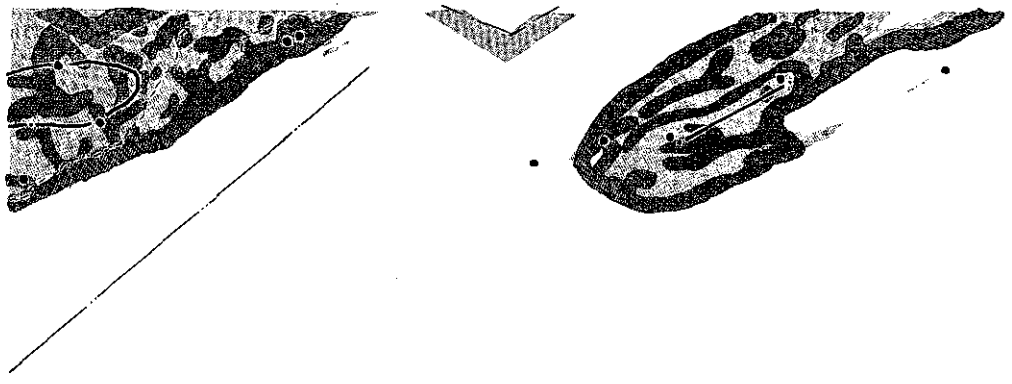
II

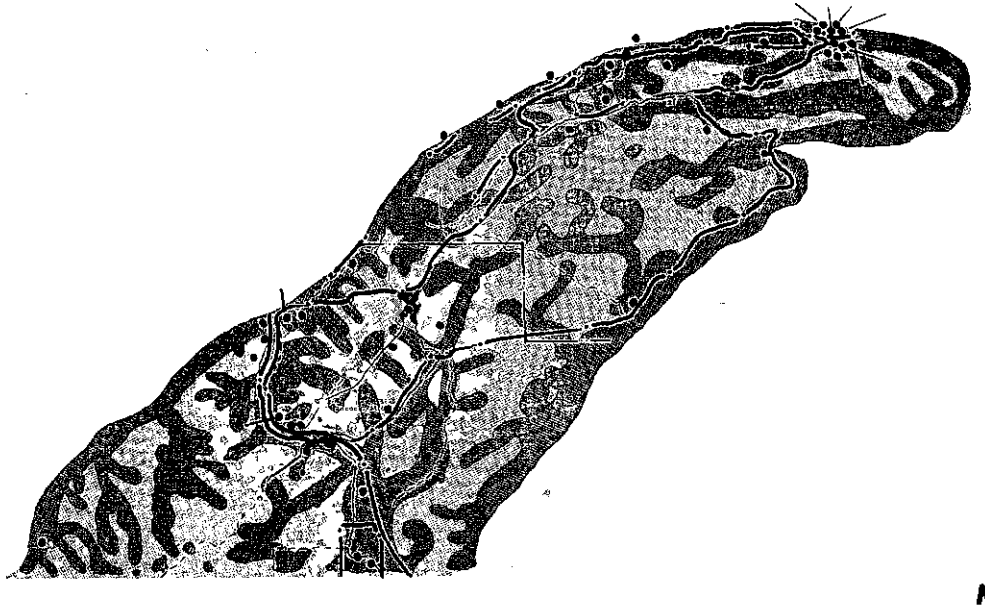
Map 5



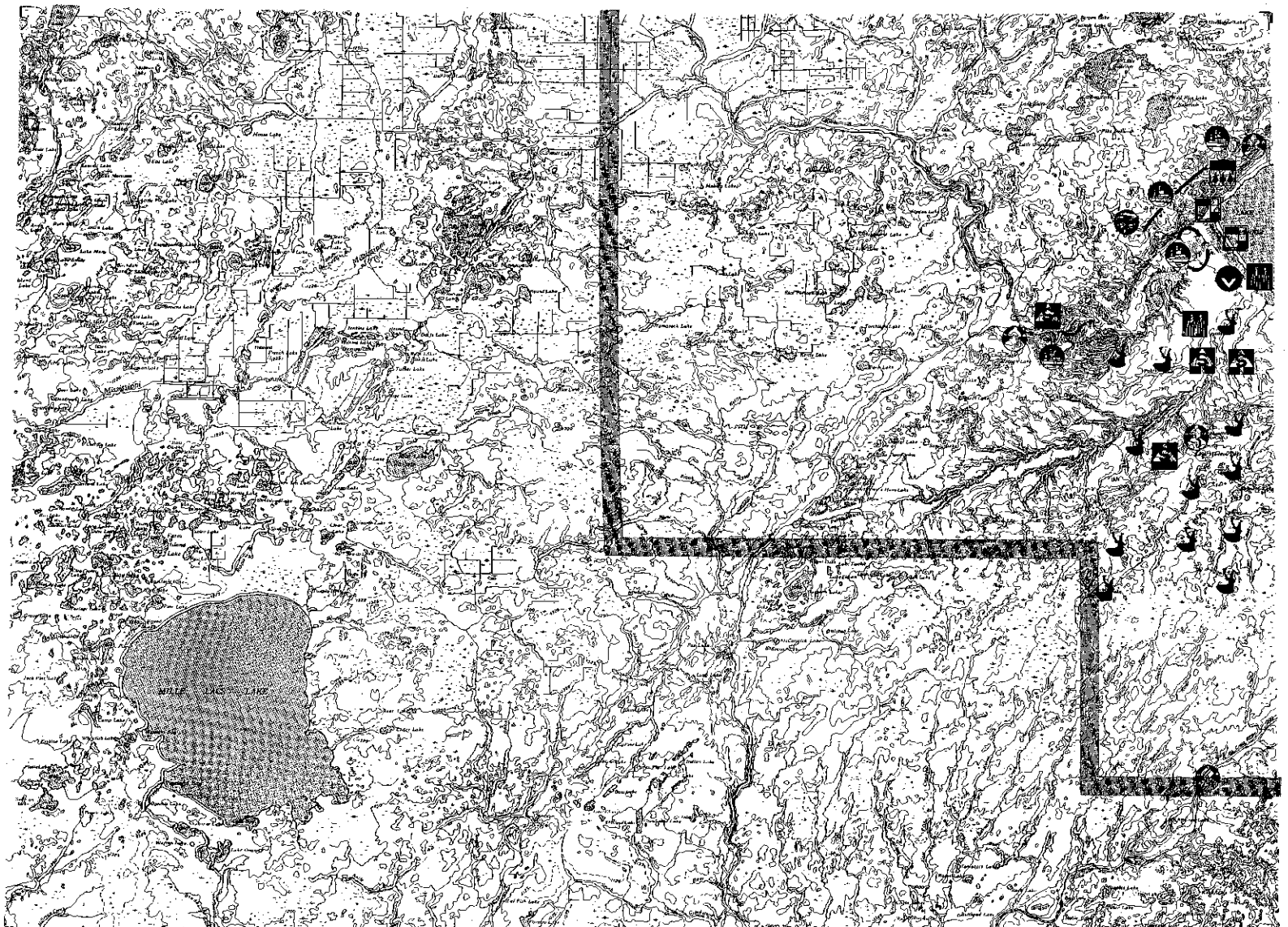
I

Map 6



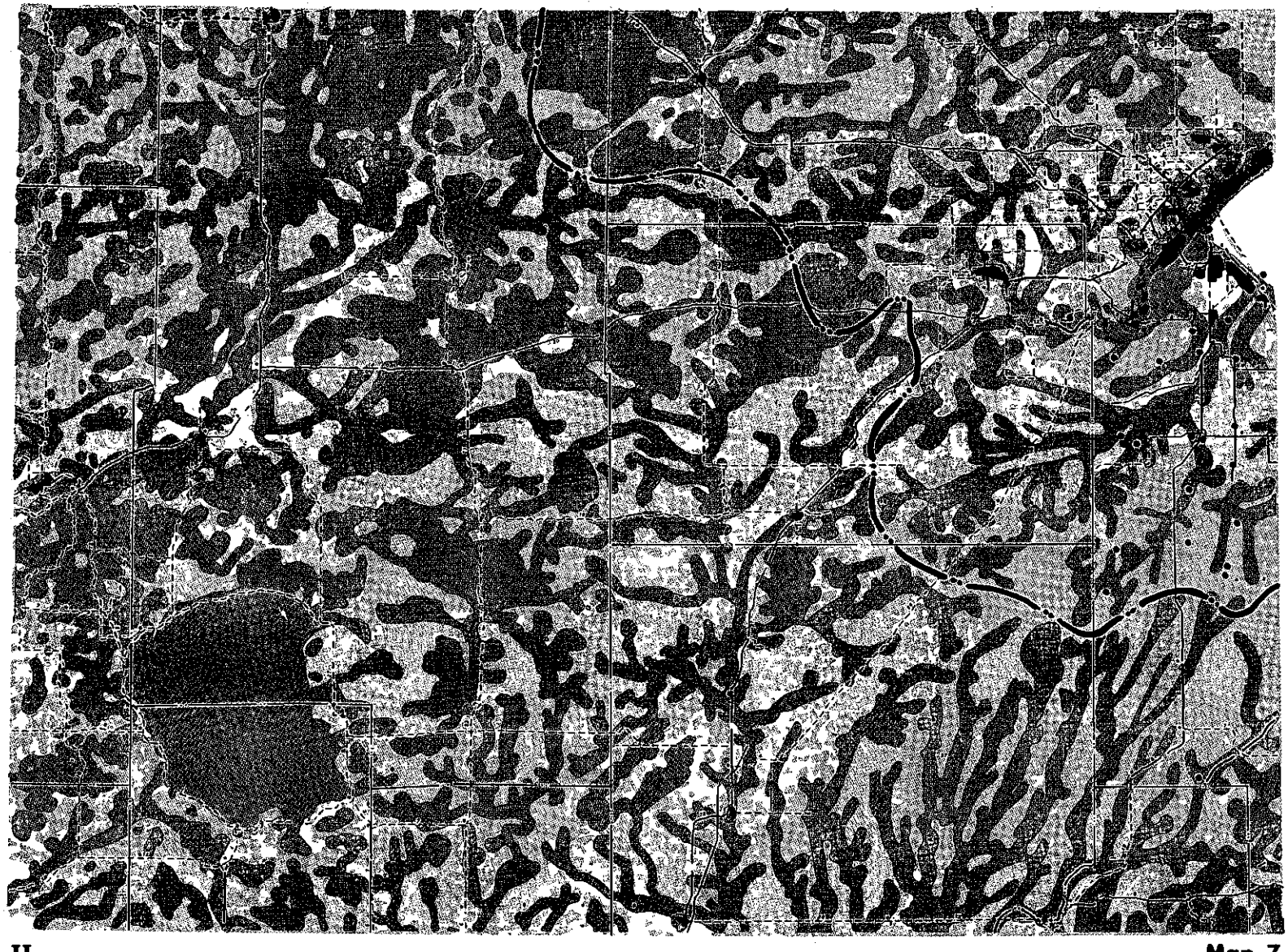


Map 6



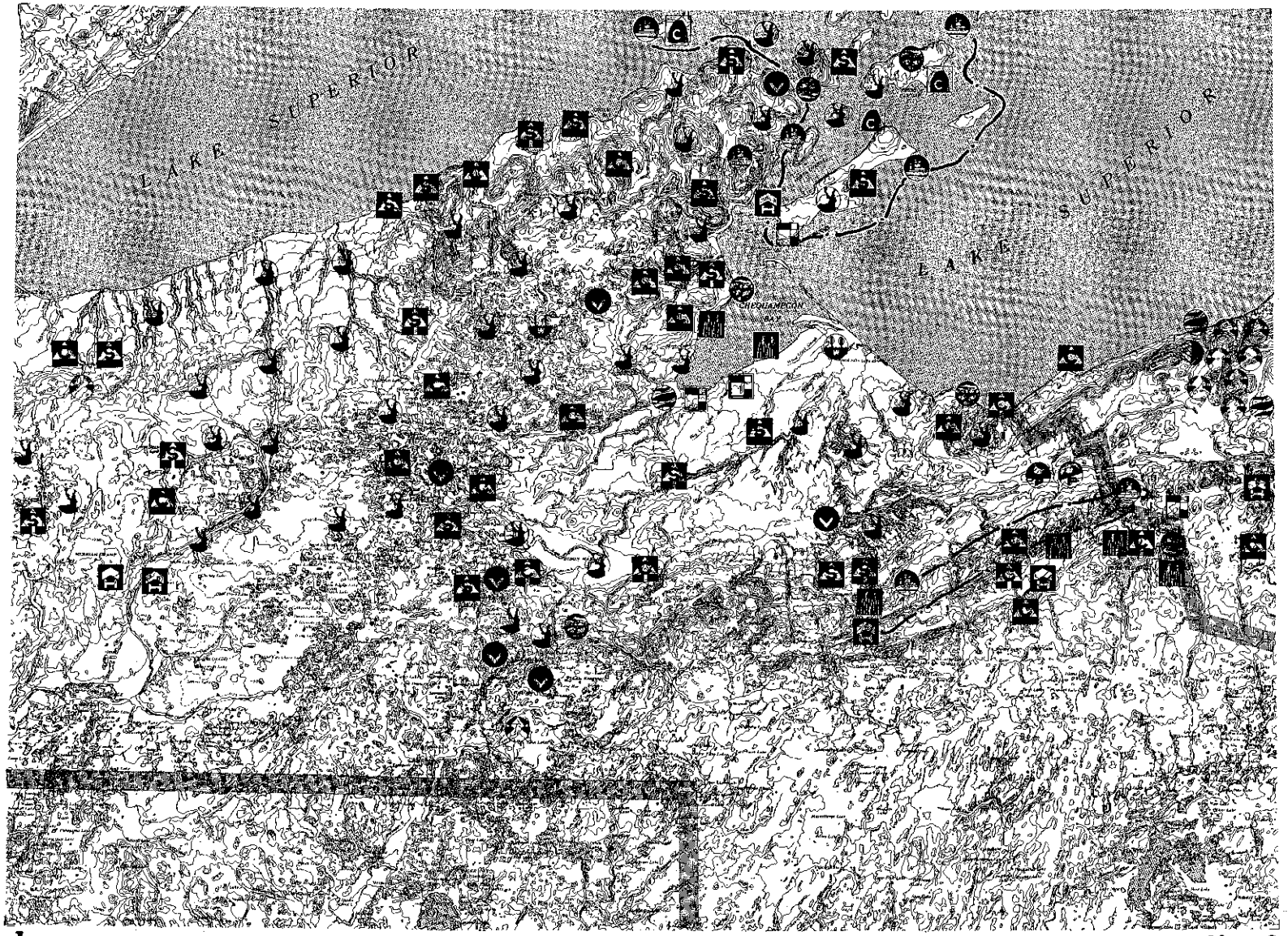
I

Map 7



II

Map 7

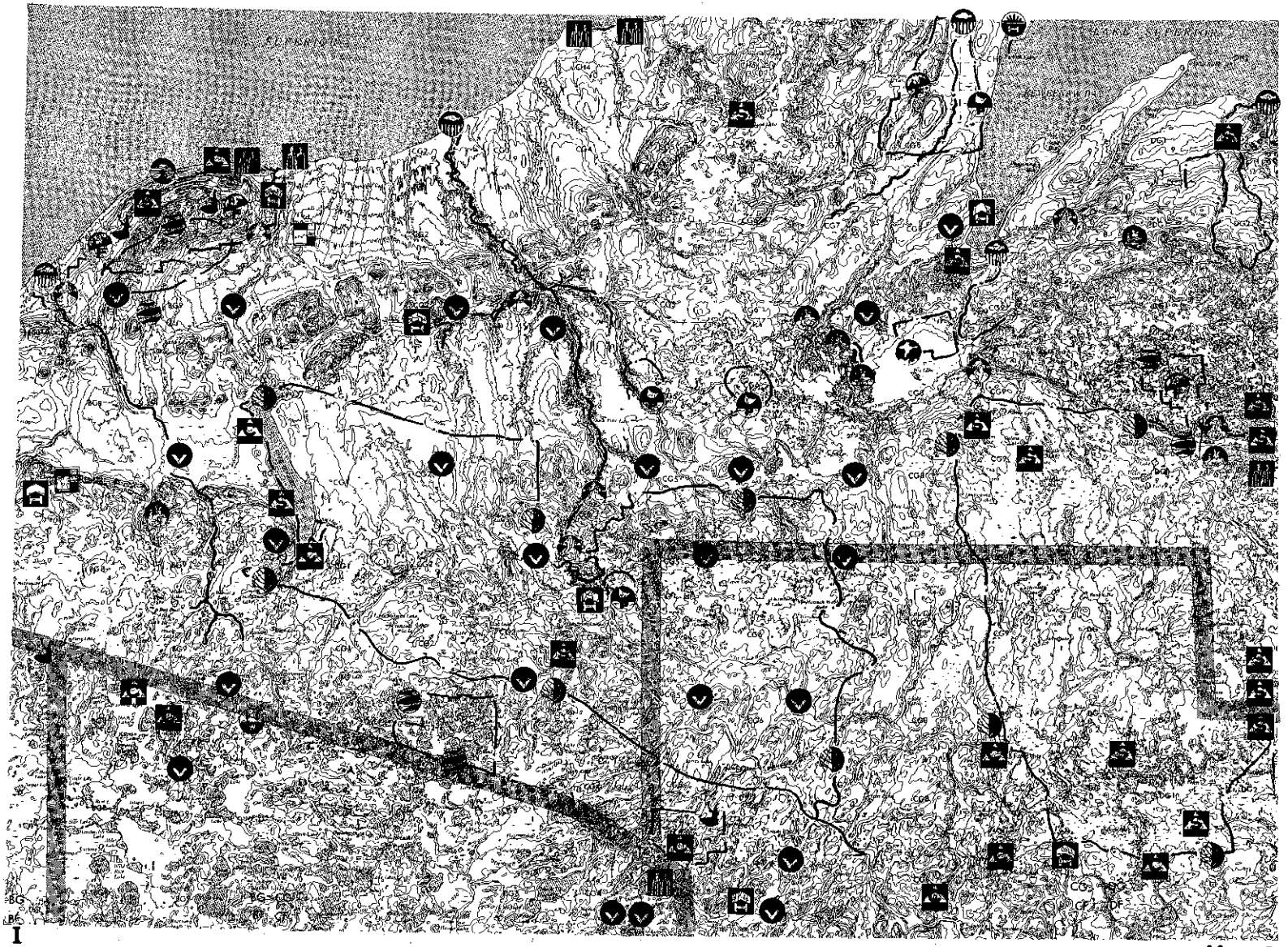


I

Map 8

II

Map 8

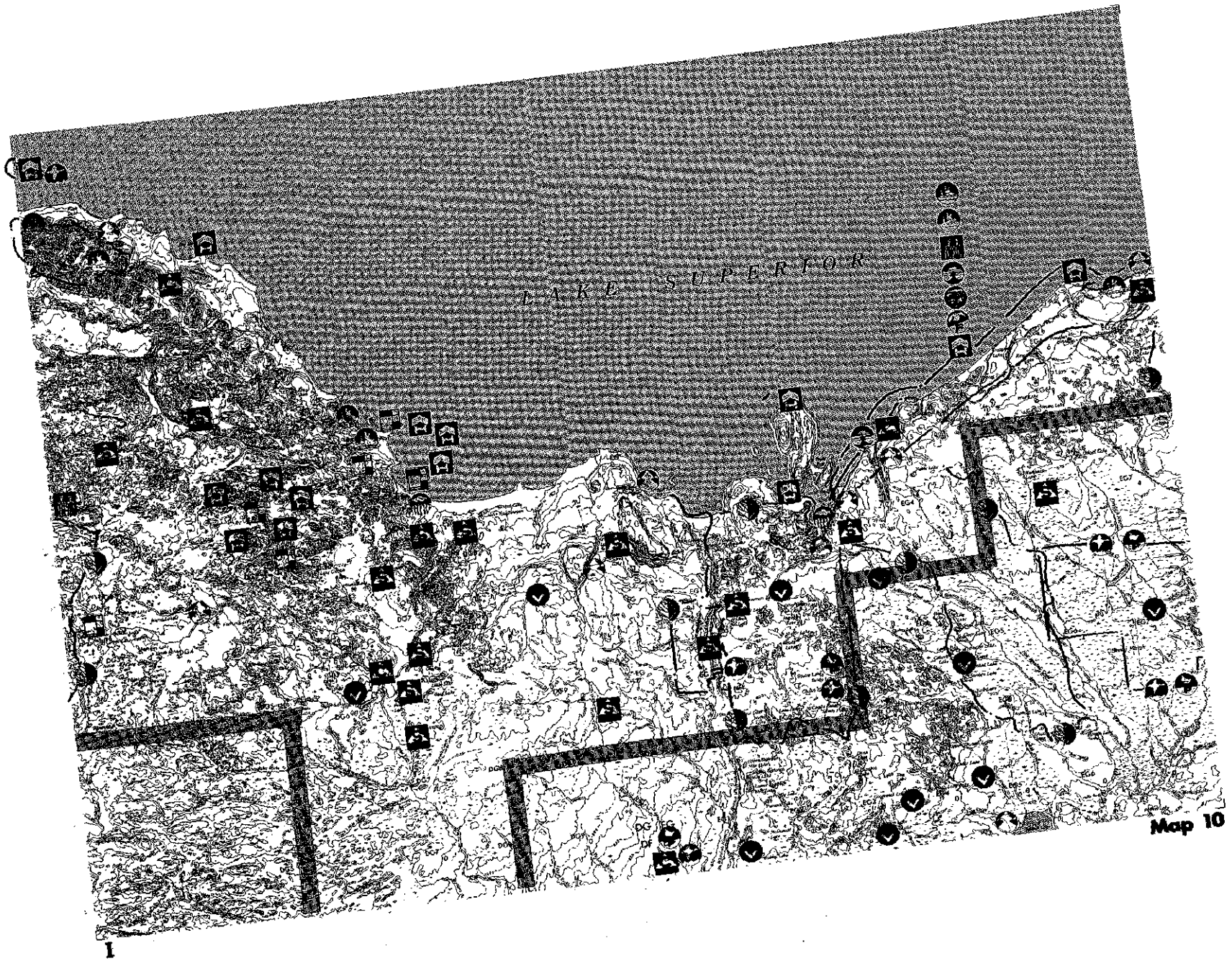


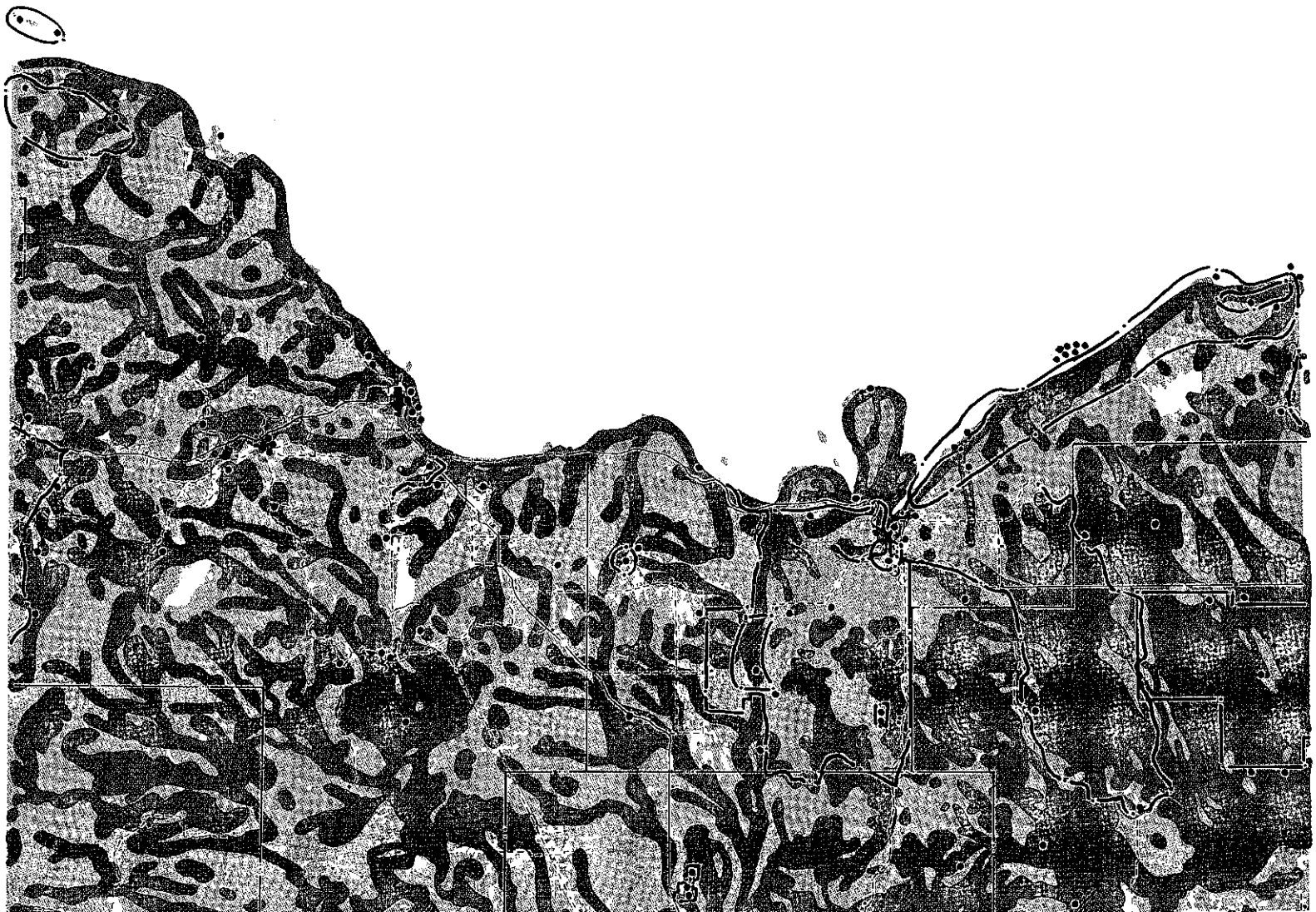
I

Map 9

II

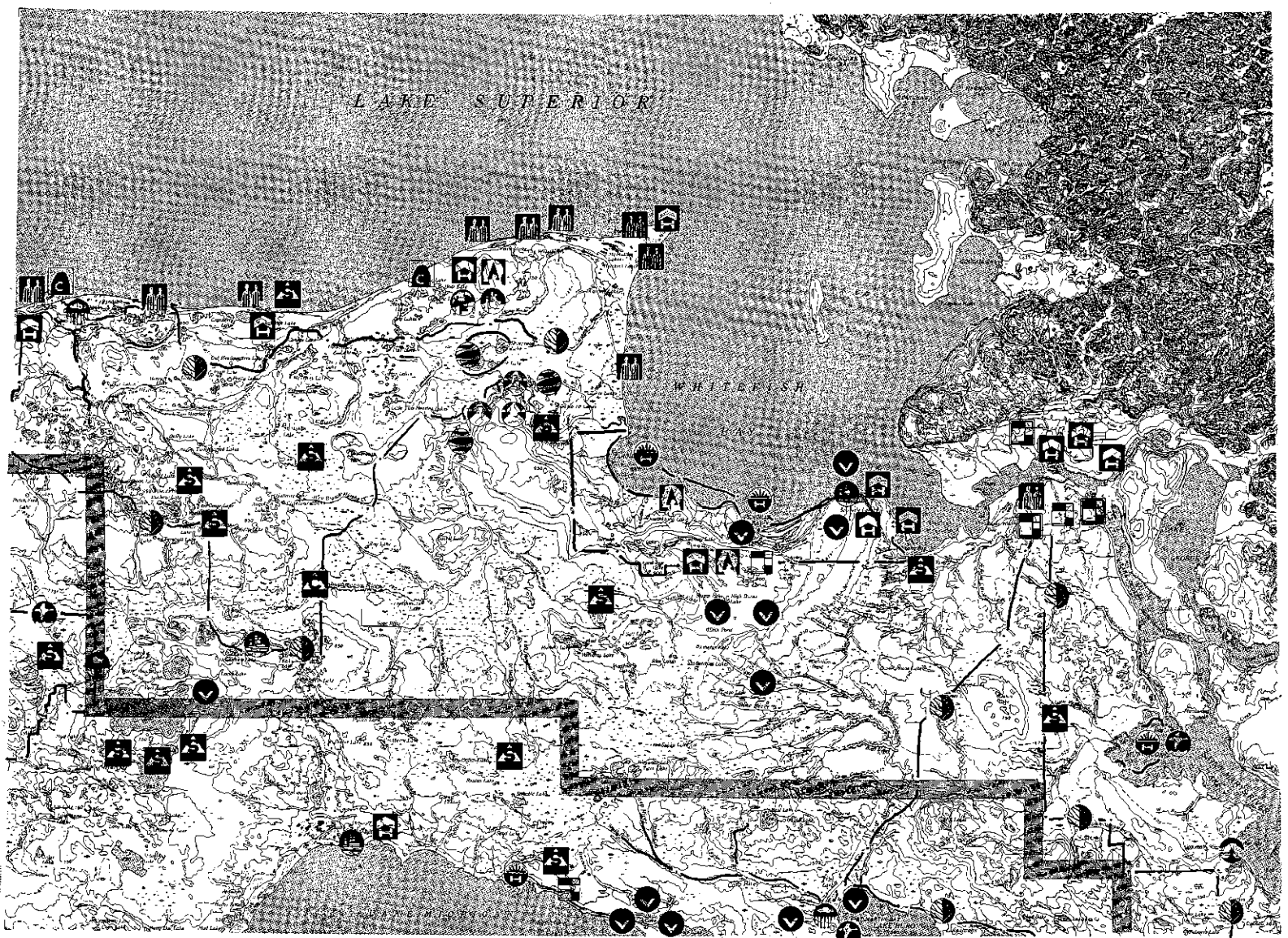
Map 9


LAKE SUPERIOR
Map 10



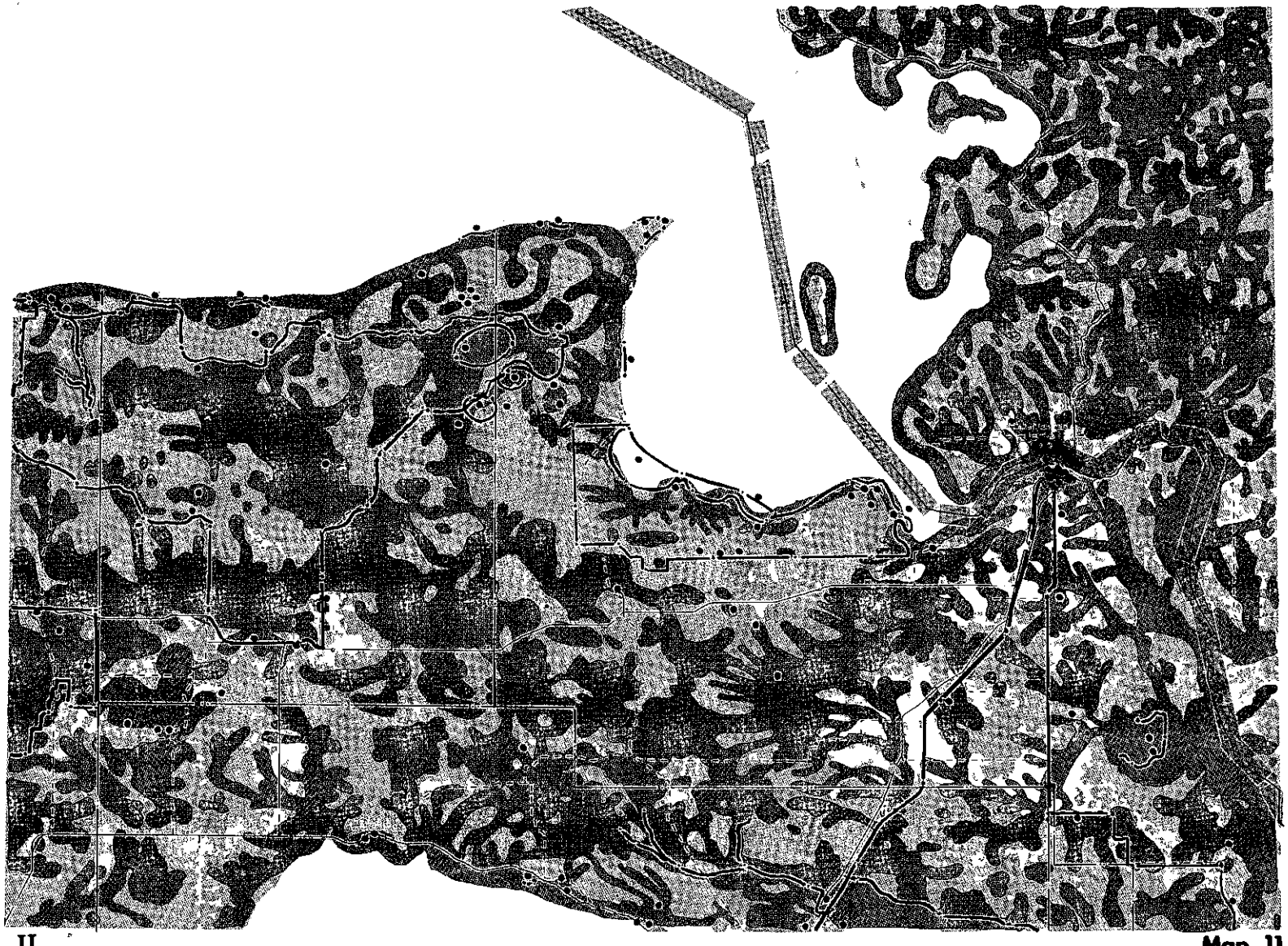
II

Map 10



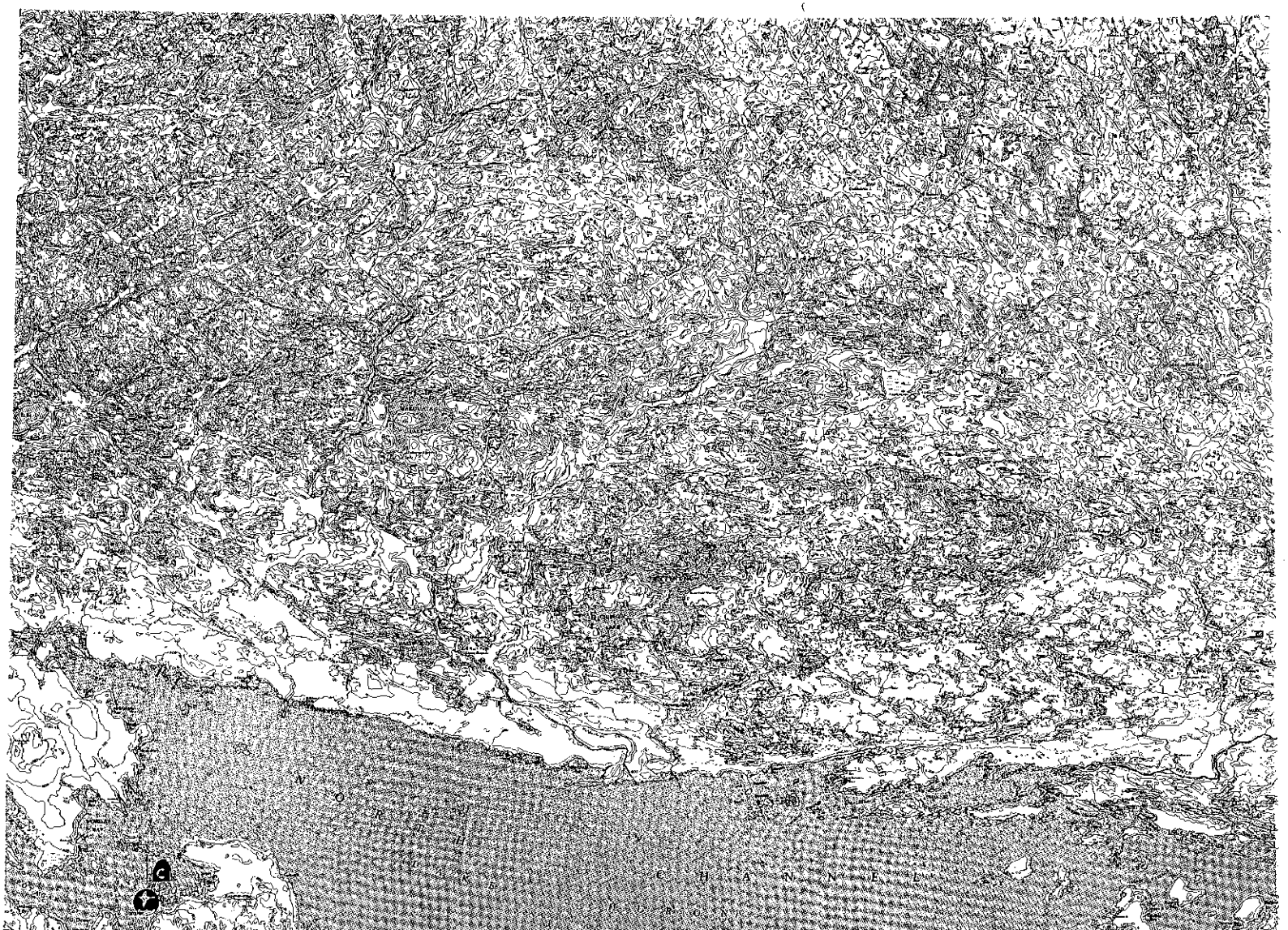
I

Map 11



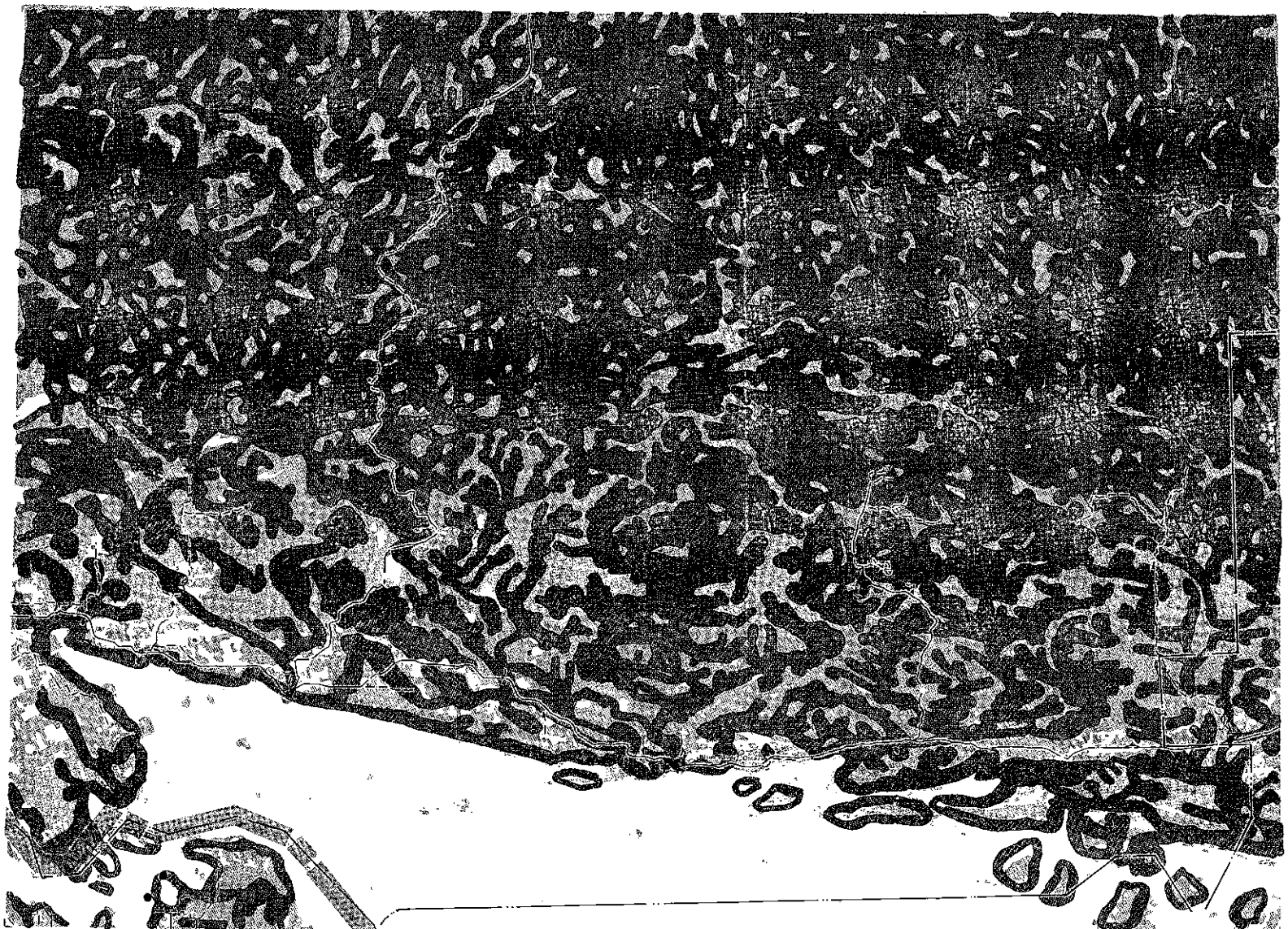
II

Map 11



I

Map 12



II

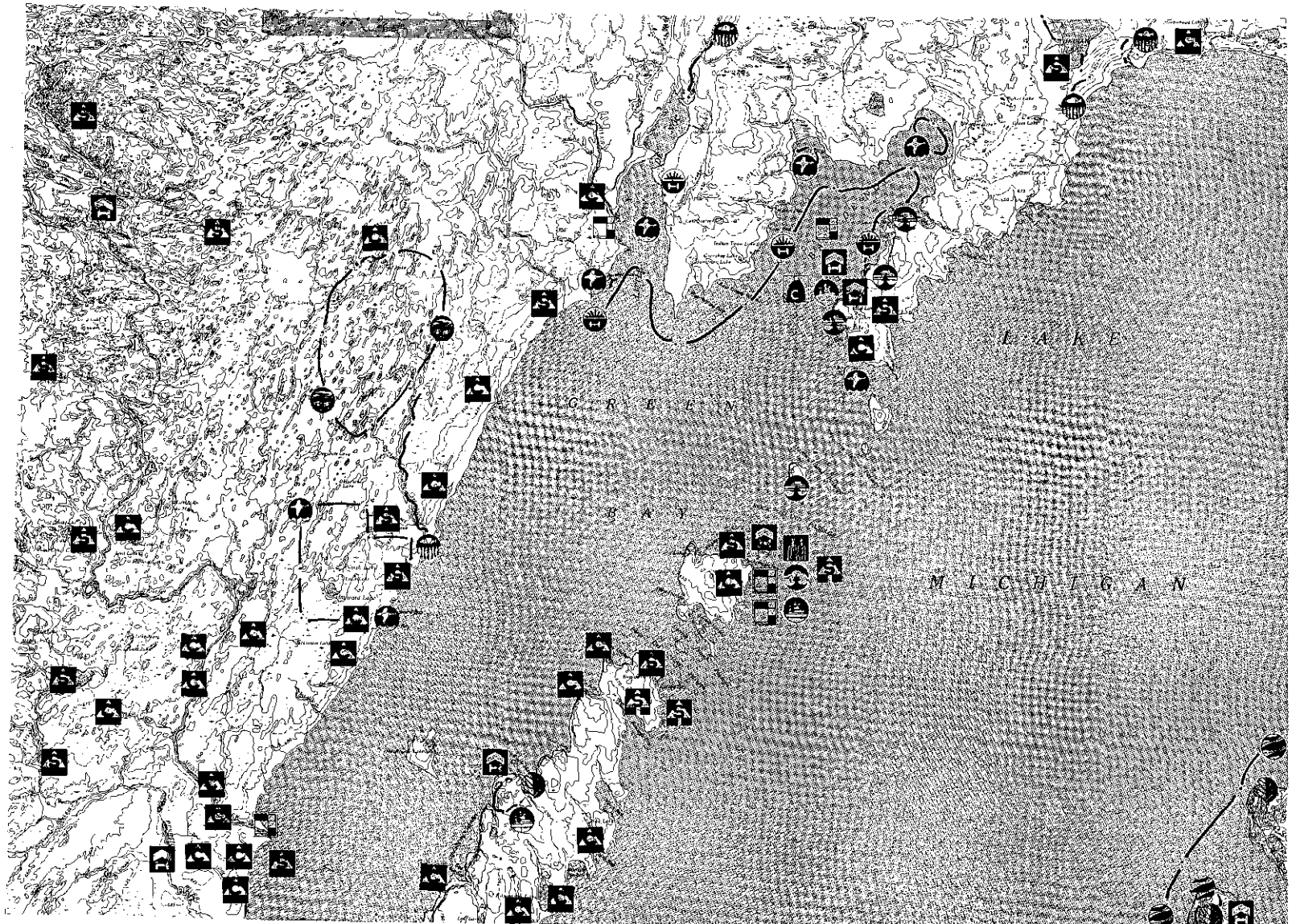
Map 12

I

Map 14

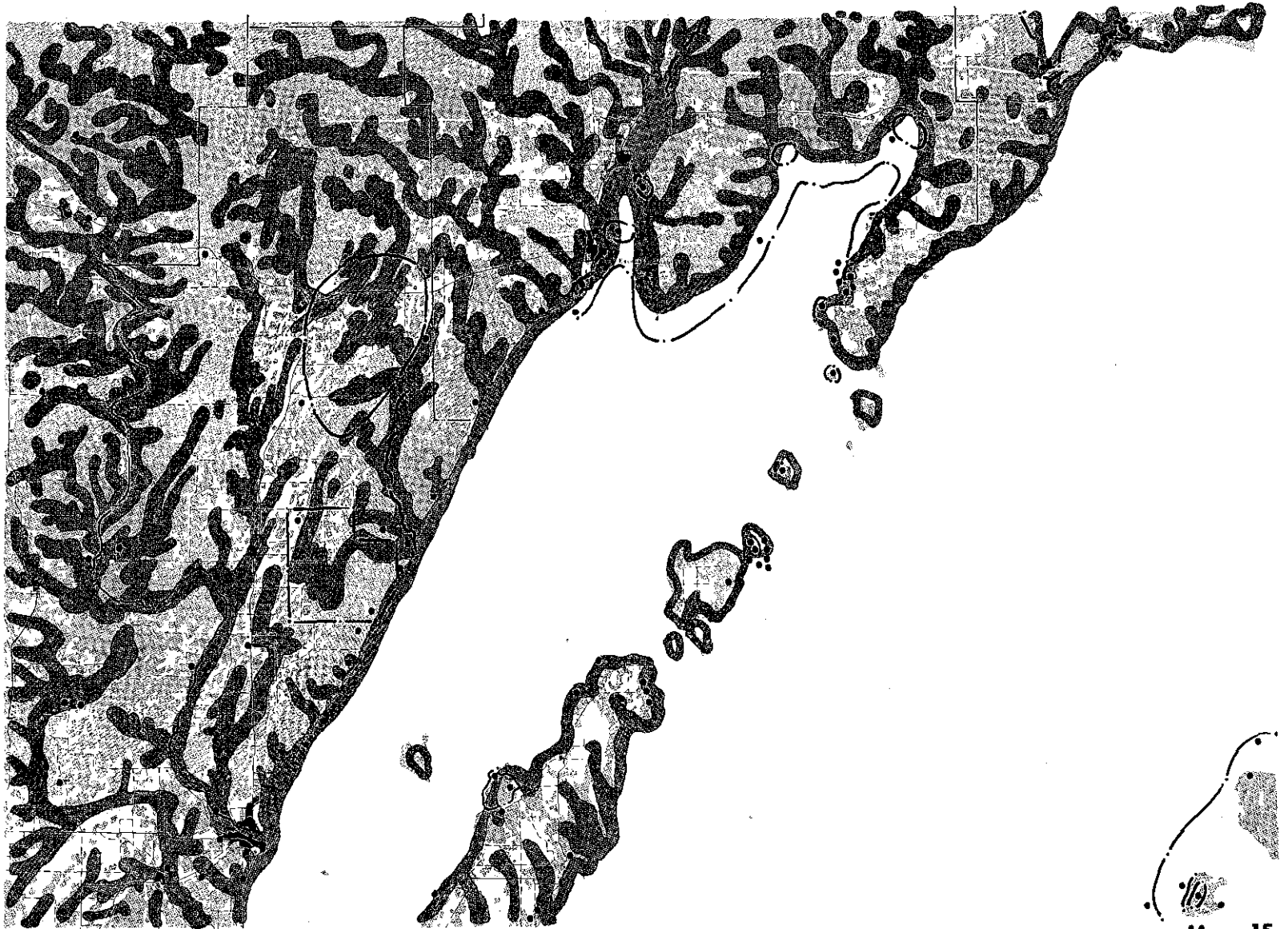
II

Map 14

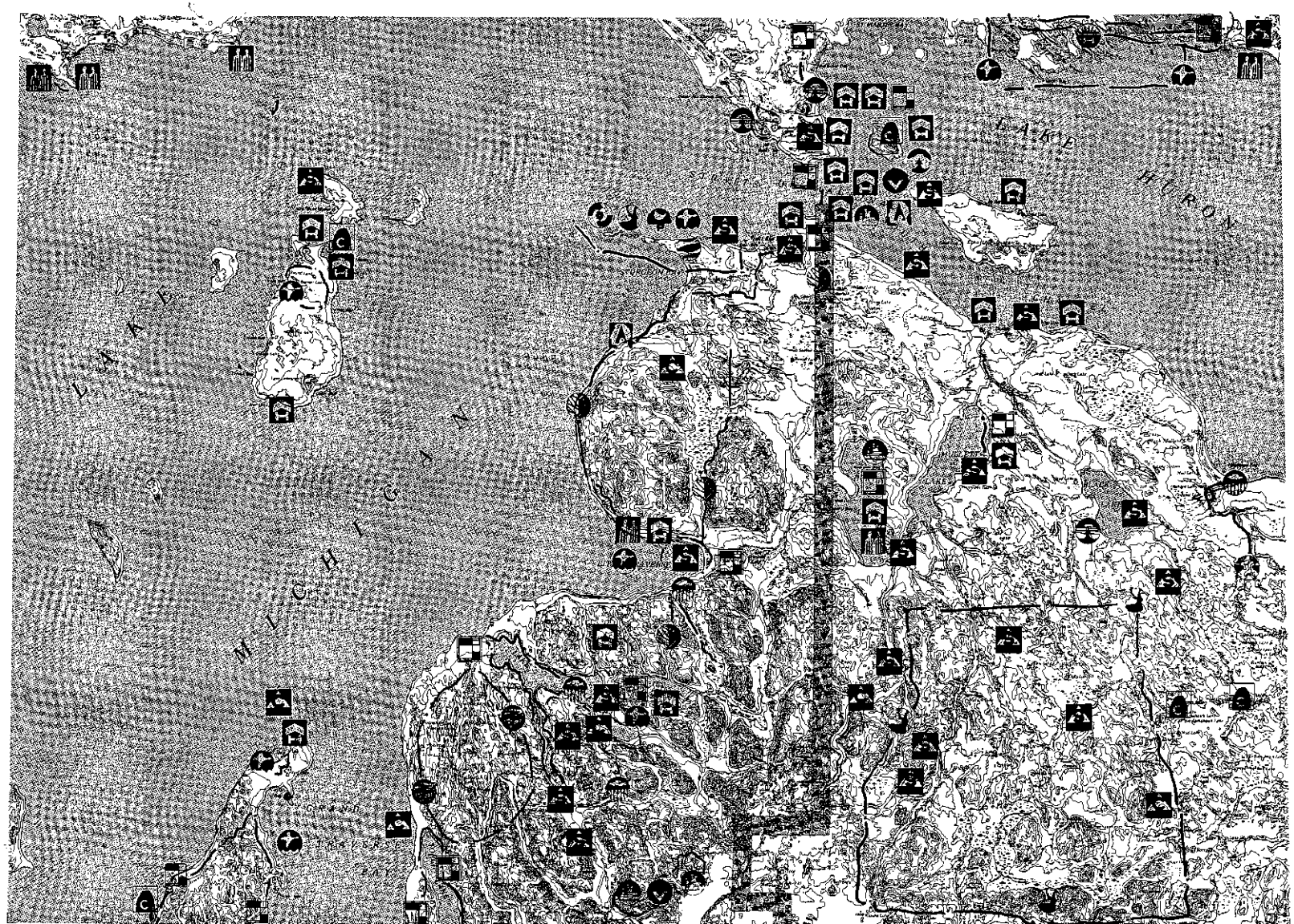


I

Map 15



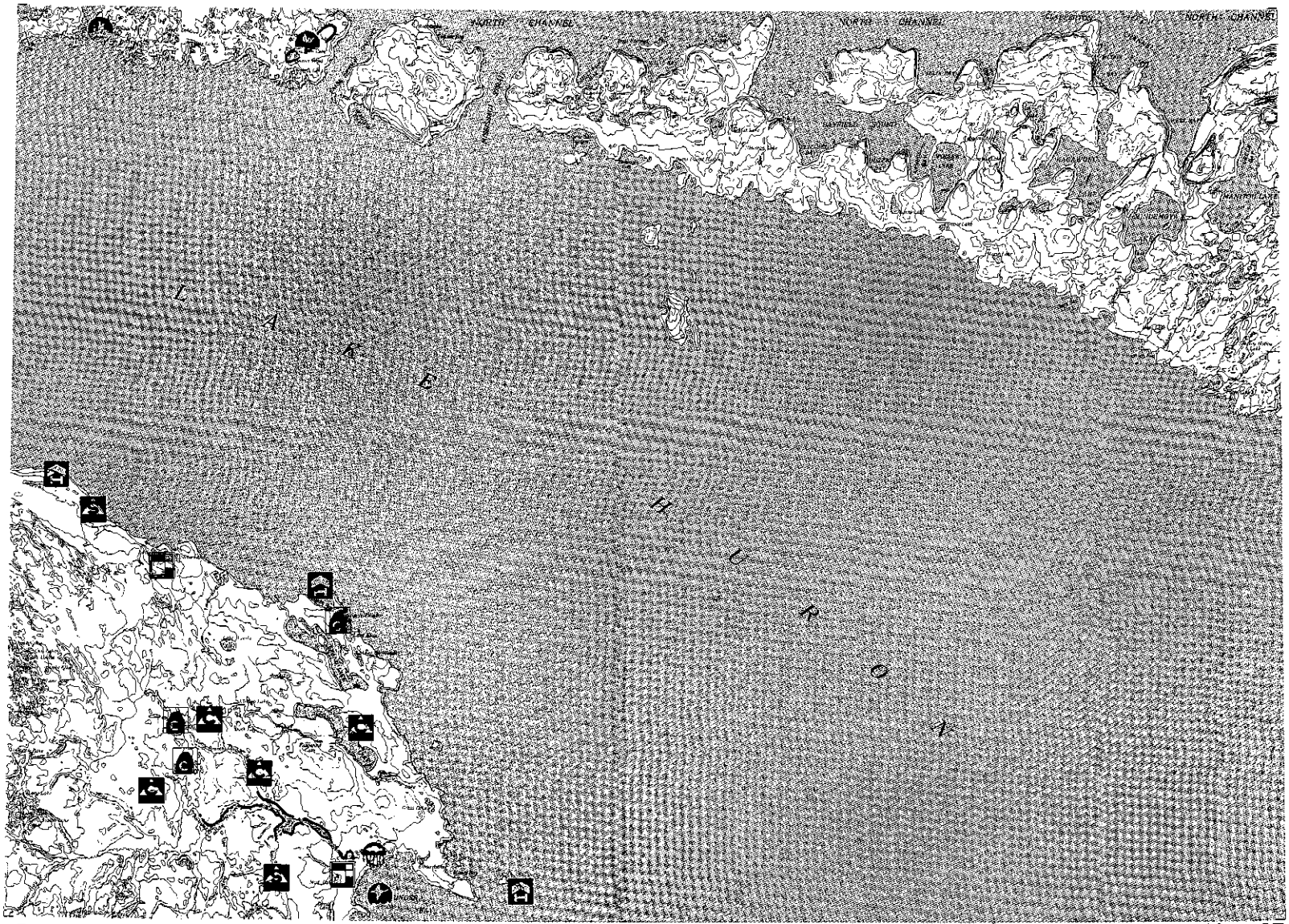
Map 15



I

Map 16

Map 16



I

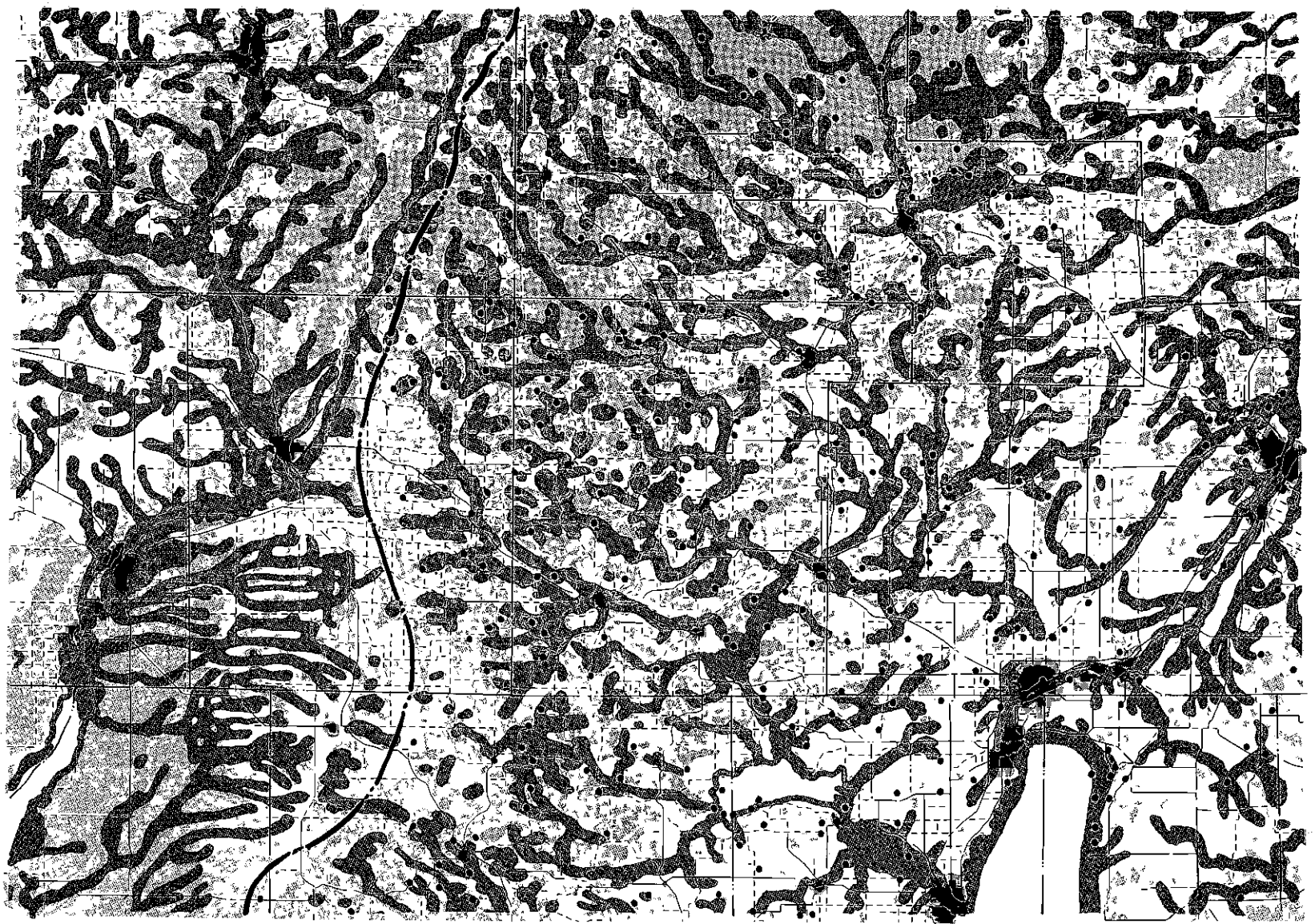
Map 17

II

Map 17

I

Map 18



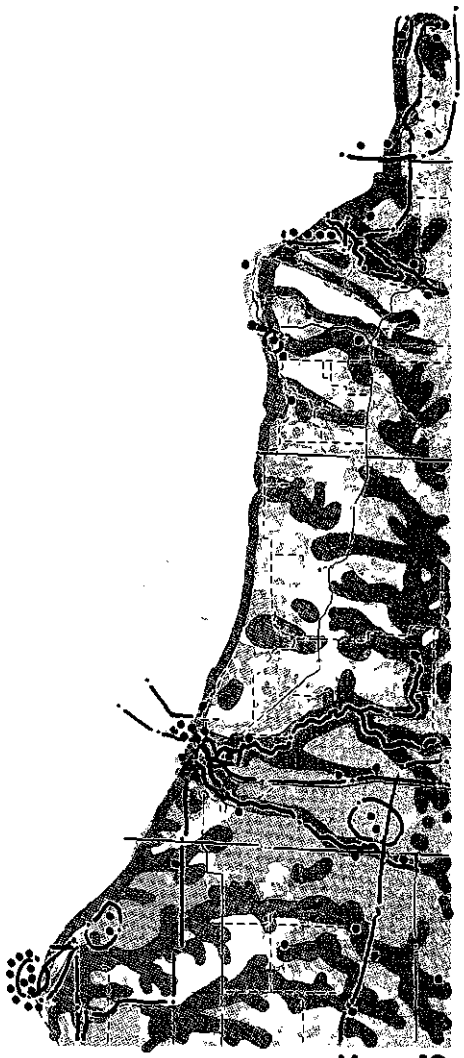
II

Map 18

I

Map 19

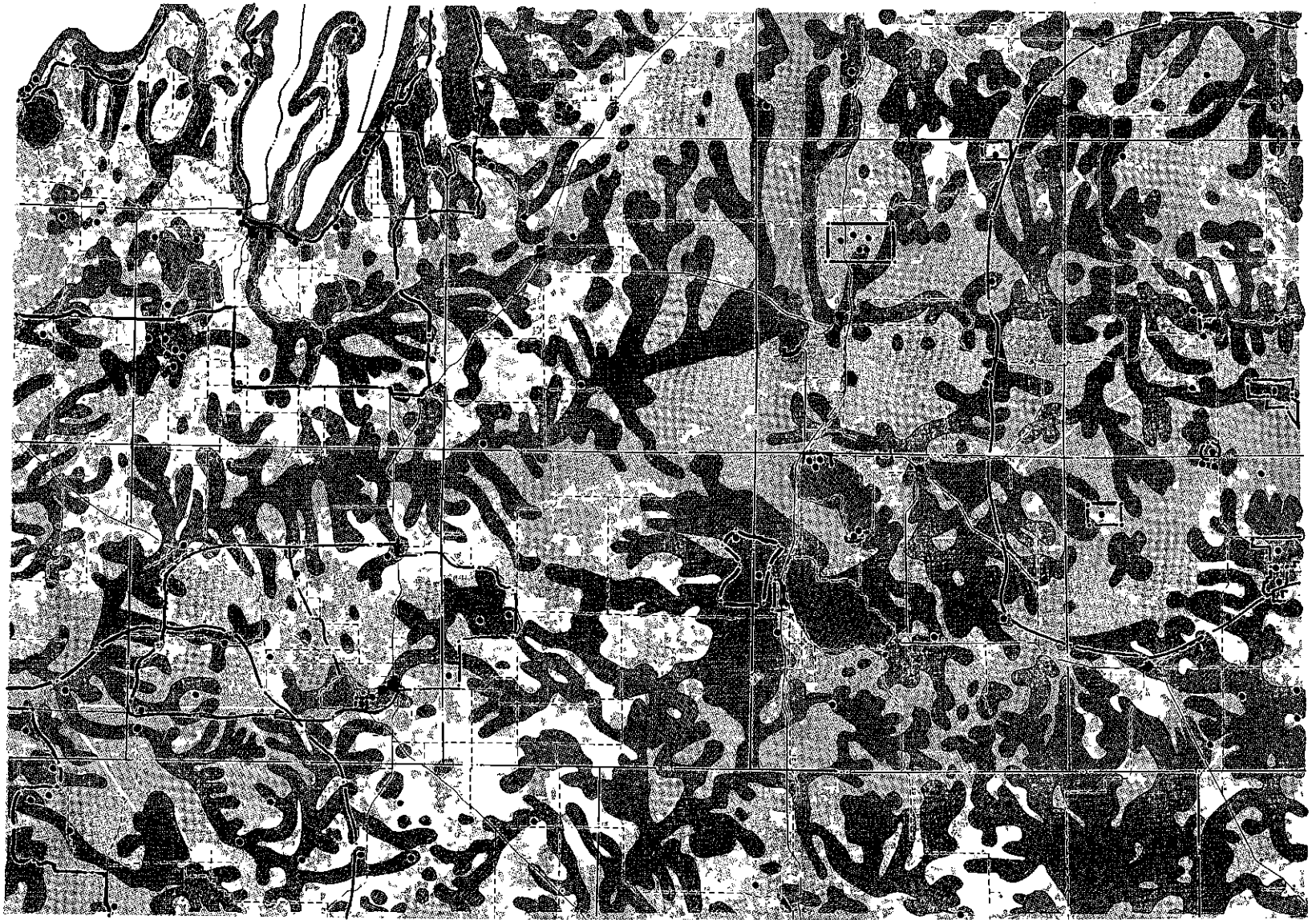
II



Map 19

I

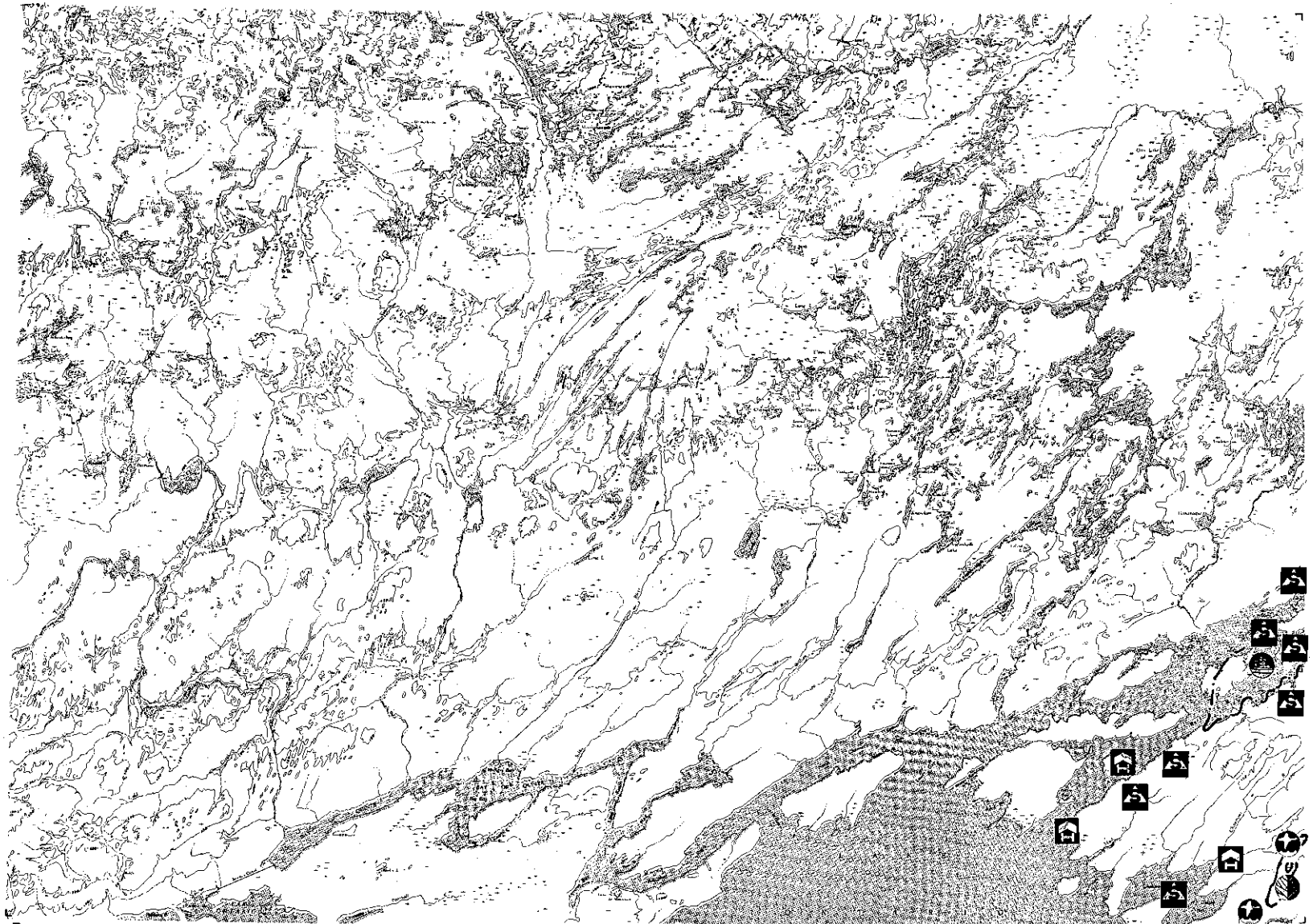
Map 20



I

Map 21

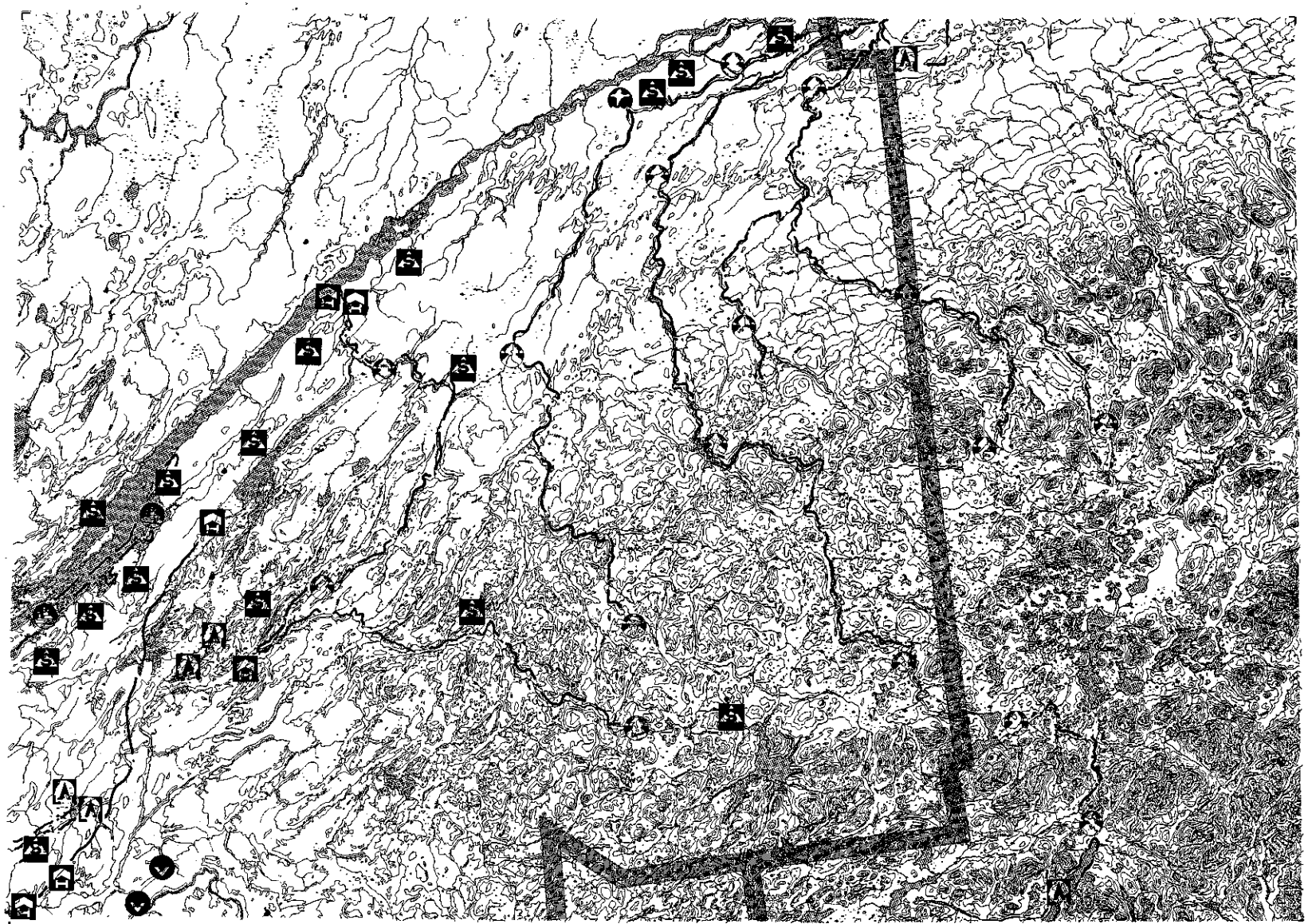
II



I

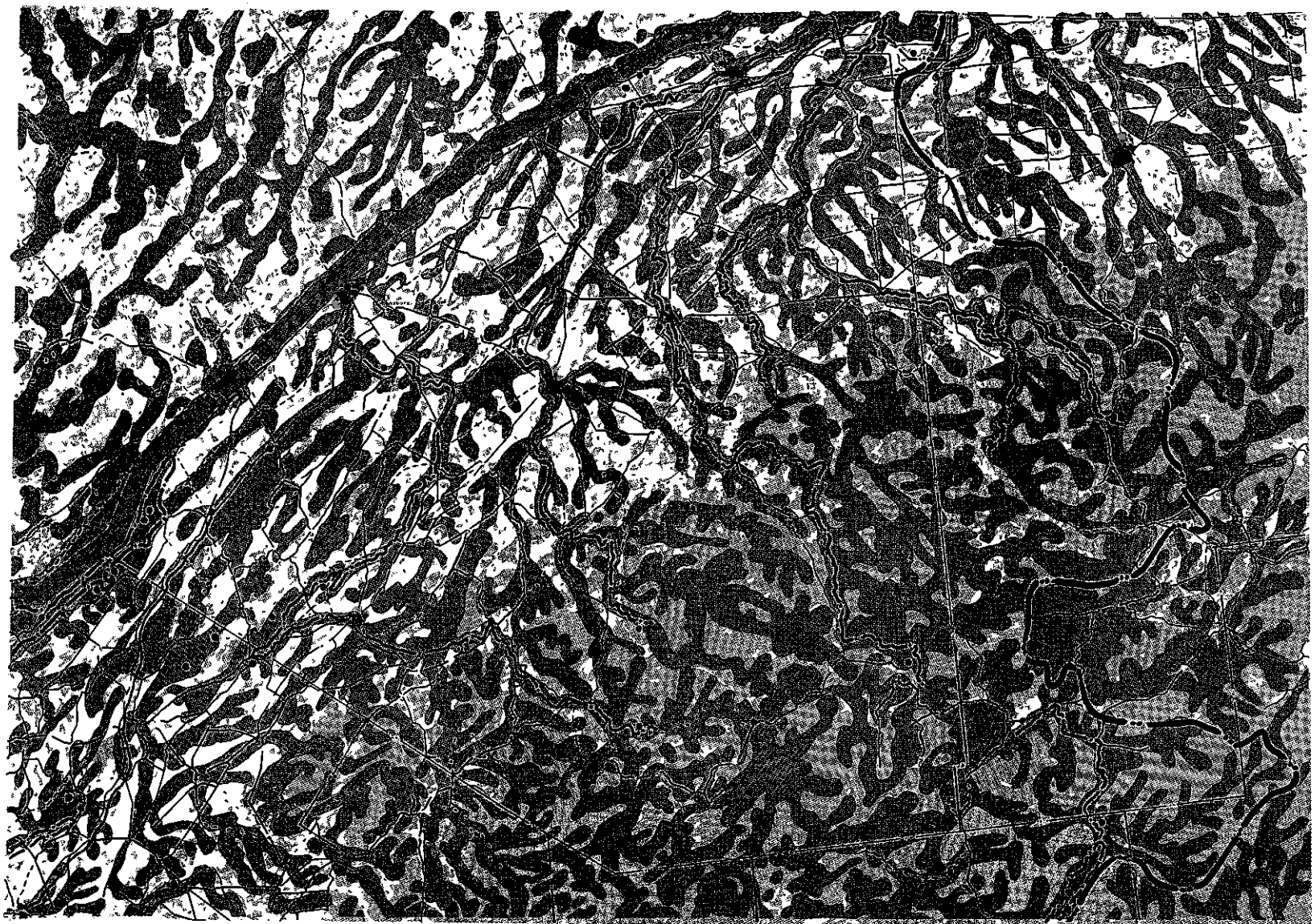
Map 22

Map 22



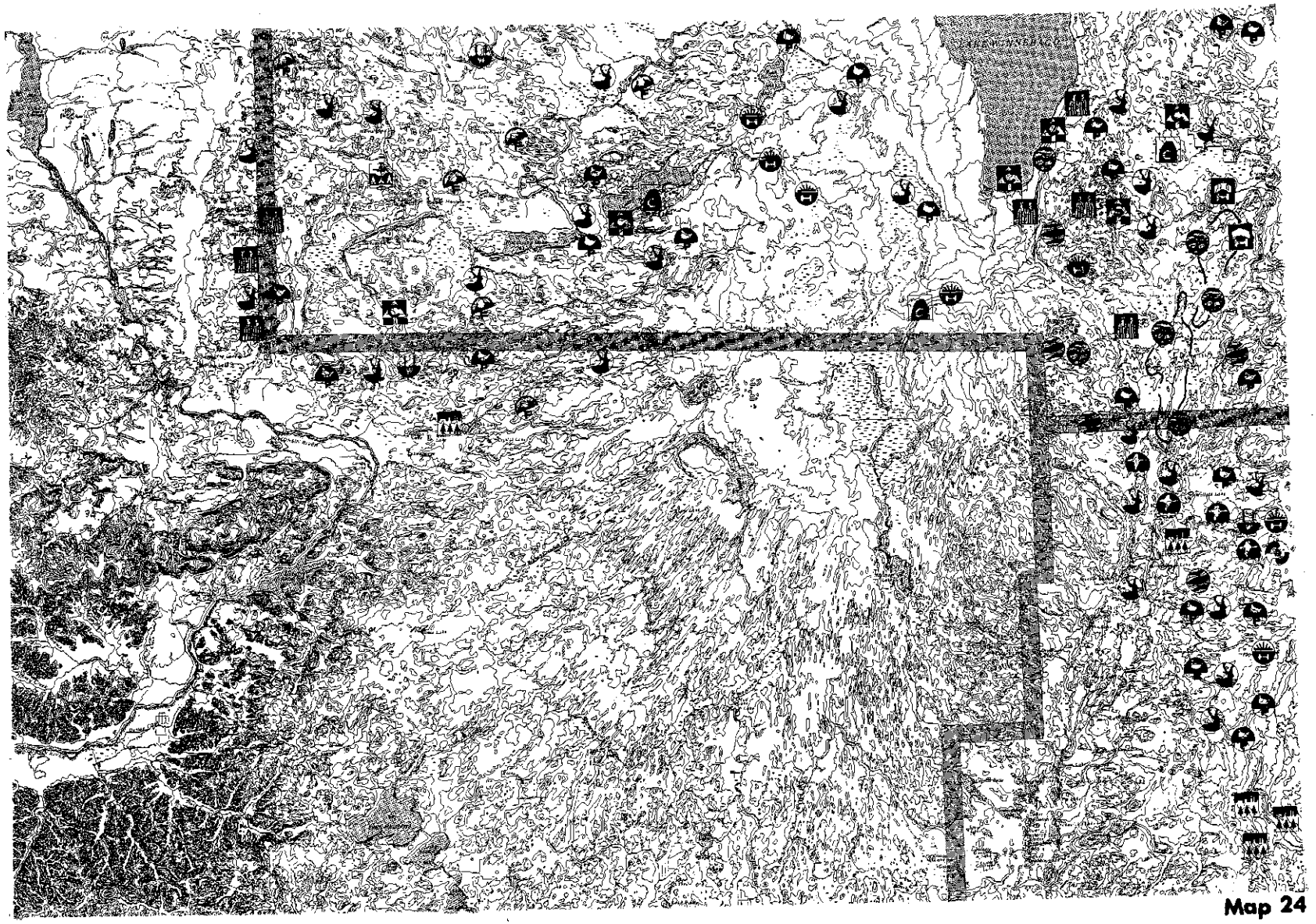
I

Map 23



II

Map 23

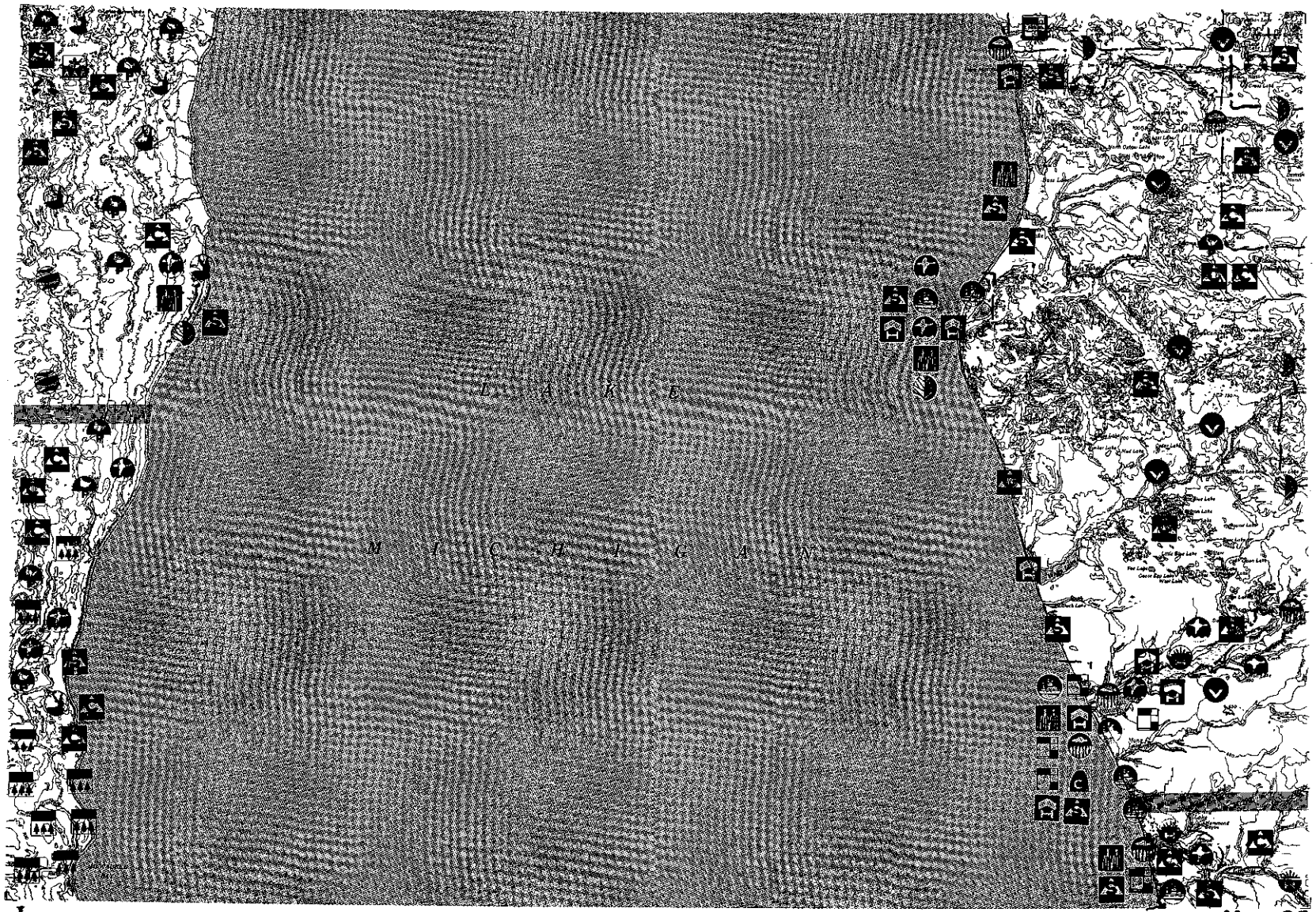


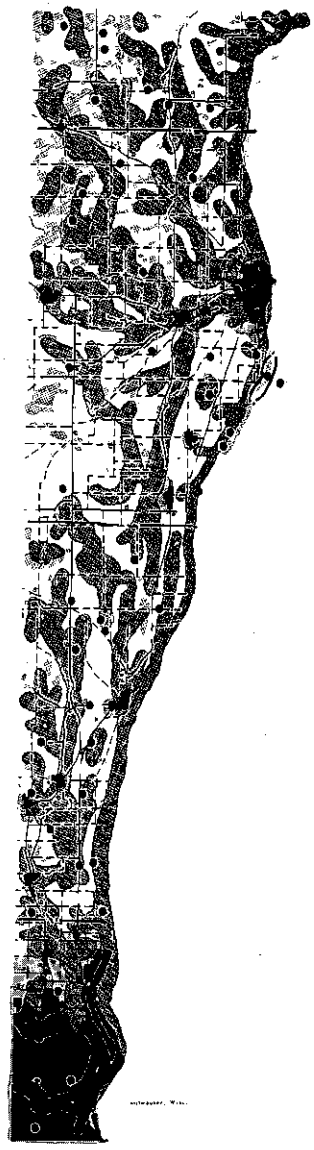
Map 24

I

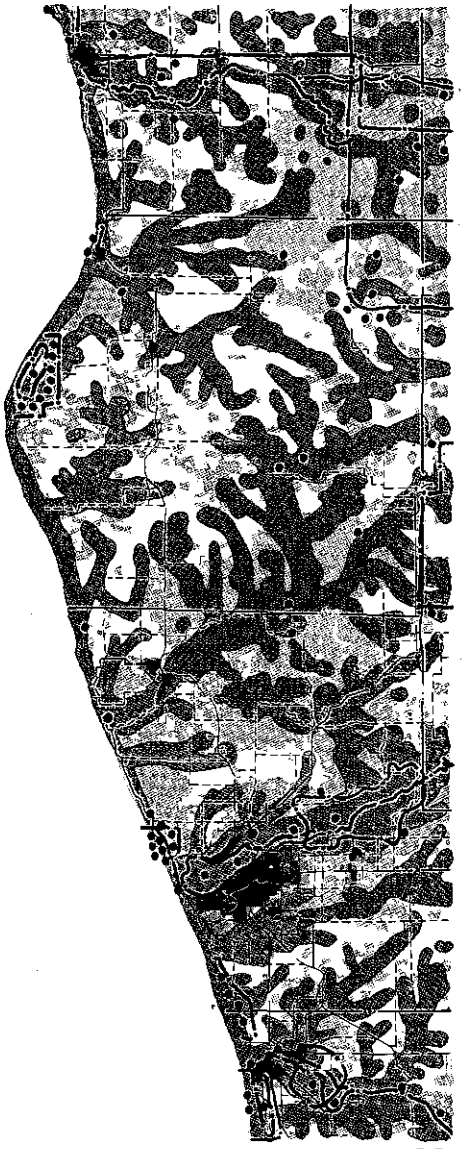
II

Map 24

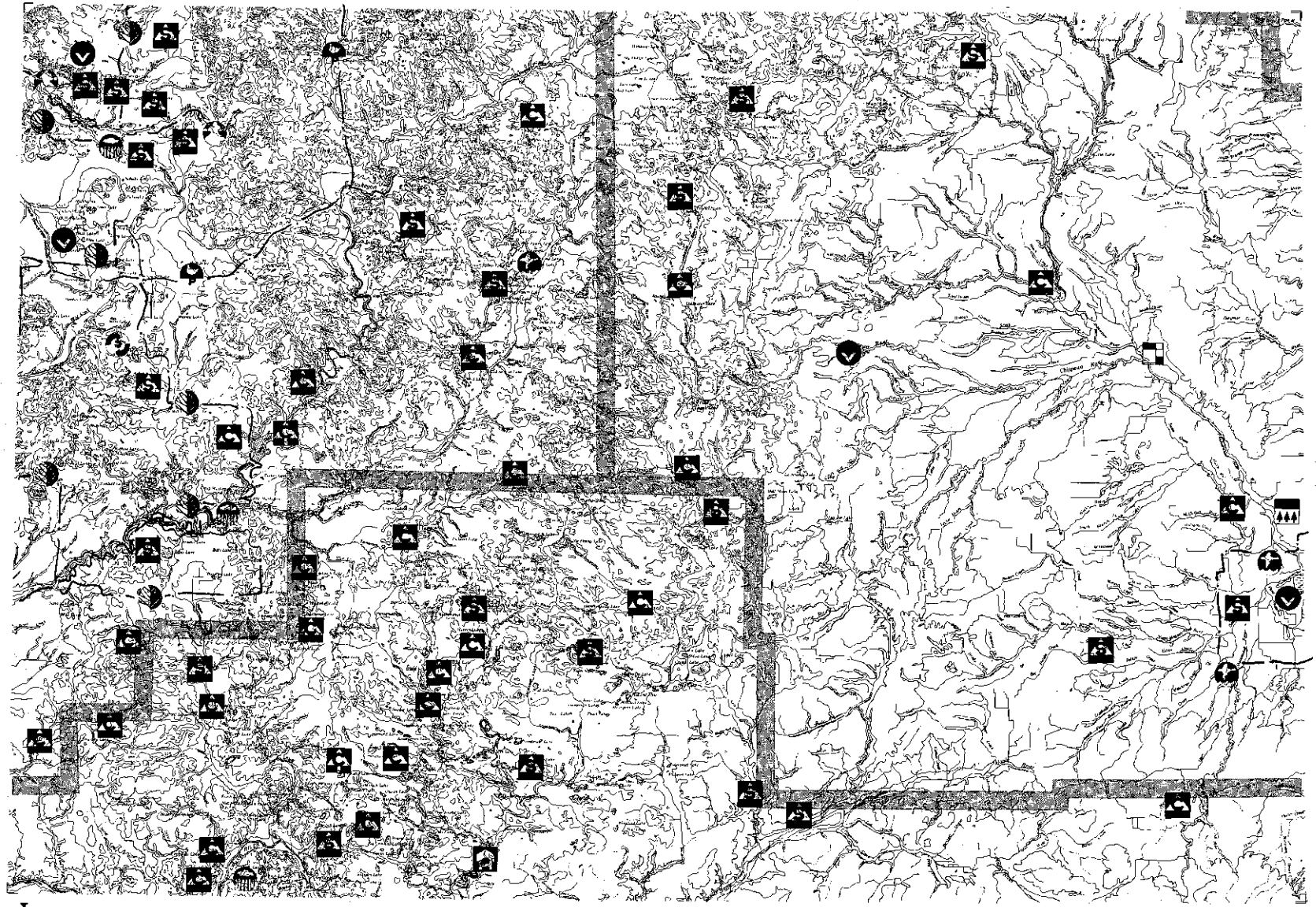

I
Map 25



II

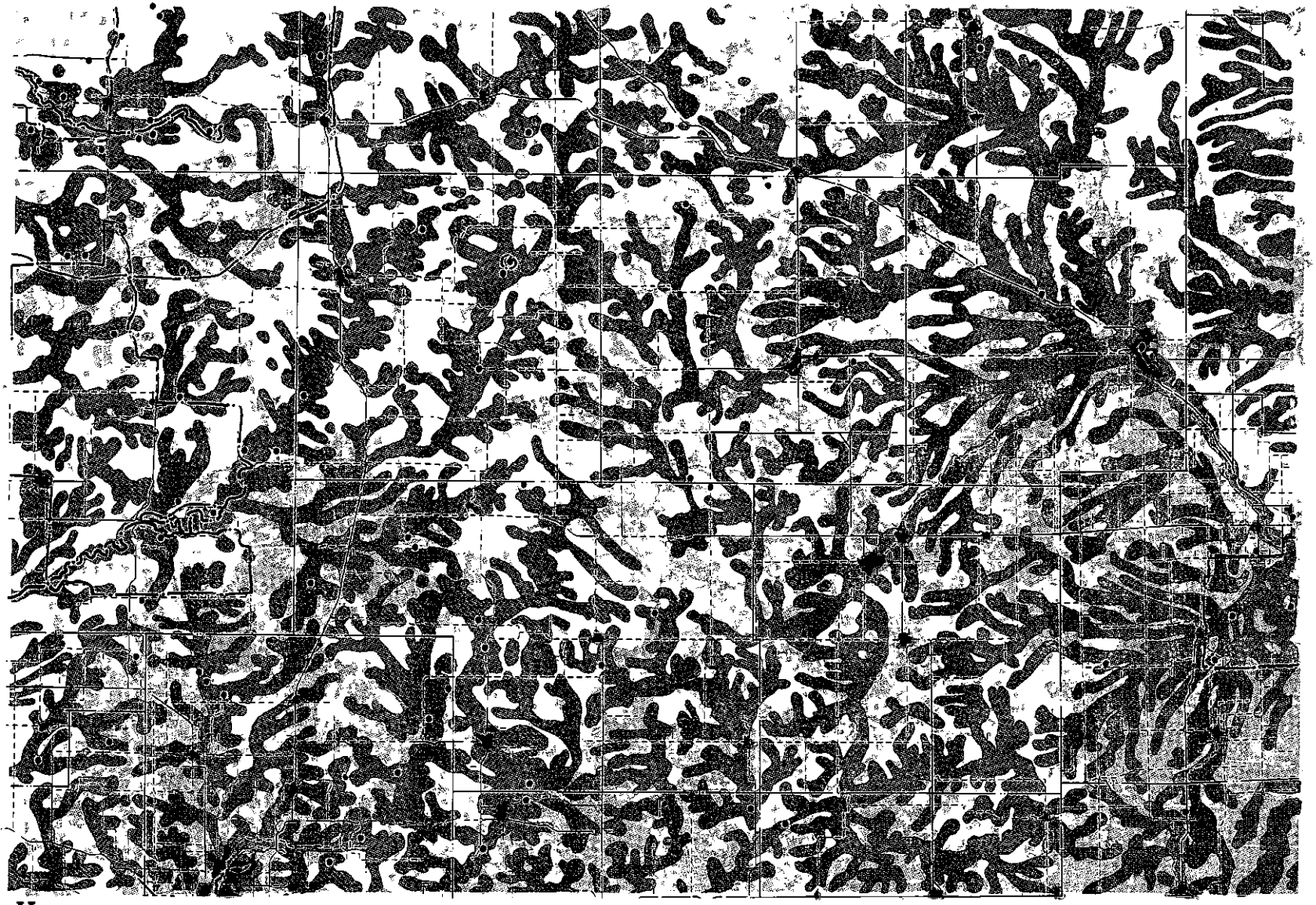


Map 25



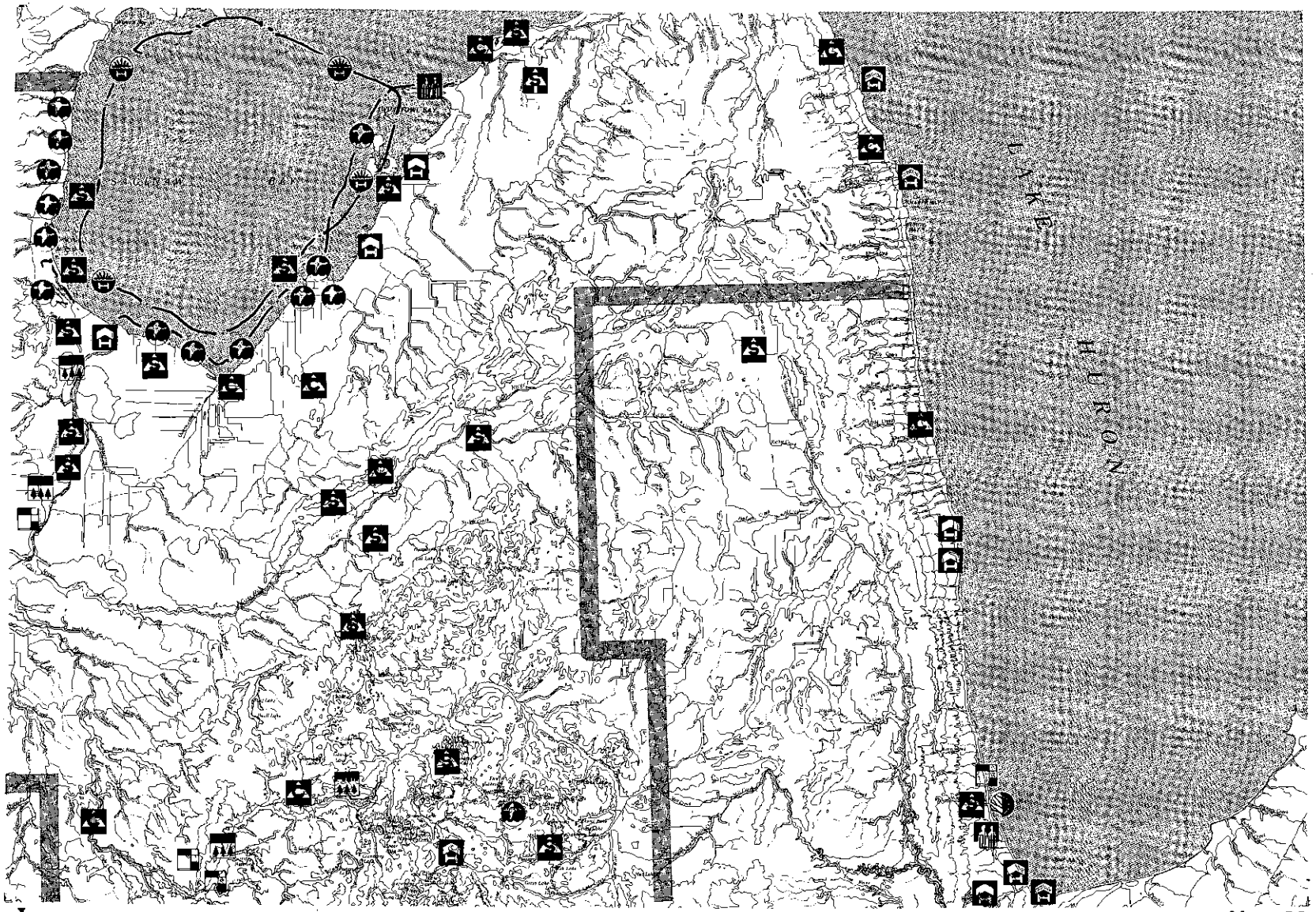
I

Map 26



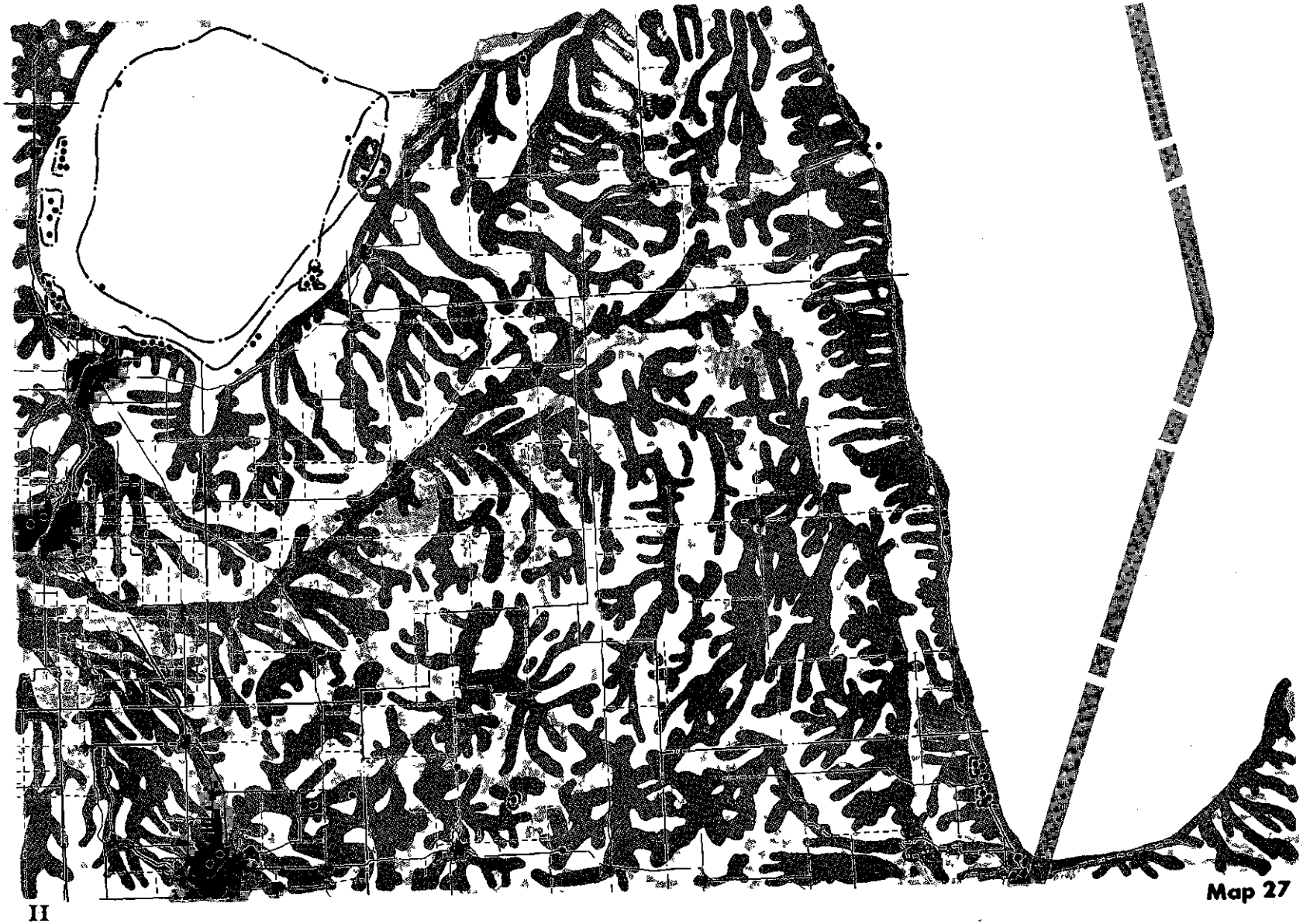
II

Map 26



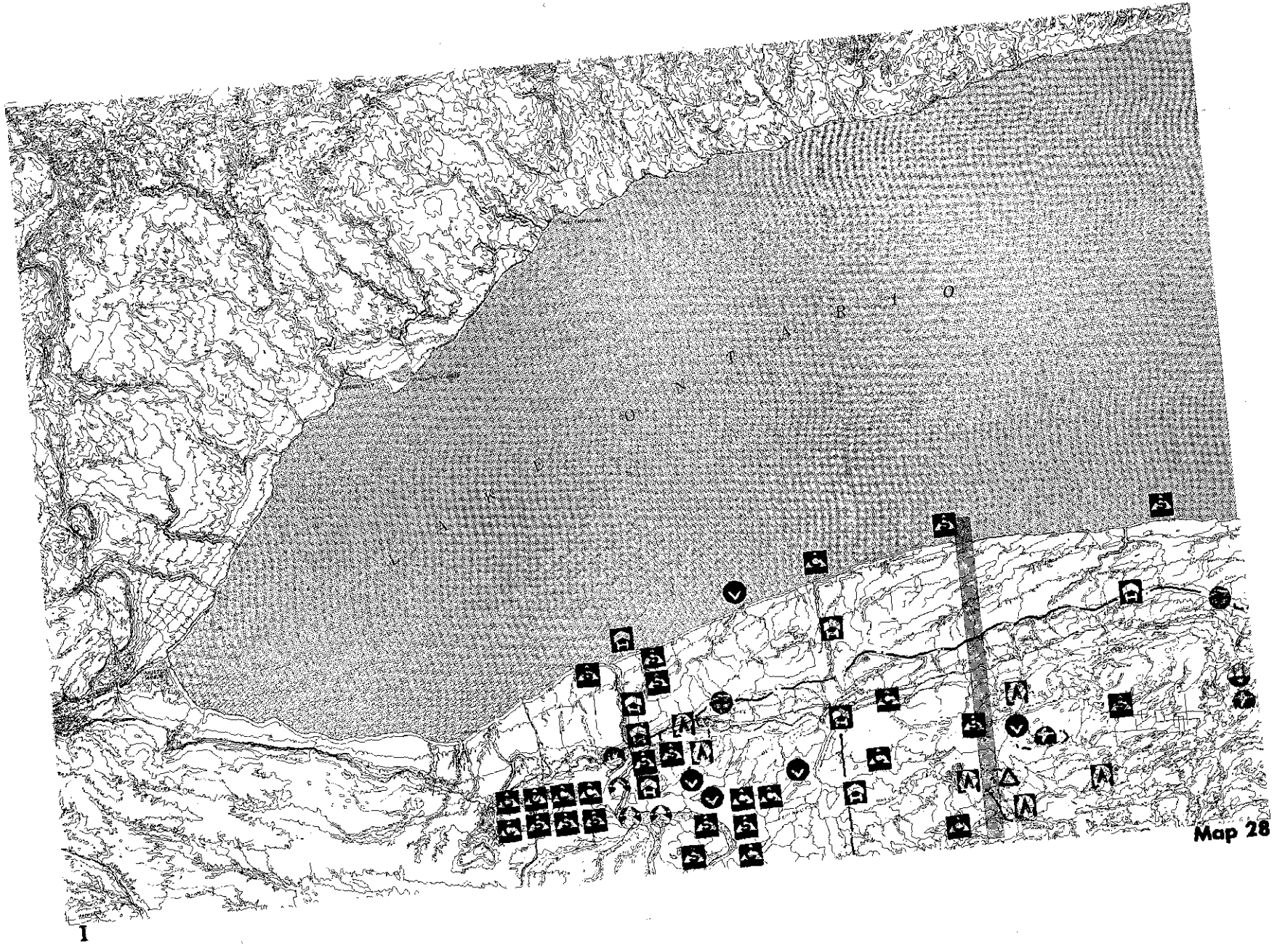
I

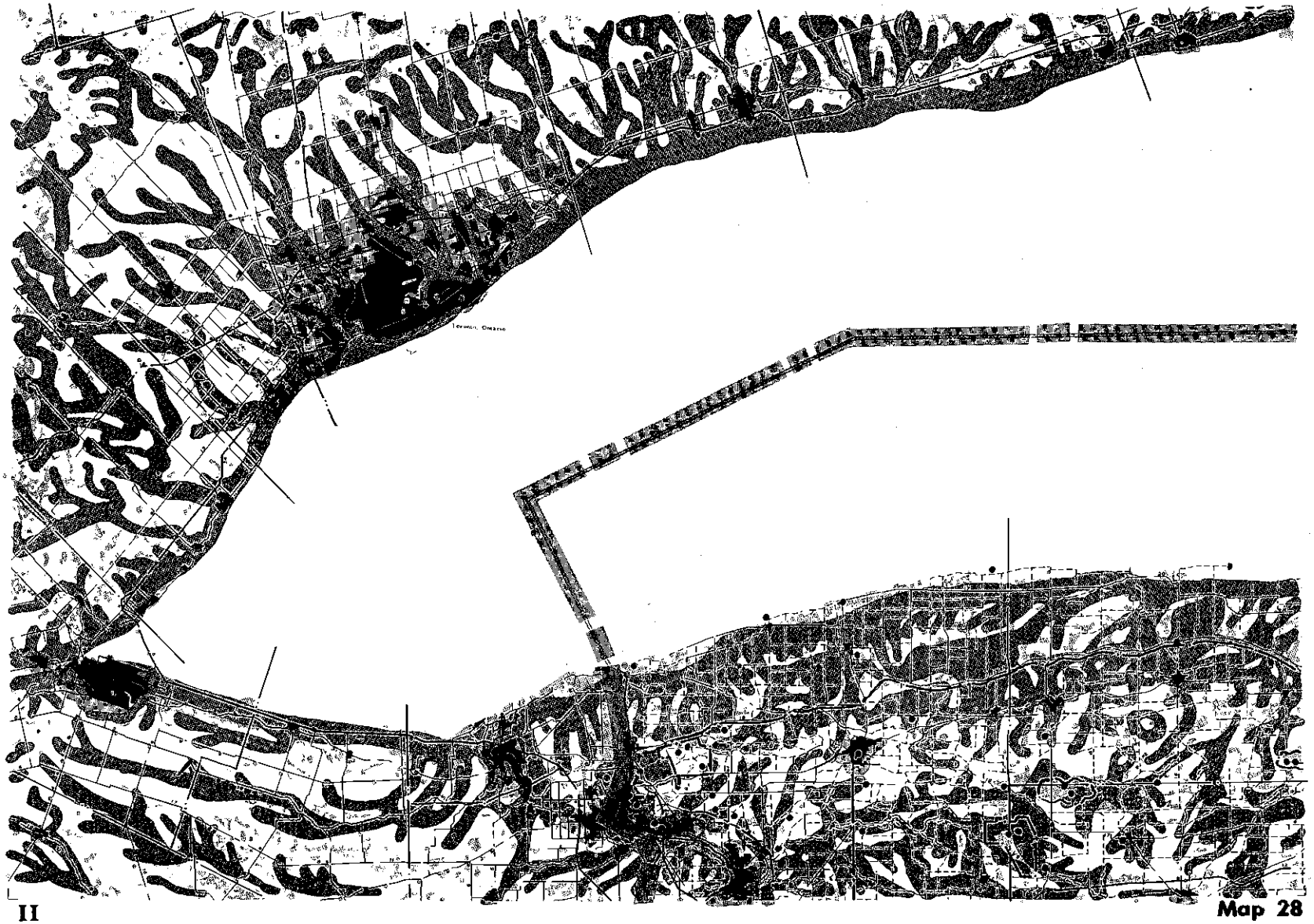
Map 27

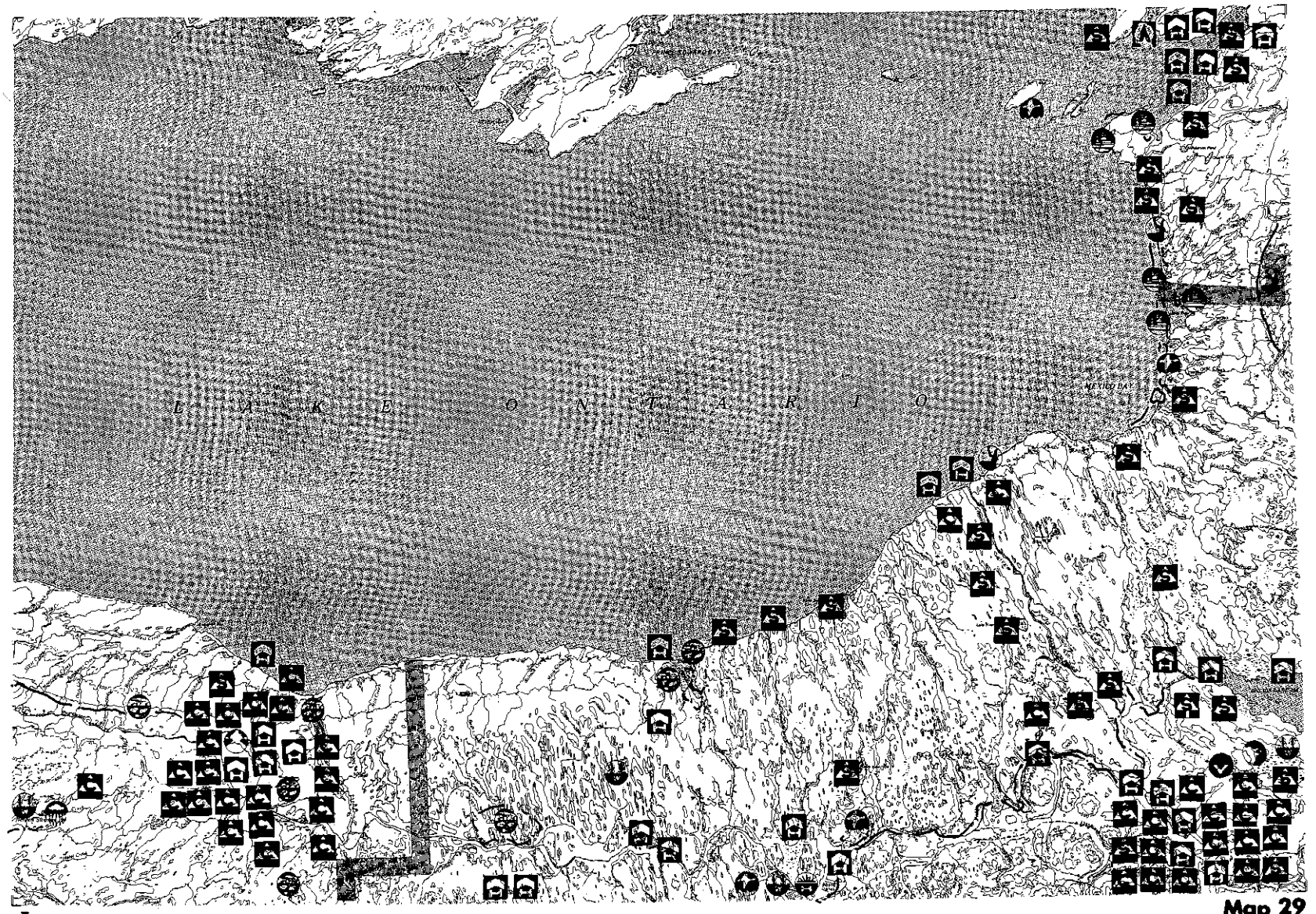


Map 27

II

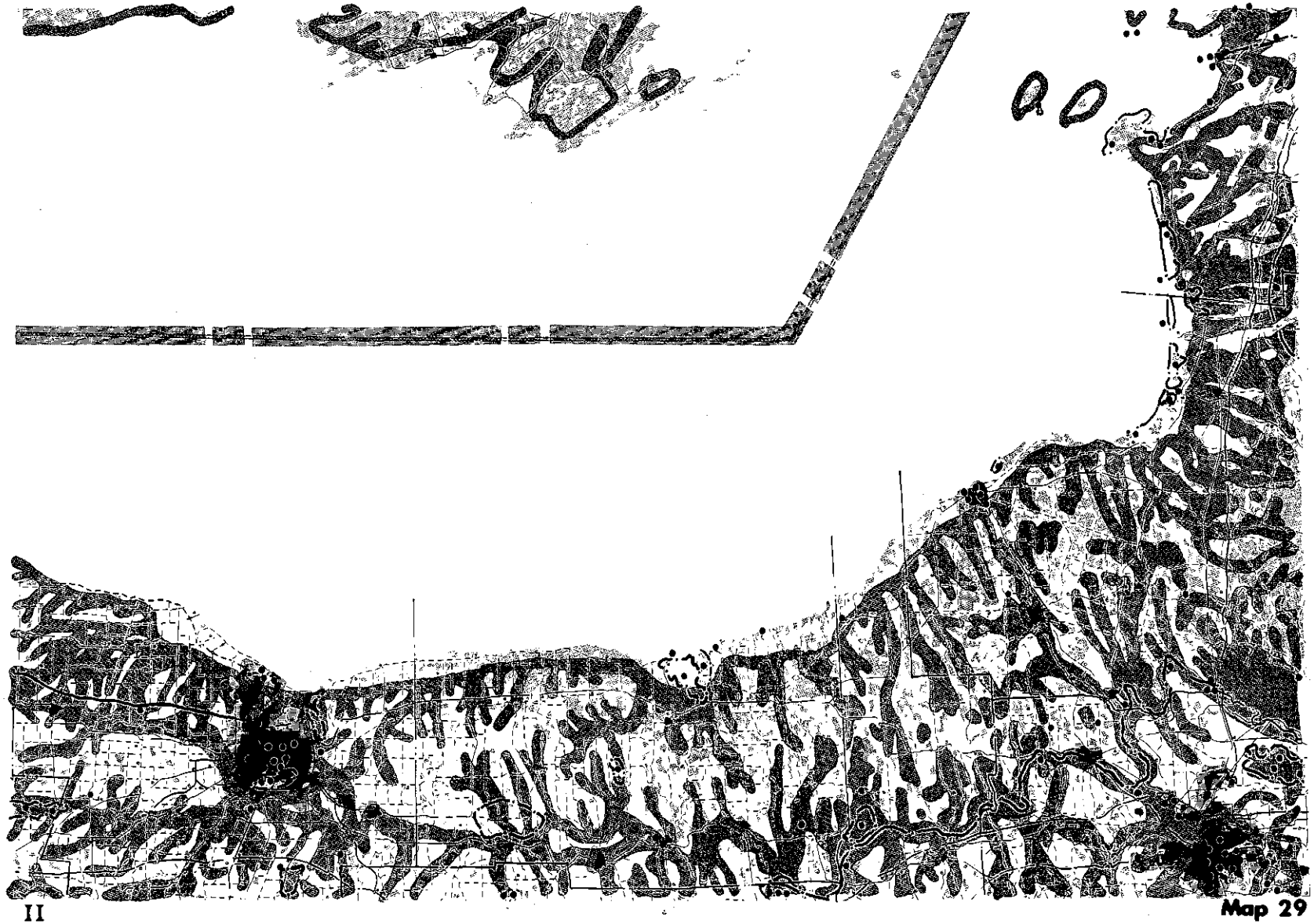

Map 28





I

Map 29

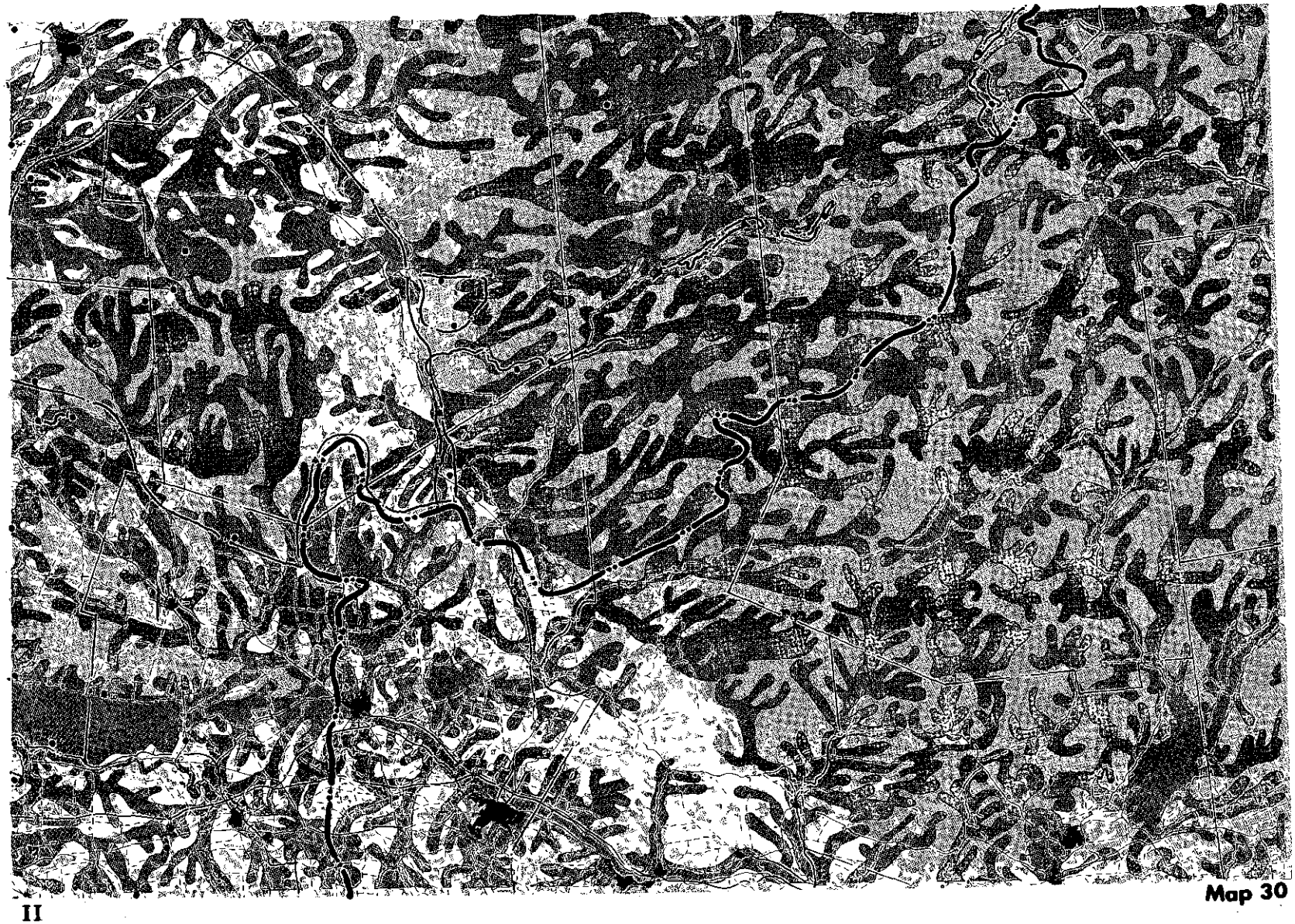


II

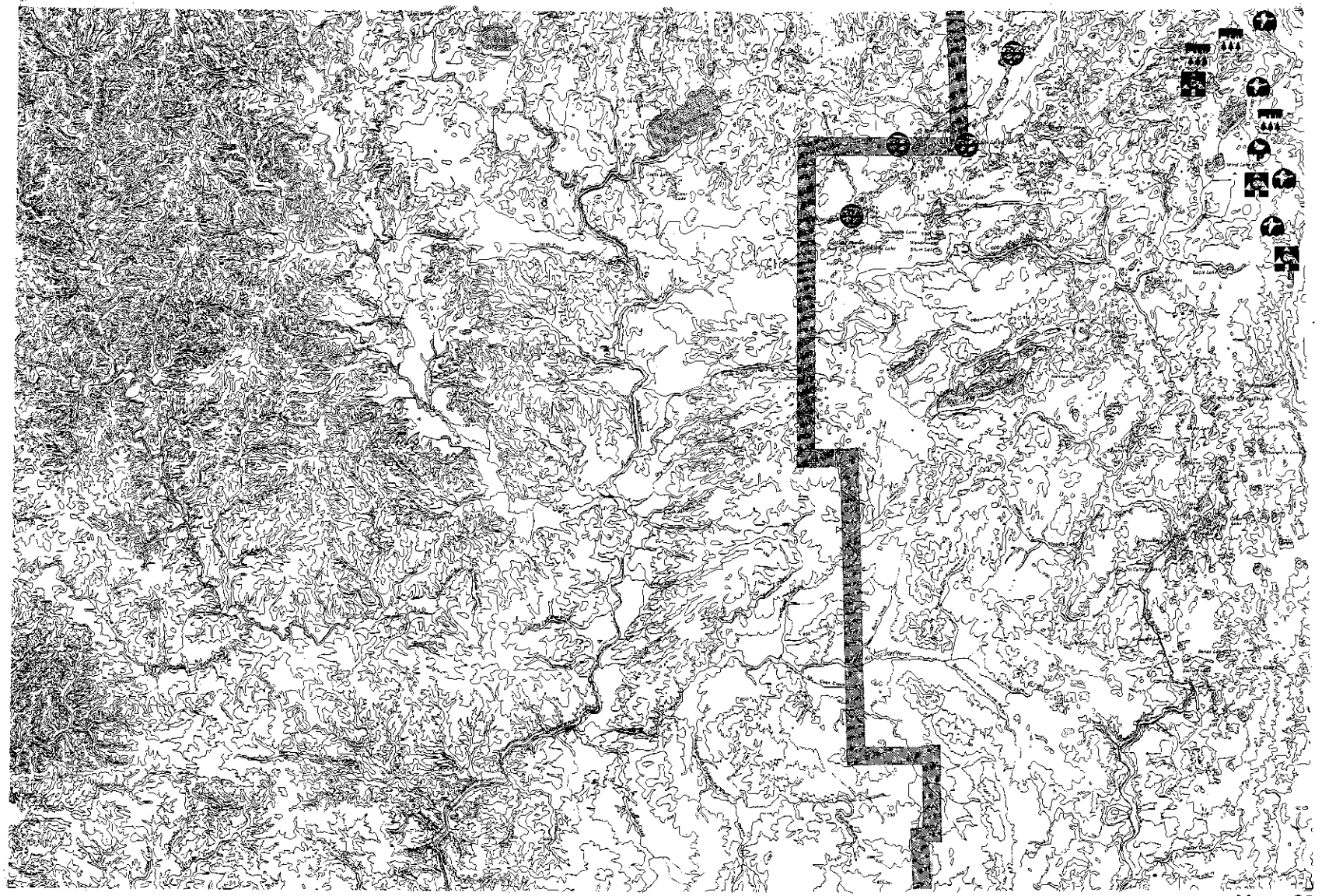
Map 29

I

Map 30

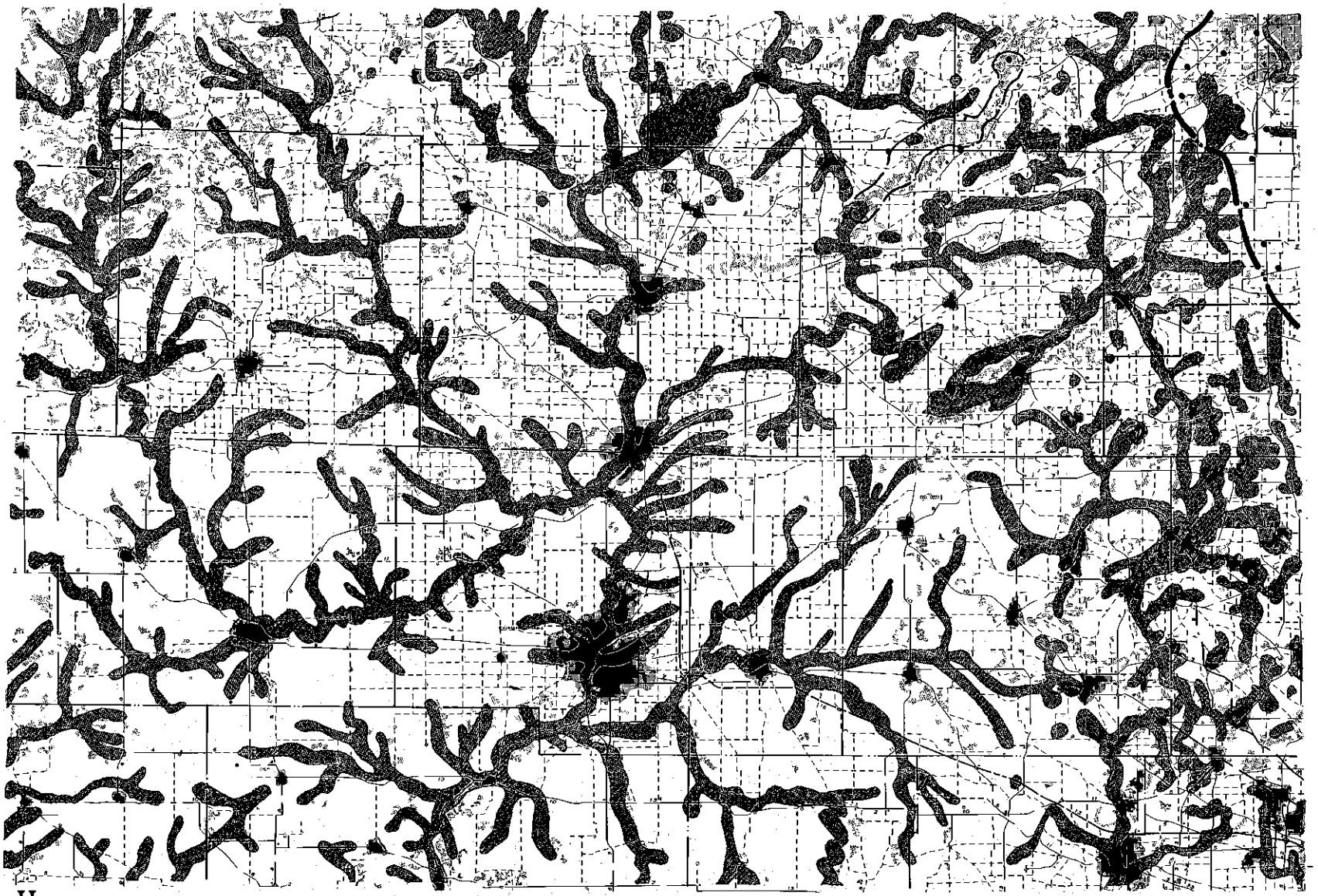


Map 30



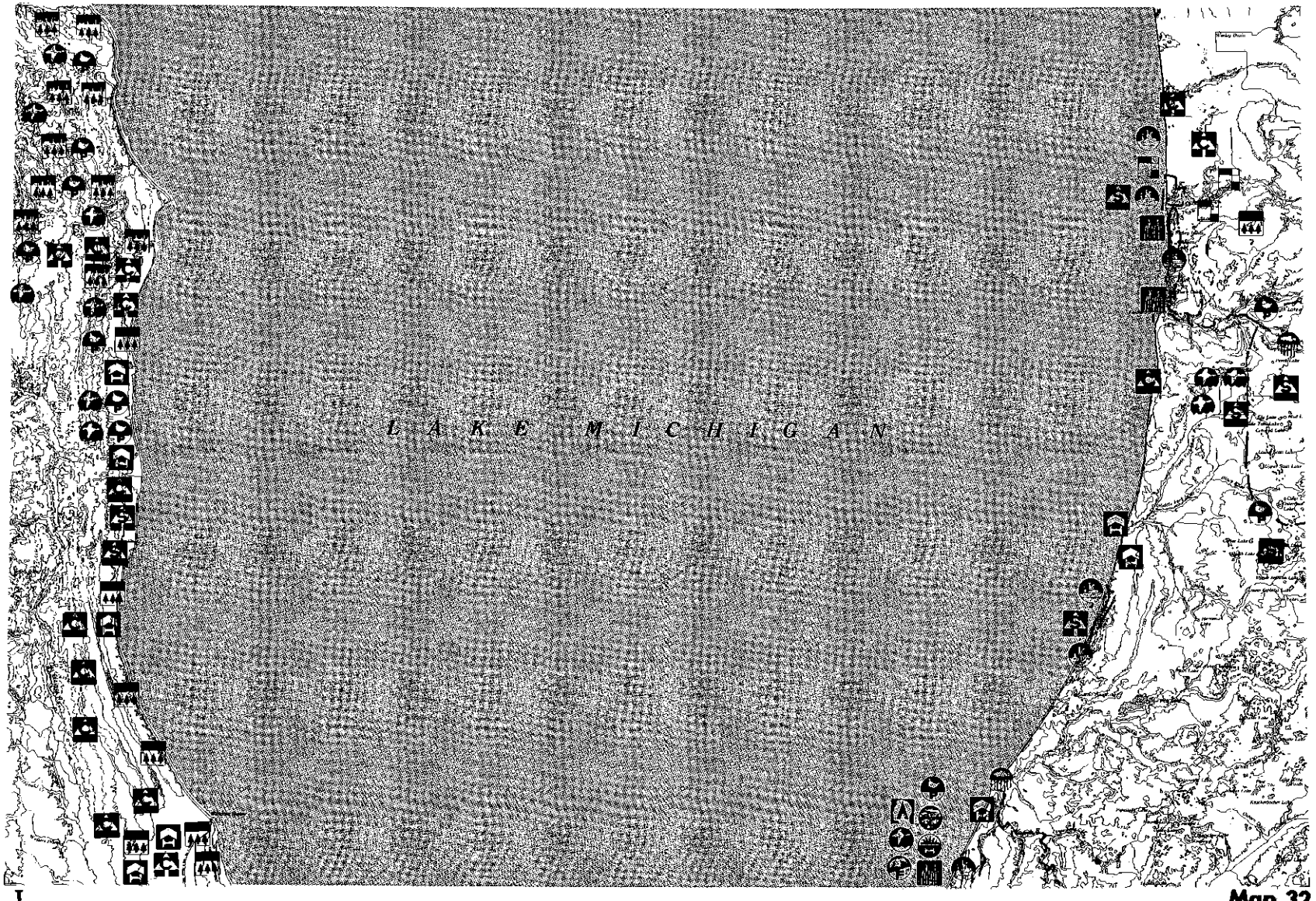
I

Map 31



II

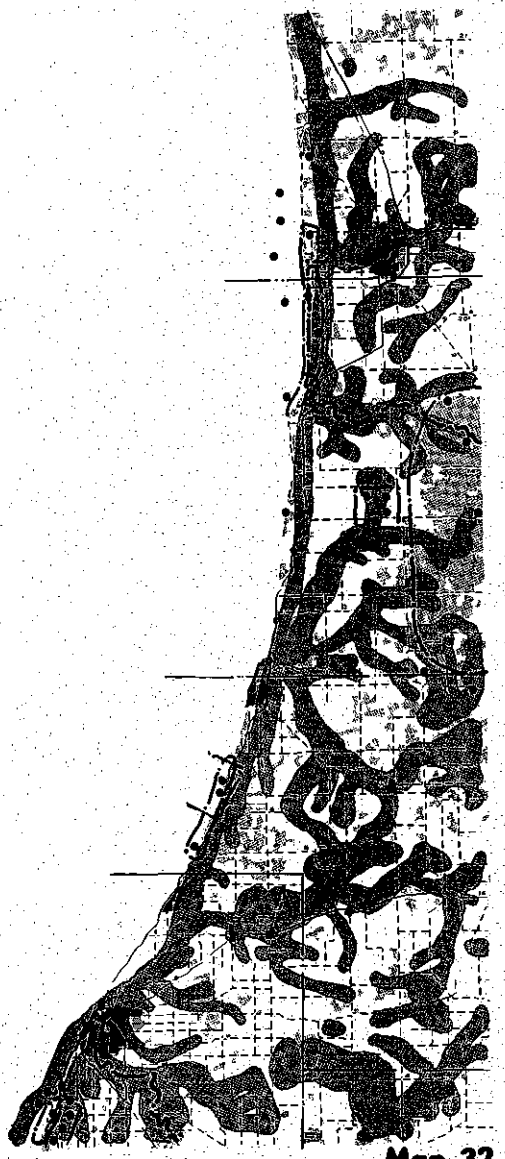
Map 31



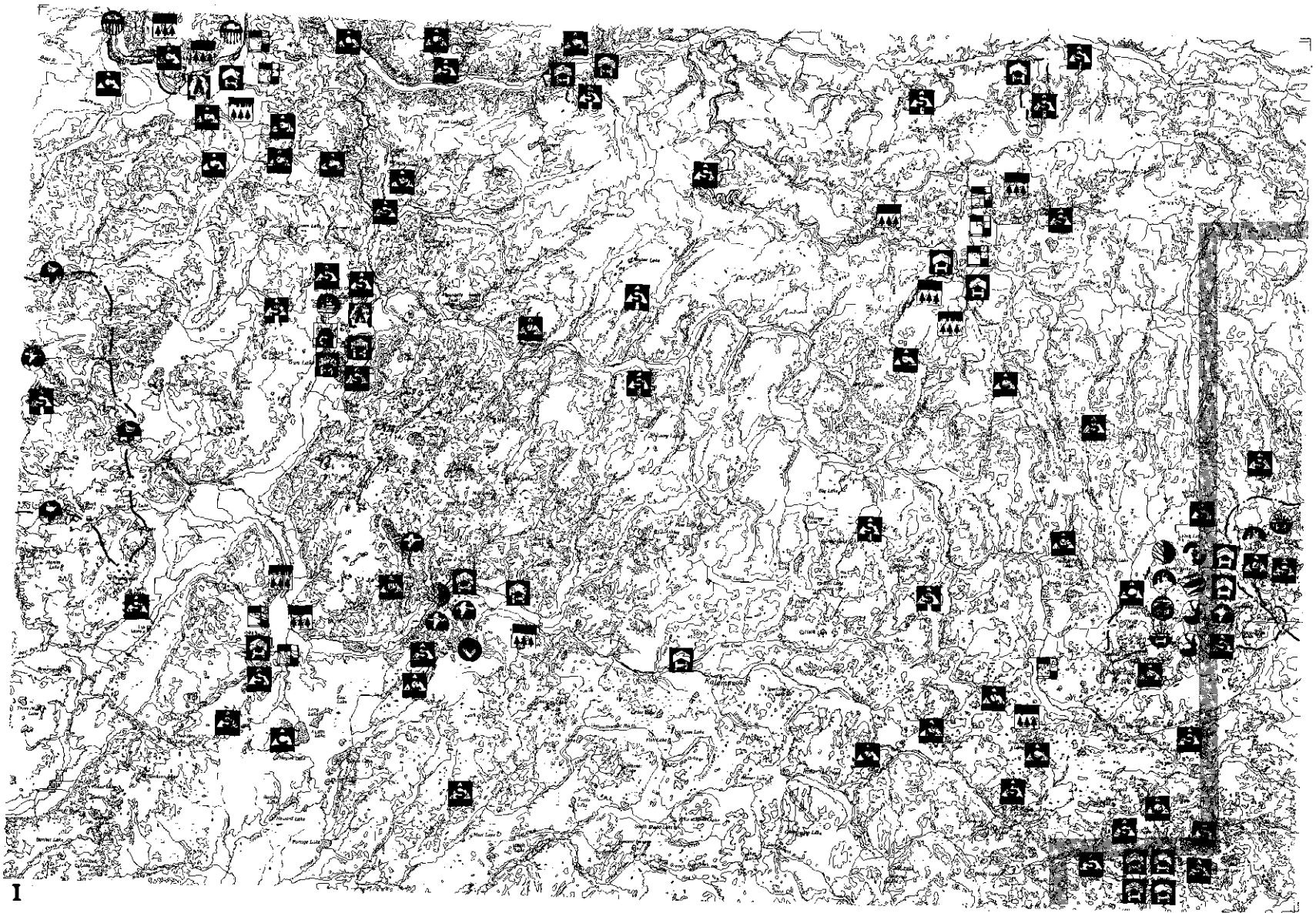
I

Map 32

II

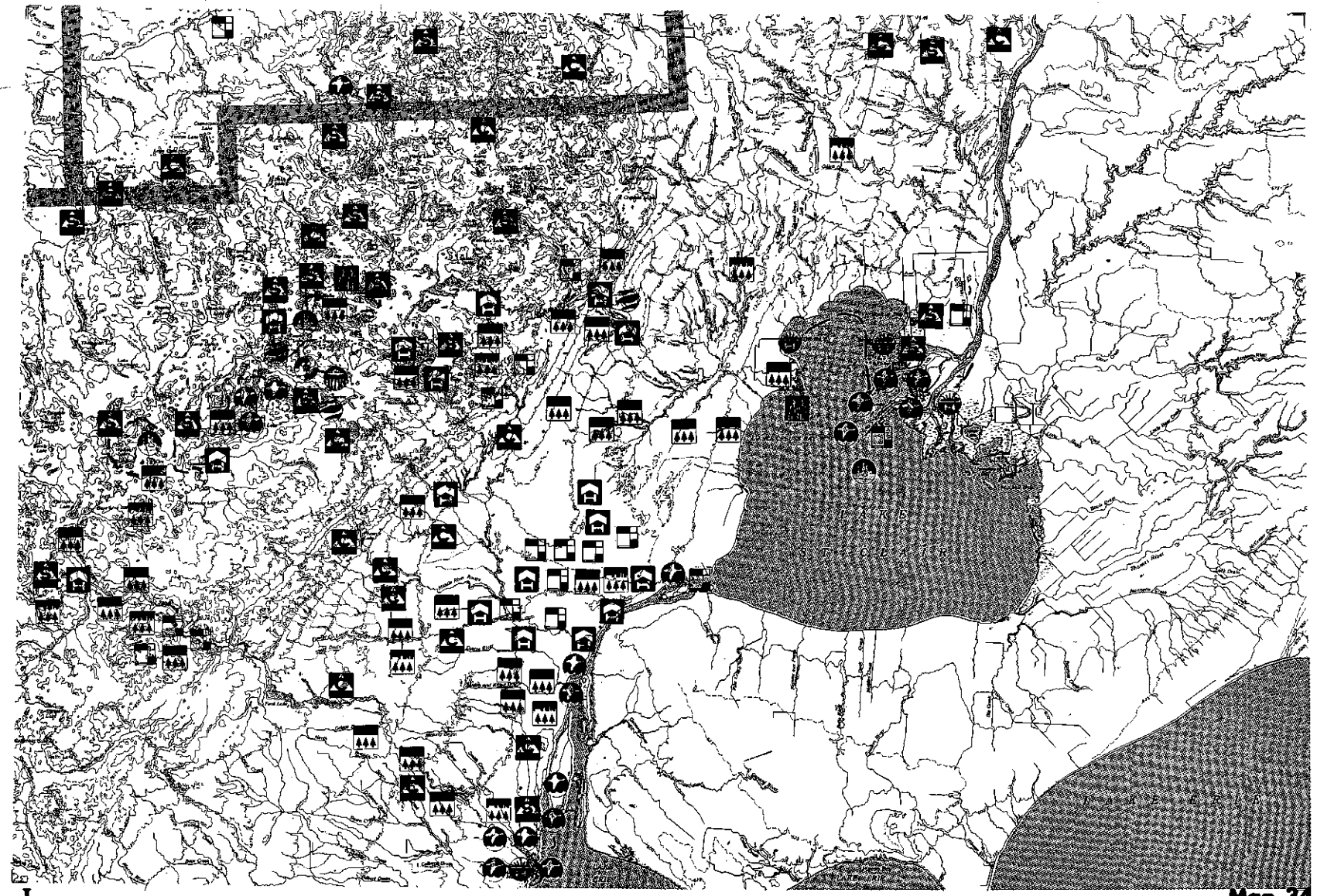


Map 32



I

Map 33

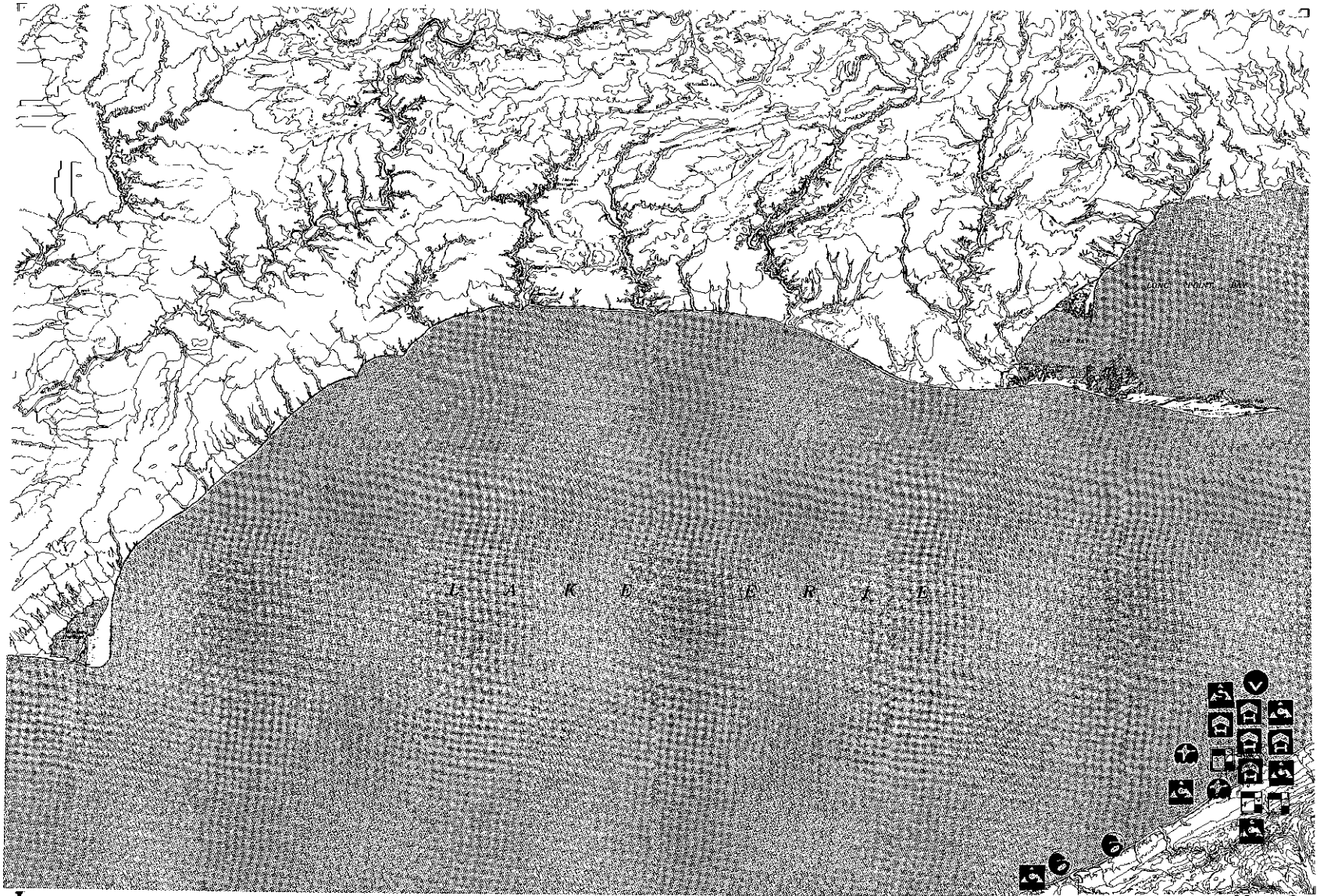


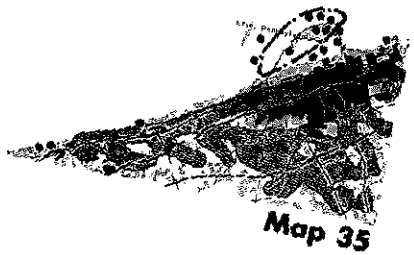
I

Map 34

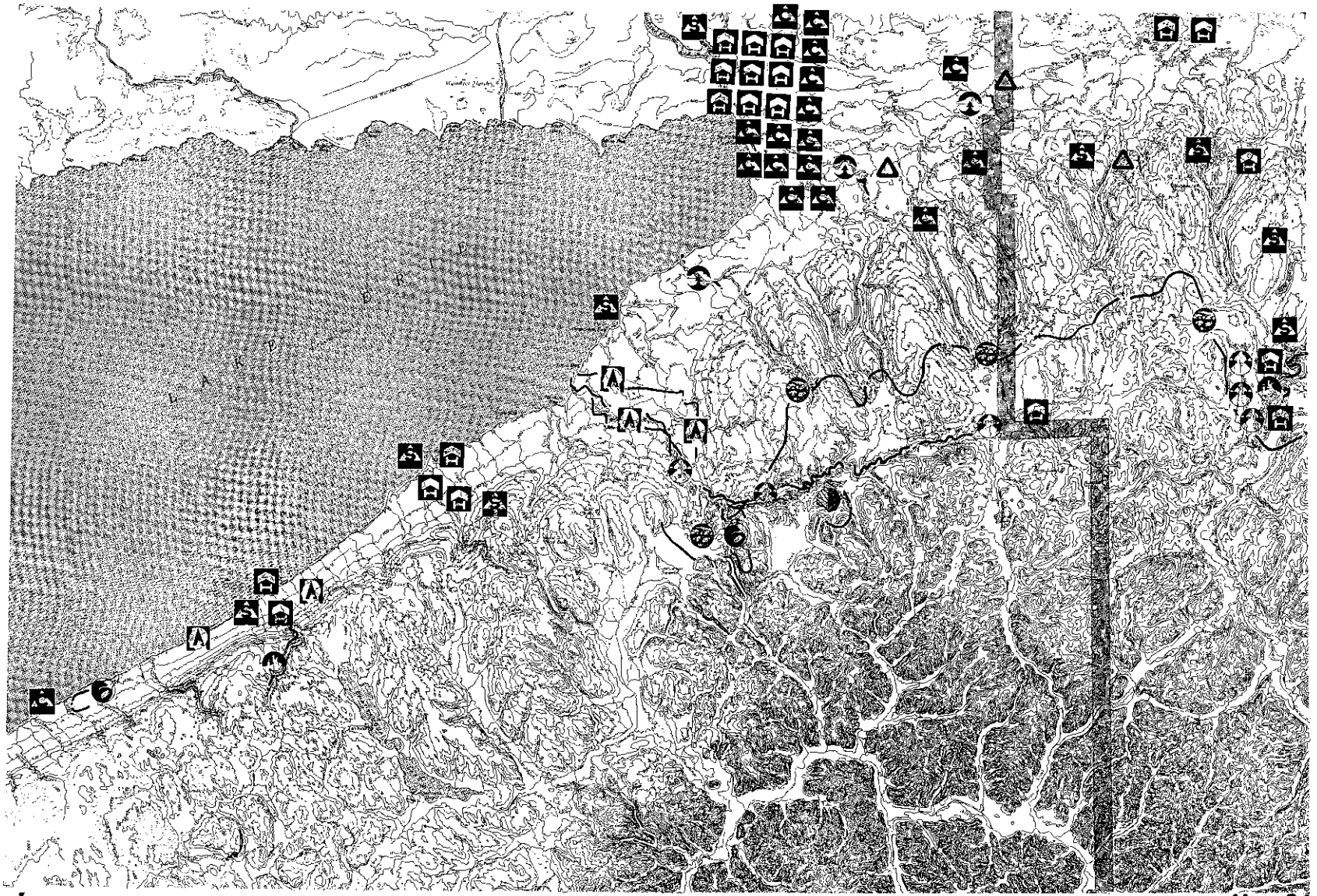
II

Map 34


I
Map 35

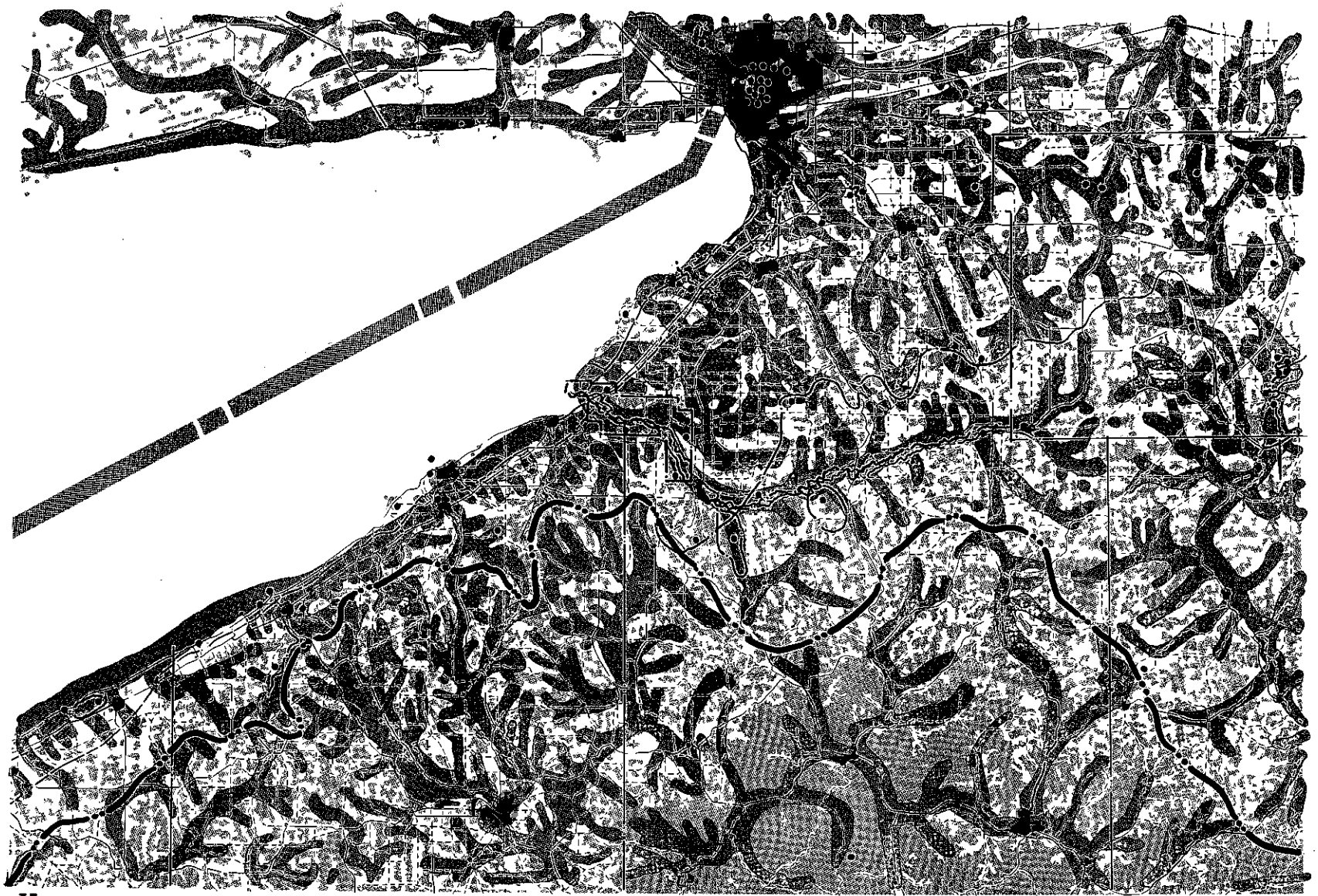


Map 35



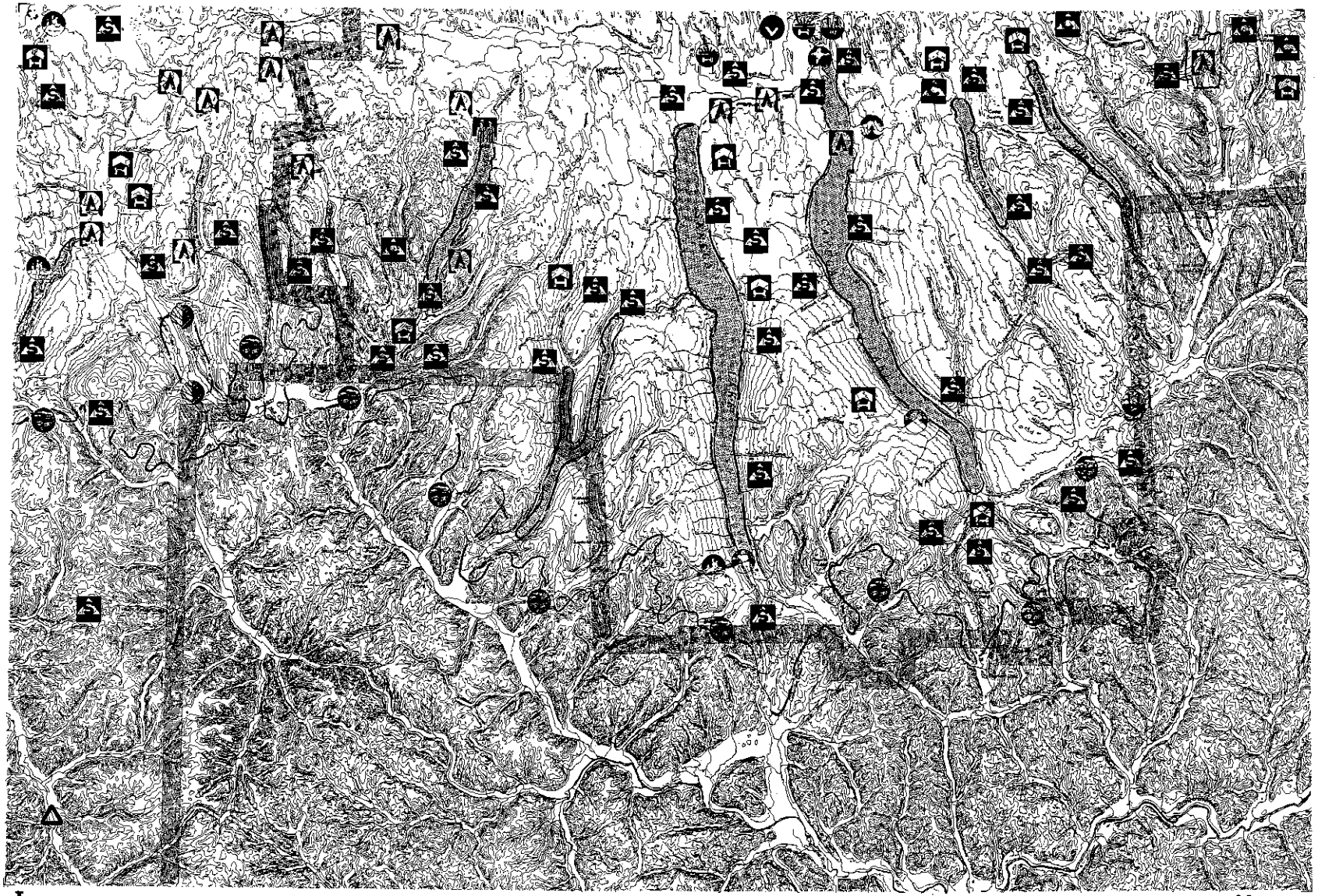
I

Map 36



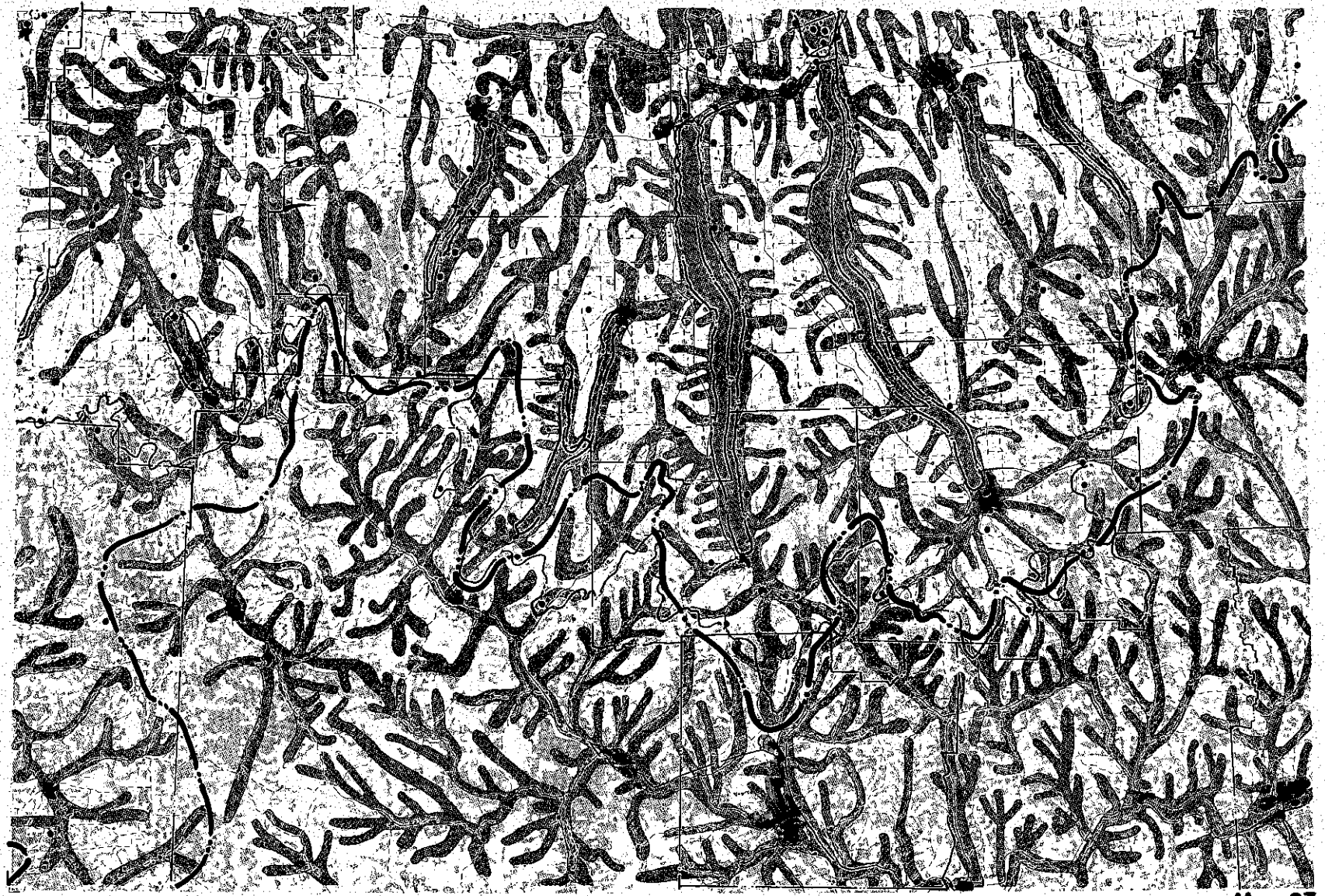
II

Map 36



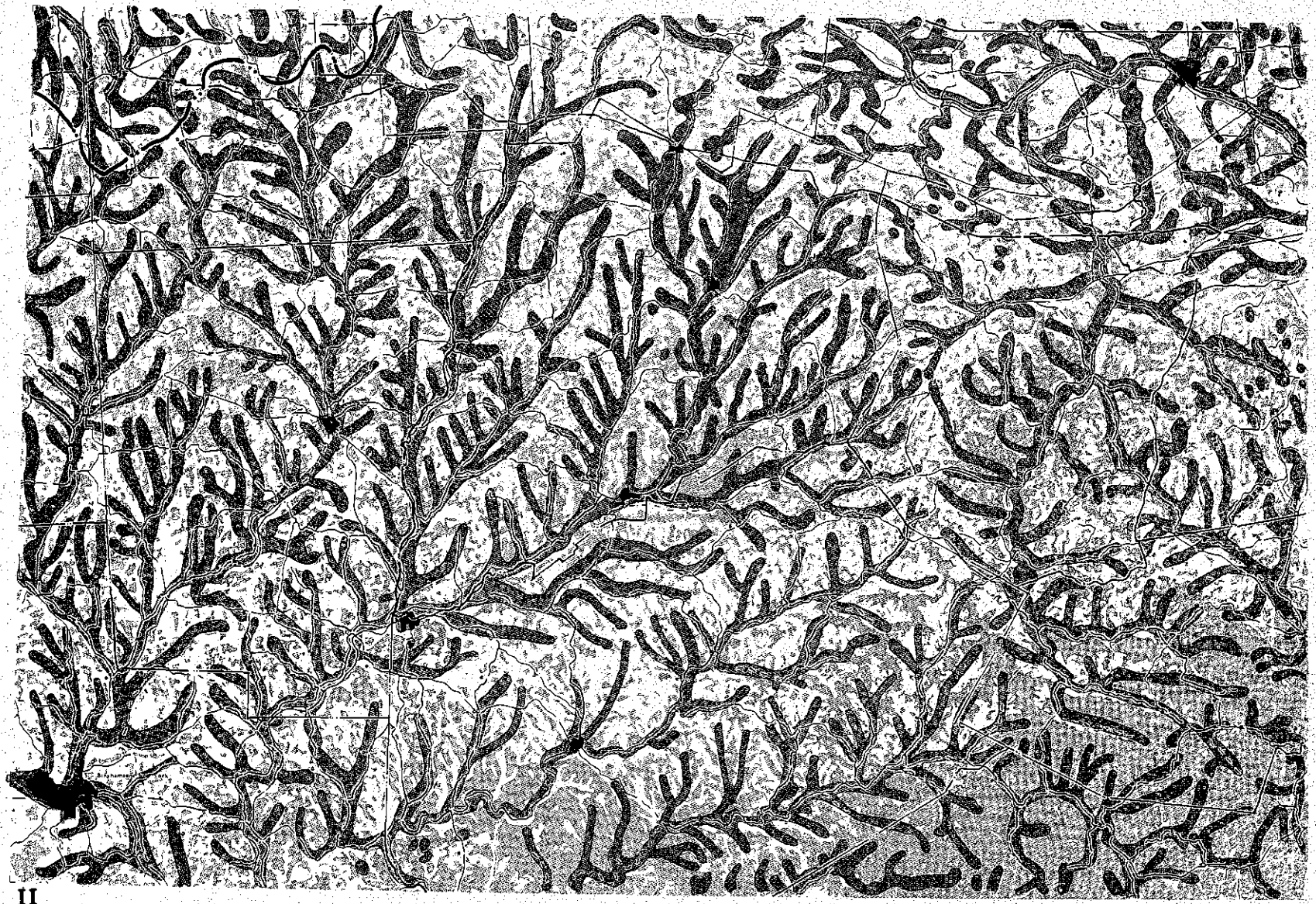
I

Map 37



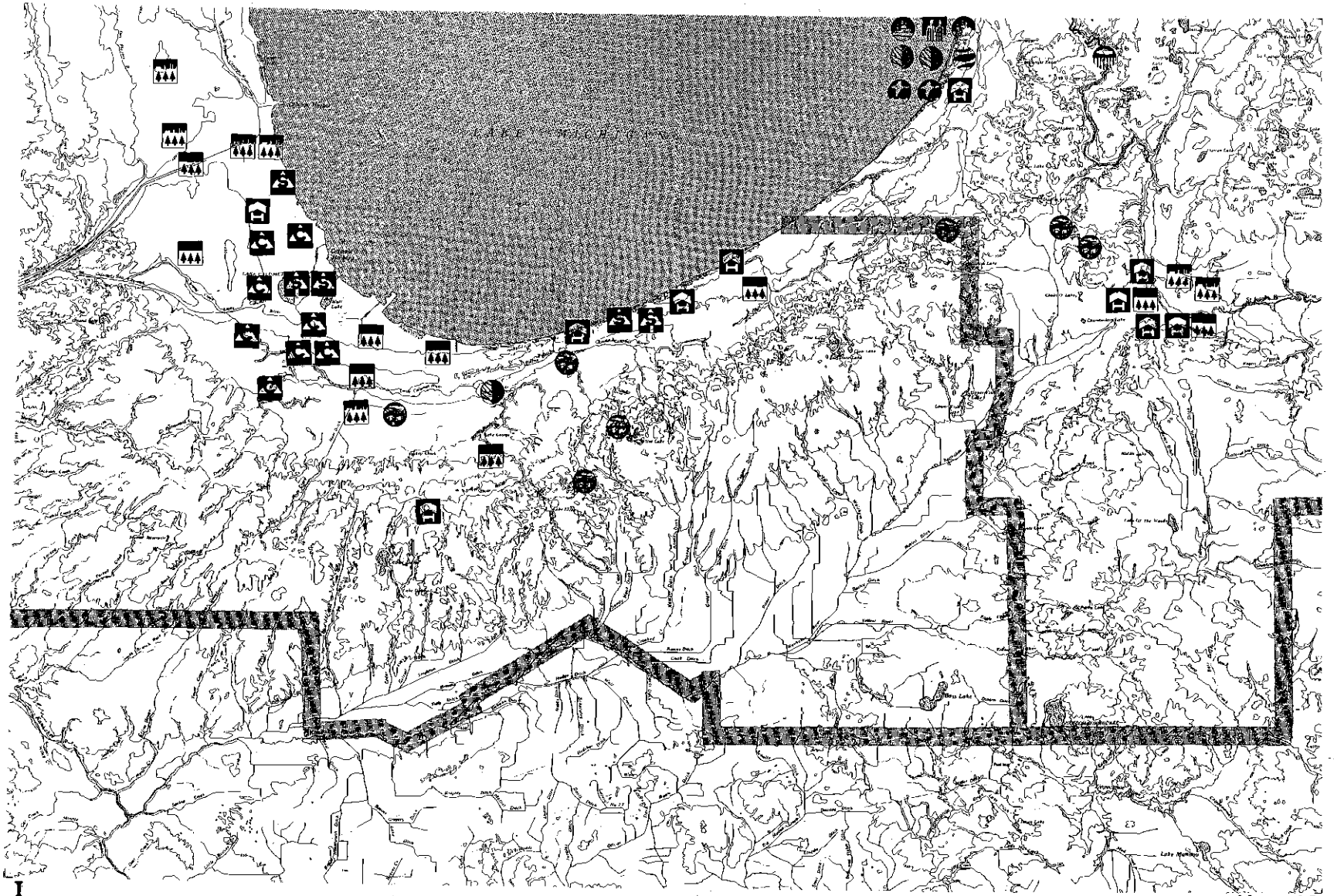
I

Map 38



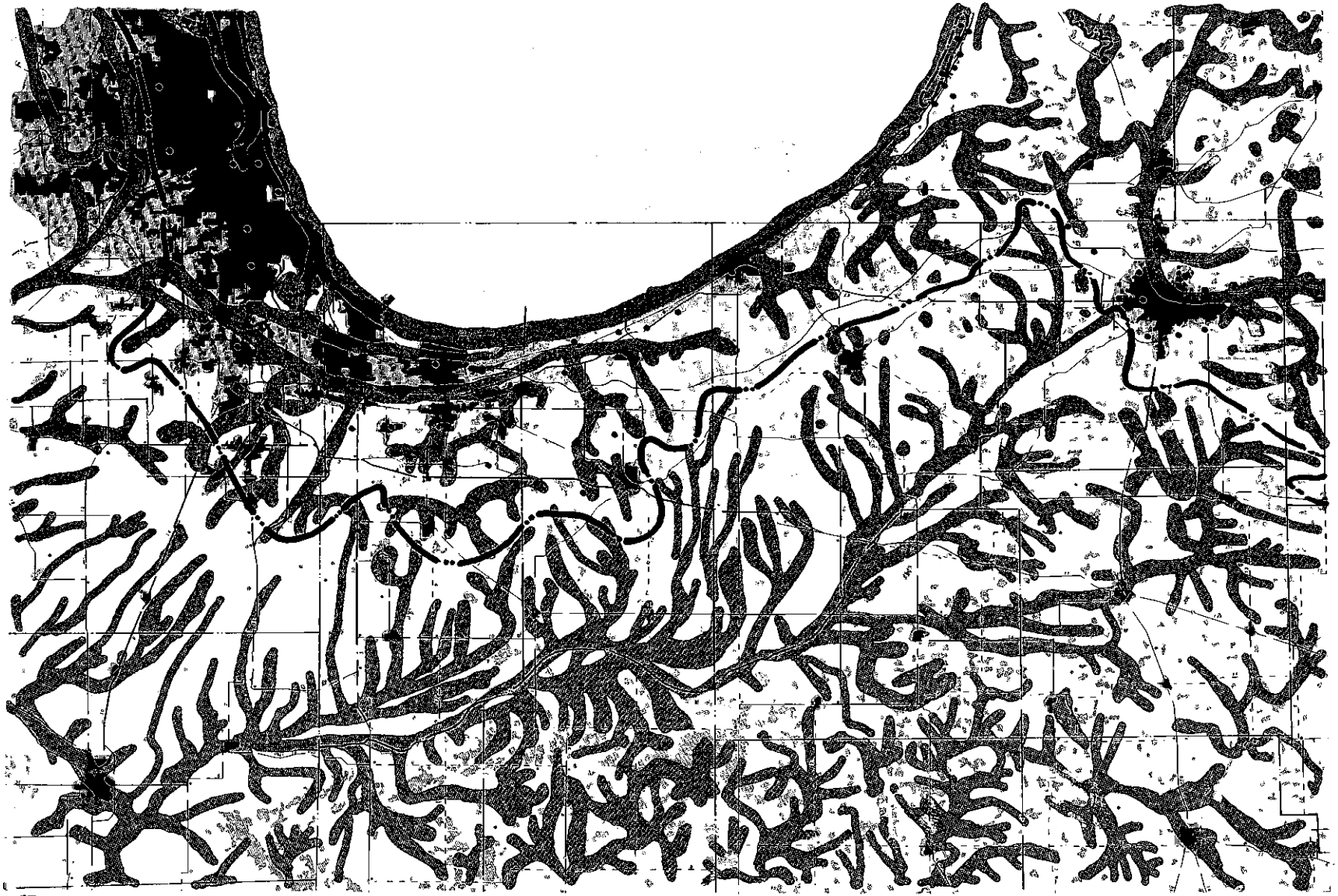
II

Map 38



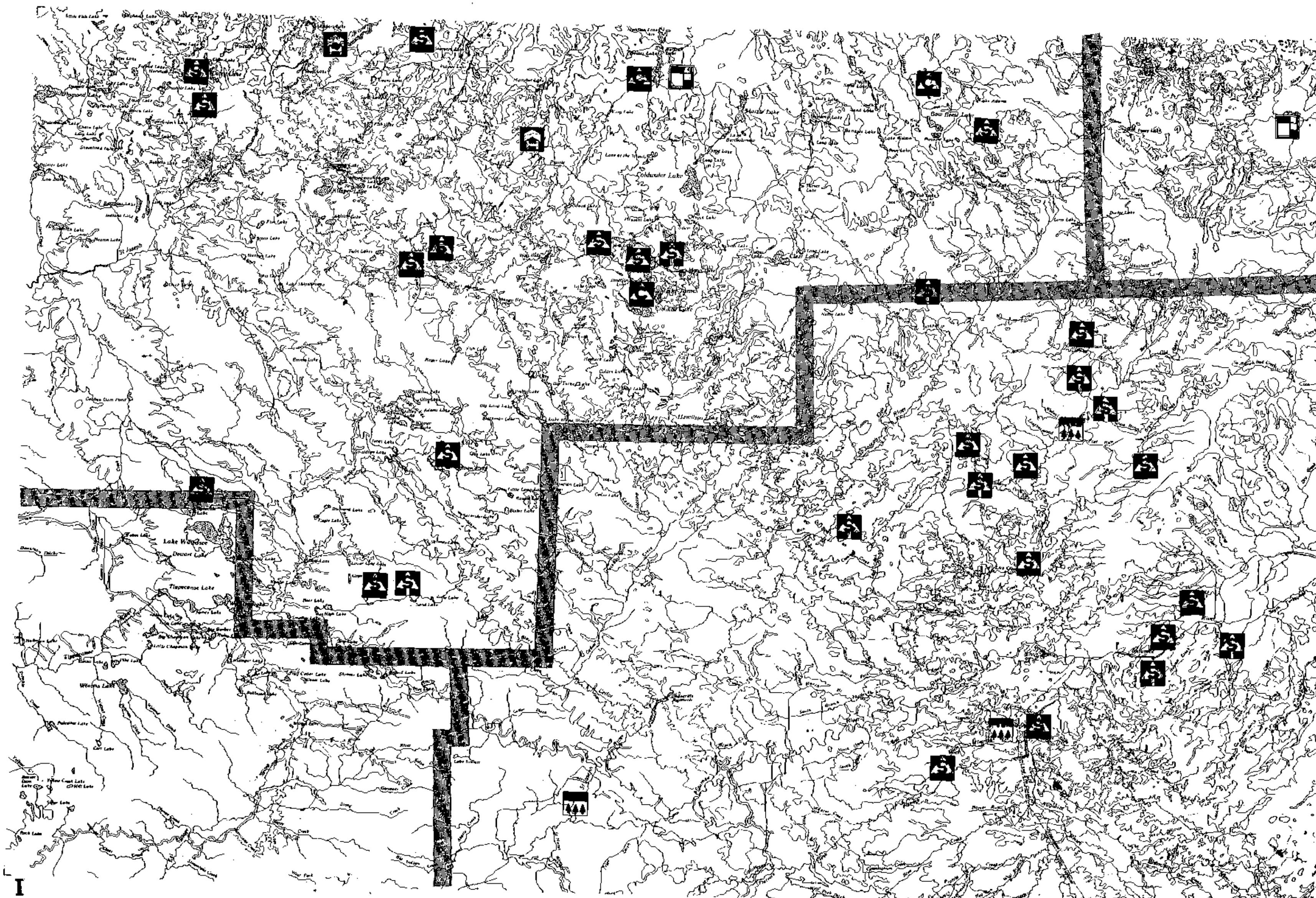
I

Map 40

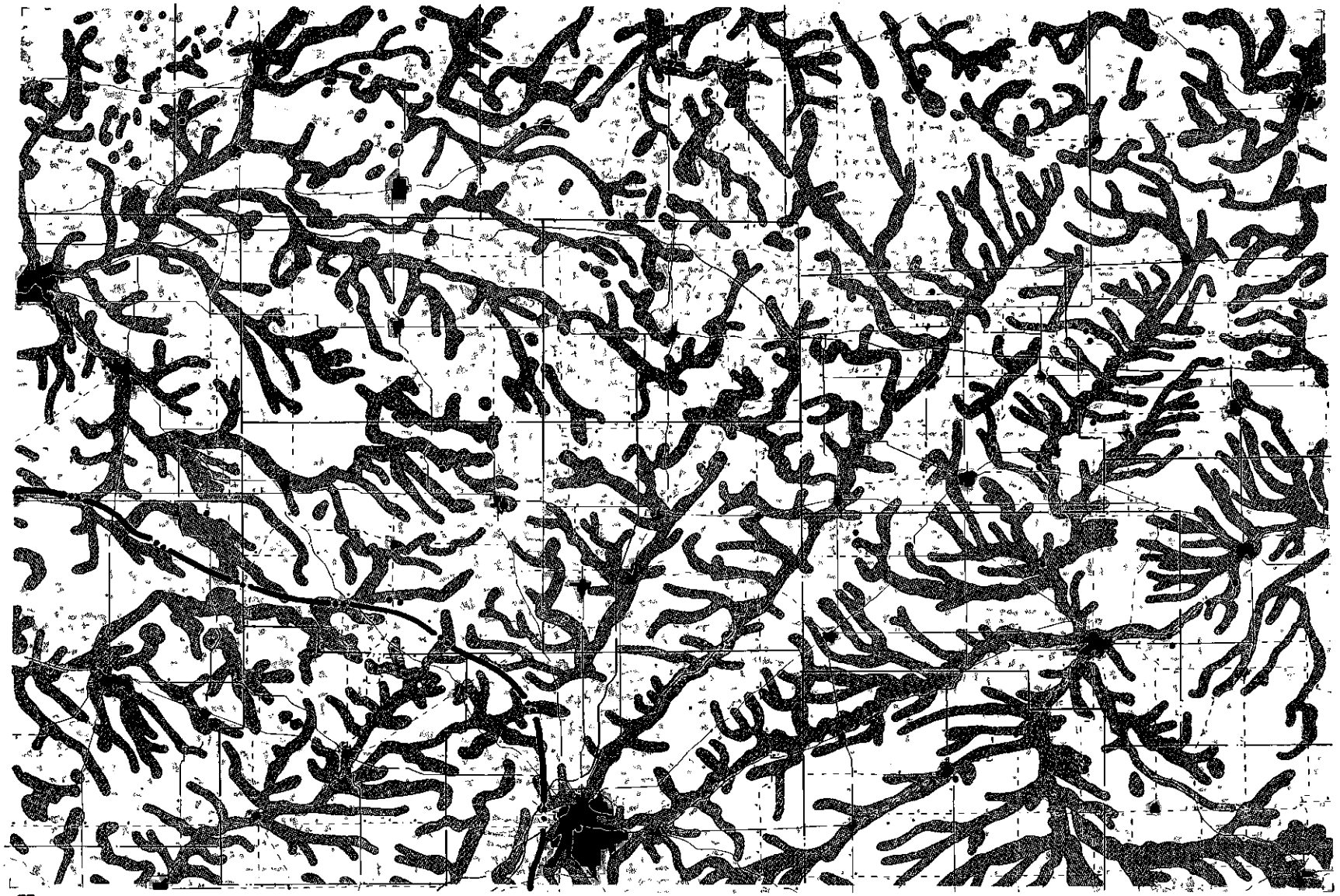


II

Map 40

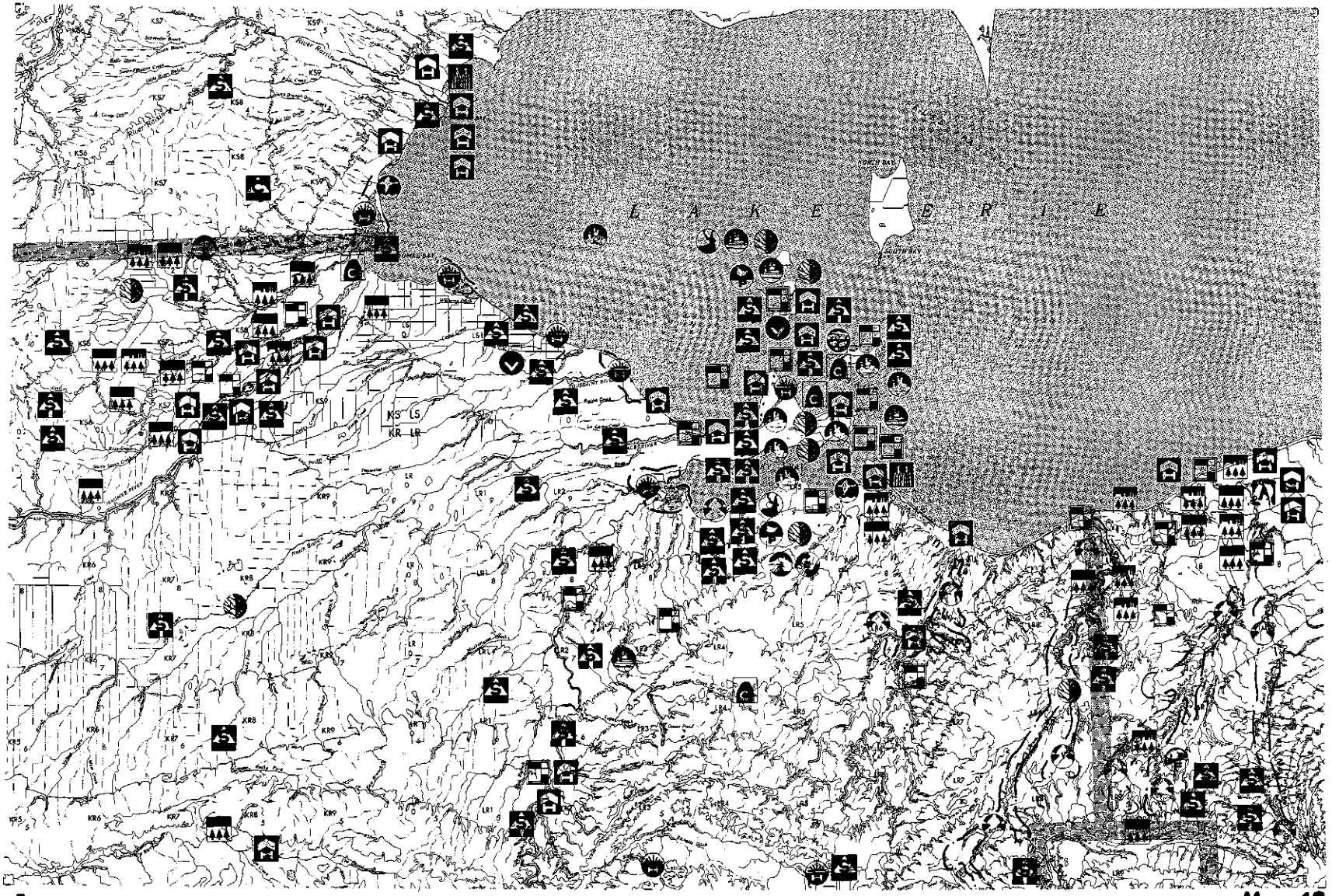


Map 41



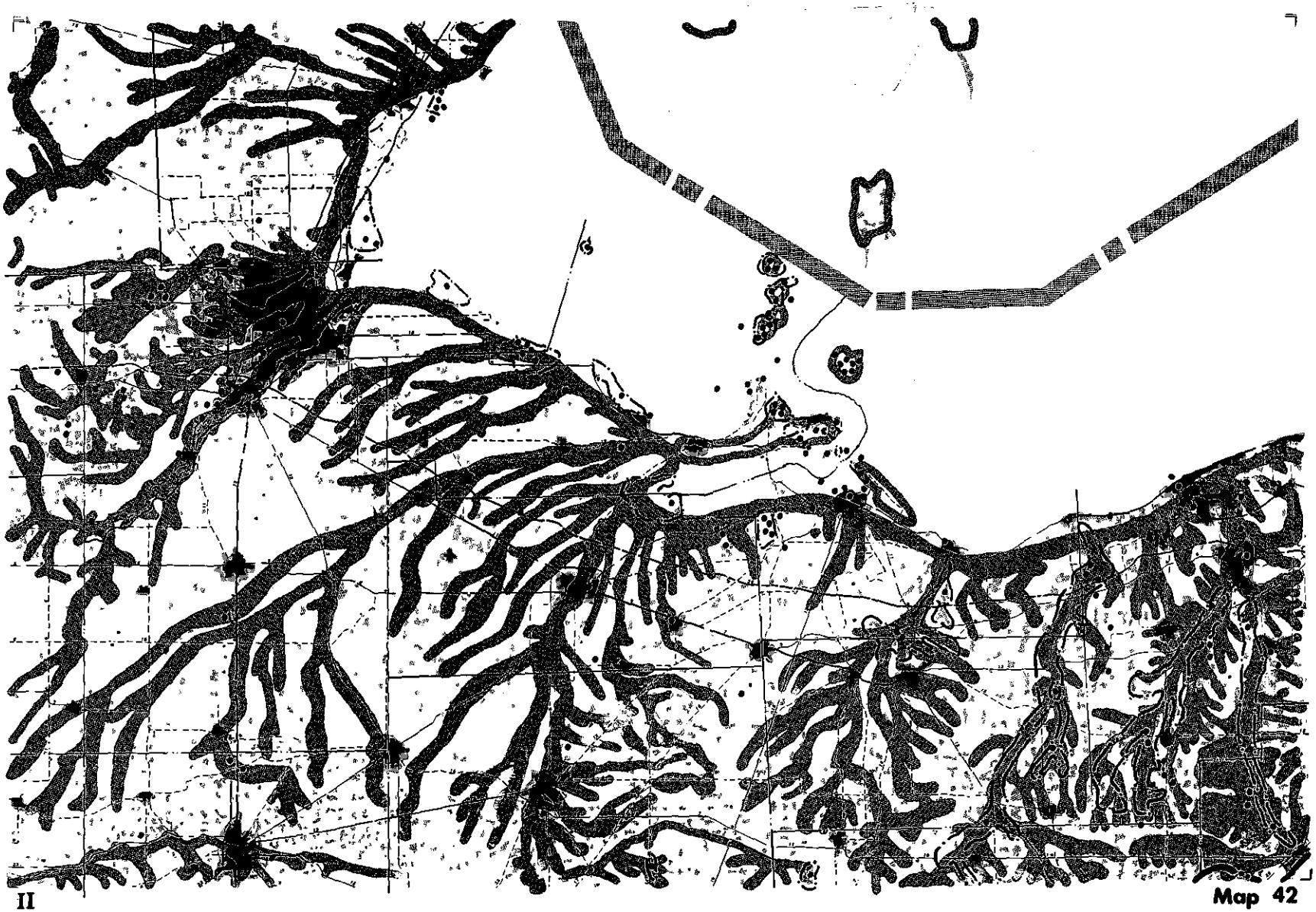
II

Map 41



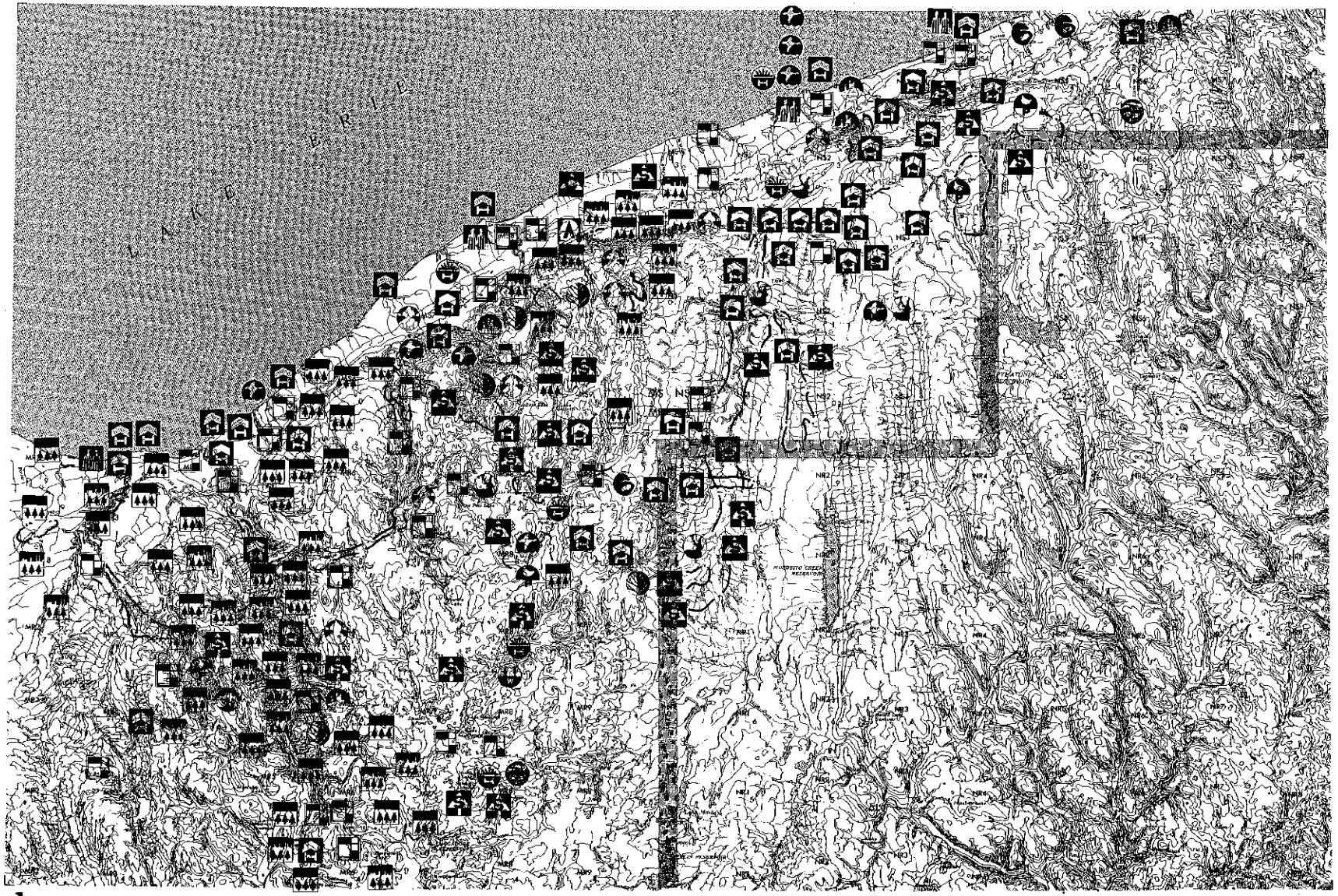
I

Map 42



II

Map 42

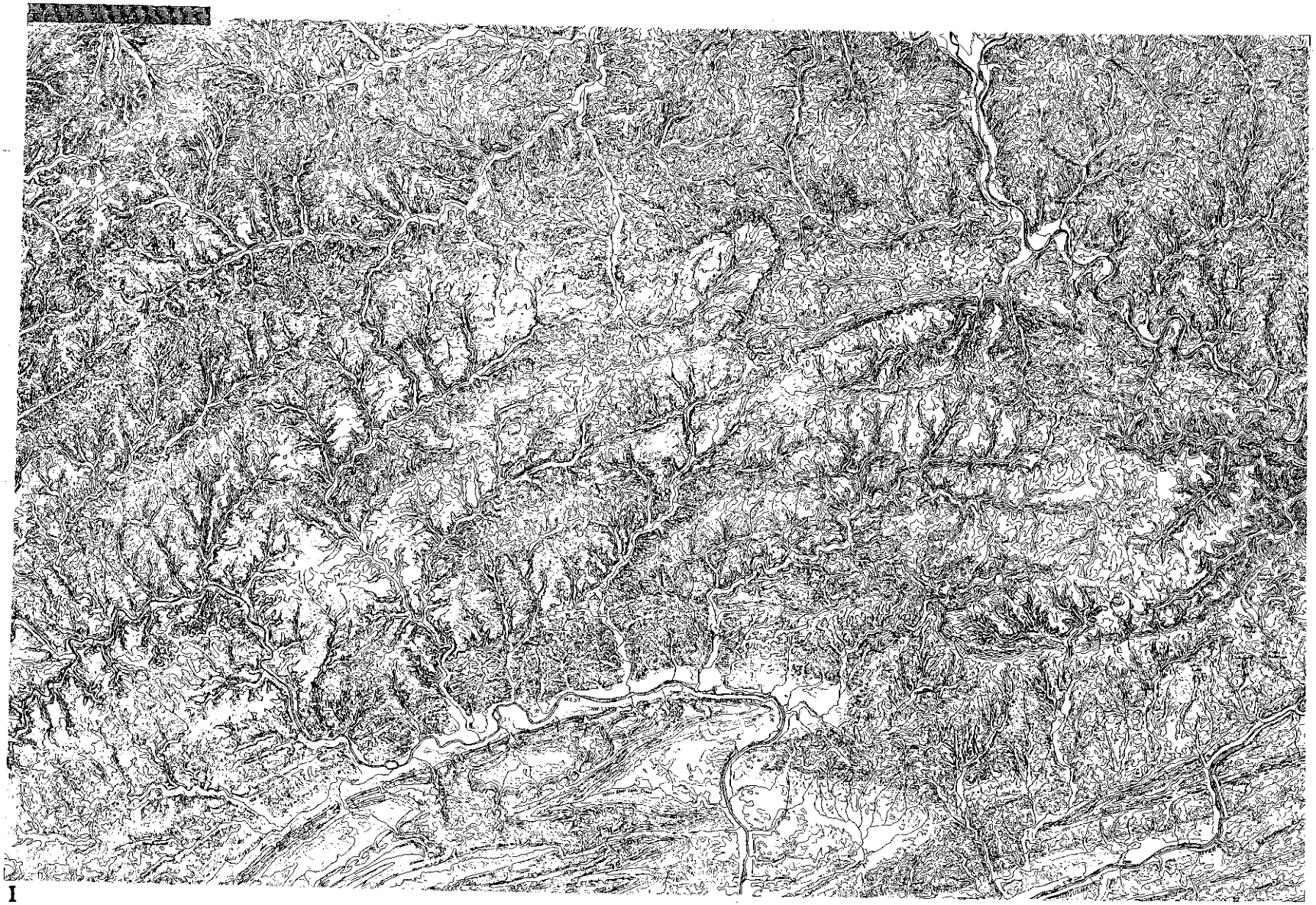


1

Map 43

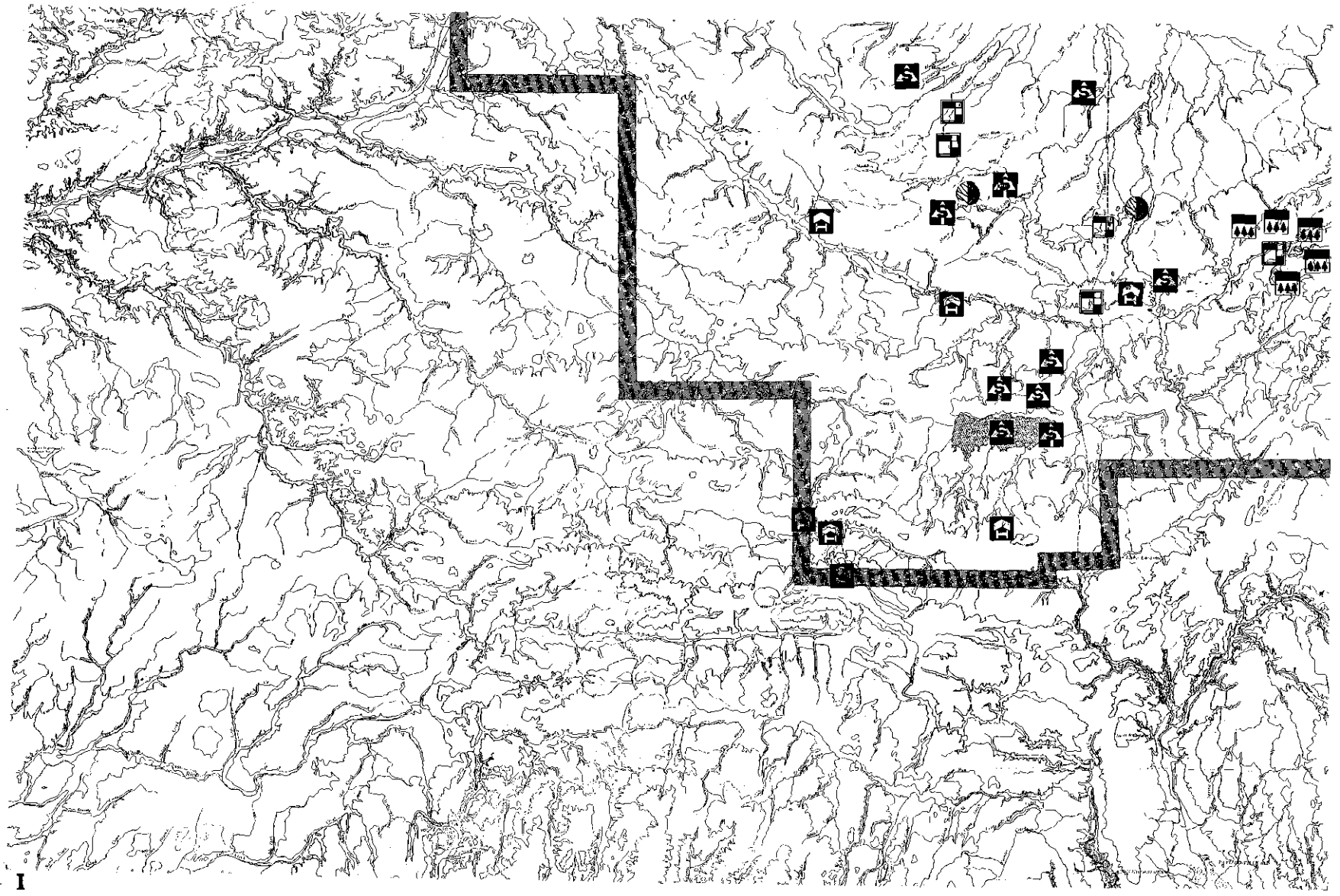
II

Map 43



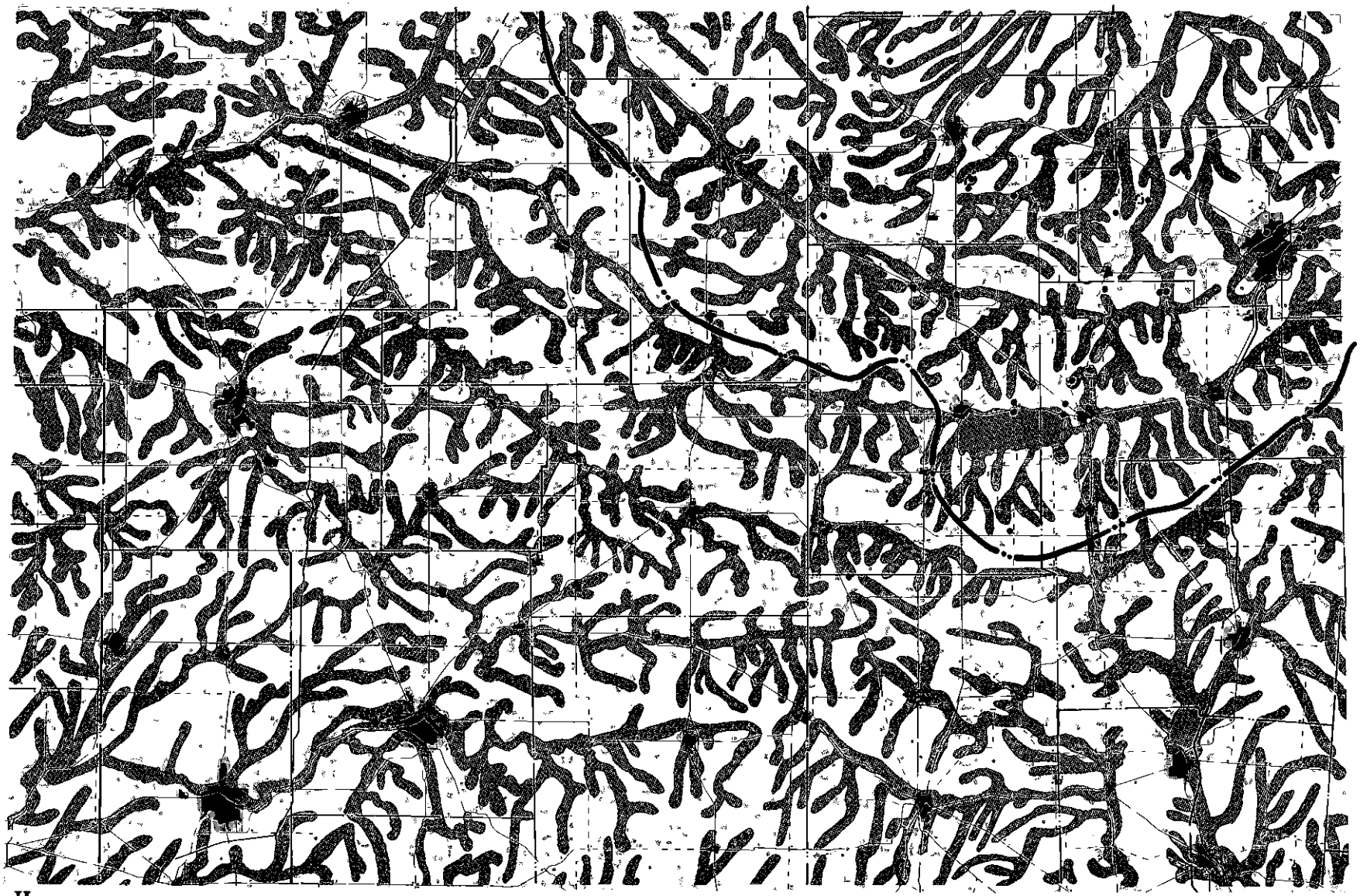
I

Map 45



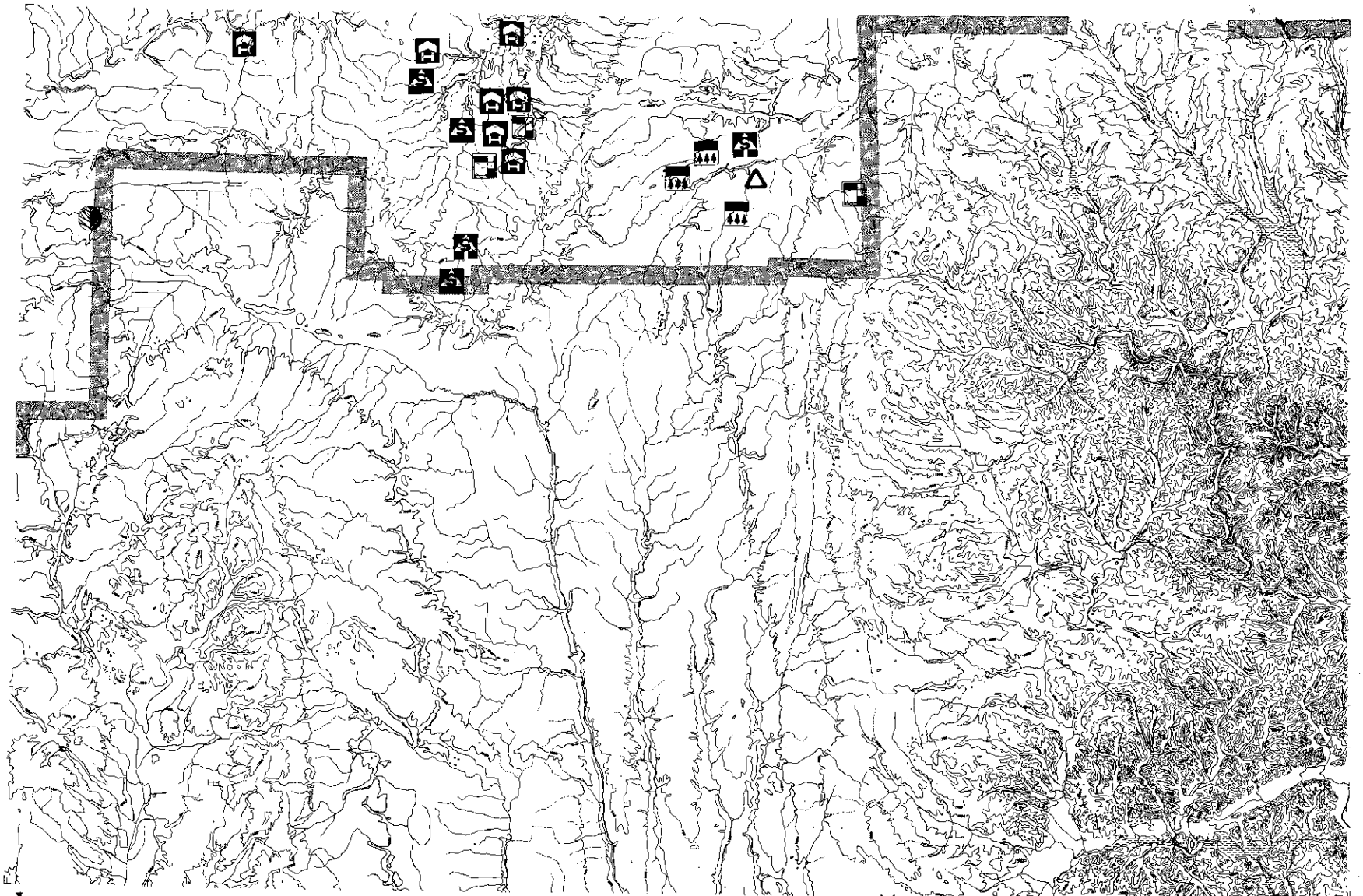
I

Map 46



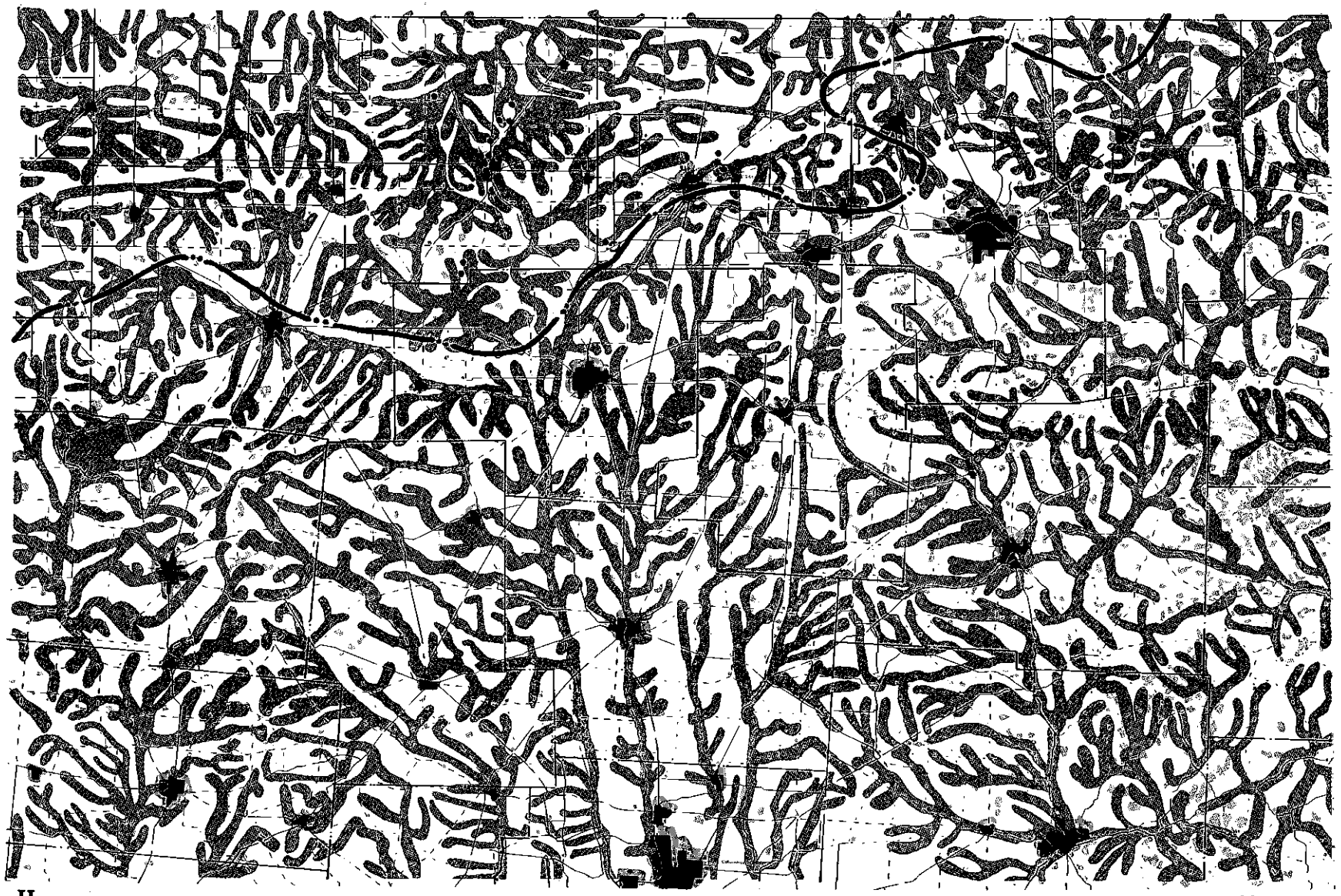
II

Map 46



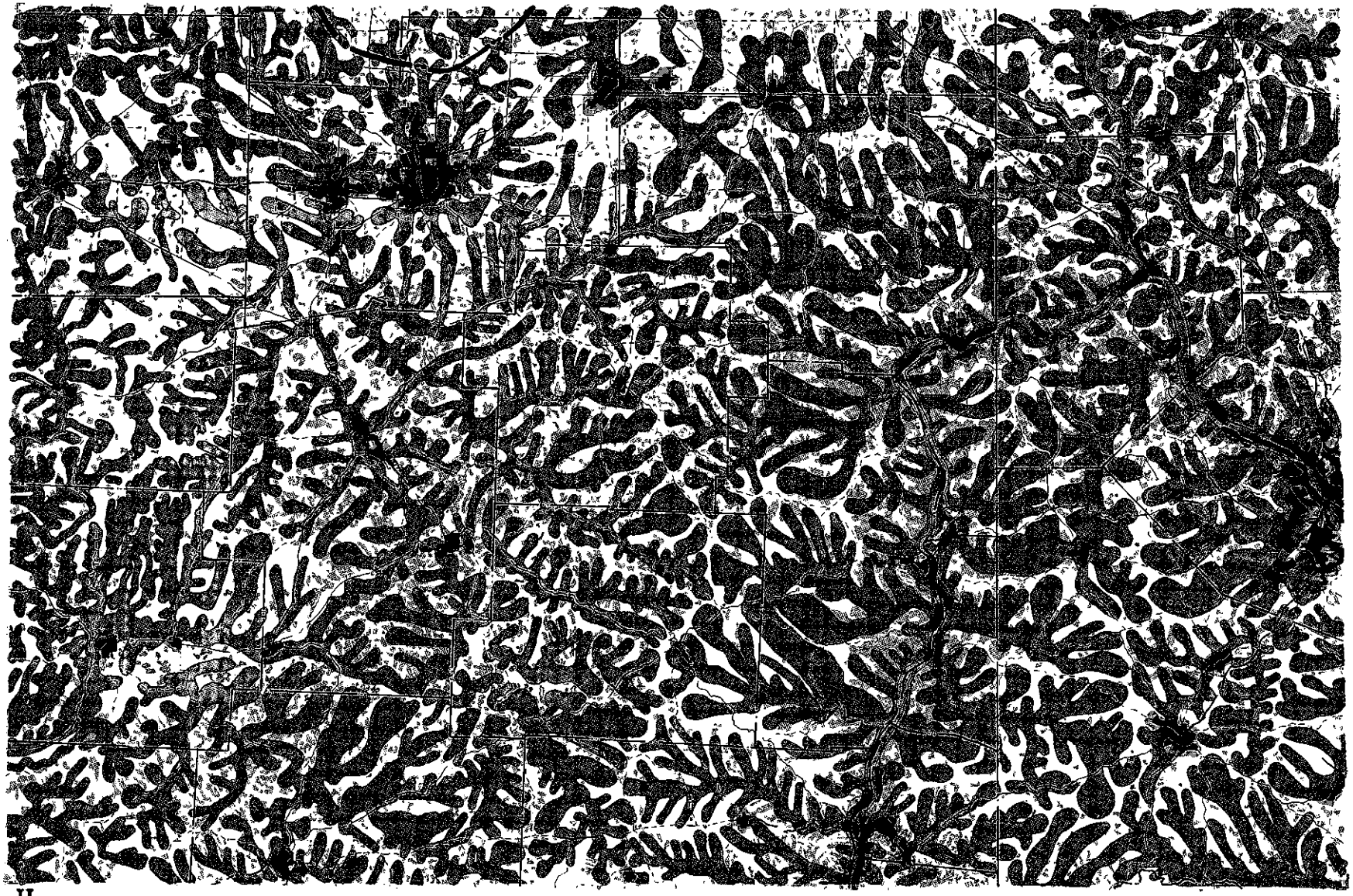
I

Map 47



I

Map 48



II

Map 48

AUTHOR

TITLE GREAT LAKES BASIN FRAMEWORK STUDY - APPENDIX 22

DATE DUE	BORROWER'S NAME
GAYLORD 45