Inventory of Lake Ontario Inlets and Harbors: Niagara River to Stony Creek

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NYSSGP-RS-76-026

INVENTORY OF LAKE ONTARIO INLETS AND HARBORS: NIAGARA RIVER TO STONY CREEK

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December 1976
(Manuscript received August 1976)

Printed in USA
Price: $3.00

This research was funded by the National Oceanic and Atmospheric Administration, Office of Sea Grant, US Department of Commerce, through an institutional grant to the State University of New York and Cornell University.

ABSTRACT

This inventory of Lake Ontario inlets and harbors was conducted to determine the capacities and services of existing boating facilities, to investigate sites for future expansion, and to make recommendations for expansion. First, some physical characteristics of Lake Ontario and its use for recreation are presented with a discussion of the historical development of the salmonid fishery and the need for better lake access. Results of previous recreational boating demand studies are also presented.

The inventory revealed the existence of 84 boating facilities, of which 23 provide launching only, 22 provide moorings and/or slips only, and 39 provide both moorings and launching. In all, 4039 moorings, approximately 50% of which accomodate boats less than 25 feet long, and 62 launching sites, providing 73 simultaneous launchings were inventoried. Survey results of marinas and yacht clubs in the inventory area revealed a present demand for nearly 2300 slips or moorings.

Sixty-one inlets and harbors were inventoried, of which, three are federally maintained as commercial harbors, four are federally maintained as small boat harbors, 19 support some type of recreational boating activity, and 35 support no boating activity. The one feature characteristic to nearly all of the inlets, except for the larger tributaries, is a barrier beach. Forty-four of the 61 inlets and harbors inventoried have some type of barrier beach formation.

Based on an analysis of the present supply of boating facilities and previous recreational boating demand projections, it is recommended that 3000 additional moorings and/or slips and 50 additional simultaneous launchings be provided by 1980. Recommendations for the distribution of

these additional facilities, either by expansion or construction of new facilities, throughout the inventory area are presented. Recognizing, however, that many of these specific recommendations cannot possibly be provided by 1980, it is recommended they be instituted as soon as possible. In general, it is suggested the private sector be encouraged to provide marina facilities such as moorings or slips, while the state and municipal governments should be responsible for providing launching facilities.

ACKNOWLEDGEMENTS

Awareness of the need for access to Lake Ontario was derived from meetings with the Niagara County Fisheries Advisory Board and the New York Sea Grant Advisory Service and the authors thank them for their advice and contributions. The authors, also, acknowledge the data contributions of the marinas and yacht clubs listed in Appendix A. Special appreciation is extended to Dr. Parker Calkin of the SUNYAB Geology Department for his Raytheon depth sounder and Mr. David Campbell for his boat, motor, and trailer, which were used extensively during the field trips.

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CHAPTER I

INTRODUCTION

1.1 Lake Ontario: Some Physical Characteristics

Lake Ontario, having a shoreline length of 726 miles is the smallest and most easterly of the Great Lakes. The lake is roughly elliptical; its major axis 193 miles long, lies nearly east to west, and its greatest width is 53 miles. The lake surface is approximately 245 feet above sea level and has an area of 7,340 square miles. It is 802 feet deep at its deepest point and averages 283 feet in depth over the entire lake. Its volume is 393 cubic miles, nearly eight times its annual outflow.

The watershed tributary to Lake Ontario, the Niagara River, and the St. Lawrence River, extends over 32,000 square miles, 16,800 square miles of which lie in the United States. The major river inflow is the Niagara River with a mean annual discharge of 202,000 cubic feet per second. The St. Lawrence River is the natural outlet for all the Great Lakes, with a mean annual outflow of 239,000 cubic feet per second.

The average annual precipitation over the Lake Ontario basin (land and water) is about 34 inches. Approximately half of the overland precipitation becomes runoff (Brunk 1964). The long term annual evaporation from Lake Ontario is approximately 28 inches. During individual years, however, annual evaporation may vary considerably from this long term average.

The mean water surface temperature varies from $2^{\circ}C$ during winter to $21^{\circ}C$ during summer. The winter minimum is reached during mid-February along the shores and during mid-March in the open lake. The summer maximum is reached during early August in the south and mid-August elsewhere. Water temperature exceeds $10^{\circ}C$ for approximately five months of the year.

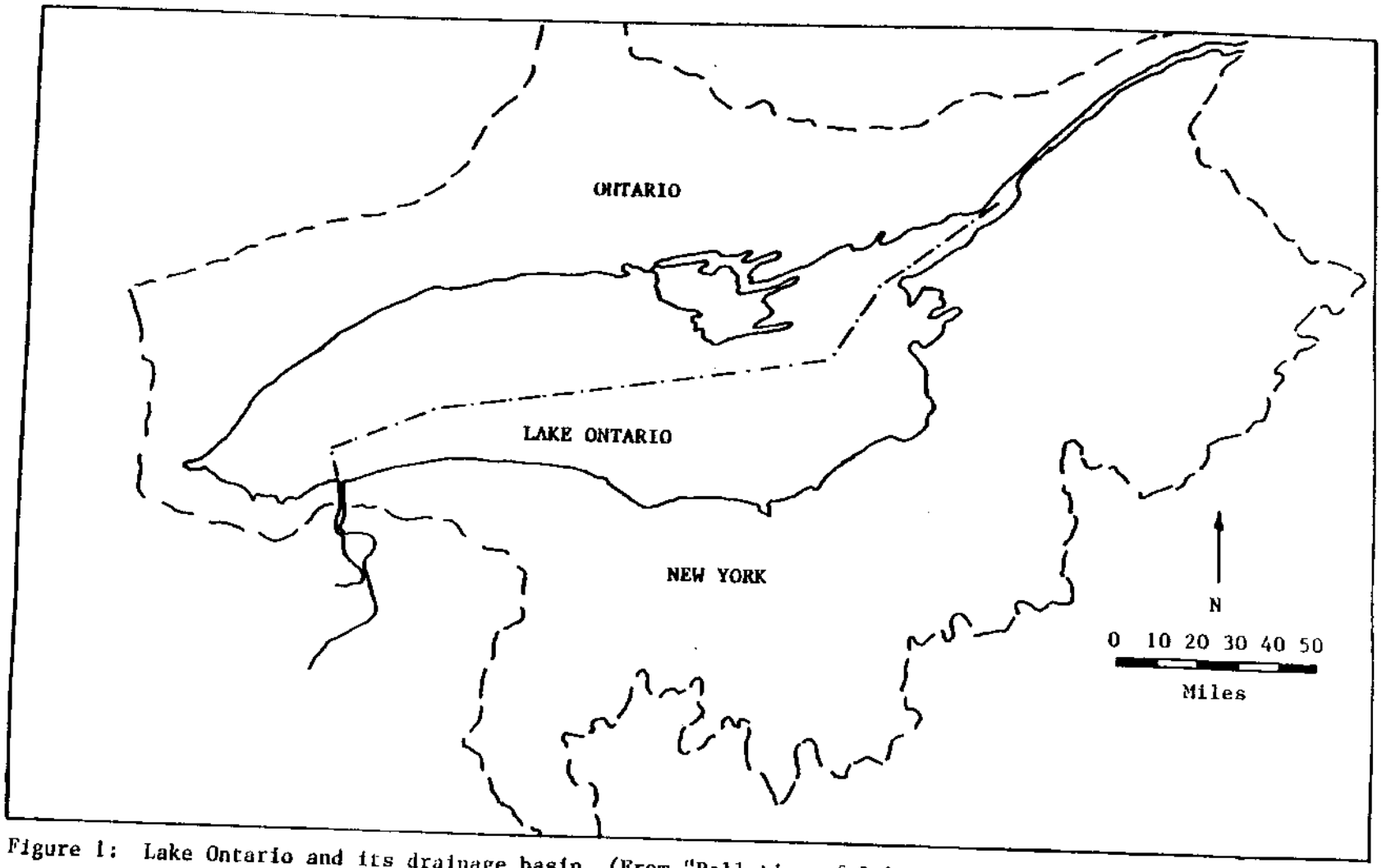


Figure 1: Lake Ontario and its drainage basin. (From "Pollution of Lake Erie, Lake Ontario and the International Section of The St. Lawrence River," International Lake Erie Water Pollution Board and the International Lake Ontario - St. Lawrence River Water Pollution Board, 1969)

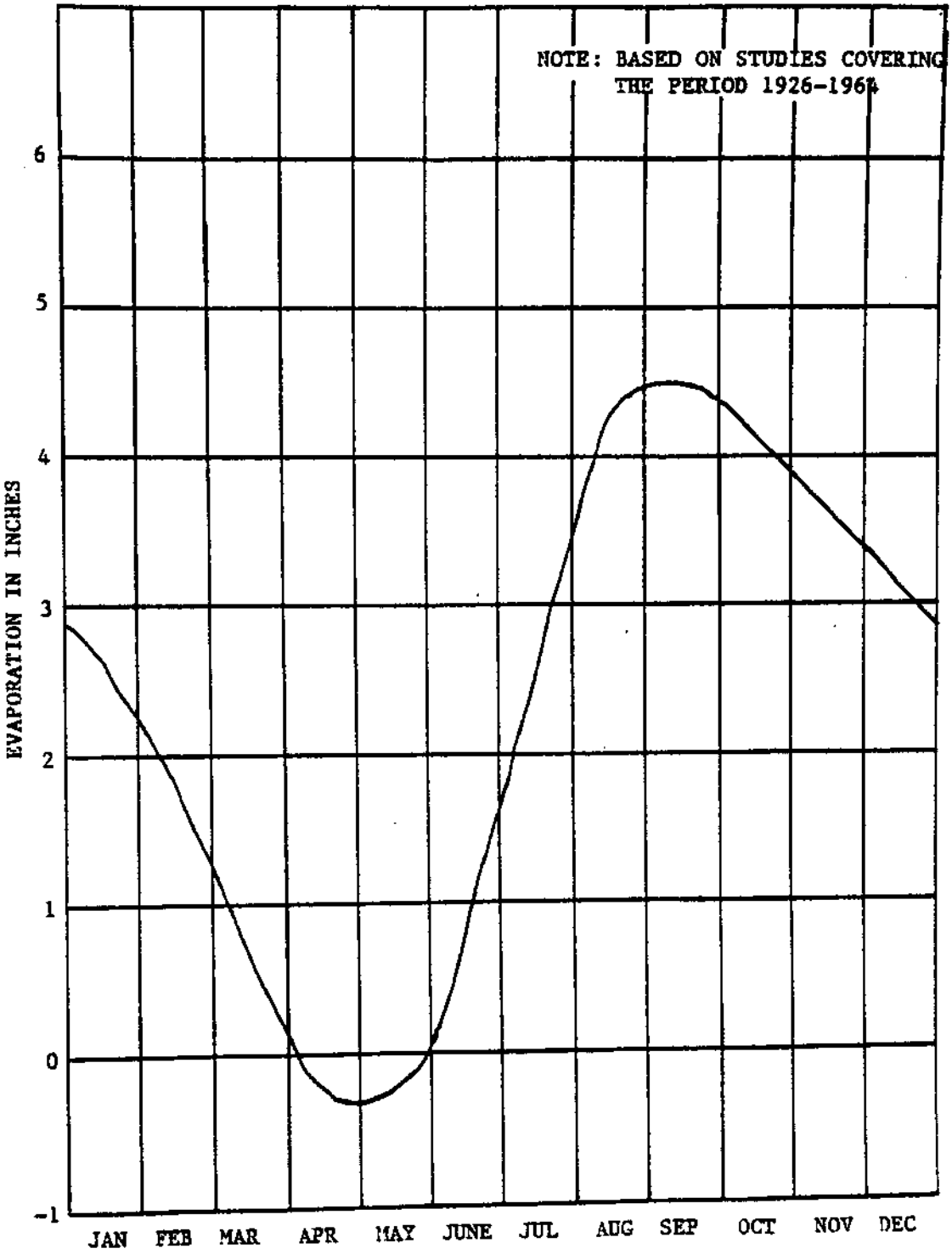


Figure 2: Evaporation from Lake Ontario. (From "Great Lakes Basin Framework Study: Appendix 11, Levels and Flows," Great Lakes Basin Commission, 1975)

The predominant wind direction around Lake Ontario is from the southwest during most months. During winter months the predominant wind direction shifts to the west. On the northwestern end of the lake, winds frequently prevail from the west, and at times from the north. The mean monthly wind speed varies from seven to thirteen miles per hour. The highest wind velocity recorded was 73 miles per hour from the west at Rochester in 1950. The highest wind velocity over the lake itself was 57 miles per hour from the west-northwest in November 1964.

The elevation of the Low Water Datum (LWD) reference plane for Lake Ontario is 242.8 feet, established in 1955. The average monthly elevation in Lake Ontario is 244.77 feet. The highest elevation ever recorded is 248.06 feet and the lowest 241.45 feet. The normal annual cycle features low monthly mean levels in the winter and highs in summer, the range usually being about two feet. Local level changes due to storm action may depart as much as two feet or more from the mean. Lake levels for the past three years are shown in Figure 3. Figure 4 shows the stage duration curve for Lake Ontario at Oswego for January-December 1860-1968.

1.2 Lake Ontario: Its Use for Recreation

Cool, pleasant temperatures make the Lake Ontario basin desirable for summer recreation. The mean daily July temperature ranges from 78°F to 84°F. The temperature rarely exceeds 100°F. The number of frost free days varies from 160 to 200 along the lakeshore to 120 to 160 in the interior. Wind velocity has a distinct bearing upon participation in recreational boating. From 1963 to 1965 small craft warnings were in effect some 17 days per month during the boating season, May through October. There are on the average, 23 days during the boating season when the winds exceed 30 miles per hour. Approximately seven days are

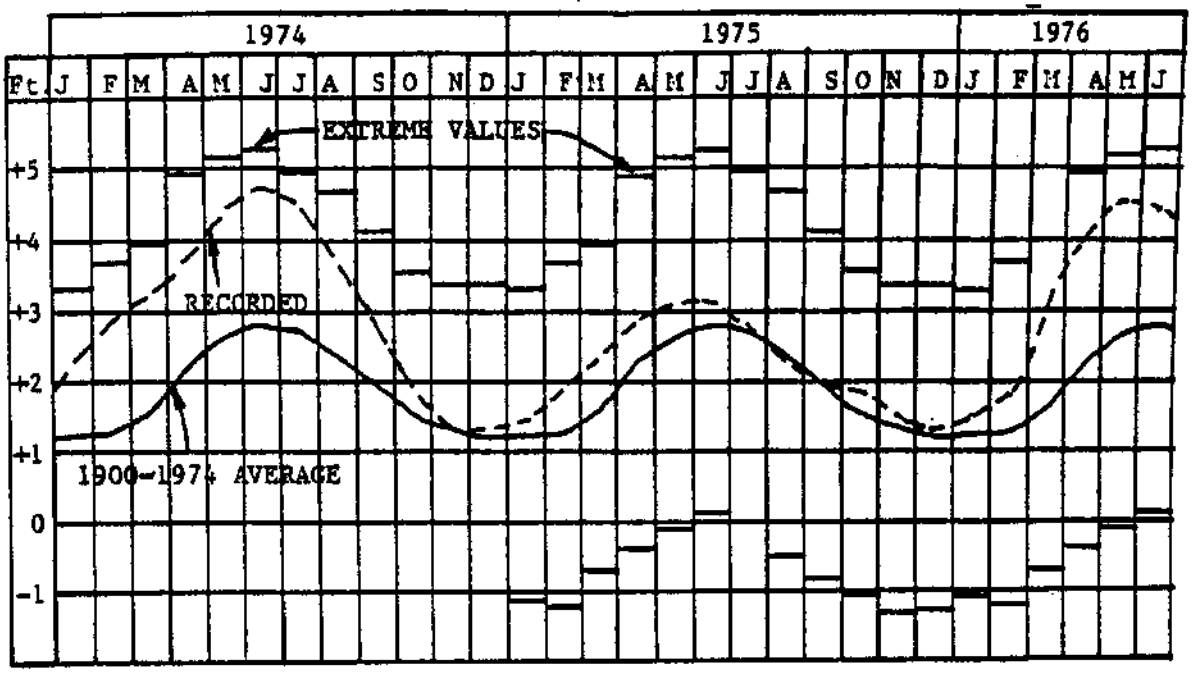


Figure 3: Lake Ontario lake levels 1974 - 1976. (From "Monthly Bulletin of Lake Levels for the Great Lakes," Department of the Army)

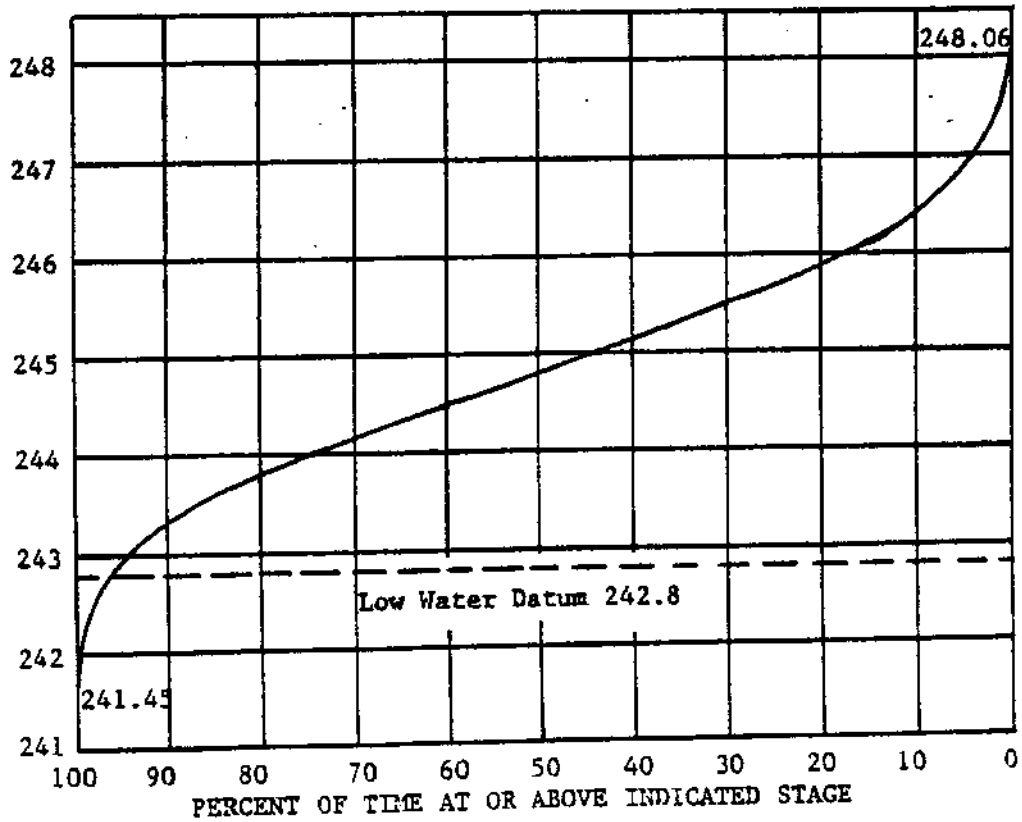


Figure 4: Stage duration curve for Lake Ontario at Oswego for January - December 1860 - 1968. (From "Great Lakes Basin Framework Study: Appendix 11, Levels and Flows," Great Lakes Basin Commission)

foggy during this period.

The southern shoreline of Lake Ontario is extremely regular with few natural embayments. It is however, a dominant recreational feature with its bluffs, beaches, sand dunes, and occasional small boat harbor. Beach areas on Lake Ontario are less prominent than any of the other Great Lakes. Sand beaches are narrow and few west of Oswego, but excellent sand beaches are common east of Oswego around the Mexico Bay area. The total beach area is approximately 63 acres, 33 acres of which are public.

Recreational boating on Lake Ontario is growing just as it is in the rest of the United States. This growth is attributed to, among other factors, advances in boat building technology, higher standards of living, and more leisure time. The most popular reason for buying a boat is for fishing. Cruising and water skiing are the next popular reasons. Lake Ontario is also used extensively for sailboating and many yacht clubs have developed around the lake. Sailboating has also been increasing, but because of the cost, at a much slower rate. Fishing, mentioned as being the most popular reason for use of a boat, recently received a shot in the arm in Lake Ontario. This development is outlined in subsequent sections.

1.3 A Brief History of the Salmonid Fishery in Lake Ontario

Accounts of salmon in Lake Ontario begin in the 1800's, in which the Atlantic salmon (Salmo salar) was described as the most important fish in the lake. (Niagara Falls barred its entry to the other Great Lakes). Atlantic salmon were described as being a valuable source of food and their abundance was believed to be a prominent factor in the early settlement of the Lake Ontario basin. However, the Atlantic salmon population declined sharply in the mid-1800's and was extinct by

1900. Their extinction was attributed to many factors, of which mill dam construction, deforestation, over fishing, and population are a few.

Since the elimination of the Atlantic salmon from the waters of Lake Ontario several attempts to re-establish a salmonid fishery have been made. Until the mid-1960's all salmon, of which coho, chinook, and kokanee were the prominent species, were planted with the primary objective of establishing self-sustaining populations. However, these attempts were not successful for the same reasons that eliminated the Atlantic salmon plus the development of two more; the appearance of the parasitic sea lamprey and pollution.

Ontario and New York State, which recognized the economic potential from the successful salmonid stocking program in Lake Michigan (begun in 1965), began to stock salmonids in Lake Ontario in the late 1960's. Table 1 indicates salmonid plantings made in Lake Ontario by New York State between 1968 and 1974. Realizing from past experience that naturally reproducing populations would be impossible to produce, these stockings were made to provide a put and take sport fishery. The availability of a strong forage base (alewives) and suitable temperatures and dissolved oxygen concentrations among other factors were expected to provide a suitable lake habitat for salmonid growth. However, due to severe sea lamprey predation, survival and recovery of early plantings were low.

To rectify this problem sea lamprey control was started in the tributaries of Lake Ontario in 1971 on the Canadian side and in 1972 in New York tributaries. Results from initial tributary treatments have proved quite successful and resulted in a much larger survival in 1973. These lamprey control treatments will continue in Lake Ontario, similar to the treatments in the upper Great Lakes performed since 1958.

Table 1

*Salmonid Plantings by the State of New York in Lake Ontario

Year	Plantings
1968	25,000 coho
1969	125,000 coho 70,000 chinook
1970	294,000 coho 140,000 chinook
1971	122,000 coho 100,000 chinook
1972	230,000 coho 426,000 chinook
1973	215,000 coho 650,000 chinook 65,000 lake trout 60,000 brown trout
1974	147,000 coho 975,000 chinook 80,000 brown trout 200,000 steelhead 15,000 rainbow trout 630,000 lake trout
1975	450,000 coho 925,000 chinook 500,000 lake trout 108,000 brown trout

*"Status of New York's Great Lakes Salmon and Trout Program," Cape Vincent Fisheries Station, New York Department of Environmental Conservation, March 5, 1974, p. 3; and "Present Status of the Great Lakes Salmon and Trout Fishery in New York," prepared by the N.Y.S. Sea Grant Advisory Service in cooperation with the N.Y.S. Dept. of Environmental Conservation, October, 1974, p.1. (St. Lawrence - Eastern Ontario Commission 1975)

The survival of the Lake Ontario salmonid program will depend on the adequate control of the sea lamprey and the ability to supply a large number of salmonids for stocking. The latter will hopefully be accomplished by a new hatchery to be built on the Salmon River in 1978-1979. Once these objectives are attained the sport fishing potential of Lake Ontario will be unlimited.

1.4 The Need for Lake Access

Since the beginning of the salmonid stocking program in the late 1960's, it has become apparent that access to Lake Ontario by fishermen is becoming a problem. The projections for growth, not only for fishing boat use, but also other forms of recreational boating, will create unmeetable demands on existing facilities. In fact, it has been observed that many are already inadequate.

Presently, and probably for the next several years access problems will be most acute during the salmonid's spring and fall spawning migrations. During these times, fishermen concentrate at the mouths of tributaries and along their banks. This problem is magnified by several factors. Salmonids usually return to the stream they were stocked in for their spawning migration. Since the flow of many of the creeks tributary to Lake Ontario, especially during the fall, is eliminated by shoaling and dry weather, stocking of these tributaries is inhibited. In several tributaries, low flows and pollution combine to create conditions (depressed dissolved oxygen concentrations, etc.) inconducive to upstream migration of salmon and, as a result, receive fewer stockings. For these reasons fewer suitable tributaries are available for salmonid migration and an increase in fisherman density results. As the salmonid program continues, the forage base of alewives and the threat of sea lampreys should decrease. Along with the decreased food supply and increased population, an increase in summer salmon fishing in the lake should occur.

Increased summer lake fishing and high fishermen density at selected tributaries will bring an immediate need for better access. Several communities along the lake have realized this and are taking steps to provide additional harbors for safe access. However, due to the time

involved in the planning and construction of these harbors (upwards of 15 years) immediate demands for access need to be reconciled.

It should be noted here that fisherman access requirements need to be planned so that conflicting objectives for use do not occur. Close cooperation with other users of the lake, the property owners, yacht clubs, and other recreational boaters is needed. Their needs and wants along with fisherman needs, should be moulded into a workable multi-use plan. Only then will the benefit derived from the recreational uses of the lake outweigh the cost of providing access.

1.5 Recreational Boating Demand Projections

Several studies have been conducted to determine recreational boating demand on all or parts of the Lake Ontario shoreline. One, conducted by the Great Lakes Basin Commission and published in 1975, encompasses all of the Great Lakes. Included in this study are projections of mooring and/or docking requirements, launching requirements, number of boats, and boat days of use. Another study, conducted by the St. Lawrence - Eastern Ontario Commission also published in 1975, encompasses the four counties (Cayuga, Oswego, Jefferson, and St. Lawrence) along the eastern end of Lake Ontario and the St. Lawrence River. Projections made in this report are based on the salmonid stocking program and studies previously done in Michigan and include number of salmonid fisherman, mooring requirements, and launching requirements. The last study is an economic impact study of the salmonid fishery on Niagara County. This study was initiated by the Niagara County Fisheries Advisory Board and conducted by the Niagara County Economic Development and Planning Department in 1975. This study concerns only Niagara County and includes some projections of number of fishermen. A

brief description of projection methods used and some results for each study are given in the following sections.

1.5.1 Great Lakes Basin Commission

The Great Lakes Basin Commission divided the Great Lakes into 15 river basin groups, three of which border the area covered in this inventory. Projections of the small boat fleet size on Lake Ontario were determined using a certain percentage of the total small boat fleet in each river basin group. Boat days of use on Lake Ontario were determined by multiplying the number of boats by 30 days of use per season. The number of moorings and/or slips and launchings were determined by examining the composition of the fleet. It was assumed that all boats 30 feet or longer were permanently berthed on Lake Ontario. It was also assumed that some of the smaller boats, especially those 20 to 30 feet long were either moored or wanted to moor on Lake Ontario. The difference between the number of boats using Lake Ontario and the number requiring berths is the number of boats requiring launching facilities. The number of launchings was found by multiplying the number of boats by 30 days of use per season.

Some results of the study for Lake Ontario are shown in Tables 2 and 3. Table 2 shows, that by 1980, demand for slips and launchings will be 10,600 and 846,000 per boating season, respectively. However, only 6000 berths and 711,000 launchings will be provided for in 1980 under present growth rates. This leaves a need for 4600 slips and 135,000 launchings. Table 3 shows the existing and future small boat fleet size in Lake Ontario. It shows that the majority of small boats registered are under 20 feet in length. The length of shoreline (about 10 miles) from the Oswego County line to Stony Point, which is included in this

TABLE 2

*Recreational Boating Requirements for Lake Ontario (thousands)

Lake Ontario	Demand			Supply			Need		
	to 1980	to 2000	to 2020	to 1980	to 2000	to 2020	to 1980	to 2000	to 2020
Number of Boats	38.8	50.0	60.9	29.7	34.7	41.9	9.1	15.3	19.0
Boat Days of Use	1164	1500	1827	891	1041	1257	273	459	570
BOATS BERTHED									
Number of Boats	10.6	13.0	16.2	6.0	6.0	6.0	4.6	7.0	10.2
Boat Days of Use	318	390	486	180	180	180	138	210	306
BOATS LAUNCHED									
Number of Boats	28.2	35.0	44.7	23.7	28.8	35.9	4.5	6.2	8.8
Number of Launchings	846	1050	1341	711	864	1077	135	186	264

* Based on Tables R9-108, R9-116, and R9-122 in "Great Lakes Basin Framework Study: Appendix R9, Recreational Boating," Great Lakes Basin Commission, 1975. Note: Table R9-108 also contained projections for counties in New York State and Pennsylvania bordering on Lake Erie. It was estimated that 30 percent of these projections applied to Niagara County which borders on Lake Ontario.

inventory, is not represented in Tables 2 and 3.

1.5.2 St. Lawrence - Eastern Ontario Commission

The St. Lawrence - Eastern Ontario Commission reports estimates of boating facilities required to support the salmonid fishery in their publication, "Supportive Facilities and Services Plan for the Eastern Lake Ontario Salmonid Fisheries Program." They are based on estimates of the number of fishermen expected within their study area. Estimates of number of fishermen were based on data from the Michigan salmonid program. The number of fishermen in Michigan and New York State are compared in Table 4.

Based on an average of six angler days per fisherman, the Commission estimated 945,000 angler days will be expended in New York State when the fishery program becomes fully developed. Of these 945,000 angler days, the Commission projected that 615,000 angler days would be expended in their study area. Design day requirements were based on 2% of the projected total annual use (New York State Office of Parks and Recreation). As a result, 12,300 fishermen were projected to use the lake on any one day.

Based on the earlier experience of Michigan, a boat fisherman to shore fisherman ratio of 3:1 and an average of 2.5 fishermen per boat were used. On this basis, 9,225 anglers were expected to fish from 3,690 boats under design day conditions. Assuming the majority of these to be launched and recovered daily, the Commission suggested that 32 additional simultaneous launchings be provided in the three counties of Cayuga, Oswego, and Jefferson.

1.5.3 Niagara County Fisheries Advisory Board

Projections of number of fishermen were made by the Niagara County

TABLE 3

*Existing and Future Small Boat Fleet Using Lake Ontario (thousands)

Lake Ontario	1968	1980	2000	2020
Number of Boats				
Resident	27.0	31.8	39.0	49.9
Non-Resident	5.6	7.0	8.6	11.1
Total	32.6	38.8	47.6	61.0
Composition				
< 12 feet (32.0%)	10.4	12.3	15.2	19.5
12 - 20 feet (63.0%)	20.5	24.1	30.0	12.3
20 - 30 feet (4.0%)	1.3	1.6	1.9	2.4
30 - 40 feet (0.7%)	0.2	0.3	0.3	0.4
> 40 feet (0.3%)	0.1	0.1	0.1	0.2

* From Tables R9-109, R9-117, and R9-124 in "Great Lakes Basin Framework Study: Appendix R9, Recreational Boating," Great Lakes Basin Commission, 1975. Values shown in this table were obtained by adding 18% of the values in Table R9-109, 60% of Table R9-117, and 20% of Table R9-124.

TABLE 4

*Number of Fishermen in Michigan and New York State

Category	Michigan	New York State
Total State Population	8,875,000 (1970)	18,190,000 (1970)
Total Resident Fishing Population	1,800,000 (1971)	3,500,000 (1970)
Number of Licensed Fishermen	1,100,000 (1971)	875,000 (1970)
Number of Salmon and Trout Fishermen	200,000 (1971)	157,000 **

* From "Supportive Facilities and Services Plan for the Eastern Lake Ontario Salmonid Fisheries Program," St.Lawrence - Eastern Ontario Commission, 1975.

** St. Lawrence - Eastern Ontario Commission projection.

Economic Development and Planning Department using population projections and number of currently licensed fishermen. All fishermen were included in the projections (salmonid fishermen were not singled out). Angler day demand was based on 5, 10, and 18 (National average) days per fisherman. These projections are illustrated in Table 5.

TABLE 5

*Projection of Fishermen and Angler Day Demand in Niagara County

	1970	1975	1980	1985	1990
Over-all Population	235,720	237,460	239,240	243,255	250,675
Population(Age 15 to 69)	151,497	155,478	165,090	166,424	166,721
Licensed Resident Anglers	17,322	26,539	42,739	47,013	57,014
% Over-all Population	7%	11%	18%	19%	23%
% Age 15 to 69	11%	17%	26%	28%	34%
Possible Licensed Angler Day Demand					
A) 5 per angler	86,610	132,695	213,695	235,065	285,070
B) 10 per angler	173,220	265,390	427,390	470,130	570,140
C) 18 per angler	311,796	477,702	769,302	846,234	1,026,252

* From "Sport Fishing," Niagara County Fisheries Advisory Board, 1975.

1.6 The Inventory

This inventory of Lake Ontario inlets and harbors was conducted to determine the capacities and services of existing boating facilities and to investigate sites for future expansion. The undeveloped inlets, with possibilities of being developed, and harbors included in this report were visited during one of several field trips between September 1975 and May 1976. Based on the information gathered, both through the inventory and the literature, recommendations for expansion of existing facilities or construction of new facilities and locations are discussed in Chapter X.

Boating facility services and capacities inventoried were number of slips (moorings), parking space available, launching ramps, gas, diesel

fuel, boat rentals, winter storage, sanitary pumpouts, hoist launches and repair facilities. A survey of marina and yacht club owners or operators was also conducted. This survey requested the number of boats moored in four size ranges 1) 0-12 feet, 2) 12-18 feet, 3) 18-25 feet, and 4) 25 feet and up. These size ranges were chosen for several reasons. Craft less than 12 feet long are small enough to be launched without the aid of a launching ramp and should not require mooring space. Boats from 12 to 25 feet long are trailerable and require launching sites, although a certain percentage are moored. Boats greater than 25 feet long are difficult to trail and are probably moored permanently during the boating season. The range from 18-25 feet was chosen, because boats of this length can weather slightly rougher lake conditions than boats in the 12-18 foot range.

In an attempt to determine present demand for mooring and/or docking space, the marina and yacht club owners were asked to estimate the number of additional slips or moorings they could rent if available. These estimates were also broken into the four size ranges previously discussed. Finally, they were asked to estimate the number of times per week their launching ramp is used. This information will be valuable in determining the need for additional launching sites.

Basic dimensions of the features characteristic to each inlet and harbor are presented. These features include embayments, barrier beaches, outlet channels, and protective structures. A sketch of each inlet or harbor is provided to illustrate these features and their dimensions. Even though the detailed characteristics of the undeveloped inlets are continually changing due to wave action and other hydrologic activities, these sketches provide good representations of the general features. Depth measurements were taken with either a Raytheon depth sounder or a survey rod. Dimensions for the federally maintained harbors were taken from the

literature (Department of the Army 1976). Measurements for the remaining inlets were taken during the field trips.

Other inlet characteristics were also noted in the inventory. These included ease of access by land, land ownership, local topography, and wildlife and fish habitats. These factors play an important role in the developm nt or expansion of boating facilities.

The inventory covers the southern Lake Ontario shoreline and includes the counties of Niagara, Orleans, Monroe, Wayne, Cayuga, Oswego, and Jefferson. The inventory begins at the Niagara River in Niagara County and ends at Stony Creek in Jefferson County. Descriptions of the shoreline, inlets, and boating facilities for each county are presented in seperate chapters. An inventory summary is presented in Chapter IX for all counties combined and each county separately.

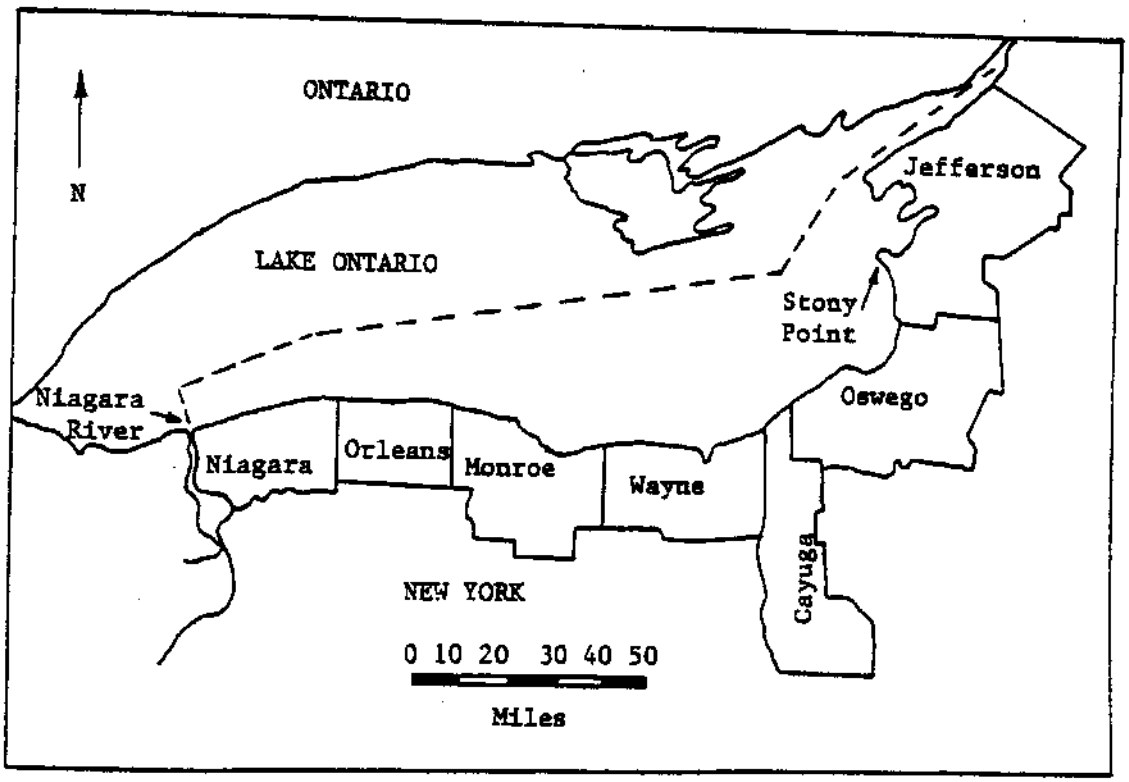


Figure 5: The inventory area.

CHAPTER II

NIAGARA COUNTY

Niagara County is bounded on the west by the Niagara River, on the east by Orleans County, and on the north by Lake Ontario. The majority of its 34.4 mile shoreline is characterized by bluffs ranging from 30 to over 60 feet in height. Narrow gravel beaches border these bluffs and are, generally, not subject to critical erosion. The predominant wind and wave directions are from the west and northwest. This causes a predominately eastward littoral transport east of Eighteenmile Creek, but to the west of this point the direction varies. Inlets and harbors of Niagara County include: Niagara River, Fourmile Creek, Sixmile Creek, Twelvemile Creek, E. Branch Twelvemile Creek (Wilson Harbor), Hopkins Creek, Eighteenmile Creek (Olcott Harbor), Keg Creek, and Golden Hill Creek.

2.1 Niagara River

The Niagara River flows from Lake Erie to Lake Ontario (average flow: 202,000 CFS) and forms part of the boundary between Ontario, Canada and New York State. Below Niagara Falls (Lower Niagara River), approximately 70% of the land on the New York side is publicly owned and provides some access for boaters and fishermen. The Lower Niagara River is a natural inlet to Lake Ontario and provides a relatively safe harbor of refuge when the lake becomes rough.

There are several boating facilities on the Lower Niagara River, including two marinas and a yacht club. Each is listed here with a

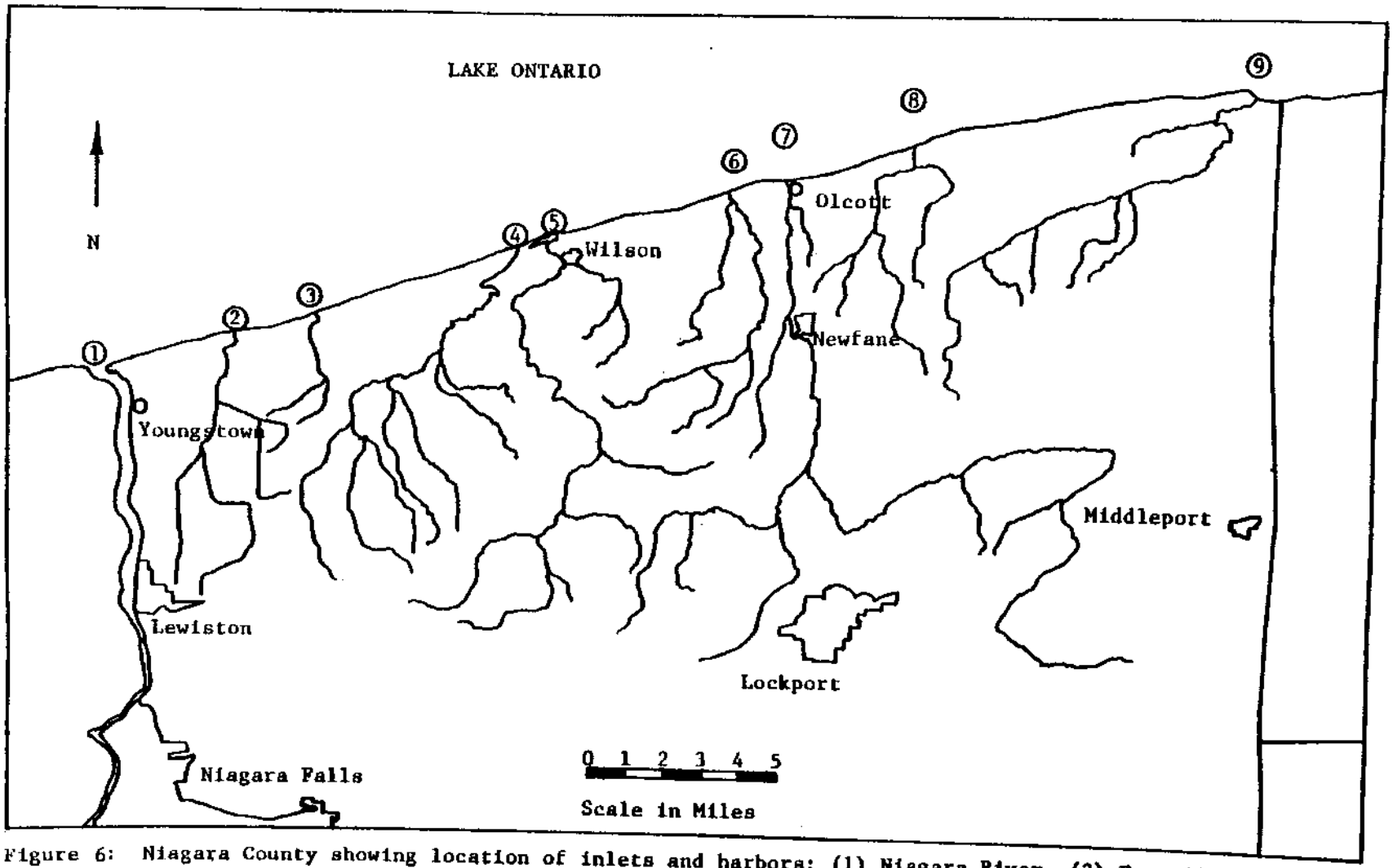
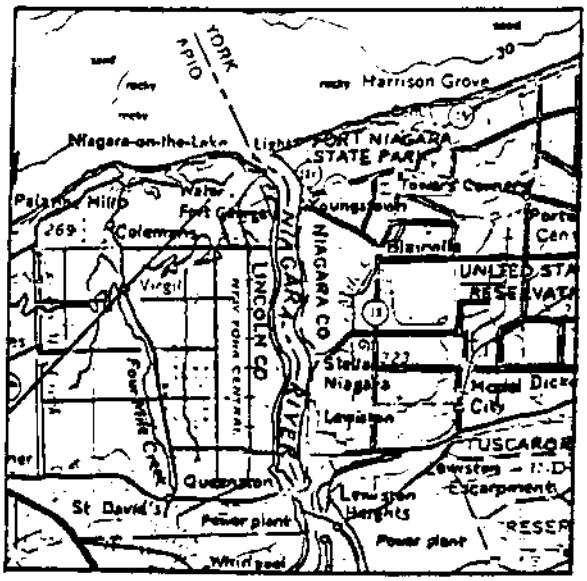


Figure 6: Niagara County showing location of inlets and harbors; (1) Niagara River, (2) Fourmile Creek, (3) Sixmile Creek, (4) Twelvemile Creek, (5) E. Branch Twelvemile Creek (Wilson Harbor), (6) Hopkins Creek, (7) Eighteenmile Creek (Olcott Harbor), (8) Keg Creek, (9) Golden Hill Creek.

description of its services and capacities. Launching ramp locations on the river are shown in Figure 7.



The Lower Niagara River
(Scale 1:250,000)

Fort Niagara State Park: This state operated launching ramp is new and appears to be the best facility on the Lower Niagara. It possesses excellent potential for expansion with good access from local roads and abundant parking space.

Pierce Marine Corporation: Pierce Marina presently rents 110 slips and moorings, 10 for boats 0-12 feet long, 25 for boats 12-18 feet long, 35 for boats 18-25 feet long, and 40 for boats longer than 25 feet. The owner has indicated, however, that 35 more could be rented, if available. The marina doesn't rent boats or operate a launching ramp. Its primary services include parking for about 40 cars, gas, a hoist launch, and winter storage.

Youngstown Boat Company: The Youngstown Boat Company is a supply store for boat hardware, clothing, etc. and has no moorings or slips for rent.

Youngstown Yacht Club: The Youngstown Yacht Club has 150 moorings allotted, primarily to sailboats over 25 feet long. Parking for 75 cars and a hand launch sailboat ramp are provided for its members.

Village of Youngstown: The village operates a launching ramp, but its use is limited due to inadequate parking space. As a result, the site has little potential for future expansion.

Lewiston Marina: Lewiston Marina rents 20 moorings for boats greater than

25 feet long, although the owner has indicated an additional 50 could be rented, if available. The marina provides parking for about 20 cars, gas, a hoist launch, and some winter storage.

Ridge Comber Boat Club: The club has approximately 10 slips for its members.

Village of Lewiston: The village operates a launching ramp that is also hampered by inadequate parking facilities. The site has little potential for future expansion.

Slips are nearly non-existent on the Lower Niagara River because of winter ice conditions. As a result, moorings are used. The use of moorings is fine for sailboats, but not for power boats and has caused predominately sailboat oriented activities on the river. Although there is theoretically unlimited space for moorings in the river, the character of the river bottom and the difficulty in providing ferry service to and from boats restricts their use. The major problems associated with expansion of recreational boating facilities, with the exception of Fort Niagara State Park, are local topography and parking. Access to the Lower Niagara is inhibited by its steep and high banks. Where the topography allows for access, such as Lewiston and Youngstown, parking is a major problem.

2.2 Fourmile Creek

Fourmile Creek is located 3.5 miles east of the Niagara River in the town of Porter. The land adjacent to the creek at its mouth is state owned (Fourmile Creek State Park) and is used strictly for camping. Facilities for recreational boating do not exist and, in fact, is prohibited except for occasional canoeing by campers occupying the park.

At its mouth, Fourmile Creek widens and forms an embayment approximately 400 feet wide bounded on either side by heavily wooded banks. The

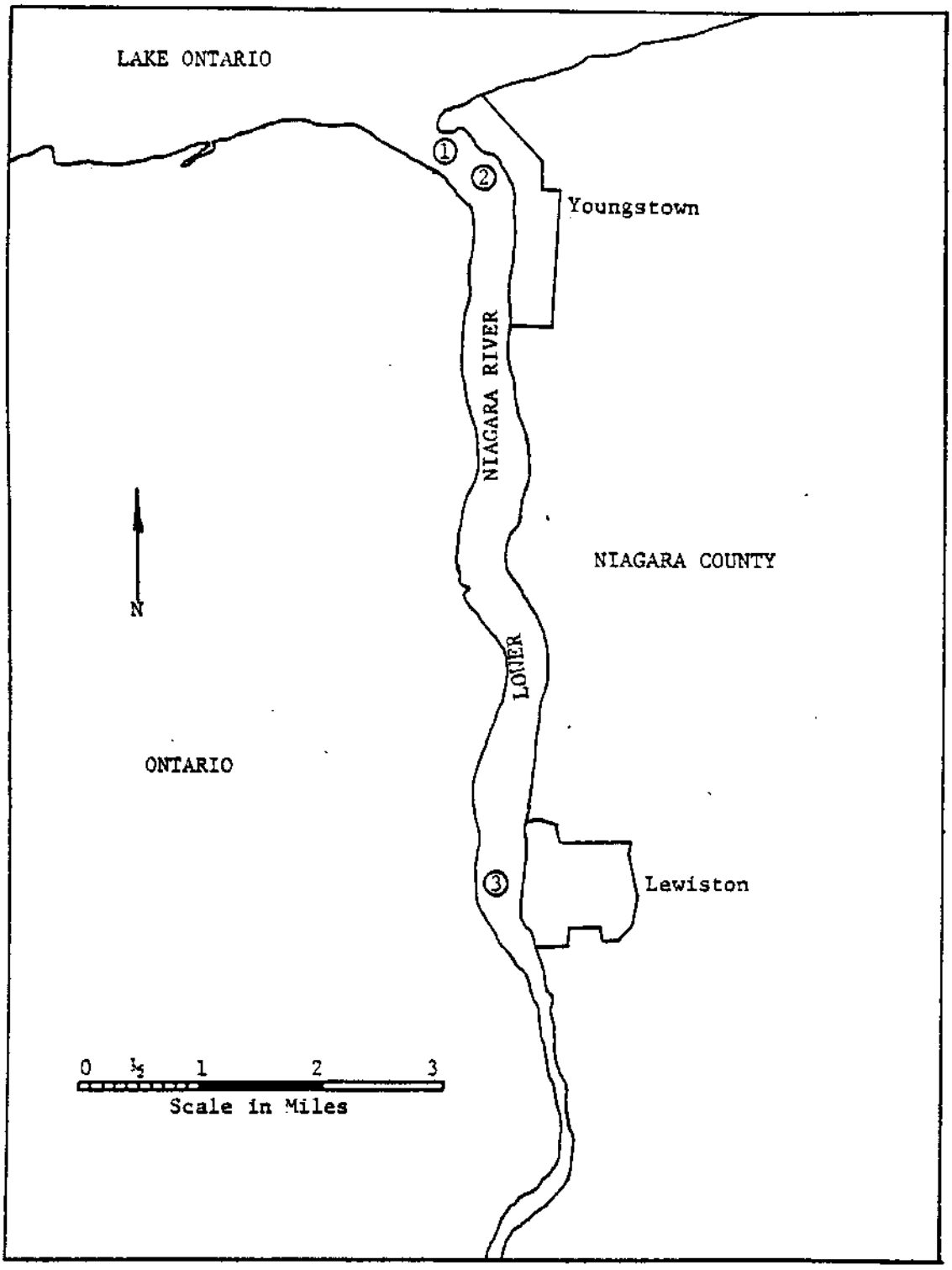
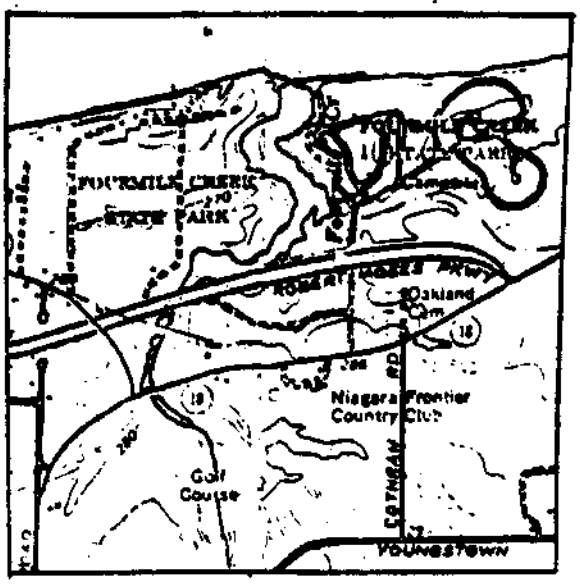


Figure 7: Lower Niagara River showing location of launching ramps; (1) Fort Niagara State Park ramp, (2) Village of Youngstown ramp, (3) Village of Lewiston ramp.

lakeshore west of the embayment is characterized by a bluff approximately 10 feet high. The embayment extends nearly 1/4 mile upstream and gradually changes to a wildlife supporting wetland. A gravel barrier beach at the creek's mouth nearly eliminates free surface flow to the lake, but an elevation difference between the creek and the lake of one foot seems to indicate some intragravel flow. The embayment ranges from 2 - 4 feet in depth.



Fourmile Creek
(Scale 1:24,000)

The barrier beach is approximately 400 feet long, averages 75 feet in width, and rises 3-4 feet above lake level. A small channel exists across the bar about 130 feet from the west bank and 270 feet from the east bank of the embayment. The upstream end of this channel is 25 feet wide and 3-4 feet deep, while the lake end is nearly 10 feet wide and filled with gravel, allowing a small outflow. Existence of the gravel bar seems to be long term as indicated by the presence of many large trees.

2.3 Sixmile Creek

Sixmile Creek is located 5.5 miles east of the Niagara River in the town of Porter. The land adjacent to the creek near its mouth is privately owned (Willow Beach Campground on west bank). Facilities for recreational boating do not exist.

Free surface flow from Sixmile Creek has been completely eliminated by a gravel barrier beach extending across its mouth. As a result, a

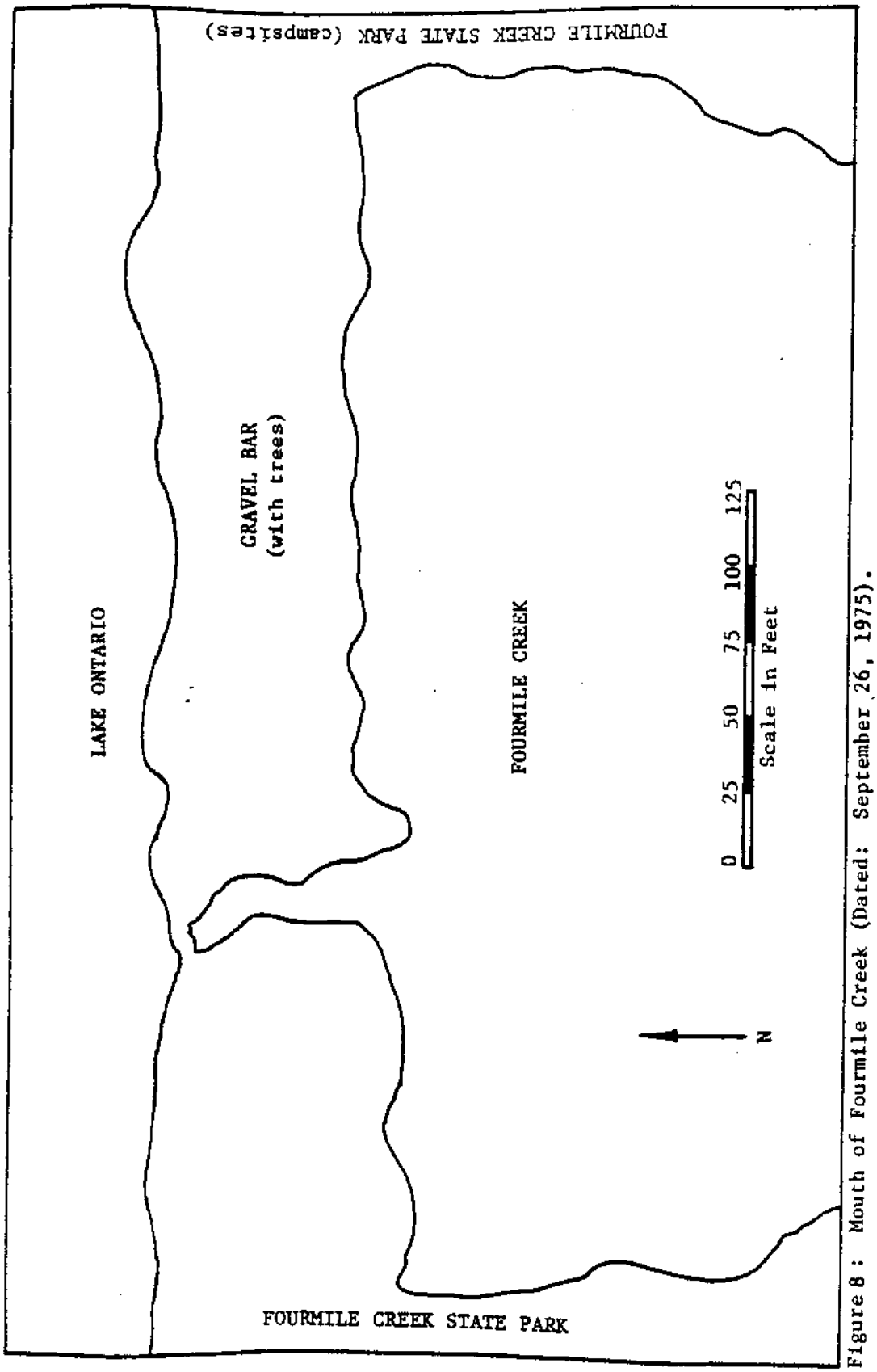
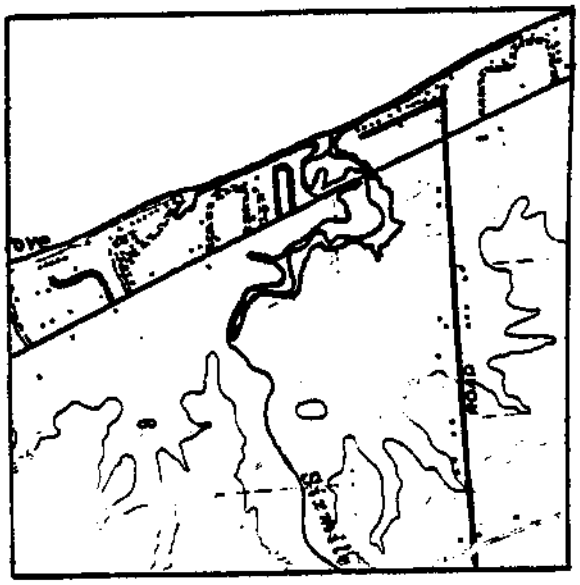


Figure 8 : Mouth of Fourmile Creek (Dated: September 26, 1975).

marshy, wildlife supporting wetland with an area of about 16 acres and a depth of 1-3 feet has been created upstream. Bluffs approximately 10 feet high characterize the lakeshore on either side of the creek.



Sixmile Creek
(Scale 1:24,000)

The barrier beach is approximately 500 feet long, averages 200 feet in width, and rises 4-5 feet above lake level. Existence of the barrier beach seems to be long term as indicated by the presence of many trees and campsites with underground water and electricity. A small channel exists across the beach approximately 150 feet from the east bank of the embayment. The upstream end of this channel is close to 25 feet wide and 2-3 feet deep and at the lake is about 40 feet wide. However, beginning at the lake, nearly 50 feet of the channel is filled with sand and gravel.

2.4 Twelvemile Creek

Twelvemile Creek is situated in the Town of Wilson about 7 miles west of Olcott Harbor. The land on the eastern side of the creek at its mouth is state owned (Wilson-Tuscarora State Park), while the western side is privately owned. Boating facilities do not exist except for privately owned docks.

The entrance channel to the lake remains open year round, is 3-4 feet deep, approximately 55 feet wide, and 110 feet long. Outflow from the creek is swift and causes onshore waves to steepen. This makes access to

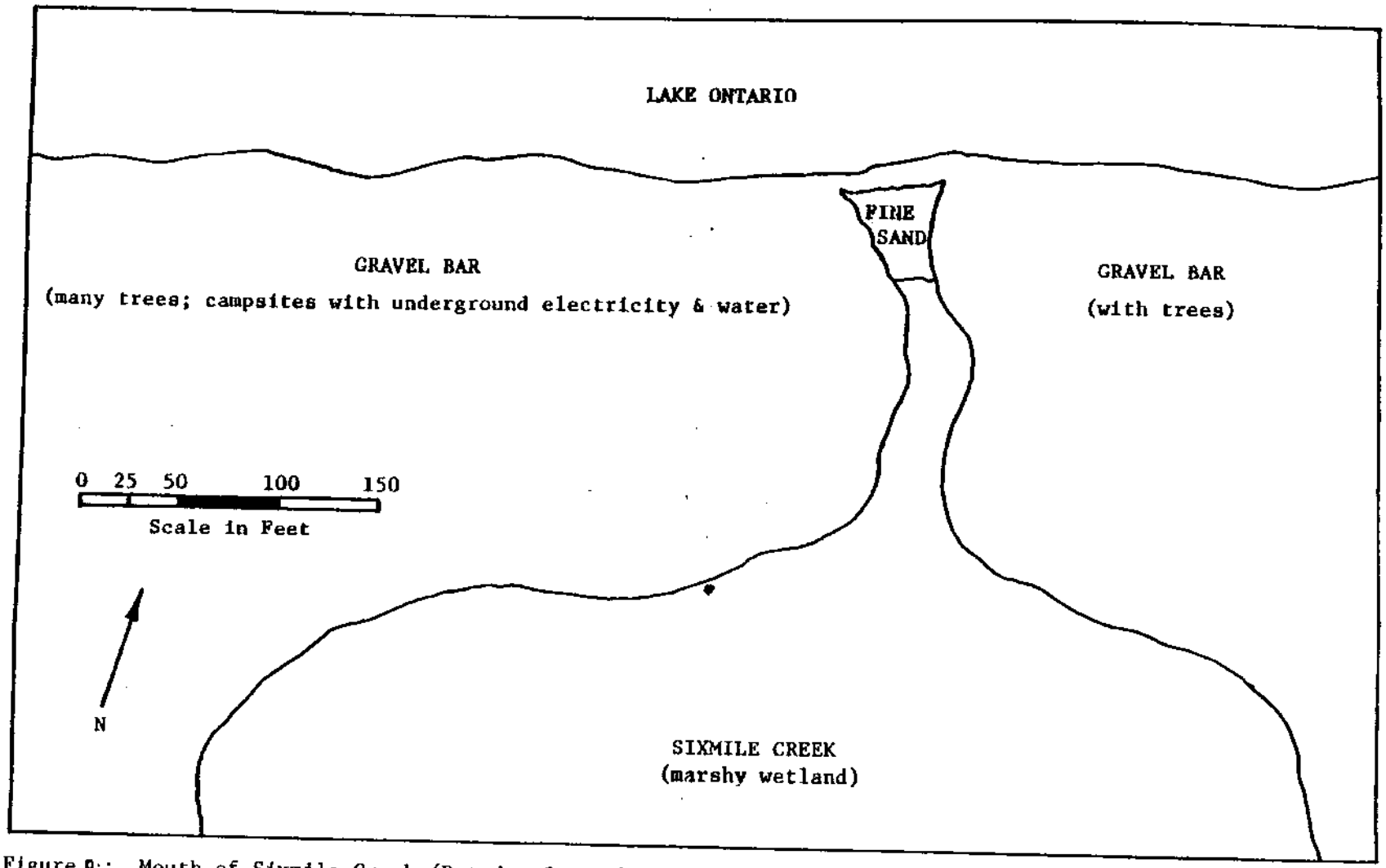
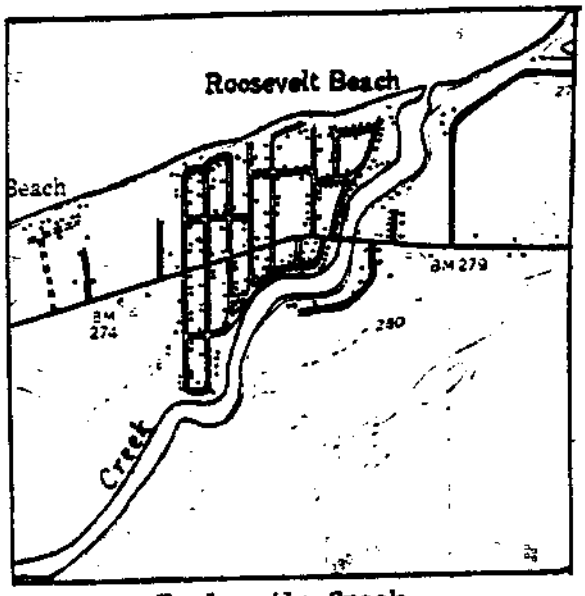


Figure 9: Mouth of Sixmile Creek (Dated: September 26, 1975).

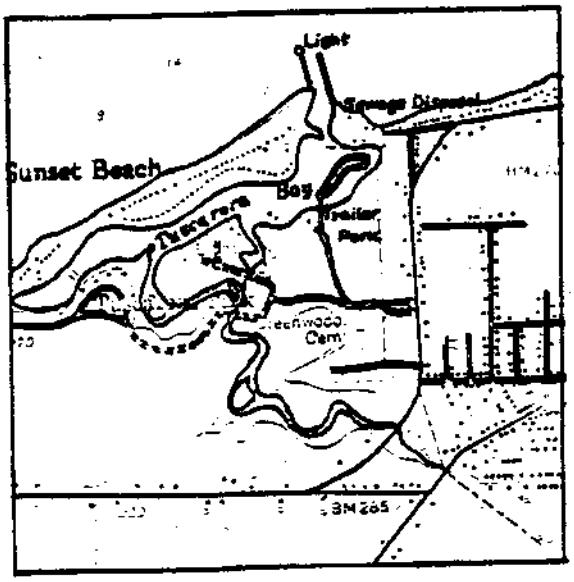
the lake or creek hazardous for small boats.



Twelvemile Creek
(Scale 1:24,000)

The entrance channel is bordered on either side by gravel bars. The eastern bar is approximately 110 feet wide, 120 feet long, and is flanked by 5-10 foot bluffs. The western bar averages 110 feet in width, 200 feet in length, and is flanked by 20-30 foot bluffs. Both bars rise 2-3 feet above lake level, are barren of foilage, and create an embayment that is calm and well protected.

2.5 East Branch of Twelvemile Creek



Twelvemile Creek
East Branch
(Scale 1:24,000)

The East Branch of Twelvemile Creek enters Lake Ontario in the Town of Wilson approximately 12 miles east of the Niagara River and 6 miles west of Eighteenmile Creek. Before entering the lake the creek forms a natural small boat harbor (Tuscarora Bay) commonly referred to as Wilson Harbor. Most of the land adjacent to the harbor is privately owned. However, the western portion is state owned (Wilson Tuscarora State Park). The harbor entrance is protected by two sheet pile, gravel filled, concrete capped federal piers each about 670 feet long. The

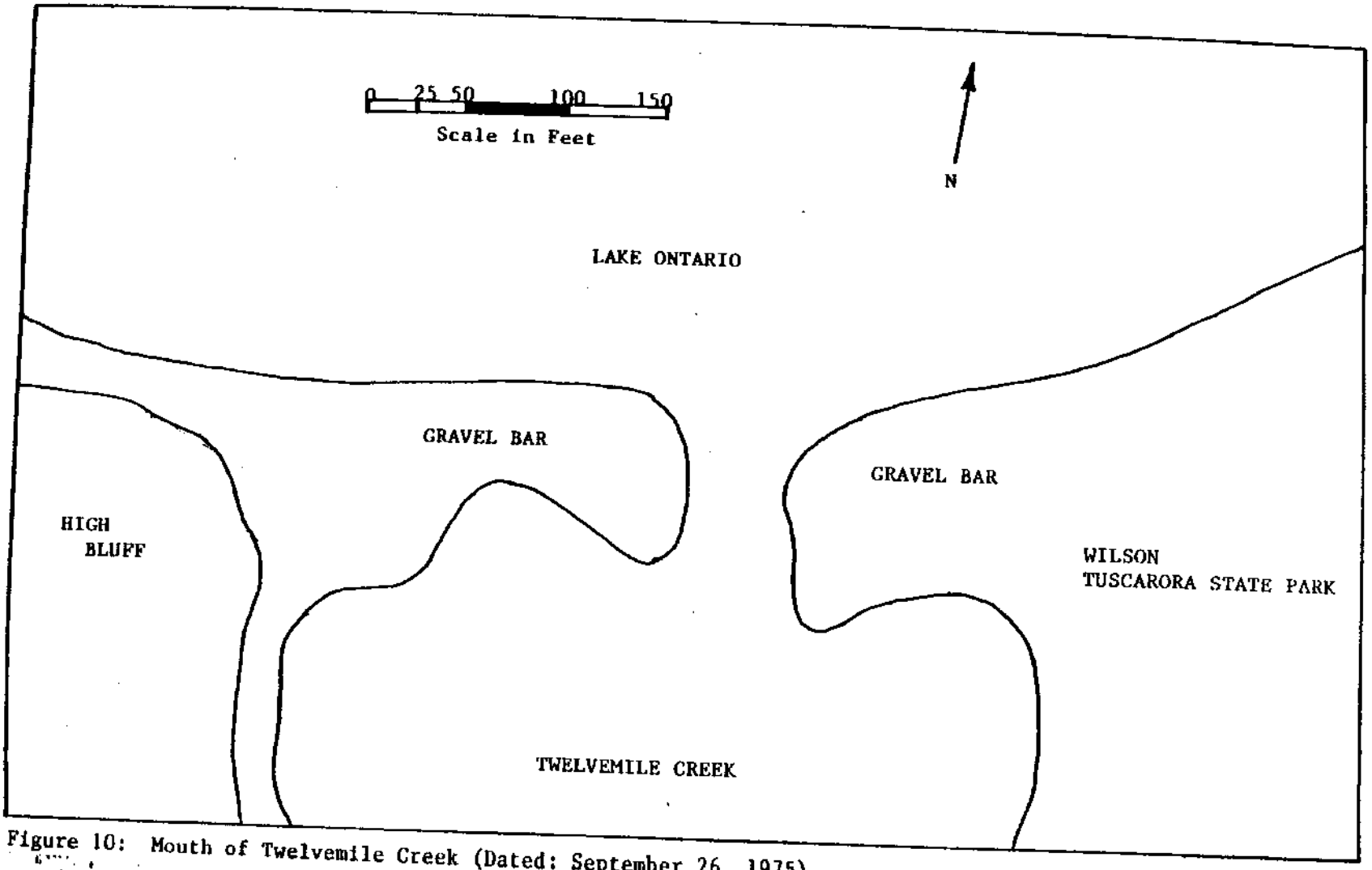


Figure 10: Mouth of Twelvemile Creek (Dated: September 26, 1975)

channel between the piers is maintained at an 8 foot depth and, since the bay is relatively shallow due to silting, a channel 6 feet deep is maintained in the bay (Figure 11).

The capacity of the privately owned portion of the harbor to support boating facilities is nearly at its upper limit. Presently, private enterprise accounts for four yacht clubs, two marinas, and three launching ramps for trailered boats. However, potential does exist for expansion of the state owned property. In fact, a launching ramp is now being proposed. Boating facilities in Wilson Harbor are listed here with some of their services. Their locations within the harbor are shown in Figure 11.

Beccue Boat Basin: The Beccue Boat Basin rents 150 slips. It provides parking for about 30 cars, gas, a hoist launch, and winter storage. The marina also operates a launching ramp for trailered boats.

Hain Yacht Club: The Hain Yacht Club provides 20 slips and parking for its members. It also provides a hoist launch and winter storage.

Tuscarora Yacht Club: The Tuscarora Yacht Club provides 80 slips for its members.

Wilson Yacht Club: The Wilson Yacht Club rents 45 slips, 5 for boats 12-18 feet long, 20 for boats 18-25 feet long, and 20 for boats longer than 25 feet. The club provides parking for about 30 cars and has no desire to expand its facilities.

Island Yacht Club: The Island Yacht Club rents its building and slips from Beccue Boat Basin.

Wilson Boathouse Restaurant: The Wilson Boathouse Restaurant docks 37 boats, 12 at 0-12 feet, 10 at 12-18 feet, and 15 at 18-25 feet. The owner has indicated that, because of the increase in fishing, 50 more slips

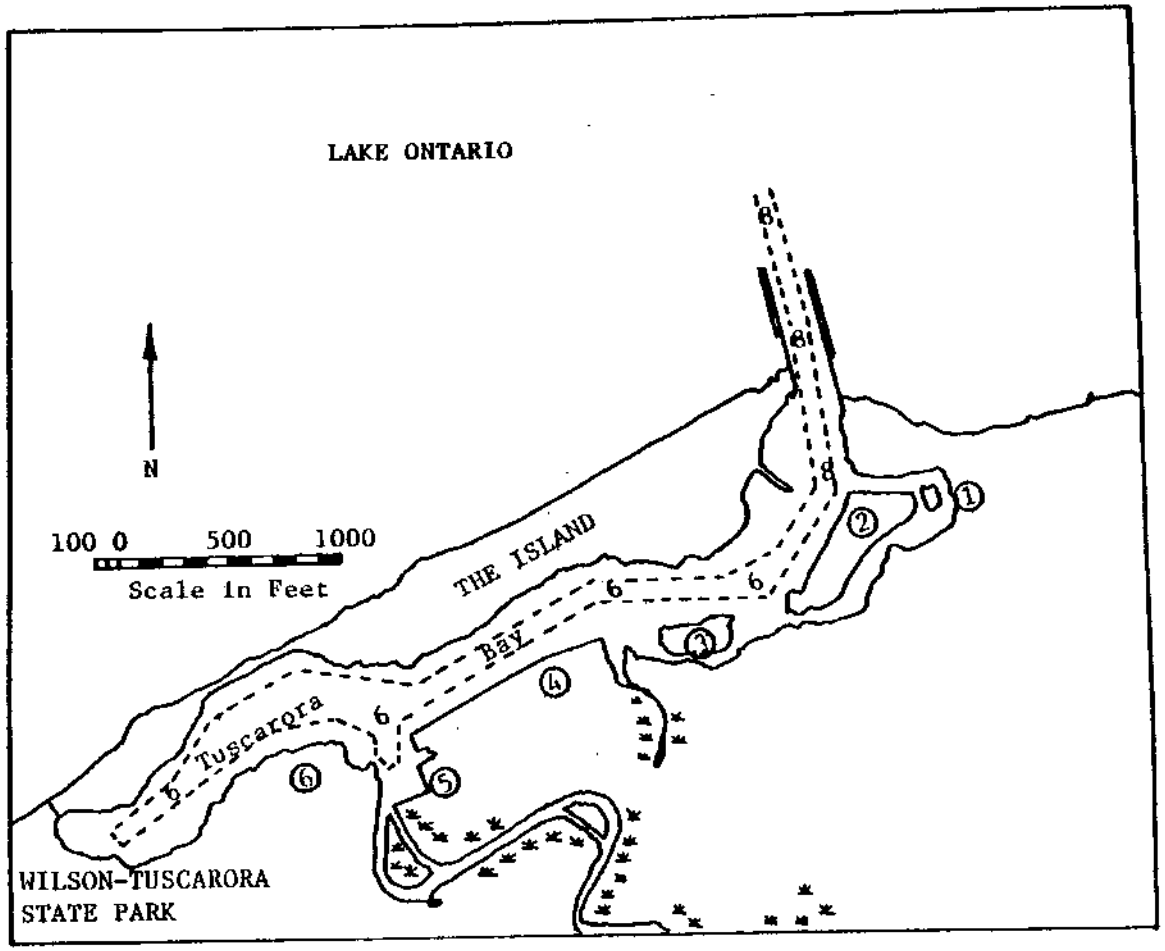
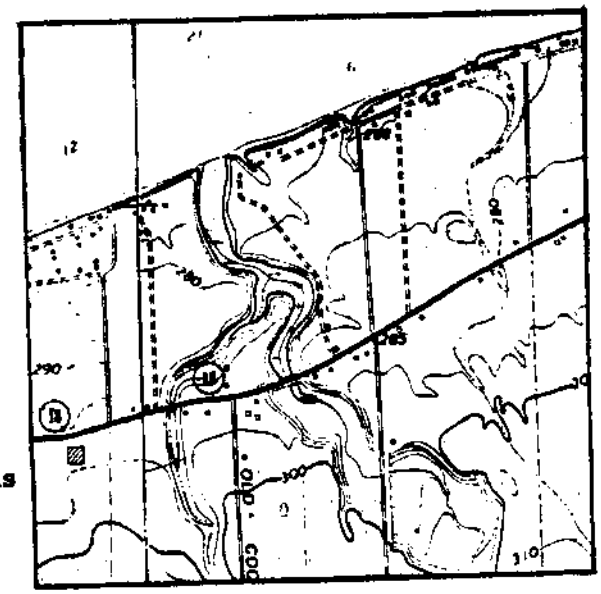


Figure 11:E. Branch Twelvemile Creek (Wilson Harbor) showing location of boating facilities; (1) Wilson Boathouse Restaurant, (2) Tuscarora Yacht Club, (3) Wilson Yacht Club, (4) Island Yacht Club, (5) Beccue Boat Basin, (6) proposed site for state owned boat launch. (Dated: December 7, 1974).

could be rented, if available. The Boathouse has 12 boats for rent and operates a launching ramp that is used, on the average, 200 times per week during the boating season. Gas and parking for nearly 300 cars are available.

2.6 Hopkins Creek

Hopkins Creek enters Lake Ontario about 4.5 miles east of Wilson Harbor in the Town of Newfane. Land adjacent to the creek near its mouth is privately owned. There are no boating facilities on this tributary.



Hopkins Creek
(Scale 1:24,000)

Free surface flow from Hopkins Creek to Lake Ontario has been eliminated by a sand and gravel barrier beach. The beach averages 60 feet in width, is about 300 feet long, and rises 2-3 feet above lake level. The barrier beaches' presence has caused a shallow, marshy embayment to form that extends nearly 1/4 mile inland. The embayment banks are 5-10 feet high near the lake, but increase to 15-25 feet, 800 feet inland. The embayment is 1-2 feet deep and provides a possible wildlife habitat.

2.7 Eighteenmile Creek

Eighteenmile Creek enters Lake Ontario approximately 6 miles east of Wilson Harbor in the Town of Newfane and is commonly referred to as Olcott Harbor. It is basically considered a harbor of refuge; however, some boating facilities are provided through private enterprise. Present-

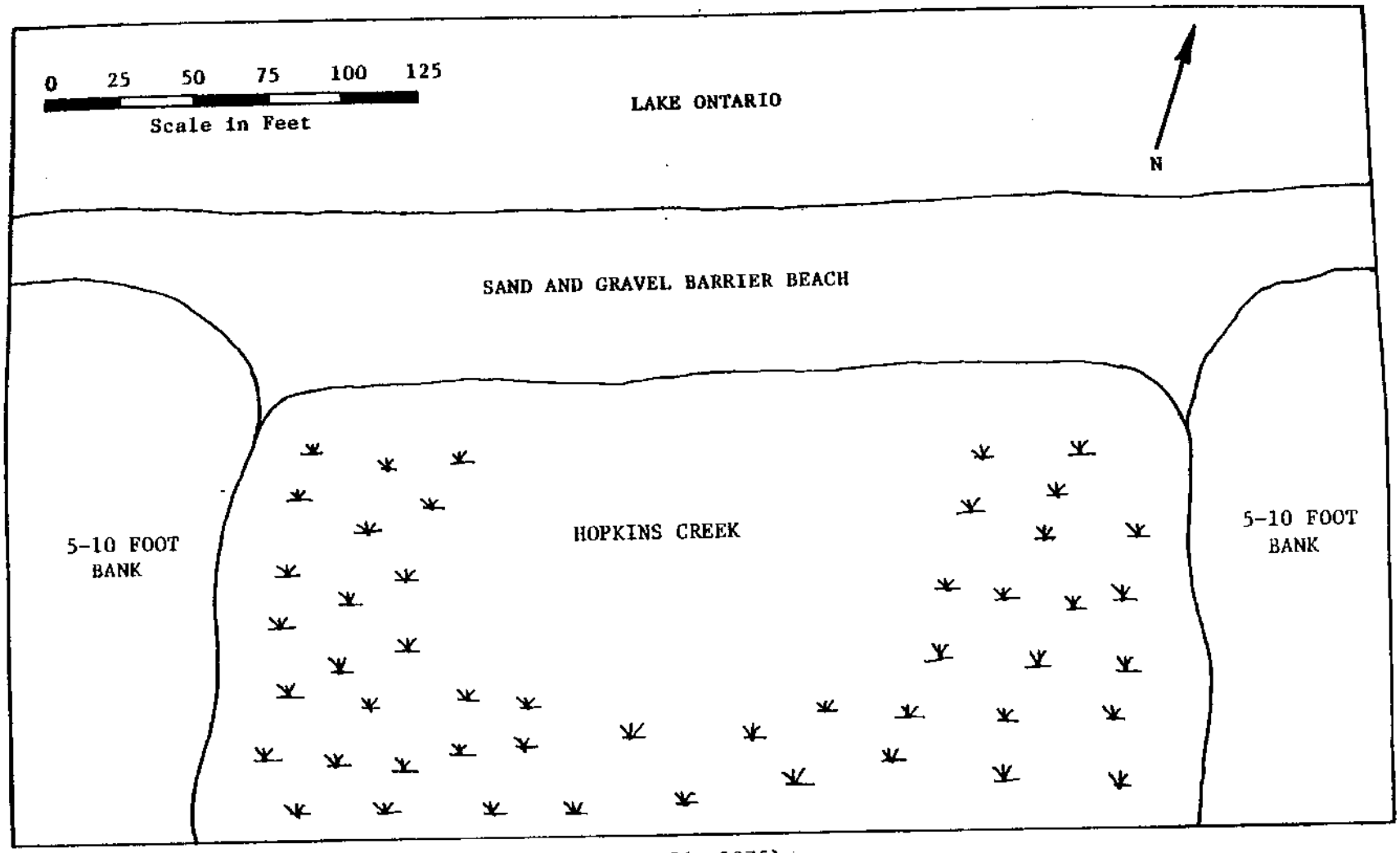
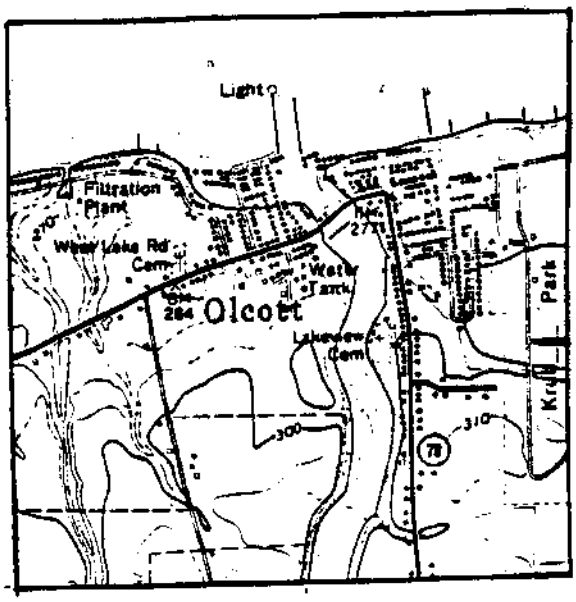


Figure 12: Mouth of Hopkins Creek. (Dated: Sept. 26, 1975)

ly, the entrance is protected on either side by two sheet-pile, gravel filled, concrete capped piers each approximately 600 feet long. The channel is maintained at a depth of 12 feet, 600 feet beyond the piers into the lake. However, a proposal has recently been submitted by the Buffalo District of the U.S. Army Corps of Engineers to add to the existing project (Figure 13). It provides for the construction of two offshore rubble-mound breakwaters to reduce the effect of swell and dredging of the creek to a depth of 9 feet 1600 feet upstream to provide adequate draft, particularly for sailboats. After being submitted an addition to the proposal was suggested (Figure 14) and, if approved, will most likely be used. This proposal will create an outer harbor suitable for boat mooring, etc.



Eighteenmile Creek
(Scale 1:24,000)

Most of the land adjacent to the creek near its mouth supports some type of boating facility. However, further upstream, accessibility to Eighteenmile Creek becomes difficult and future expansion of boating facilities in this area seems unrealistic. On the other hand, incorporation of the Corps proposal may remedy this problem by providing additional space for boat moorings and docks. Boating facilities in Olcott Harbor are listed here with their capacities and services. The locations of these facilities within the harbor are shown in Figure 13.

Hedley Boat Company: The Hedley Boat Company rents 64 moorings and sells boats and boat hardware. A hoist launch, gas, and some winter storage are also available.

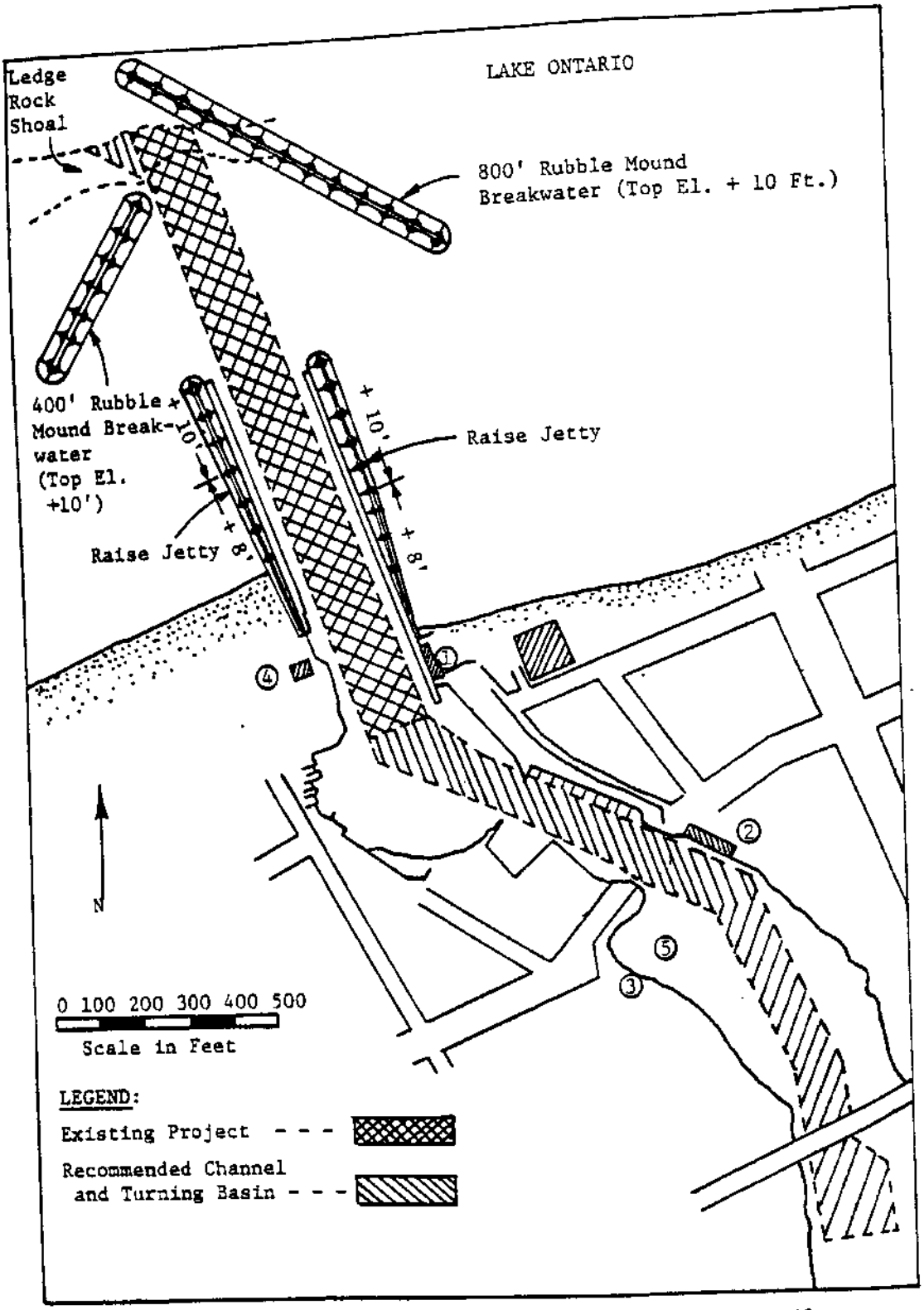


Figure 13: U.S. Army Corps of Engineers Proposal for Eighteenmile Creek (Olcott Harbor) showing location of boating facilities; (1) Hedley Boat Company, (2) McDonough Marine, (3) Town of Newfane launch ramp, (4) Olcott Yacht Club, (5) proposed location for town marina.

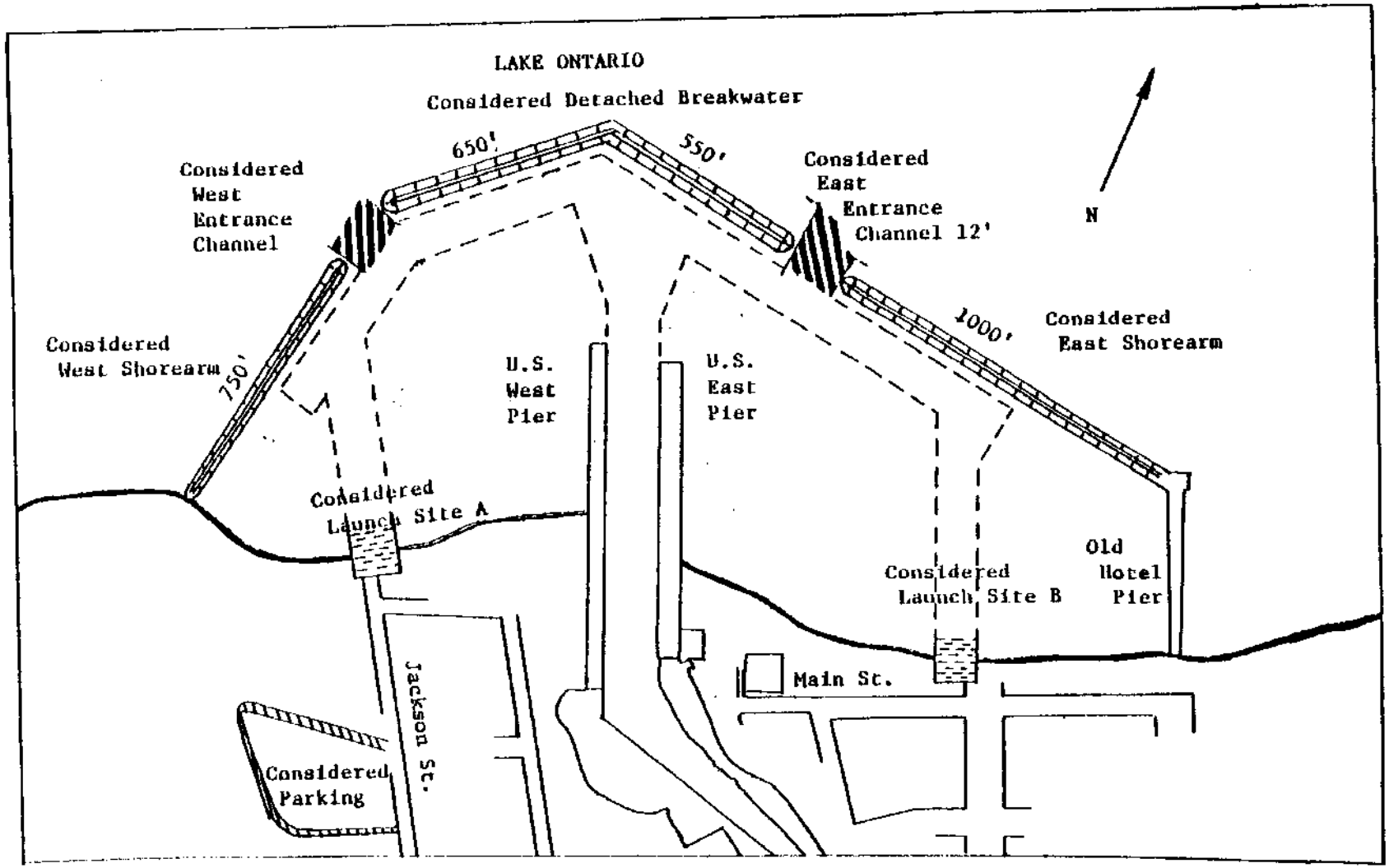


Figure 14 : Addition to Corps proposal for Olcott Harbor (see Figure 13)

McDonough Marine: McDonough Marine rents about 40 slips and moorings and has a repair facility for power boats. The marina also provides gas, a hoist launch, and some winter storage.

William Koehler: William Koehler rents only 9 slips, 2 for 12-18 foot boats and 7 for boats longer than 25 feet. He has estimated that 6 additional slips could be rented if available. Parking for about 20 cars is provided.

Olcott Yacht Club: The Olcott Yacht Club has no facilities of its own.

Town of Newfane: The town operates a launching ramp on the creek's west bank. There is parking space available for about 20 cars.

Due to the Town of Newfane's awareness of the increase in the salmoni fishery, a town marina is being proposed in the vicinity of the town launching ramp. A Federal assistance program, explicitly set up for small boat facility development, has contributed half the cost and incorporation of the proposal will require the town to absorb the other half. It is hoped that construction of the marina will aid in reducing pressure exerted by fishermen and boaters during peak periods of demand.

2.8 Keg Creek

Keg Creek enters Lake Ontario in the Town of Newfane about 3.5 miles east of Olcott Harbor. The property adjacent to the creek near its mouth is privately owned. At this point, the creek banks are very high (close to 25 feet) and steep making accessibility by land difficult As a result, no boating facilities exist.

The entrance to the lake is completely shoaled; eliminating free surface flow from the creek to the lake. The creek has formed an embayment upstream that is between one and two feet deep and provides a poss: wildlife habitat. The gravel barrier beach across the mouth is approx-

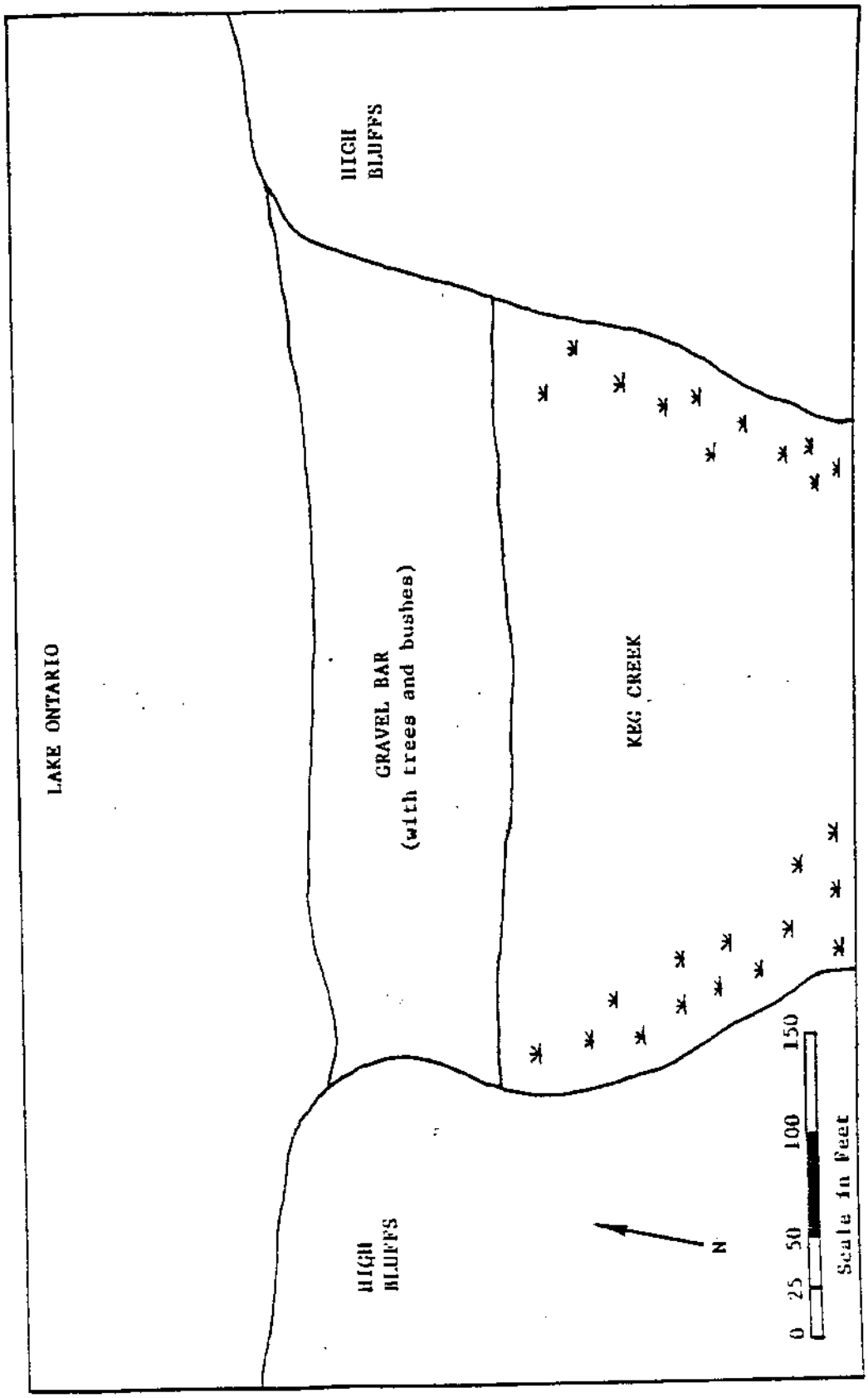
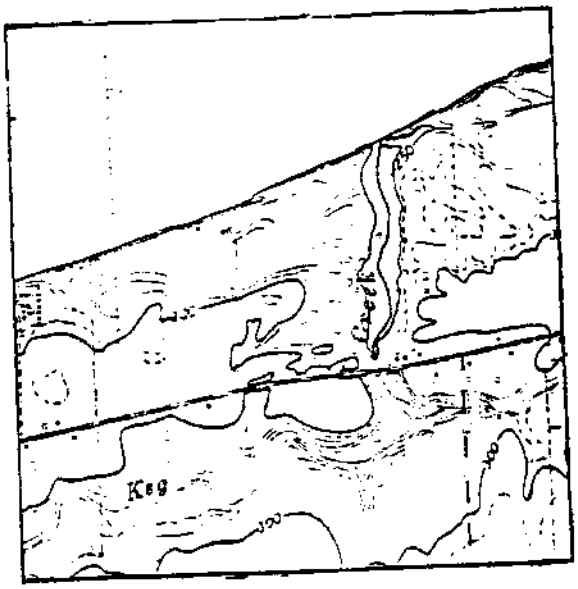


Figure 15 : Mouth of Keg Creek (Dated: September 26, 1975).

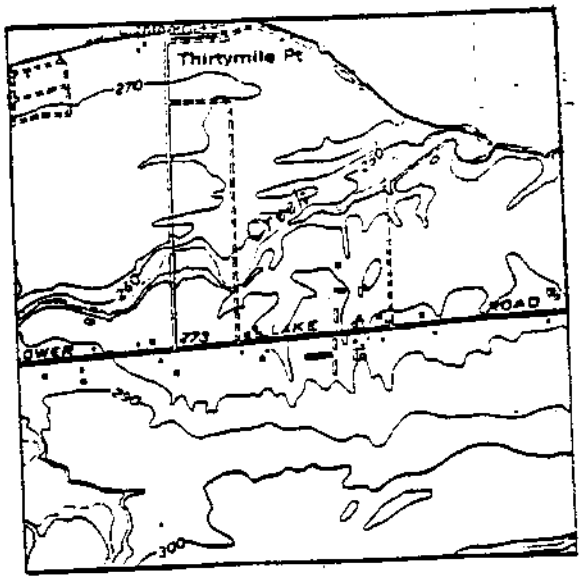
imately 400 feet long, averages 100 feet in width, and rises 3-4 feet above lake level. The presence of many trees and bushes on the bar suggests a long term existence.



Keg Creek
(Scale 1:24,000)

2.9 Golden Hill Creek

Golden Hill Creek enters Lake Ontario approximately 12.5 miles east of Olcott Harbor in the Town of Somerset. The land adjacent to the creek at its mouth is state owned (Golden Hill State Park) and has not been developed except for a few campsites west of the creek. No boating facilities exist at present, but there is considerable interest in having this site developed into a harbor of refuge. This interest has been initiated by the fact that the distance (28 miles) between Olcott and Oak Orchard Harbors is too great for boaters caught in a storm east or west of these harbors, respectively. Development of a harbor of refuge at Golden Hill would not only benefit these boaters, but could also serve as a launching site.



Golden Hill Creek
(Scale 1:24,000)

Golden Hill Creek flows parallel to the lake for about 800 feet before entering it. The creek is separated from the lake by a gravel barrier beach that is 80-100 feet

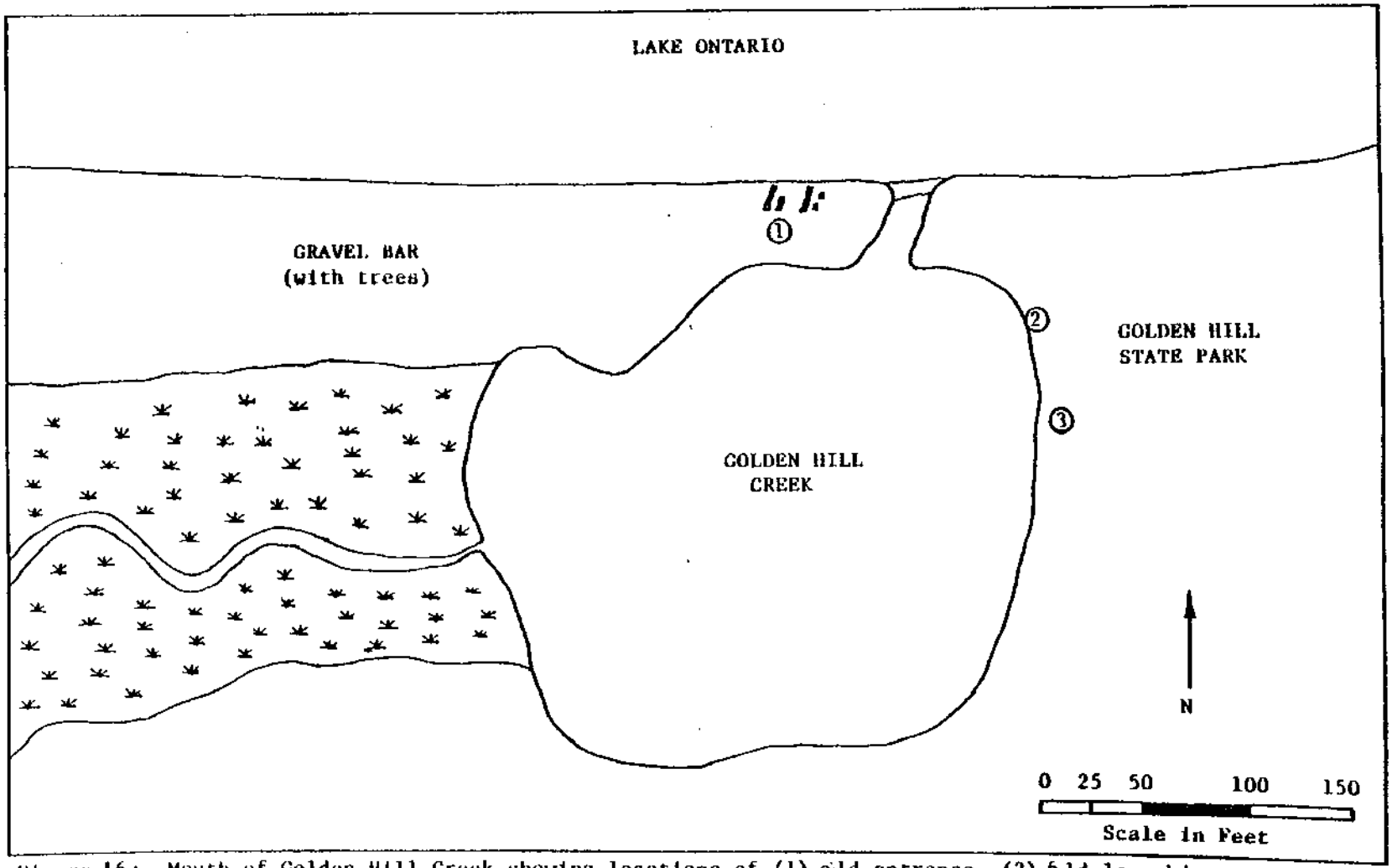


Figure 16: Mouth of Golden Hill Creek showing locations of (1) old entrance, (2) old launching ramp, (3) holding tank and electric service. (Dated: September 26, 1975).

feet wide and rises 4-5 feet above lake level. Many trees and bushes have grown on this beach and seem to indicate a long term existence. The channel connecting the lake and the creek is approximately 20 feet wide and 40 feet long. In the spring of 1975 the channel was free of sediment and 1-2 feet deep, but at the time of this inventory was completely filled in, eliminating flow to the lake. The creek has formed an embayment with an area of about 1 3/4 acres and is 4-5 feet deep. Upstream, the creek is a wildlife supporting wetland which may restrict any fast action for harbor development. The site possesses easy access by local roads and adequate parking space.

Before Hurricane Agnes, the embayment did harbor a private marina with a launching ramp, a holding tank, electricity, and about 25 slips. The slips and launching ramp have virtually vanished, but the holding tank and electric service are still intact. The entrance at that time was located about 60 feet west of the present channel and was protected by two wooden pile, stone filled jetties of which remnants still exist. Historically, an additional entrance to the lake existed about 500 feet west of the present entrance, but it has since been filled in with sand and gravel.

CHAPTER III

ORLEANS COUNTY

Orleans County is bounded on the west by Niagara County, on the east by Monroe County, and on the north by Lake Ontario. The majority of its 24 mile shoreline is characterized by 20 foot and higher glacial till bluffs. Little protection of the shoreline is provided by the narrow sand and gravel beaches that border these bluffs and, as a result, erosion occurs along the entire shoreline where unprotected. The predominant wind and wave directions are from the west and northwest and consequently a predominately eastward littoral transport results. Residential development exists over half of the Orleans County shoreline with the remainder being open space, either agricultural, undeveloped, or park land. Inlets and harbors of Orleans County include: Marsh Creek, Perch Creek, Johnson Creek, Oak Orchard Creek (Oak Orchard Harbor), and Bald Eagle Creek.

3.1 Marsh Creek

Marsh Creek enters Lake Ontario in the Town of Yates 18.5 miles east of Olcott Harbor and 8.5 miles west of Oak Orchard Harbor. The creek forms a small embayment, 2-3 feet deep, near its mouth and harbors one or two small boats. These boats and the land adjacent to the embayment are privately owned.

The creek is connected to the lake by a channel approximately 15 feet wide which, at the time of this inventory, was almost filled with sand and gravel. It is evident, however, that the channel must be open during part of the year for use by the boat owners. The

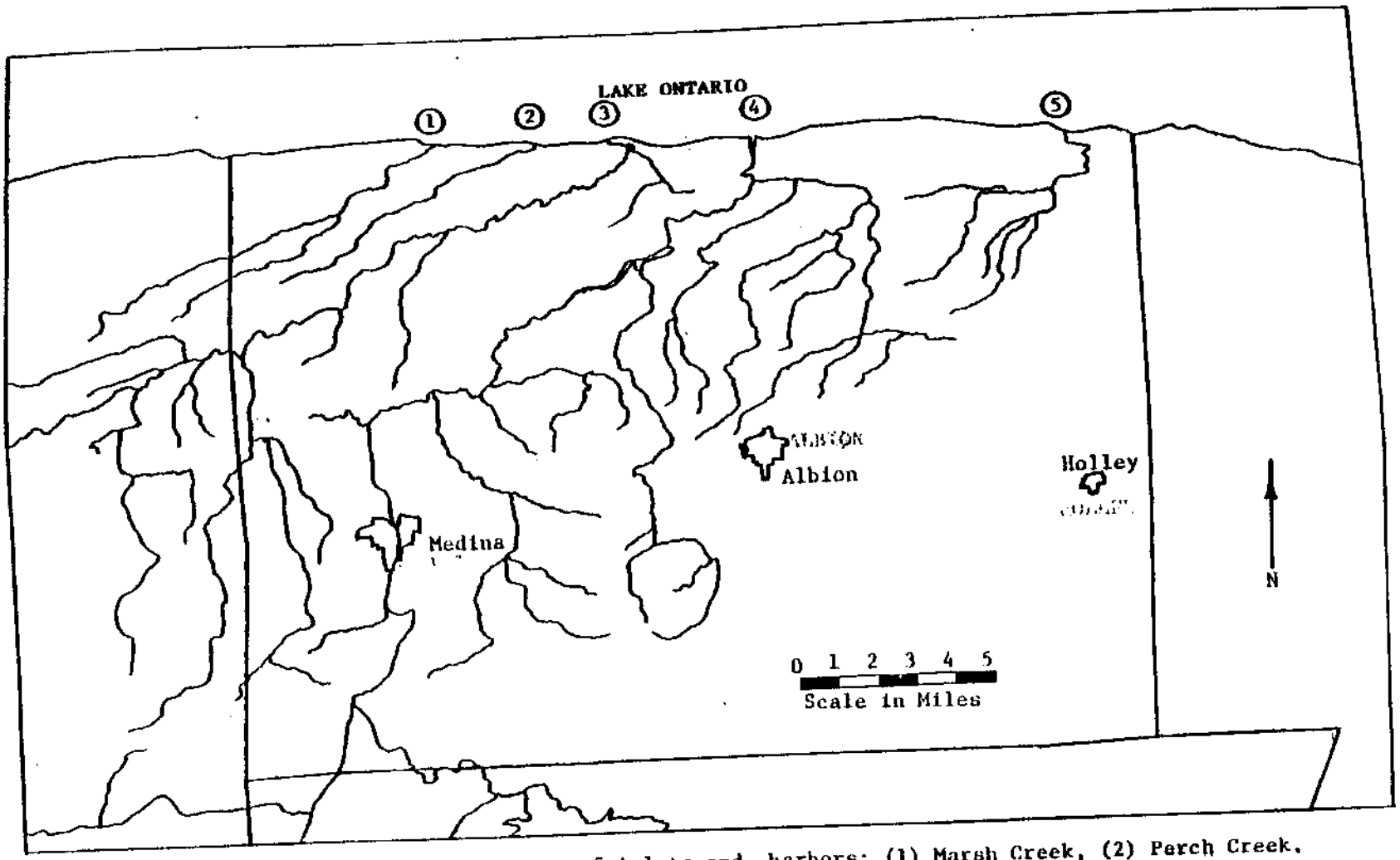


Figure 17 : Orleans County showing location of inlets and harbors; (1) Marsh Creek, (2) Perch Creek, (3) Johnson Creek, (4) Oak Orchard Creek (Oak Orchard Harbor), (5) Bald Eagle Creek.

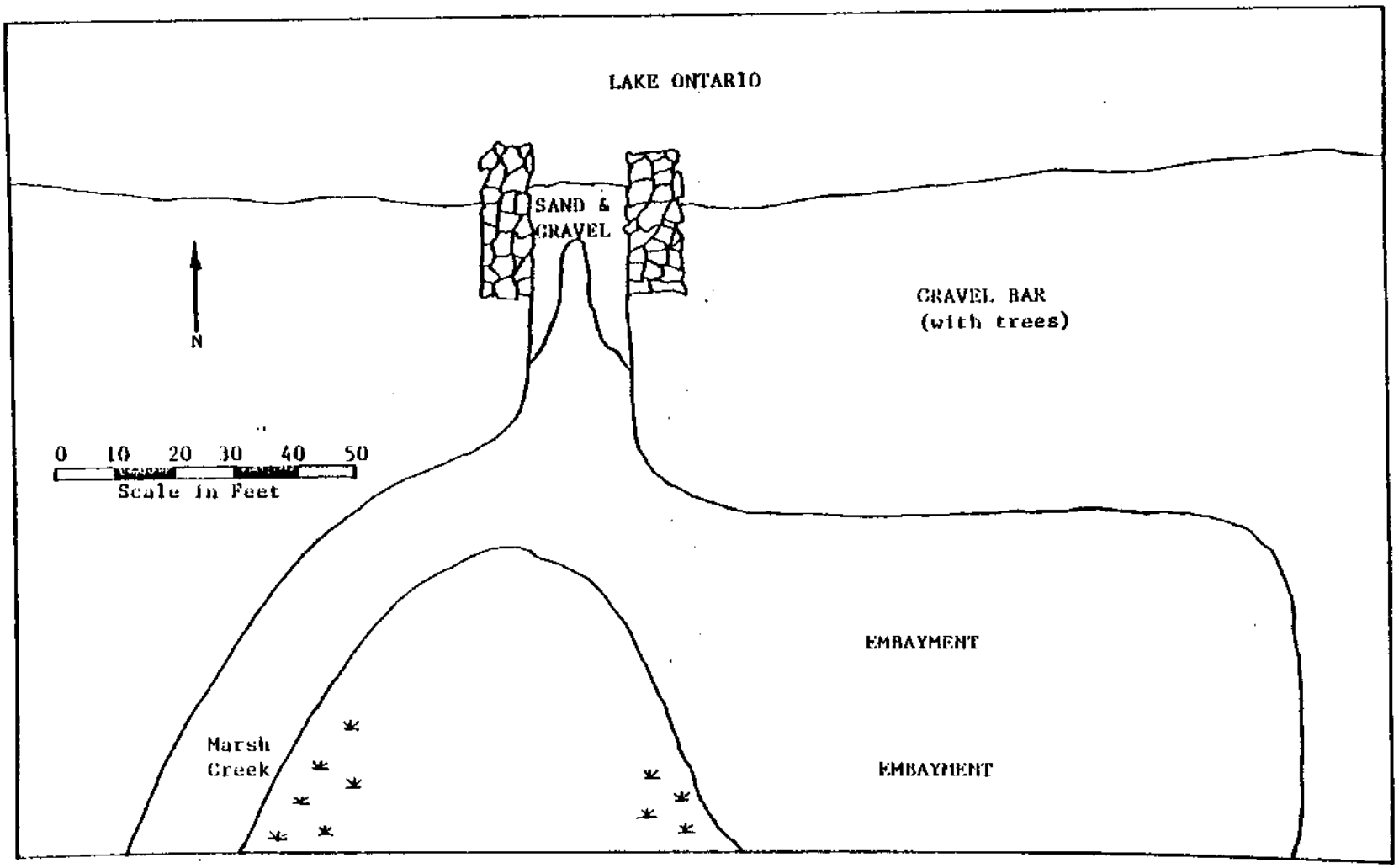
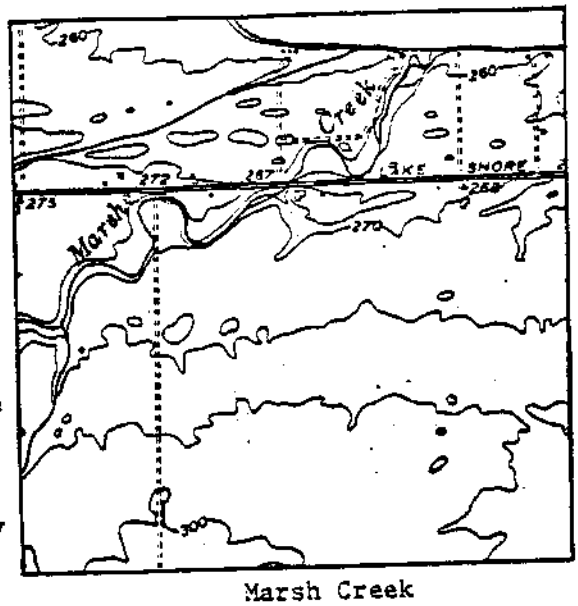


Figure 18: Mouth of Marsh Creek (Dated: October 10, 1975)

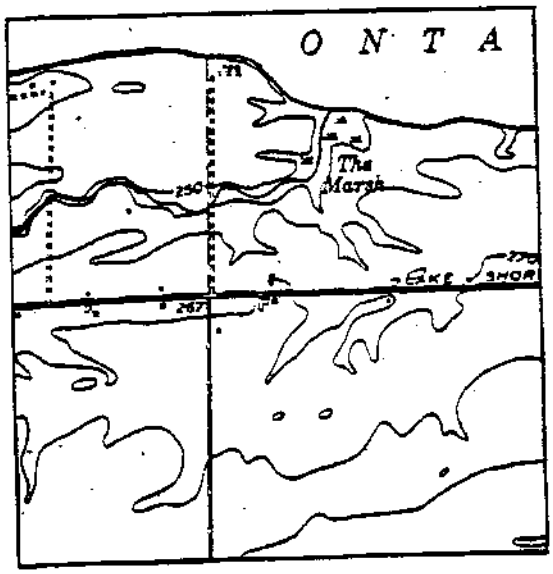
entrance is protected by two small rip-rap jetties approximately 25 feet long, 9 feet wide, and about 4 feet above lake level. A gravel bar (with some trees) approximately 50 feet wide and 100 feet long exists to the east of the channel and separates the embayment from the lake. The creek upstream from the embayment is marshy and undoubtedly a wildlife habitat.



Marsh Creek
(Scale 1:24,000)

3.2 Perch Creek

Perch Creek enters Lake Ontario in the Town of Carlton about 6 miles west of Oak Orchard Harbor. The land adjacent to the creek at its mouth is privately owned (Green Harbor) and operated as a campsite (16 acres). In addition, a man-made embayment adjacent to the creek serves as a marina for small boats.



Perch Creek
(Scale 1:24,000)

The entrance channel to the lake averages 80 feet in width and is protected by two rip-rap jetties, each approximately 125 feet long and 10 feet wide. Some of the rocks have been dislodged from their original positions and, as a result, the jetties are in much need of repair. Constant dredging is required to maintain adequate navigable depths in

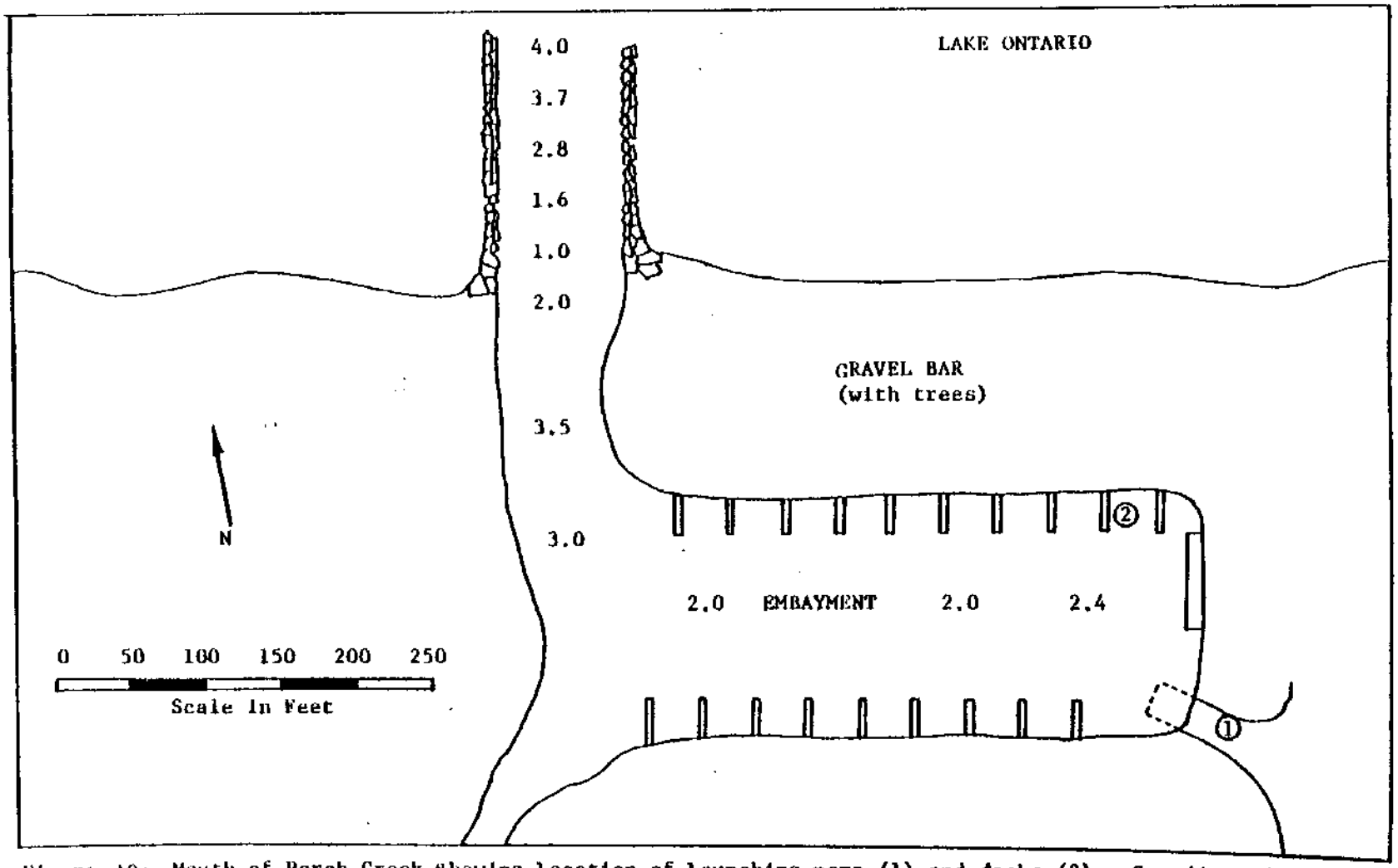


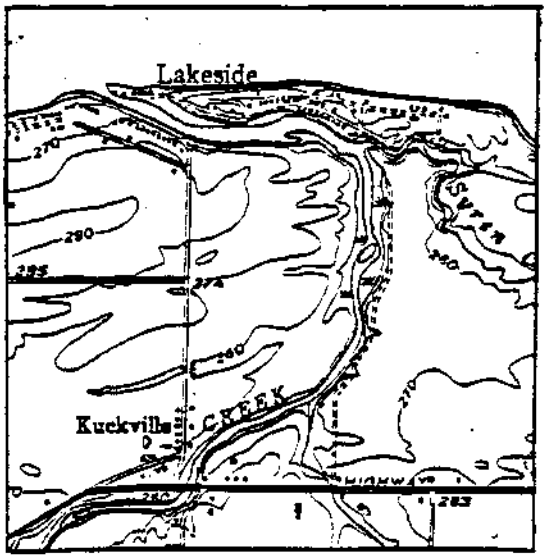
Figure 19: Mouth of Perch Creek showing location of launching ramp (1) and docks (2). Soundings (in feet) taken at time of inventory. (Dated: October 10, 1975).

the channel because of shoaling. The manager of the marina and campsite estimates the annual dredge from the entrance at approximately 1000 cubic yards at a cost of $2000. The owner, because of this cost, is contemplating closing the marina at the expiration of the present 25 year easement. The average depth in the entrance ranges from 1-3 feet and from 2-3½ feet in the embayment. Algae buildup is another problem at this inlet. The creek upstream from the embayment resembles a ditch more than a creek and is marshy.

The marina rents 42 slips for boats 14-22 feet long and has no room for expansion without costly excavation. It operates a launching ramp that is used approximately 30 times per week during the boating season. Parking for 25 cars and gas are available.

3.3 Johnson Creek

Johnson Creek empties into Lake Ontario about 4 miles west of Oak Orchard Harbor in the Town of Carlton. The land on either side of the creek at its mouth and upstream is privately owned. No boating facilities exist along the creek, except for privately owned boathouses and docks.



Johnson Creek
(Scale 1:24,000)

The entrance to the lake is about 65 feet wide, but a gravel bar (17 feet long, 14 feet wide, and 1-1/2 feet above lake level) exists in the center. This has actually created two outflows to the lake. The channel to the north is very shallow (0.5 feet deep and less), about 45 feet wide and has a

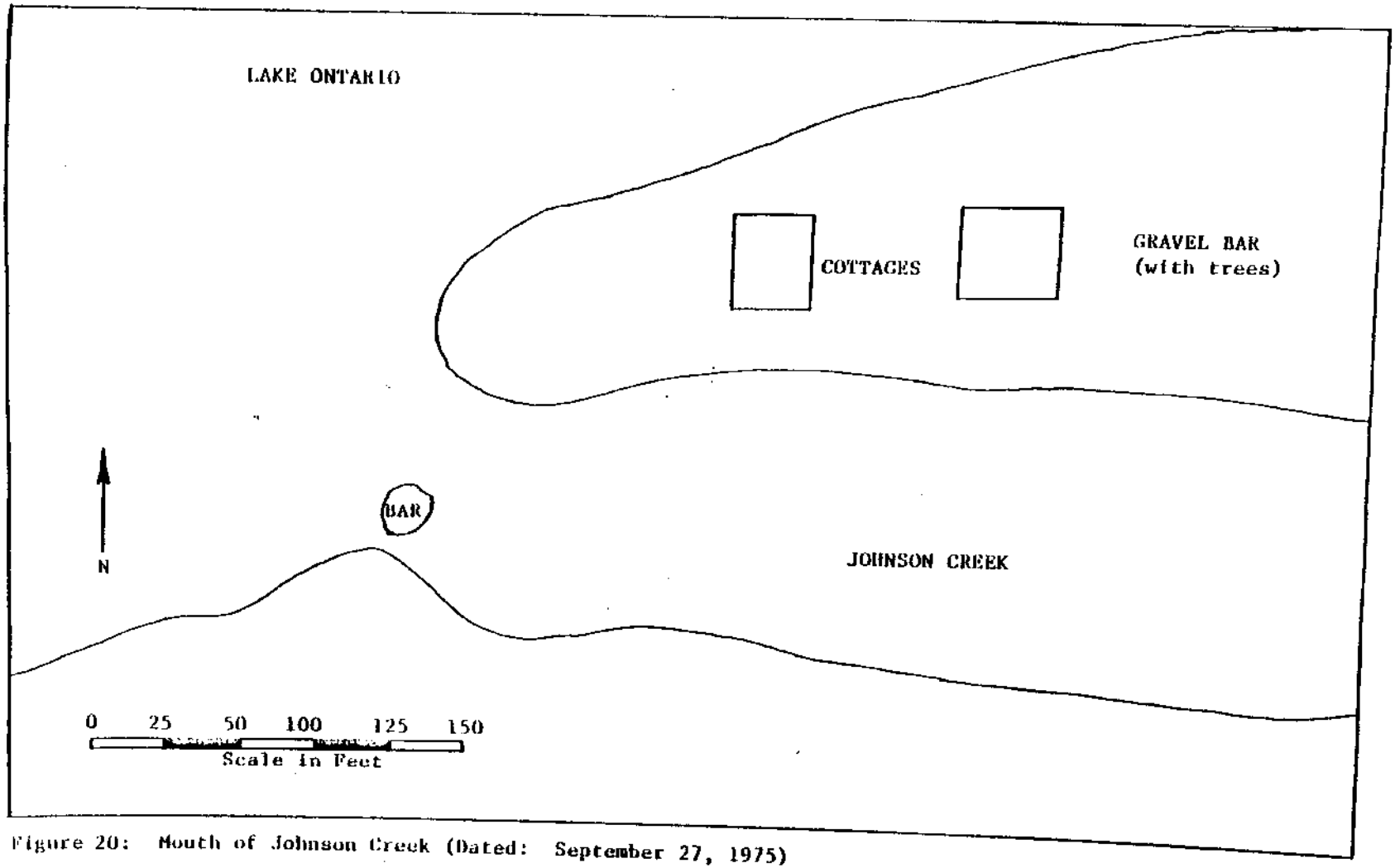


Figure 20: Mouth of Johnson Creek (Dated: September 27, 1975)

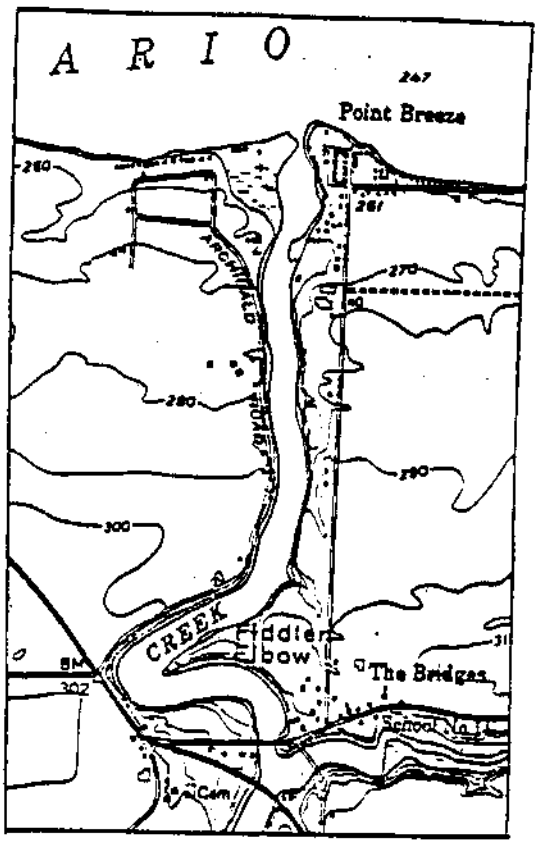
slow outflow. This channel is flanked to the east by a gravel bar that is approximately 700 feet long, averaging 150 feet in width, rises 5-6 feet above lake level, and upon which, several cottages are built. The channel to the south has a very swift outflow, is 2-3 feet deep, about 8 feet wide, and is flanked to the west by bluffs 10-15 feet high. The existence of the bar in the entrance is not permanent and access to the lake is possible at other times. However, shoaling of the entrance is a continual problem and access is usually hazardous throughout the year.

The creek possesses adequate draft for any size small boat for some distance upstream, as judged by the size range of boats on the creek. The creek bed runs essentially parallel to the lake (from west to east) for about 1/2 mile before turning southward. It is separated from the lake by a peninsula-type tract of land averaging 400 feet in width. The southern bank, along this stretch, is very high (about 20 feet) and steep making access to the creek difficult. The northern bank is just the opposite as far as access is concerned, but is heavily populated with cottages. If the entrance to the lake were protected, residents along the creek would benefit immensely as would boaters on the lake during storms. The creek would also be accessible (from the lake and possibly by land) during the spring and fall salmon runs and for fishermen who like to stream fish for pike, bass, etc.

3.4 Oak Orchard Creek

Oak Orchard Creek flows into Lake Ontario approximately 33 miles west of Rochester in the Town of Carlton. Four power stations owned by the Mohawk Power Company are located on the creek with a combined capacity of 6800 kw. The land near its mouth is both privately and publicly owned, with the community being referred to as Point Breeze. The public

property is state owned and is adjacent to the newly constructed jetties. The private property is further upstream and supports some boating facilities.



Oak Orchard Creek
(Scale 1:24,000)

The recently completed (1975 by the Corps of Engineers) entrance channel is 11,175 feet long, has an average width of 200 feet, and an average depth of 10 feet. The harbor basin (Oak Orchard Harbor), begins about 400 feet from the lakeshore, is 675 feet long, 200-240 feet wide and 8 feet deep. Protection from waves is provided by a detached breakwater (sheetpile and concrete caisson-type), about 550 feet long, 1000 feet north of and parallel to the shore and two parallel rip-rap jetties about 200 feet apart (center to center). The west and east jetty are 900 feet wide and 670 feet long, respectively, and each has a concrete walkway and guardrail atop it. Between the jetties and the detached breakwater, the remains of the old jetties have been removed and a 10 foot deep approach channel to the lake has been dredged.

There are several boating facilities located on Oak Orchard Creek, including two yacht clubs and six marinas. Each is listed below with a description of its services and capacities. The location of facilities in the harbor area are shown in Figure 21.

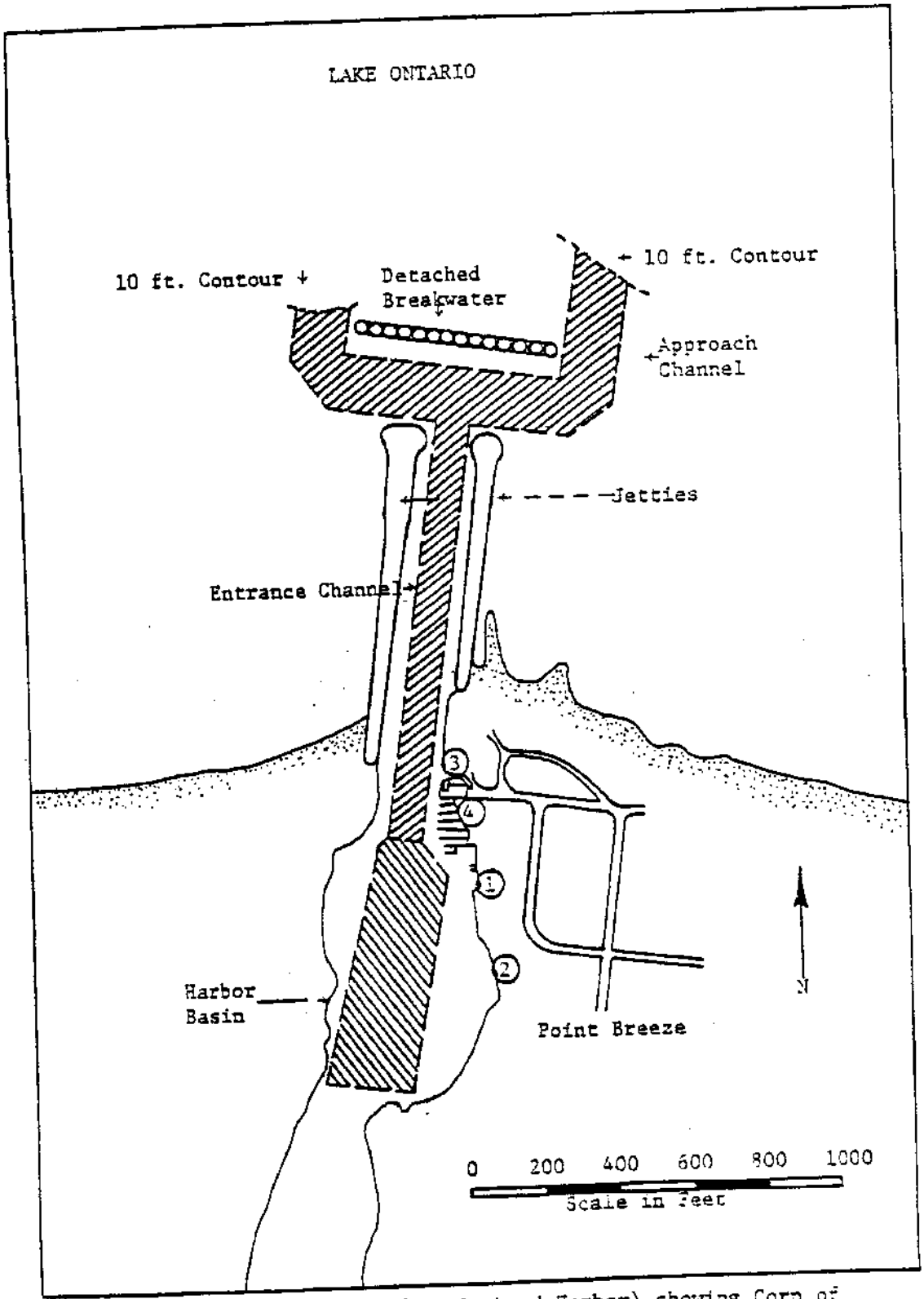


Figure 21: Oak Orchard Creek (Oak Orchard Harbor) showing Corp of Engineers project and location of boating facilities (1) Norm's Marina, (2) McMurry's Marina, (3) state launch ramp, and (4) Oak Orchard Boat Livery.

Norm's Marina: Norm's Marina rents 32 slips, 10 for boats 12-18 feet long, 10 for boats 18-25 feet long, and 12 for boats longer than 25 feet. However, the owner has indicated that, if available, 40 more could be rented. Other services provided are gas, parking for nearly 30 cars, water, hoist launch, sanitary pumpout, winter storage, and engine repair.

McMurray's Marina: McMurray's Marina rents 46 slips and operates a launching ramp for trailered boats. Parking for 75 cars, gas, a hoist launch, and winter storage are also provided.

State Of New York: State owned launching ramp is located on east bank of creek. It is rarely used because of needed repair. However, little parking space is available even if it were repaired.

Oak Orchard Boat Livery: The Oak Orchard Boat Livery rents about 15 slips. It provides gas and parking space for about 10 cars.

Oak Orchard Yacht Club: The Oak Orchard Yacht Club is located about one-half mile from the creek's mouth. It provides 45 slips (boats 25 feet or longer) for its members. The club has indicated however, that 30 more could be used. Parking for nearly 100 cars is provided.

Point Breeze Yacht Club: Point Breeze Yacht Club moors its 26 boats (10: 12-18 footers, 4: 18-25 footers, and 12: longer than 25 feet) at the two bridges about 1.25 miles upstream from the mouth. Parking is provided for 30 cars and there is, at present, no desire to expand their facilities.

Oak Orchard Marina: Oak Orchard Marina, located at the two bridges, rents about 30 slips. The marina operates a launching ramp that is used about 50 times per week. Also provided are parking for 25 cars, gas, and boat rentals.

Hatch and Elam Boat Livery: The Hatch and Elam Boat Livery, located at the two bridges, rents 15 slips for boats 12-18 feet long. The owner has indicated that, if available, 20 more could be rented immediately. The livery has 22 boats for rent, parking space for 25 cars, and gas. It also operates a launching ramp that is used about 25 times per week.

Betty's Fisherman Haven: Betty's Fisherman Haven rents about 20 slips and provides a launching ramp for trailered boats. Other services include parking for 45 cars, gas, and boat rentals.

The banks of Oak Orchard Creek between the two bridges (the bridges restrict large boat traffic), in general, are very high and steep. As a result, expansion of boating facilities is restricted.

3.5 Bald Eagle Creek

Bald Eagle Creek enters Lake Ontario in the Town of Kendall about 8 miles east of Oak Orchard Creek. The land on both sides of the creek at its mouth and bordered on the south by the Lake Ontario State Parkway is privately owned by C.H. Schepler, who has developed the area into a small boat facility (Bald Eagle Resort). The creek south of the parkway is a wildlife supporting wetland.

Bald Eagle Creek
(Scale 1:24,000)

Membership in the Bald Eagle Resort is required for use of the boating facility. Floating docks capable of handling 60 boats, 25 for boats 12-18 feet long, 32 for boats 18-25 feet long, and 3 for boats longer than 25

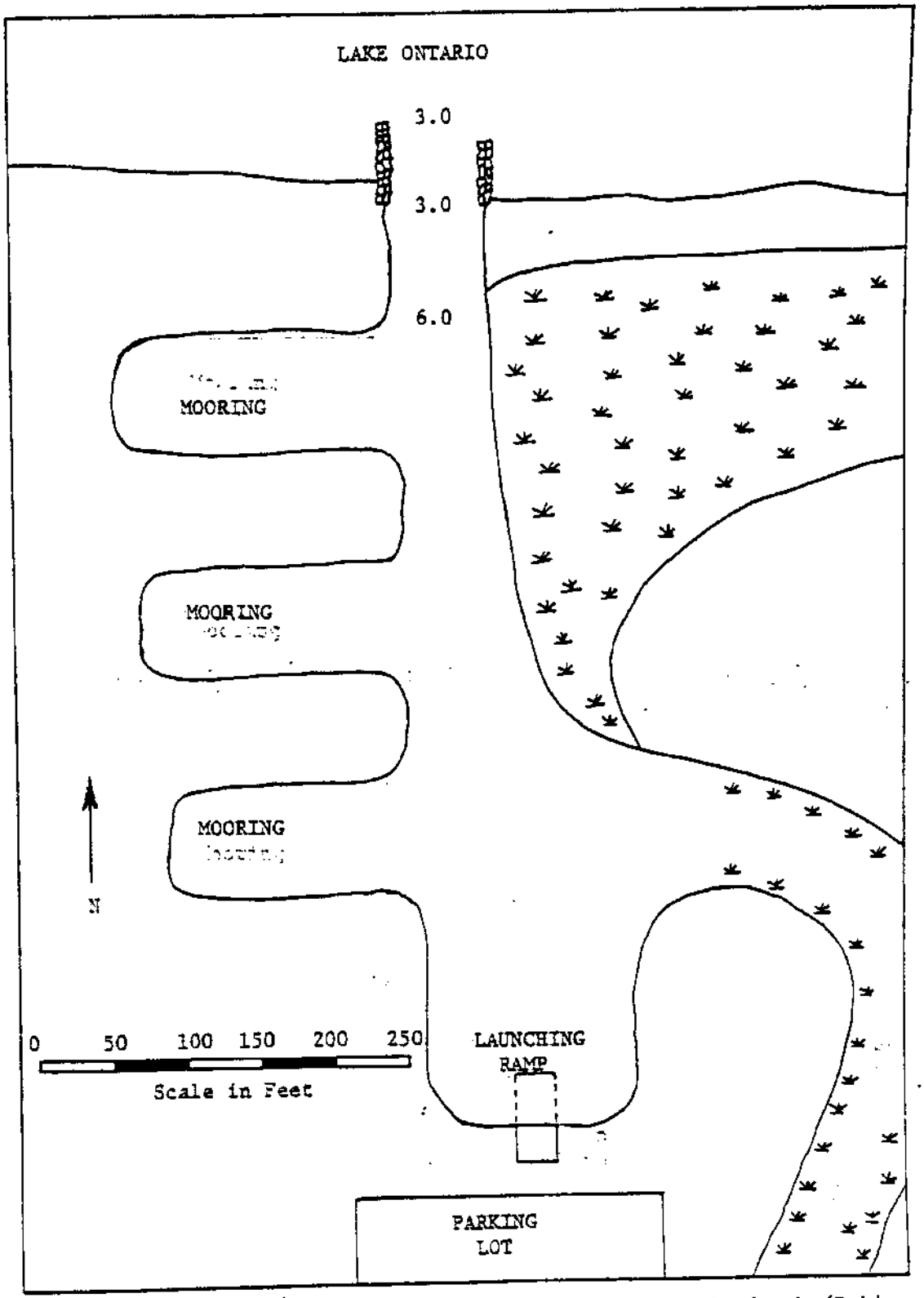


Figure 22: Small boat facility at the mouth of Bald Eagle Creek (Bald Eagle Resort). Soundings (in feet) taken at time of inventory. (Dated: September 27, 1975).

feet, are available. The owner has indicated, however, that 40 more slips could be rented. A launching ramp is supplied and is used approximately 15 times per week during the boating season (members only). There are three boats for rent, gas and oil service, and parking for nearly 200 cars.

The entrance channel to the lake is 60 to 66 feet wide and is protected by two rip rap jetties, each about 40 feet long and 2 1/2 feet above lake level. The channel averages 3 feet in depth, while the embayment and the areas created by the owner (by excavation) for mooring range from 2-6 feet in depth. Constant shoaling requires the entrance to be dredged annually. The owner, using his own drag line, removes 200-800 yards of material each year and uses it for roads and parking lots. The owner would like to expand the facility, but approval by the N.Y.S. Department of Environmental Conservation is required.

CHAPTER IV

MONROE COUNTY

Monroe County is bounded on the west by Orleans County, on the east by Wayne County, and on the north by Lake Ontario. The shore characteristics from the Orleans County line to Hamlin Beach State Park (2 miles) are essentially identical to those of Orleans County (20 foot or higher glacial till bluffs). Between Hamlin Beach State Park and Rochester (about 20 miles) the shore is low marsh land with barrier sand and gravel beaches separating the marshes and open ponds (Buck Pond, Round Pond, etc.) from the lake. From Rochester to the Wayne County line the shore is characterized by silt and clay bluffs up to 55 feet high. The beaches along the entire shoreline are generally too narrow (up to 30 feet), except at the W. S. West Pier at Rochester Harbor where the littoral transport has been interrupted, to provide much protection. On the otherhand, Monroe County, being well developed has approximately 11-1/2 miles of artifically protected shoreline. The predominant wind and wave directions are from the west and northwest producing an eastward littoral transport. About 20 miles of Monroe County's shore is residential, about 7 miles are parkland and the remainder is undeveloped or used for commercial and industrial purposes. Inlets and harbors of Monroe County include: Yanty Creek, Sandy Creek, Cowsucker Creek, Brush Creek, East Creek, Braddock Bay, Buck Pond (Black Creek), Round Pond (Northrup Creek), Little Pond (Slatar Creek), Genesee River (Rochester Harbor), Irondequoit Bay, Mill Creek, and Fourmile Creek. It should be noted here that Cranberry Pond and Long Pond, located between Braddock Bay and Buck Pond have no noticeable outlets to Lake Ontario.

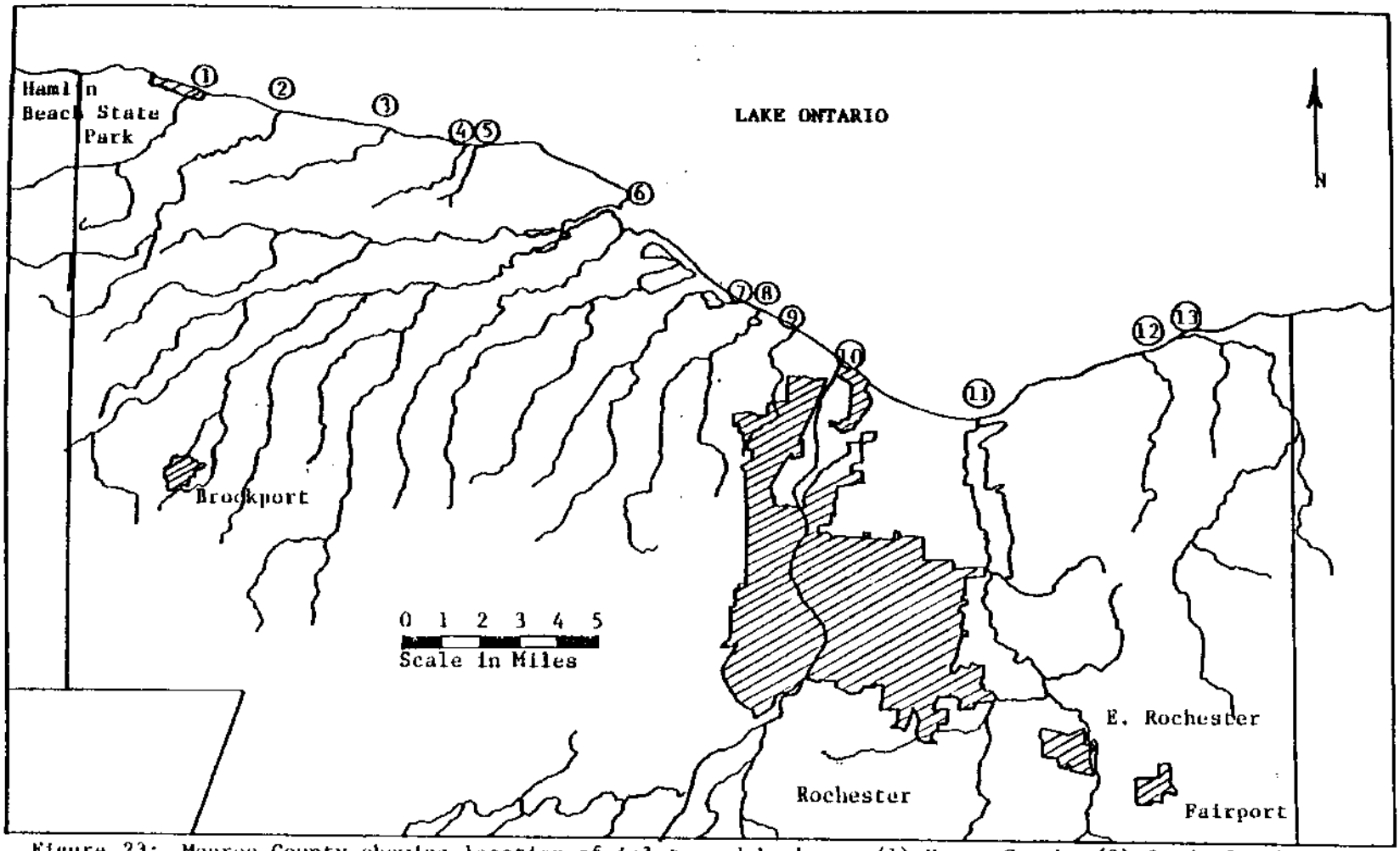
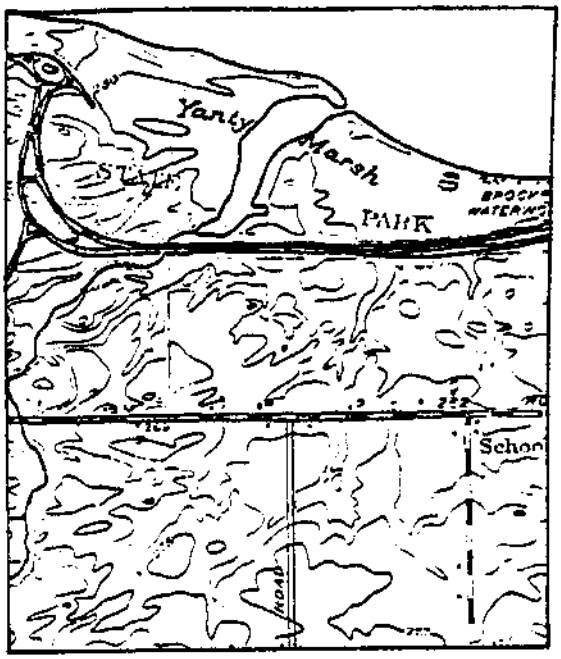


Figure 23: Monroe County showing location of inlets and harbors; (1) Yanty Creek, (2) Sandy Creek, (3) Cowsucker Creek, (4) Brush Creek, (5) East Creek, (6) Braddock Bay, (7) Buck Pond(Larkin Creek), (8) Round Pond (Round Pond Creek), (9) Little Pond (Slater Creek), (10) Genesee River (Rochester Harbor), (11) Irondequoit Bay, (12) Mill Creek, (13) Fourmile Creek.

4.1 Yanty Creek

Yanty Creek enters Lake Ontario in the Town of Hamlin about 22 miles west of Rochester. The land near its mouth is state owned (Hamlin Beach State Park). Upstream from the mouth, there is a wildlife-supporting, marshy embayment (Yanty Marsh). As a result, accessibility by automobile is difficult and no boating facilities exist.



Yanty Creek
(Scale 1:24,000)

The embayment, which extends 0.2 miles to the west and 0.6 miles to the east of the mouth, is essentially separated from the lake by a sand and gravel bar averaging 150 feet in width and rising 4-5 feet above lake level. The embayment is bounded on the south by the Lake Ontario State Parkway. The entrance channel to the lake is 3-4 feet deep, approximately 20 feet wide, and has a substantial outflow. The lake side of the channel is blocked by fallen trees that typically litter the lakeshore along the marsh.

4.2 Sandy Creek

Sandy Creek flows into Lake Ontario about 20 miles west of Rochester in the Town of Hamlin. The land immediately adjacent to the creek at its mouth is privately owned. The only public property is located beneath the Lake Ontario State Parkway, which crosses the creek about 1000 feet upstream. Three privately owned small boat facilities are operated along the creek: (1) Brockport Yacht Club, (2) Sandy Harbor Marine, (3) a launching ramp approximately 1/4 mile upstream from the Parkway.

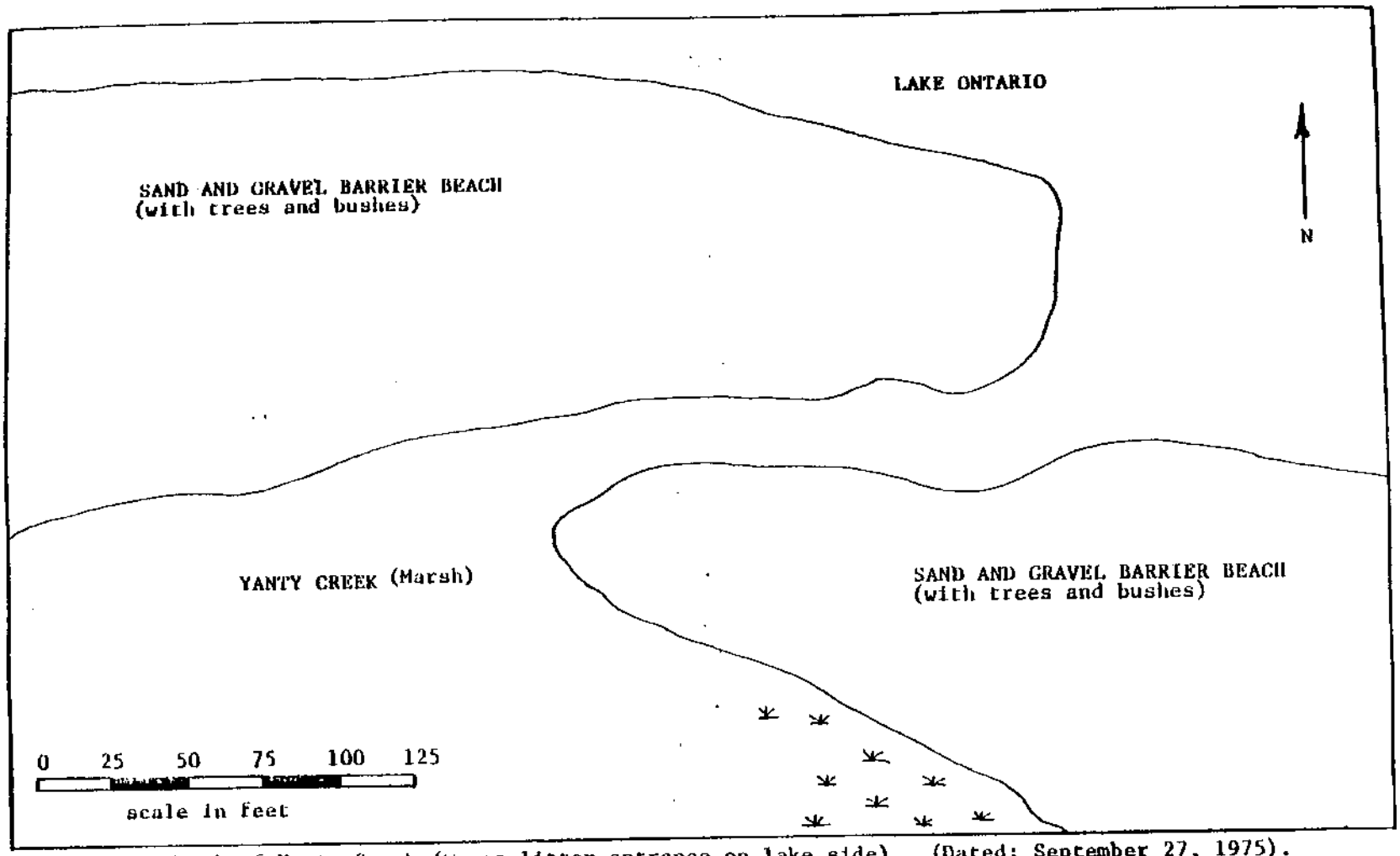
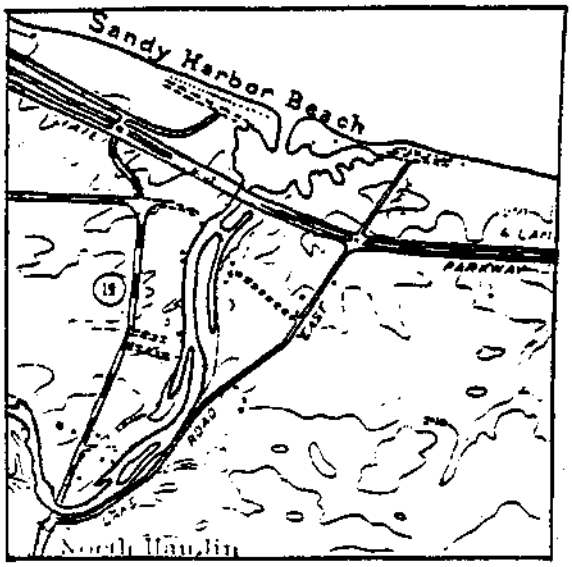


Figure 24: Mouth of Yanty Creek (Trees litter entrance on lake side). (Dated: September 27, 1975).

The entrance to the lake is protected by two breakwaters that form an arrowhead shaped channel. The western breakwater, constructed of rip-rap, is about 320 feet long and 15 feet wide. The eastern breakwater is concrete, about 270 feet long, 8 feet wide, and is broken in several places. Depths in the channel between the breakwaters vary from 3-1/2 to 5 feet, while depths in the creek approach 8 feet. A shallow embayment, extending about 1000 feet to the east and 600 feet to the west of the entrance, is present and gradually becomes marshy at its southern limit, the Parkway. The embayment is separated from the lake by a sand and gravel bar averaging 250 feet in width and upon which several cottages are built.



Sandy Creek
(Scale 1:24,000)

The Brockport Yacht Club owns the land on the west bank near the breakwater and the embayment on this side forms the docking area, about 70 slips for its members boats. Six of these slips handle boats 0-12 feet long, 20 are for boats 12-18 feet long, 40 are for boats 18-25 feet long, and 20 are for boats longer than 25 feet. There is little room for expansion and the club limit of 100 is taxing existing facilities and services. Parking for only 40 cars, a hoist launch, and some winter storage are provided. Sandy Harbor Marine is located about 200 feet upstream from the parkway on the west side of the creek. It is not presently operated as a full scale marina, but is used primarily for launching trailered boats, for which ample parking space is provided. The embayment for the marina is man-made, is about 7 feet deep, and has several docks

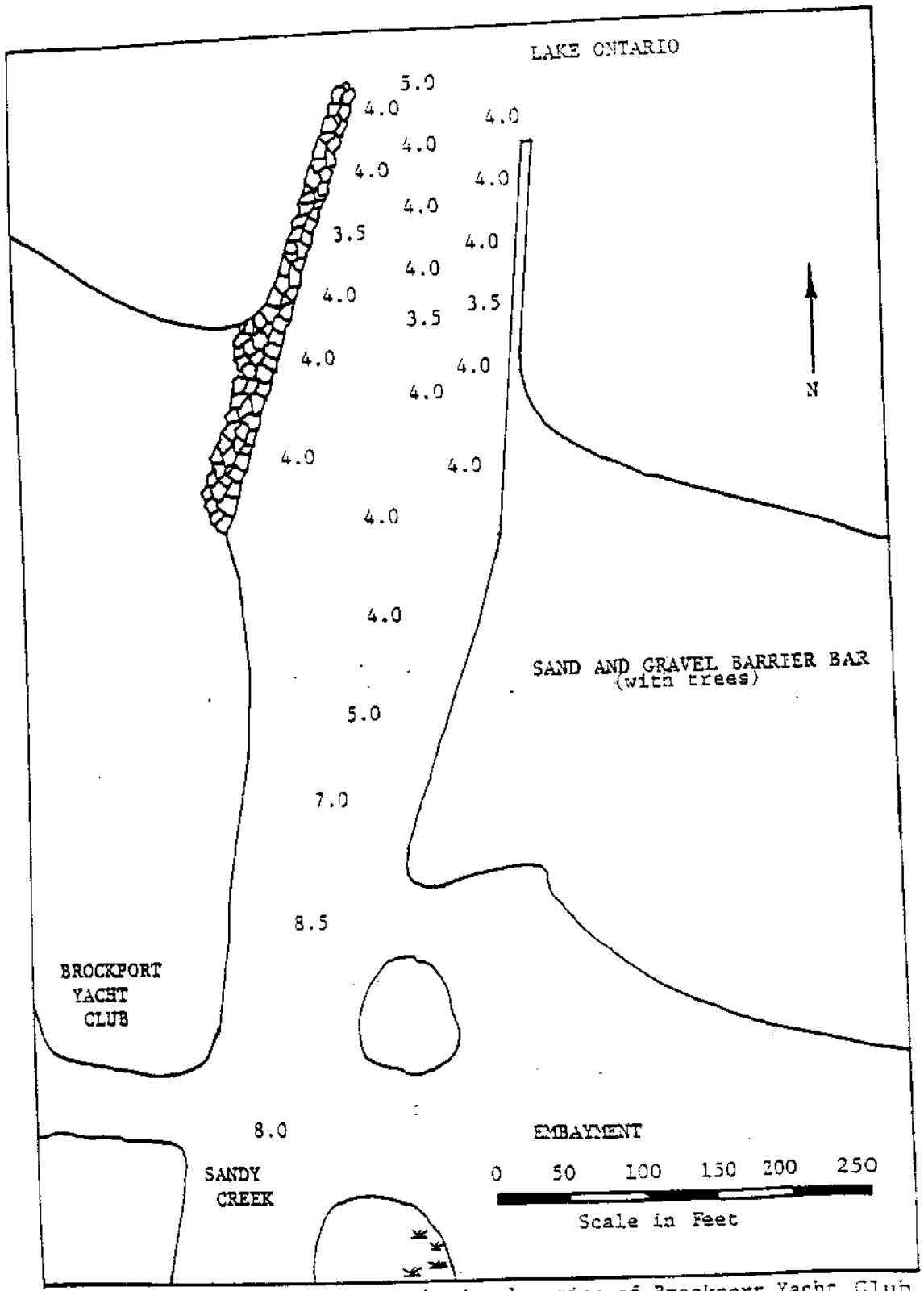
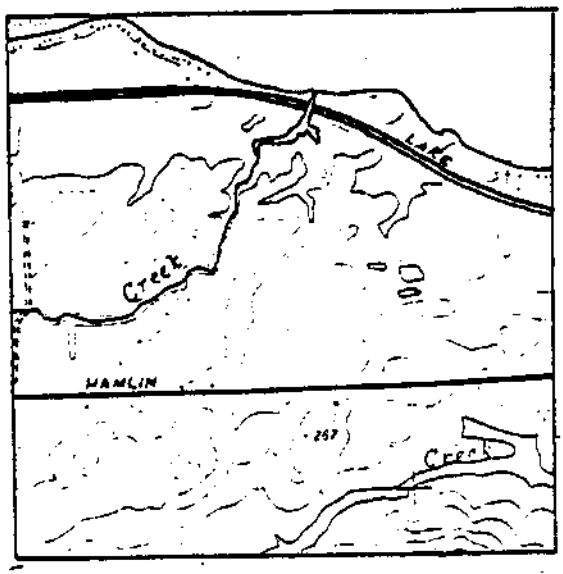


Figure 25: Sandy Creek Harbor showing location of Brockport Yacht Club and breakwaters. Soundings (in feet) taken at time of inventory. (Dated: October 10, 1975).

in need of repair. The embayment is connected to the creek by a channel about 300 feet long, 40 feet wide, and 5 feet deep. At the launching ramp upstream, a gas pump and adequate parking are available.

4.3 Cowsucker Creek

Cowsucker Creek enters Lake Ontario about 17 miles west of Rochester in the Town of Hamlin. The land adjacent to its mouth is state owned (Lake Ontario State Parkway). Due to its shallow depth and small size no boating facilities exist at this inlet.



Cowsucker Creek
(Scale 1:24,000)

The channel to the lake averages 30 feet in width and 2 feet in depth. It is about 400 feet long and passes underneath the Parkway 200 feet upstream. As it passes underneath the Parkway the channel width is reduced to 15 feet with a clearence of 4 feet. At the upstream end of the channel a marshy embayment with an area close to 7 acres exists. The entrance is protected by two rip rap jetties each about 70 feet long, 25 feet wide, and rising 6-7 feet above the water surface.

4.4 Brush Creek

Brush Creek enters Lake Ontario about 2 miles east of Cowsucker Creek in the Town of Parma. The land immediately adjacent to its mouth (about 600 feet along the lake) is state owned. This land is flanked on either side by private homes and cottages.

Brush Creek forms a marshy embayment that is separated from the lake by a sand and gravel bar averaging 300 feet in width, rising 5-6 feet above lake level, and extending about 600 feet to either side of the mouth. The

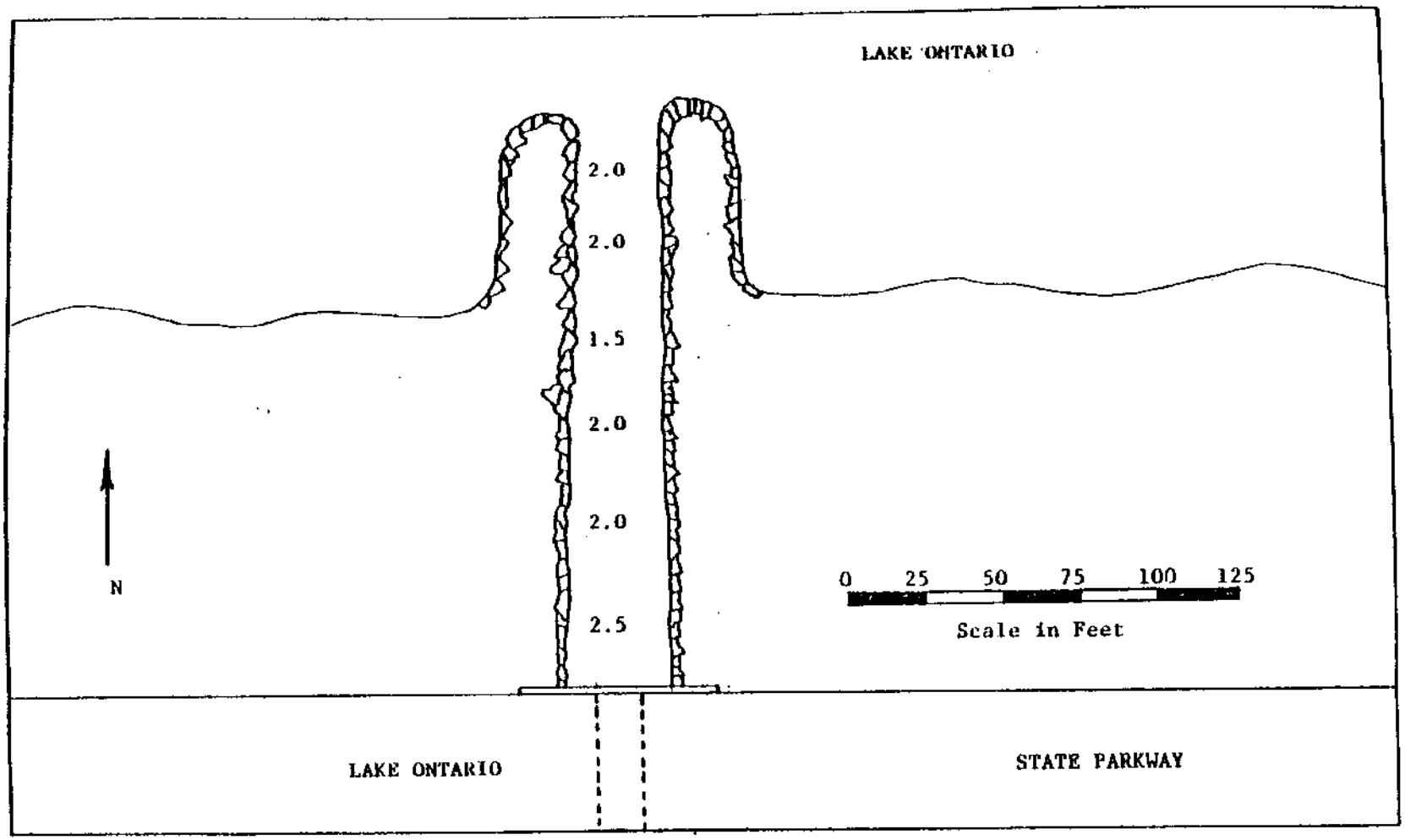
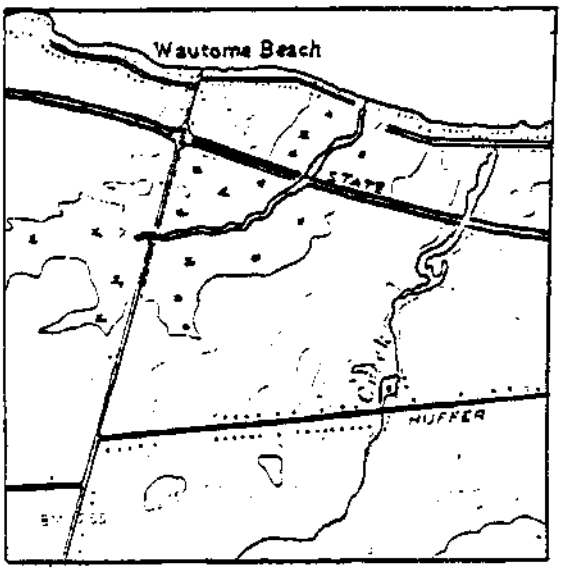


Figure 26: Mouth of Cowsucker Creek. Soundings(in feet) taken at time of inventory. (Dated: October 10, 1975)

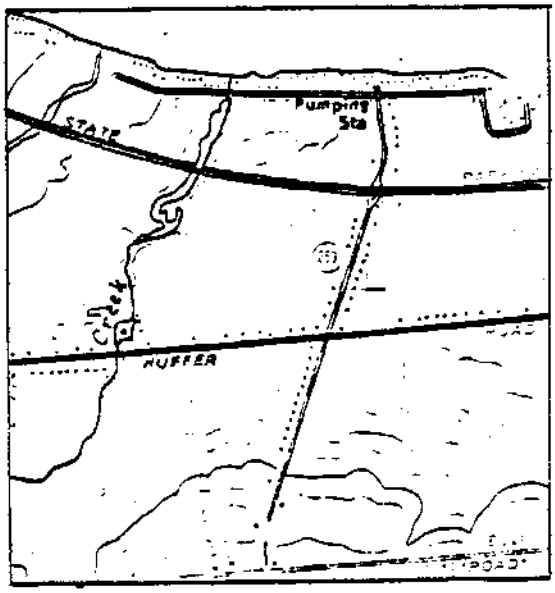
majority of the marsh, which extends nearly one mile upstream, is protected by the state as a wildlife refuge. However, hunting is allowed with the appropriate permit obtainable from the DEC. Free surface flow from the creek to the lake has been eliminated. The channel connecting the embayment and the lake is about 200 feet wide. However, it is filled with fine sand and separates he creek from the lake by 100 feet. As a result, no boating facilities exist at this location.



Brush Creek
(Scale 1:24,000)

4.5 East Creek

East Creek enters Lake Ontario in the Town of Parma only 1/4 mile east of Brush Creek. The land adjacent to its mouth is privately owned. A marshy embayment exists upstream and is separated from the lake by a barrier beach. This beach averages 300 feet in width, rises 6-7 feet above lake level, and extends 1400 feet east and 400 feet west of the mouth. The embayment is connected to the lake by a 45 foot wide channel at the lake that narrows to 25 feet at the bridge (200 feet south of lake), and whose banks are protected by rip rap. However, the channel is filled with sand approximately 75 feet inland from the lake, negating the existence of boating facilities.



East Creek
(Scale 1:24,000)

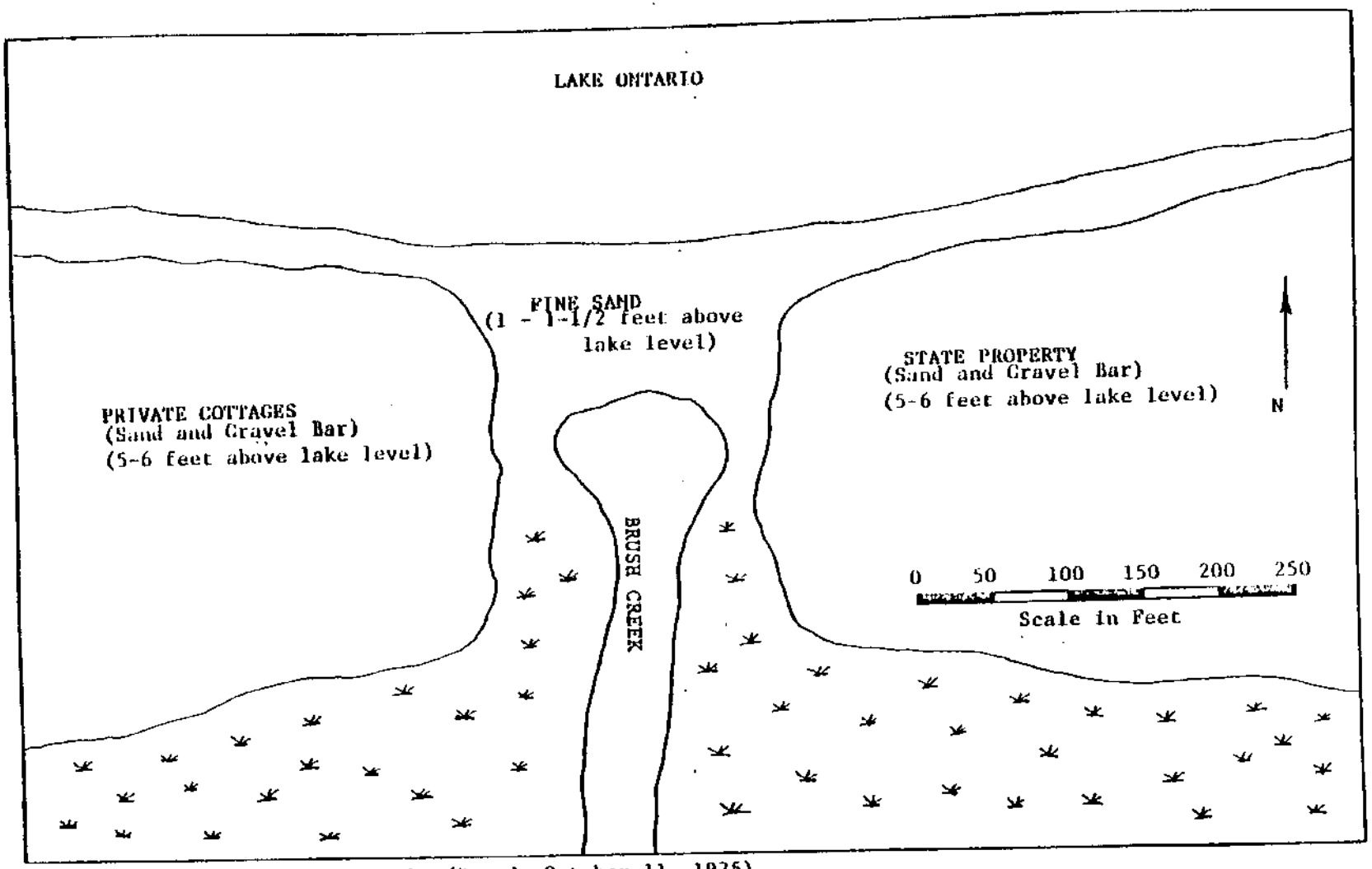


Figure 27: Mouth of Brush Creek. (Dated: October 11, 1975).

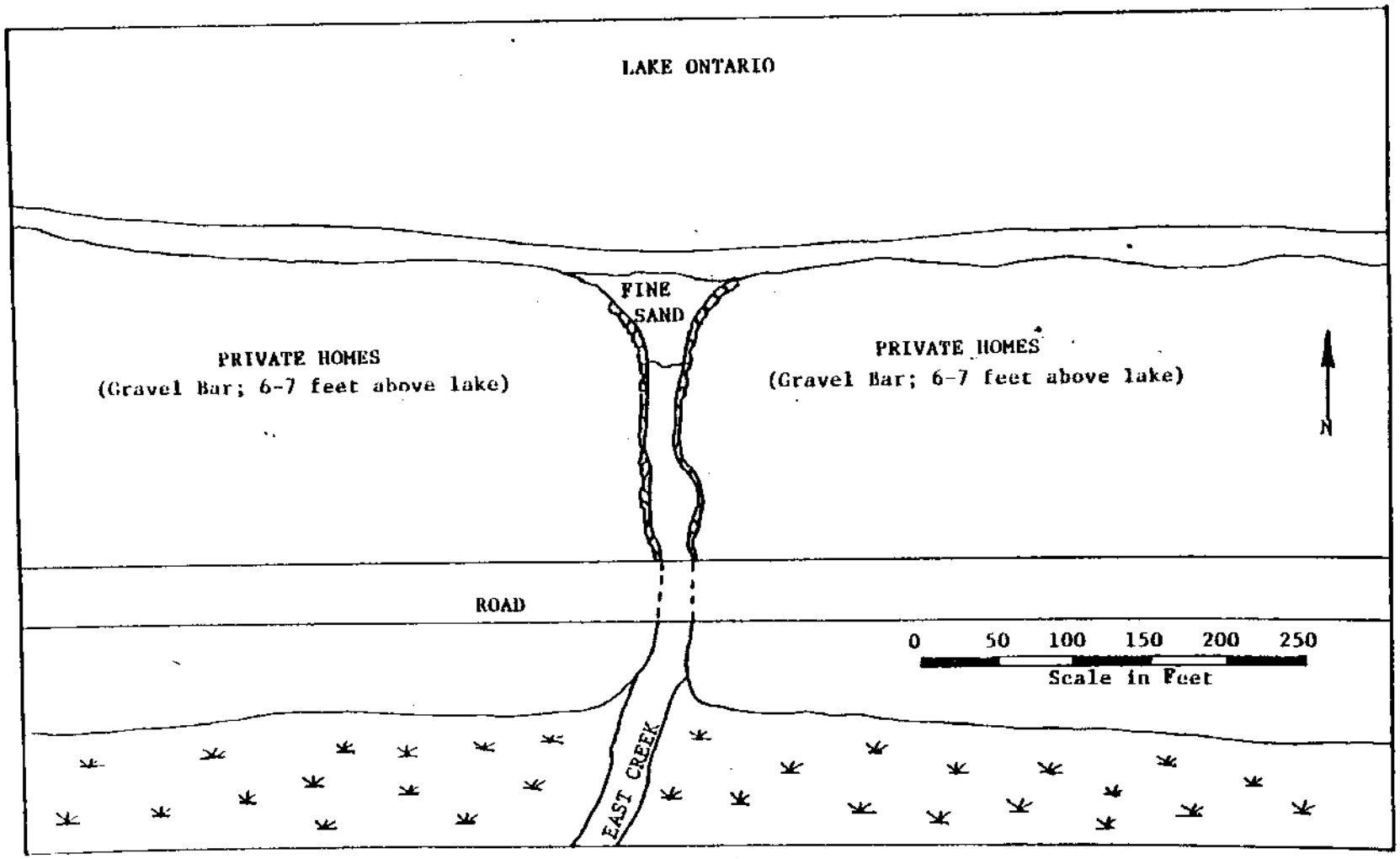
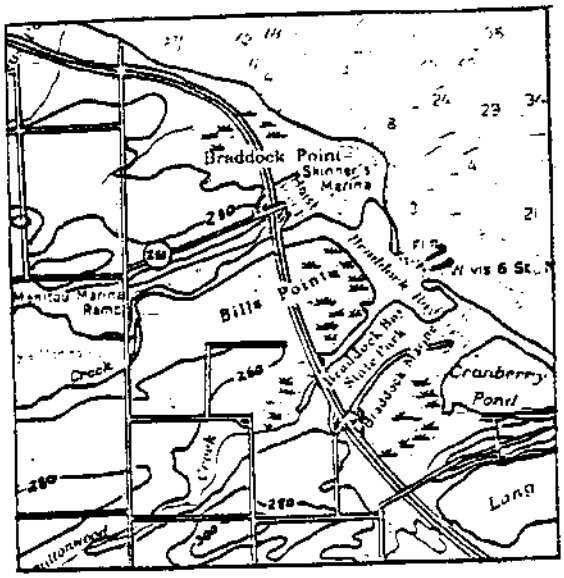


Figure 28: Mouth of East Creek (Dated: October 11, 1975).

4.6 Braddock Bay

Braddock Bay is located in the Town of Greece about 7 miles west of Rochester Harbor. Most of the bay and the land adjacent to it, north of the Lake Ontario State Parkway, is part of Braddock Bay State Park (only a small portion of the west bank is privately owned). All land south of the Parkway is privately owned. The bay forms a natural harbor of refuge for boaters and much of the land around the perimeter of the bay forms a wildlife refuge. However, hunting is allowed with appropriate permit. Two Creeks, Salmon Creek and Buttonwood Creek, empty into the bay and also form natural wildlife habitats.



Braddock Bay
(Scale 1:80,000)

In general, the bay is very shallow (4-5 feet) and is hazardous for boaters unfamiliar with the bathymetry. Two Coast Guard markers, approximately 180 feet apart, define the safest approach channel to the bay. However, the formation of an underwater bar about 200 feet on the markers' lakeward side, has reduced the water depth to 2 feet at times, especially in the fall. As a result, many sailboat owners, whose moorings are in the bay, either run aground or have to give up boating very early in the season. The latter situation has prompted many sailboat owners to relocate at Rochester Harbor. The problem seems to originate from a combination of low lake water levels and shoaling. Some action has been taken by the operator of Braddock Marine (state marina) to have the entrance channel dredged, but the DEC is reluctant to issue a permit until the effects on aquatic life are determined.

There are four marinas located within the bay. One is state owned and the others are private. Each is listed below with a description of its services and capacities. Their locations within the bay are shown in Figure 29.

Braddock Marine: Braddock Marine is a state owned marina (Braddock Bay State Park) located on the bay's east side. It is protected on the north by a part natural and part man made, rip-rap and earth breakwater averaging 100-200 feet in width. The breakwater has an L-shape and is about 2500 feet long. The marina has the greatest number of slips (180) and boating services of any in the bay. Facilities and services include a snack bar, marine store, small boat rentals, winter storage, gas, launch ramp, and a hoist launch. In addition, specialized transient facilities include restrooms with showers, holding tank pump out station, laundry and reserved transient dock space.

Skinner's Marina: This marina is located on the western side of the bay on Manitou Beach Road. Being north of the Ontario State Parkway bridge, Skinner's Marina caters to large boat owners. However, due to the shallow waters boat size is limited to 30 feet. The facilities include 120 slips, winter storage, launch ramp, gas, small boat rentals, marine supply store, and snack bar and restaurant.

Manitou Marina: Manitou Marina is located on the east side of Manitou Road along the mouth of Salmon Creek. It is primarily a small boat slip rental facility. Being south of the Ontario State Parkway, any boat higher than eight feet off the water is unable to pass into the bay and, consequently, the lake. The facility has a total of about 40 slips, a launch ramp, gas dock, and yard storage for boats on trailers.

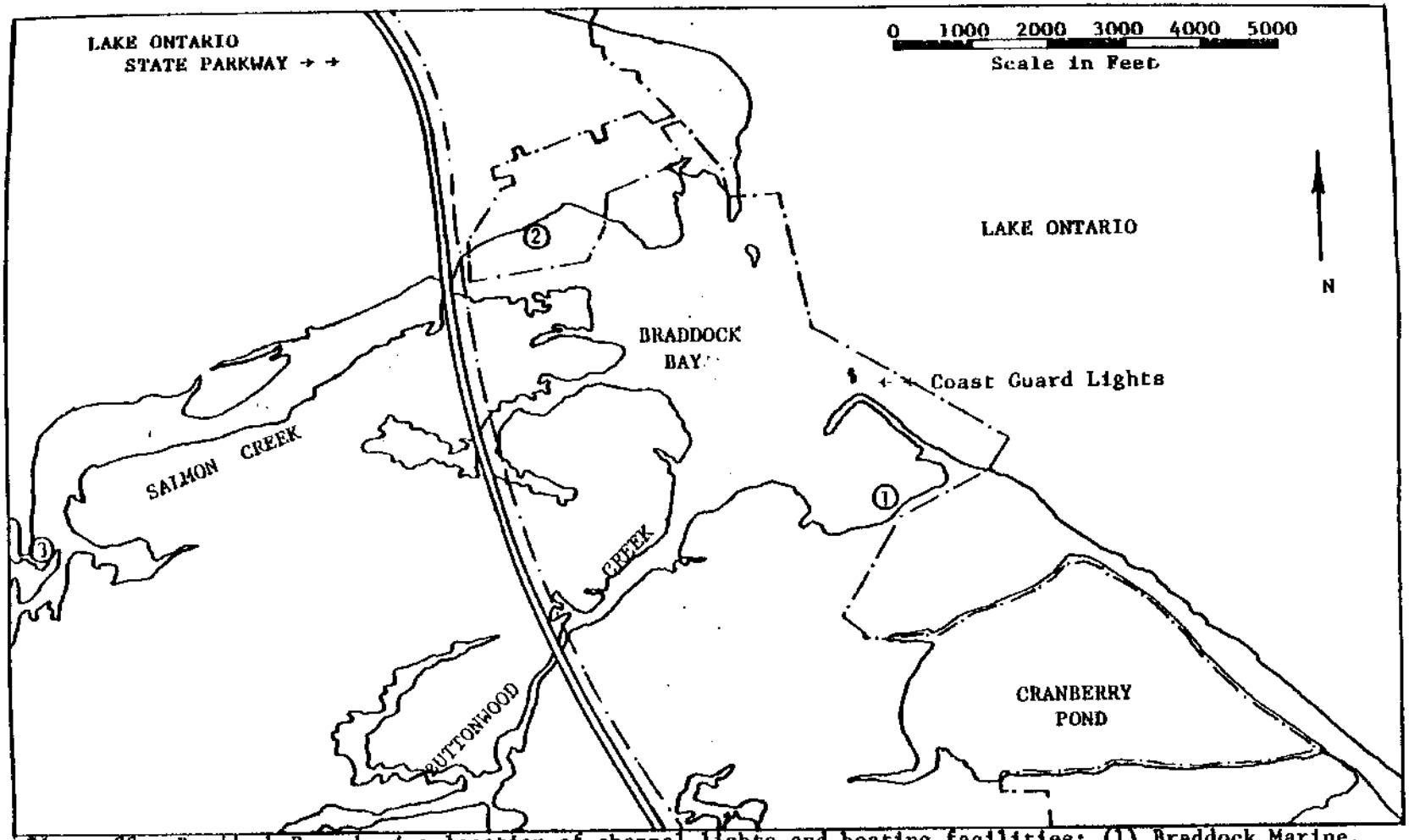
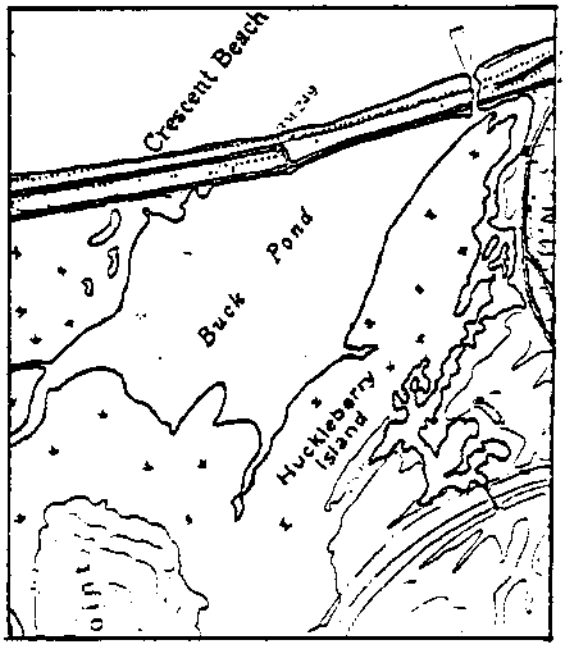


Figure 29: Braddock Bay showing location of channel lights and boating facilities: (1) Braddock Marine, (2) Skinners Marina, (3) Manitou Marina, and (4) Larry's Marina. Dotted lines encompass Braddock Bay State Park. (Dated: October 11, 1975.)

Larry's Marina: Larry's Marina is located on the east side of Manitou Road and on the Salmon Creek mouth. It too, because of the bridge restriction, is also limited to servicing and mooring small boats and caters primarily to the fisherman. Facilities include 50 slips, launch ramp, small boat and canoe rentals, marine supplies, gas, bait shop, trailer storage, and a bar and restaurant.

4.7 Buck Pond (Larkin Creek)

Buck Pond is located about 3 miles west of Rochester Harbor in the Town of Greece. The pond and the land (except on the lakeward side) adjacent to it is part of Braddock Bay State Park. The pond is separated from the lake by a sand and gravel bar that averages 400 feet in width, approximately 1-1/4 miles in length, rising 5-7 feet above lake level, and is heavily populated with homes and cottages.



Buck Pond
(Scale 1:24,000)

Much of the ponds' perimeter is marshland and provides a natural wildlife habitat. The pond itself is very shallow and averages only 2-3 feet in depth.

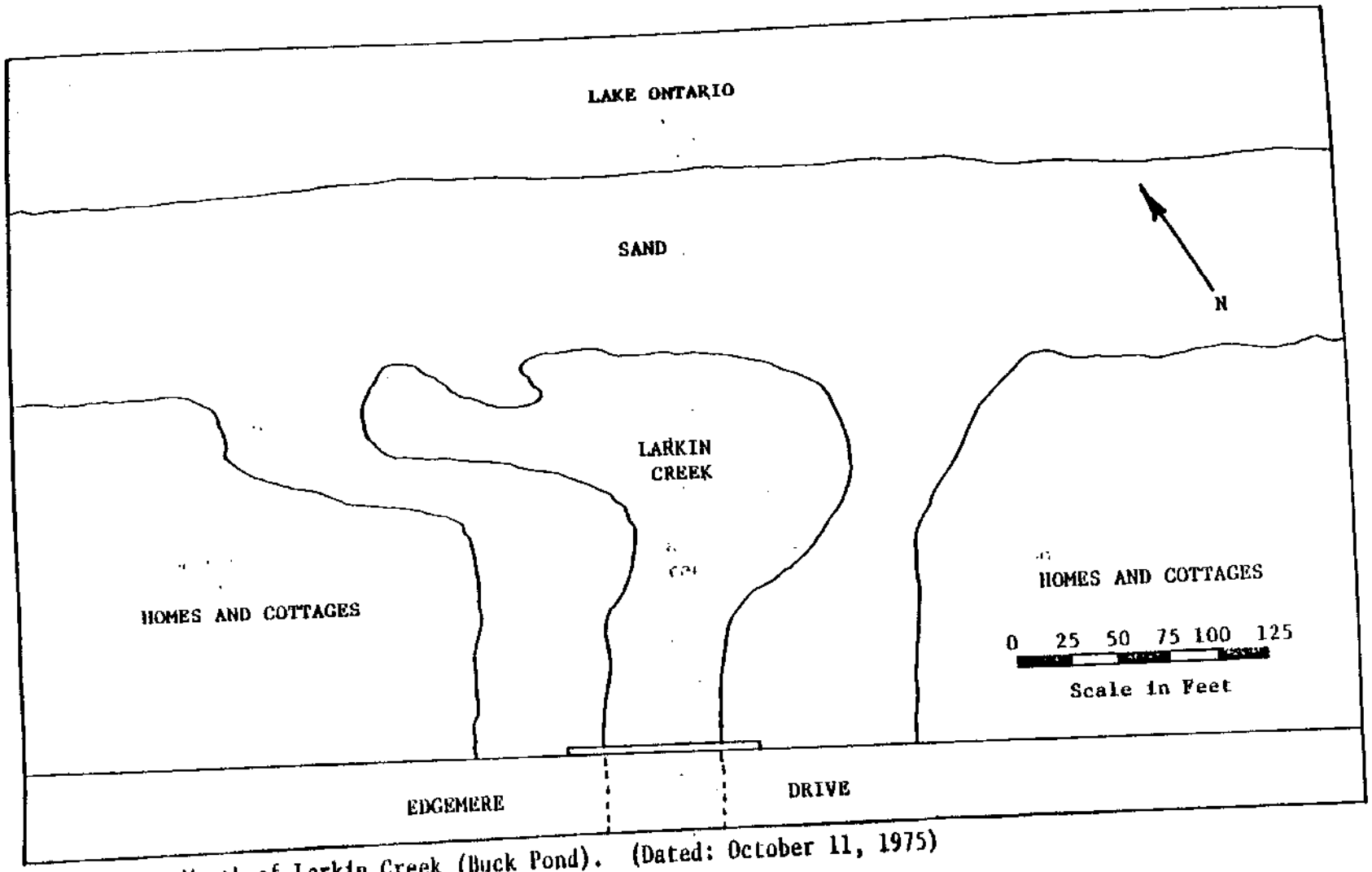
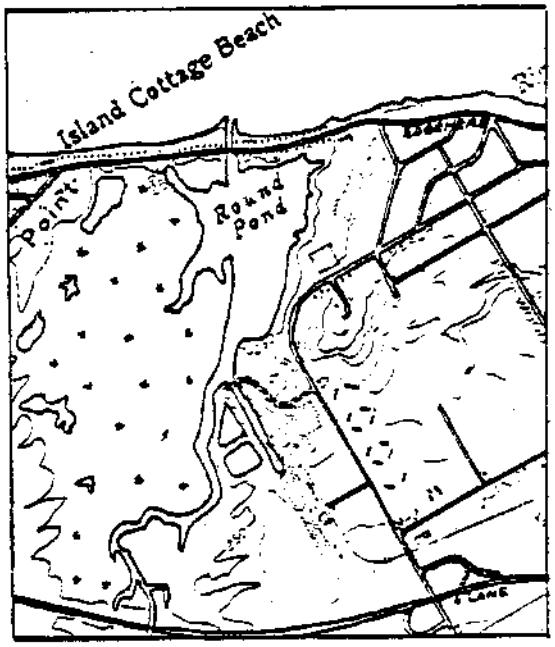


Figure 30: Mouth of Larkin Creek (Buck Pond). (Dated: October 11, 1975)

The channel connecting Buck Pond to Lake Ontario is located about 600 feet west of the eastern side of the pond. At the time of this inventory, its mouth was filled with sand (95 feet; landward), eliminating free surface flow to the lake. About 300 feet inland a bridge crosses the channel and provides only a 2 foot clearance. The width of the channel at the bridge is about 55 feet and is 3-4 feet deep. No boating access to the lake is possible, because of the channel shoaling and the low bridge clearance. However, small boats are used on the pond itself for fishing.

4.8 Round Pond (Round Pond Creek)

Round Pond is located about 2-1/2 miles west of Rochester Harbor and only 1/2 mile east of Buck Pond. The pond is fed by Round Pond Creek and the land on its perimeter is privately owned. It is separated from the lake by a sand and gravel bar that averages 350 feet in width, approximately 1/2 mile in length, rises 7-8 feet above lake level, and is heavily populated with homes and cottages. The pond is very shallow and much of it is a wildlife supporting wetland.



Round Pond
(Scale 1:24,000)

The channel connecting Round Pond to the lake is located about 1000 feet west of its east bank. It is about 85 feet wide and 2-4 feet deep. The entrance is protected by two rip-rap and earth jetties,

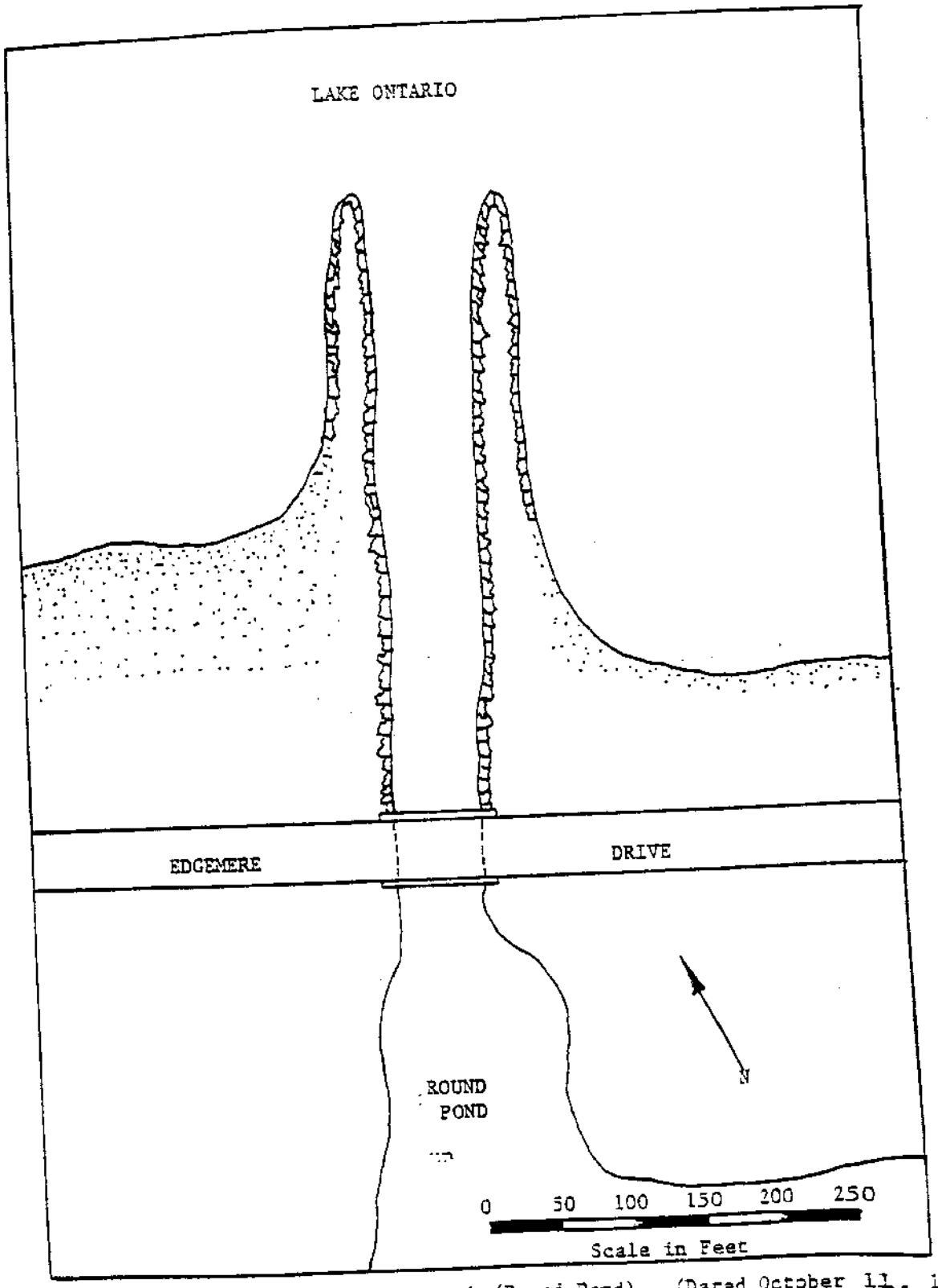
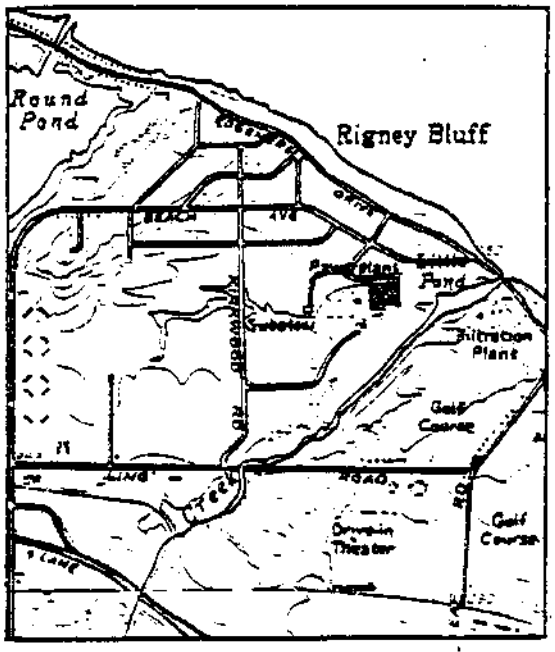


Figure 31: Mouth of Round Pond Creek (Round Pond). (Dated October 11, 1973)

the west one being 225 feet long and the east one being 325 feet long. The discrepency in their lengths is due to accretion of sand on the west side of the entrance. They are both about 30 feet wide, rise 5-6 feet above lake level and have trees growing on them. About 425 feet inland, a bridge (Edgemere Drive) with only a 4 foot clearance crosses the channel. No boating facilities exist at this inlet because of the ponds' shallow depth and the low bridge clearance.

4.9 Little Pond (Slater Creek)

Little Pond is located 1-1/2 miles west of the Genesee River in the Town of Greece. This creek is of special interest because it is used to discharge the thermal effluent from a power plant, owned by Rochester Gas and Electric Corporation, into Lake Ontario. The power plant is located on the west bank of the creek about 1000 feet from the lake shore. The effluent is discharged into the creek which then passes under Edgemere Drive, through 4 foot diameter corrugated pipes, onto the lake's surface. The land on the north side of the road is public and is used extensively for fishing (warm water species, such as bass, are attracted to the discharge). The pond itself is evidently owned by RGE, since it has been surrounded by a fence.



Little Pond
(Scale 1:24,000)

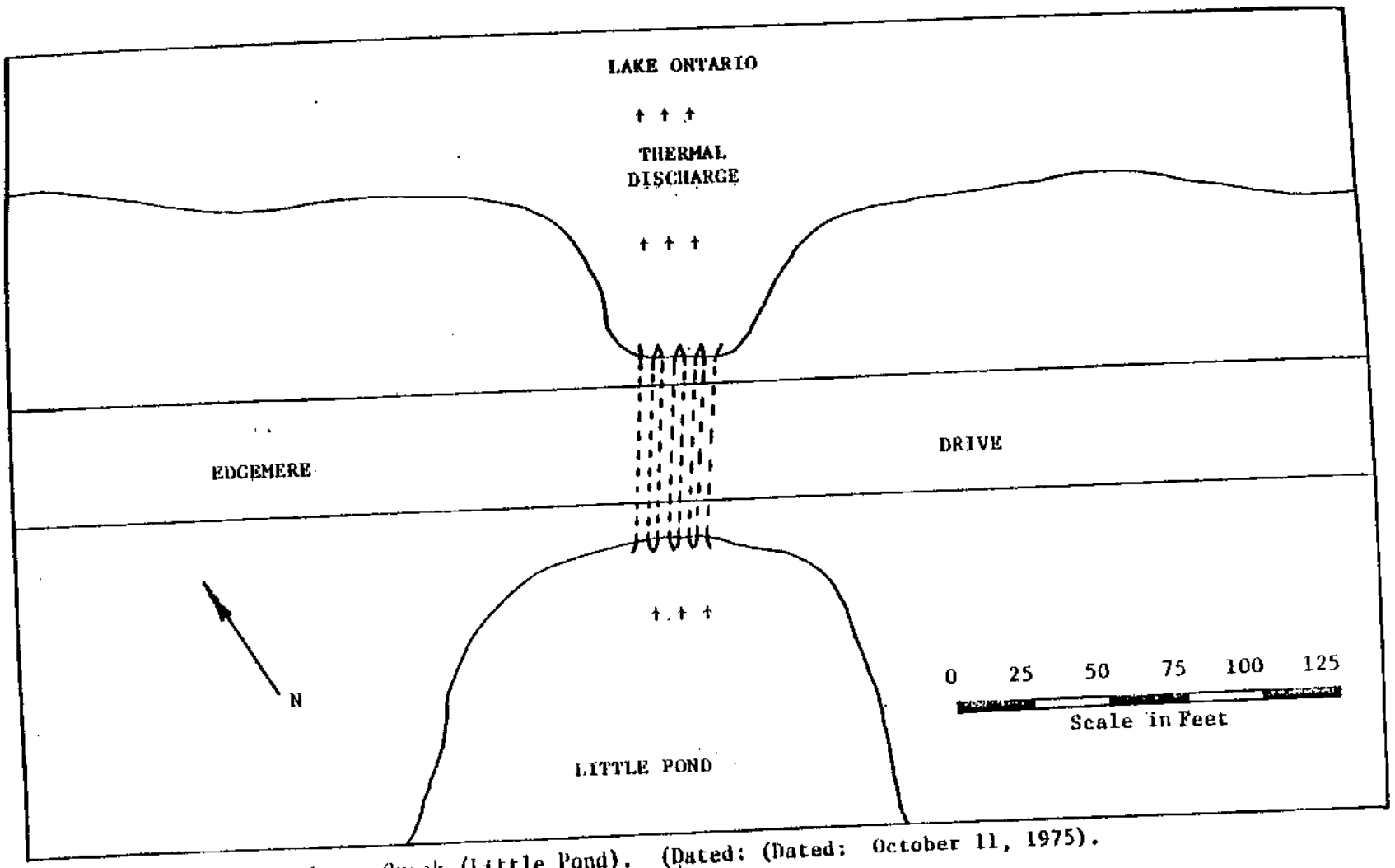
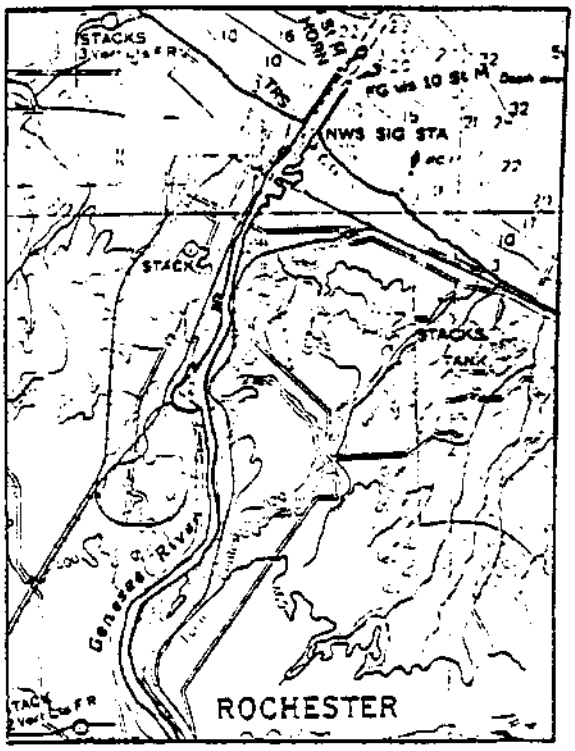


Figure 32: Mouth of Slater Creek (Little Pond). (Dated: (Dated: October 11, 1975).

4.10 Genesee River

The Genesee River enters Lake Ontario in the City of Rochester. The lower 3.1 miles of the river is federally maintained as a commercial harbor even though its importance in this respect has dwindled in recent years. Two reinforced concrete, U.S. piers protect the entrance, the west one being 3000 feet long and the east one 2700 feet long. The navigation channel depths and widths are shown in Figure 33. Nearly all land adjacent to the navigation channel is privately owned and most of it is commercially used except for reaches of the river where steep banks make accessibility impossible.



Genesee River
(Scale 1:80,000)

There are several boating facilities located along the river. These include four privately owned marinas and two yacht clubs. Each is listed below with a description of its capacities and services. Their location on the river is shown in Figure 33.

Anchor Marine: Anchor Marine presently rents 70 slips, 10 for boats, 18-25 feet in length and 60 for boats longer than 25 feet and it has been indicated by the owner that, if available, an additional 80 slips could be rented (30 for 18-25 foot boats and 50 for boats longer than 25 feet). The marina operates a launching ramp ($3.00 fee) that is used approximately 15 times per week during the boating season. There is parking for about 70 cars. Other services offered are: hoist launch, gas, some

outside storage, and a maintenance and repair shop.

Shumway Marine: Shumway Marine rents approximately 180 slips for boats 18 foot and up and it has been indicated by the owner that an additional 70 slips could be rented if available. The boats are docked in a basin adjacent to the river that averages 6-8 feet in depth. The marina operates a launching ramp ($3.00 fee) that is used approximately 25 times per week during the boating season. Parking space is adequate; however, if required 11 acres are available for conversion to parking area. The marina can handle transient craft up to 180 feet long, has both gas and diesel fuel, a hoist launch, a sanitary pumpout, and indoor and outdoor winter storage (about 200 boats).

Voyager Boat Sales, Inc.: Voyager Boat Sales presently rents about 220 slips for boats 25 foot and up with water depths ranging from 4-5 feet (Fall 1975) in the docking areas. They have a new launching ramp ($3.00 fee or $61.00 or $41.00 season passes depending on whether user leaves boat on trailer at marina); therefore its use during the season is not known. Other services offered are: hoist launch, gas, and indoor and outdoor winter storage. There is enough parking space to accommodate about 150 cars at any one time.

River View Marina: River View Marina rents about 350 slips and can handle boats up to 60 feet long. Water depths in the docking area range from 3 to 11 feet. Parking is adequate with the possibility for expansion if necessary. Services offered by the marina are: launching ramp ($2.00 fee, not easy to use), sanitary pumpout, gas, and indoor and outdoor storage for about 500 boats.

Rochester Yacht Club: The Rochester Yacht Club is a private establishment providing about 140 slips for its members. The docks are situated in a basin adjacent to the river with depths ranging from 6-10 feet. The club also operates a hoist launch and a sanitary pumpout. Parking is adequate and is strictly for members of the club.

Genesee Yacht Club: The Genesee Yacht Club is another private establishment providing 48 slips for some of its members with depths averaging 6-8 feet in the docking area. The slips are allocated on a membership seniority basis, with associated annual fees for the slip and outside winter storage. It has been indicated by the yacht club treasurer that, if available, 40-50 more slips could be used by members who are not able to dock at the club. The club operates a launching ramp that is used only 4-5 times per week during the boating season. The club provides parking space for its members only and can accommodate up to 150 cars at any one time.

At present, the demand for docking facilities on the Genesee River is so great that the only possible way of renting one is to purchase a boat from one of the four marinas. Sometimes this doesn't even insure a dock, and as a result, many boat sales are lost. Other problems encountered in Rochester Harbor affect the operation of boating facilities. These are the continuous silting of the docking areas via river transport requiring periodic dredging and swells from the lake, causing mooring difficulties. These two problems particularly affect docking facilities located directly on the river bank.

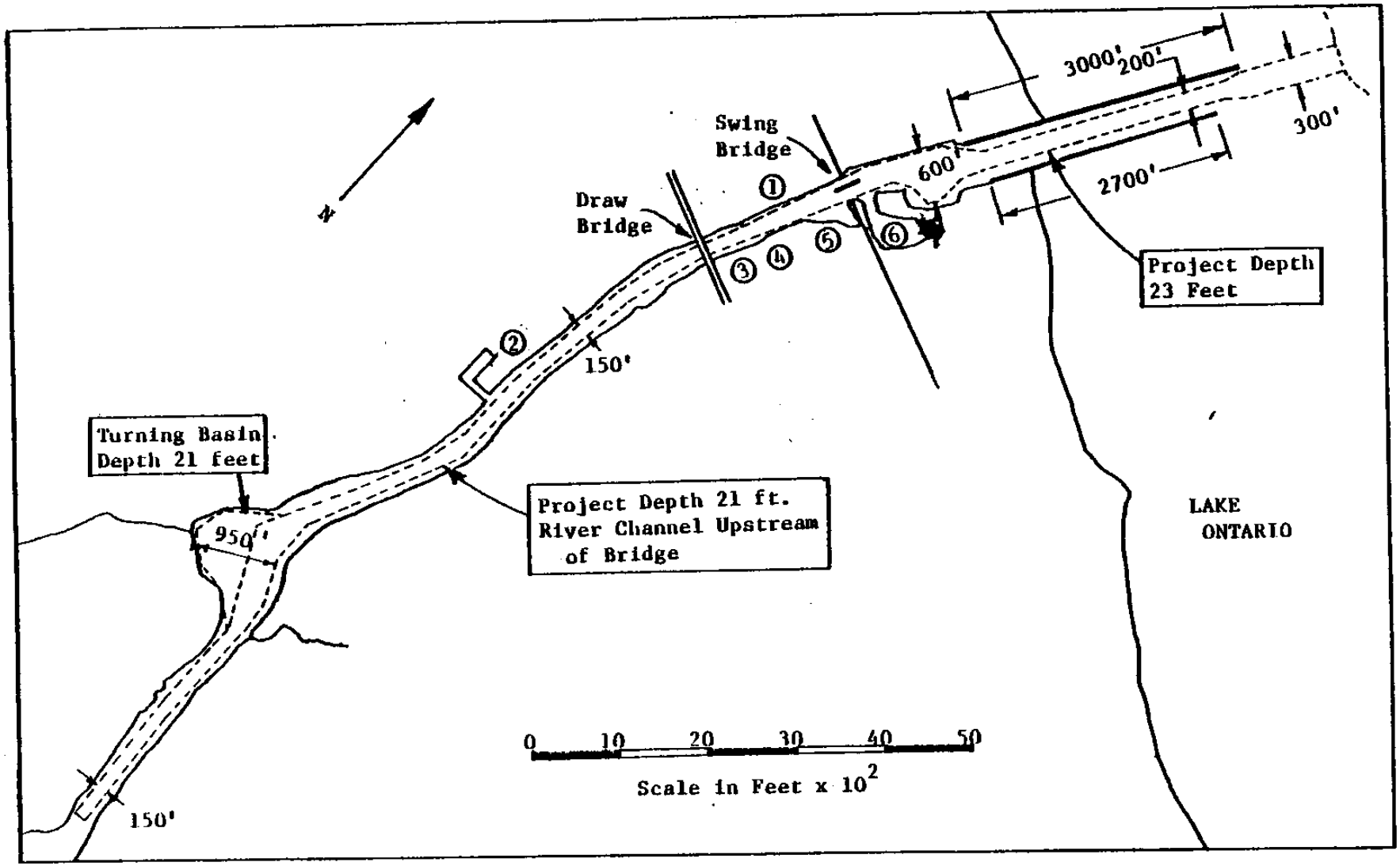
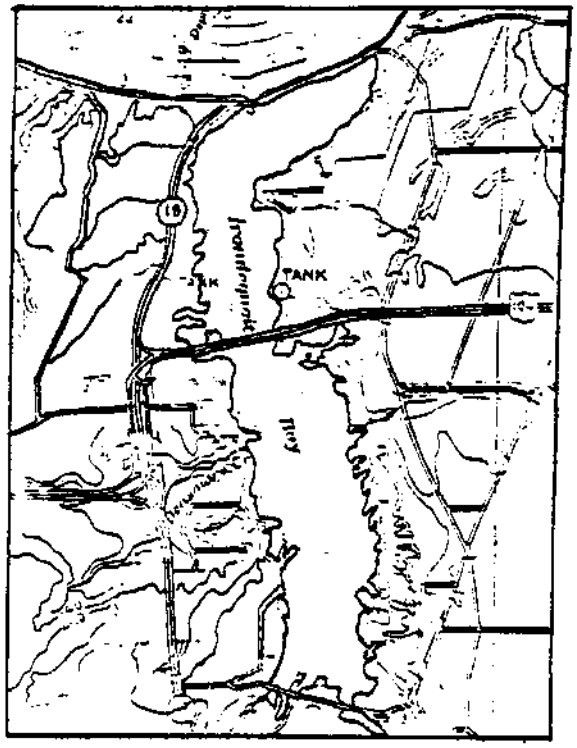


Figure 33: Rochester Harbor (Genesee River) showing dimensions of maintained channel, location of piers, and locations of boating facilities: (1) Anchor Marine, (2) River View Marina, (3) Voyager Boat Sales, Inc., (4) Genesee Yacht Club, (5) Shumway Marine, and (6) Rochester Yacht Club.

4.11 Irondequoit Bay

Irondequoit Bay is located four miles east of the Genesee River and is approximately four miles long, three-quarters of a mile wide, and ranges in depths to over 60 feet. The bay is separated from the lake by a sand and gravel bar a little over one mile long, averaging 350 feet in width, and rising 10-12 feet above lake level. The bar is populated with homes and cottages and is traversed by a railroad and highway. The bay provides good shelter for small boats due to its high banks.



Irondequoit Bay
(Scale 1:80,000)

The entrance to the lake is about 60 feet wide and averages five feet in depth. However, access to the lake from the bay or vice versa by other than small fishing boats is hampered by the presence of low clearance bridges for the railroad and the highway. Access is also hampered by the presence of an underwater bar, about one foot below the surface and 75 feet from shore, across the entrance. There are at present no structures protecting the entrance, but Congress has already appropriated money for its development into a harbor of refuge. The project plan calls for the opening of the bay entrance, construction of parallel jetties and the replacement of the existing fixed span railroad bridge

with a swing bridge.

Boating facilities on Irondequoit Bay include two marinas and a yacht club. Each is listed below with its capacities and services. Their location in the bay is shown in Figure 3-. In addition to these facilities, a public launching ramp is located on the west side of the entrance.

Mayer's Marina, Inc.: Mayer's Marina presently rents 125-150 slips for boats ranging in size from 12-25 feet. The owner has indicated that, if available, 50 more slips could be rented immediately and even more if the entrance to the lake were modified to accommodate larger boats. The marina operates a launching ramp ($2.00 fee) and has parking space available for up to 100 cars. Other services include: gas, boat rentals (3), and a hoist launch.

Jim's Marine Service: Jim's Marine Service presently rents about 150 slips for boats ranging in size from 11-25 feet. The marina operates a launching ramp and provides good parking and gas.

Newport Yacht Club: The Newport Yacht Club maintains 45 docks for small sail boats (12-18 feet) and whose use is restricted to members. The club operates a launching ramp that is used 10-15 times per week during the boating season by its members only. The club has parking space to handle about 40 cars.

Reaction to an entrance channel modification for Irondequoit Bay is varied. The marina owners are in favor of the modification, because of the opportunity for increasing their business. The yacht club, however, is opposed to the modification because they feel it would result in excessive motor boat traffic. This excessive traffic would in turn interfere with their small boat sailing and racing.

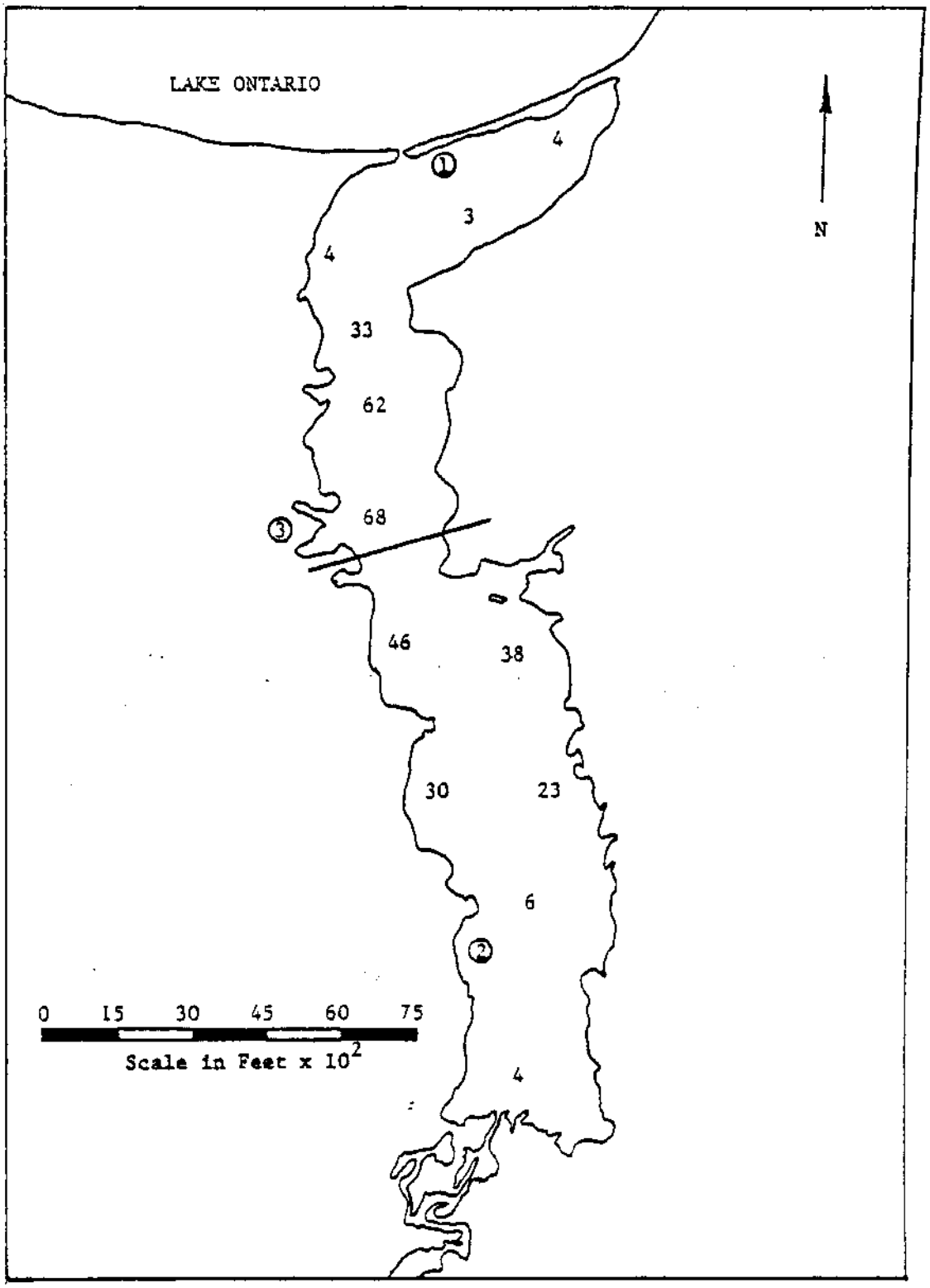


Figure 34: Irondequoit Bay showing locations of boating facilities: (1) Mayer's Marine, (2) Jim's Marine Service (3) Newport Yacht Club. Soundings within the bay are in feet.

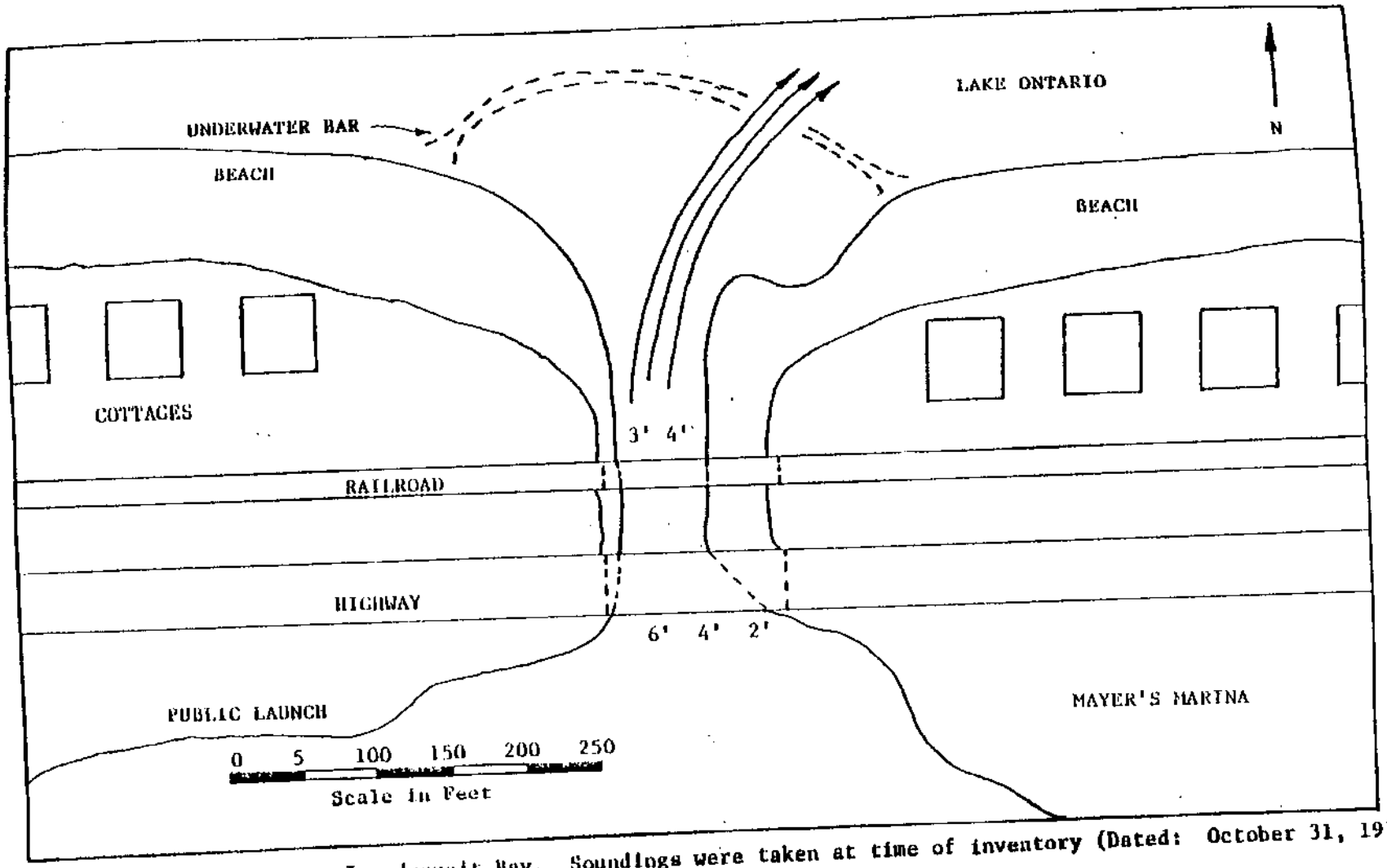
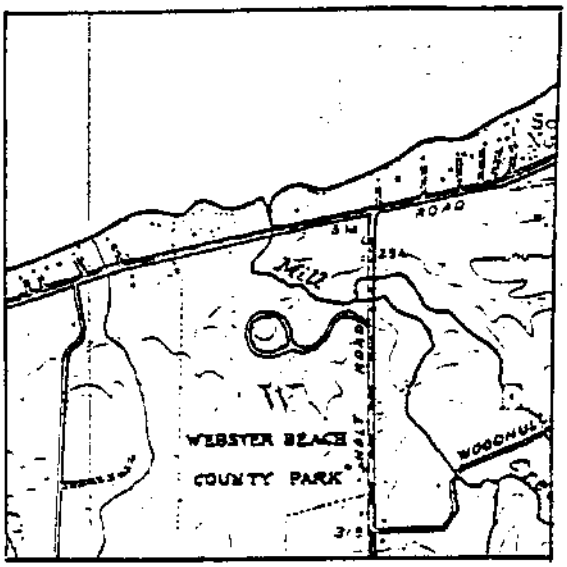


Figure 35: Entrance to Irondequoit Bay. Soundings were taken at time of inventory (Dated: October 31, 1975)

4.12 Mill Creek

Mill Creek enters Lake Ontario 8.5 miles east of the Genesee River in the Town of Webster. The land adjacent to the creek at its mouth is publicly owned (Webster Park) and is used for picnicking and camping. A 400 foot public fishing pier exists about 500 feet east of the creek. West of the creek is a large parking lot and restrooms that are used by bathers, when the water is clean enough, and fishermen.



Mill Creek
(Scale 1:24,000)

The creek forms no embayment and has a very small outflow. The creek at its mouth is only 20 feet wide, ranges from one to two feet in depth, and is crossed by a wooden foot bridge (3 ft. clearance) about 60 feet from the lake. In addition, a gravel bar has formed across the creek mouth (see figure) that rises approximately one foot above lake level. No boating facilities exist on this tributary because of its small physical size.

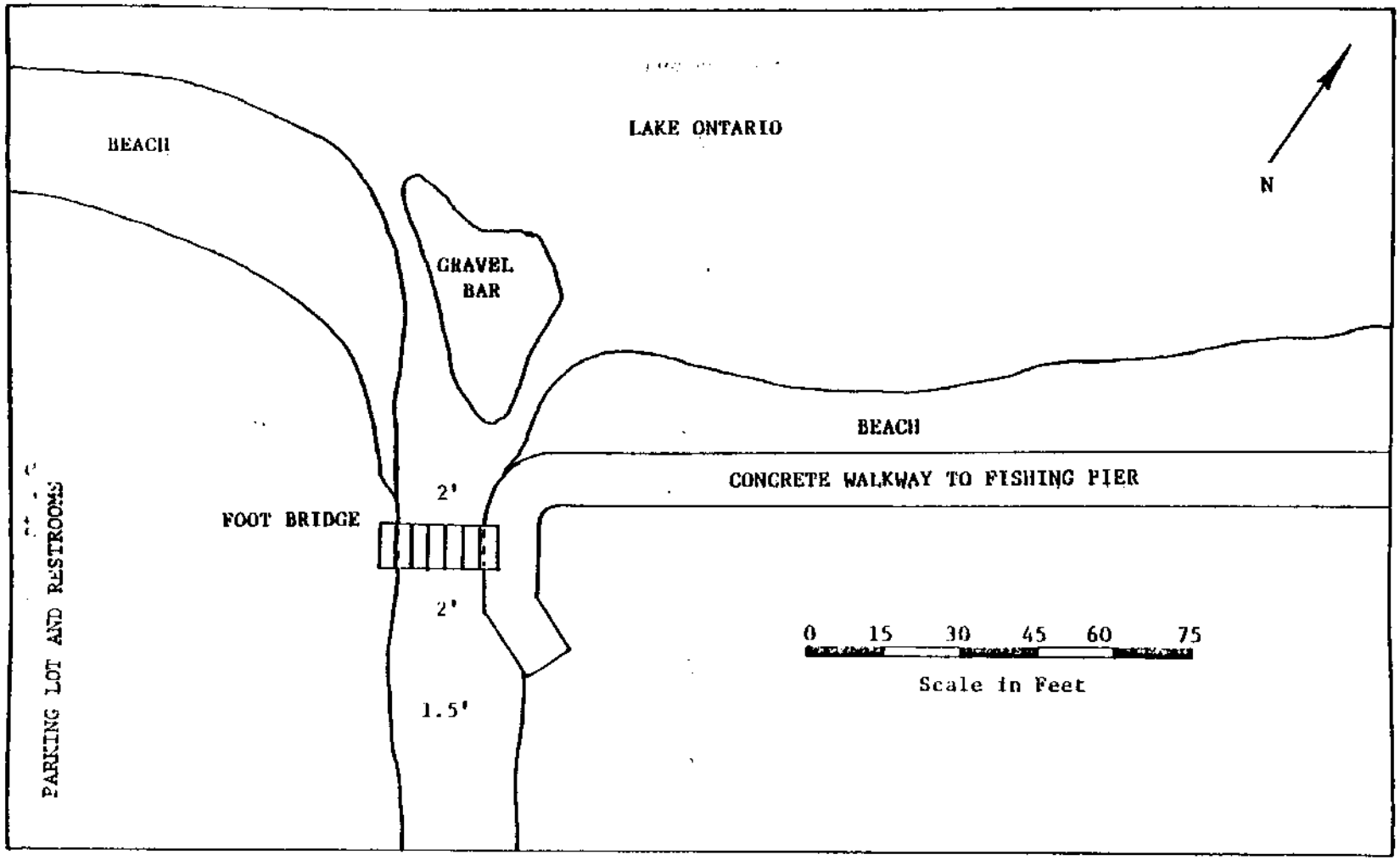
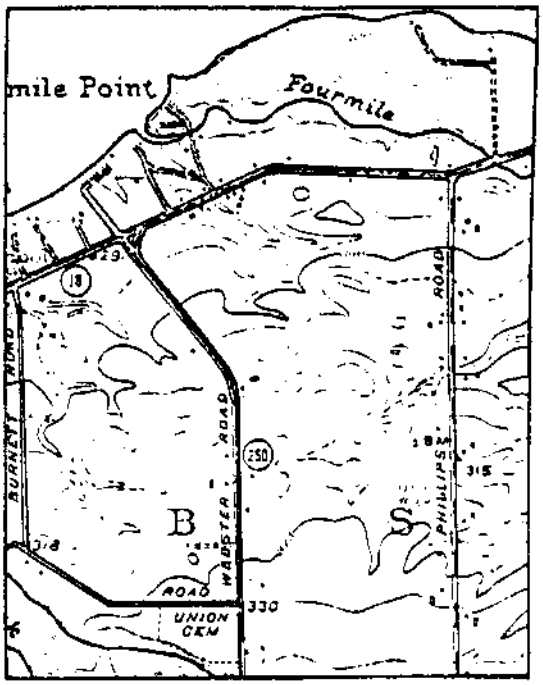


Figure 36: Mouth of Mill Creek. Soundings taken at time of inventory. (Dated: October 31, 1975).

4.13 Fourmile Creek

Fourmile Creek enters Lake Ontario 9.5 miles east of the Genesee River in the Town of Webster. The land adjacent to the creek near its mouth is privately owned with the west bank supporting a restaurant and the east bank private residences. No boating facilities exist on this tributary, except for a docking pier provided by the restaurant for transient craft.



Fourmile Creek
(Scale 1:24,000)

The creek at its mouth is about 75 feet wide and averages four to five feet in depth. This channel extends upstream (SE direction) 400 feet before narrowing and turning to the Some protection of the entrance is offered by the previously mentioned concrete pier on the west side which extends about 75 feet into the lake. The east side is protected inadequately by a small rip rap pier extending only 15 feet into the lake. No bar has formed across the entrance, so access to the creek from the lake is possible as long as calm conditions prevail.

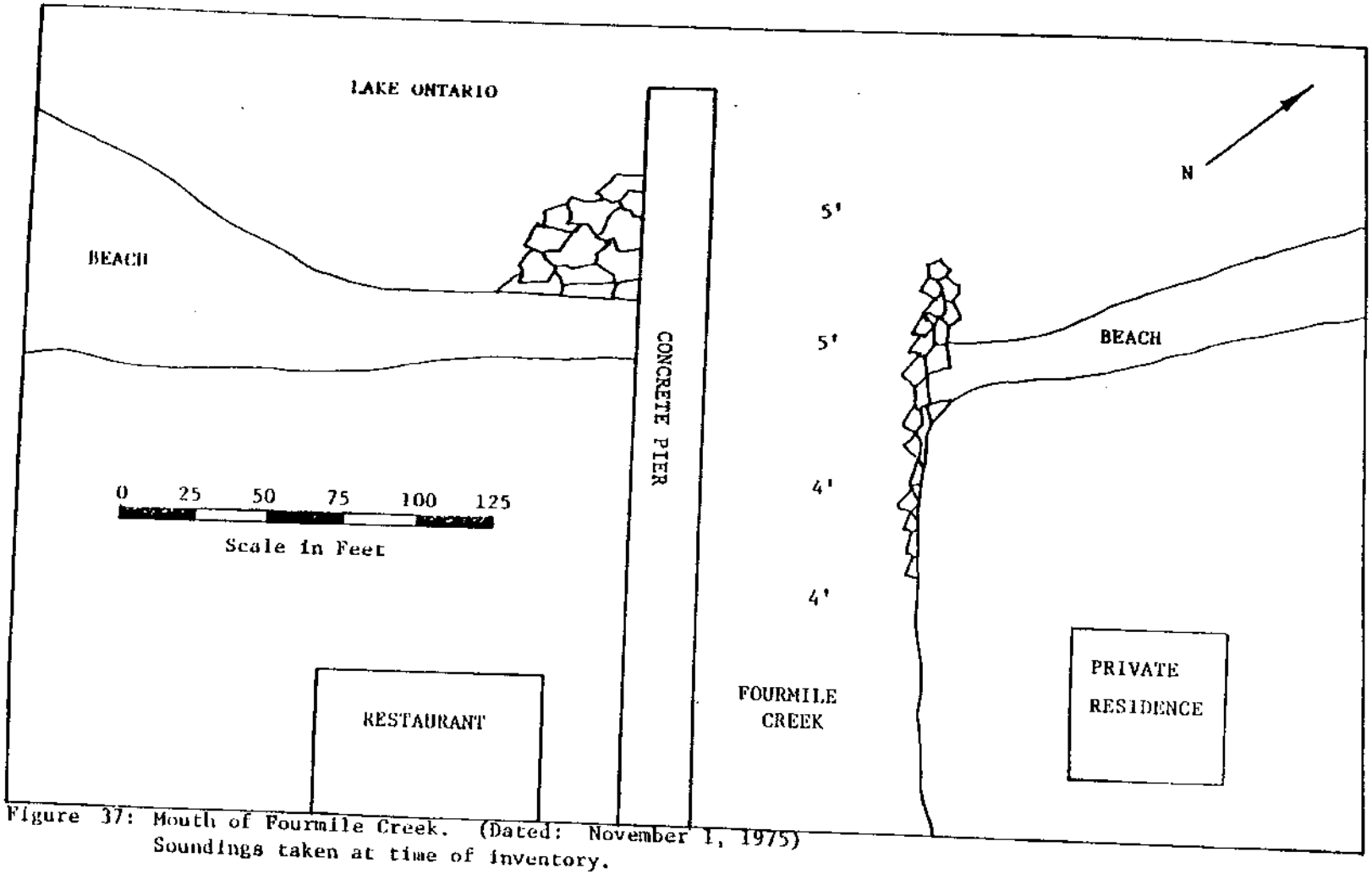


Figure 37: Mouth of Fourmile Creek. (Dated: November 1, 1975) Soundings taken at time of inventory.

CHAPTER V

WAYNE COUNTY

Wayne County is bounded on the west by Monroe County, on the east by Cayuga County, and on the north by Lake Ontario. The westerly 22 miles of the Wayne County shore, between the Monroe-Wayne County line and Sodus Bay, has quite a continuous bluff from 10 to 70 feet high, with an average height of about 25 feet. The bluff material is mainly silt and clay. The average width of the beach is about ten feet and is composed of coarse gravel and shingle.

The easterly 15 miles of the Wayne County shore, between Sodus Bay and Little Sodus Bay, are a series of drumlins separated by marshes that extend several miles inland along the creeks that enter the lake. The drumlins are up to 150 feet high above lake level and one-quarter to one-half mile wide at their base. The material at the bluff face of the eroding drumlins is glacial till, containing from ten to 100 percent sand and gravel. Lake Bluff, just east of Sodus Bay, and Chimney Bluff, two miles farther east, are two of the highest. Beaches at the base of the drumlins are generally less than ten feet wide. Narrow sand and gravel beaches have formed across the low marsh areas or open water between the drumlins. A predominate eastward littoral transport of beach material along the entire Wayne County shore exists and is the result of the predominate west and northwest winds.

The upland shore of Wayne County is mainly used for agricultural purposes. However, a fringe of scattered residential developments borders the lake and Chimney Bluffs State Park, just east of Sodus Bady, has a frontage of nearly two miles. Inlets and harbors in Wayne County include:

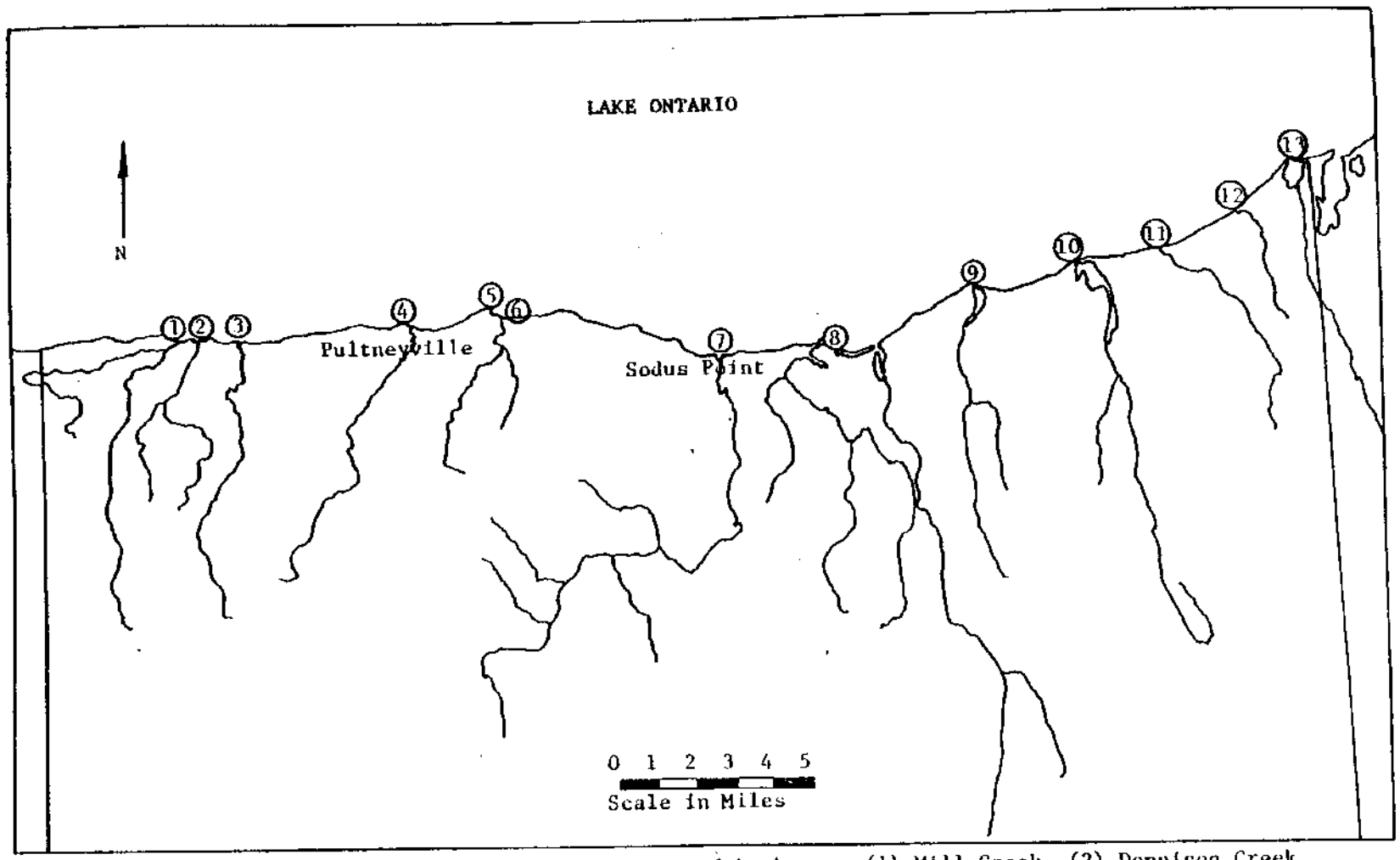
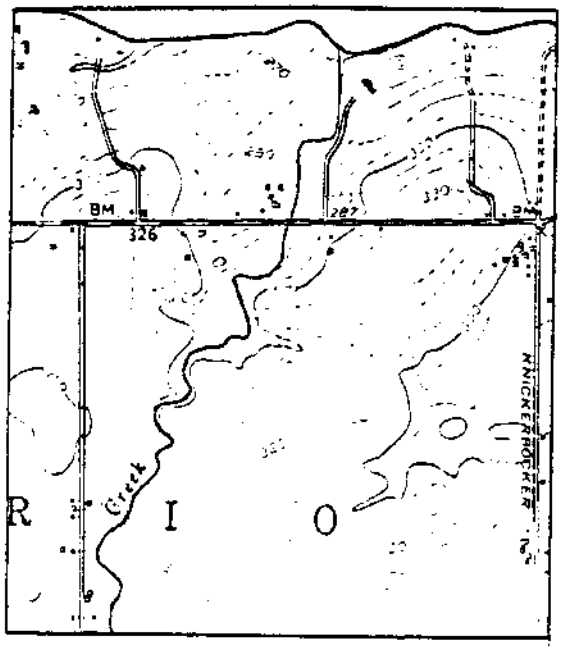


Figure 38: Wayne County showing location of inlets and harbors: (1) Mill Creek, (2) Dennison Creek, (3) Bear Creek, (4) Salmon Creek, (5) Hughes Marina, (6) Mink Creek, (7) Maxwell Bay (Salmon Creek), (8) Sodus Bay, (9) East Bay, (10) Port Bay, (11) Red Creek, (12) Black Creek, (13) Blind Sodus Bay.

Mill Creek, Dennison Creek, Bear Creek, Salmon Creek, Paradise Lagoon (Hughes Marina) Mink Creek, Maxwell Bay (Salmon Creek), Sodus Bay, East Bay, Port Bay, Red Creek, Balck Creek, and Blind Sodus Bay. Mill Creek is not included in this inventory because of its proximity to the nuclear power plant (Nine Mile Point) owned by Rochester Gas & Electric Security restrictions eliminate any possibility of recreational boating development on this tributary.

5.1 Dennison Creek

Dennison Creek enters Lake Ontario in the Town of Ontario about 17 miles west of Sodus Bay. The land on either side of the creek near its mouth is privately owned. No boating facilities exist on this tributary because of its small size.



Dennison Creek
(Scale 1:24,000)

The creek mouth is about 20 feet wide and the outflow is partially blocked by a sand and gravel bar 5 feet wide and that rises one foot above lake level. Depths in the creek upstream from its mouth average 1-2 feet. The creek is flanked on both sides by low bluffs approximately 10 feet high.

5.2 Bear Creek

Bear Creek Harbor is located approximately 16 miles west of Sodus Bay in the Town of Ontario. The west bank of the creek near its mouth is owned by the Town of Ontario, while the east bank is privately owned. The

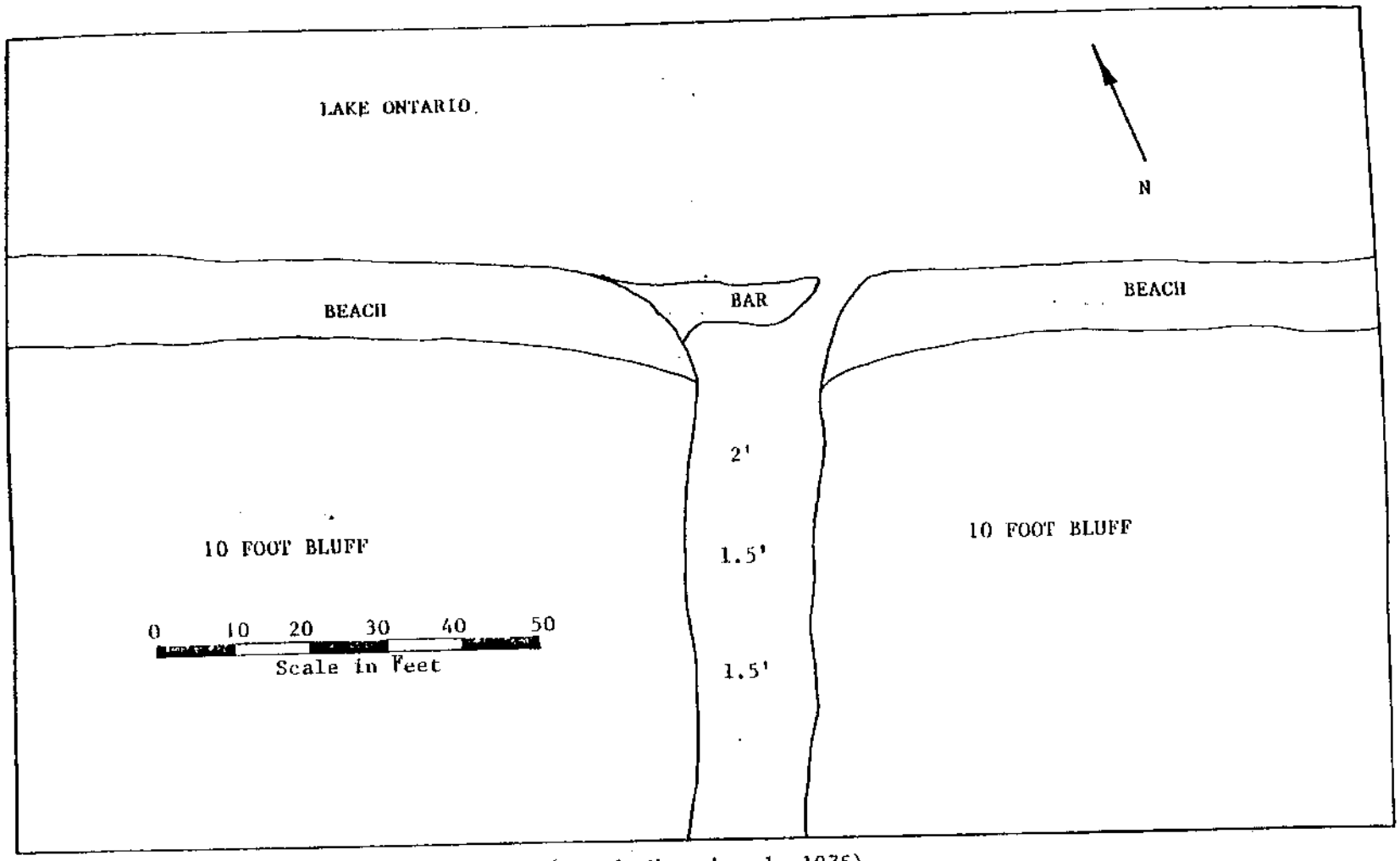
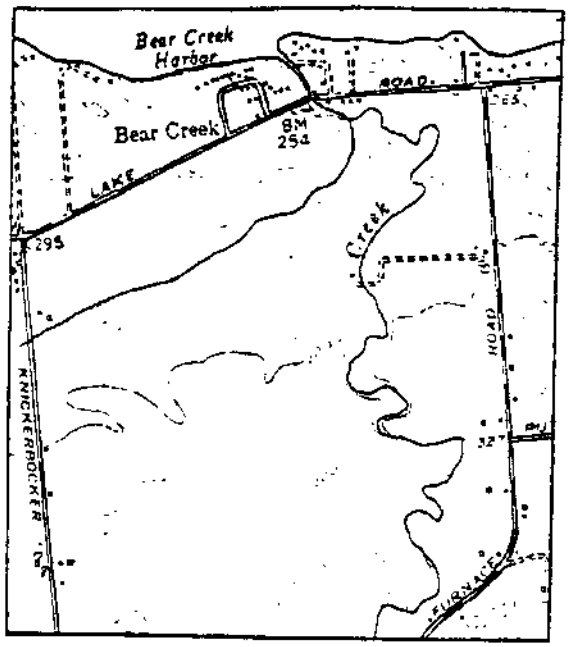


Figure 39: Mouth of Dennison Creek (Dated: November 1, 1975)

town maintains a free launching ramp on its side of the creek, which was initially constructed to handle barges carrying materials for construction of the Nine Mile Point nuclear power plant. Parking space is limited, however, with space to handle only 10-15 cars with trailers.

Low Bluffs, 10-15 feet high flank the harbor entrance which averages 110 feet in width from the lake shore to the ramp, 250 feet upstream. From this point, the creek narrows to about 50 feet. Depths in the harbor at the time of its construction averaged 10-15 feet, but since that time sedimentation has reduced the average depth to 5 feet. The harbor is inadequately protected with a small rip-rap breakwater about 75 feet long and 4-5 feet above lake level on the west side of the entrance.



Bear Creek
(Scale 1:24,000)

5.3 Salmon Creek

Salmon Creek enters Lake Ontario 11.3 miles west of Sodus Bay in the Town of Williamson in the Village of Pultneyville. The land adjacent to the creek near its mouth is privately owned and is administered jointly by the Pultneyville Yacht Club (west bank) and the Pultneyville Mariners (east bank). The yacht club has developed a functional but crowded harbor near the creek's mouth. Facilities are limited to members and guests from other clubs and include parking space for 40-50 cars, approximately

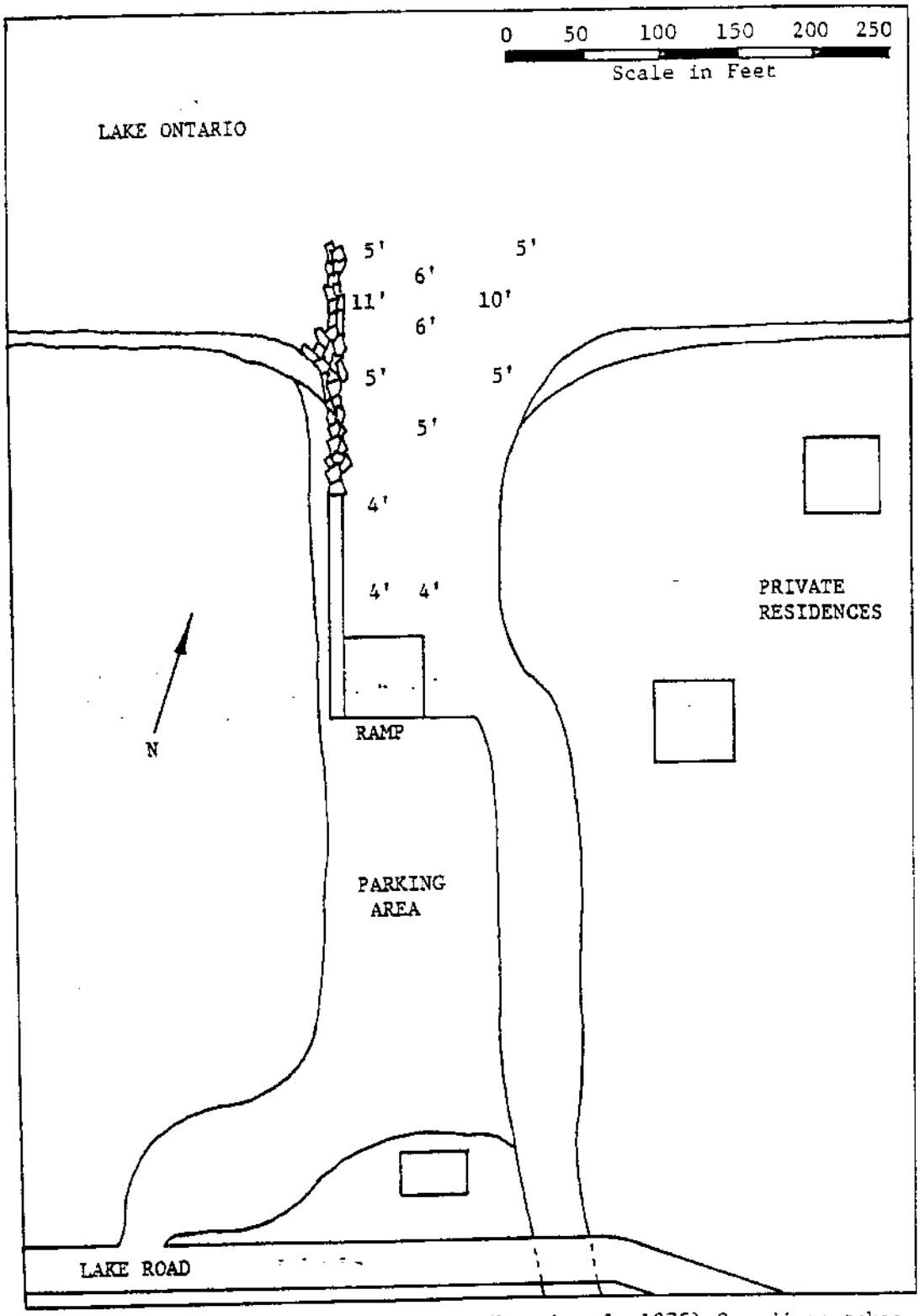


Figure 40: Bear Creek Harbor (Dated: November 1, 1975) Soundings taken at time of inventory.

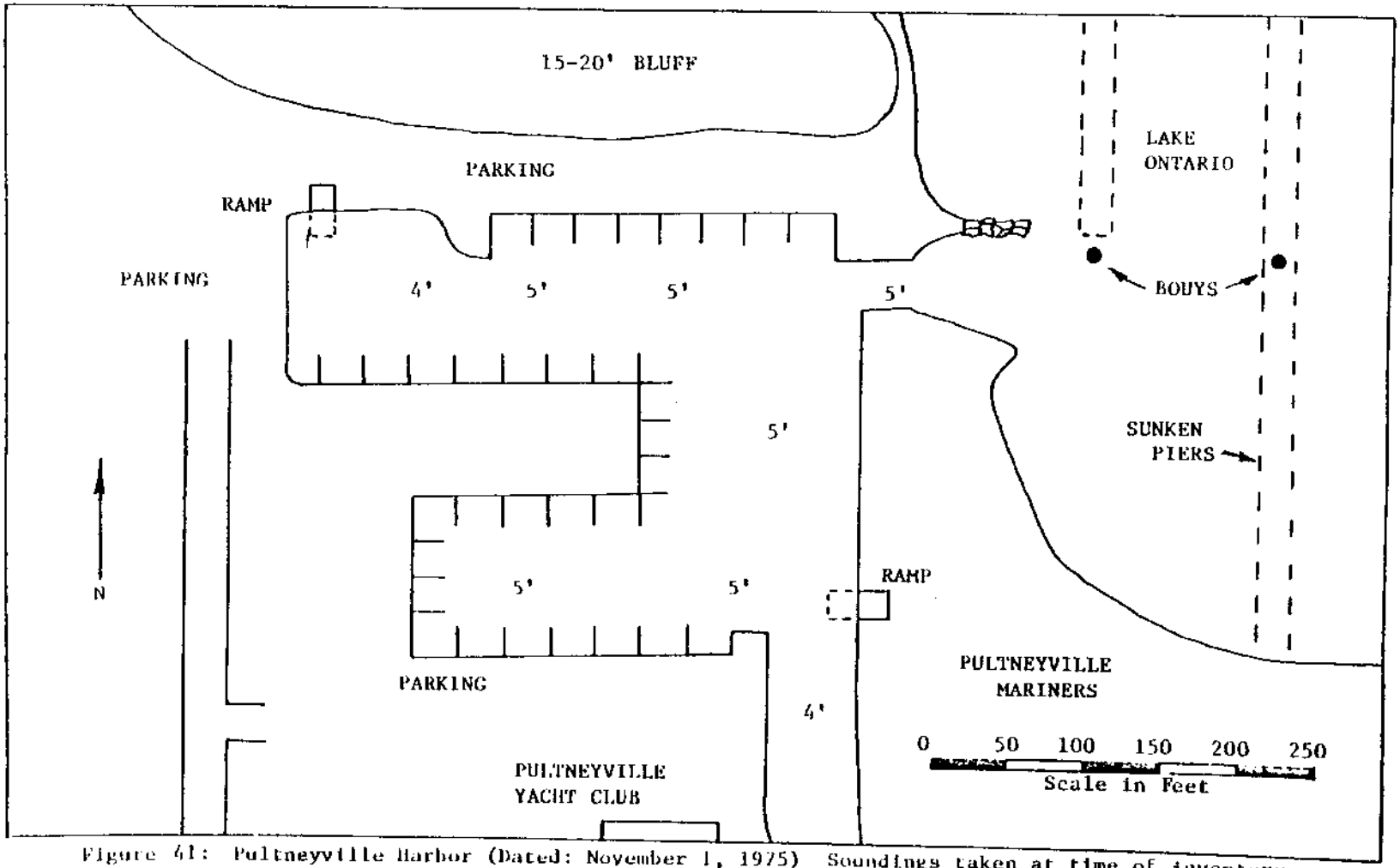
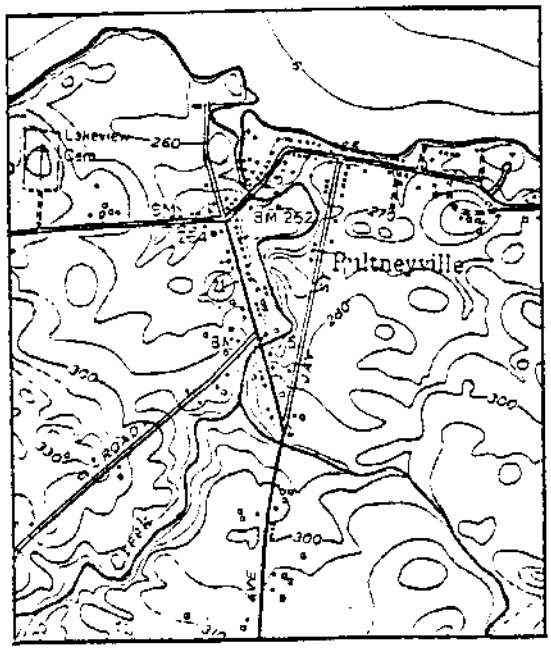


Figure 41: Pultneyville Harbor (Dated: November 1, 1975) Soundings taken at time of inventory

125 slips, a launching ramp, gas, and a hoist launch. The Pultneyville Mariners, a group of sunfish and dinghy sailors, operate a launching ramp on the east bank, but it is also provided along the creek, because of its small size.

The harbor itself is maintained by the yacht club, is tree shaded and very pleasant. Depths in the basin average 4-5 feet. The harbor entrance is about 35 feet wide, 4-5 feet deep, and flanked by a 15-20 foot bluff on the north and a 0-5' bluff on the south. A small rip-rap breakwater, about 50 feet long and 10 feet wide, has been built on the north side, but it doesn't seem to be adequate. The entrance is well protected, however, from west and northwest storms, because it opens eastward into the lake. The harbor approach channel is hazardous, because of two sunken piers, but it is well marked by buoys.



Salmon Creek
(Scale 1:24,000)

5.4 Hughes Marina (Paradise Lagoon)

Hughes Marina is located at Fairbanks Point about 9.3 miles west of Sodus Bay in the Town of Williamson. Hughes Marina is privately owned and was developed mainly to accommodate fishermen. The harbor, which averages 3-4 feet in depth, is man made, since no natural channel or tributary was present at the time of its construction. The marina provides a launching ramp ($2.00 fee), plenty of parking, about 55 slips, gas, a refreshment

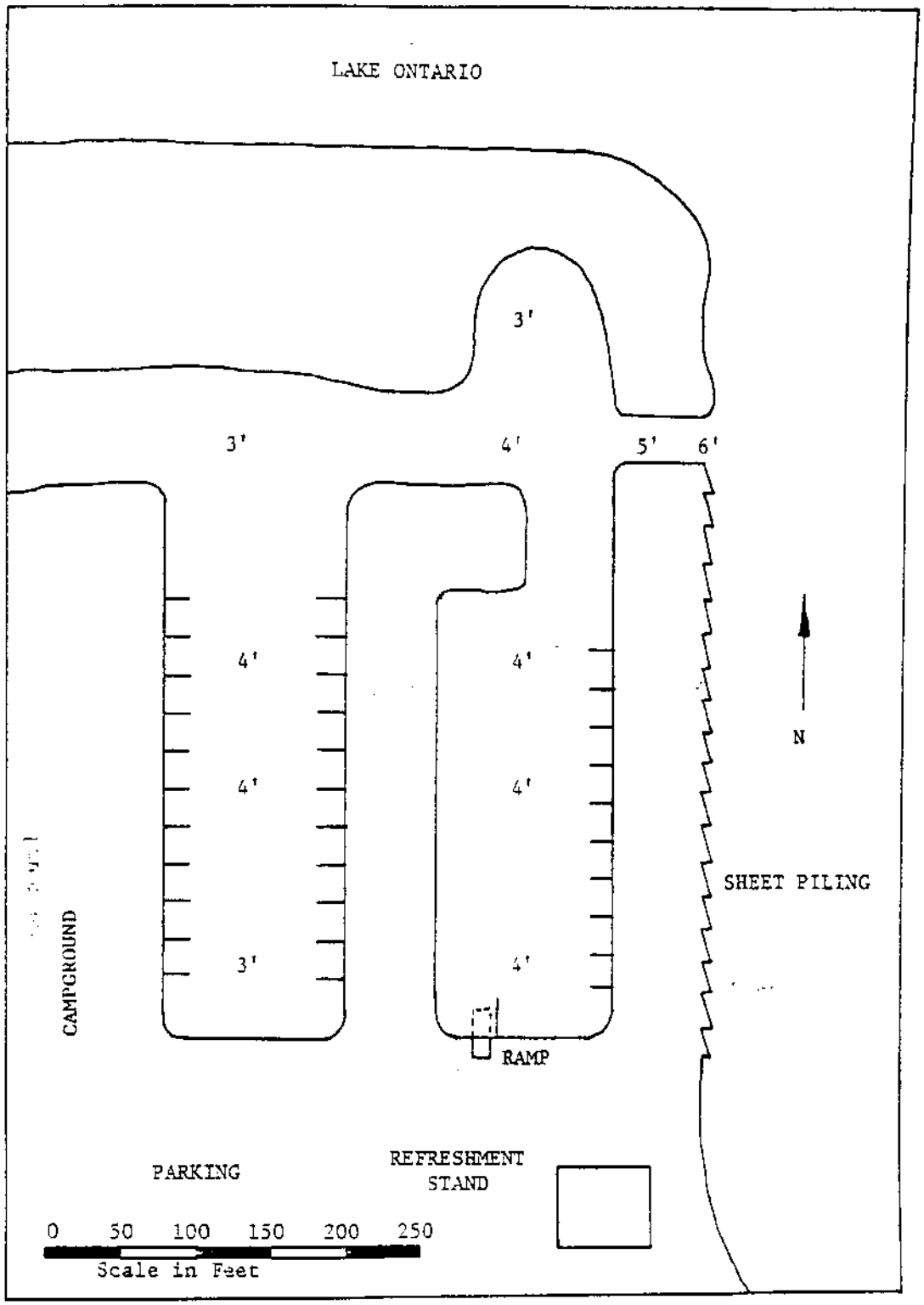
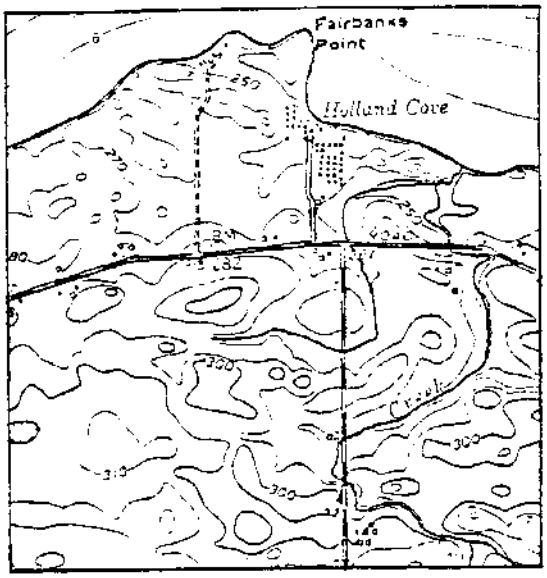


Figure 42: Hughes Marina (Dated: November 14, 1975) Soundings taken at time of inventory

stand, bait, and boat rentals. The land around the harbor has also been developed into a neat campground.

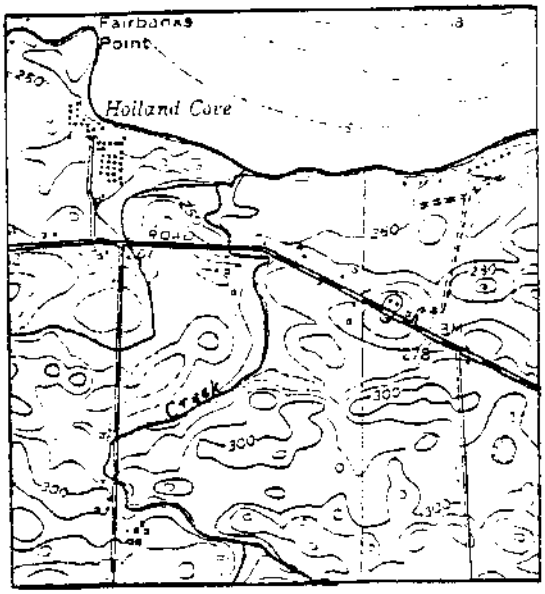


Hughes Marina
(Scale 1:24,000)

The harbor entrance is on the east side of the point and is marked by a Mobil gas sign. It is not protected by any structures. However, it is well protected from the predominate west and northwest storms, because it opens eastward into the lake. The entrance is about 30 feet wide and averages 5-6 feet in depth on the south side. The north side is constantly being filled in with sand and gravel via littoral transport and requires periodic dredging. The section of land just south of the entrance is protected against erosion by steel sheet piling and is populated with trees.

5.5 Mink Creek

Mink Creek enters Lake Ontario about nine miles west of Sodus Bay in the Town of Williamson. The property on either side of the creek near its mouth is privately owned. No boating facilities exist at this tributary because of its small size and nearness to Hughes Marina.



Mink Creek
(Scale 1:24,000)

A small marshy embayment (about 7 acres has formed near the creeks

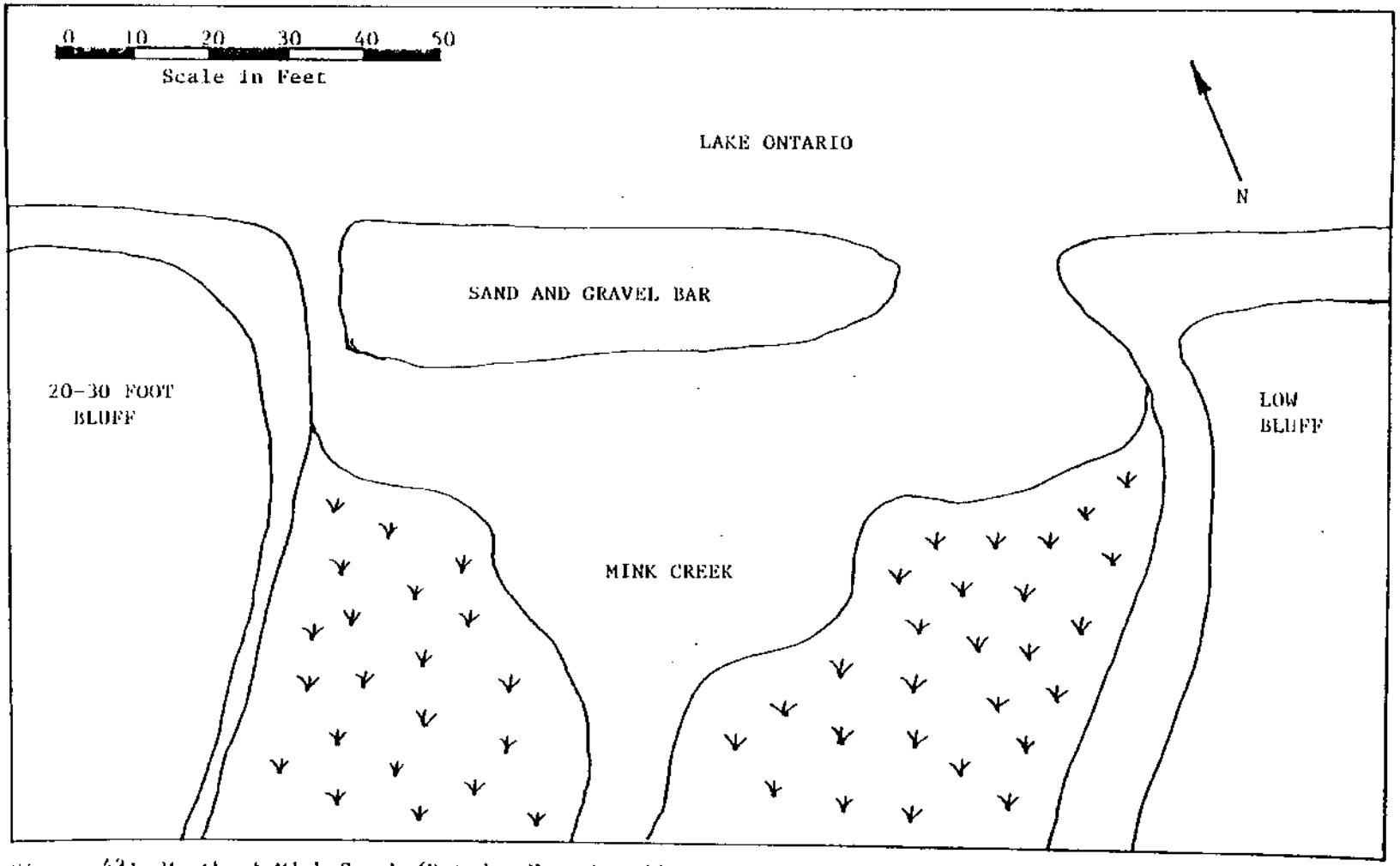


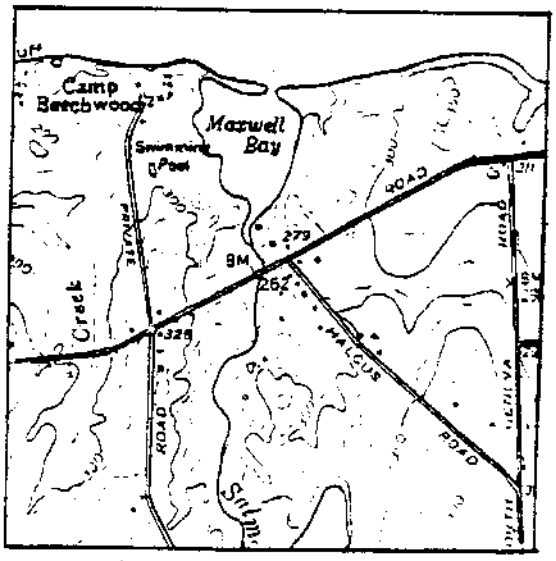
Figure 43: Mouth of Mink Creek (Dated: November 15, 1975)

mouth and is flanked on the west by a 20-30 foot bluff and on the east by a 0-5 foot bluff. A sand and gravel bar approximately 70 feet long, averaging 20 feet in width and rising 2-3 feet above lake level separates the bay from the lake. Two outlets carry runoff to the lake. One is located at the bay's extreme west edge and is about five feet wide and two feet deep. The second is located at the bay's east edge and is about 20 feet wide and 2-3 feet deep.

5.6 Salmon Creek

Salmon Creek enters Lake Ontario about 2.5 miles west of Sodus Bay in the Town of Sodus. The creek forms a large embayment near its mouth, with an area of about 27 acres, called Maxwell Bay. Land adjacent to Maxwell Bay is privately owned with the west side supporting a Girl Scout camp (Camp Beachwood). The bay is flanked on both sides by high bluffs making access by land difficult. The bay is separated from the lake by a tree and brush covered, gravel, barrier beach, 1000 feet long, averaging 100 feet in width, and rising 3-4 feet above lake level. It averages only 2-3 feet in depth and is marshy. No boating facilities are present on this tributary because of these physical constraints.

An outlet to the lake does exist and is located about 650 feet from the west bluff. The channel width averages 30 feet with the depth varying from 3 feet on the bay side to 0.5 feet on the lake side. The shallow depth on the lake side is the result of wave action and transport of beach



Salmon Creek
(Scale 1:24,000)

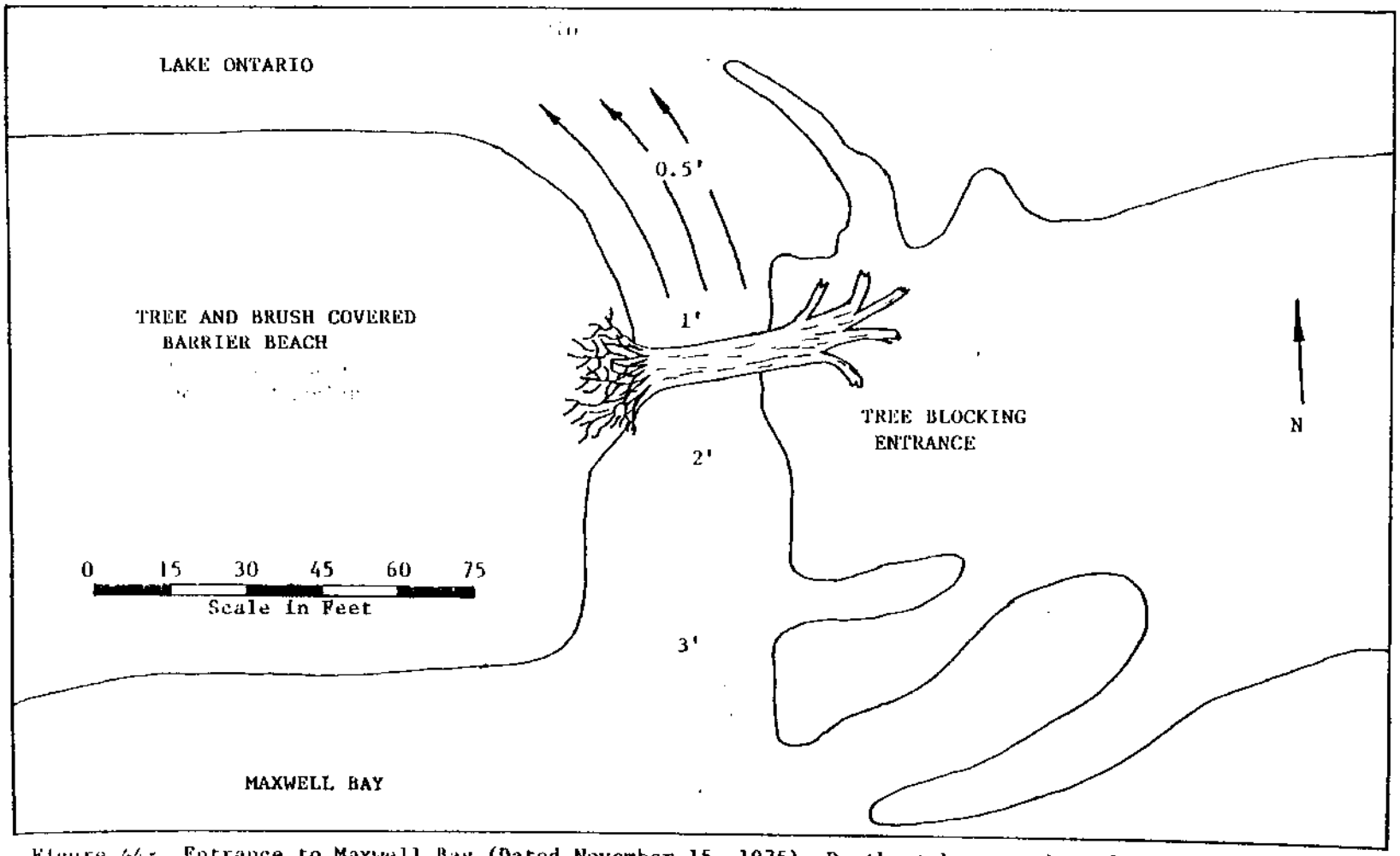


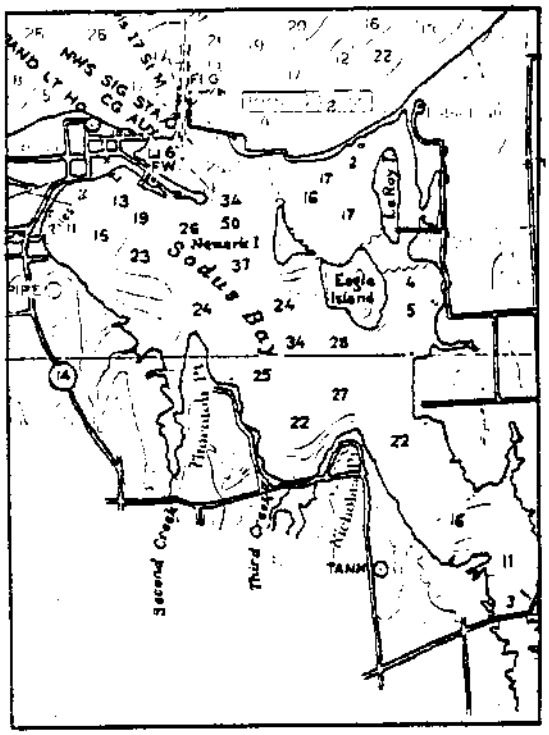
Figure 44: Entrance to Maxwell Bay (Dated November 15, 1975) Depths taken at time of inventory

material. A large tree has fallen across the entrance which at times during the year was passable by small fishing boats.

An attempt to remove the tree was made by some local fishermen, but conservationists had the tree replaced because its absence would have disturbed the muskrat environment in the bay. Since the bay offers good fishing and fishing access is restricted by the land owners around the bay and the entrance is blocked, fishermen in the area are disturbed.

5.7 Great Sodus Bay

Great Sodus Bay, located in the Town of Sodus, is a large natural body of water fed by several small streams. It is separated from Lake Ontario by a barrier beach, which is typical of the lake shore in this area. The entrance channel to Great Sodus Bay is federally maintained and is protected by two reinforced concrete piers, the west one being 1580 feet long and the east one 1300 feet long. There is, in addition, a breakwater approximately 1500 feet long connecting the bayside of the east pier to Charles Point, the western most point of the barrier beach. The maintained navigation channel depths and widths are shown in Figure 45. Even though Sodus Bay is maintained as a commercial harbor, its use in this respect ceased about eight years ago with the closing of the Penn Central's coal terminal on the bay's west bank. As a result, the bay is now used primarily as a small boat harbor. Nearly



Great Sodus Bay
(Scale 1:80,000)

all land surrounding Great Sodus Bay is privately owned and supports many summer homes and cottages as well as year round residences.

There are several boating facilities located within the bay and nearly all of them provide better than average services. These include five marinas, a bait shop and boat livery, a public launching ramp, and a yacht club. Each is listed below with a description of its capacities and services. Their location in the bay is shown in Figure 45

Sills Marina: Sills Marina provides approximately 60 slips for boats greater than 25 feet in length. Depths in the docking area average about eight feet. The owner operates a launching ramp and has adequate parking for automobiles. Other services include: gas, diesel fuel, indoor (310) and outdoor (100) winter storage, and a hoist launch.

Trestle Marine: Trestle Marine rents approximately 95 slips and the owner has plans to build an additional 100 slips. Since Trestle Marine is located on the site of the old coal terminal, depths in the docking area average over 20 feet making it possible to handle any size recreational craft. No launching ramp is provided, but adequate parking is provided for patrons of the marina. Other services include: gas, diesel fuel, hoist launch, a sanitary pumpout facility, complete repair facility, and outdoor winter storage (18 acres).

Arney's Marina: Arney's Marina rents 63 slips, 40 for boats 12-18 feet long, 15 for boats 18-25 feet long and eight for boats greater than 25 feet in length. It has been indicated by the owner that, if available, an additional 25 slips could be rented. The floating docks are moored in water averaging only five feet in depth and hence are used primarily by fishing boats and cabin cruisers up to 35 feet long. The owner operates a launching ramp that is used 50 to 100 times per week during the boating season. There is parking space available for about 40 cars. Other

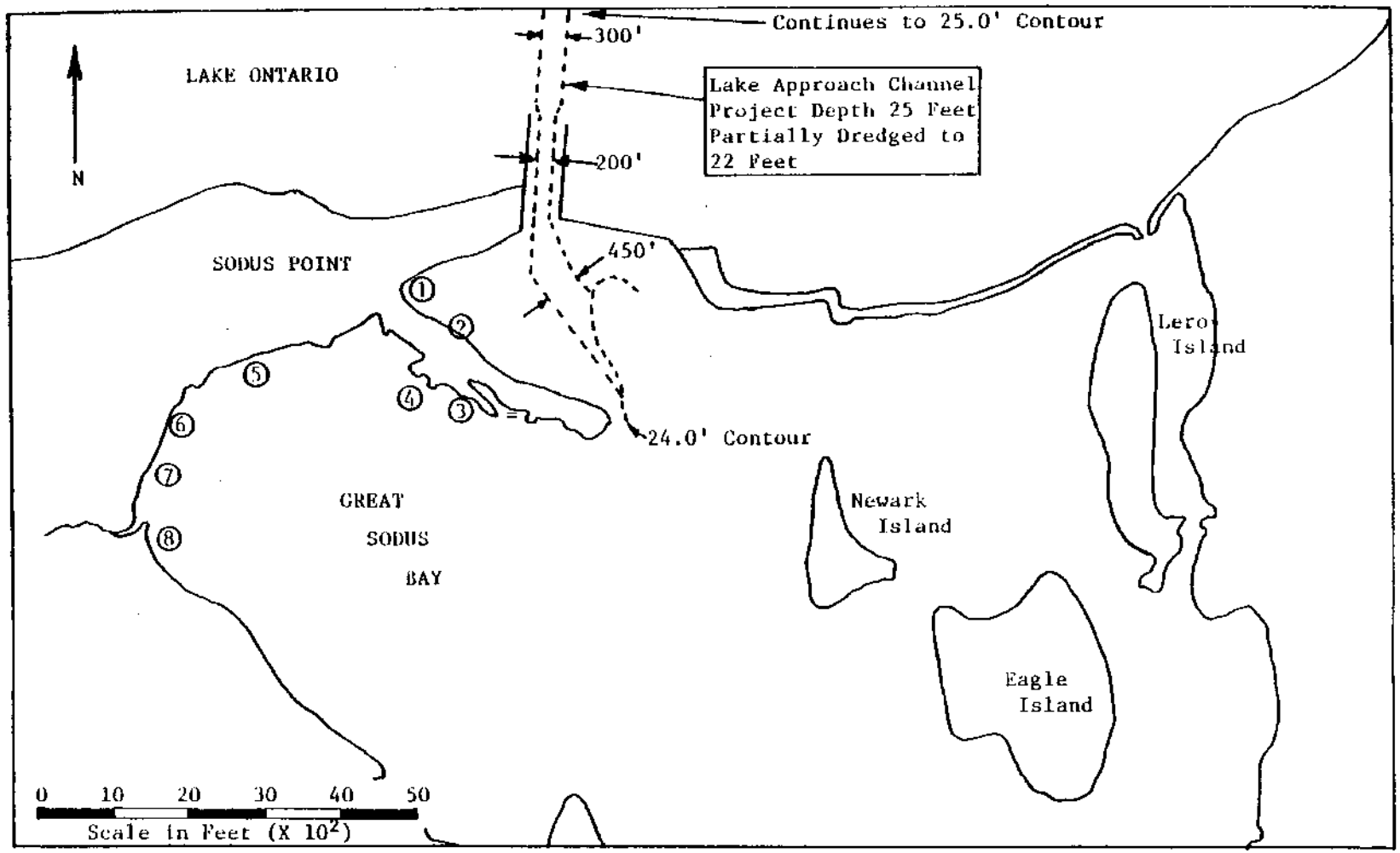


Figure 45: Great Sodus Bay showing dimensions of maintained channel, location of piers, and locations of boating facilities: (1) Sodus Point Bait Shop and Boat Livery,(2) Krenzer Marine,(3) Anchor Yacht Sales,(4) Sodus Bay Yacht Club,(5) Sills Marina,(6) Trestle Marine,(7) public launch ramp, and(8) Arney's Marina

services include: hoist launch, gas, and indoor and outdoor winter storage

Krenzer Marine:

Krenzer Marine rents about 40 slips and can handle up to a 45 foot craft. Depths in the docking area average 10 - 15 feet. The owner operates a launching ramp, but can provide little parking. Other services include: gas, hoist launch, indoor (135) and outdoor (50) winter storage.

Anchor Yacht Sales:

Anchor Yacht provides 60 moorings, primarily for sailboats with drafts up to seven feet. Anchor Yacht has no launching ramp, but provides adequate parking for its patrons. Other services include: gas, a sanitary pumpout facility, hoist launch, and outdoor winter storage (70 boats).

Sodus Point Bait Shop and Boat Livery:

The Sodus Point Bait Shop and Boat Livery is used strictly by fishermen. It provides about 70 slips, but it has been indicated by the owner that an additional 30 slips could be rented if available. The floating docks are moored in 4-5 feet of water and can handle boats up to 22 feet in length. The owner operates a boat launch that is very busy during the boating season. There is parking space available for about 50 cars. In addition, 14 rental boats and gas are available.

Sodus Bay Yacht Club:

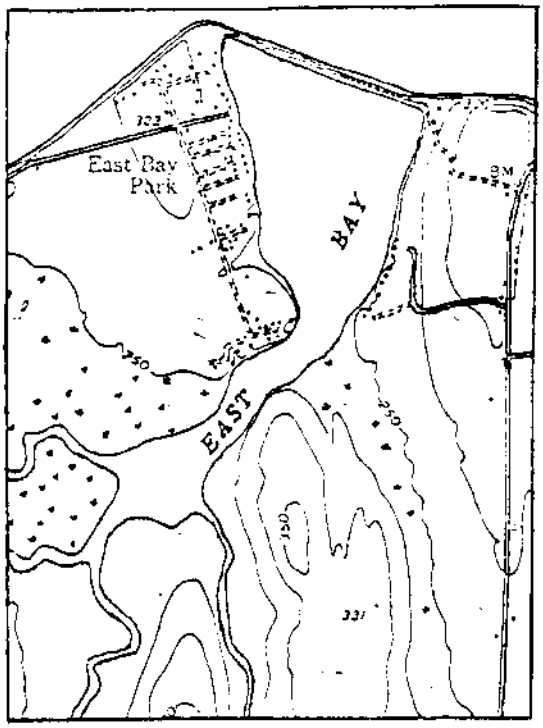
The Sodus Bay Yacht Club provides moorings strictly for its members. Other services offered to its members are gas, outside winter storage, parking and a hoist launch.

Town of Sodus Launching Ramp:

The free public launching ramp has parking space for approximately 20 cars with trailers.

5.8 East Bay

East Bay is a natural bay, fed by several small tributaries, located about 4.5 miles east of Great Sodus Bay in the Town of Huron. Nearly all property surrounding East Bay is privately owned. However, the wetlands at the head end of the bay and portions of land adjacent to these wetlands are state owned and kept as a wildlife refuge. The only boating facility, usable by persons other than landowners, is an unimproved launching ramp with very little parking space. The ramp is located on the bay's west bank (Figure 42) and there is no fee for its use.



East Bay
(Scale 1:24,000)

The bay is separated from Lake Ontario by a tree and brush covered sand and gravel barrier beach averaging 90 feet in width, about 1/2 mile in length, and rising 3-4 feet above lake level. The bay is bounded on the other three sides by high drumlins, between which are the many acres of wetlands. During most of the year the barrier beach prohibits any significant free surface flow (mainly intragravel flow) from the bay to the lake. At the time of this inventory, however, an outlet, about 1000 feet from the west bank of the bay had formed across the barrier beach. This resulted from the barrier beaches inability to resist the hydrostatic pressure caused by the elevation difference (about 1.5 feet) of the bay and lake waters. The resulting outlet averaged about 30 feet in width, 1-2 feet in depth, and possessed a very rapid outflow. Soundings taken at the time of

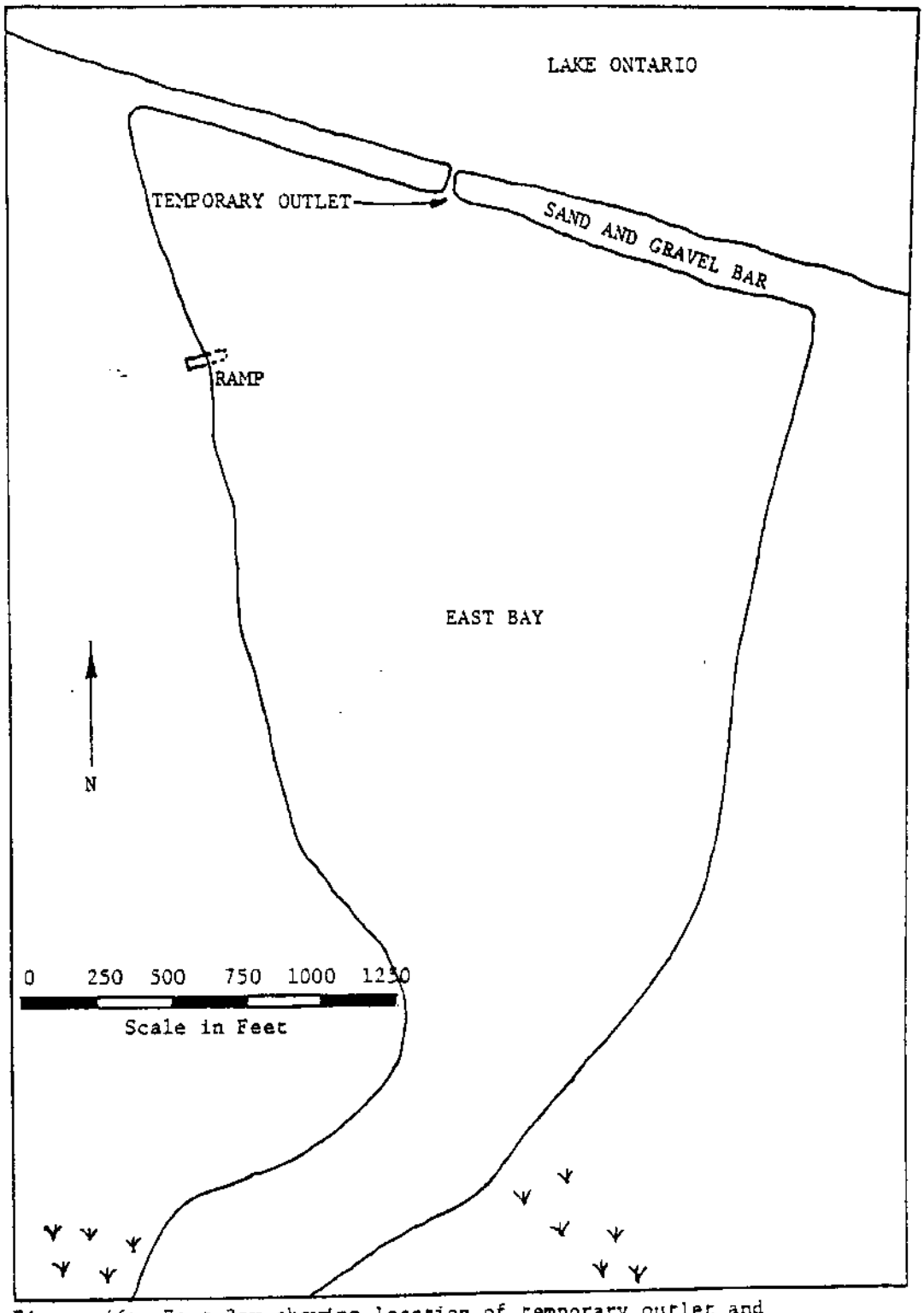


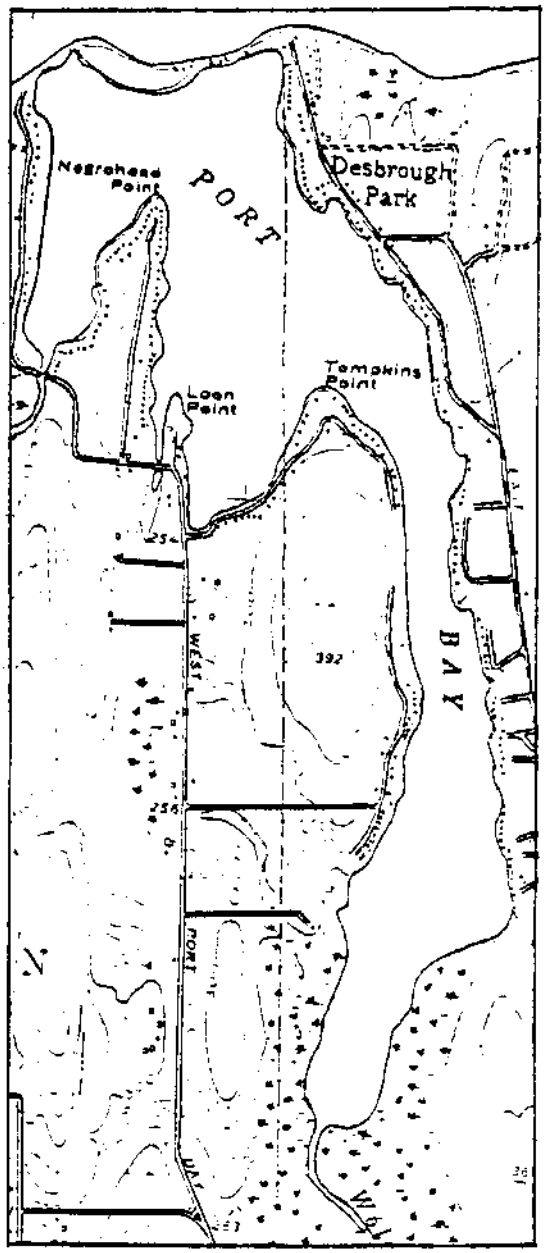
Figure 46: East Bay showing location of temporary outlet and unimproved launching ramp (Dated: November 15, 1975).

this inventory showed an average depth in the bay of about five feet. Access to the bay by land, in other than a few places, is difficult because of the wetlands and high drumlins.

5.9 Port Bay

Port Bay is another natural bay fed by several small tributaries, located about seven miles east of Great Sodus Bay on the boundary between the Town of Huron and the Town of Wolcott. Most of the land surrounding Port Bay is populated with privately owned summer and year round homes. However, the wetlands at the head end of the bay and portions of land adjacent to these wetlands are state owned and protected as a wildlife refuge.

There are three boating facilities, usable by persons other than landowners, on Port Bay. One is the Pier One Restaurant docking and launching facility located on the bay's west bank. This facility provides a launching ramp, gas, parking for about 15 cars with trailers, and about 20 slips in various states of disrepair. A New York State fishing access site for bank fishing or



Port Bay
(Scale 1:24,000)

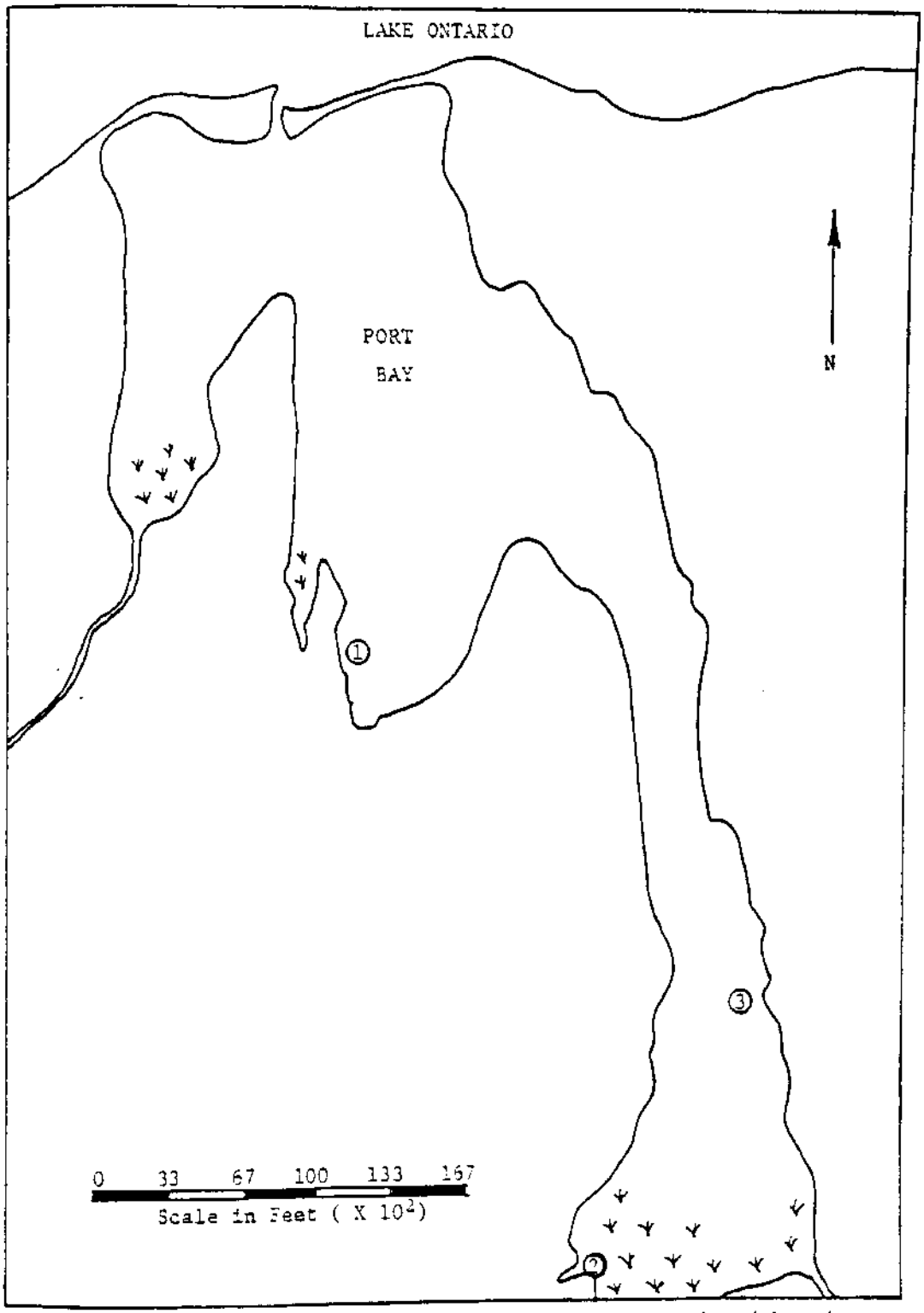


Figure 47: Port Bay showing location of entrance channel and boating facilities: (1) Pier One Restaurant (docking and launching), (2) N.Y.S. fishing access site, and (3) launching ramp.

launching car top boats is located about one mile south of the Pier One Restaurant. This site has parking space for about 20 cars. Accessibility to the water provided by this site is less than desirable, however, and could stand some improvement. Finally, there is a launching ramp on the east side of the bay just off of East Port Bay Road.

The bay is separated from Lake Ontario by a tree covered, sand and gravel barrier beach averaging 200 feet in width, about 1/2 mile in length, and rising 5-6 feet above lake level. The bay is bounded on the rest of its banks by high drumlins. An entrance channel to Port Bay from Lake Ontario is located about 1400 feet from the bay's west bank. It has been maintained for the past 20 years by a local citizen who was contracted by the land owners around Port Bay. The entrance averages about 70 feet in width and ranges from 4-10 feet in depth. Access to Port Bay by sailboats is hampered, however, by an aerial cable having a low clearance. The bay itself ranges in depth up to 25 feet and would make a good small boat harbor.

A small boat harbor at Port Bay was authorized under the 1950 River and Harbor Act. The project would have involved the construction of two arrowhead breakwaters and the dredging of an eight foot deep channel, approximately 1500 feet east of the channel's present location. However, the project is now being reviewed to determine if it should be recommended for deauthorization.

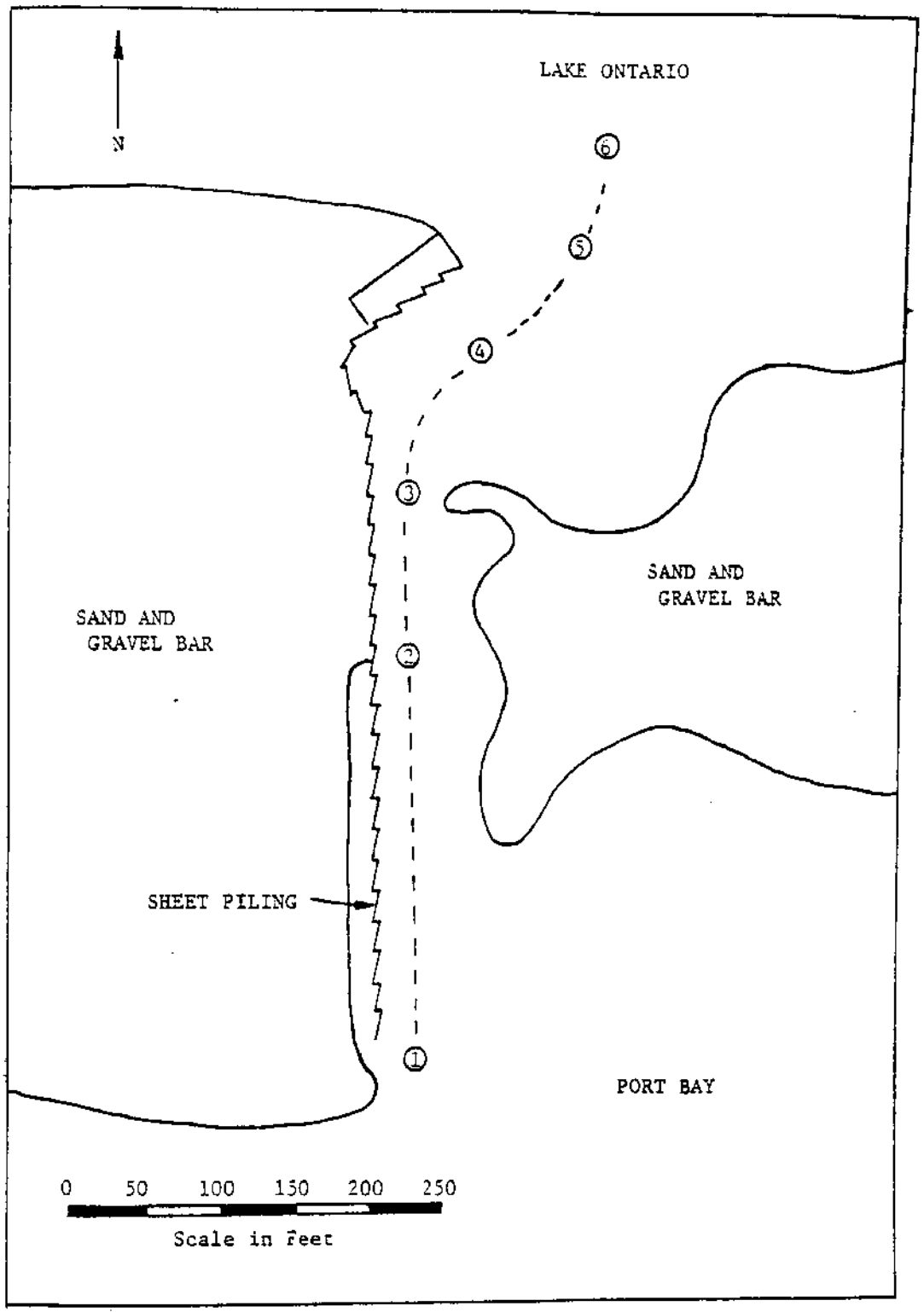


Figure 48: Entrance to Port Bay showing route and stations of soundings illustrated in Figure . (Dated: May 25, 1976).

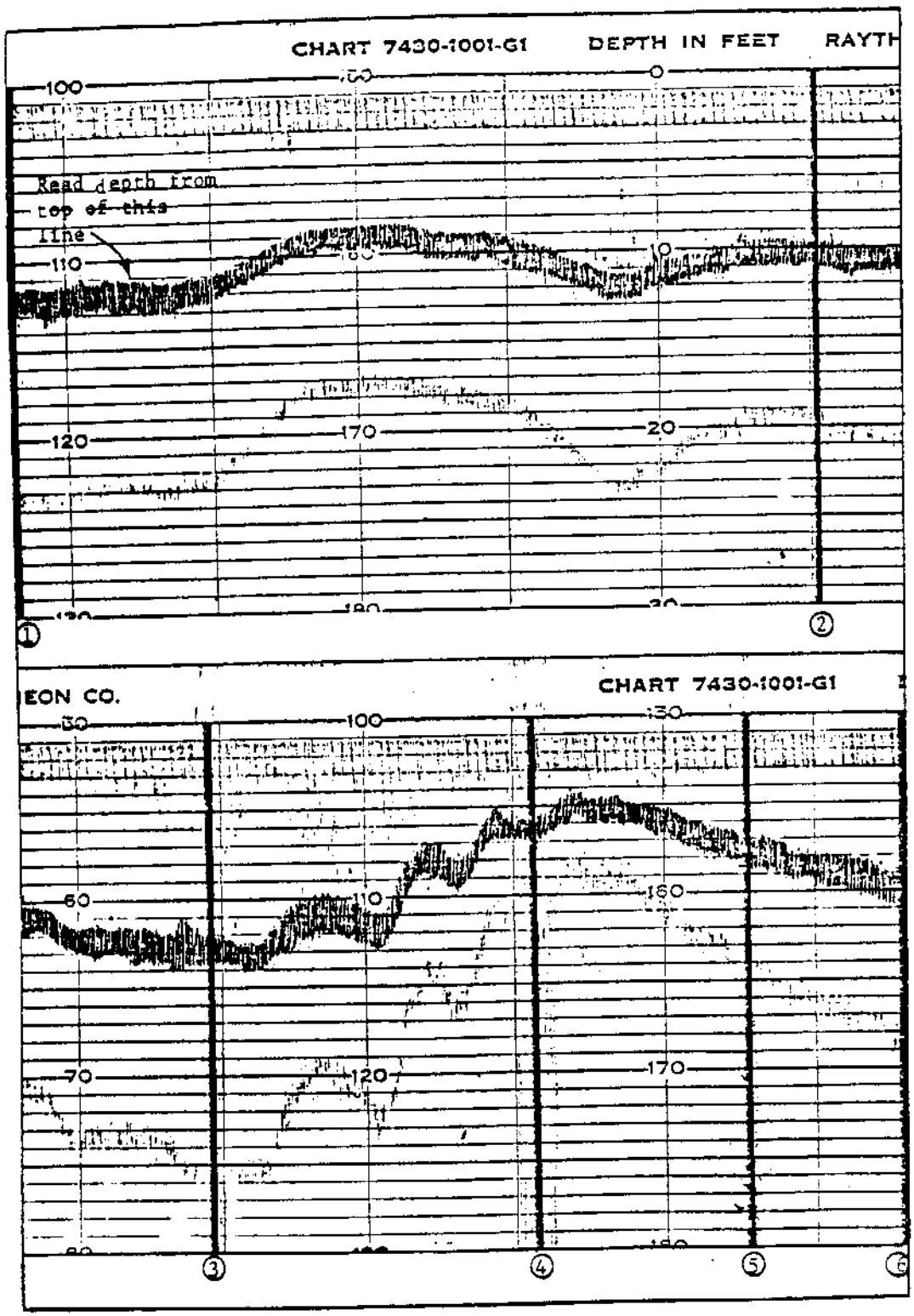


Figure 49: Port Bay entrance channel soundings. Circled numerals denote corresponding stations in Figure 48. The distance between each horizontal line represents one foot. (Dated: May 25, 1976).

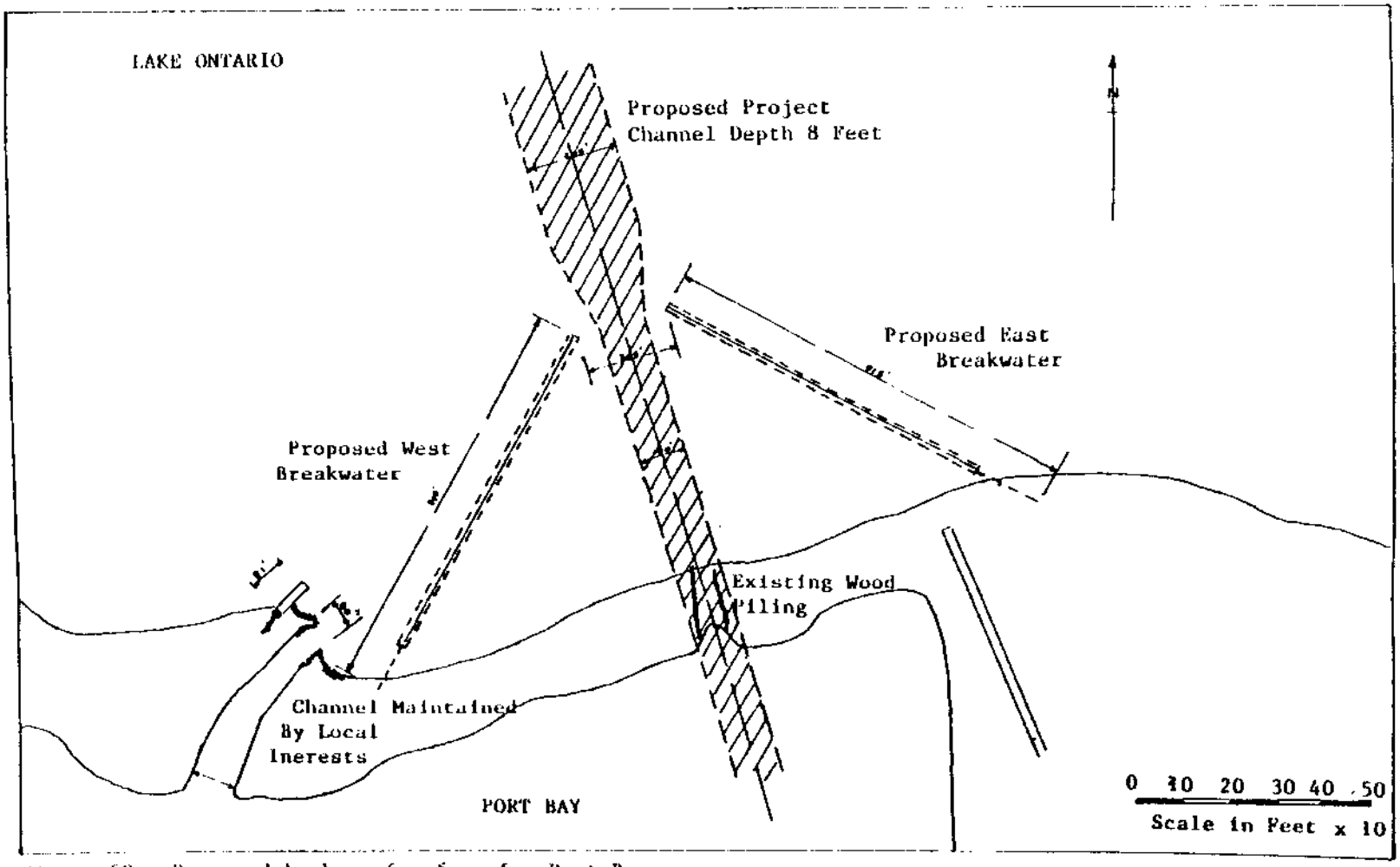
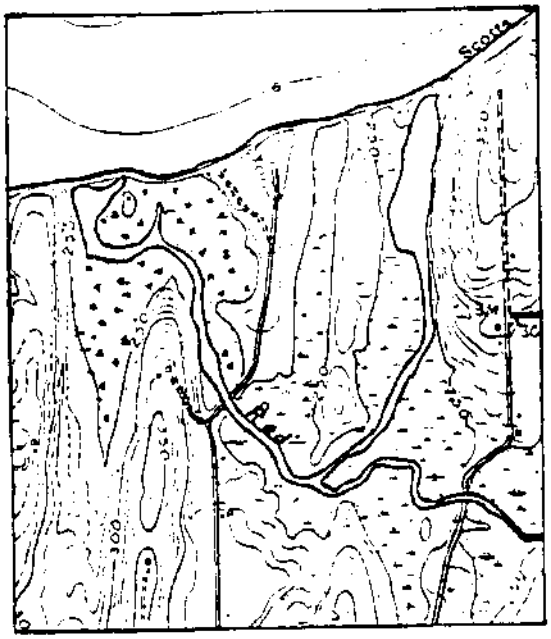


Figure 50: Proposed harbor of refuge for Port Bay.

5.10 Red Creek

Red Creek enters Lake Ontario about 9 miles east of Great Sodus Bay in the Town of Wolcott. The land adjacent to Red Creek near its mouth is privately owned. No boating facilities, other than land owners' docks, exist on this tributary because of its small size and inaccessibility by land.



Red Creek
(Scale 1:24,000)

Many acres of wetlands exist among the several high drumlins that form the banks of Red Creek in its lower reaches. The creek forms an embayment near its mouth that averages 3-4 feet in depth and is very marshy. During much of the year the mouth of Red Creek is separated completely from the lake by a sand and gravel barrier beach, populated with trees. The barrier beach averages 40 feet in width, is about 1400 feet long, and rises 3-4 feet above lake level. At the time of this inventory, however, an elevation difference of 1.5 feet between the embayment and the lake had caused an outlet to form across the barrier beach about 750 feet from the west bank. The outlet was about 50 feet wide, 1-2 feet deep, and possessed a swift outflow.

5.11 Black Creek

Black Creek is located about 11 miles east of Great Sodus Bay in the Town of Wolcott. The land adjacent to Black Creek near its mouth is privately owned. No boating facilities exist on this tributary.

A large marshy embayment, averaging only 1-2 feet in depth, has formed

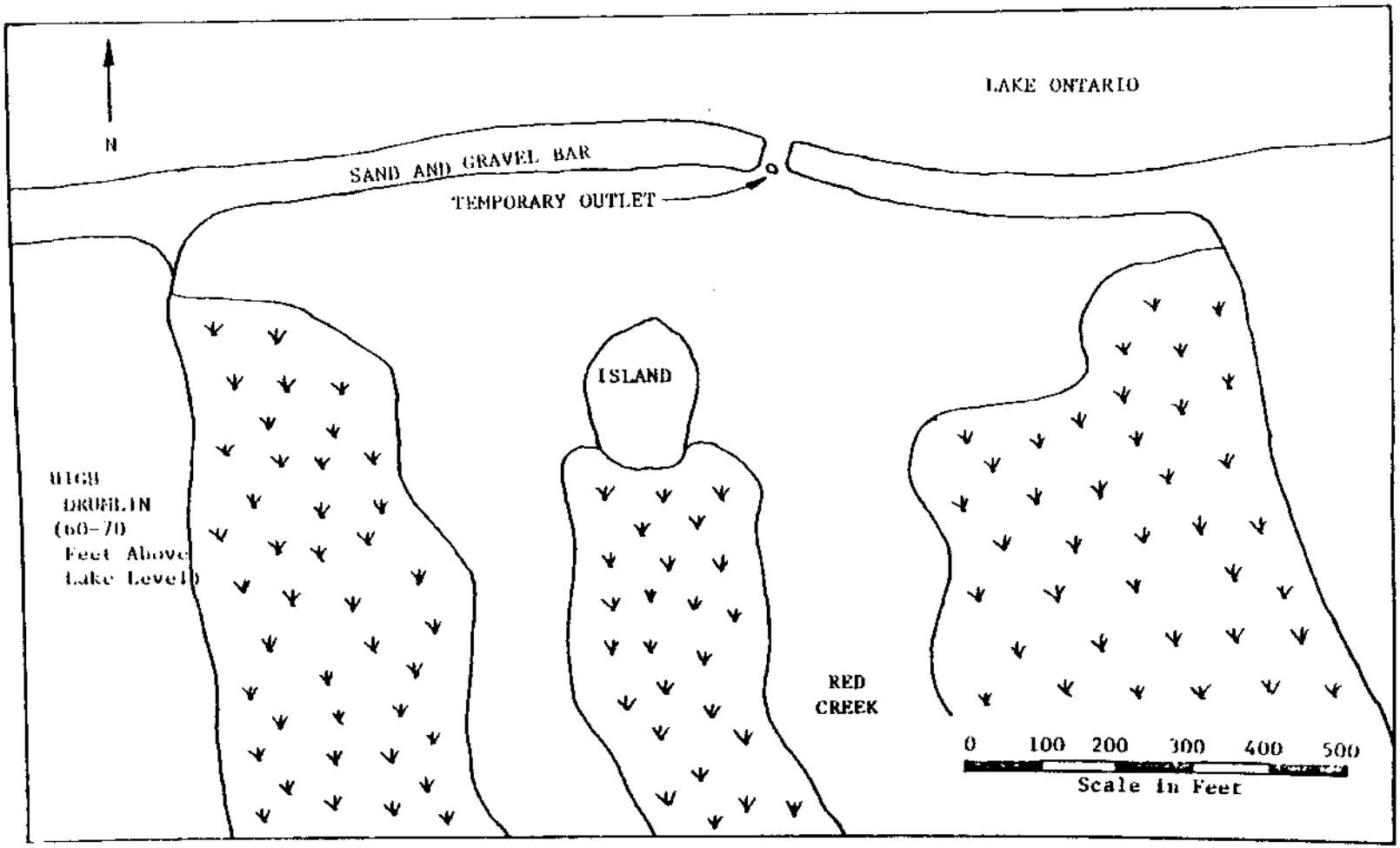


Figure 51: Mouth of Red Creek. (Dated: May 25, 1976).

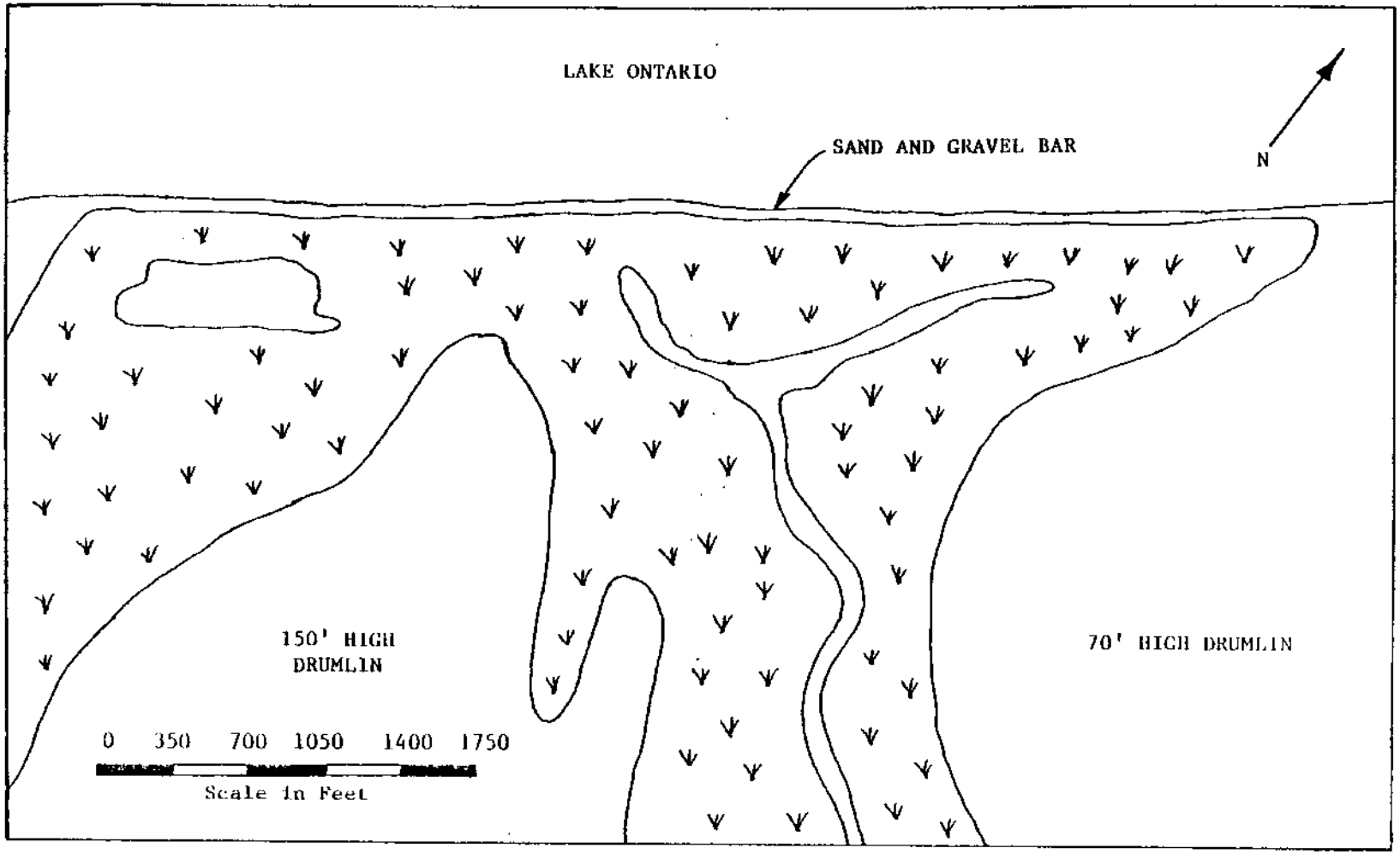
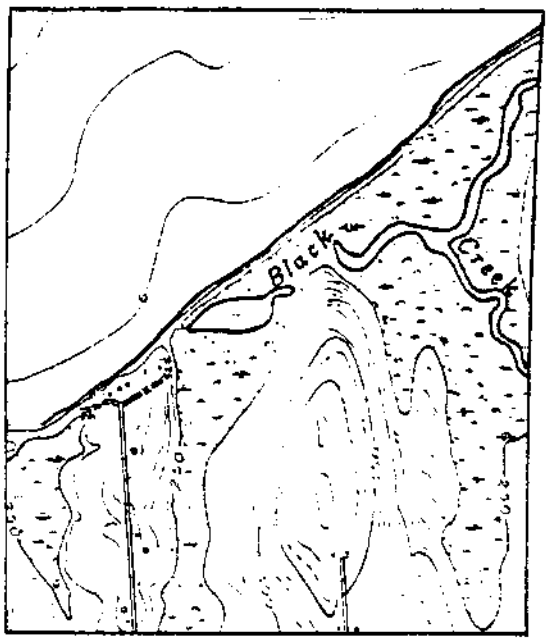


Figure 52: Mouth of Black Creek. (Dated: May 25, 1976).

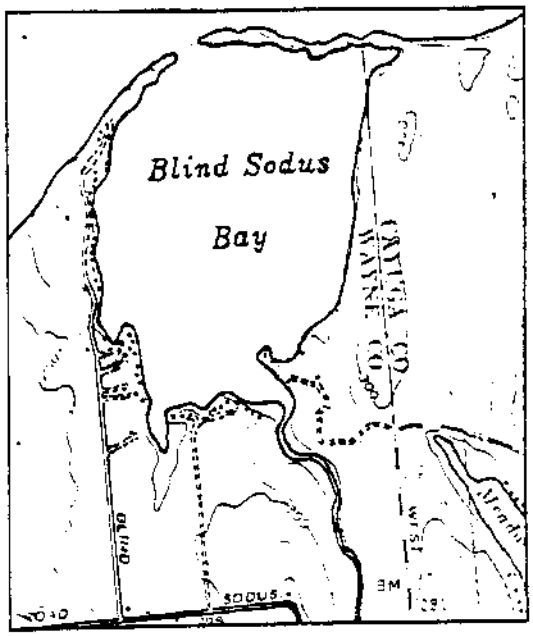
at the mouth of Black Creek and supports a diversity of wildlife. The embayment is separated from Lake Ontario by a very long sand and gravel barrier beach. This barrier beach is over one mile long, averages only 50 feet in width, rises 4-5 feet above lake level and is sparsely populated with vegetation. Free surface outflow from the embayment has been completely eliminated, but an elevation difference of about one foot seems to indicate the possibility of intra gravel flow.



Black Creek
(Scale 1:24,000)

5.12 Blind Sodus Bay

Blind Sodus Bay is a natural bay fed by Blind Sodus Creek. It is located about 13 miles east of Great Sodus Bay in the Town of Wolcott. All property surrounding Blind Sodus Bay is privately owned and supports many summer and year round homes. No boating facilities exist in the bay except docks built by the land owners. The lack of boating facilities in Blind Sodus Bay is mostly influenced by its nearness to Little Sodus Bay, a federally maintained small boat harbor only 0.4 miles to the east.



Blind Sodus Bay
(Scale 1:24,000)

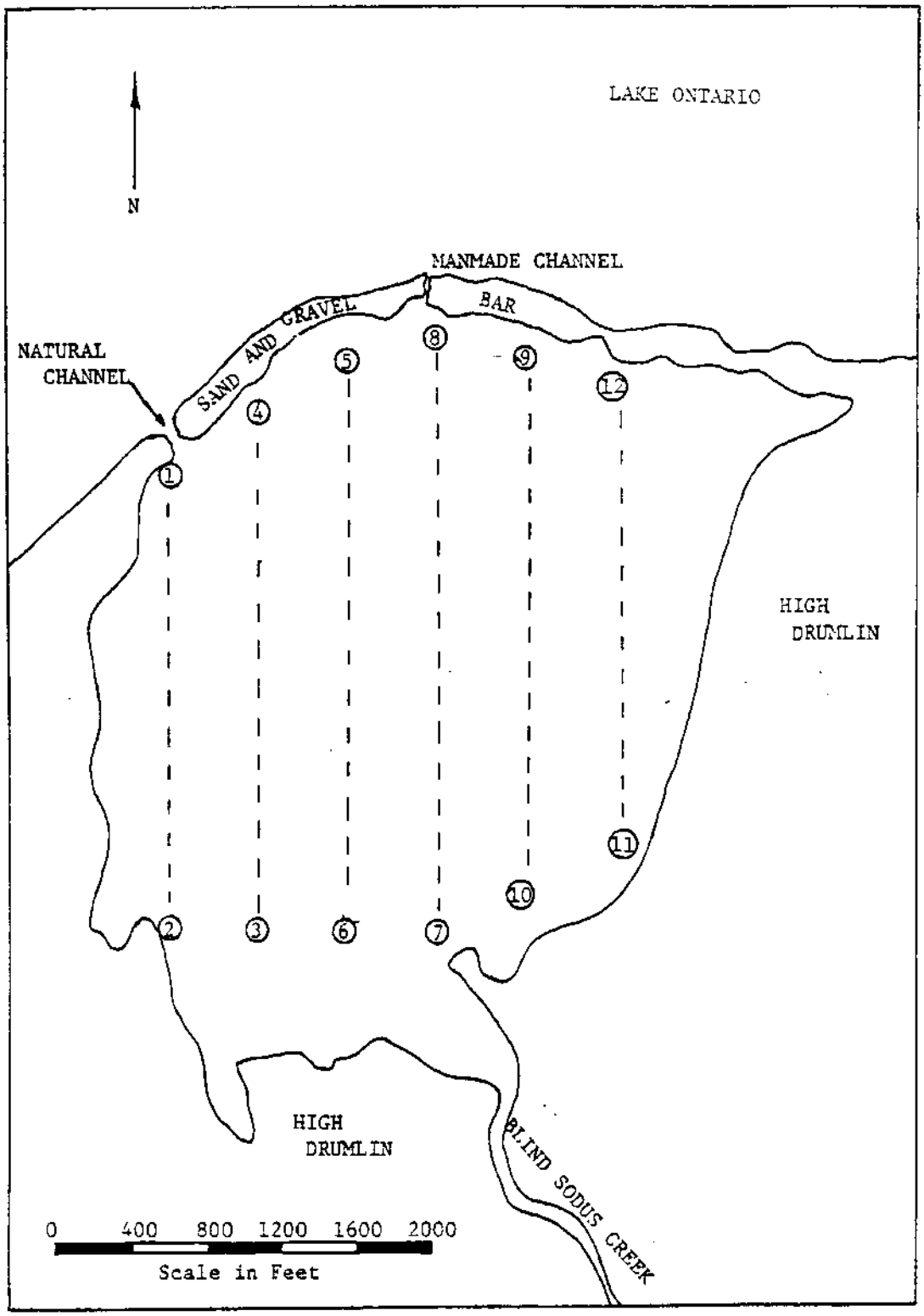


Figure 53: Blind Sodus Bay showing location of natural and man made outlets, also shows route and stations of soundings illustrated in Figures 54 and 55. (Dated: May 26, 1976).

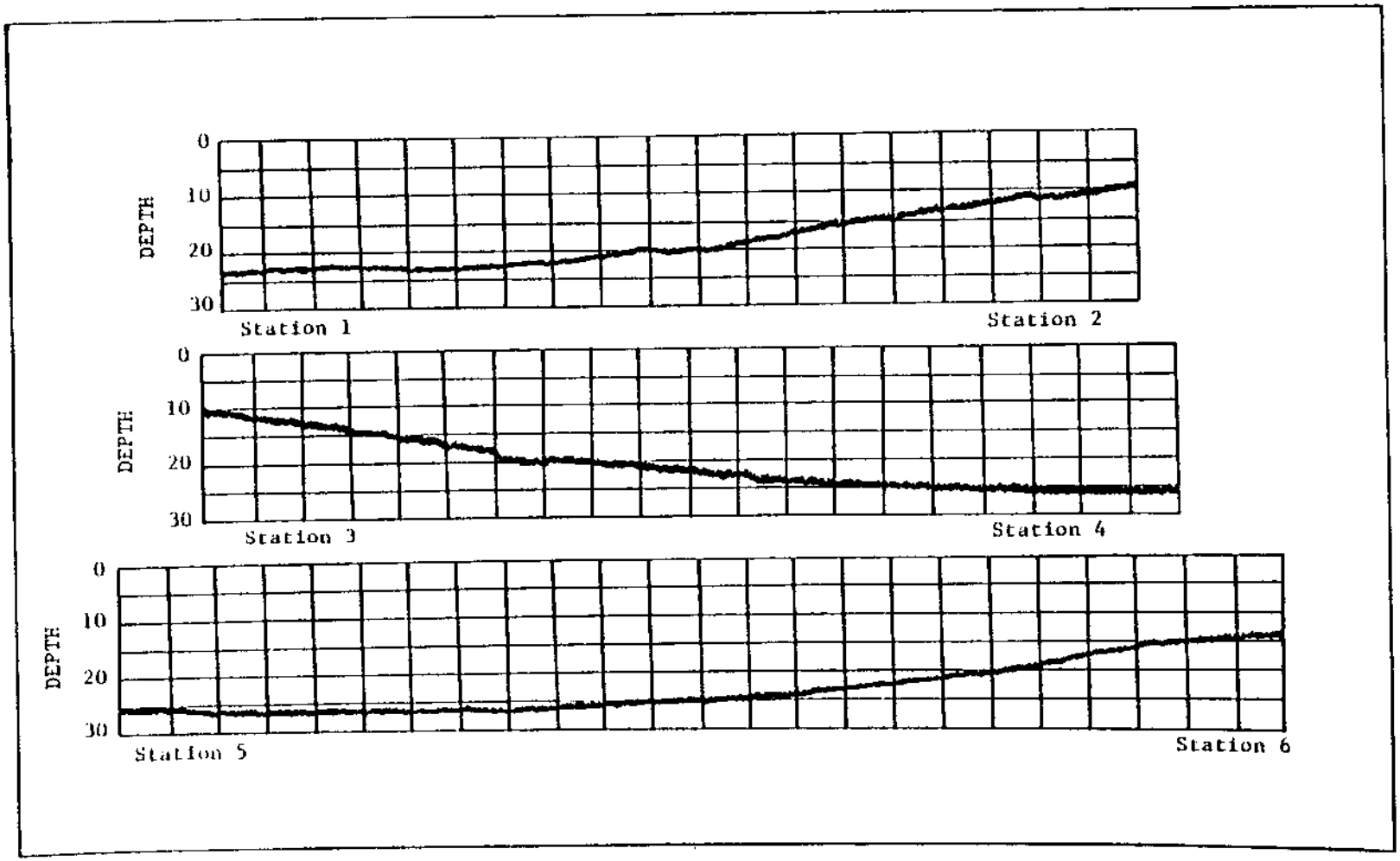


Figure 54: Soundings made at Blind Sodus Bay. Circled numerals correspond to stations shown in Figure 53. Distance between successive horizontal lines represents 5 feet in depth. Distance between successive vertical lines represents approximately 120 feet. (Dated: May 26, 1976).

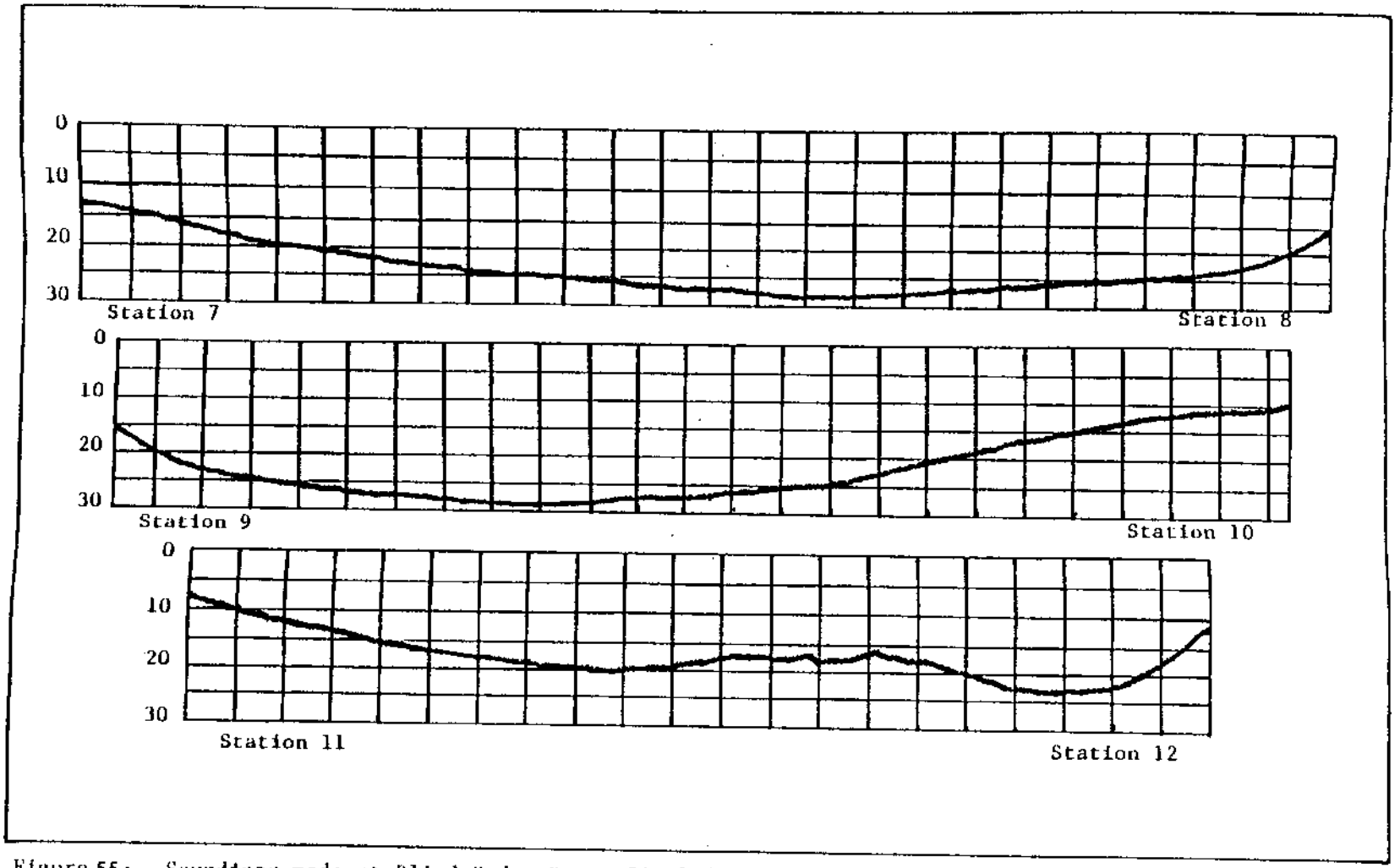


Figure 55: Soundings made at Blind Sodus Bay. Circled numerals correspond to stations shown in Figure 53. Distance between successive horizontal lines represents 5 feet in depth. Distance between successive vertical lines represents approximately 120 feet. (Dated: May 26, 1976).

The bay is separated from Lake Ontario by a tree and brush covered, sand and gravel barrier beach. The beach averages 120 feet in width, is about 0.7 miles long, and rises 3-4 feet above lake level. The bay is bounded on the east and south by high drumlins and on the west by lowlands.

At the time of this inventory, a natural entrance existed at the extreme western bank of the bay. It was about 50 feet wide, only 1-2 feet deep, and interspersed with trees. A manmade entrance was also present about 1600 feet east of the natural entrance. It was however, only about 8 feet wide and 1-2 feet deep. An elevation difference of nearly one foot was causing a swift outflow from both entrances. The bay itself averages 10-12 feet in depth as illustrated in Figures 53 and 54.

CHAPTER VI

CAYUGA COUNTY

Cayuga County is bounded on the west by Wayne County, on the east by Oswego County, and on the north by Lake Ontario. The entire 8 miles of the Cayuga County shore are a series of drumlins separated by marshes that extend several miles inland along the creeks that enter the lake. The drumlins are up to 150 feet high above lake level and one-quarter to one-half mile wide at their base. The material at the bluff face of the eroding drumlins is glacial till, containing from 10 to 100 precent sand and gravel. Beaches at the base of the drumlins are generally less than 10 feet wide. Narrow sand and gravel beaches have formed across the low marsh areas on open water between the drumlins. A predominate eastward littoral transport of beach material exists along the Cayuga County shoreline and is the result of the predominate west and northwest winds. Tributaries and harbors in Cayuga County include: Little Sodus Bay, Sterling Creek (The Pond), Nine-mile Creek, and Eightmile Creek.

6.1 Little Sodus Bay

Little Sodus Bay is located about 15 miles east of Great Sodus Bay in the Town of Sterling and is federally maintained as a small boat harbor. Two parallel, reinforced concrete piers, 250 feet apart, protect the entrance channel. The west pier is 1747 feet long and the east pier is 1810 feet long. The maintained channel dimensions are shown in Figure 57. There is, also, a 1680 foot breakwater connecting the southern tip of the east pier to the bay's east bank. This breakwater adequately protects the bay, which ranges from 5-34 feet in depth, from lake storms. The bay is bounded on its remaining three sides by high drumlins. The majority of land surrounding Little Sodus Bay is privately owned and supports many year round

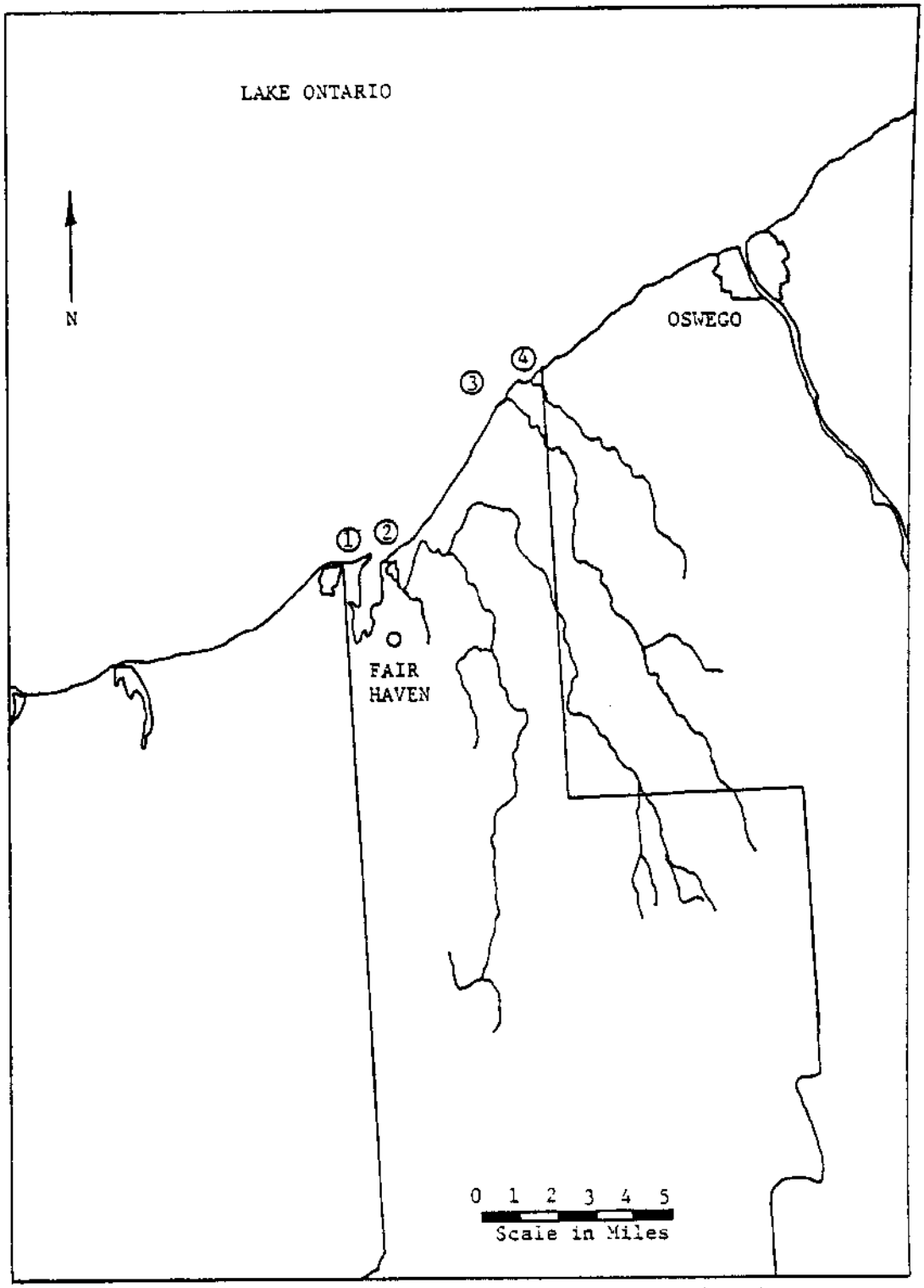
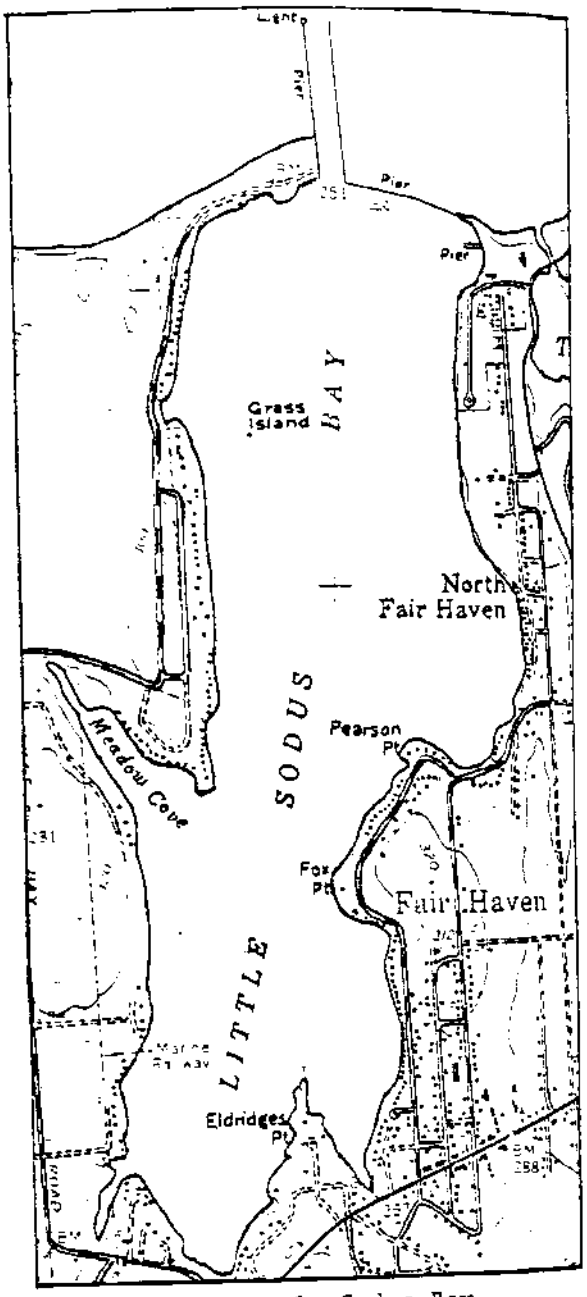


Figure 56: Cayuga County showing location of inlets and harbors: (1) Little Sodus Bay, (2) Sterling Creek (3) Ninemile Creek, (4) Eightmile Creek.

and summer homes. However, approximately 2000 feet of the bay's east bank is state owned and part of Fair Haven State Park.

There are several boating facilities located in Little Sodus Bay. They include three private marinas, a yacht club, a state owned boat launch, and a private boat launch. The private boat launch is located on the bay's southwest corner and provides limited parking space. A fourth marina, Chinook Harbor, Inc., is presently under development. Its floating docks and launching ramp will primarily service small boats. The location of each facility within the bay is shown in Figure 52. Each facility is listed below with a description of its services.



Little Sodus Bay
(Scale 1:24,000)

Rasbeck's Marina:

Rasbeck's Marina presently rents 85 slips, the majority of which are occupied by sailboats. The owner has indicated, however, that an additional 50 slips could be rented immediately if available. A free, public launching ramp is available near the marina. There is adequate parking for patrons of

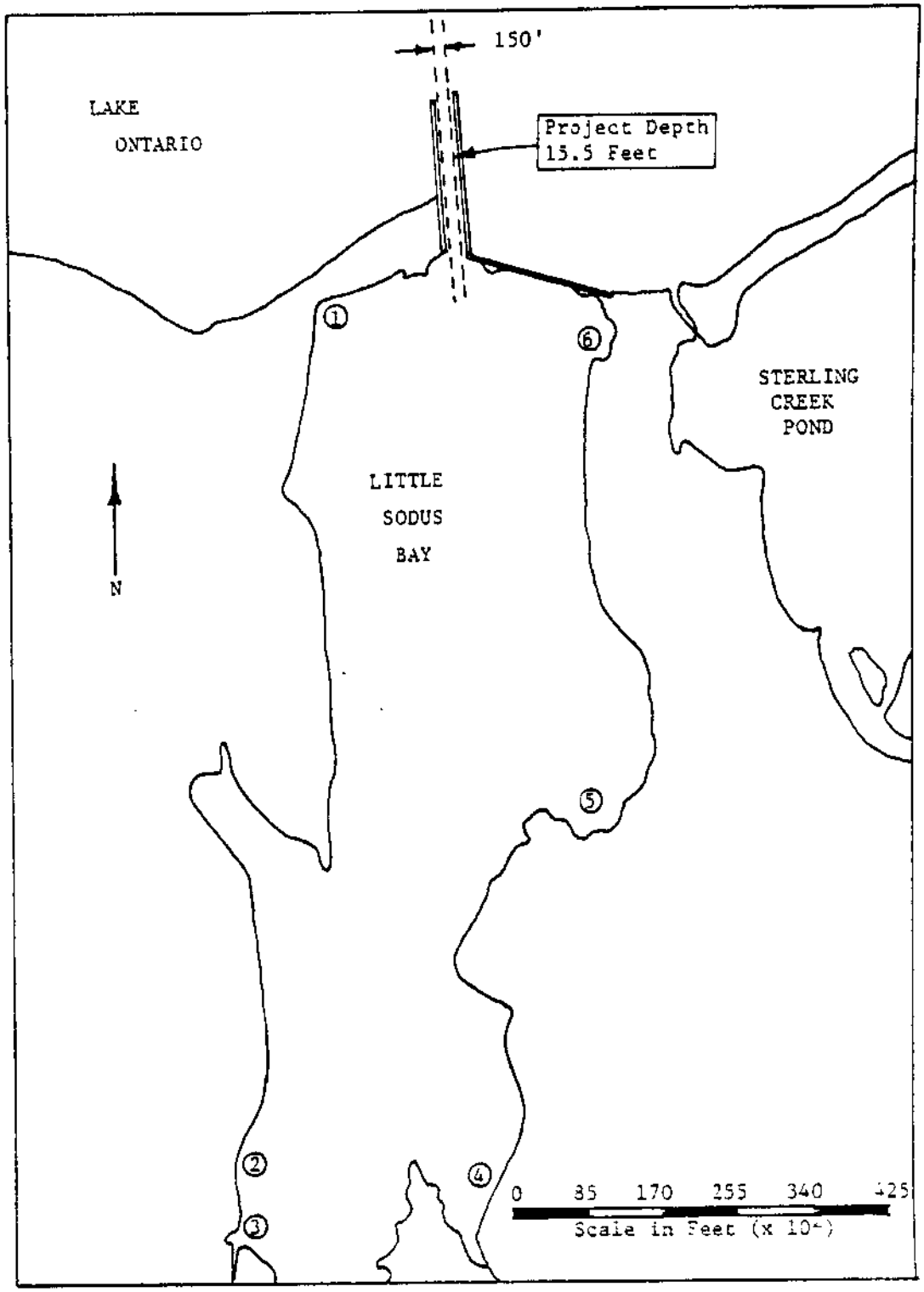


Figure 37: Little Sodus Bay showing navigation channel dimensions and locations of boating facilities: (1) The Boathouse, (2) Fair Haven Yacht Club, (3) Rasbeck's Marina, (4) private launching ramp, (5) Buster's Boat Base, (6) Fair Haven State Park launching ramp.

the marina and users of the launching ramp. The marina can handle boats up to 40 feet long and occasionally experienced silting in the docking area. Other services offered by Rasbeck's Marina include: gas, hoist launch, indoor (75) and outdoor (100) storage.

The Boathouse:

The Boathouse rents 15 slips; 10 for boats 18-25 feet in length, and 5 for boats greater than 25 feet. It has been indicated by the owner that 10 additional slips could be rented if available. The Boathouse doesn't operate a launching ramp, but 8 boats are available for rent. There is parking space for approximately 25 cars. Other services include gas and winter storage.

Busters Boat Base:

Buster's Boat Base rents approximately 20 slips, the majority of which are occupied by fishing boats. A launching ramp and gas are also available.

Fair Haven Yacht Club:

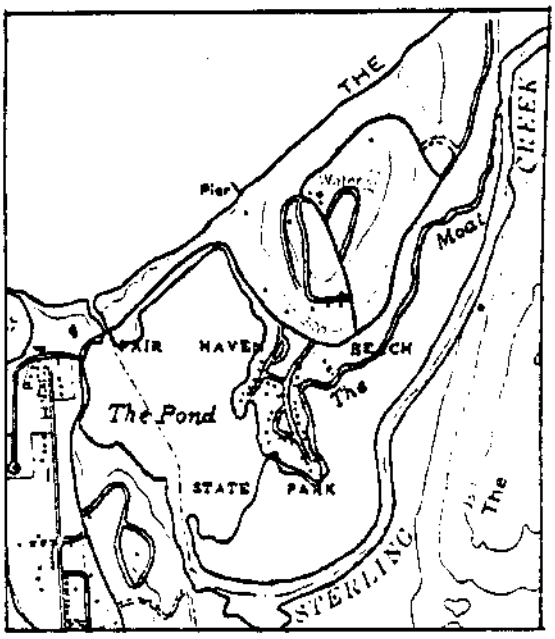
The Fair Haven Yacht Club has moorings for 70 sailboats. These 70 moorings are distributed in the following manner: 30 for boats 0-12 feet, 15 for boats 12-18 feet, 10 for boats 18-25 feet, and 15 for boats 25 feet and up. It has been indicated by the yacht club director that an additional 20 moorings could be used if available. The yacht club does operate a launching ramp, but it is used exclusively by its members for launching small sailboats. It is used approximately 30 times per week during the boating season. There is parking space available for about 100 cars. Other services offered by the yacht club are: gas, hoist launch, and winter storage.

Fair Haven State Park:

Fair Haven State Park operates 2 free launching ramps on the bay's east side. There is parking space for 40 cars with trailers. The park also maintains the only sanitary pumpout facility on the bay.

6.2 Sterling Creek

Sterling Creek enters Lake Ontario only 0.4 mile east of Little Sodus Bay. Land on both sides of the creek near its mouth is state owned and part of Fair Haven State Park. Wetlands border Sterling Creek several miles inland as it winds among the high drumlins typical of Cayuga County.



Sterling Creek
(Scale 1:24,000)

A large embayment with an area of about 160 acres, called Sterling Creek Pond, has formed near the creek's mouth. It is separated from Lake Ontario by a sand and gravel barrier beach averaging 350 feet in width, 2000 feet long, rising 6-7 feet above lake level, and over which passes one of the state park's roads. Depths in the embayment range from 3 feet near its southern shore to 10 feet near the lake. There is an outlet to the lake about 300 feet from the pond's east bank. The entrance ranges from 75 to 130 feet in width, is approximately 400 feet long, and averages 6-7 feet in depth. Some protection of the entrance is afforded by a small rip-rap pier on the channel's west side. A low clearance bridge (2-3 feet) restricts access to the pond from the lake. Only small fishing boats are able to pass under the bridge. Even though there are no improved boating facilities on the pond or along Sterling Creek, access can be gained by an unimproved ramp (Figure 58) near the creek's mouth.

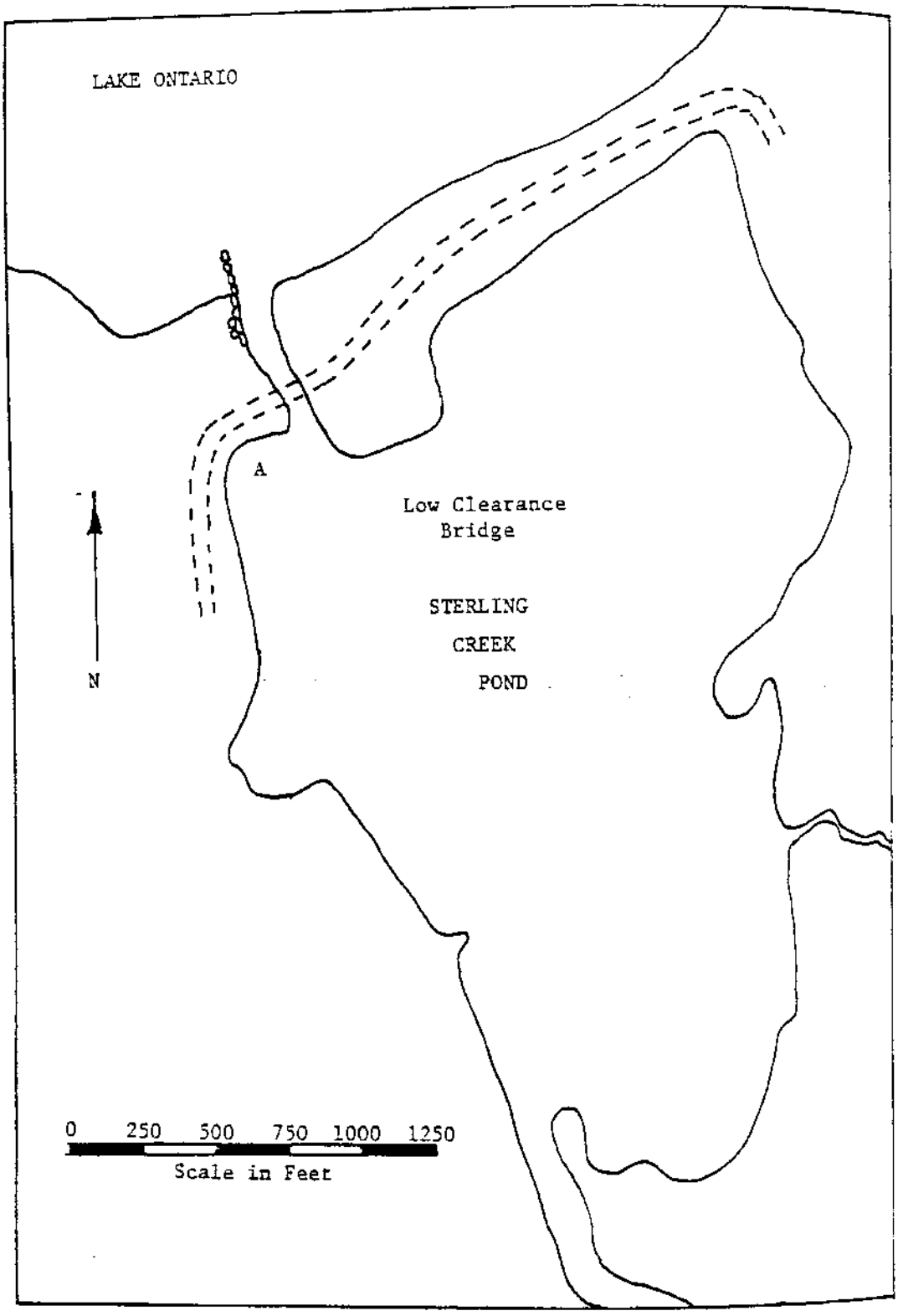
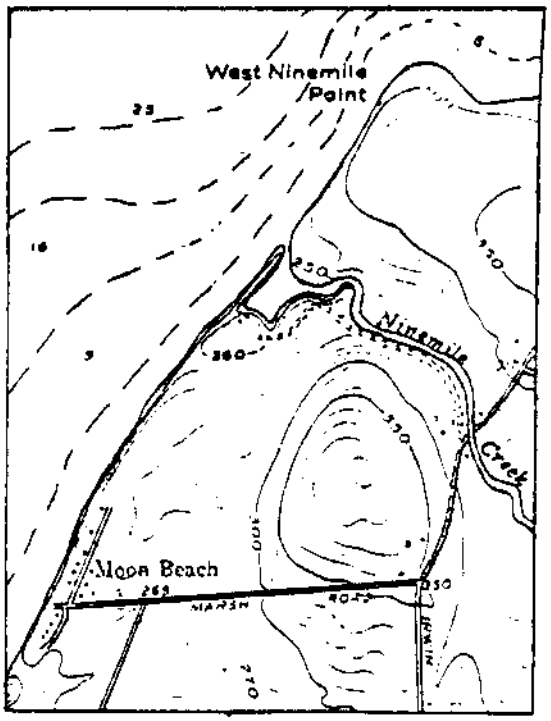


Figure 58: Mouth of Sterling Creek showing location of unimproved launching site A . (Dated: May 26, 1976).

6.3 Ninemile Creek

Ninemile Creek enters Lake Ontario about 6 miles east of Little Sodus Bay in the Town of Sterling. The land adjacent to Ninemile Creek, near its mouth, is privately owned. The topography on either side of the creek changes from low bluffs near its mouth to high drumlins further inland making access by land difficult. As a result, no boating facilities exist on this tributary.



Ninemile Creek
(Scale 1:24,000)

An embayment, having an area of about 3 acres, has formed near the creek's mouth. It is separated from the lake by a sand and gravel barrier beach about 800 feet long, averaging 40 feet in width, and rising 5 to 6 feet above lake level. The embayment averages only 2-3 feet deep and is marshy.

There is an outlet with a substantial volume of outflow at the embayments extreme east side. It averages 3-4 feet deep and ranges from 35 feet wide on the embayment side to 10 feet wide at the lake. The east bank of the entrance is protected by an outcrop of large rocks.

6.4 Eightmile Creek

Eightmile Creek enters Lake Ontario about 7 miles east of Little Sodus Bay in the Town of Sterling. The land on either side of the creek near its mouth is privately owned. Topography along the creek changes from low bluffs

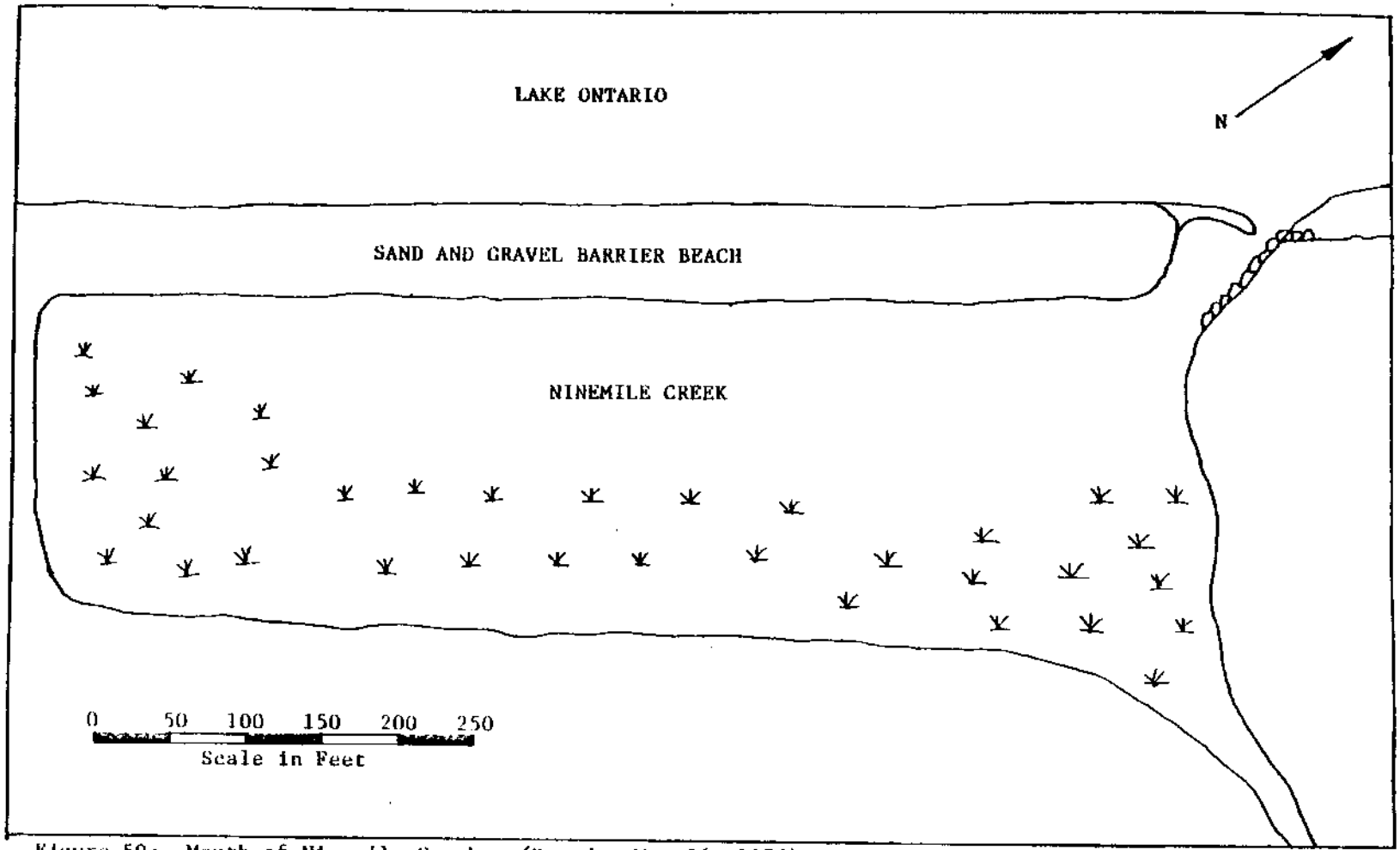
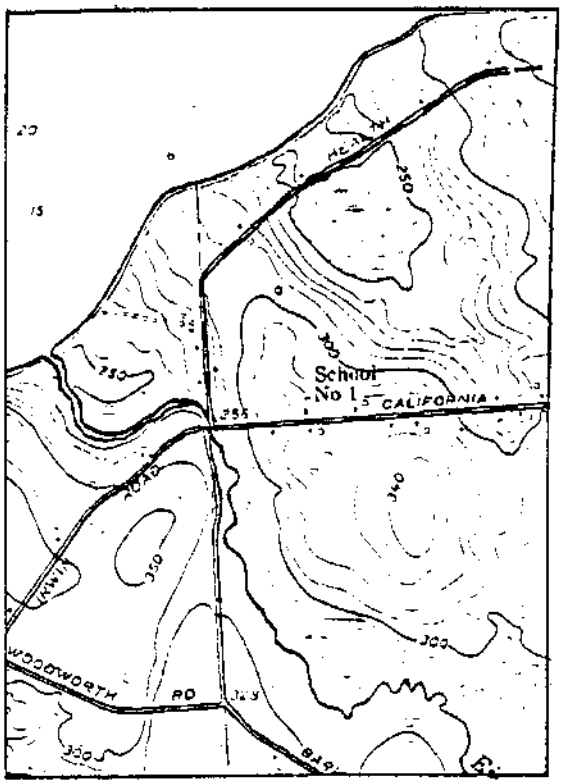


Figure 59: Mouth of Ninemile Creek. (Dated: May 26, 1976).

near its mouth to high drumlins further inland. There are no boating facilities on this tributary.

A marshy embayment with an area of about 9 acres has formed near the creek's mouth. It is separated from the lake by a tree covered, sand and gravel barrier beach about 400 feet long, averaging 80 feet in width, and rising 5-6 feet above lake level. Depths in the embayment range from 1 to 3 feet making it a suitable habitat for wildlife.



Eightmile Creek
(Scale 1:24,000)

There is an outlet about 150 feet from the embayment's west bank. An elevation difference of about 0.75 feet is (at the time of this inventory) causing a substantial outflow. The outlet channel is 2-3 feet deep and 20-25 feet wide.

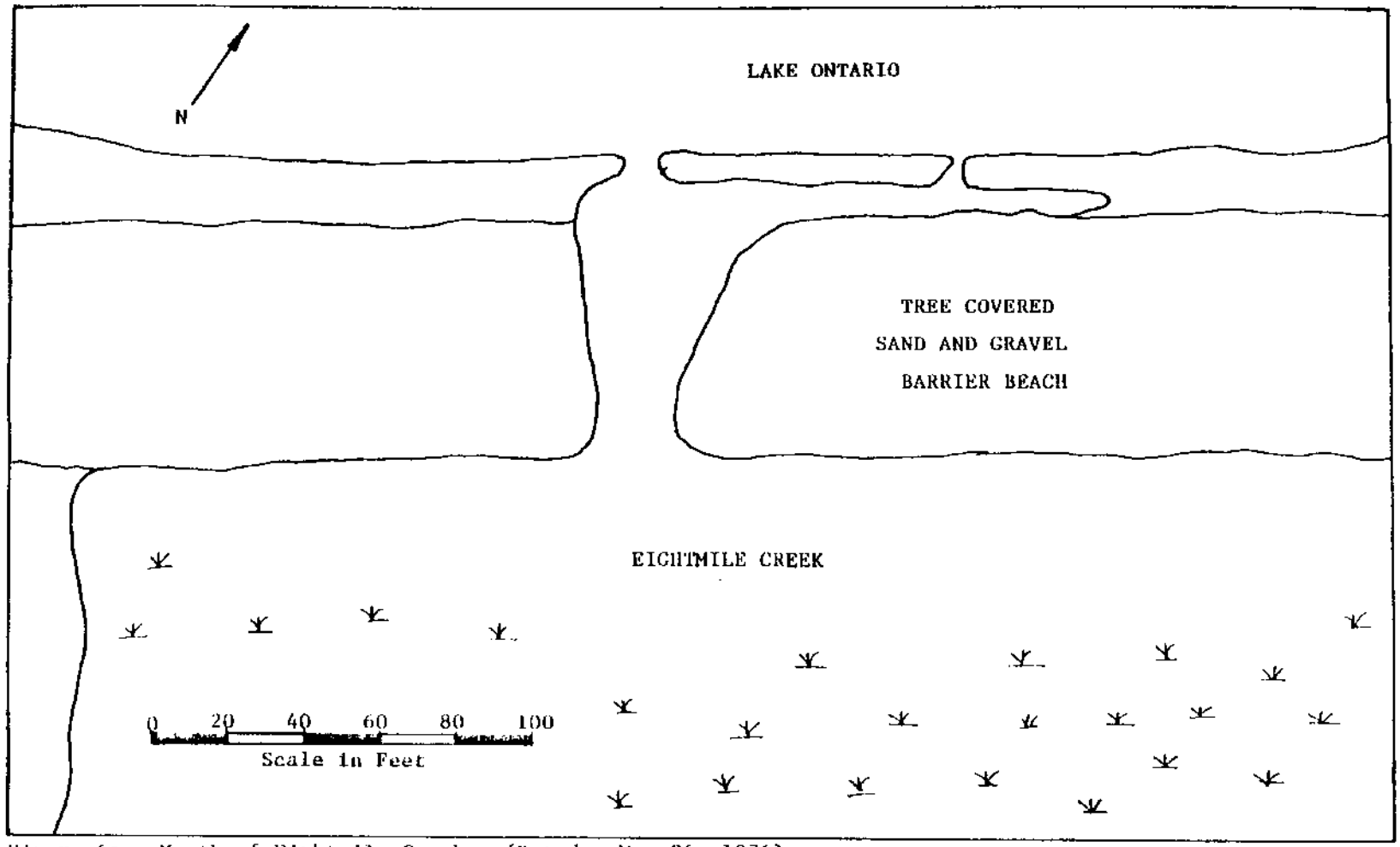


Figure 60; Mouth of Eightmile Creek. (Dated: May 26, 1976).

CHAPTER VII

OSWEGO COUNTY

Oswego County is bounded on the west by Cayuga County, on the north by Jefferson County, and to the north and west by Lake Ontario. The westerly five miles, up to the City of Oswego, of the 33 mile Oswego County shoreline are a series of drumlins separated by marshes that extend several miles inland along the creeks that enter the lake. The drumlins are up to 150 feet above lake level and one-quarter to one-half mile wide at their base. Beaches at the base of the drumlins are generally less than 10 feet wide. Narrow sand and gravel barrier beaches have formed across the low marsh areas between the drumlins.

For about 13 miles east of the mouth of the Oswego River, the shore bluffs are from 5 to 25 feet high. Rock outcrops from lake level to 10 feet or more above lake level occur within this reach. The overlying material is glacial till. Gravel and shingle beaches up to 30 feet wide occur.

From 13 miles east of Oswego to the Salmon River, the shore contains occasional reaches of high ground separated by marsh areas that are fronted by barrier beaches. These beaches are similar to but less prominent and noticeable than the drumlin formations to the west. The remaining Oswego shoreline, north of the Salmon River, is generally a barrier beach and sand dunes up to 45 feet high separating either marsh areas or open ponds from the lake. The dunes and wide flat beaches consist of fine sand.

A relatively large part of the frontage of Oswego County is of particular interest as wildlife habitat because of large marsh areas and protected ponds along the shore. Inlets and harbors of Oswego County include: Snake Creek, Rice Creek, Oswego River, Wine Creek, Otter Branch Creek, Catfish Creek, Butterfly Creek, Little Salmon River, Sage Creek, Snake Creek, Grindstone

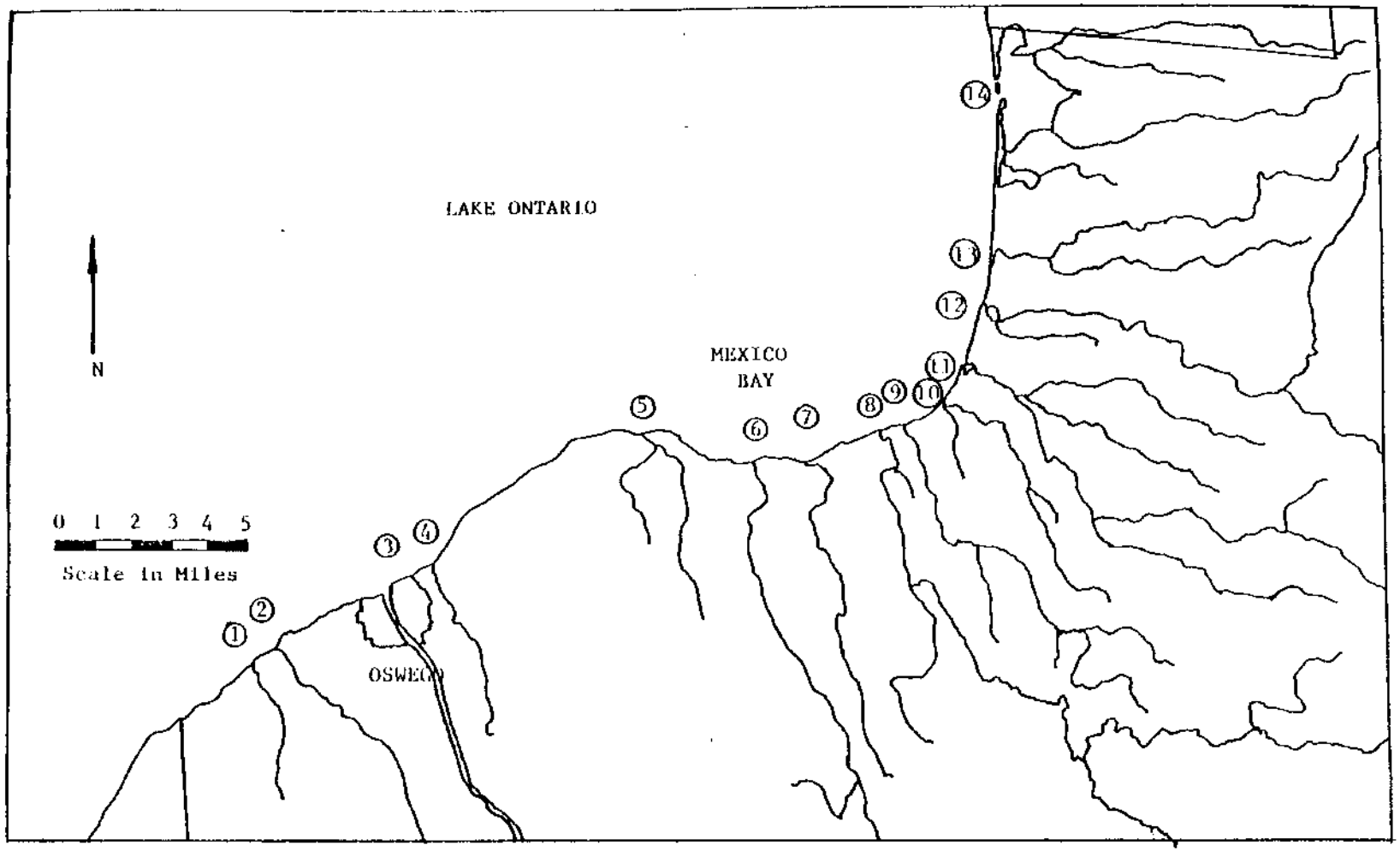
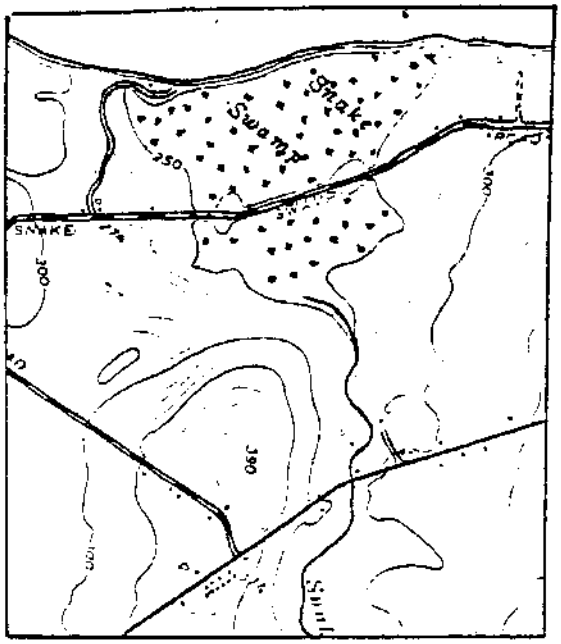


Figure 61: Oswego County showing location of inlets and harbors: (1) Snake Creek, (2) Rice Creek, (3) Oswego River, (4) Wine Creek, (5) Otter Branch Creek, (6) Catfish Creek, (7) Butterfly Creek, (8) Little Salmon River, (9) Sage Creek, (10) Snake Creek, (11) Grindstone Creek, (12) Salmon River,

Creek, Salmon River, Deer Creek, and North Pond.

7.1 Snake Creek

Snake Creek enters Lake Ontario about 10.5 miles east of Little Sodus Bay in the Town of Oswego. The land adjacent to the creek, near its mouth, is privately owned. There are no boating facilities on this tributary.



Snake Creek
(Scale 1:24,000)

A large marshy embayment, with an area of about 130 acres, has formed near the creek's mouth. It ranges from 2-4 feet in depth and is an excellent habitat for ducks (St. Lawrence-Eastern Ontario Commission, 1975). The marsh is separated from Lake Ontario by a sand and gravel barrier beach about 3500 feet long, averaging 50 feet in width, and rising 5-6 feet above lake level. Free surface flow to the lake has been eliminated by the barrier beach. However, approximately 1000 feet from the embayment's west side there is evidence of an outlet. The mouth of the outlet, at the time of this inventory, was filled with sand and gravel. Some intragravel flow was occurring because of a 0.5 foot elevation differential.

7.2 Rice Creek

Rice Creek enters Lake Ontario about 14 miles east of Little Sodus Bay in the Town of Oswego. The land adjacent to Rice Creek near its mouth is privately owned. No boating facilities exist on this tributary.

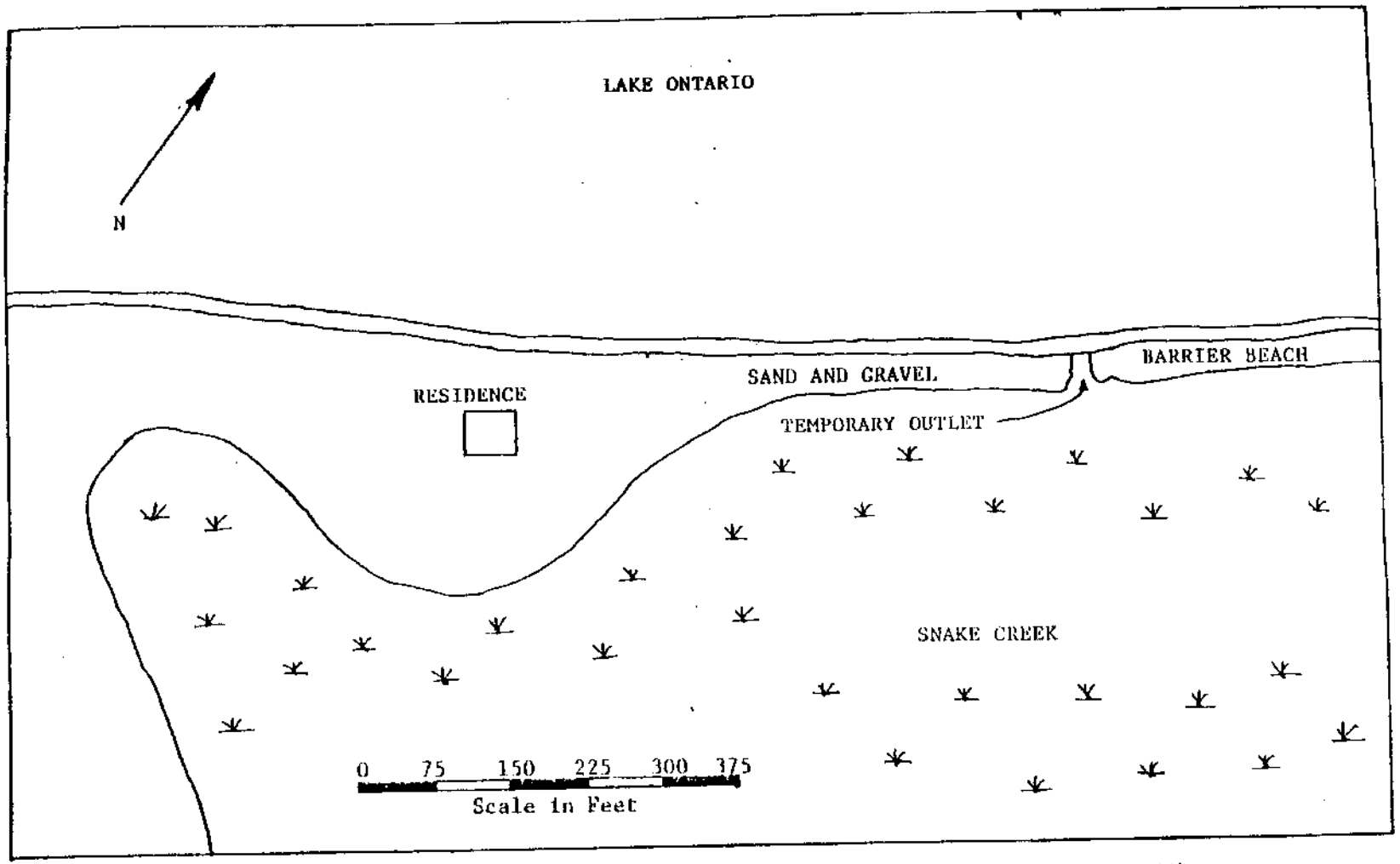
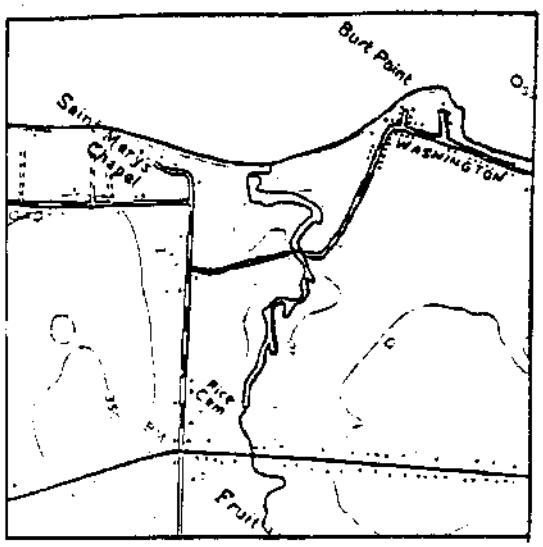


Figure 62: Mouth of Snake Creek showing location of temporary outlet. (Dated:May 26, 1976).

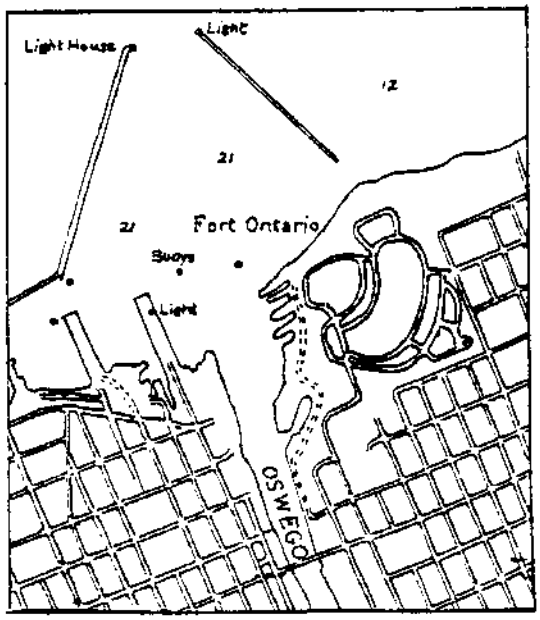
A large embayment, called Rice Creek Marsh, having an area of about 45 acres has formed at the mouth of Rice Creek. The embayment ranges from 2-6 feet in depth and receives heavy public use for fishing. It is separated from the lake by a sand and gravel barrier beach 400 feet long, averaging 60 feet in width, and rising 3-4 feet above lake level. There is an outlet about 320 feet from the embayment's east side. The channel is approximately 8 feet wide at its narrowest point and 1-2 feet deep. An elevation differential of 0.5 feet was causing a very swift outflow at the time of this inventory.



Rice Creek
(Scale 1:24,000)

7.3 Oswego River

The Oswego River enters Lake Ontario in the City of Oswego. The mouth of the Oswego River is a federally maintained commercial harbor referred to as Oswego Harbor. The harbor also serves as the entrance to the New York State Barge Canal system connecting Lake Ontario with the Hudson River. The harbor is protected by several reinforced concrete structures. The outer harbor's east side is protected by



Oswego River
(Scale 1:24,000)

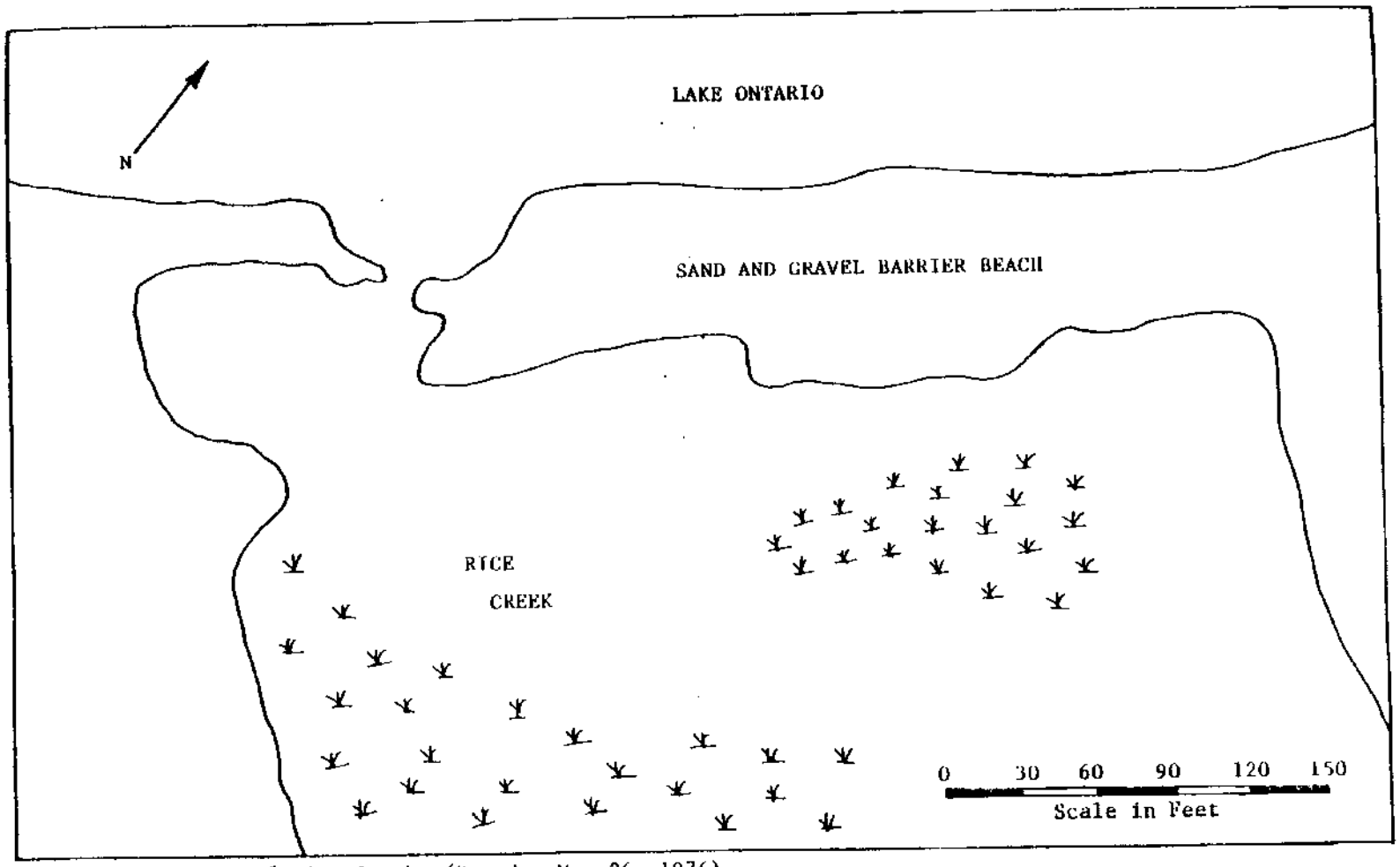


Figure 63: Mouth of Rice Creek. (Dated: May 26, 1976).

an 850 foot detached breakwater and a 2200 foot arrowhead breakwater. The west side is protected by a system that consists of a 2700 foot arrowhead breakwater, a 3100 foot breakwater parallel to shore, and a 1400 foot shore connecting breakwater. The lake approach channel lies between the west end of the detached breakwater and the west breakwater system. The maintained navigation channel and harbor dimensions are shown in Figure 64. Nearly all land bordering on Oswego Harbor is used for commercial purposes.

There are only two boating facilities at the present time located in Oswego Harbor. One is a private marina, Oswego Marina, Inc., and the other is a public launching site operated by the City of Oswego. To augment these facilities, either the Port of Oswego Authority or the City of Oswego plan to build a marina within the next 5 years at the public launching site. Each of the boating facilities is listed below with a description of its services. Their location within the harbor is shown in Fig. 64.

Oswego Marina, Inc. Oswego Marina, Inc. permanently rents 40 slips for boats greater than 25 feet in length. The marina also has a large transient business, but it is presently being hampered by about 10 survey boats from 19 to 37 feet long being docked here. The manager of the marina has indicated that, with hundreds of new boats being sold, an additional 60 slips per year could be rented, if available, to boats ranging from 12 feet and up. The marina has no launching ramp, but there is enough parking space to handle about 100 cars. Other services include: gas; hoist launch, sanitary pumpout facility, and winter storage.

City of Oswego Launching Site. The City of Oswego launching site (Wright's Landing) is located west of the Erie-Lackawanna Railway's coal dock. Two free launching ramps are provided and adequate parking space is available. In addition, approximately 10 small sailboat moorings are located in the embayment next to the public launch site.

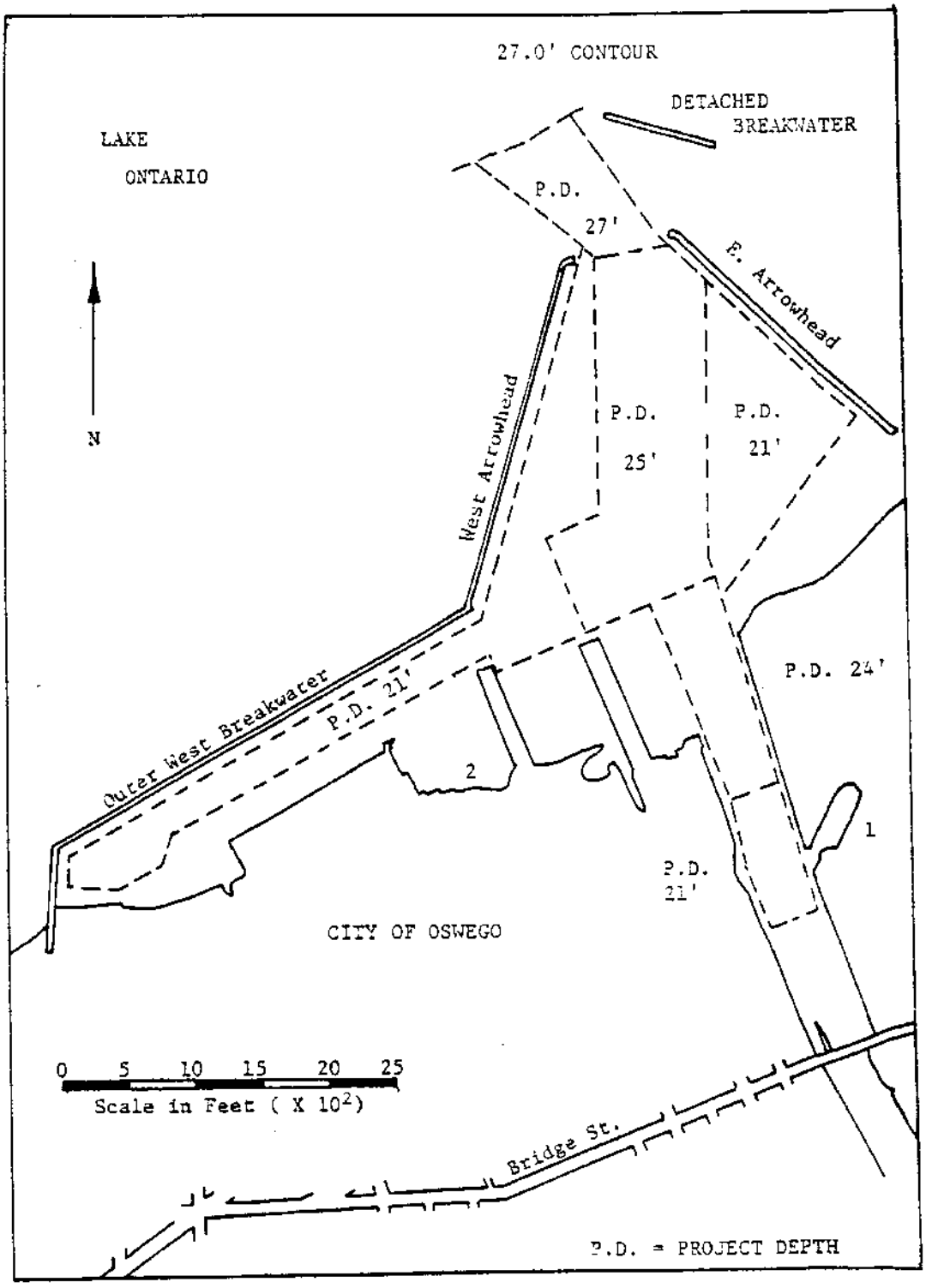
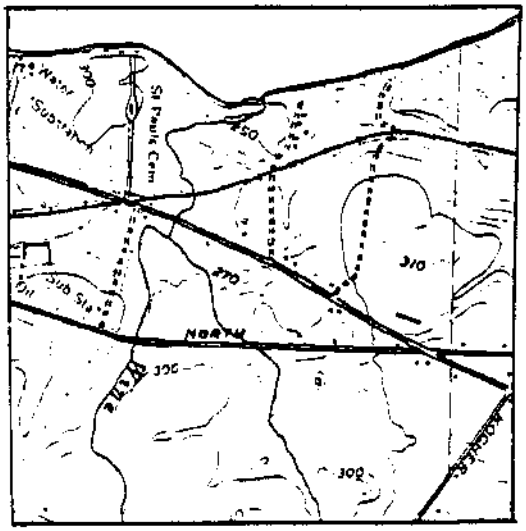


Figure 64: Oswego Harbor showing navigation channel and harbor dimensions, location of breakwaters, and location of boating facilities: (1) Oswego Marina, Inc. and (2) Wrights Landing.

7.4 Wine Creek

Wine Creek enters Lake Ontario only 1.5 miles east of the Oswego River in the City of Oswego. Land on either side of the creek near its mouth is privately owned. There are no boating facilities on this tributary.

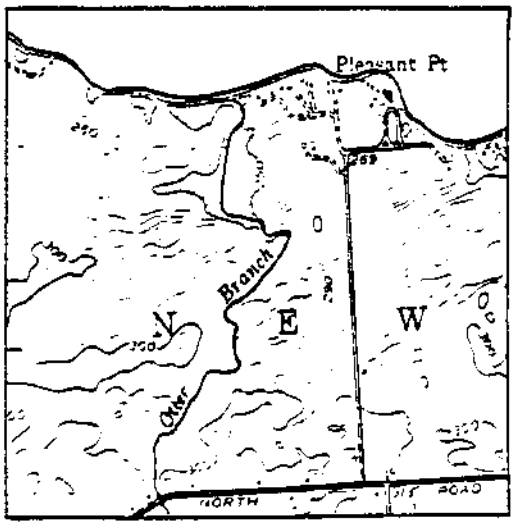


Wine Creek
(Scale 1:24,000)

A small embayment has formed near the mouth of Wine Creek and has an area of about 3.5 acres. It is very shallow and marshy and a possible wildlife habitat. The embayment is separated from the lake by a grass and brush covered, sand and gravel barrier beach. The beach is about 200 feet wide, 400 feet long, and rises 3-4 feet above lake level. The embayment is flanked on either side by 6-10 foot high bluffs. At the base of the west bluff is an outlet 2-3 feet deep and 4 feet wide at its narrowest point.

7.5 Otter Branch Creek

Otter Branch Creek enters Lake Ontario about 10.5 miles east of the Oswego River in the Town of New Haven. The land adjacent to the creek near its mouth is privately owned. No boating facilities exist on this tributary.



Otter Branch Creek
(Scale 1:24,000)

An embayment with an area of about 19 acres has formed near the

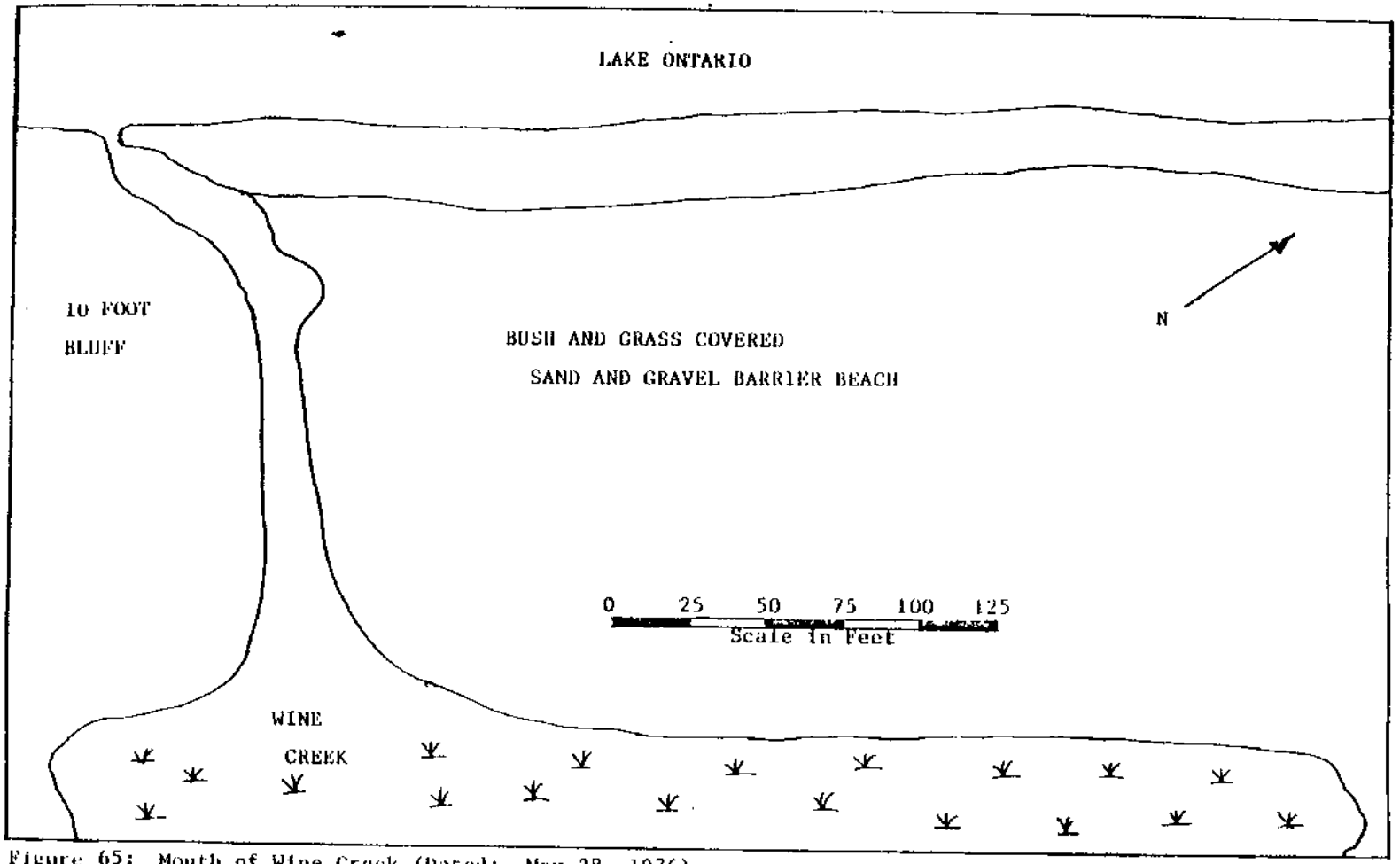


Figure 65: Mouth of Wine Creek (Dated: May 28, 1976).

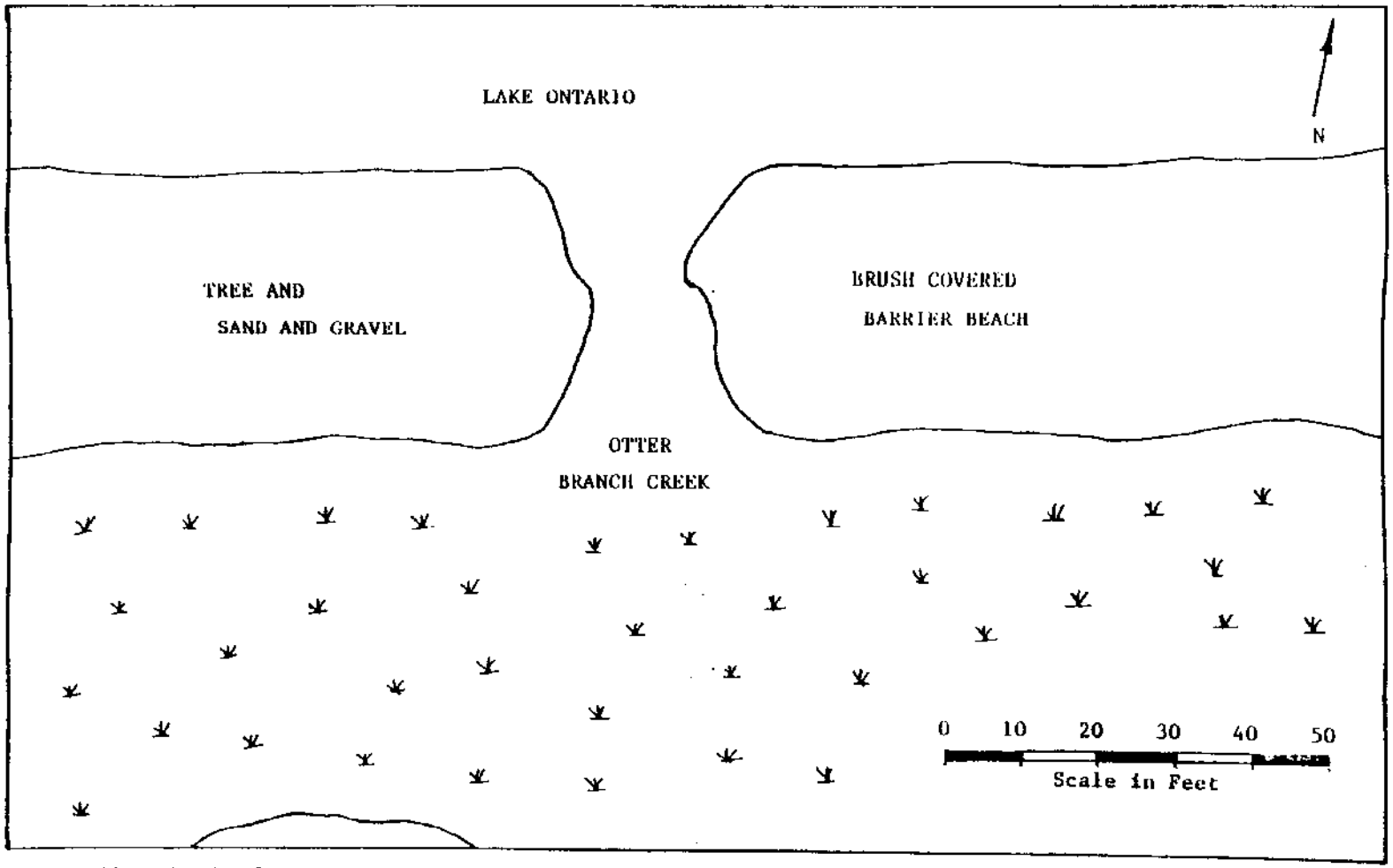
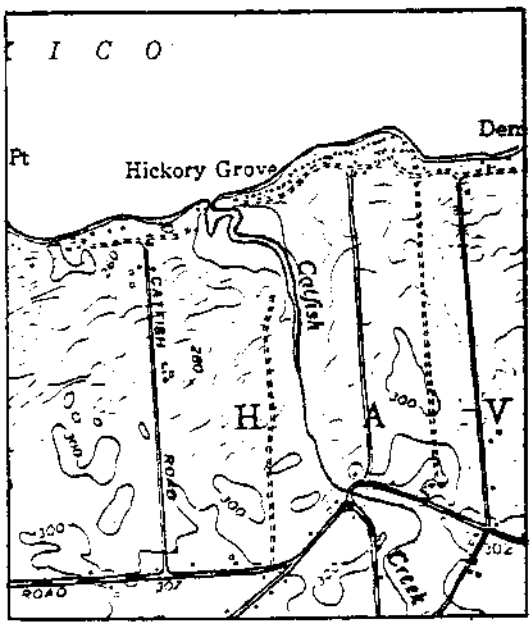


Figure 66: Mouth of Otter Branch Creek. (Dated: May 28, 1976).

creek's mouth. It is separated from the lake by a sand and gravel barrier beach 1000 feet long, averaging 35 feet in width, and rising 4-5 feet above lake level. The embayment is very shallow and marshy. An outlet crosses the barrier beach about 200 feet from the embayment's east bank. The outlet channel ranges from 10-25 feet in width and is 2-3 feet deep.

7.6 Catfish Creek

Catfish Creek enters Lake Ontario about 11.5 miles east of the Oswego River in the Town of New Haven. The land adjacent to the creek near its mouth is privately owned and supports several summer cottages and mobile homes. The topography is low and gradually sloping around the embayment that has formed at the creek's mouth. The residents around the embayment have constructed about 30 slips and maintain a launching ramp for their own use.



Catfish Creek
(Scale 1:24,000)

The embayment has an area of about 24 acres and provides good fishing for northern pike and largemouth bass. Depths in the embayment range from two feet in the marshy areas to six feet in the open water areas. It is separated from the lake by a low bluff 800 feet long, averaging 200 feet in width, and rising ten feet above lake level. About 80 feet from the embayment's west bank is an entrance 50 feet wide and averaging seven feet deep. Both sides of the entrance are lined with rip rap for protection.

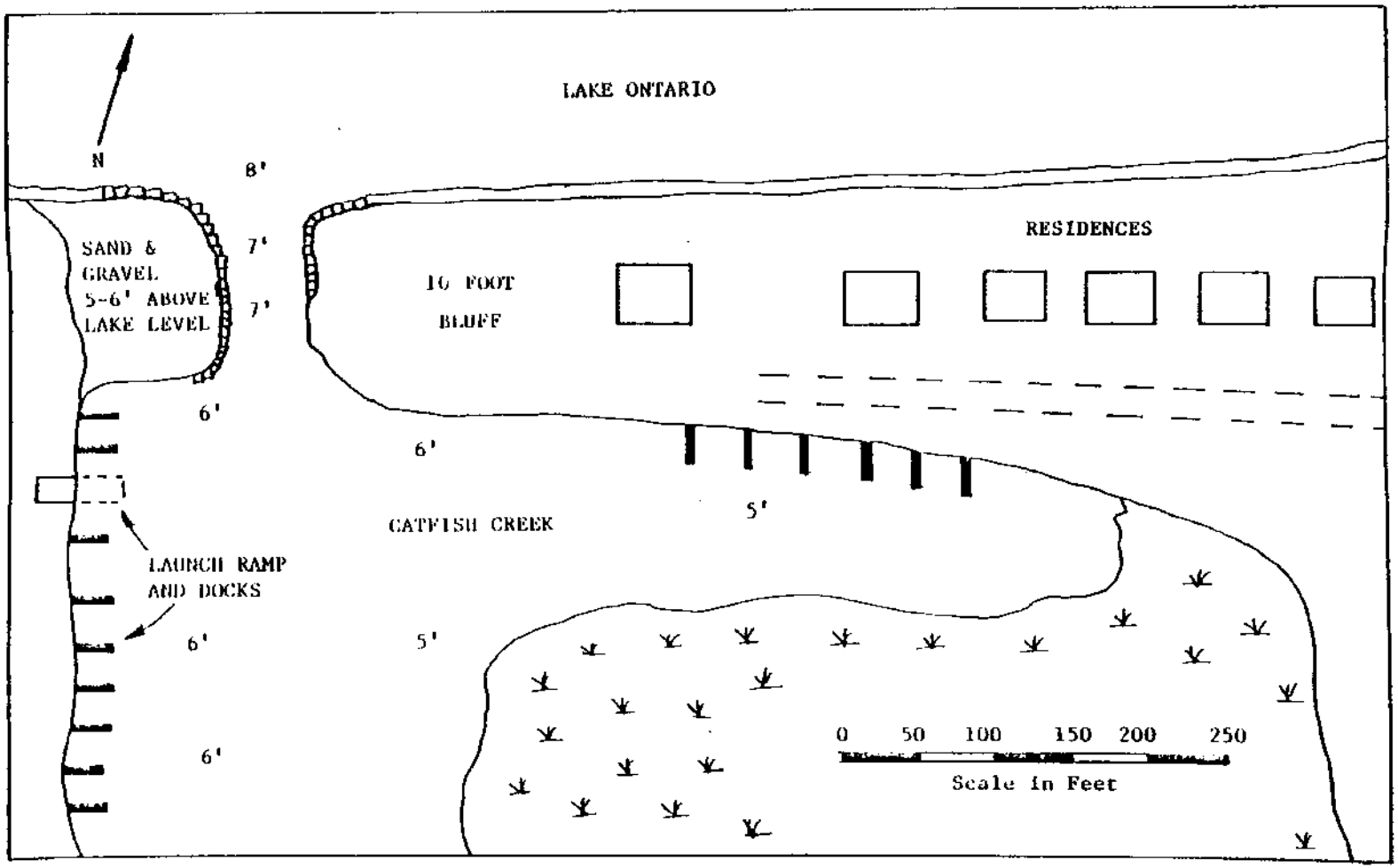
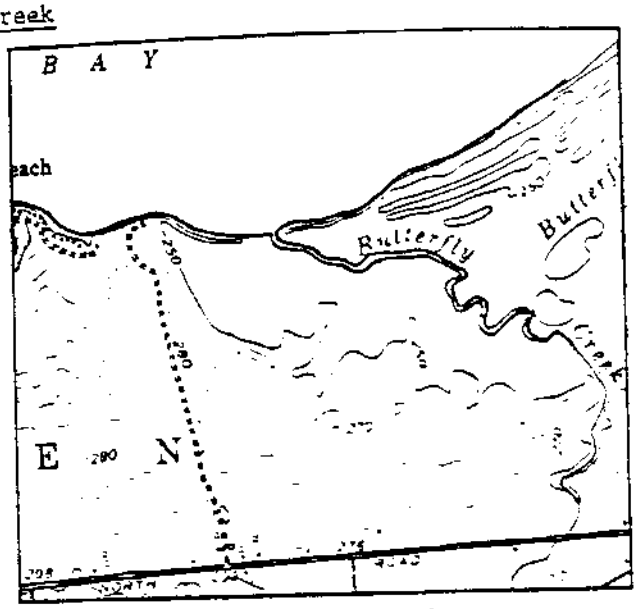


Figure 67: Mouth of Catfish Creek. Soundings taken at time of inventory. (Dated: May 28, 1976).

The very narrow beaches that border the bluff separating the embayment from the lake seem to minimize shoaling of the entrance.

7.7 Butterfly Creek



Butterfly Creek
(Scale 1:24,000)

Butterfly Creek enters Lake Ontario about 13 miles east of the Oswego River in the Town of New Haven. The land on either side of the creek, near its mouth, is privately owned and is virtually absent of any residences. There are no boating facilities on this tributary.

A 300 acre embayment, called Butterfly Swamp, has been formed at the creek's mouth. The entire embayment is marshy and provides an optimum cover situation for fish and wildlife use. It also provides excellent waterfowl hunting (St. Lawrence-Eastern Ontario Commission, 1975). The marsh is separated from the lake by a tree and brush covered sand and gravel barrier beach nearly two miles long, ranging from 20 to 100 feet in width and rising 3-4 feet above lake level. About 1000 feet from the swamp's west bank an outlet crosses the barrier beach. The outlet channe is only 6 feet wide and 1-2 feet deep.

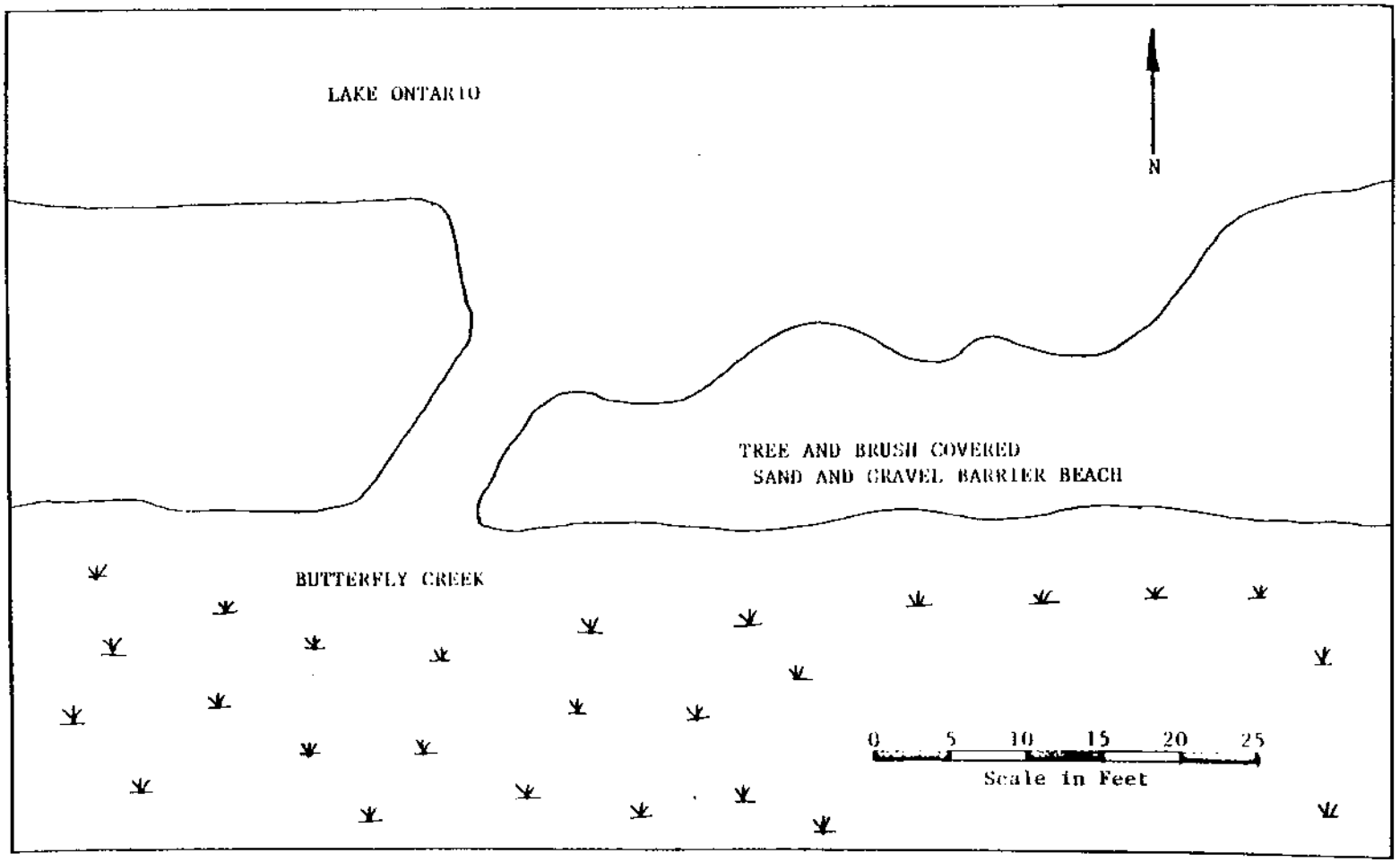
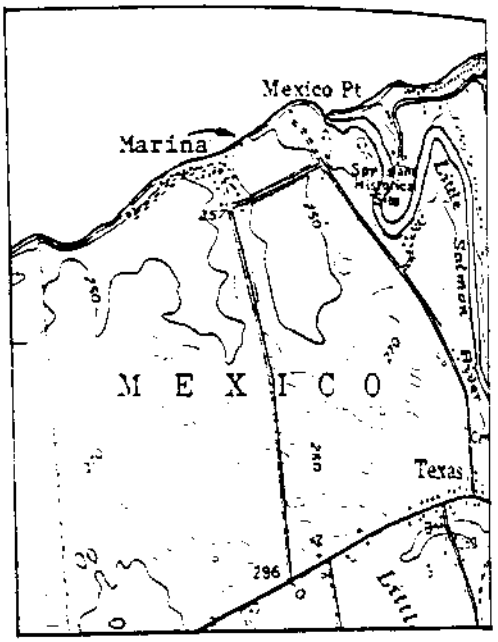


Figure 68: Mouth of Butterfly Creek. (Dated: May 28, 1976).

7.8 Little Salmon River

The Little Salmon River enters Lake Ontario about 15 miles east of Oswego Harbor at a place called Mexico Point. The Little Salmon River provides excellent fishing and is a Class 1 salmonid stream. This means the river is now under management and/or has natural migratory salmonids in it. The river is currently being stocked with Coho and Chinook salmon and may in the future have naturally reproducing populations of these species (St. Lawrence-Eastern Ontario Commission, 1975). Land on the river's east bank, near its mouth, is state owned while the west bank is privately owned.



Little Salmon River
(Scale 1:24,000)

The state has built a rip rap breakwater measuring 660 feet in length, 40 feet in width, and rising 5-6 feet above lake level across the river mouth. Construction of the breakwater was undertaken to prevent erosion of the state's shoreline property and to provide a sheltered embayment for the launching site erected by the state. Two ramps have been provided with considerable parking space. However, the breakwater has not reduced the amount of sand building up on the opposite side of the river mouth opening and may be contributing to it. Jetties will eventually be needed to insure navigable depths throughout the boating season.

The embayment created by the breakwater is about 700 feet long and 200 feet wide. The river mouth opening or channel is located at the breakwater's west end and ranges from 75 to 150 feet in width. Depths in the embayment

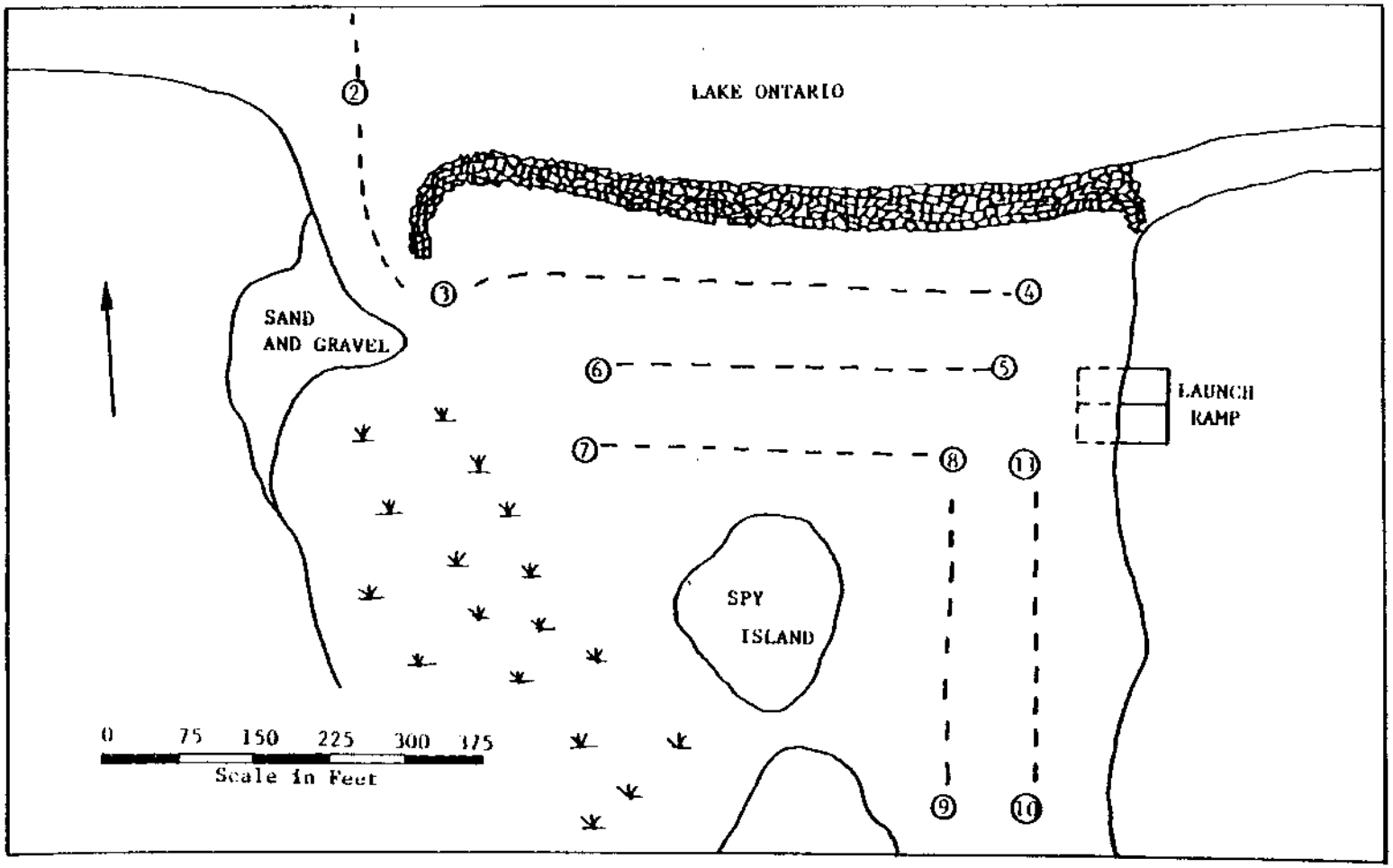


Figure 69: Mouth of the Little Salmon River (Mexico Point) showing location of breakwater and launching ramp. Also shown is the route of soundings shown in Figure . Circled numerals denote stations.

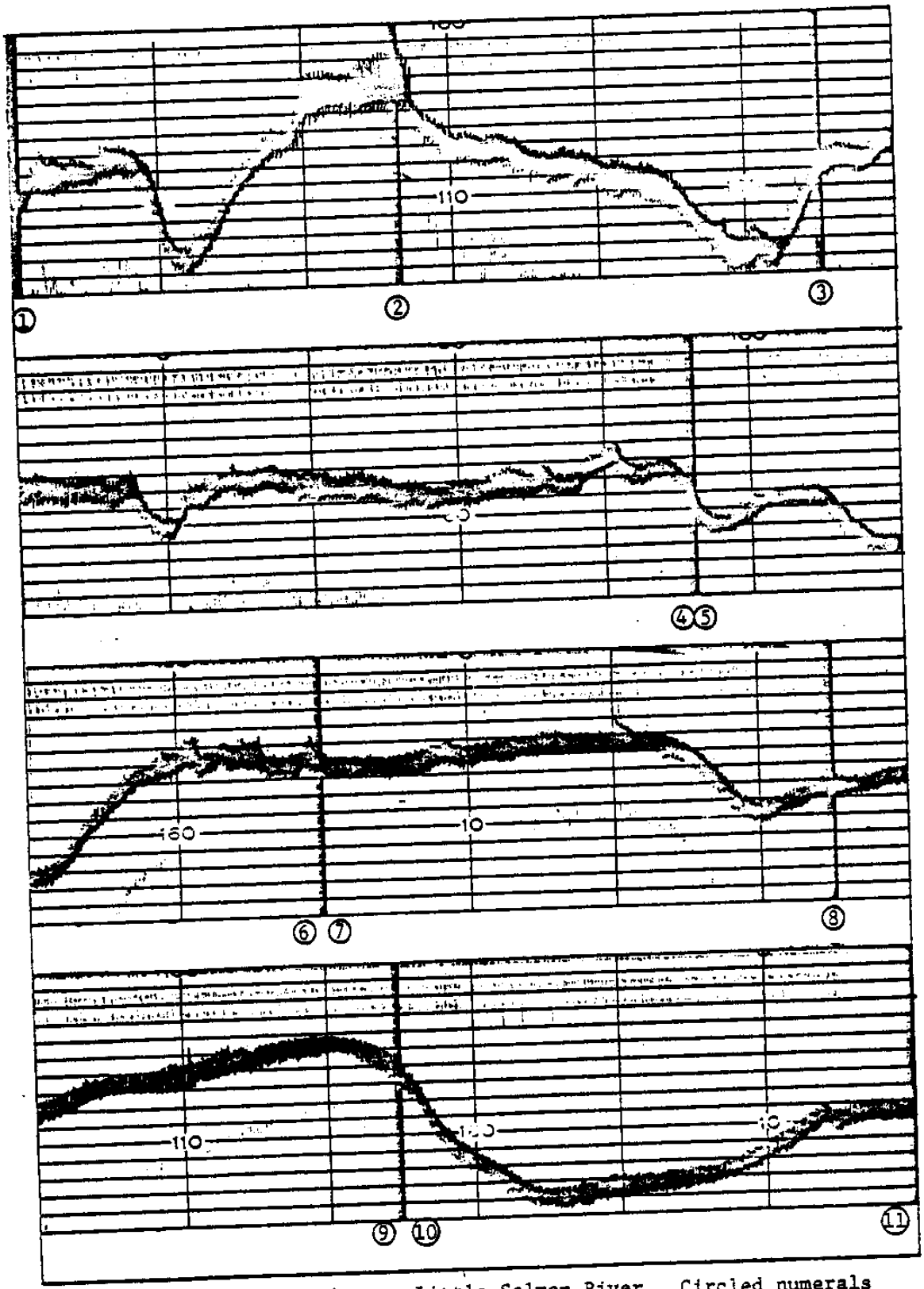


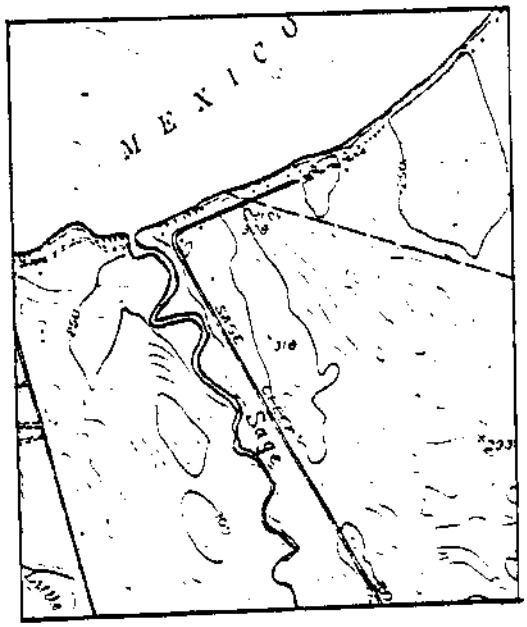
Figure 70: Soundings taken at Little Salmon River. Circled numerals denote stations. Vertical scale is in feet and horizontal scale is approximately 100 feet to the inch. (Dated: May 27, 1976).

and entrance channel are illustrated by Figures 69 and 70. Maneuvering a small boat through the opening, when the lake is rough, can prove to be difficult because the river outflow causes incoming waves to break near the entrance.

There is a private boating facility approximately 0.2 miles west of the Little Salmon River (see vicinity map) in a small embayment on the lake. No structures are present, but a channel, navigable by small boats, is provided. Approximately 30 slips, a launching ramp, and gas are available and are used primarily by residents of the summer homes on the embayment's west bank.

7.9 Sage Creek

Sage Creek enters Lake Ontario 1.3 miles east of Mexico Point in the Town of Mexico. Land on either side of the creek, near its mouth, is privately owned and supports several residences. A high drumlin borders the creek's east bank, while a low, gradually sloping, bluff characterizes the west bank. There are no boating facilities on this tributary.



Sage Creek
(Scale 1:24,000)

A 40 acre embayment has formed at the creek's mouth. The majority of the embayment is marshy wetland and is referred to as Sage Creek Marsh. The marsh is an excellent production area for ducks and furbearers. Fishing opportunities for large mouth bass, bullheads, and northern pike are also abundant. (St. Lawrence-Eastern Ontario Commission, 1975). Depths in the embayment's open water areas

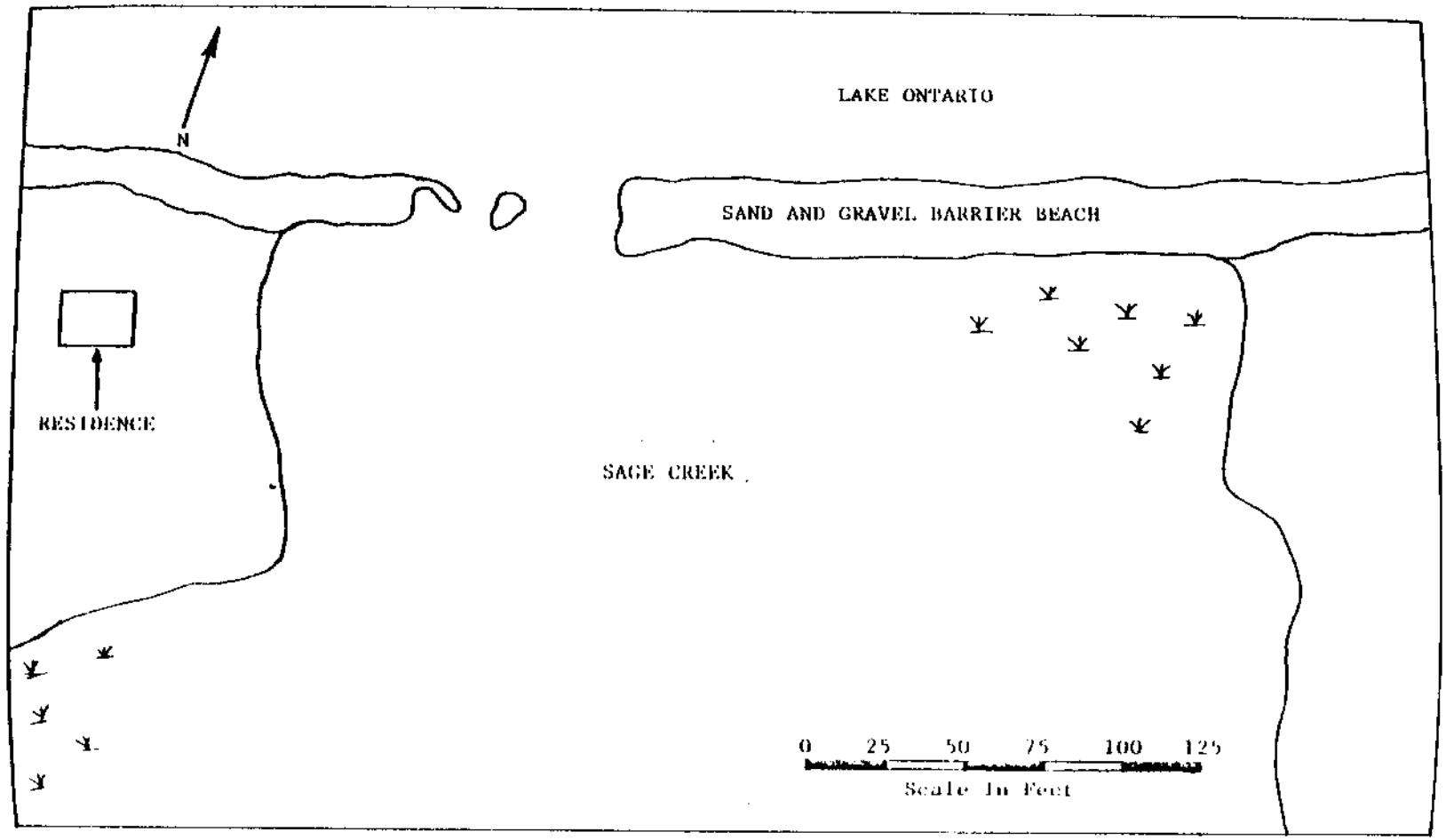
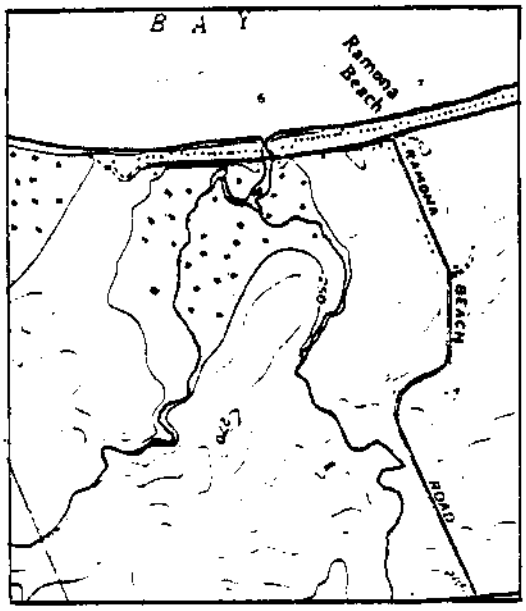


Figure 71: Mouth of Sage Creek. (Dated: May 27, 1976).

range from 2-6 feet. It is separated from the lake by a sand and gravel barrier beach 300 feet long, averaging 25 feet in width, and rising 2-3 feet above lake level. Two outlets have formed approximately 50 feet from the west bank. One channel is 10 feet wide and only 1-2 feet deep, while the other is 30 feet wide and 4 feet deep.

7.10 Snake Creek

Snake Creek enters Lake Ontario 1.5 miles northeast of Sage Creek in the Town of Richland. The lakefront on both sides of the creek is lined with privately owned summer homes and is called Ramona Beach. However, a discussion with one of the homeowners revealed that not much of a beach remains. Within the last 40 years up to 40 feet of beach along this section of the shoreline has eroded away. There are no boating facilities on Snake Creek.



Snake Creek
(Scale 1:24,000)

A 68 acre embayment has formed at the creek's mouth. Nearly all of the embayment is low, marshy wetland and is referred to as Ramona Beach Marsh. The marsh is an excellent production area for ducks and furbearers. The embayment is separated from the lake by a tree and grass covered sand and gravel barrier beach 1600 feet long, averaging 300 feet in width, and rising 6-10 feet above lake level. An outlet channel crosses the barrier beach about 400 feet from the embayment's north side. It averages 80 feet in width and ranges from 2-10 ft. in depth. A road which uses a 10 ft. diameter steel

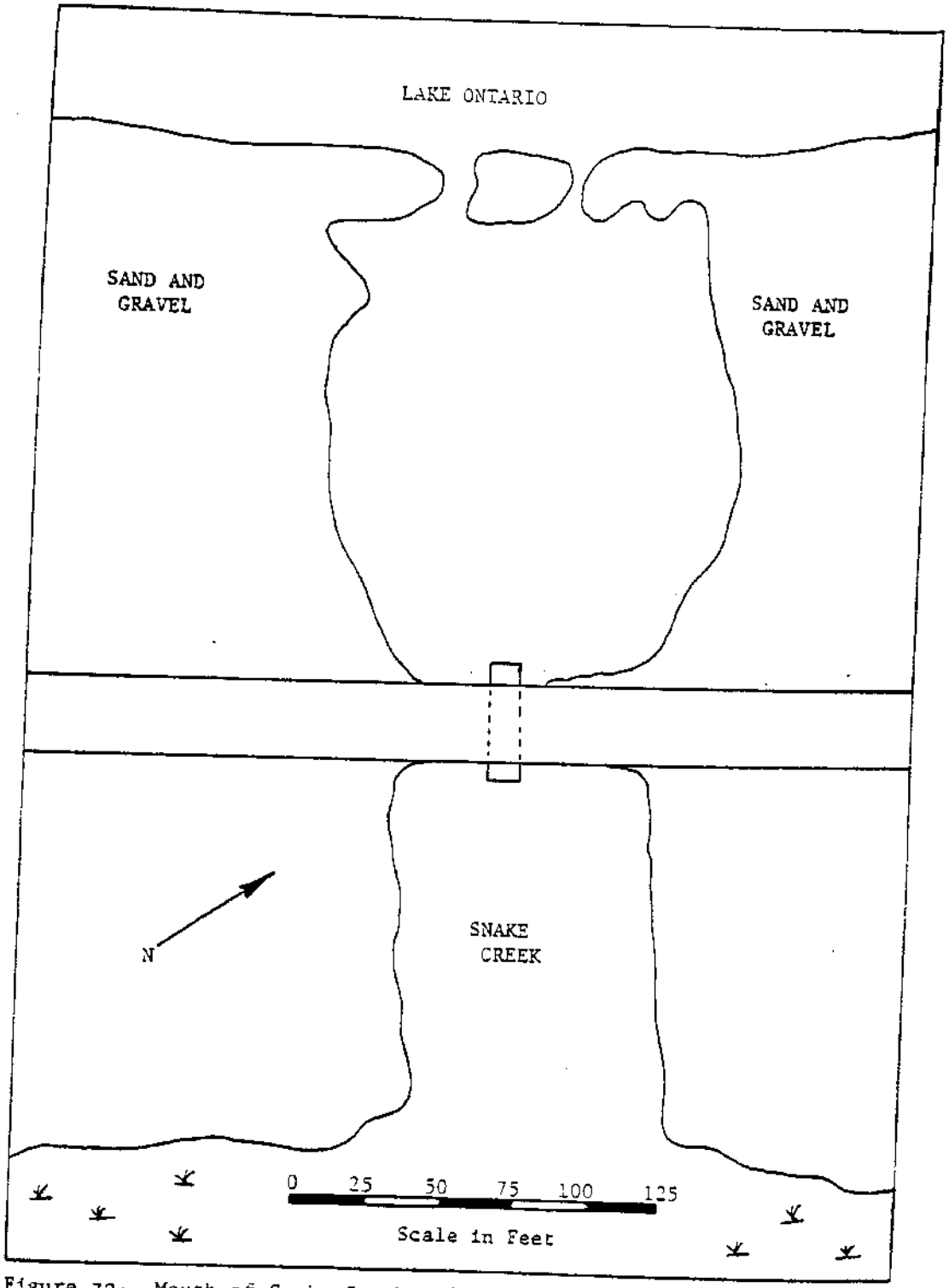


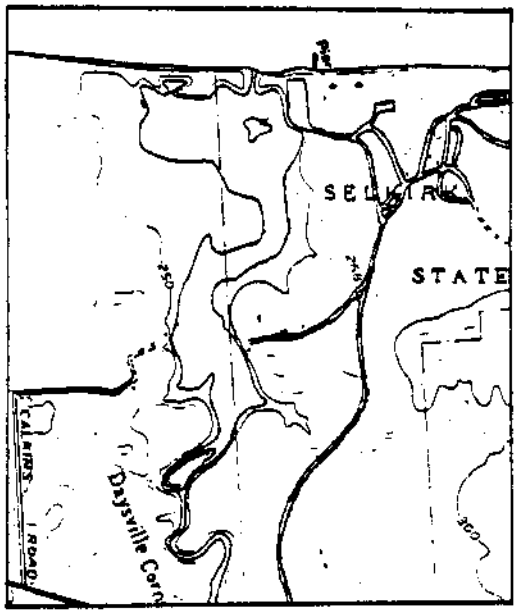
Figure 72: Mouth of Snake Creek. (Dated: May 27, 1976).

pipe as the bridge, passes over the channel 180 feet from the lake. Outflow of water to the lake is hampered by a 25 foot wide sand and gravel bar across the outlet's mouth. Two channels, one 6 feet wide and 1-2 feet deep and one 3 feet wide and 0-1 foot deep, have formed across this bar.

7.11 Grindstone Creek

Grindstone Creek enters Lake Ontario 1.1 miles north of Snake Creek in the Town of Richland. The land north of the creek, near its mouth, is state owned and is part of Selkirk Shores State Park. The south side is privately owned. Grindstone Creek is a Class 1 salmonid stream, meaning that it is under management and/or has natural migratory salmonids in it. The principal salmonid species inhabiting this tributary are Chinook salmon and Steelhead.

There are no boating facilities on Grindstone Creek.



Grindstone Creek
(Scale 1:24,000)

A 130 acre embayment, a good part of which is marshy, has formed at the mouth of Grindstone Creek. These wetlands are a good production area for waterfowl and provide good hunting and fishing opportunities. The embayment is separated from the lake by a sand and gravel, tree and brush covered barrier beach. This beach is 2400 feet long, averages 250 feet in width, and rises 2-3 feet above lake level. An outlet has developed about 150 feet from the embayment's north bank. This outlet ranges from 80-200 feet in width and 3-4 feet in depth.

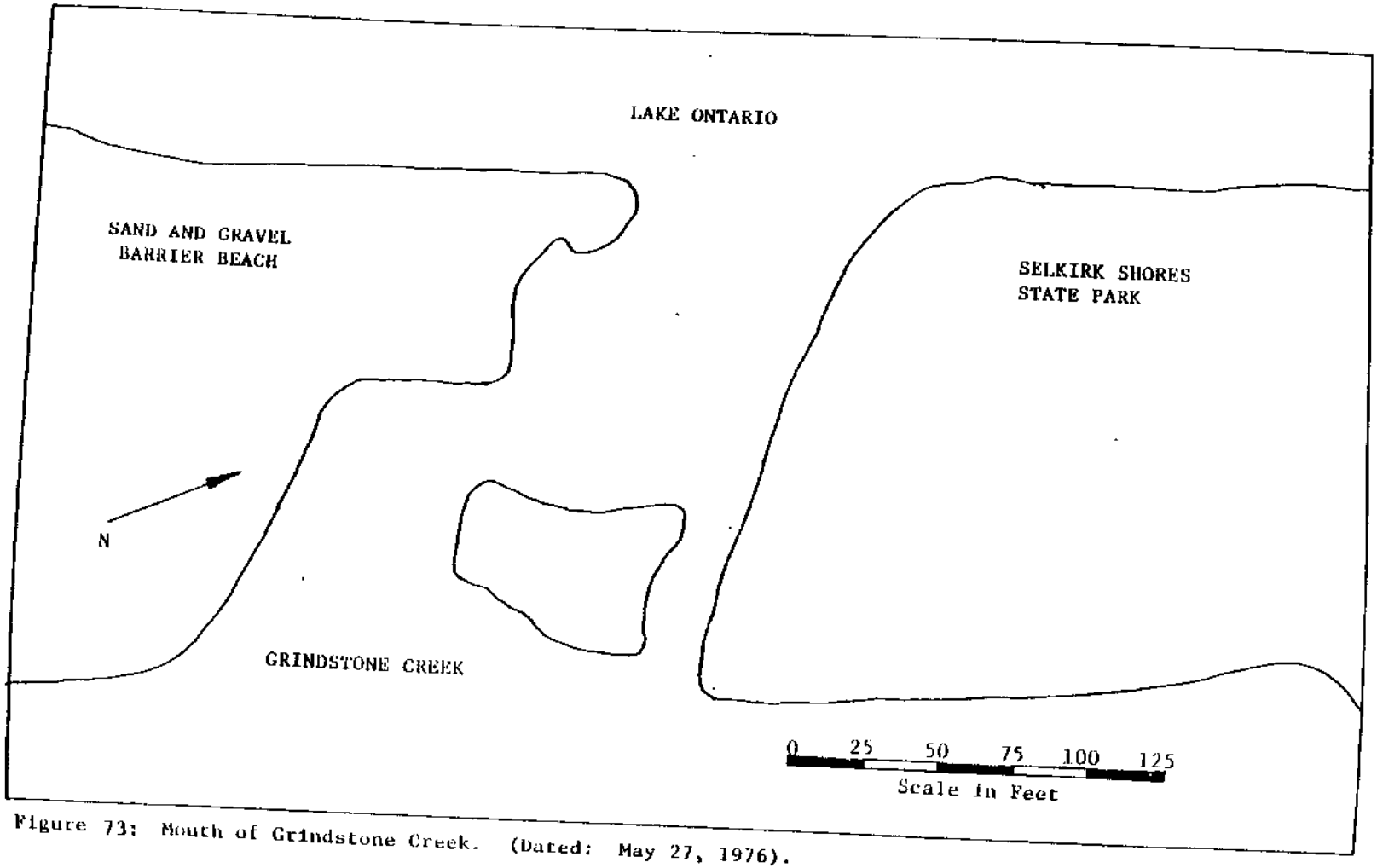
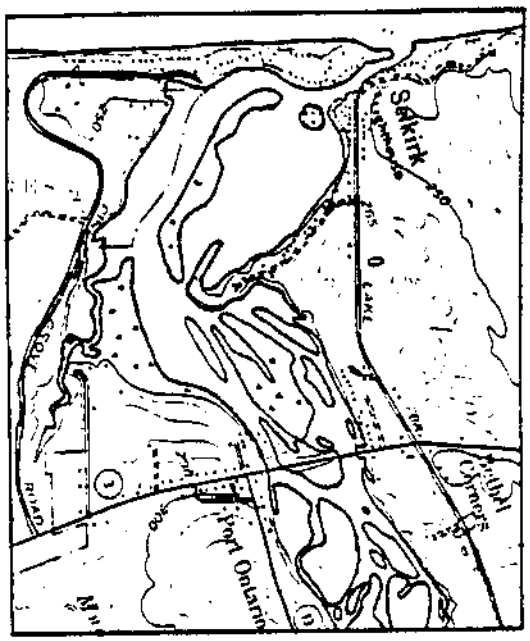


Figure 73: Mouth of Grindstone Creek. (Dated: May 27, 1976).

7.12 Salmon River

The Salmon River enters Lake Ontario 1.8 miles north of Grindstone Creek in the Town of Richland. The land on both sides of the river, except for a 2000 foot stretch on the south bank, is privately owned and supports many residences. The 2000 foot stretch is state owned and part of Selkirk Shores State Park. The Salmon River, having an estimated flow of 890 CFS, is a Class F salmonid stream and supports all species of salmonids. In fact, it has naturally reproducing populations of steelheads. Fishing opportunities as a result are excellent.



Salmon River
(Scale 1:24,000)

There is considerable interest in having a harbor of refuge developed at the Salmon River. In fact a project was authorized in the 1945 River and Harbor Act. This project provides for the construction of a north breakwater 885 feet long and a south jetty 1060 feet long. An entrance channel 1300 feet long, 100 feet wide and 10 feet deep, an inner channel within the river, 1800 feet long, 100 feet wide, and 8 feet deep, and a mooring basin 900 feet long and 400 feet wide are to be dredged. Except for the possible inclusion of walkways on the structures for fishing this project is being adhered to. A hydraulic model study and the Phase I General Design Memorandum are being initiated this year.

A large embayment has formed just upstream from the river mouth. It is separated from the lake by a sand barrier beach nearly 1/2 mile long, averag-

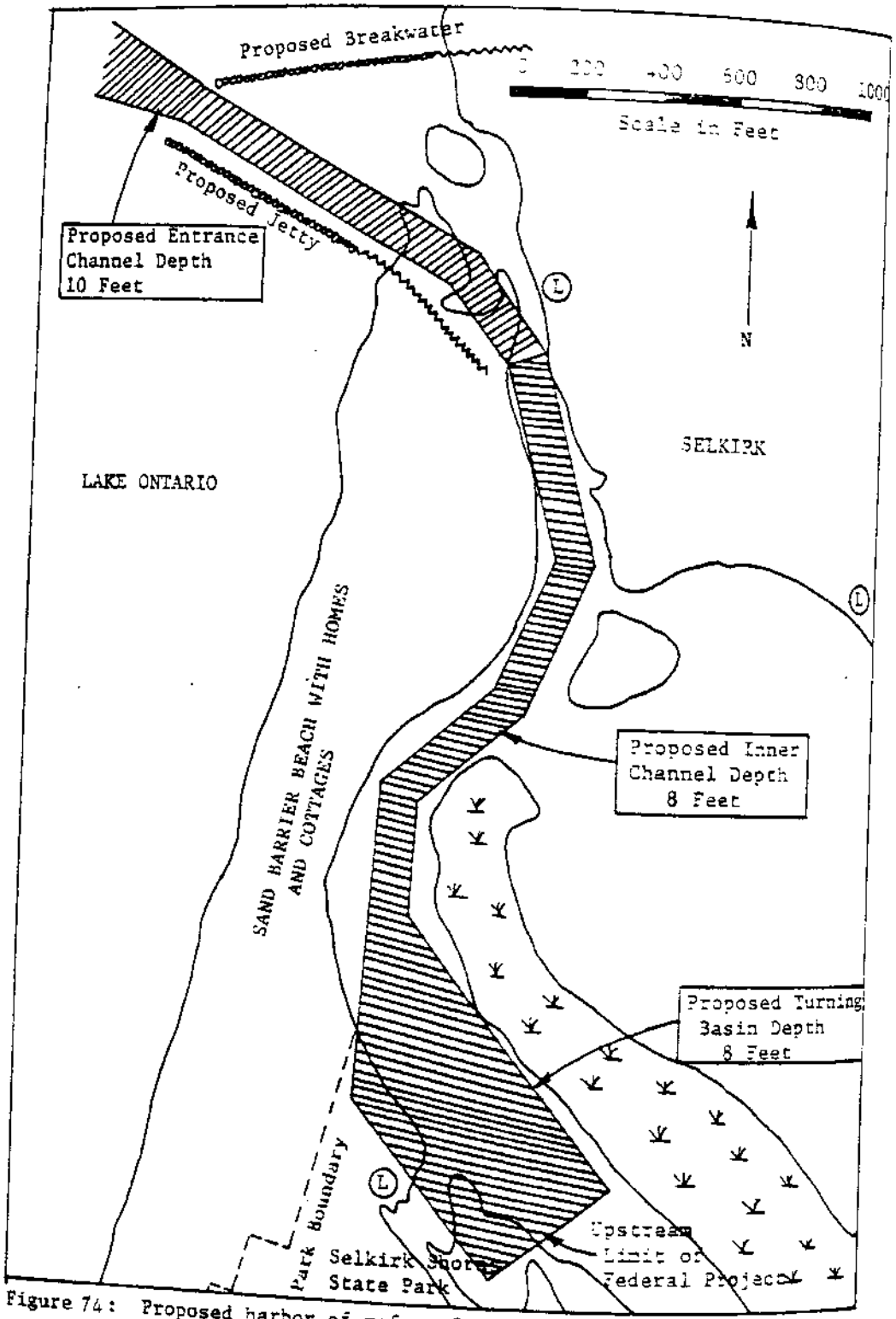


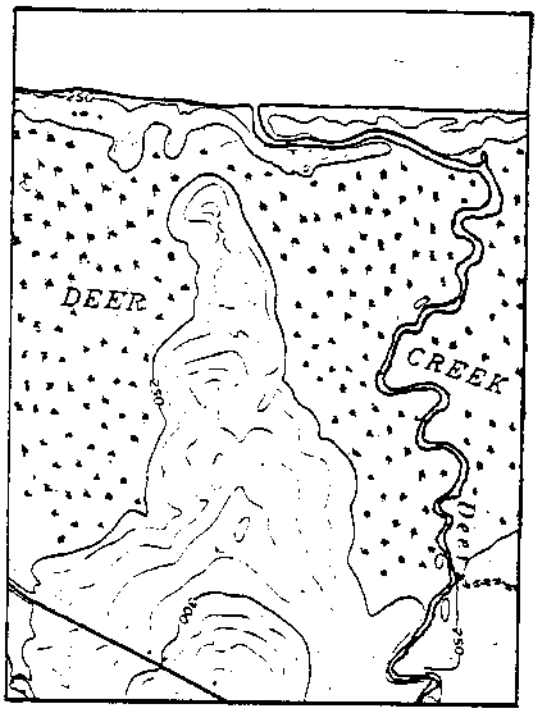
Figure 74: Proposed harbor of refuge for the Salmon River. Locations of launching ramps shown by circled letter L.

averaging 400 feet in width, and rising 15-20 feet above lake level. Many residences have been built on this beach and may cause problems if a jetty is constructed at this entrance. The entrance is at the barrier beach's north end and averages 150 feet in width. Presently access to Lake Ontario from the Salmon River is possible, but only for small boats. Sand bars continually accrete near the entrance channel mouth making navigation hazardous.

Boating facilities on the Salmon River are few and accommodate mainly fishermen. There are four launching ramps within one mile of the river mouth. One launching ramp is state owned and operated from Selkirk Shores State Park on the south bank. The ramp is unimproved, but considerable space has been set aside for parking. Kenny's Boat Livery, located 1 mile upstream, provides a launching ramp, some docking space, and gas. However parking space is limited. A small marina (Lighthouse Marina), near the mouth, operates one of the two remaining ramps and offers some docking space, boat rentals, gas, and parking for 40-50 cars. The last ramp is operated by a resident living approximately 1000 feet upstream from the marina. He also offers boat rentals, but has limited parking space.

7.13 Deer Creek

Deer Creek enters Lake Ontario 0.8 miles north of the Salmon River in the Town of Richland. The lakeshore, both north and south of the creek, is characterized by high sand dunes and is privately owned. The lakeshore south of Deer Creek is presently being developed into a camping area and swimming beach called Brennen Beach. There are no boating facilities on this tributary.



Deer Creek
(Scale 1:24,000)

A 1200 acre marsh, called Deer Creek Marsh, has formed at the creek's mouth and is an excellent fish and wildlife habitat. Deer Creek itself is a class 2 salmonid stream, meaning that if stocked and managed it could develop excellent salmon runs. The creek presently has runs of stray salmonids and supports some fishing (St. Lawrence-Eastern Ontario Commission, 1975). The marsh is separated from the lake by the previously mentioned sand dunes, which average 500-600 feet in width, for nearly 2 miles. The outlet channel averages 70 feet in width and ranges from 2-5 feet in depth. Navigation through the channel is hazardous, however, due to sand bar accretion near its mouth.

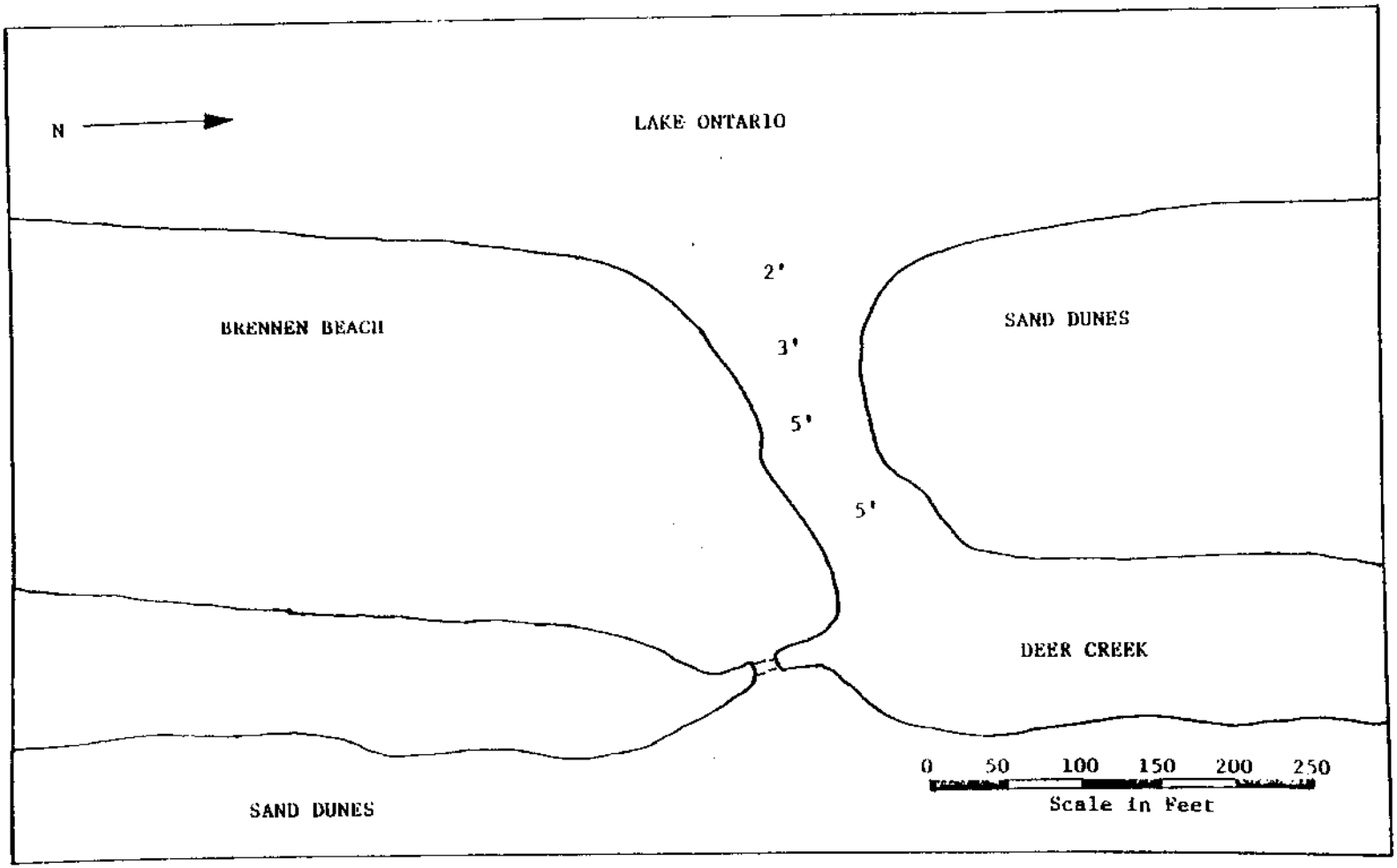
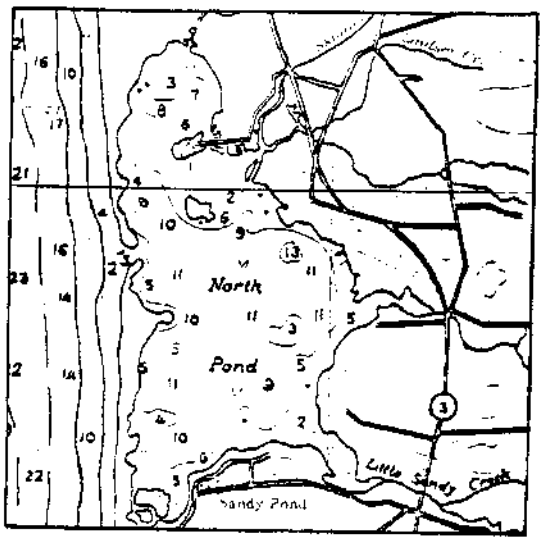


Figure 75 : Mouth of Deer Creek. Soundings taken at time of inventory. (Dated: May 27, 1976)

7.14 North Pond

North Pond is located 5.5 miles north of the Salmon River in the Town of Sandy Creek. All of the land surrounding North Pond is privately owned and supports many summer and year round homes. The pond is fed by several small tributaries of which Skinner Creek, Lindsey Creek, and Little Sandy Creek are Class 1 Salmonid streams. All of these creeks have naturally reproducing populations of steelheads and provide excellent fishing.



North Pond
(Scale 1:80,000)

North Pond is protected from the lake by a barrier beach characterized by sand dunes up to 45 feet high. This beach is nearly 3.5 miles long and varies from 250 to 1000 feet in width. The entrance channel is continually changing, but locally maintained buoys are moved several times each summer as needed. However, at the time of this inventory, there were two entrances, one marked and one unmarked. Depths in these channels are illustrated by Figures 77 and 78. Much of the pond is 12-14 feet deep, but reaches depths up to 20 feet in some places.

Two problems continually plague the residents and users of North Pond. One is caused by high lake levels. High lake levels permit storm waves to propagate through the entrance without dissipation and property damage results. Erosion of the barrier beach is also a problem during high lake level periods. The other problem is the growth of weeds in

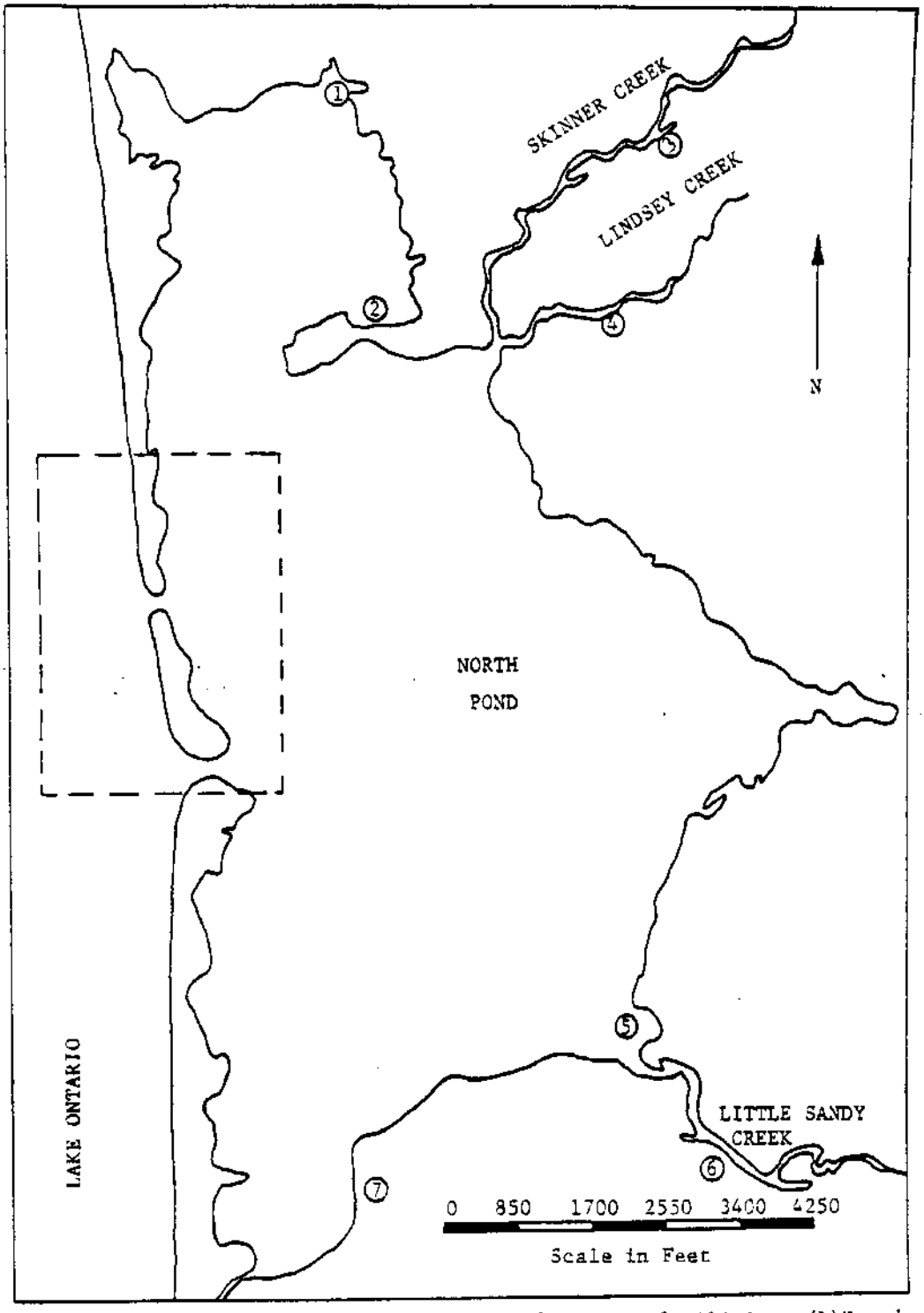


Figure 76: North Pond showing location of boating facilities: (1)Kast's Marina, (2) Greene Point Marina (3) Freeman's Marina, (4) Reiter's Marina, (5) Seber Shore Marina, (6) Jone's Marina, (7) private launching ramp. Area surrounded by dashed line shown in Figure 77.

the pond, which reaches its peak in midsummer and continues through to fall. This problem is especially evident around the marinas where motor boat traffic is inhibited.

There are a total of seven boating facilities on North Pond. All of them accommodate boats only 25 feet long or under, because larger boats cannot use the lake entrance. One of these is a private launching ramp and is not listed below. The remaining six facilities are listed below with a description of their services. Their location, including the launching ramp, on North Pond is shown in Figure 76.

Reiter's Marina: Reiter's Marina presently rents 36 slips, six for boats 12-18 feet long and 30 for boats 18-25 feet long. The owner has indicated, however, that an additional 100 slips could be rented if available (40 for 12-18 foot boats and 60 for 18-25 foot boats). The marina operates a launching ramp that is used approximately 150 times per week during the boating season. Other services provided are parking for approximately 50 cars, gas, and winter storage.

Greene Point Marina: Greene Point Marina rents approximately 60 slips. The marina operates a launching ramp, but there is very little parking and in fact, charges for parking a car with trailer. Other services include gas, winter storage and boat rentals.

Seber Shore Marina: Seber Shore Marina rents 35 slips, 20 for boats 12-18 feet long and 15 for boats 18-25 feet long. The owner has indicated that an additional 25 slips could be rented if available. The marina operates a launching ramp that is used about 5 times per week during the boating season. There is enough space to park 30 cars, but the owner has indicated that additional space is available if needed. The owner also plans on initiating a boat rental business next year.

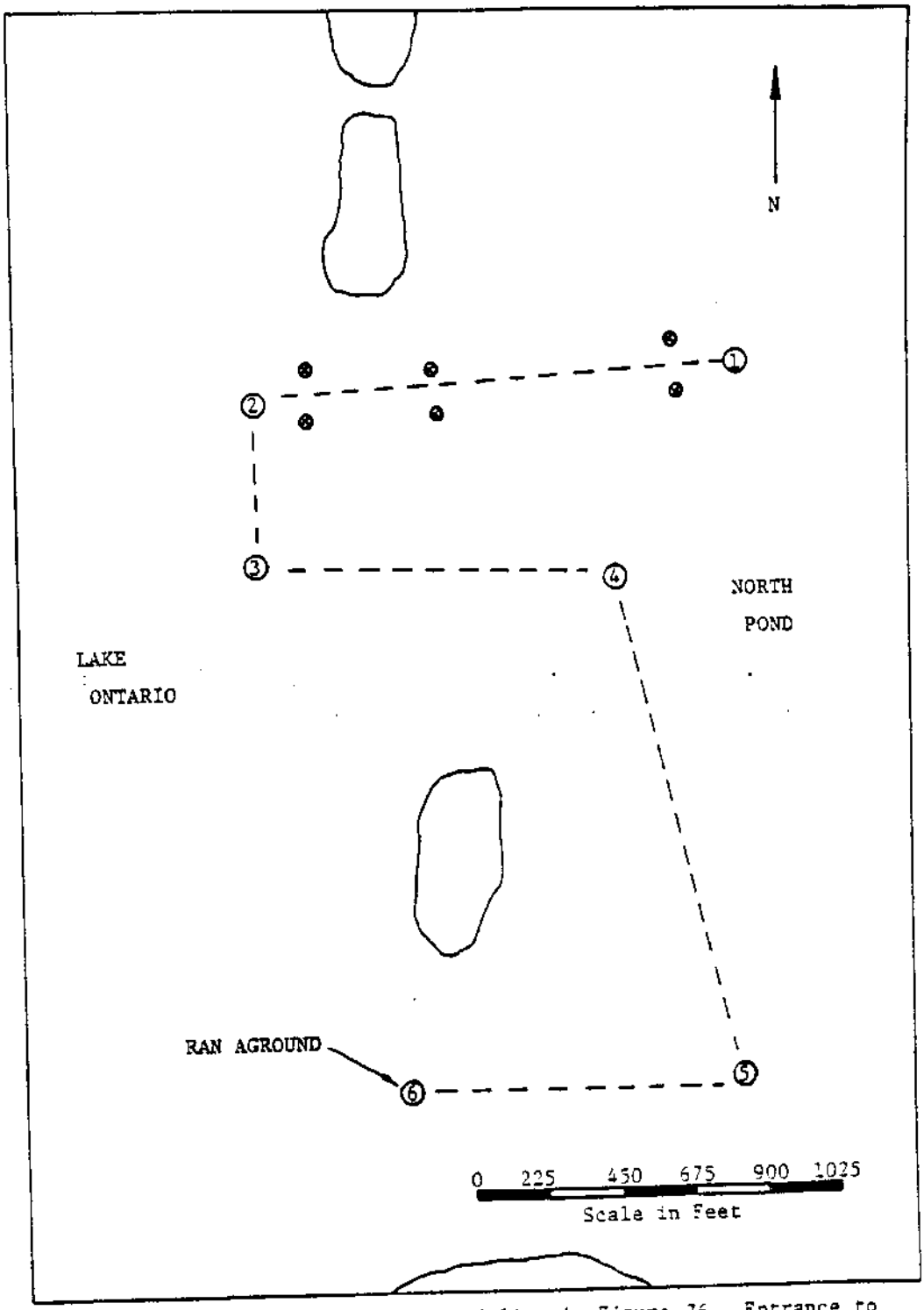


Figure 77: Area surrounded by dashed line in Figure 76. Entrance to North Pond. (Dated: May 28, 1976). Dashed line shows path of soundings (Figure 78).

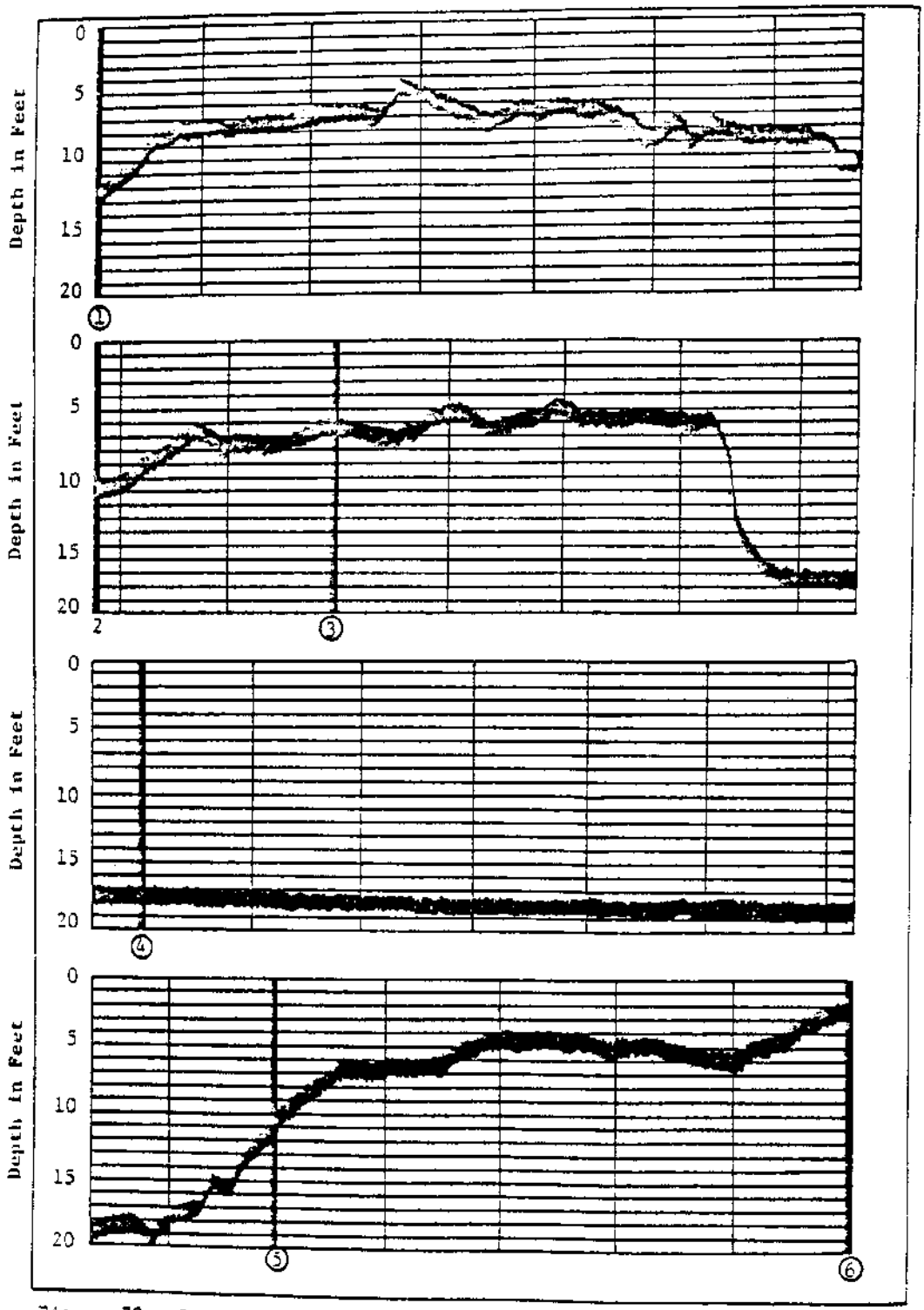


Figure 78: Soundings taken at North Pond: Circled numerals correspond to stations shown in Figure 77. The horizontal scale, the distance between two successive vertical lines, is approximately 200 feet. (Dated: May 28, 1976).

Jones Marina: Jones Marina rents 35 slips; 16 for boats 12-18 feet long, 17 for boats 18-25 feet long, and 2 for boats longer than 25 feet. The owner has indicated that an additional 25 slips could be rented if available and he is, in fact, in the process of obtaining permits to construct them. The marina operates a launching ramp that is used approximately 15 times per week during the boating season. Other services include: parking for 40-50 cars, gas, and winter storage.

Freeman's Marina: Freeman's Marina rents approximately 20 slips for boats under 25 feet long. Other services include a launching ramp, gas and parking for 40-50 cars.

Kast's Marina: Kast's Marina rents 40 slips for boats under 25 feet long. Other services include a launching ramp, gas, parking for 30-40 cars, and winter storage.

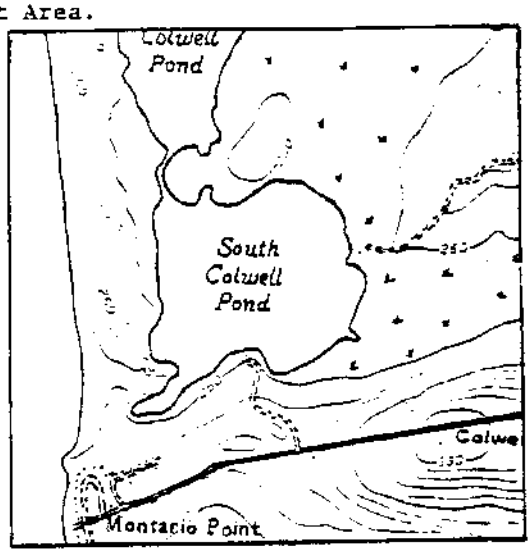
CHAPTER VIII

JEFFERSON COUNTY

Jefferson County is bounded on the south by Oswego County, on the north by the St. Lawrence Seaway, and on the west by Lake Ontario. From the Oswego County line to Stony Point, a distance of 10 miles, the shoreline is composed of a barrier beach characterized by sand dunes up to 45 feet high. This barrier beach separates vast marsh areas and open ponds from the lake. The beach and dunes are composed of very fine sand and the beach has a very flat offshore slope and is relatively stable. Two of the open ponds separated from the lake are Lakeview Pond and Cranberry Pond. They have no usable outlets to the lake and are omitted from this inventory. There is, however, a launching ramp provided by the state on Lakeview Pond. Cranberry Pond is an excellent water fowl habitat. Tributaries and harbors of Jefferson County between the Oswego County line and Stony Point are: South Colwell Pond, Sandy Creek, Black Pond, and Stony Creek. The dunes and marshland between South Colwell Pond and Southwick Beach State Park and between Lake Ontario and Route 3 are state owned and is called Lakeview Wildlife Management Area.

8.1 South Colwell Pond

South Colwell Pond is located approximately 2.5 miles north of the North Pond entrance. The pond is separated from Lake Ontario by the barrier beach described previously. This barrier beach, the pond, and the wetlands surrounding the pond are part of the Lakeview Wildlife Management Area.



South Colwell Pond
(Scale 1:24,000)

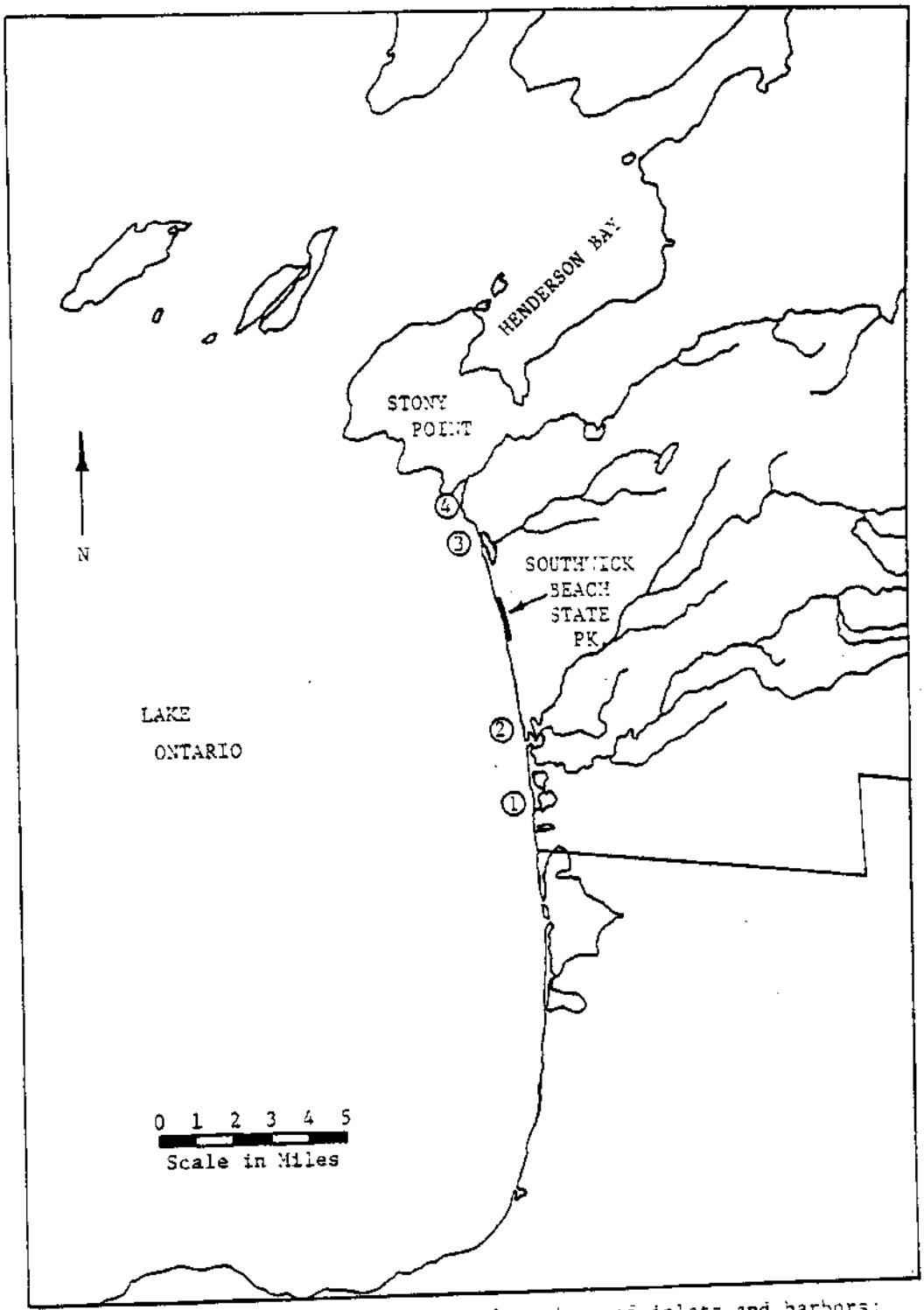


Figure 79: Jefferson County showing locations of inlets and harbors: (1) South Colwell Pond, (2) Sandy Creek, (3) Black Pond, (4) Stony Creek.

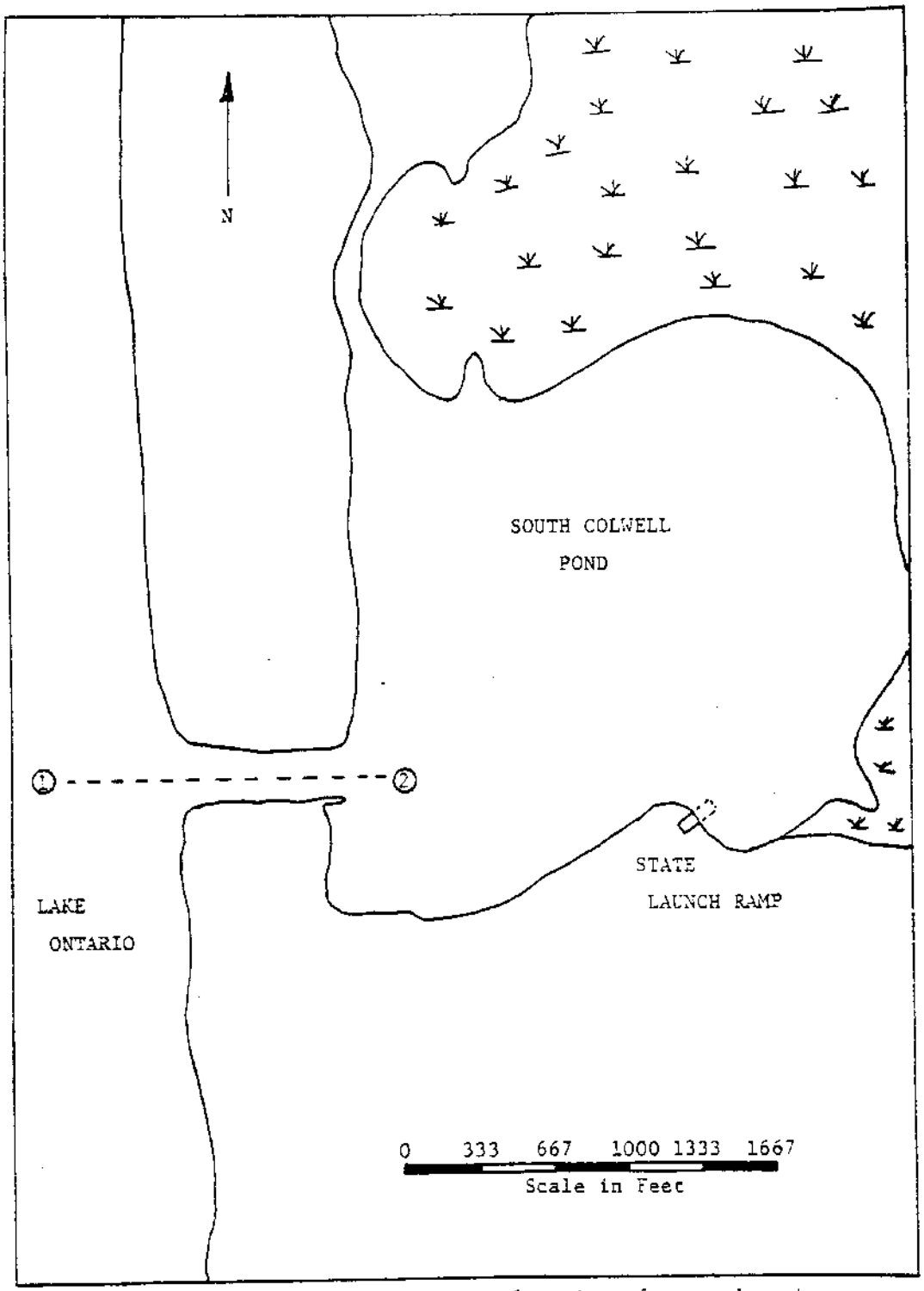


Figure 80: South Colwell Pond showing location of state launch ramp, entrance channel, and depth sounding route. Circled numerals correspond to those in Figure 81.

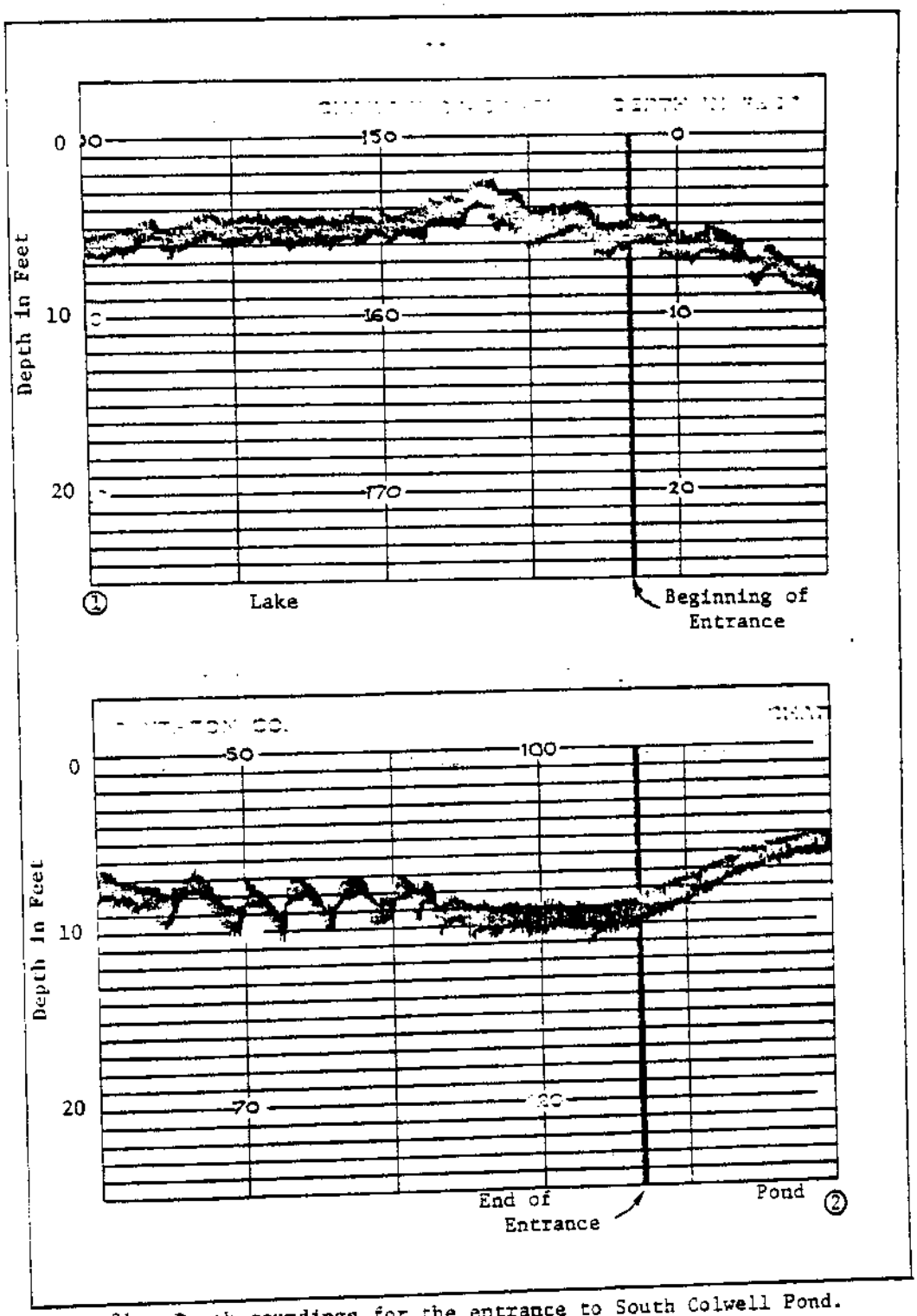


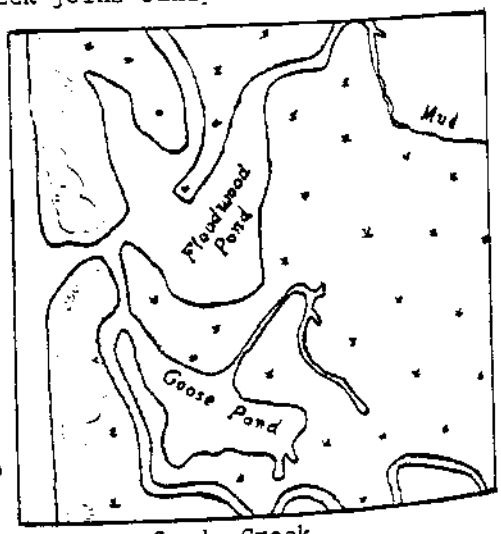
Figure 81 : Depth soundings for the entrance to South Colwell Pond. Horizontal scale is about 150 feet per inch. (Dated: May 28, 1976).

South Colwell Pond has an area of about 110 acres and provides good fishing. Depths in the pond range from 5 to 9 feet. The entrance channel located on the pond's southwest corner, averages 200 feet in width. Depth in the channel is illustrated by Figures 80 and 81. Navigation of the entrance is dangerous except under very calm lake conditions. A combination of the gently sloping lake bottom near the entrance and the shallow water depth causes waves to steepen and break. The state has provided an unimproved launching ramp for access to the pond. The ramp's location on the pond is shown in Figure 79.

8.2 Sandy Creek

Sandy Creek, having an estimated flow of 79 CFS (International Lake Ontario-St. Lawrence River Water Pollution Board 1969) enters Lake Ontario approximately four miles north of North Pond in the Town of Ellisburg. The land and marsh adjacent to the creek near its mouth is part of the Lakeview Wildlife Management Area. There are no boating facilities on this tributary, except for an unimproved launching ramp just constructed by the state. It is located about 2 miles upstream where Rt. 3 crosses South Sandy Creek, a tributary of Sandy Creek. S. Sandy Creek joins Sandy Creek close to the lake entrance.

Sandy Creek and S. Sandy Creek are class 1 salmonid streams. The principal species in Sandy Creek is Chinook Salmon while all species are present in S.Sandy Creek. In fact, S. Sandy Creek supports naturally reproducing populations of Steelheads (St. Lawrence-Eastern Ontario Commission, 1975).



Sandy Creek
(Scale 1:24,000)

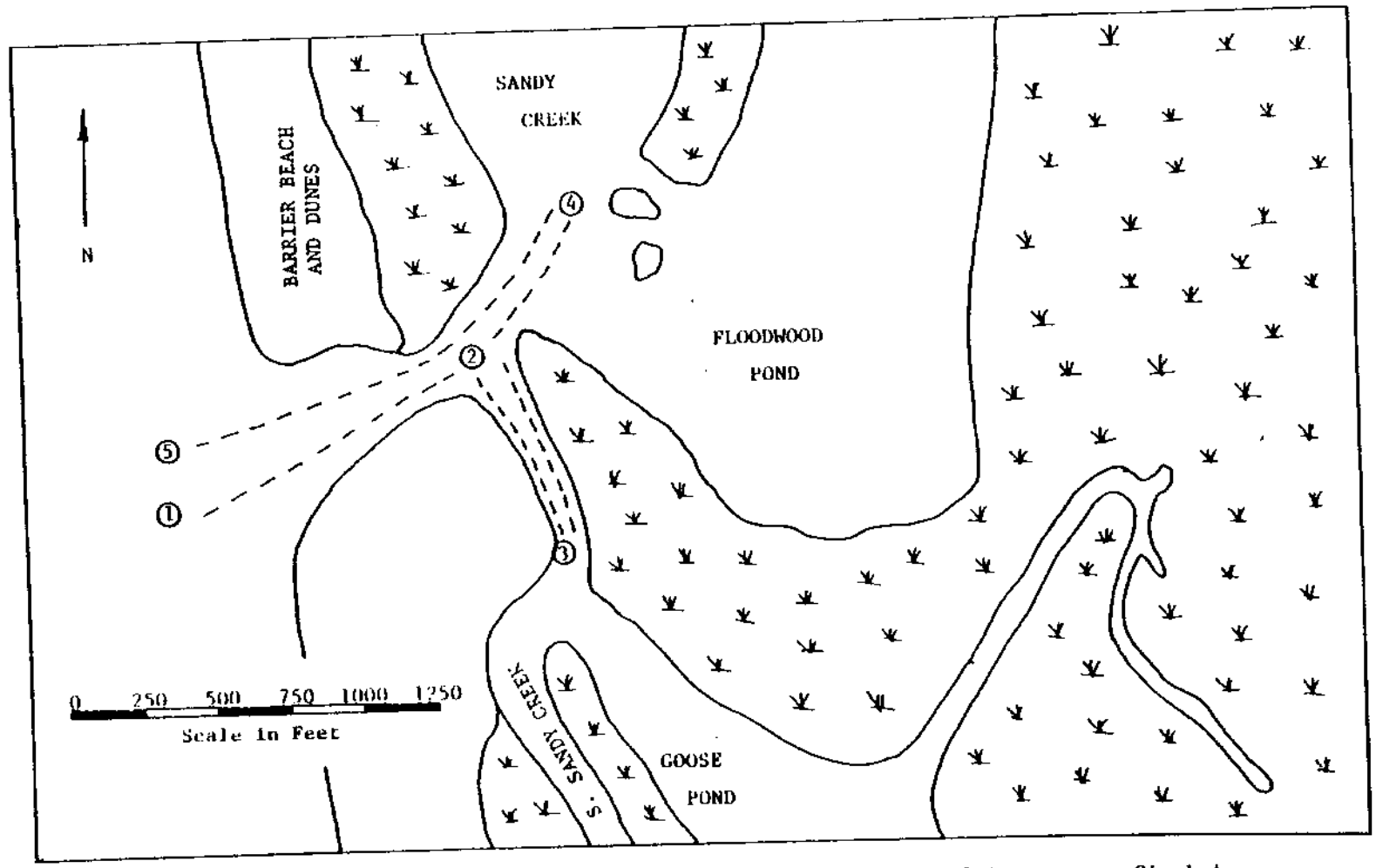


Figure 82: Mouth of Sandy Creek showing route of soundings made at time of inventory. Circled numerals correspond to those in Figure 83.

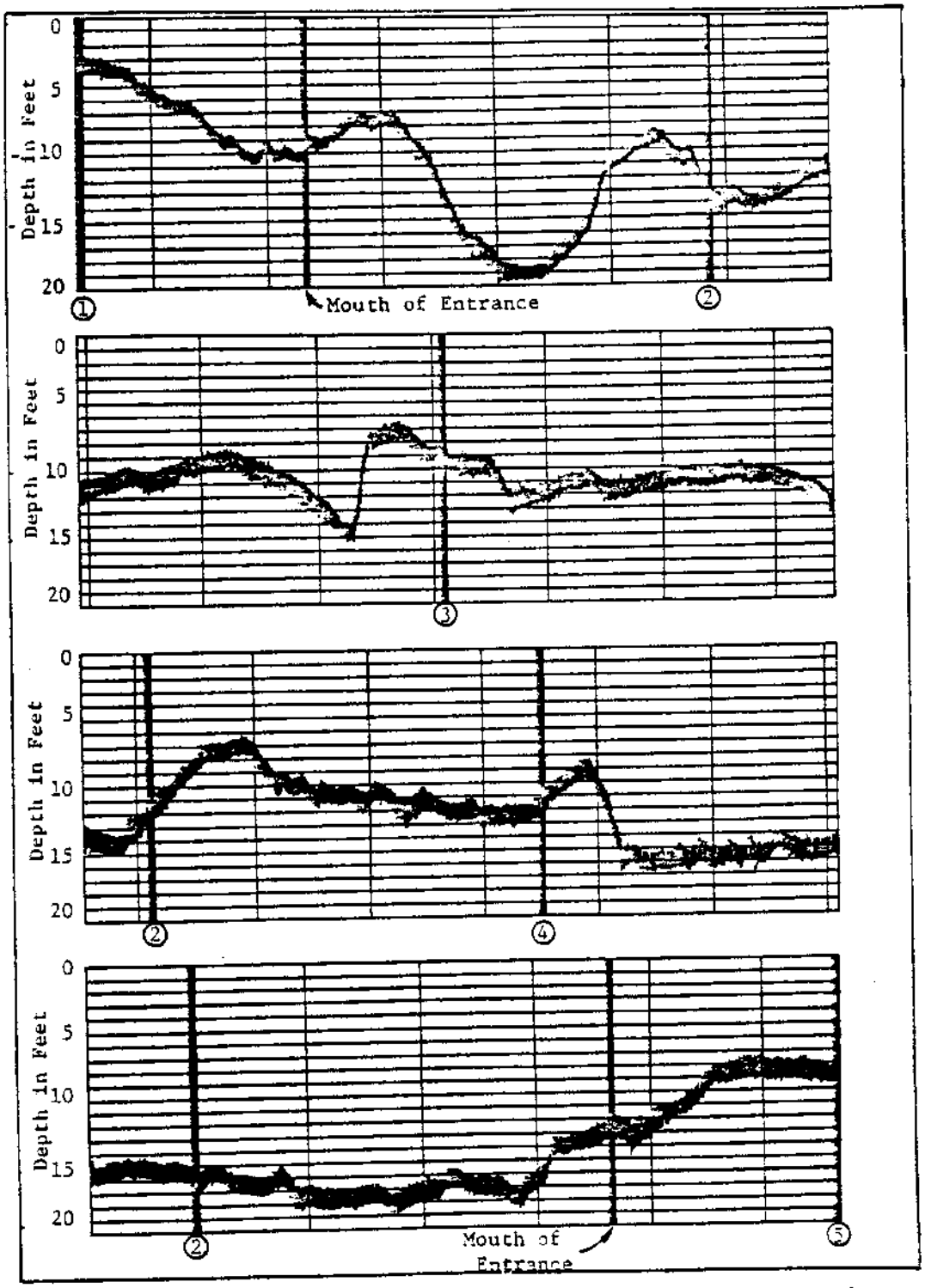
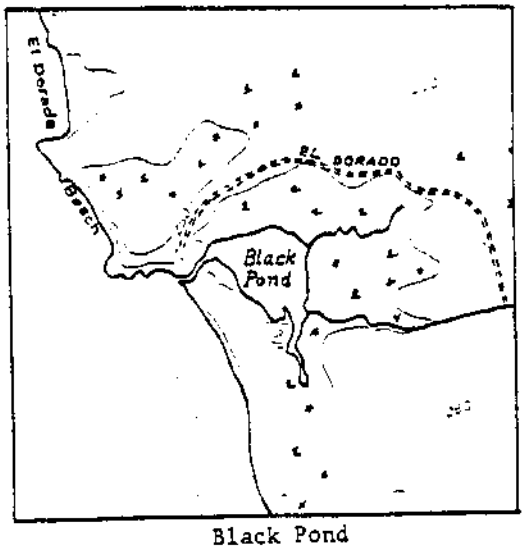


Figure 83: Soundings taken at mouth of Sandy Creek. Circled numerals correspond to stations shown in Figure 82. The horizontal scale, distance between two successive vertical lines is approximately 200 feet. (Dated: May 28, 1976).

The entrance channel width varies from about 800 feet at its mouth to about 180 feet at the junction of Sandy and South Sandy Creeks. Depths in the channel and the first few hundred feet of each creek are illustrated in Figures 82 and 83. Navigation of the channel is difficult during rough lake conditions because waves steepen and break on the gently sloping lake bottom near its mouth.

8.3 Black Pond

Black Pond is located six miles north of Sandy Creek in the Town of Ellisburg. The land surrounding Black Pond is privately owned. There are no boating facilities on Black Pond.



Black Pond
(Scale 1:24,000)

Black Pond Marsh, having an area of 107 acres, is a good fishing area for largemouth bass, northern pike, and bullheads. The marsh is separated from the lake by the barrier beach previously described. Depths in the pond range from 2-6 feet. The entrance channel averages 40 feet in width and only 1-3 feet in depth. The offshore slope in the vicinity of the entrance is very flat and inhibits motor boat traffic.

8.4 Stony Creek

Stony Creek enters Lake Ontario seven miles north of Sandy Creek in the Town of Henderson. The land adjacent to the creek, near its mouth, is privately owned and supports many residences. There are, presently, no boating facilities on Stony Creek. There used to be a marina, called Betty's Marina, but is has closed within the past year.

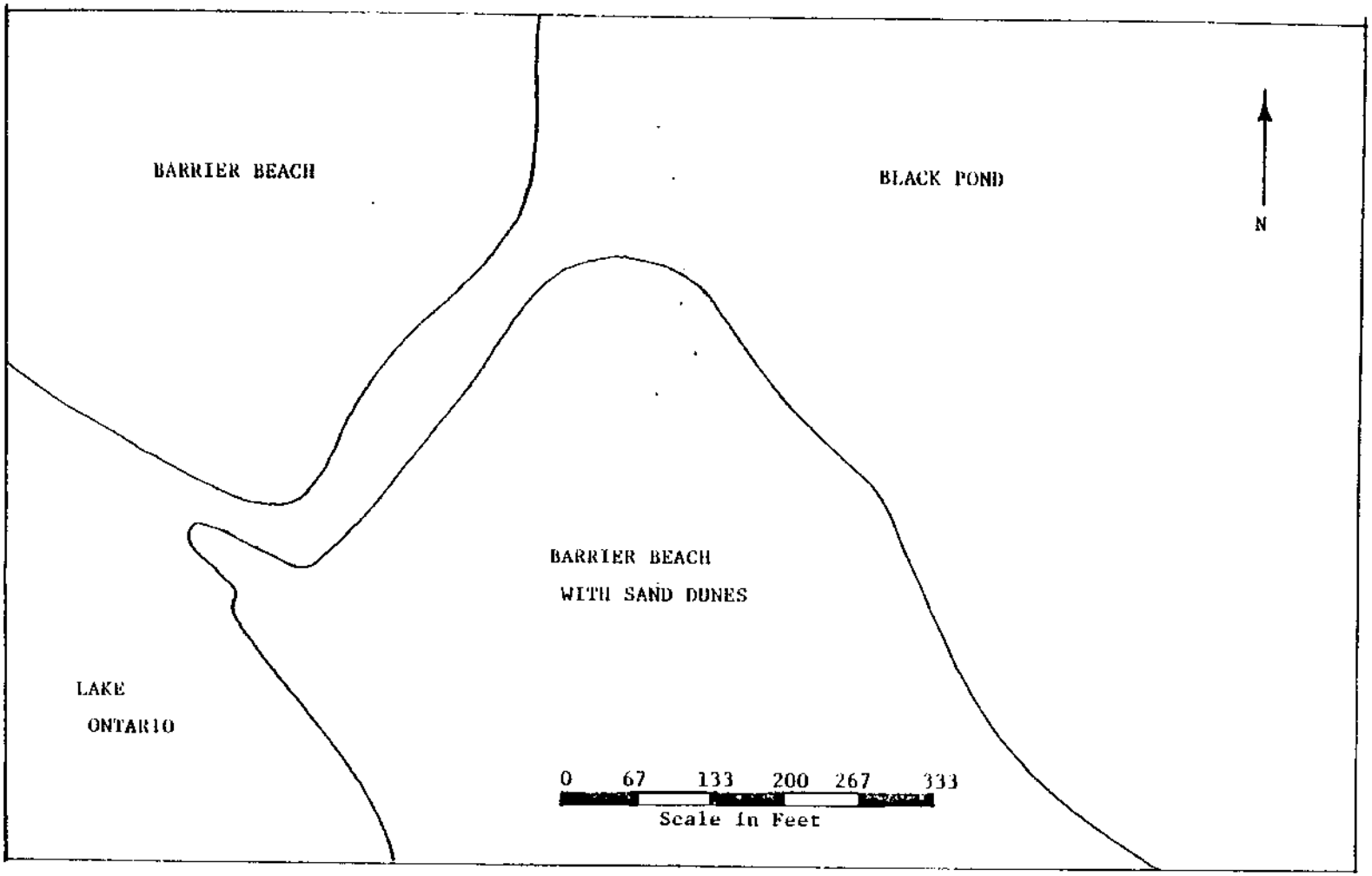
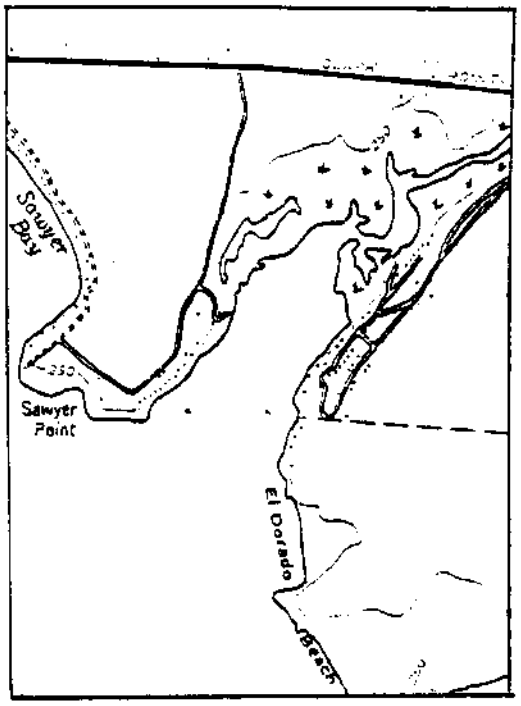


Figure 84: Entrance to Black Pond. (Dated: May 28, 1976).

The marina used to operate a launching ramp, sell gas, dock boats and rent boats.

Stony Creek is a class 2 salmonid stream. If stocked and managed Stony Creek could develop excellent steelhead runs and possibly support naturally reproducing populations of this species. A large embayment, open to the lake, has formed at the mouth of Stony Creek. It varies from 2000 to 500 feet in width and is about 3000 feet long. Its upstream end is bounded by wetlands capable of supporting wildlife. Depths in the embayment are illustrated by Figures 85 and 86.



Stony Creek
(Scale 1:24,000)

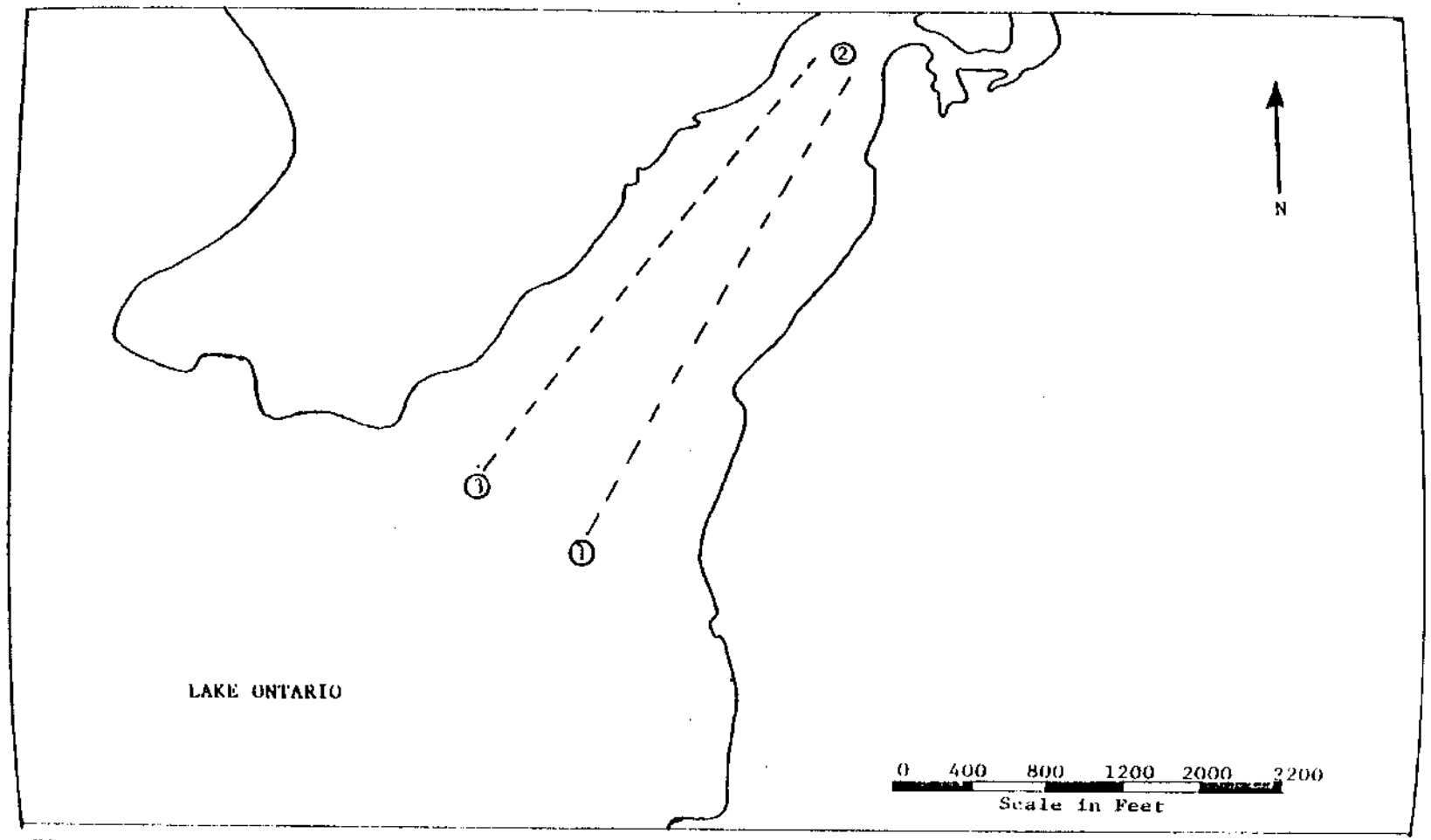


Figure 85: Mouth of Stony Creek showing route of soundings made at time of inventory. (Dated: May 28, 1976).

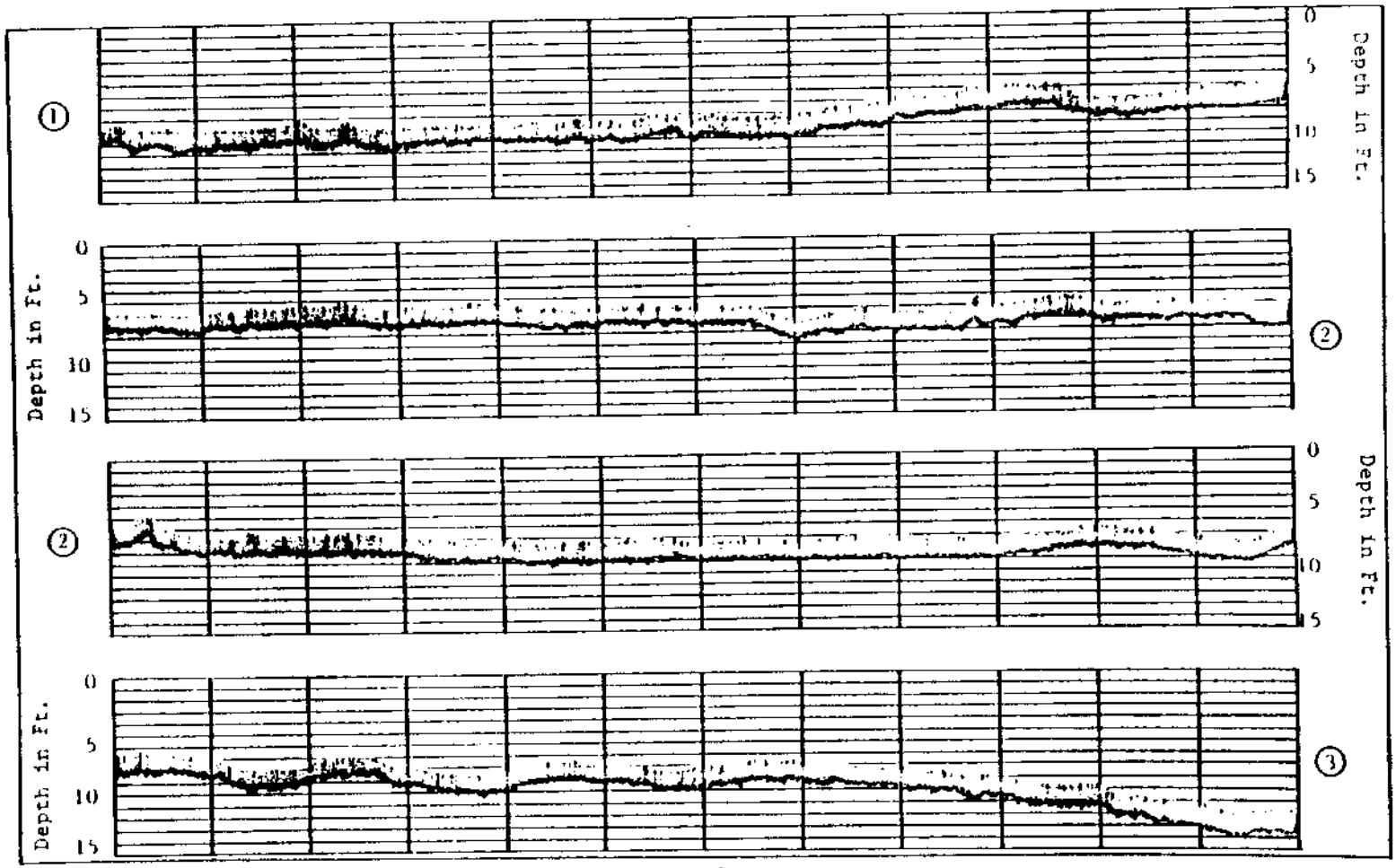


Figure 86: Soundings taken at mouth of Stony Creek. Circled numerals correspond to stations shown in Figure 85. Horizontal scale, distance between two successive vertical lines, is approximately 150 feet.

CHAPTER IX
SUMMARY

9.1 Boating Facilities

Results for the inventory of boating facilities along the southern shore of Lake Ontario from the Niagara River to Stony Point are presented in this section. Sections 9.1.1 - 9.1.7 summarize the findings for each of the counties within the area. The findings in this summary are based on an inventory of state, municipal, and private facilities established to serve the public. They do not reflect the number of slips or launch ramps developed by individuals, owning land bordering on any of the harbors or inlets, for their own use. Inlets or harbors where this type of development is most pronounced are Sodus Bay and Port Bay in Wayne County, Blind Sodus Bay and Little Sodus Bay in Cayuga County, the Salmon River and North Pond in Oswego County, and Stony Creek in Jefferson County. It is assumed, however, that the numbers and use of these slips and ramps are small compared to those of the facilities listed in this inventory and will not substantially affect the conclusions and recommendations made in Chapter X.

Of the 84 boating facilities inventoried from the Niagara River to Stony Point, 23 provide launching only, 22 provide moorings and/or slips only, and 39 provide moorings and launching. Table 6 lists each of the counties in the inventory area and their respective distributions of boating facility type. The total number of slips and/or moorings, launching sites, and simultaneous launchings for each county are shown in Table 7. Table 8 shows the distribution of mooring and simultaneous launching ownership. Of the 4039 slips and/or moorings in the inventory area, 95.3% are privately owned. There are 73 simultaneous launchings

distributed among 62 launching sites of which 59.4% are privately owned, 23.0% are state owned, and 17.6% are municipally owned.

TABLE 6

Distribution of Boating Facility Type in the Inventory Area

County	Launching Only	Mooring Only	Mooring and Launching	Total
Niagara	4	11	2	17
Orleans	1	4	6	11
Monroe	3	2	12	17
Wayne	6	3	7	16
Cayuga	3	1	3	7
Oswego	4	1	9	14
Jefferson	2	0	0	2
Total for Inventory Area	23	22	39	84

TABLE 7

Number of Slips, Launching Sites, and Simultaneous Launchings in Inventory Area

County	Slips	Launching Sites	Simultaneous Launchings
Niagara	735	6	8
Orleans	331	7	7
Monroe	1829	15	15
Wayne	638	13	13
Cayuga	190	5	8
Oswego	316	14	20
Jefferson	0	2	2
Total for Inventory Area	4039	62	73

TABLE 8

Ownership of Moorings and/or Slips and Simultaneous Launchings in Inventory Area

Ownership	Number of Simultaneous Launchings	% of Total	Number of Moorings and Slips	% of Total
State	17	23.3	180	4.5
Municipal	12	16.4	10	0.2
Private	44	60.3	3849	95.3
Total	73	100.0	4039	100.0

Information regarding the size range of boats moored in the inventory was obtained from 29 out of 61 marinas and yacht clubs. The findings for each county are shown in Table 9. The results show that 3% of the boats moored are 0-12 feet long, 18% are 12-18 feet long, 27% are 18-25 feet long, and 52% are greater than 25 feet long. Boats ranging in size up to 25 feet long account for 48% of the 1899 slips represented by the 29 marinas and yacht clubs. Extrapolating this percentage over the entire inventory area, approximately 2000 boats are under 25 feet long.

Twenty eight (46%) of the 61 marinas and yacht clubs in the inventory area responded to the survey requesting estimates of mooring space demand. These 28 facilities represent 1774 (44%) of the 4039 slips and/or moorings in the inventory area and they indicated that an additional 1015 slips could be rented if available. Of these 1015 slips 0% would be used by boats less than 12 feet long, 18% by boats 12-18 feet long, 29% by boats 18-25 feet long, and 53% by boats greater than 25 feet long. This represents 57% increase over existing capacity. Extrapolating this percentage over the entire inventory area, approximately 2290 slips are required to meet present demand. Table 10 illustrates the contribution from each county.

TABLE 9

Size Range and Number of Boats Moored in 29 (48%) of 61 Marinas and Yacht Clubs in the Inventory Area

County	Number of Marinas and Yacht Clubs	Number that Responded to Survey	Size Range of Boat 0-12	12-18	18-25	25-up	Total
Niagara	13	6 (46%)	22	42	70	237	371
Orleans	10	6 (60%)	0	75	63	72	210
Monroe	14	7 (50%)	6	125	210	458	799
Wayne	10	4 (40%)	00	40	85	163	288
Cayuga	4	2 (50%)	30	15	20	20	85
Oswego	10	4 (40%)	0	42	62	42	146
Jefferson	0	0	0	0	0	0	0
Total for Inventory Area	61	29 (48%)	58 (3%)	339 (18%)	510 (27%)	992 (52%)	1899

TABLE 10

Present Demand for Slips by County and Size Range of Boat

County	Number of Marinas and Yacht Clubs	Number that Responded to Survey	Number of Slips Represented	Number of Slips Needed Size Range of Boat (Feet) 0-12	12-18	18-25	25-up	Total Number of Slips Needed	Percentage Increase Over Existing Capacity	Additional Slips made for County
Niagara	13	5 (38%)	221 (30%)	0	35	40	66	141	65%	450
Orleans	10	6 (60%)	210 (63%)	0	50	20	60	130	62%	200
Monroe	14	7 (50%	799 (44%)	0	20	60	220	300	38%	700
Wayne	10	4 (40%)	228 (36%)	0	0	42	112	154	68%	400
Cayuga	4	3 (75%)	170 (89%)	0	0	35	45	80	47%	90
Oswego	10	4 (40%)	146 (46%)	0	80	95	35	210	144%	450
Jefferson	0	0	0	0	0	0	0	0	0	0
Total for Inventory Area	61	29 (48%)	1774 (44%)	0	185 (18%)	292 (29%)	538 (53%)	1015	57%	2290

Of the 39 marinas and yacht clubs in the inventory area that operate launching ramps, 16 (41%), representing 17 simultaneous launchings, responded to the survey request for number of launchings per week during the boating season. Together they estimated that 775 launchings occurred per week for an average of 46 launchings per simultaneous launching site. However, four of the respondents represented four simultaneous launching sites that require membership for use and are not open to the general public. Neglecting these, the average number of launchings per week contributed by the general public increases to 55. Since the use of public launching sites was not obtainable, it is assumed that they are used close to 55 times per week. Since 67 of the 73 simultaneous launching sites in the inventory area are open to the general public, it is estimated that at least 88,500 launchings take place per year.

9.1.1 Niagara County

Table 13 lists each of the boating facilities in Niagara County along with their services and capacities. Of the 18 facilities inventoried four are exclusively launching sites, 12 provide only moorings and/or slips, and two provide launching and mooring. The total number of slips, launching sites, and simultaneous launchings for each inlet or harbor are shown in Table 11. Totals for Niagara County include 735 slips and/or moorings and six launching sites with eight simultaneous launchings. Table 12 shows distribution of slips and simultaneous launching ownership in the county.

TABLE 11

Number of Slips, Launching Sites, and Simultaneous Launchings in Niagara County

Inlet or Harbor	Slips	Launching Sites	Simultaneous Launchings
Niagara River	290	3	3
Wilson Harbor	332	2	3
Olcott Harbor	113	1	2
Total for Niagara County	735	6	8

TABLE 12

Ownership of Moorings and/or Slips and Simultaneous Launchings in Niagara County

Ownership	Simultaneous Launchings	% of Total	Moorings and Slips	% of Total
State	1	12.5	0	0
Municipal	4	50.0	0	0
Private	3	37.5	735	100.0
Total	8	100.0	735	100.0

TABLE 13

BOATING FACILITIES IN NIAGARA COUNTY

Inlet or Harbor	Boating Facility	**Owner-ship	Slips (moorings) 0-12	*12-18	18-25	25-up	Total	Demand for slips (moorings) 0-12	*12-18	18-25	25-up	Total
Niagara River	Ft. Niagara St. Park	S	-	-	-	-	-	-	-	-	-	-
	Village of Youngstown	M	-	-	-	-	-	-	-	-	-	-
	Village of Lewiston	M	-	-	-	-	-	-	-	-	-	-
	Peirce Marine Corp.	P	10	25	35	40	110	-	15	10	10	35
	Youngstown Boat Co.	P	-	-	-	-	-	-	-	-	-	-
	Youngstown Yacht Club	P	-	-	-	150	150	-	-	-	-	***NA
	Lewiston Marina	P	-	-	-	20	20	-	-	-	50	50
	Ridge Comber Boat Club	P	NA	NA	NA	NA	10	NA	NA	NA	NA	NA
E. Branch Twelve-mile Cr.	Beccue Boat Basin	P	NA	NA	NA	NA	150	NA	NA	NA	NA	NA
	Main Yacht Club	P	NA	NA	NA	NA	20	NA	NA	NA	NA	NA
	Tuscarora Yacht Club	P	NA	NA	NA	NA	80	NA	NA	NA	NA	NA
	Wilson Yacht Club	P	-	5	20	20	45	-	-	-	-	-

TABLE 13(Con't) - BOATING FACILITIES IN NIAGARA COUNTY

Inlet or Harbor	Boating Facility	**Owner-ship	Slips (moorings) 0-12	*12-18	18-25	25-up	Total	Demand for slips (moorings). 0-12	*12-18	18-25	25-up	Total
	Island Yacht Club	P	-	-	-	-	-	-	-	-	-	-
	Wilson Boat-house Restaurant	P	12	10	15	-	37	-	20	30	-	50
Eighteen-mile Creek (Olcott Harbor)	Hedley Boat Company	P	NA	NA	NA	NA	64	NA	NA	NA	NA	NA
	McDonough Marine	P	NA	NA	NA	NA	40	NA	NA	NA	NA	NA
	William Koehler	P	-	2	-	7	9	-	-	-	6	6
	Town of Newfane	M	-	-	-	-	-	-	-	-	-	-

Inlet or Harbor	Boating Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
Niagara River	Fort Niagara State Park	†††1(I)	NA	300	†-	-	-	-	-
	Village of Youngstown	1(I)	NA	15	-	-	-	-	-
	Village of Lewiston	1(I)	NA	10	-	-	-	-	-
	Peirce Marine Corp.	-	-	40	††X	-	-	X	X

TABLE 13(Con't) - BOATING FACILITIES IN NIAGARA COUNTY

Inlet or Harbor	Boating Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
	Youngstown Boat Co.	-	-	-	-	-	-	-	-
	Youngstown Yacht Club	-	-	75	-	-	-	X	X
	Lewiston Marina	-	-	20	X	-	-	X	X
	Ridge Comber Boat Club	-	-	-	-	-	-	-	-
E. Branch Twelve-mile Ck. (Wilson Harbor)	Beccue Boat Basin	1(I)	NA	30	X	-	X	X	X
	Hain Yacht Club	-	-	-	-	-	-	X	X
	Tuscarora Yacht Club	-	-	40	-	-	-	-	-
	Wilson Yacht Club	-	-	30	-	-	-	-	-
	Island Yacht Club	-	-	-	-	-	-	-	-
	Wilson Boat-house Restaurant	2(I)	200	300	X	50	-	-	-
Eighteen Mile Creek (Olcott Harbor)	Hedley Boat Company	-	-	30	X	-	-	X	X
	McDonough Marine	-	-	40	X	-	-	X	X

TABLE 13(Con't) - BOATING FACILITIES IN NIAGARA COUNTY

Inlet or Harbor	Boating Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
	William Koehler	-	-	-	-	-	-	-	-
	Town of Newfane	2(I)	NA	20	-	-	-	-	-

*Indicates length of boat moored (feet). **S-State; M-Municipal; P-Private. ***Information not available
†Indicates service is not provided. ††Indicates service is provided. ††† I - Improved; U - unimproved.

Five of the marinas and yacht clubs (out of 13) responded to the survey requesting estimates of mooring space demand. Representing 221 (30%) of the 735 slips in Niagara County, they indicated that an additional 141 slips could be rented if available. This represents a 65% increase over existing capacity. Extrapolating this percentage over the entire county, approximately 450 more slips are required to meet present demand.

9.1.2 Orleans County

Table 16 lists each of the boating facilities in Orleans County along with their services and capacities. Of the 11 facilities inventoried, one provides only launching, four provide only mooring and/or slips, and six provide both mooring and launching. The number of slips, launching sites, and simultaneous launchings for each inlet or harbor are shown in Table 14. There are a total of 331 slips in Orleans County and seven launching sites with seven simultaneous launchings. Table 15 shows the distribution of slip and simultaneous launching ownership in the county.

TABLE 14

Number of Slips, Launching Sites, and Simultaneous Launchings in Orleans County

Inlet or Harbor	Slips	Launching Sites	Simultaneous Launchings
Green Harbor	42	1	1
Oak Orchard Harbor	229	5	5
Bald Eagle Creek	60	1	1
Total for Orleans County	331	7	7

TABLE 15

Ownership of Slips and/or Moorings and Simultaneous Launchings in Orleans County

Ownership	Simultaneous Launchings	% of Total	Moorings and Slips	% of Total
State	1	14.3	0	0
Municipal	0	0	0	0
Private	6	85.7	331	100.0
Total	7	100.0	331	100.0

Six of the marinas and yacht clubs responded to the survey requesting estimates of mooring space demand. These six facilities represent 210 (63%) of the 331 slips in Orleans County and they indicated that an additional 130 slips could be rented if available. This represents a 62% increase over existing capacity. On a county wide basis, approximately 200 additional slips are required to meet present demand.

9.1.3 Monroe County

Table 17 lists the boating facilities in Monroe County with the services and capacities of each. Three of the 17 facilities inventoried are launching sites only, two provide moorings and/or slips only, and 12 provide both mooring and launching. Table 17 gives the number of slips, launching sites, and simultaneous launchings for each harbor or inlet. There are 1829 slips and/or moorings in Monroe County and 15 launching sites providing 15 simultaneous launchings. Table 18 shows the distribution of slip and simultaneous launching ownership in the county.

TABLE 16

BOATING FACILITIES IN ORLEANS COUNTY

Inlet or Harbor	Boating Facility	**Ownership	Slips (Moorings) 0-12*	12-18	18-25	25-up	Total	Demand for Slips (moorings) 0-12	12-18	18-25	25-up	Total
Perch Creek (Green Harbor)	Green Harbor Campsite	P	-	15	27	-	42	-	-	-	-	-
Oak Orchard Creek (Oak Orchard Harbor)	Norm's Marina	P	-	10	10	12	32	-	20	-	20	40
	McMurry's Marina	P	NA***	NA	NA	NA	46	NA	NA	NA	NA	NA
	Point Breeze Yacht Club	P	-	10	4	12	26	-	-	-	-	-
	Oak Orchard Yacht Club	P	-	-	-	45	45	-	-	-	30	30
	Hatch and Elam Boat Livery	P	-	15	-	-	15	-	20	-	-	20
	Oak Orchard Marina	P	NA	NA	NA	NA	30	NA	NA	NA	NA	NA
	Oak Orchard Boat Livery	P	NA	NA	NA	NA	15	NA	NA	NA	NA	NA
	Betty's Fisherman Haven	P	NA	NA	NA	NA	20	NA	NA	NA	NA	NA
	Launch Ramp	S	-	-	-	-	-	-	-	-	-	-
Bald Eagle Creek	Bald Eagle Resort	P	-	25	32	3	60	0	10	20	10	40

TABLE 16 (Con't) - BOATING FACILITIES IN ORLEANS COUNTY

Inlet or Harbor	Boating Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
Perch Creek (Green Harbor)	Green Harbor Campsite	1(I)†††	30	25	X††	-†	-	-	-
Oak Orchard Creek (Oak Orchard Harbor)	Norm's Marina	-	-	30	X	-	X	X	X
	McMurray's Marina	1(I)	NA	75	X	-	-	X	X
	Point Breeze Yacht Club	-	-	30	-	-	-	-	-
	Oak Orchard Yacht Club	-	-	100	-	-	-	-	-
	Hatch and Elam Boat Livery	1(I)	25	25	X	22	-	-	-
	Oak Orchard Marina	1(I)	50	25	X	X	-	-	-
	Oak Orchard Boat Livery	-	-	10	X	-	-	-	-
	Betty's Fisherman Haven	1(I)	NA	45	X	X	-	-	-
	Launch Ramp	1(U)	NA	50	-	-	-	-	-
Bald Eagle Creek	Bald Eagle Resort	1(I)	15	200	X	3	-	-	X

*Indicates length of boat moored (feet) **S-State; M-Municipal; P-Private *** Information not available
†Indicates service is not provided ††Indicates service is provided †††I-Improved; U-Unimproved

TABLE 17

Number of Slips, Launching Sites, and Simultaneous Launchings in Monroe County

Inlet or Harbor	Slips	Launching Sites	Simultaneous Launchings
Sandy Creek Harbor	86	2	2
Braddock Bay	390	4	4
Rochester Harbor	1008	5	5
Irondequoit Bay	345	4	4
Total	1829	15	15

Seven out of 14 marinas and yacht clubs responded to the survey. These seven facilities represent 799(44%) of the total number of slips and/or moorings in Monroe County. They have indicated that an additional 300 slips could be rented if available, which represents a 38% increase over existing capacity. Monroe County, based on this percentage, needs approximately 700 additional slips to meet present demands.

TABLE 18

Ownership of Moorings and/or Slips and Simultaneous Launchings in Monroe County

Ownership	Simultaneous Launchings	% of Total	Moorings and slips	% of Total
State	1	6.7	180	9.8
Municipal	1	6.7	0	0
Private	13	86.6	1649	90.2
Total	15	100.0	1829	100.0

9.1.4 Wayne County

Boating facilities in Wayne County are listed in Table 22 along with their services and capacities. Of the 16 boating facilities inventoried, six are exclusively launching sites, three provide moorings and/or slips only, and seven provide both mooring and launching. The number of slips,

TABLE 19

BOATING FACILITIES IN MONROE COUNTY

Inlet or Harbor	Boating Facility	**Ownership	Slips (moorings) 0-12*	12-18	18-25	25-up	Total	Demand for Slips (moorings) 0-12	12-18	18-25	25-up	Total
Sandy Creek (Sandy Creek Harbor)	Brockport Yacht Club	P	6	20	40	20	86	-	-	-	-	-
	Sandy Harbor Marine	P	-	-	-	-	-	-	-	-	-	-
	Launching Ramp (1/4 mi. upstream from Parkway	P	-	-	-	-	-	-	-	-	-	-
Braddock Bay	Braddock Marine	S	NA***	NA	NA	NA	180	NA	NA	NA	NA	NA
	Skinners Marina	P	NA	NA	NA	NA	120	NA	NA	NA	NA	NA
	Larry's Marina	P	NA	NA	NA	NA	50	NA	NA	NA	NA	NA
	Manitou Marina	P	NA	NA	NA	NA	40	NA	NA	NA	NA	NA
Genesee River (Rochester Harbor	Anchor Marine	P	-	-	10	60	70	-	-	30	50	80
	Shumway Marine	P	-	-	70	110	180	-	-	-	70	70
	Voyager Boat Sales	P	-	-	-	220	220	-	-	-	50	50

TABLE 19 (Con't) - BOATING FACILITIES IN MONROE COUNTY

Inlet or Harbor	Boating Facility	**Owner-ship	Slips (moorings) 0-12*	12-18	18-25	25-up	Total	Demand for Slips (moorings) 0-12	12-18	18-25	25-up	Total
	Riverview Marina	P	NA	NA	NA	NA	350	NA	NA	NA	NA	NA
	Rochester Yacht Club	P	NA	NA	NA	NA	140	NA	NA	NA	NA	NA
	Genesee Yacht Club	P	-	-	-	48	48	-	-	-	50	50
Irondequoit Bay	Mayer's Marina, Inc.	P	-	60	90	-	150	-	20	30	-	50
	Newport Yacht Club	P	-	45	-	-	45	-	-	-	-	-
	Jim's Marine Service	P	NA	NA	NA	NA	150	NA	NA	NA	NA	NA
	Town of Webster	M	-	-	-	-	-	-	-	-	-	-

Inlet or Harbor	Boating Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
Sandy Creek	Brockport Yacht Club	-	-	40	-†	-	X††	X	X
	Sandy Harbor Marine	1(I)†††	NA	50	-	-	-	-	-
	Launching Ramp (1/4 mi. upstream from Parkway)	1(I)	NA	20	X	-	-	-	-

TABLE 19 (con't) - BOATING FACILITIES IN MONROE COUNTY

Inlet or Harbor	Boating Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
Braddock Bay	Braddock Marine	1(I)	NA	150	X	X	X	X	X
	Skinner's Marina	1(I)	NA	100	X	X	-	X	X
	Larry's Marina	1(I)	NA	30	X	X	-	-	-
	Manitou Marina	1(I)	NA	30	X	-	-	-	X
Genesee River	Anchor Marine	1(I)	15	70	X	-	-	X	X
	Shumway Marine	1(I)	25	200	X	-	X	X	X
	Voyager Boat Sales	1(I)	NA	150	X	-	-	X	X
	River View Marina	1(U)	NA	300	X	-	X	X	X
	Rochester Yacht Club	-	-	250	X	-	X	X	X
	Genesee Yacht Club	1(I)	5	150	-	-	-	X	X
Irondequoit Bay	Mayer's Marina, Inc.	1(I)	20	100	X	3	-	X	X
	Newport Yacht Club	1(I)	15	40	-	-	-	-	-

TABLE 19 (Con't) - BOATING FACILITIES IN MONROE COUNTY

Inlet or Harbor	Boating Facility	Launching Ramp	No.of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
	Jim's Marine Service	1(I)	NA	40	X	X	-	-	-
	Town of Webster	1(U)	NA	15	-	-	-	-	-

*Indicates length of boat moored (feet) **S-State; M-Municipal; P-Private *** Information not available

†Indicates service is not provided ††Indicates service is provided †††I-Improved; U-Unimproved

√Deisel fuel also available

launching sites, and simultaneous launchings for each inlet or harbor are shown in Table 20. There are a total of 638 slips and/or moorings and 13 launching sites providing 13 simultaneous launchings. Table 21 shows the distribution of slip and simultaneous launching ownership in the county.

TABLE 20

Number of Slips, Launching Sites, and Simultaneous Launchings in Wayne County

Inlet or Harbor	Slips	Launching Sites	Simultaneous Launchings
Bear Creek Harbor	0	1	1
Pultneyville Harbor	125	2	2
Paradise Lagoon	55	1	1
Great Sodus Bay	438	5	5
East Bay	0	1**	1
Port Bay	20	3*	3
Total	638	13	13

* One is for car top boats only
** No access to lake

TABLE 21

Ownership of Moorings and/or Slips and Simultaneous Launchings in Wayne County

Ownership	Simultaneous Launchings	% of Total	Moorings and Slips	% of Total
State	1	7.7	0	0
Municipal	3	23.1	0	0
Private	9	69.2	638	100.0
Total	13	100.0	638	100.0

Three out of 10 marinas and yacht clubs responded to the survey requesting estimates of mooring space demand. These three facilities represent 228(36%) of the 638 slips in Wayne County and they indicated

TABLE 22

BOATING FACILITIES IN WAYNE COUNTY

Inlet or Harbor	Boating Facility	**Owner-Ship	Slips (moorings)					Demand for Slips (moorings)				
			0-12*	12-18	18-25	25-up	Total	0-12	12-18	18-25	25-up	Total
Bear Creek (Bear Creek Harbor)	Town of Ontario	M	-	-	-	-	-	-	-	-	-	-
Salmon Creek (Pultney-ville Harbor)	Pultney-ville Yacht Club	P	NA***	NA	NA	NA	125	NA	NA	NA	NA	NA
	Pultney-ville Mariners	P	-	-	-	-	-	-	-	-	-	-
Paradise Lagoon	Hughes Marina	P	NA	NA	NA	NA	55	NA	NA	NA	NA	NA
Great Sodus Bay	Sills Marina	P	-	-	-	60	60	NA	NA	NA	NA	NA
	Trestle Marine	P	-	-	-	95	95	-	-	-	100	100
	Sodus Point Bait Shop & Boat Livery	P	-	-	70	-	70	-	-	30	-	30
	Arney's Marina	P	-	40	15	8	63	-	-	12	12	24
	Krenzer Marine	P	NA	NA	NA	NA	40	NA	NA	NA	NA	NA
	Anchor Yacht Sales	P	NA	NA	NA	60	60	NA	NA	NA	NA	NA
	Sodus Bay Yacht Club	P	NA	NA	NA	NA	50	NA	NA	NA	NA	NA

TABLE 22 (Con't)- BOATING FACILITIES IN WAYNE COUNTY

Inlet or Harbor	Boatng Facility	**Owner-ship	Slips (moorings) 0-12*	12-18	18-25	25-up	Total	Demand for Slips (moorings) 0-12	12-18	18-25	25-up	Total
	Townof Sodu.	M	-	-	-	-	-	-	-	-	-	-
East Bay	Townof Huro	M	-	-	-	-	-	-	-	-	-	-
Port Bay	PierOne Resturant	P	NA	NA	NA	NA	20	NA	NA	NA	NA	NA
	N.Y.. Fish-ing ccess Site	S	-	-	-	-	-	-	-	-	-	-
	Launhing Site	P	-	-	-	-	-	-	-	-	-	-

Inlet or Harbor	Boatng Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
Bear Creek (Bear Creek Harbor)	Townof Ontaio	1(U)✓	NA	25	-†	-	-	-	-
Salmon Creek (Pultney-ville Harbor)	Pultey-vill Yach Club	1(I)	NA	50	X††	-	-	X	X
	Pultey-vill Mariers	1(I)	NA	100	X	-	-	-	-
Paradise Lagoon	Hughs Maria	1(I)	NA	200	X	X	-	-	X
Great Sodus Bay	Sill Maria	1(I)	NA	150	X†††	-	-	X	X
	Tresle Marie	-	-	200	X†††	-	X	X	X

TABLE 22 (Con't) - BOATING FACILITIES IN WAYNE COUNTY

Inlet or Harbor	Boating Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
	Sodus Point Bait Shop & Boat Livery	1(I)	100	50	X	14	-	-	-
	Arney's Marina	1(I)	75	45	X	-	-	X	X
	Krenzer Marine	1(U)	NA	20	X	-	-	X	X
	Anchor Yacht Sales	-	-	60	X	-	X	X	X
	Sodus Bay Yacht Club	-	-	50	X	-	-	X	X
	Town of Sodus	1(U)	NA	30	-	-	-	-	-
East Bay	Town of Huron	1(U)//	NA	15	-	-	-	-	-
Port Bay	Pier One Restaurant	1(I)	NA	30	X	-	-	-	-
	N.Y.S. Fishing Access Site	1///	-	20	-	-	-	-	-
	Launching Ramp	1(I)	NA	30	-	-	-	-	-

*Indicates length of boat moored (feet) **S-State; M-Municipal; P-Private *** Information not available
†Indicates service is not provided ††Indicates service is provided †††Deisel fuel also available
/I-Improved; U-Unimproved //no access to lake ///car top boats only

that an additional 154 slips could be rented if available. This is about a 68% increase over existing capacity. For the county as a whole, an additional 400 slips would be needed to satisfy present demands.

9.1.5 Cayuga County

Table 25 lists the boating facilities and their services and capacities in Cayuga County. Of the seven facilities inventoried, three are launching sites only, one provides only moorings and/or slips, and three provide both mooring and launching. Table 23 gives the number of slips, launching sites, and simultaneous launchings for each inlet or harbor. There are a total of 190 slips and five launching sites providing eight simultaneous launchings. Table 24 shows distribution of slip and simultaneous launching ownership in the county.

TABLE 23

Number of Slips, Launching Sites, and Simultaneous Launchings in Cayuga County

Inlet or Harbor	Slips	Launching Sites	Simultaneous Launchings
Little Sodus Bay	190	4	7
Sterling Creek	0	1	1
Total	190	5	8

TABLE 24

Ownership of Moorings and/or Slips and Simultaneous Launchings in Cayuga County

Ownership	Simultaneous Launchings	% of Total	Moorings and Slips	% of Total
State	5	62.5	0	0
Municipal	1	12.5	0	0
Private	2	25.0	190	100.0
Total	8	100.0	190	100.0

TABLE 25

BOATING FACILITIES IN CAYUGA COUNTY

Inlet or Harbor	Boating Facility	**Owner-ship	Slips (moorings) 0-12*	12-18	18-25	25-up	Total	Demand for Slips (moorings) 0-12	12-18	18-25	25-up	Total
Little Sodus Bay	Rasbeck's Marina	P	NA***	NA	NA	NA	85	NA	NA	NA	NA	50
	The Boat-House	P	-	-	10	5	15	-	-	5	5	10
	Buster's Boat Base	P	NA	NA	NA	NA	20	NA	NA	NA	NA	NA
	Fair Haven Yacht Club	P	30	15	10	15	70	-	-	10	10	20
	Fair Haven State Park	S	-	-	-	-	-	-	-	-	-	-
	Launch Ramp	P	-	-	-	-	-	-	-	-	-	-
Sterling Creek	Fair Haven State Park	S	-	-	-	-	-	-	-	-	-	--

Inlet or Harbor	Boating Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
Little Sodus Bay	Rasbeck's Marina	1(U)†††	NA	100	X††	-†	-	X	X
	The Boat-house	-	-	25	X	8	-	X	X
	Buster's Boat Base	1(1)	NA	30	X	X	-	-	-
	Fair Haven Yacht Club	1(1)	30	100	X	-	-	X	X

TABLE 25 (Con't) - BOATING FACILITIES IN CAYUGA COUNTY

Inlet or Harbor	Boating Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
Sterling Creek	Fair Haven State Park	1(U)	NA	10	-	-	-	-	-

*Indicates length of boat moored (feet) **S-State; M-Municipal; P-Private *** Information not available
†Indicates service is not provided ††Indicates service is provided †††I-Improved; U-Unimproved

Three of the four marinas and yacht clubs in Cayuga County responded to the survey. They represent 170(89%) of the 190 slips in the county, and have indicated that an additional 80 slips could be rented if available. This represents a 47% increase over existing capacity. Extrapolating this percentage increase over the entire county, approximately 90 slips are needed to satisfy the present demand.

9.1.6 Oswego County

Boating facilities and their services and capacities are listed in Table 28 for Oswego County. Four of the 14 facilities inventoried provide launching only, one only mooring, and nine both mooring and launching. The number of slips and/or moorings, launching sites, and simultaneous launchings for each inlet or harbor are shown in Table 26. There are a total of 316 slips and/or moorings and 14 launching sites providing 20 simultaneous launchings in Oswego County. Table 27 gives distribution of slip and simultaneous launching ownership in the county.

TABLE 26

Number of Slips, Launching Sites, and Simultaneous Launchings in Oswego County

Inlet or Harbor	Slips	Launching Sites	Simultaneous Launchings
Oswego Harbor	40	1	3
Little Salmon River	30*	2*	5
Salmon River	20	4	5
North Pond	226	7	7
Total	316	14	20

* Slips and 1 ramp are located at private marina 0.2 miles west of river

Four of the ten marinas in Oswego County responded to the survey requesting estimates of mooring space demand. These four facilities represent 146(46%) of the slips and/or moorings in the county. They

indicated that, if available, an additional 210 slips could be rented This represents a 144% increase over existing capacity. The county on the whole, therefore, would require an additional 450 slips to meet present demand.

TABLE 27

Ownership of Moorings and/or Slips and Simultaneous Launchings in Oswego County

Ownership	Simultaneous Launchings	% of Total	Slips and Moorings	% of Total
State	6	30.0	0	0
Municipal	3	15.0	10	3.2
Private	11	55.0	306	96.8
Total	20	100.0	316	100.0

9.1.7 Jefferson County

There are only two boating facilities in Jefferson County between the Oswego County line and Stony Creek. They are shown in Table 29 with their capacities and services. The two facilities are unimproved launching sites having two simultaneous launchings. They are provided by the New York State Department of Environmental Conservation.

TABLE 29

BOATING FACILITIES IN JEFFERSON COUNTY

Inlet or Harbor	Boating Facility	Owner-Ship*	Launch Ramp	Simultaneous Launchings	No.of uses per week	Parking Space
South Colwell Pond	Launch Ramp	S	1(U)**	1	NA***	30
Sandy Creek	"	S	1(U)	1	NA	20
Total	-	-	2	2	-	-

*S - State: M - Municipal; P - Private

**I - Improved; U - Unimproved

***Information not available

TABLE 28

BOATING FACILITIES IN OSWEGO COUNTY

Inlet or Harbor	Boating Facility	**Ownership	Slips (moorings) 0-12*	12-18	18-25	25-up	Total	Demand for Slips (moorings) 0-12	12-18	18-25	25-up	Total
Oswego River (Oswego Harbor)	Oswego Marina, Inc.	P	-	-	-	40	40	-	10	20	30	60
	City of Oswego	M	-	-	-	-	-	-	-	-	-	-
	Boat Launch	S	-	-	-	-	-	-	-	-	-	-
Little Salmon River	Marina /	P	NA***	NA	NA	NA	30	NA	NA	NA	NA	NA
Salmon River	Selkirk Shores State Park	S	-	-	-	-	-	-	-	-	-	-
	Lighthouse Marina	P	NA	NA	NA	NA	10	NA	NA	NA	NA	NA
	Kenny's Boat Livery	P	NA	NA	NA	NA	10	NA	NA	NA	NA	NA
	Launch Ramp	P	-	-	-	-	-	-	-	-	-	-
North Pond	Reiter's Marina	P	-	6	30	-	36	-	40	60	-	100
	Greene Point Marina	P	NA	NA	NA	NA	60	NA	NA	NA	NA	NA
	Seber Shore Marina	P	-	20	15	-	35	-	20	5	-	25
	Jones Marina	P	-	16	17	2	35	-	10	10	5	25
	Freeman's Marina	P	NA	NA	NA	NA	20	NA	NA	NA	NA	NA

TABLE 28 (Con't) - BOATING FACILITIES IN OSWEGO COUNTY

Inlet or Harbor	Boating Facility	**Owner-ship	Slips (moorings) 0-12	12-18	18-25	25-up	Total	Demand for Slips (moorings) 0-12	12-18	18-25	25-up	Total
	Kast's Marina	P	NA	NA	NA	NA	40	NA	NA	NA	NA	NA
	Launch Ramp	P	-	-	-	-	-	-	-	-	-	-

Inlet or Harbor	Boating Facility	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
Oswego River (Oswego Harbor)	Oswego Marina, Inc.	-	-	100	X††	-†	X	X	X
	City of Oswego	3(I)†††	NA	50	-	-	-	-	-
Little Salmon River	Boat Launch	4(I)	NA	250	-	-	-	-	-
	Marina	1(I)	NA	50	X	-	-	-	-
Salmon River	Selkirk Shores State Park	2(U)	NA	150	-	-	-	-	-
	Lighthouse Marina	1(I)	NA	50	X	X	-	-	-
	Kenny's Boat Livery	1(U)	NA	30	X	X	-	-	-
	Launch Ramp	1(I)	NA	10	X	X	-	-	-
North Pond	Reiter's Marina	1(I)	150	50	X	-	-	X	X
	Greene Point Marina	1(I)	NA	5	X	X	-	-	X
	Seber Shore Marina	1(I)	-	30	X	-	-	-	X

TABLE 28 (Con't) - BOATING FACILITIES IN OSWEGO COUNTY

Inlet or Harbor	Boating Facilities	Launching Ramp	No. of uses per week	Parking Space	Gas	Boat Rentals	Sanitary Pumpout	Hoist Launch	Winter Storage
	Jones Marina	1(I)	15	45	X	-	-	-	X
	Freeman's Marina	1(I)	NA	30	X	X	-	-	X
	Kast's Marina	1(I)	NA	35	X	-	-	-	X
	Launch Ramp	1(U)	NA	20	-	-	-	-	-

*Indicates length of boat moored (Feet) **S-State; M-Municipal; P-Private ***Information not available
√Located 0.2 miles west of Salmon River on Lake
†Indicates servlce is not provided ††I-Improved; U-Unimproved †††Indicates service is provided

9.2 Inlet and Harbor Characteristics

In all, 61 inlets and harbors were inventoried. Three of these are federally maintained as commercial harbors (Rochester Harbor, Great Sodus Bay, Oswego Harbor) and four are federally maintained as small boat harbors (Wilson Harbor, Olcott Harbor, Oak Orchard Harbor, Little Sodus Bay). Nineteen of the remaining 56 support some type of recreational boating activity (mainly fishing). These inlets are either maintained naturally throughout most of the boating season or are locally maintained through periodic dredging. The remaining 35 support no boating facilities.

The one feature characteristic to nearly all of the inlets in this report, except for the larger rivers, is a barrier beach. Forty four of the 61 inlets and harbors inventoried have some type of barrier beach formation. Only 15 of these appear to have entrance channels that allow free surface flow to the lake year round, either naturally or through mans efforts. Many of the inlets with barrier beaches are accompanied by marshy, wildlife supporting embayments.

Summaries of the physical characteristics of the inlets and harbors in each county are given in Tables 30 - 36. These characteristics include ownership (either side of inlet near lake), status (developed or undeveloped), presence of entrance protecting structures, barrier beach formations, entrance channel conditions, existence of embayments, accessibility from the lake (entrance channel navigable), accessibility from land, and an indication as to the inlets potential for development or, in the case of a developed harbor, its potential for expansion. The indication as to development or expansion is based on the information gathered through the inventory and the literature.

TABLE 30

Summary of Inlet and Harbor Characteristics for Niagara County

Inlet	†Ownership	§Status	Existing Structures	Bar	Entrance Channel	Embayment	*Accessibility from Lake	Accessibility from Land	Potential for Development or Expansion
Niagara River	S,M,P	Semi-D	None	None	Wide & deep	None	A	R	Restricted
Fourmile Creek	S	U	None	Gravel, across mouth	Temporary	Marshy	N	A	Fair
Sixmile Creek	P	U	None	Gravel, across mouth	Temporary	Marshy	N	A	Possible
Twelvemile Creek	S,P	U	None	Gravel on either side of entrance	55' wide 3-4 feet deep	Large; deep	R	A	Good
E. Branch Twelvemile Creek	S,P	D	Parallel piers	None	Maintained	Silting Problems	A	A	Restricted
Hopkins Creek	P	U	None	Gravel, across mouth	Temporary	Wildlife Habitat	N	R	None
Eighteenmile Creek	P	D	Parallel piers	None	Maintained	None	A	R	Current proposal for expansion

TABLE 30 (Con't) - Summary of Inlet and Harbor Characteristics in Niagara County

Inlet	Owner-ship	Status	Existing Structures	Bar	Entrance Channel	Embay-ment	Accessibility from Lake	Accessibility from Land	Potential for Development or Expansion
Keg Creek	P	U	None	Gravel, across mouth	Tempor-ary	Wildlife Habitat	N	R	None
Golden Hill Creek	S	U	None	Gravel, across mouth	Tempor-ary	Marshy upstream	N	A	Favorable

† P - private; M - municipal; S - state
§ D - developed; U - undeveloped
* N - not accessible; A - accessible; R - restricted

TABLE 31

Summary of Inlet and Harbor Characteristics in Orleans County

Inlet	†Owner-ship	§Status	Existing Structures	Bar	Entrance Channel	Embay-ment	*Accessibility from Lake	*Accessibility from Land	Potential for Development or Expansion
Marsh Creek	P	U	Short, parallel rip rap piers	Gravel, east of entrance	No outflow during low flow	Marshy	R	A	Poor
Perch Creek	P	Semi-D	Parallel rip rap piers	Gravel, east of entrance	Periodic dredging required	Silt & algae problems	R	A	Restricted
Johnson Creek	P	U	None	Gravel, east of entrance	Constantly changing, but, open year round	None	R	R	Fair
Oak Orchard Creek	S,P	D	Parallel piers and detached breakwater	None	Maintained	None	A	R	Restricted
Bald Eagle Creek	P	D	Short parallel rip rap jetties	None	Periodic dredging required	Marshy upstream	R	A	Very good

† P - private; M - municipal; S - state § D - developed; U - undeveloped
* N - not accessible; A - accessible; R - restricted

TABLE 32

Summary of Inlet and Harbor Characteristics in Monroe County

Inlet	Owner-ship	Status	Existing Structures	Bar	Entrance Channel	Embay-ment	Accessibility from Lake	Accessibility from Land	Potential for Development or Expansion
Yanty Creek	S	U	None	Sand and gravel on either side of entrance	Narrow, 3-4 feet deep	Wildlife Habitat	R	N	None
Sandy Creek	P	D	Arrowhead breakwater system	Sand and gravel on either side of entrance	Open year round	Marshy upstream	A	A	Good
Cowsucker Creek	S	U	Short rip rap jetties	None	Narrow & shallow	Marshy	R	A	None
Brush Creek	S	U	None	Sand and gravel across mouth	Tempor-ary	Wildlife habitat	N	R	None
East Creek	P	U	None	Gravel across mouth	Tempor-ary	Wildlife Habitat	N	R	None
Braddock Bay	S,P	D	Some pro-tection by partial breakwater	Underwater near en-trance	Shallow	Silt and low water problems: marshy upstream	R	A	Excellent

TABLE 32 (Con't) - Summary of Inlet and Harbor Characteristics in Monroe County

Inlet	Ownership†	Status§	Existing Structures	Bar	Entrance Channel	Embayment	Accessibility from Lake*	Accessibility from Land*	Potential for Development or Expansion
Buck Pond	S	U	None	Sand and gravel separates it from lake	Temporary	Shallow, used for fishing	N	A	None
Round Pond	P	U	Short rip rap jetties	Sand and gravel separates it from lake	Traversed by low clearence bridge	Shallow	R	A	None
Little Pond	P	U	None	None	None	Small & shallow	N	R	None
Genesee River	M,P	D	Parallel piers	None	Maintained	None	A	A	Good
Irondequoit Bay	M,P	U	None	Sand and gravel separates it from lake	Traversed by low clearences bridges	Large & deep	R	A	Excellent
Mill Creek	M	U	None	Gravel, across mouth	Narrow, shallow	None	N	A	None
Fourmile Creek	P	U	Short concrete pier on west	None	Narrow, 4-5 feet deep	None	R	A	Possible

† P - private; M - municipal; S - state § D - developed; U - undeveloped

* N - not accessible; A - accessible; R - restricted

TABLE 33

Summary of Inlet and Harbor Characteristics in Wayne County

Inlet	†Ownership	§Status	Existing Structures	Bar	Entrance Channel	Embayment	* Accessibility from Lake	Accessibility from Land	Potential for Development or Expansion
Dennison Creek	P	U	None	Sand & gravel across mouth	Narrow, shallow	None	N	R	None
Bear Creek	M,P	Semi- D	Short rip rap jetty west side of entrance	None	Silting problems	None	A	R	Fair
Salmon Creek	P	D	Small rip rap jetty	None	Narrow, 4-5 feet deep	Well protected	A	R	Poor
Hughes Marina	P	D	None	None	Requires periodic dredging	Shallow	R	A	Fair
Mink Creek	P	U	None	Sand & gravel across mouth	Small & shallow	Marshy	N	R	None
Salmon Creek	P	U	None	Sand & gravel across mouth	Temporary	Large & marshy	N	R	Possible
Great Sodus Bay	M,P	D	Parallel piers and breakwater	None	Maintained	Very large	A	A	Excellent

TABLE 33 (Con't) - Summary of Inlet and Harbor Characteristics in Wayne County

Inlet	Ownership†	Status§	Existing Structures	Bar	Entrance Channel	Embayment	Accessibility from* Lake	Accessibility from* Land	Potential for Development or Expansion
East Bay	S,P	U	None	Sand & gravel across mouth	Temporary	Large, marshy upstream	N	R	Possible
Port Bay	S,P	Semi-D	None	Sand & gravel across mouth	Maintained by local interests	Large, marshy upstream	R	A	Excellent
Red Creek	P	U	None	Sand & gravel across mouth	Temporary	Small, marshy	N	R	None
Black Creek	P	U	None	Sand & gravel across mouth		Wildlife Habitat	N	R	None
Blind Sodus Bay	P	U	None	Sand & gravel across mouth	Shallow natural channel and small dredged channel	Large & deep	R	R	Possible

† P - private; M - municipal; S - state § D - developed; U - undeveloped
* N - not accessible; A - accessible; R - restricted

TABLE 34

Summary of Inlet and Harbor Characteristics in Cayuga County

Inlet	†Ownership	§Status	Existing Structures	Bar	Entrance Channel	Embayment	*Accessibility from Lake	*Accessibility from Land	Potential for Development or Expansion
Little Sodus Bay	S,P	D	Parallel piers and breakwater	None	Maintained	Large, deep	A	A	Excellent
Sterling Creek	S	U	Small rip rap jetty on west side of entrance	Sand and gravel on either side of entrance	Traversed by low clearence bridge	Shallow, marshy	R	A	Poor
Ninemile Creek	P	U	None	Sand & gravel west of entrance	Narrow & shallow	Shallow, marshy	N	R	Poor
Eightmile Creek	P	U	None	Sand and gravel on either side of entrance	Temporary	Wildlife habitat	N	R	Poor

† P - private; M - municipal; S - state § D - developed; U - undeveloped

* N - not accessible; A - accessible; R - restricted

TABLE 35

Summary of Inlet and Harbor Characteristics in Oswego County

Inlet	†Ownership	§Status	Existing Structures	Bar	Entrance Channel	Embayment	*Accessibility from Lake	*Accessibility from Land	Potential for Development or Expansion
Snake Creek	P	U	None	Sand and gravel across mouth	Temporary	Waterfowl habitat	N	R	Poor
Rice Creek	P	U	None	Sand and gravel on either side of entrance	Narrow, shallow	Small, marshy	N	A	Poor
Oswego River	M,P	D	Arrowhead, detached & shore connecting breakwaters	None	Maintained	None	A	R	Very good
Wine Creek	P	U	None	Sand and gravel east of entrance	Narrow, shallow	Small, marshy	N	R	Poor
Otter Branch Creek	P	U	None	Sand and gravel on either side of entrance	Temporary	Shallow, marshy	N	R	Poor

TABLE 35 (Con't) - Summary of Inlet and Harbor Characteristics in Oswego County

Inlet	Owner-ship	Status	Existing Structures	Bar	Entrance Channel	Embay-ment	Accessibility from Lake	Accessibility from Land	Potential for Development or Expansion
Catfish Creek	P	U	None	Sand and gravel on either side of entrance	Open year round, 50' wide, 7' deep	Averages 7' deep, marshy upstream	A	R	Good
Butterfly Creek	P	U	None	Sand and gravel on either side of entrance	Tempor-ary	Wildlife habitat	N	R	Poor
Little Sal-mon River	S,P	Semi-D	Rip rap breakwater across mouth	None	Shoaling problems	Small, marshy upstream	A	A	Very good
Sage Creek	P	U	None	Sand and gravel on either side of entrance	Tempor-ary	Marshy upstream	N	A	Poor
Snake Creek	P	U	None	Sand and gravel on either side of entrance	Tempor-ary	Wildlife habitat	N	R	Poor
Grindstone Creek	S	U	None	Sand and gravel on either side of entrance	Tempor-ary	Wildlife habitat	N	A	Poor

TABLE 35 (Con't) - Summary of Inlet and Harbor Characteristics in Oswego County

Inlet	Ownership	Status	Existing Structures	Bar	Entrance Channel	Embayment	Accessibility from Lake	Accessibility from Land	Potential for Development or Expansion
Salmon River	S,P	U	None	Sand spit west of entrance	Continual shoaling problems	Large, good fishing	R	A	Excellent
Deer Creek	P	U	None	Sand barrier beach with sand dunes	Open, but shallow	Wildlife habitat	N	R	Poor
North Pond	P	Semi-D	None	Continually changing	Continually changing	Large, deep	R	A	Very good

† P - private; M - municipal; S - state §D - developed; U - undeveloped
* N - not accessible; A - accessible; R - restricted

TABLE 36

Summary of Inlet and Harbor Characteristics in Jefferson County

Inlet	†Ownership	§Status	Existing Structures	Bar	Entrance Channel	Embayment	*Accessibility from Lake	*Accessibility from Land	Potential for Development or Expansion
South Colwell Pond	S	U	None	Barrier beach (sand) separates it from lake	Wide & fairly deep	Wildlife habitat	R	R	Possible
Sandy Creek	S	U	None	Sand barrier beach on either side of entrance	Wide & deep	Wildlife habitat	A	R	Poor
Black Pond	P	U	None	Sand barrier beach	Narrow, shallow	Wildlife habitat	N	R	Poor
Stony Creek	P	U	None	None	Very wide & averages 8' deep	Marshy upstream	A	R	Possible

† P - private; M - municipal; S - state § D - developed; U - undeveloped
* N - not accessible; A - accessible; R - restricted

CHAPTER X

DISCUSSION OF RESULTS AND RECOMMENDATIONS

10.1 Comparison of Recreational Boating Demand Projections

According to the Great Lakes Basin Commission, a demand for approximately 10,000 slips will occur by 1980 and a supply of only 6,000 will be realized (Table 2). According to this inventory, there is currently (1976) a demand for 6,000 slips and moorings with a supply of only 4,000. Conversations with many of the marina and yacht club owners revealed that supplying additional slips is difficult. The inability of the private sector to obtain permits for construction or dredging, without prolonged waiting periods, is causing many to give up expansion attempts. Based on these two trends and the inventory results, requirements for slips and moorings are projected for 1980 in Table 37.

TABLE 37

Comparison of 1980 Mooring Demand Projections for the Inventory Area

Source	Demand for Slips and/or Moorings	Supply of Slips and/or Moorings	Need for Slips and/or Moorings
Great Lakes Basin Commission	10,000	6,000	4,000
Inventory	7,500	4,500	3,000

Assuming a boat can be launched and recovered in 20 minutes (St. Lawrence - Eastern Ontario Commission) and the average length of a boat day on Lake Ontario is 12 hours, then 36 launchings, uniformly spaced throughout the day, could take place. Incorporating this assumption, the 846,000 launchings per year projected by the Great Lakes Basin Commission

for 1980 will require approximately 140 simultaneous launching sites (assuming uniform seasonal use). The Commission has also projected a supply of 711,000 launchings in 1980 or 118 simultaneous launching sites, resulting in a need for 22. However, launching site use is rarely distributed uniformly throughout the season and peak day demand estimates are needed. Cuurently, the New York State Department of Parks and Recreation estimates peak day demand by using 1.5 to 2.0 percent of the projected annual use. Taking 2% of the Commission's projected use for 1980, the maximum number of launchings occuring on one day would be near 17,000, requiring at least 470 simultaneous launching sites in the inventory area (uniform daily use).

Using the methodology of the St. Lawrence - Eastern Ontario Commission and assuming the salmonid fishery to be fully developed by 1980, another projection of launching requirements can be made. The St. Lawrence - Eastern Ontario Commission has estimated that 157,000 salmon and trout fishermen will emerge in New York State when the fishery is fully developed. Using an average of six angler days per fisherman, an estimated 945,000 angler days will be expended. Using the Commission's boat fisherman to shore fisherman ratio of 3:1 and an average of 2.5 fishermen per boat, 283,000 launchings may be expected. Assuming that few of the moored boats in the inventory area will be used for salmon fishing (a small percentage if they were) and uniform seasonal use,only 47 simultaneous launchings will be required. However, salmon fishing will most likely be concentrated in the spring or fall and peak day demand estimates are needed. Taking 2% of the projected annual use, 5670 launchings can be expected on any one day. This occurence would require at least 157 simultaneous launching sites assuming uniform daily use.

The fact that this projection is only for salmon fishermen demand doesn't invalidate its application to all recreational boating demands on launching facilities. Other boating activities, such as water skiing or cruising, on a seasonal basis will be beginning or ending when the peak demand for salmon fishing occurs. Furthermore, fishermen usually require the use of launching facilities in the early morning hours, while other activities begin later in the day. In fact, since the demand will be concentrated in the morning, the peak demand projection of 157 simultaneous launchings may be conservative. Comparison of the Great Lakes Basin Commission and St. Lawrence - Eastern Ontario Commission based projections is illustrated in Table 38.

TABLE 38

Comparison of 1980 Requirements for Simultaneous Launchings for the Inventory Area

Source	Demand Based on Uniform Seasonal Use	Peak Day Demand	Supply	Need Based on Uniform Seasonal Use	Need Based on Peak Day Demand
Great Lakes Basin Commission	140	470	118	22	352
St. Lawrence Eastern Ontario Commission	47	157	67*	--	90

* Present supply open to the general public

According to the inventory results, launching sites are now being used an average of 3685 times per week or 88,500 times per year. Based on this, only 15 simultaneous launching sites (uniform seasonal use) or a peak day demand of 50 sites are required, while the inventory revealed

that 67 simultaneous launching sites are available to the general public. This seems to indicate an adequate supply of launching facilities. However, the responses to the survey requesting estimates of launching ramp use didn't include a good cross section of public and private facilities and lacked projections of increased demand, both from the fishery and the general growth in recreational boating. As a result, these findings cannot reasonably be used to predict the future need for launching facilities.

10.2 Specific Recommendations

Since the 1980 mooring and launching projections of the Great Lakes Basin Commission seem to be high they will be precluded by the projections based on the inventory and the St. Lawrence - Eastern Ontario Commission methodology. Based on the assumptions and discussion in the preceeding paragraphs, it is recommended that at least 3,000 slips and moorings be provided by 1980. Of these approximately 50% should accommodate boats up to 25 feet long and 50% should accommodate boats longer than 25 feet. Since peak day demand projections are rarely designed for, it is recommended that 50 additional simultaneous launchings be provided.

Recommendations for the distribution of these additional slips and/or moorings and simultaneous launchings throughout the six county area are presented here. They are based on the needs of expected fishing "hot spots" and the proximity of harbors of refuge. Also included are suggestions for expansion of existing or construction of new facilities. Undeveloped or problem sites along the lake that are recommended for development or expansion are accompanied by design wave information in Appendix B. This information includes significant deep water wave heights and periods for different approach directions and will help to illustrate the need for

protective structures at sites reccommended for development or expansion.

10.2.1 Niagara County

Additional facilities in Niagara County are recommended for the Lower Niagara River, Wilson Harbor, Olcott Harbor, and Golden Hill Creek. Three more simultaneous launchings (preferably at Fort Niagara State Park) and 100 moorings are suggested for the Lower Niagara River. The proposal for a state owned (Wilson Tuscarora State Park) launching facility in Wilson Harbor is supported and should provide two simultaneous launchings. Even though the proposed harbor modification at Olcott may not be completed by 1980, the Town of Newfane's effort to construct a marina is supported and should provide two more simultaneous launchings and slips for 100 boats under 25 feet long. Once the outer harbor is completed, 100 moorings for boats longer than 25 feet long are recommended.

The development of Golden Hill Creek into a harbor of refuge is recommended. The potential for development here is strongly influenced by the lack of nearby facilities. The nearest harbors are at Olcott and Oak Orchard, approximately 28 miles apart. Any boater caught in a storm away from these two would require refuge. This development would also increase the opportunity for use of Lake Ontario. Provisions for its development would include dredging an entrance channel, construction of a breakwater system, and dredging the embayment to provide adequate draft. Once this is done, a launching ramp, providing two simultaneous launchings, and a marina with 50 slips for boats under 25 feet long are recommended. To make up for the lag between recommendation, authorization, design, and actual construction of the harbor, this site should, in the interim, be developed as a launching site. To this end, dredging of the entrance channel and the embayment would be required. The entrance channel could be stabilized by large stone rip rap.

10.2.2 Orleans County

The recent development of a harbor of refuge at Oak Orchard Creek appears adequate for the protection of recreational boaters in Orleans County. Even though Johnson Creek has the best potential, physically, of any of the undeveloped inlets in the county for boating facility expansion, maintenance of the entrance channel or the construction of a harbor of refuge is not warranted due to the proximity of Oak Orchard. Therefore, it is recommended that boating facilities on Oak Orchard Creek be expanded and include two additional simultaneous launchings (provided by state near piers), 100 slips to accommodate boats under 25 feet long, and 100 slips for boats longer than 25 feet. The construction of longer jetties and provision for 60 additional slips (boats less than 25 feet) are recommended for the private facility at Bald Eagle Creek.

10.2.3 Monroe County

The population of Monroe County is the greatest of any county in the inventory area and, as a result, requires a greater proportion of the boating facilities. Additional facilities in Monroe County are recommended for Sandy Creek Harbor, Braddock Bay, Rochester Harbor, and Irondequoit Bay. Provision for one additional simultaneous launching at Sandy Creek Harbor is suggested. At Braddock Bay it is recommended that the entrance channel be dredged periodically to allow larger boats to moor in the bay. This would help to relieve the pressure on Rochester Harbor's facilities. In the event of this modification, an additional three simultaneous launchings, 150 slips for boats less than 25 feet long, and 50 slips for boats longer than 25 feet long are suggested.

The greatest demand for boating facilities within the inventory area is in Rochester Harbor. Since access to the river from land is restricted,

the expansion of boating facilities will be difficult. If possible, however, one additional simultaneous launching, 50 more slips for boats less than 25 feet long, and 300 more slips for boats longer than 25 feet long should be provided.

The proposed harbor of refuge at Irondequoit Bay is strongly encouraged. This waterbody is very large and deep and its development should eliminate congestion problems in Rochester Harbor. When and if the project is incorporated, two additional simultaneous launchings, 50 more slips for boats under 25 feet long, and 200 slips and/or moorings for boats longer than 25 feet long are recommended.

10.2.4 Wayne County

Additional facilities in Wayne County are recommended for Great Sodus Bay and Port Bay. At Great Sodus Bay two additional simultaneous launchings, 100 slips for boats under 25 feet long, and 300 slips and/or moorings for boats longer than 25 feet long are suggested. Facilities at Port Bay should include three additional simultaneous launchings and slips for 100 boats less than 25 feet long. In the event of the proposed harbor modification, 100 slips and/or moorings for boats 25 feet or longer are recommended.

10.2.5 Cayuga County

Recreational boaters using the waters off Cayuga County appear to be adequately protected by the harbor at Little Sodus Bay. However, present facilities are not adequate to meet future demand. It is recommended that the Fair Haven State Park launch site be expanded to six simultaneous launchings. Moorings and slips for 50 more boats under 25 feet long and 100 more boats longer than 25 feet should be provided in the harbor. It is also recommended that an improved launching ramp be provided on

Sterling Creek Pond, since this tributary has possibilities of supporting salmonid spawning runs.

10.2.6 Oswego County

Additional facilities in Oswego County are recommended for Oswego Harbor, the Little Salmon River, the Salmon River, and North Pond. The proposed marina in Oswego Harbor, in the vicinity of Wright's Landing, is supported and should provide 200 slips for boats under 25 feet long and 200 slips for boats longer than 25 feet long. Three additional simultaneous launchings are also recommended. Some modifications at the Little Salmon River are suggested. In the short run, the entrance channel should be dredged periodically to maintain navigable depths for fishing boats. In the long run, a breakwater system is recommended for safe access during rough lake conditions. It is also recommended that four simultaneous launchings be added to the existing facility. No slips or moorings are recommended because the embayment is small and the river provides excellent fishing oppurtunities.

Since the distance between Oswego Harbor and Henderson Bay is so great, the proposed harbor of refuge at the Salmon River is supported. Furthermore, the Salmon River will probably be the best salmonid stream in the inventory area and will require additional boating facilities. It is recommended that 10 more simultaneous launchings and a marina, possibly state owned (Selkirk Shores State Park) with slips for 200 boats under 25 feet long be provided.

Facilities at North Pond should be expanded to provide 300 slips for boats under 25 feet long and four more simultaneous launchings. Marking of the entrance channel should be continued and it should possibly be dredged to ensure a more consistent position. The establishment of a

harbor of refuge at North Pond is not recommended for the near future. Stabilization of the barrier beach is recommended, however, to prevent lake storms from propogating into the pond.

10.2.7 Jefferson County

Additional facilities in Jefferson County are recommended for South Colwell Pond and Stony Creek. The launching facility at South Colwell Pond should be improved and expanded to provide two simultaneous launchings. A launching site with two simultaneous launchings is recommended for Stony Creek.

10.3 General Recommendations

The inventory revealed that many of the inlets along Lake Ontario have embayments supporting a diversity of wildlife, but no facilities for boating. It is recommended that these wetlands not be used to provide new locations for recreational boating access. The only exceptions to this recommendation are Golden Hill Creek and the Salmon River. Golden Hill Creek, which is recommended for development, has a very small wetland area and seems worth the sacrafice. The Salmon River, since it will be the best salmonid stream in the inventory area, needs to expand its facilities to prevent any civil disorders arising from demand for access.

Future expansion of boating facilities on Lake Ontario, as a result, should occur in developed or semi-developed inlets and harbors. Inlets and harbors that fall into this category are the Niagara River, Wilson Harbor, Olcott Harbor, Oak Orchard Harbor, Sandy Creek Harbor, Braddock Bay, Rochester Harbor, Great Sodus Bay, Port Bay, Little Sodus Bay, Oswego Harbor, and North Pond. Even though these inlets support as great,if not greater, diversity of fish and wildlife, environmental restrictions on expansion of boating facilities should be relaxed, to a degree. It was found, during the inventory field trips, that the private sector is more than willing, in

TABLE 39

Recommended Distribution of Moorings and Slips in the Inventory Area for 1980

County	Inlet or Harbor	Present Supply	Additional Required by 1980		Total Available in 1980
			Boats 25 feet	Boats 25 feet	
Niagara	Niagara River	290	0	100	390
	Wilson Harbor	332	0	0	332
	Olcott Harbor	113	100	100	313
	Golden Hill	0	50	0	50
	Total	735	150	200	1085
Orleans	Green Harbor	42	0	0	42
	Oak Orchard Harbor	229	100	100	429
	Bald Eagle Creek	60	60	0	120
	Total	331	160	100	591
Monroe	Sandy Creek Harbor	86	0	0	86
	Braddock Bay	390	150	50	590
	Rochester Harbor	1008	50	300	1358
	Irondequoit Bay	345	50	200	565
	Total	1829	250	550	2629

TABLE 39 (Con't) - Recommended Distribution of Moorings and Slips in the Inventory Area in 1980

County	Inlet or Harbor	Present Supply	Additional Required by 1980		Total Available in 1980
			Boats 25 feet	Boats 25 feet	
Wayne	Pultneyville Harbor	125	0	0	125
	Paradise Lagoon	55	0	0	55
	Great Sodus Bay	438	100	300	838
	Port Bay	20	100	100	220
	Total	638	200	400	1238
Cayuga	Little Sodus Bay	190	50	100	340
Oswego	Oswego Harbor	40	200	200	440
	*Little Salmon River	30	0	0	30
	Salmon River	20	200	0	220
	North Pond	226	300	0	526
	Total	316	700	200	1216
Total for Inventory Area		4039	1510	1550	7099

* Marina located 1/4 mile west of Little Salmon River

TABLE 40

Recommended Distribution of Simultaneous Launchings in the Inventory Area for 1980

County	Inlet or Harbor	Present Supply	Additional Required by 1980	Total Available in 1980
Niagara	Niagara River	3	3	6
	Wilson Harbor	3	2	5
	Olcott Harbor	2	2	4
	Golden Hill	0	2	2
	Total	8	9	17
Orleans	Green Harbor	1	0	1
	Oak Orchard Harbor	5	2	7
	Bald Eagle Creek	1	1	2
	Total	7	3	10
Monroe	Sandy Creek Harbor	2	1	3
	Braddock Bay	4	3	7
	Rochester Harbor	5	1	6
	Irondequoit Bay	4	2	6
	Total	15	7	22

TABLE 40 (Con't) - Recommended Distribution of Simultaneous Launchings in the Inventory Area for 1980

County	Inlet or Harbor	Present Supply	Additional Required by 1980	Total Available in 1980
Wayne	Bear Creek Harbor	1	0	1
	Pultneyville Harbor	2	0	2
	Paradise Lagoon	1	0	1
	Great Sodus Bay	5	2	7
	*East Bay	1	0	1
	Port Bay	3	3	6
	Total	13	5	21
Cayuga	Little Sodus Bay	7	2	9
	Sterling Creek Pond	1	1	2
	Total	8	3	11
Oswego	Oswego Harbor	3	3	6
	**Little Salmon River	5	4	9
	Salmon River	5	10	15
	North Pond	7	4	11
	Total	20	21	41

TABLE 40 (Con't) - Recommended Distribution of Simultaneous Launchings in the Inventory Area for 1980

County	Inlet or Harbor	Present Supply	Additional Required by 1980	Total Available in 1980
Jefferson	South Colwell Pond	1	1	2
	Sandy Creek	1	0	1
	Stony Creek	0	2	2
	Total	2	3	5
Total for Inventory Area		73	51	124

* No access to Lake Ontario
** One simultaneous launching is located 1/4 mile west of Little Salmon River

most instances, to expand existing facilities. However, the cost required to conform to the present environmental regulations and the prolonged waiting periods for permits is discouraging many people. The private sector should be encouraged to provide marina facilities such as slips and/or moorings, gas, and winter storage. On the other hand, the state and municipal governments should be responsible for providing launching facilities. Recognizing that many of the specific recommendations in the previous section cannot possibly be provided by 1980, it is recommended they be instituted as soon as possible.

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APPENDIX A

YACHT CLUB AND MARINA ADDRESSES

by COUNTY AND TRIBUTARY

I. Niagara County

A. Niagara River (Lower)

Mr. R. C. Courter
Lewiston Marina, Inc.
Foot of Center Street
Lewiston, New York 14092

Mr. R. C. Courter
Youngstown Yacht Club
Water Street
Youngstown, New York 14174

Mr. B. L. Fairbank
Youngstown Boat Company
Water Street
Youngstown, New York 14174

Mr. Lewis M. Mies
Pierce Marine Corp.
Youngstown, New York 14174

B. East Branch Twelvemile Creek (Wilson Harbor)

Mr. Joseph Hain
Wilson Boathouse Restaurant
57 Harbor Street
Wilson, New York 14172

Mr. Lloyd Beardsley
Wilson Yacht Club
Treasure Island
Wilson, New York 14172

R. D. Falby
Island Yacht Club
Beccue Island
Wilson, New York 14172

Mr. Edward Beccue
Beccue Boat Basin
Beccue Island
Wilson, New York 14172

C. Eighteenmile Creek (Olcott Harbor)

William Kohler
5833 West Main Street
Olcott, New York 14126

Mr. Rod Hedley
Hedley Boat Company
5723 West Bluff Street
Olcott, New York 14126

McDonough Marine
5800 West Main Street
Olcott, New York 14126

II. Orleans County

A. Perch Creek

Mr. Larry Schmidt
Green Harbor Campsites
12813 Lake Shore Road
Lyndonville, New York 14098

B. Oak Orchard Creek (Oak Orchard Harbor)

Richard J. Menzel
Oak Orchard Yacht Club
Archibald Road
Waterport, New York 14571

Mr. Fuzzy Norman
Norm's Marina
Point Breeze Road
Kent, New York 14477

McMurray's Marina, Inc.
Point Breeze
Kent, New York 14477

Oak Orchard Boat Livery
Point Breeze
Kent, New York 14477

Betty's Fisherman Haven
Point Breeze
Kent, New York 14477

Oak Orchard Marina
Point Breeze Road
Kent, New YOrk 14477

Alan R. Johnson, M.D.
Point Breeze Yacht Club
Point Breeze
Kent, New York 14477

Mr. Walter J. Elam
Hatch and Elam Boat Livery
14339 Rt. 18 West
Waterport, New York 14571

C. Bald Eagle Creek

Mr. C. H. Schepler
Bald Eagle Resort
9 Lakeland Beach Rd.
Kendall, New York 14476

III. Monroe County

A. Sandy Creek

Mr. Neil Ober
Brockport Yacht Club
Sandy Harbor Beach
Hamlin, New York 14446

B. Braddock Bay

Gene Waterstraw
Braddock Marine
194 Braddock Road
Hilton, New York 14468

Skinners Marina
320 Manitou Beach Road
Hilton, New York 14468

Larry's Marina
416 Manitou Road
Hilton, New YOrk 14468

Manitou Marina
372 Manitou Road
Hilton, New YOrk 14468

Manitou Yacht Club
372 Manitou Road
Hilton, New York 14468

C. Genesee River

Rochester Yacht Club
5555 St. Paul Blvd.
Rochester, New York 14612

Mr. F. Shumway, Jr.
Shumway Marine
70 Pattenwood Drive
Rochester, New York 14612

Harrison Chapin
Anchor Marine
560 River Street
Rochester, New York 14612

Martin L. Marshfield
Riverview Yacht Basin
18 Patten Street Ext.
Rochester, New YOrk 14612

Mrs. Joyce Gilbert
Voyager Boat Sales, Inc.
Stutson Street Ext.
Rochester, New York 14612

Mr. Ernest R. Persi
Genesee Yacht Club
Rochester, New York 14612

D. Irondequoit Bay

Mr. W. Mayer
Mayers Marina
7 Lake Road, West
Webster, New York 14580

Mr. Howard E. Sabin
Newport Yacht Club
694 Seneca Road
Rochester, New YOrk 14622

Jim's Marine Service
512 Bay Front South
Rochester, New York 14609

Mr. Edward Kemp
Slims Marine Service
352 Empire Blvd.
Rochester, New York 14609

IV. Wayne County

A. Salmon Creek

Pultneyville Yacht Club
Pultneyville, New York 14538

B. ----------

Hughes Marine
Paradise Lagoon
Williamson, New York 14589

C. Sodus Bay

Art Read
Trestle Marine
Sodus Point, New York 14555

Stewart Sill, Jr.
Sill's Marina, Inc.
Sodus Point, New York 14555

Paul Krenzer
Krenzer Marine
Sodus Point, New York 14555

Mr. George Arney
Arney's Marina
Sodus Point, New York 14555

Mr. Bob Chase
Sodus Point Bait Shop
and Boat Livery
Sodus Point, New York 14555

Mr . William Dusset
Anchor Yacht
Clover Street
Sodus Point, New York 14555

Sodus Bay Yacht Club
Sodus Point, New York 14555

Tucker Marina Service
RD
Wolcott, New York 14590

V. Cayuga County

A. Little Sodus Bay

Mr. James R. Child
Fair Haven Yacht Club
West Bay Road
Fair Haven, New York 13064

Mr. Jeffery Balker
The Boathouse
West Bay Road
Fair Haven, New York 13064

Rasbeck's Marina
West Bay Road
Fair Haven, New York 13064

Buster's Boat Base
Lake Road
Fair Haven, New York 13064

VI. Oswego County

A. Oswego River

Mr. George Dence
Oswego Marina, Inc.
East Harbor
Oswego, New York 13126

B. Salmon River

Lighthouse Marine
RD #2
Pulaski, New York 13142

Kenny's Boat Livery
Route 3, Scenic Highway
Pulaski, New York 13142

C. North Pond

Greenpoint Marina
RD #1
Mannsville, New York 13661

Mr. Elmer Reiter
Reiter's Marina
Route 3 - Scenic Highway
Sandy Creek, New York 13145

Mr. John Dinehart
Seber Shore Marine
RD
Sandy Creek, New York

Mr. Griffith Jones
Jones Marina
RD #2
Pulaski, New York 13142

Freeman's Marina
Route 3 - Scenic Highway
Sandy Creek, New York 13145

Kast's Marina
Renshaw Road
Mannsville, New York 13661

APPENDIX B

DESIGN WAVE INFORMATION FOR SELECTED SITES ON LAKE ONTARIO

Design wave information for selected sites on Lake Ontario are presented here. Included are significant deepwater wave heights and periods for different directions of approach. The tables of wave heights (in feet and meters) are presented in terms of location, return periods, season, and wave angle class. The tables of wave periods are given in terms of location, wave heights, and angle of wave approach. The angle classes are wave approach directions as viewed by an observer on shore. The three classes are thus defined:

Angle Class 1 - Mean wave approach angle greater than 30 degrees to right of normal to shore. For Lake Ontario, this would include NE, E, and SE directions.

Angle Class 2 - Mean wave approach angle within 30 degrees to either side of normal to shore. This would include the N direction.

Angle Class 3 - Mean wave approach angle greater than 30 degrees to left of normal to shore. This would include NW, W, and SW directions.

The information in this appendix is taken from Resio, Donald T. and Vincent, Charles L., "Design Wave Information for the Great Lakes: Report 2, Lake Ontario" March 1976. See references.

Table of Extremes Estimates
Wilson, N.Y. (Twelvemile Creek, Wilson Harbor, Olcott Harbor)
Grid Location 7, 7 Lat = 43, 43 Lon = 78, 88
Shoreline Grid Point 2

Winter Angle Classes

Return Period	1	2	3	All
5	4.6(1.8)	9.8(1.4)	12.5(1.3)	12.8(.13)
10	7.5(2.5)	10.8(1.8)	14.1(1.7)	14.3(1.7)
20	8.9(3.1)	12.1(2.3)	15.4(2.1)	15.7(2.1)
50	10.8(3.8)	13.1(2.9)	17.4(2.6)	17.7(2.7)
100	12.5(4.4)	14.1(3.3)	19.0(3.0)	19.2(3.1)

Spring Angle Classes

	1	2	3	All
5	3.3(0.6)	6.2(0.9)	8.9(0.3)	8.6(0.3)
10	3.9(0.8)	6.6(1.1)	9.3(0.4)	9.2(0.4)
20	4.6(1.0)	8.2(1.4)	9.5(0.5)	9.8(0.5)
50	5.2(1.2)	9.5(1.8)	10.8(0.6)	10.6(0.6)
100	5.6(1.4)	9.8(2.0)	10.8(0.7)	11.2(0.7)

Summer Angle Classes

	1	2	3	All
5	3.9(0.7)	4.9(0.6)	7.9(0.4)	8.1(0.4)
10	4.6(1.0)	5.6(0.8)	8.2(0.6)	8.6(0.6)
20	5.6(1.2)	6.2(1.0)	8.9(0.7)	9.1(0.7)
50	7.9(1.5)	7.9(1.2)	9.5(0.9)	9.7(0.9)
100	8.5(1.7)	7.9(1.4)	9.8(1.0)	10.3(1.1)

Fall Angle Classes

	1	2	3	All
5	7.5(0.4)	8.5(0.6)	10.8(1.0)	11.2(1.0)
10	7.9(0.6)	9.2(0.8)	12.1(1.3)	12.3(1.3)
20	8.5(0.7)	9.8(1.))	13.1(1.6)	13.5(1.7)
50	8.9(0.9)	12.1(1.2)	13.8(2.0)	15.0(2.2)
100	8.9(1.0)	13.1(1.4)	15.7(2.4)	16.2(2.4)

Significant Period by Angle Class and Wave Height (sec)

Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3
1	2.1	2.2	2.1	10	6.8	7.2	7.5	19	9.3	9.9	10.6
2	3.3	3.5	3.4	11	7.1	7.5	7.8	20	9.6	10.2	11.0
3	4.1	4.4	4.4	12	7.4	7.8	8.2	21	9.9	10.5	11.3
4	4.9	5.2	5.1	13	7.6	8.1	8.5	22	10.2	10.8	11.7
5	5.4	5.7	5.7	14	7.9	8.4	8.9	23	10.4	11.1	12.0
6	5.7	6.0	6.1	15	8.2	8.7	9.2	24	10.7	11.4	12.4
7	6.0	6.3	6.4	16	8.5	9.0	9.6	25	11.0	11.7	12.7
8	6.2	6.6	6.8	17	8.8	9.3	9.9				
9	6.5	6.9	7.1	18	9.0	9.6	10.3				

Table of Extremes Estimates
Thirty Mile Point, N.Y. (Golden Hill Creek)
Grid Location 7, 9 Lat = 43, 45 Lon = 78 46
Shoreline Grid Point 4

Winter Angle Classes

Return Period	1	2	3	All
5	8.2(0.3)	9.8(0.9)	9.8(0.6)	10.7(0.9)
10	7.5(0.4)	10.8(1.1)	10.8(0.7)	11.6(1.2)
20	8.9(0.5)	11.8(1.4)	11.2(0.9)	12.6(1.5)
50	9.8(0.6)	13.1(1.8)	13.1(1.1)	13.9(1.9)
100	10.8(0.7)	14.1(2.0)	13.4(1.3)	14.9(2.2)

Spring Angle Classes

	1	2	3	All
5	3.9(0.4)	4.9(1.2)	5.9(1.2)	7.7(1.5)
10	4.3(0.6)	5.6(1.5)	6.6(1.5)	8.2(1.9)
20	4.9(0.7)	7.5(1.9)	8.5(1.9)	8.7(2.0)
50	5.6(0.9)	7.9(2.4)	9.5(2.4)	9.4(2.3)
100	5.9(1.0)	8.5(2.7)	9.8(2.7)	10.0(2.8)

Summer Angle Classes

	1	2	3	All
5	3.6(0.0)	4.9(0.4)	5.6(0.4)	6.3(0.5)
10	5.2(0.0)	5.6(0.6)	5.9(0.6)	7.4(0.7)
20	8.2(0.0)	5.9(0.7)	6.6(0.7)	8.8(0.0)
50	10.2(0.0)	6.6(0.9)	8.2(0.9)	10.9(0.0)
100	12.5(0.0)	6.9(1.0)	8.5(1.0)	12.6(0.0)

Fall Angle Classes

	1	2	3	All
5	4.9(0.3)	9.8(0.4)	8.9(0.3)	9.6(0.4)
10	5.2(0.4)	10.2(0.6)	9.2(0.4)	10.4(0.6)
20	5.6(0.5)	10.8(0.7)	9.5(0.5)	11.2(0.8)
50	8.2(0.6)	12.1(0.9)	9.8(0.6)	12.3(0.9)
100	8.9(0.7)	12.8(1.0)	10.8(0.7)	13.1(1.1)

Significant Period by Angle Class and Wave Height(sec)

Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3
1	2.3	2.1	2.2	10	7.0	6.8	7.4	19	9.2	9.5	10.6
2	3.5	3.2	3.4	11	7.2	7.1	7.8	20	9.5	9.8	11.0
3	4.4	4.1	4.3	12	7.5	7.4	8.1	21	9.7	10.1	11.4
4	5.2	4.8	5.1	13	7.7	7.7	8.5	22	10.0	10.4	11.7
5	5.7	5.3	5.6	14	8.0	8.0	8.8	23	10.2	10.7	12.1
6	5.9	5.6	6.0	15	8.2	8.3	9.2	24	10.5	11.0	12.4
7	6.2	5.9	6.3	16	8.5	8.6	9.6	25	10.7	11.3	12.8
8	6.4	6.2	6.7	17	8.7	8.9	9.9				
9	6.7	6.5	7.0	18	9.0	9.2	10.3				

Table of Extremes Estimates
East Rochester, N.Y. (Irondequoit Bay)
Grid Location 8.14 Lat = 43, 37 Lon = 77, 47
Shoreline Grid Point 9

Winter Angle Classes

Return Period	1	2	3	All
5	6.2(1.6)	11.2(1.3)	13.4(0.6)	14.4(0.6)
10	8.9(2.1)	13.1(1.7)	14.1(0.7)	14.8(0.8)
20	9.8(2.6)	14.1(2.1)	14.8(0.9)	15.3(1.0)
50	11.2(3.2)	15.4(2.6)	15.1(1.1)	16.6(2.8)
100	13.4(3.7)	17.7(3.0)	15.4(1.3)	18.1(3.1)

Spring Angle Classes

	1	2	3	All
5	4.3(0.3)	5.6(1.0)	8.2(0.9)	8.2(0.9)
10	4.9(0.4)	6.6(1.3)	9.2(1.1)	9.3(1.2)
20	4.9(0.5)	7.9(1.6)	10.2(1.4)	10.5(1.5)
50	7.9(0.6)	8.9(2.0)	12.1(1.8)	12.2(1.8)
100	8.5(0.7)	9.5(2.4)	13.1(2.0)	13.4(2.1)

Summer Angle Classes

	1	2	3	All
5	3.6(1.7)	5.2(0.4)	7.5(0.4)	7.7(0.4)
10	4.9(2.3)	5.9(0.6)	8.2(0.6)	8.4(0.6)
20	7.5(2.8)	6.2(0.7)	8.5(0.7)	9.0(0.8)
50	8.9(3.5)	7.5(0.9)	9.2(0.9)	10.0(1.0)
100	9.8(4.1)	7.9(1.0)	9.8(1.0)	10.7(4.4)

Fall Angle Classes

5	5.2(0.3)	10.8(1.3)	12.1(0.7)	12.6(0.7)
10	5.6(0.4)	12.5(1.7)	13.1(1.0)	13.8(1.0)
20	5.9(0.5)	13.8(2.1)	13.8(1.2)	15.1(2.3)
50	7.2(0.6)	15.4(2.7)	15.4(1.5)	16.8(2.9)
100	7.9(0.7)	17.1(3.1)	16.4(1.7)	18.1(3.3)

Significant Period by Angle Class and Wave Height (sec)

Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3
1	2.2	2.1	2.2	10	6.9	6.9	7.2	19	9.2	9.4	10.3
2	3.5	3.3	3.4	11	7.2	7.2	7.5	20	9.5	9.7	10.6
3	4.4	4.2	4.3	12	7.4	7.5	7.9	21	9.8	10.0	10.9
4	5.1	5.0	5.0	13	7.7	7.7	8.2	22	10.0	10.3	11.3
5	5.6	5.5	5.5	14	7.9	8.0	8.6	23	10.3	10.5	11.6
6	5.9	5.8	5.8	15	8.2	8.3	8.9	24	10.5	10.8	12.0
7	6.1	6.1	6.2	16	8.5	8.6	9.2	25	10.8	11.1	12.3
8	6.4	6.3	6.5	17	8.7	8.9	9.6				
9	6.6	6.6	6.9	18	9.0	9.1	9.9				

Table of Extremes Estimates
West Rochester, N.Y. (Braddock Bay)
Grid Location 7,13 Lat = 43,48 Lon = 77, 65
Shoreline Grid Point 8

Winter Angle Classes

Return Period	1	2	3	All
5	5.9(1.1)	9.2(1.0)	9.5(0.7)	9.9(0.7)
10	6.9(1.5)	10.5(1.3)	10.5(0.9)	11.5(1.4)
20	8.5(1.9)	11.5(1.6)	11.2(1.2)	13.0(1.9)
50	9.8(2.3)	13.8(2.0)	13.8(1.4)	15.1(2.2)
100	10.2(2.7)	15.1(2.4)	15.1(1.7)	16.8(2.6)

Spring Angle Classes

	1	2	3	All
5	3.3(0.3)	4.6(0.4)	5.6(0.4)	5.4(0.4)
10	3.6(0.4)	5.2(0.6)	6.2(0.6)	6.3(0.6)
20	3.9(0.5)	5.6(0.7)	6.6(0.7)	7.2(0.8)
50	4.3(0.6)	6.2(0.9)	7.2(0.9)	8.4(1.0)
100	4.6(0.7)	8.2(1.0)	8.5(1.0)	9.4(1.1)

Summer Angle Classes

	1	2	3	All
5	3.0(1.9)	4.3(1.6)	4.6(0.3)	6.2(0.4)
10	4.9(2.5)	5.6(2.1)	4.9(0.4)	7.7(2.9)
20	7.2(3.1)	7.9(2.6)	5.2(0.5)	9.3(3.1)
50	9.5(3.8)	9.5(3.2)	5.6(0.6)	11.5(4.7)
100	12.1(4.5)	10.8(3.7)	5.9(0.7)	13.2(4.8)

Fall Angle Classes

	1	2	3	All
5	5.6(1.4)	8.2(0.7)	9.2(1.3)	10.9(1.5)
10	7.5(1.9)	8.9(1.0)	10.2(1.7)	11.8(2.0)
20	8.9(2.4)	9.8(1.2)	12.1(2.1)	12.8(2.3)
50	11.5(2.9)	11.8(1.5)	13.4(2.7)	14.1(2.8)
100	12.8(3.4)	12.5(1.7)	14.1(3.1)	15.2(3.3)

Significant Period by Angle Class and Wave Height(sec)

Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ft.(Ft.)	Angle Class 1	2	3
1	2.1	2.1	2.0	10	6.8	6.6	6.9	19	9.1	8.9	9.8
2	3.4	3.3	3.2	11	7.1	6.9	7.2	20	9.4	9.1	10.1
3	4.2	4.2	4.1	12	7.3	7.1	7.5	21	9.7	9.4	10.4
4	5.0	4.9	4.8	13	7.6	7.4	7.9	22	9.9	9.6	10.7
5	5.5	5.4	5.3	14	7.8	7.6	8.2	23	10.2	9.9	11.1
6	5.8	5.6	5.6	15	8.1	7.9	8.5	24	10.4	10.1	11.4
7	6.0	5.9	5.9	16	8.4	8.1	8.8	25	10.7	10.4	11.7
8	6.3	6.1	6.3	17	8.6	8.4	9.1				
9	6.5	6.4	6.6	18	8.9	8.6	9.5				

Table of Extremes Estimates
Wolcott, N. Y. (Port Bay)
Grid Location 8,17 Lat = 43, 38 Lon = 76, 87
Shoreline Grid Point 12

Winter Angle Classes

Return Period	1	2	3	All
5	6.6(1.6)	10.5(1.4)	13.8(0.7)	13.8(0.7)
10	8.9(2.1)	11.8(1.9)	14.8(0.9)	15.0(0.9)
20	10.2(2.6)	13.8(2.3)	15.4(1.2)	16.4(1.2)
50	10.5(3.2)	15.7(2.9)	16.1(1.4)	18.2(1.6)
100	13.1(3.7)	18.0(3.4)	18.0(1.7)	19.6(3.7)

Spring Angle Classes

	1	2	3	All
5	4.6(1.0)	5.2(1.0)	8.2(0.7)	8.1(0.7)
10	4.9(1.3)	6.9(1.3)	8.9(1.0)	9.2(1.0)
20	6.9(1.6)	7.5(1.6)	9.8(1.2)	10.2(1.2)
50	7.9(2.0)	8.5(2.0)	12.1(1.5)	11.6(1.4)
100	8.9(2.4)	9.5(2.4)	12.5(1.7)	12.7(1.7)

Summer Angle Classes

	1	2	3	All
5	3.9(0.9)	4.6(1.2)	6.9(0.4)	7.1(0.5)
10	4.9(1.1)	5.2(1.5)	7.2(0.6)	7.9(0.6)
20	5.9(1.4)	7.2(1.9)	7.9(0.7)	8.8(0.8)
50	8.2(1.8)	8.2(2.4)	8.2(0.9)	10.0(2.1)
100	9.5(2.0)	9.2(2.7)	9.5(1.0)	11.0(2.4)

Fall Angle Classes

	1	2	3	All
5	6.6(0.4)	11.8(1.2)	12.8(0.6)	12.9(0.6)
10	6.9(0.6)	13.1(1.5)	13.4(0.8)	14.3(0.8)
20	7.5(0.7)	14.4(1.9)	14.1(1.0)	15.8(2.1)
50	8.9(0.9)	17.1(2.4)	15.7(1.2)	17.8(2.5)
100	9.8(1.0)	18.4(2.7)	17.1(1.4)	19.3(2.9)

Significant Period by Angle Class and Wave Height (sec)

Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3
1	2.2	2.1	2.4	10	7.0	6.9	7.6	19	9.5	9.4	10.3
2	3.5	3.4	3.7	11	7.3	7.2	7.9	20	9.8	9.7	10.7
3	4.3	4.2	4.6	12	7.6	7.5	8.2	21	10.1	10.0	11.0
4	5.1	5.0	5.4	13	7.8	7.7	8.5	22	10.4	10.3	11.3
5	5.6	5.5	6.0	14	8.1	8.0	8.8	23	10.6	10.5	11.6
6	5.9	5.8	6.3	15	8.4	8.3	9.1	24	10.9	10.8	11.9
7	6.2	6.1	6.6	16	8.7	8.6	9.4	25	11.2	11.1	12.2
8	6.4	6.3	6.9	17	9.0	8.9	9.7				
9	6.7	6.6	7.2	18	9.2	9.1	10.0				

Table of Extremes Estimates
Oswego, N.Y. (Little Salmon River)
Grid Location 6,19 Lat = 43, 63 Lon = 76, 50
Shoreline Grid Point 14

Winter Angle Classes

Return Period	1	2	3	All
5	6.6(1.7)	13.1(1.8)	17.7(1.3)	17.8(1.3)
10	9.2(2.3)	15.7(2.5)	19.0(1.7)	19.8(1.8)
20	10.5(2.8)	17.7(3.1)	20.7(2.1)	21.7(2.2)
50	13.4(3.5)	20.3(3.8)	23.6(2.6)	24.3(2.7)
100	14.4(4.1)	23.0(4.4)	24.9(3.0)	26.2(3.2)

Spring Angle Classes

	1	2	3	All
5	3.6(0.3)	5.2(1.3)	8.2(1.6)	10.0(1.9)
10	3.9(0.4)	7.2(1.7)	8.9(2.1)	10.9(2.6)
20	4.3(0.5)	8.2(2.1)	11.8(2.6)	11.9(2.6)
50	4.9(0.6)	9.2(2.7)	12.8(3.2)	13.2(3.3)
100	5.2(0.7)	9.8(3.1)	14.1(3.7)	14.2(3.8)

Summer Angle Classes

	1	2	3	All
5	3.6(0.7)	4.9(0.7)	8.2(0.4)	8.4(0.4)
10	4.3(1.0)	5.6(1.0)	8.9(0.6)	8.9(0.6)
20	5.2(1.2)	6.6(1.2)	9.2(0.7)	9.4(0.7)
50	7.9(1.5)	7.2(1.5)	9.8(0.9)	10.1(0.9)
100	9.2(1.7)	7.5(1.7)	10.2(1.0)	10.7(1.1)

Fall Angle Classes

	1	2	3	All
5	7.9(0.4)	9.8(0.7)	14.1(1.6)	13.7(1.5)
10	8.5(0.6)	11.2(1.0)	16.4(2.1)	15.7(2.0)
20	8.9(0.7)	11.5(1.2)	17.7(2.6)	17.8(2.6)
50	9.8(0.9)	13.1(1.5)	20.7(3.2)	20.6(3.2)
100	10.5(1.0)	13.4(1.7)	22.6(3.7)	22.7(3.8)

Significant Period by Angle Class and Wave Height (sec)

Wave Ht.(Ft.	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3
1	2.4	2.3	2.2	10	7.1	7.1	7.3	19	9.7	10.0	10.2
2	3.6	3.2	3.5	11	7.3	7.4	7.6	20	10.0	10.4	10.5
3	4.2	4.1	4.4	12	7.6	7.7	7.9	21	10.2	10.7	10.9
4	4.9	4.8	5.1	13	7.9	8.0	8.2	22	10.5	11.0	11.2
5	5.6	5.4	5.6	14	8.2	8.4	8.6	23	10.8	11.3	11.5
6	5.9	5.7	5.9	15	8.5	8.7	8.9	24	11.1	11.7	11.9
7	6.2	6.1	6.3	16	8.8	9.0	9.2	25	11.4	12.0	12.2
8	6.5	6.4	6.6	17	9.1	9.4	9.6				
9	6.8	6.7	6.9	18	9.4	9.7	9.9				

Table of Extremes Estimates
Lacona, N.Y. (Salmon River North Pond)
Grid Location 6,20 Lat = 43, 63 Lon = 76, 28
Shoreline Grid Point 15

Winter Angle Classes

Return Period	1	2	3	All
5	8.9(0.7)	18.0(1.8)	6.6(0.1)	18.2(1.9)
10	9.8(0.9)	19.4(2.5)	6.9(0.2)	20.3(2.6)
20	10.5(1.2)	22.3(3.1)	6.9(0.2)	22.4(3.1)
50	13.8(1.4)	23.9(3.8)	7.9(0.3)	25.2(4.0)
100	14.1(1.7)	27.2(4.4)	7.9(0.3)	27.3(4.4)

Spring Angle Classes

	1	2	3	All
5	4.9(0.6)	9.8(1.0)	3.9(0.6)	10.8(1.1)
10	5.9(0.8)	11.8(1.3)	4.6(0.8)	11.5(1.3)
20	6.2(1.0)	12.1(1.6)	5.2(1.0)	12.2(1.7)
50	7.5(1.2)	13.1(2.0)	5.6(1.2)	13.1(2.0)
100	7.9(1.4)	13.8(2.4)	5.9(1.4)	13.8(2.4)

Summer Angle Classes

	1	2	3	All
5	4.9(0.4)	8.5(0.3)	3.6(0.4)	7.1(0.2)
10	5.2(0.6)	8.9(0.4)	4.3(0.6)	8.2(0.3)
20	5.9(0.7)	9.2(0.5)	4.6(0.7)	9.3(0.5)
50	7.2(0.9)	9.8(0.6)	5.2(0.9)	10.8(0.6)
100	7.5(1.0)	11.8(0.7)	5.9(1.0)	11.9(0.7)

Fall Angle Classes

	1	2	3	All
5	8.2(1.2)	15.4(1.3)	4.9(0.7)	14.3(1.2)
10	9.5(1.5)	17.4(1.7)	5.6(1.0)	16.4(1.6)
20	10.8(1.9)	18.4(2.1)	6.6(1.2)	18.5(2.2)
50	12.8(2.4)	21.6(2.7)	6.9(1.5)	21.2(2.6)
100	13.4(2.7)	23.3(3.1)	8.2(1.7)	23.3(3.1)

Significant Period by Angle Class and Wave Height (sec)

Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3
1	2.3	2.1	1.9	10	7.1	7.1	6.5	19	9.6	10.2	9.4
2	3.5	3.3	3.0	11	7.4	7.4	6.8	20	9.9	10.5	9.7
3	4.4	4.2	3.8	12	7.7	7.8	7.1	21	10.2	10.8	10.0
4	5.2	4.9	4.4	13	7.9	8.1	7.5	22	10.5	11.2	10.3
5	5.7	5.4	4.9	14	8.2	8.5	7.8	23	10.7	11.5	10.7
6	6.0	5.7	5.2	15	8.5	8.8	8.1	24	11.0	11.9	11.0
7	6.3	6.1	5.5	16	8.8	9.1	8.4	25	11.3	12.2	11.3
8	6.5	6.4	5.9	17	9.1	9.5	8.7				
9	6.8	6.8	6.2	18	9.3	9.8	9.1				

Table of Extremes Estimates
Belleville, N.Y. (Stony Creek)
Grid Location 5, 20 Lat = 43, 77 Lon = 76, 28
Shoreline Grid Point 16

Winter Angle Classes

Return Period	1	2	3	All
5	10.2(0.3)	18.7(1.7)	10.3(0.6)	20.7(1.9)
10	10.5(0.4)	19.7(2.3)	11.5(0.7)	21.7(2.5)
20	10.8(0.5)	22.6(2.8)	12.1(0.9)	22.7(2.8)
50	11.2(0.6)	23.6(3.5)	13.4(1.1)	24.0(3.6)
100	11.5(0.7)	24.9(4.1)	14.1(1.3)	25.0(4.1)

Spring Angle Classes

	1	2	3	All
5	5.2(1.4)	11.8(0.7)	5.6(2.3)	11.1(0.7)
10	7.5(1.9)	12.8(1.0)	7.5(1.7)	12.4(0.9)
20	8.5(2.4)	13.4(1.2)	8.5(2.1)	13.7(1.2)
50	9.8(2.9)	14.4(1.5)	9.2(2.7)	15.4(1.6)
100	11.8(3.4)	16.4(1.7)	9.8(3.1)	16.6(1.7)

Summer Angle Classes

	1	2	3	All
5	4.9(0.4)	8.9(0.3)	3.9(1.0)	9.0(0.3)
10	5.6(0.6)	9.2(0.4)	4.9(1.3)	9.4(0.4)
20	5.9(0.7)	9.5(0.5)	6.6(1.6)	9.7(0.5)
50	7.5(0.9)	9.8(0.6)	7.9(2.0)	10.3(0.6)
100	7.9(1.0)	10.2(0.7)	10.5(2.3)	11.1(2.4)

Fall Angle Classes

	1	2	3	All
5	9.2(0.7)	16.7(0.9)	4.9(1.3)	16.0(0.8)
10	10.2(1.0)	17.7(1.1)	6.6(1.8)	17.4(1.1)
20	10.8(1.2)	18.7(1.4)	8.2(2.2)	18.3(1.4)
50	12.5(1.5)	20.7(1.8)	10.2(2.8)	20.7(1.8)
100	13.8(1.7)	22.0(2.0)	12.1(3.2)	22.1(2.0)

Significant Period by Angle Class and Wave Height (sec)

Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3	Wave Ht.(Ft.)	Angle Class 1	2	3
1	2.2	2.3	2.0	10	7.2	7.1	6.7	19	9.9	10.0	9.3
2	3.4	3.5	3.2	11	7.5	7.4	6.9	20	10.3	10.3	9.6
3	4.3	4.4	4.0	12	7.8	7.7	7.2	21	10.6	10.6	9.8
4	5.1	5.1	4.7	13	8.1	8.1	7.5	22	10.9	10.9	10.1
5	5.6	5.5	5.2	14	8.4	8.4	7.8	23	11.2	11.3	10.4
6	5.9	5.8	5.5	15	8.7	8.7	8.1	24	11.5	11.6	10.7
7	6.2	6.1	5.8	16	9.0	9.0	8.4	25	11.8	11.9	11.0
8	6.5	6.5	6.1	17	9.3	9.3	8.7				
9	6.8	6.8	6.4	18	9.6	9.7	9.0				