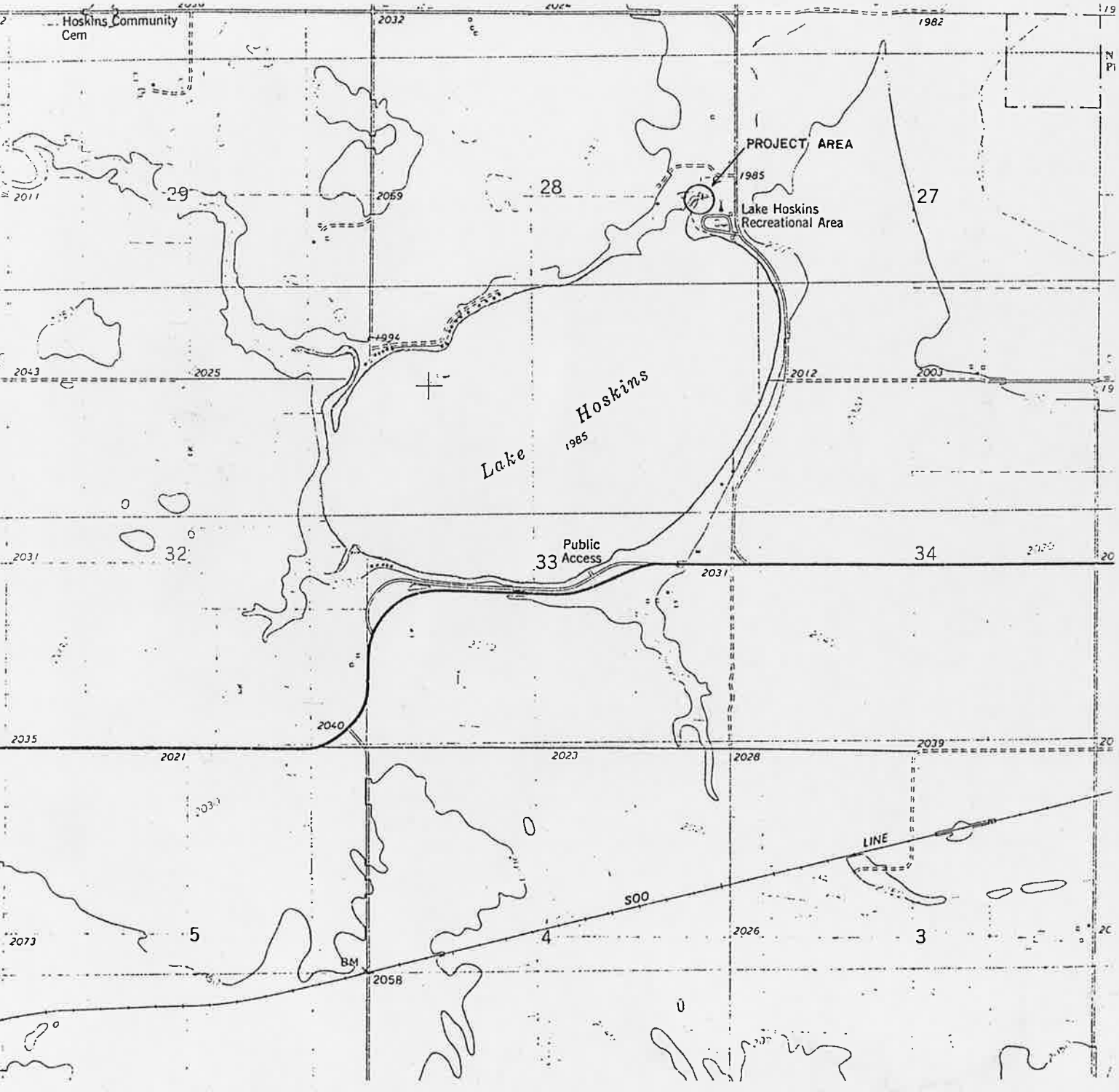
PRELIMINARY ENGINEERING REPORT

LAKE HOSKINS

SWC PROJECT #484

McINTOSH COUNTY



NORTH DAKOTA STATE WATER COMMISSION

MARCH 1989

PRELIMINARY ENGINEERING REPORT

LAKE HOSKINS

SWC PROJECT #484

North Dakota State Water Commission
900 East Boulevard
Bismarck, ND 58505-0187

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDIX A

Investigation Agreement

I. INTRODUCTION

Background:

The Lake Hoskins dam is owned by the city of Ashley and is located approximately 3 miles west of Ashley, Figure 1. The lake covers an area of approximately 600 acres and has a drainage area of approximately 25 square miles. There is no record of the construction of the structure in the State Water Commission files, but the Water Commission did participate in major revisions to the spillway in 1950 and the embankment in 1952.

The city of Ashley has a park located on the northeast shore of the lake, along the east side of the outlet area. The park is the main public access area on the lake and is used by fishermen from Ashley and the surrounding area. The area available for shore fishing in the park is limited due to areas with brush and trees along the bank and shallow water in the area approaching the spillway. This portion of Lake Hoskins is very shallow and is overgrown with cattails. The Lake Hoskins Improvement Association and the McIntosh County Water Resource District felt that deepening the lake and building up the shore line in this area would increase the opportunity for shore fishing. The increased area for fishing would enhance the recreational value of the park and the lake.

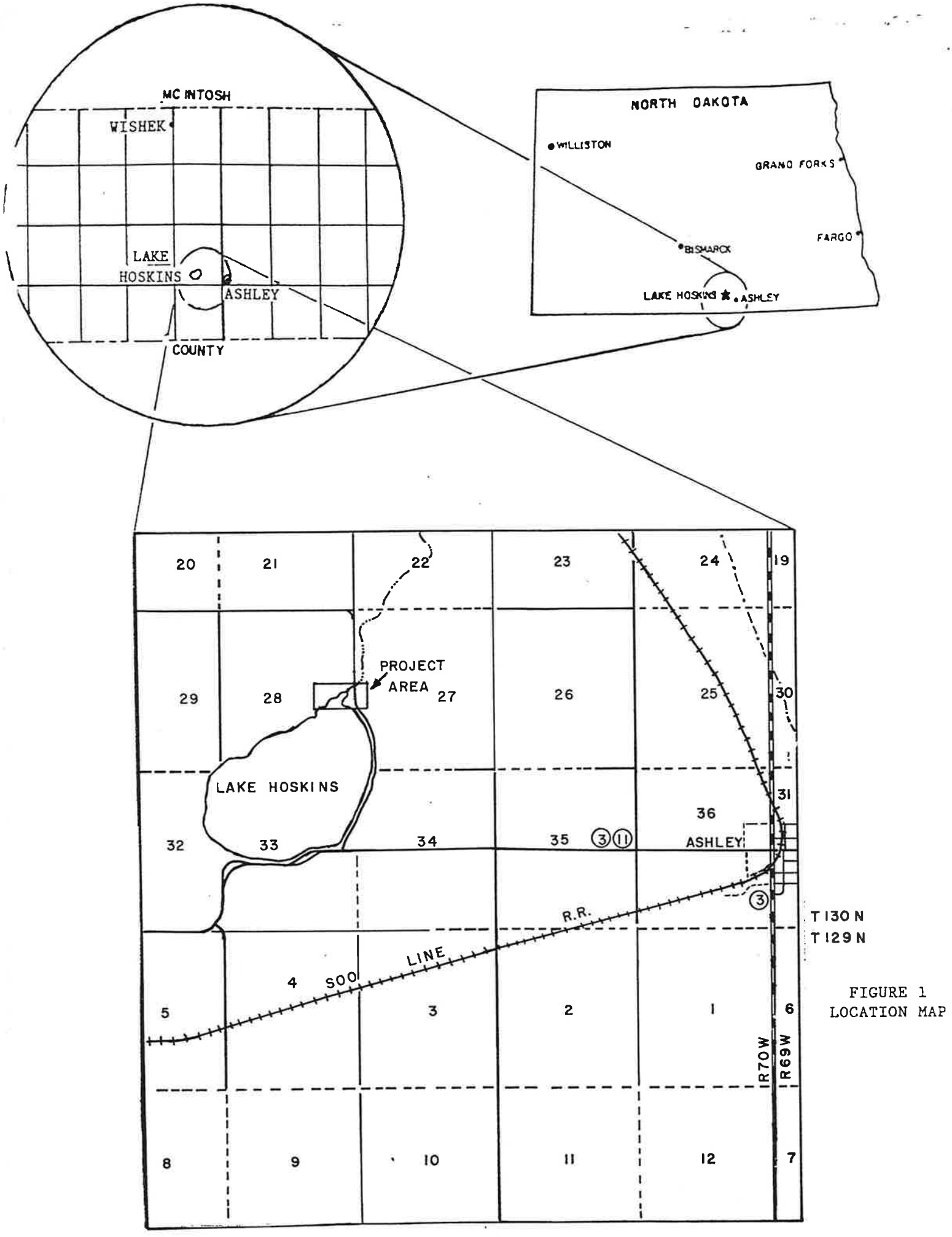

FIGURE 1
LOCATION MAP

The McIntosh County Water Resource District requested the State Water Commission investigate the possibility of deepening the area and reshaping the bank line. In December, 1987, an agreement was signed for the Water Commission to conduct an investigation for the proposed project.

The proposed project is located on Lake Hoskins between the city park boat ramp and the spillway in Section 28, Township 130 North, Range 70 West, McIntosh County, North Dakota, Figure 2.

Objective:

The overall objective is to determine a feasible method to increase the recreational value of the lake. The recreational value can be increased by making the lake shore more accessible to fishermen, and deepening the area to attract more fish.

Survey:

In December 1987, the area was surveyed by the State Water Commission. The area was cross-sectioned and holes were made in the ice to take soundings. These soundings were used to construct a topographic map of the area (shown in Figure 2).

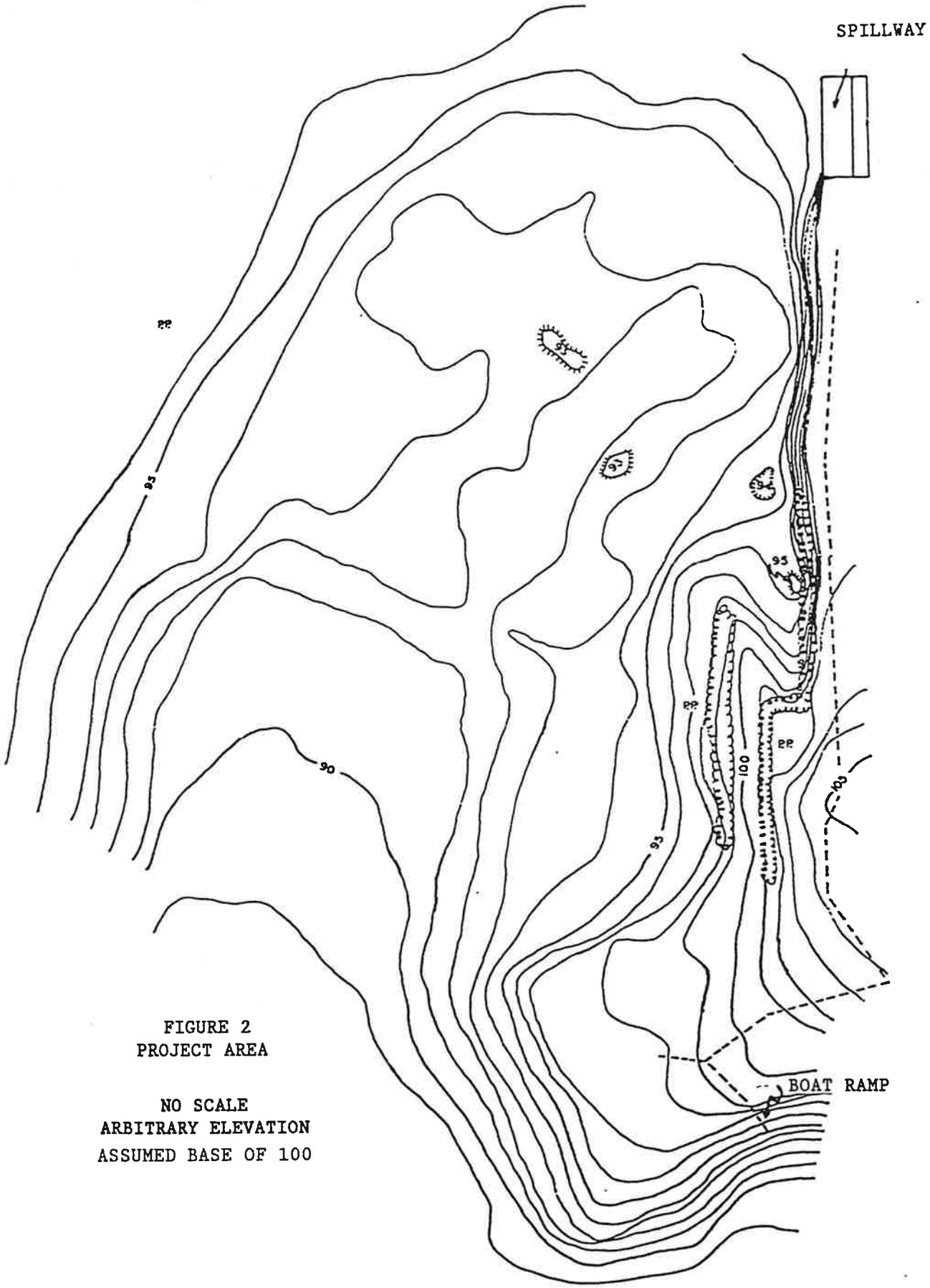

FIGURE 2
PROJECT AREA

NO SCALE
ARBITRARY ELEVATION
ASSUMED BASE OF 100

II. ALTERNATIVES

Based on the 1987 survey, the most practical method of excavating the area would be with scrapers. The area to be excavated must be dry and solid enough to allow the scrapers to operate without getting stuck. If the lake is low and the area is naturally dry, it will be quite simple to complete the project. However, if the lake is at or above the 90 contour line, a cofferdam will have to be constructed so the water can be removed from the area.

Excavate Without Cofferdam:

The area that will be excavated is shown in Figure 3. There is a power line running through the project area, as one of the power poles is located in the area to be sloped, the line will have to be moved during construction. The east bank will be shaped and sloped at 4:1 (4 Horizontal to 1 Vertical) to an elevation equal to the top of the outlet structure. The west bank will be sloped into the existing ground, but will not be shaped as it is not a public fishing area. The reshaped bank should not require any rock protection as the present bank is not eroding and the excavation should not significantly increase wave action against the shore. There will be some fill required behind the east bank to raise the area up to the elevation of the bank line. The excavated material will be used to supply the fill. An additional spoil area will be needed to waste the excess material excavated, the spoil area could be located

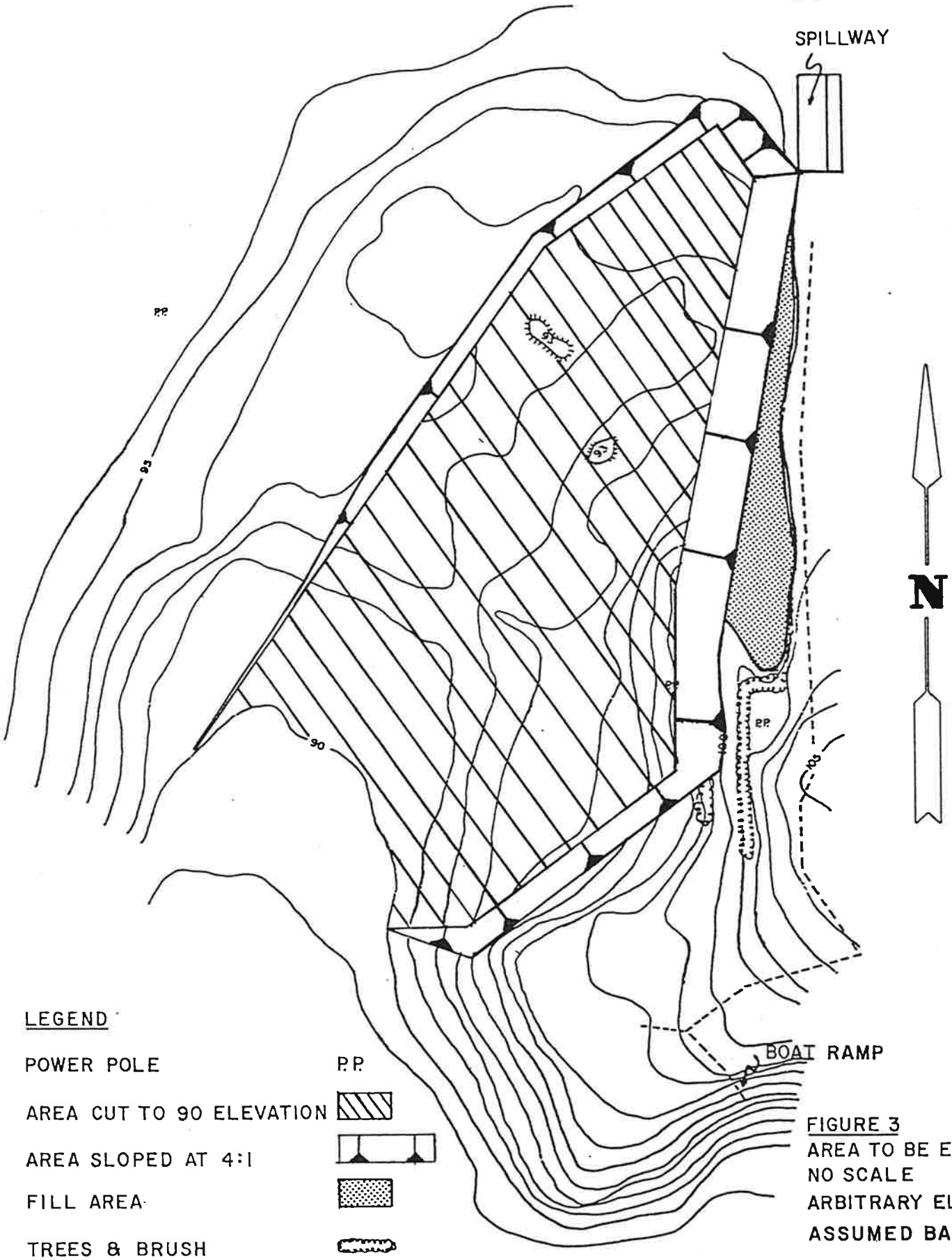

FIGURE 3
AREA TO BE EXCAVATED
NO SCALE
ARBITRARY ELEVATION
ASSUMED BASE OF 100

immediately west of the area to be excavated. The spoil should be spread on the upper bank, above the spillway elevation of 96.3. If the spoil is spread below this elevation, a permit from the Corps of Engineers will be required. A cost estimate for this method is given below.

COST ESTIMATE

Item	Quantity	Unit	Unit Cost	Cost
Mobilization		L.S.	$	$ 2,000
Power Line Relocation		L.S.		1,500
Clearing and Grubbing	0.40	Ac.	500.00	200
Excavation and Fill	11,700.00	C.Y.	1.50	17,550
Seeding	3.50	Ac.	700.00	2,450
	Subtotal			$23,700
	30% Contingencies and Engineering			7,100
	Total			$30,800

Excavate with Cofferdam:

It may be necessary to build a cofferdam across the upstream end of the area, Figure 4, and dewater the area before the excavation can be begin. The cofferdam would allow work to be done even if the lake level was above or near the 90 contour line. The area may require a substantial time period to dry enough to allow equipment to operate. There is a danger in leaving a cofferdam in place over an extended period as a heavy rainfall may cause the cofferdam to be overtopped.

The cofferdam would have a 10-foot top width and 4:1 side slopes. The cofferdam should have at least 2 feet of freeboard.

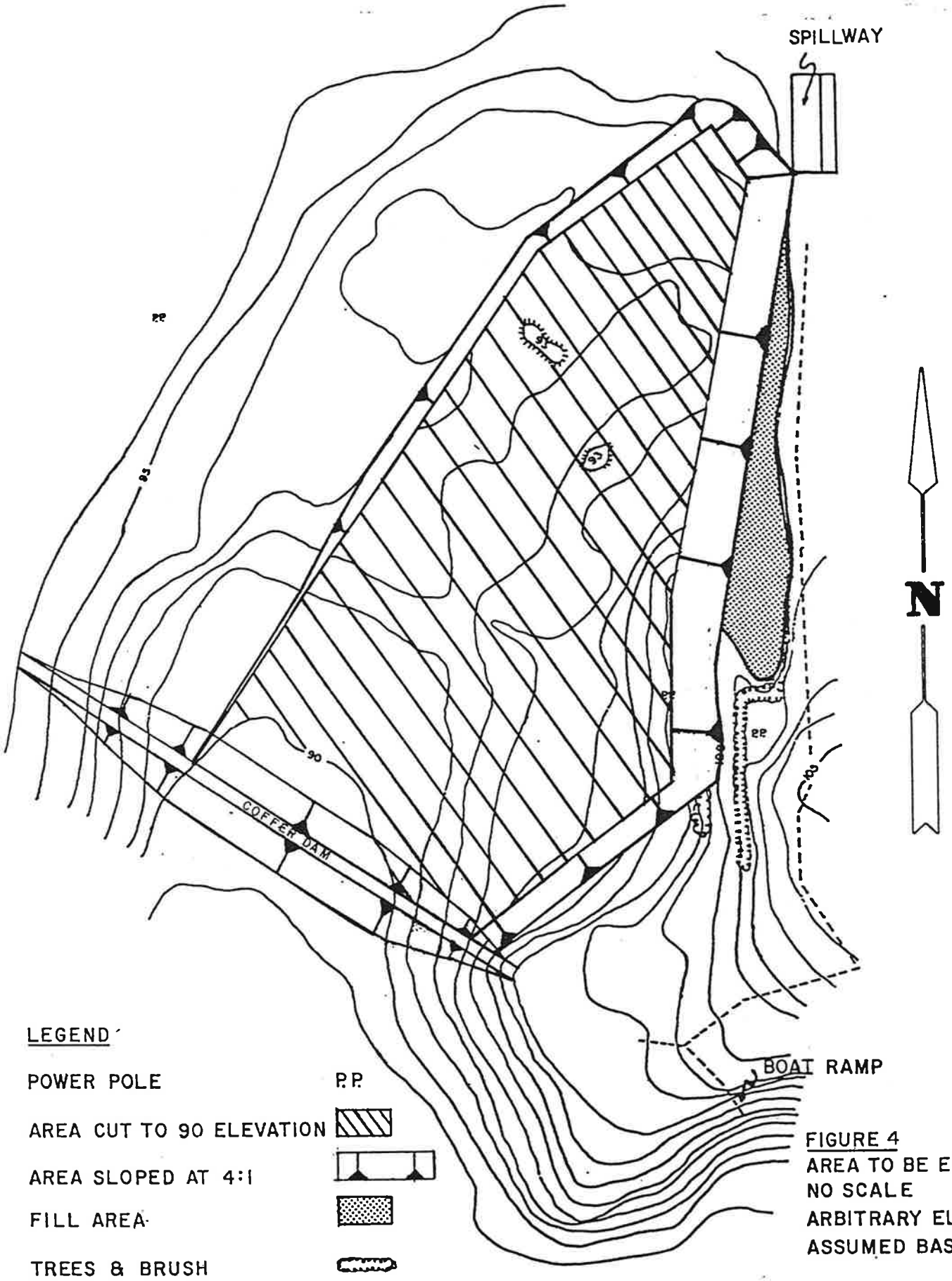

FIGURE 4
AREA TO BE EXCAVATED
NO SCALE
ARBITRARY ELEVATION
ASSUMED BASE OF 100

If the water level is at 94, one foot lower than when the area was surveyed, the cofferdam would need to be 6 feet high. Due to the low water resulting from last summers drought, a 6-foot cofferdam was assumed for the cost estimate given below.

COST ESTIMATE

Item	Quantity	Unit	Unit Cost	Cost
Mobilization		L.S.	$	$ 2,000
Power Line Relocation		L.S.		1,500
Clearing and Grubbing	0.4	Ac.	500.00	200
Excavation and Fill	11,700.0	C.Y.	1.50	17,550
Seeding	3.5	Ac.	700.00	2,450
Cofferdam Fill	2,172.0	C.Y.	3.00	6,516
Excavation	2,172.0	C.Y.	2.00	4,344
	Subtotal			$34,560
	30% Contingencies and Engineering			$10,370
	Total			$44,900

III. SUMMARY

The excavation of the area between the boat landing and the spillway will improve the shore fishing access and therefore improve the recreational value of the lake. A cofferdam may be needed across the upper end of the project to allow the area to be dewatered. The area may take a long time to dry, causing a risk of the cofferdam being overtopped by a heavy rainfall.

IV. RECOMMENDATIONS

Since the water level cannot be predicted at this time, it is recommended that the decision on the use of a cofferdam not be made until after the spring runoff, and as close to the beginning of construction as possible. It is also recommended that if it appears the cofferdam will be necessary the decision to use the cofferdam be delayed as long as possible as in the fall of the year there is a greater chance of the area being dry enough to allow equipment to operate without the cofferdam. Not using a cofferdam would not only reduce the cost of the project but would also eliminate the chance of the cofferdam being overtopped. The McIntosh County Water Resource District must decide which method should be used and if the project should proceed.

APPENDIX A

Investigation Agreement

SWC Project #1834
November 30, 1987

A G R E E M E N T

Investigation of Lake Hoskins Improvements

I. PARTIES

THIS AGREEMENT is between the North Dakota State Water Commission, hereinafter referred to as the Commission, acting through the State Engineer, Vernon Fahy; and the McIntosh County Water Resource Board, hereinafter referred to as the Board, acting through its Chairman, Clarence Wetzel. This agreement replaces the previous agreement dated October 22, 1987.

II. PROJECT, LOCATION, AND PURPOSE

The project involves a study of the effects of cleaning the area along bank from the city park's boat ramp to the outlet of Lake Hoskins. The possibility of using the waste from this area as fill for a fishing access area will also be investigated. The project is located in Section 28, Township 130 North, Range 70 West, McIntosh County, ND.

III. PRELIMINARY INVESTIGATION

The parties agree that further information is necessary concerning the proposed project. Therefore, the Commission shall conduct the following:

1. Field surveys, including soundings, necessary to further define the problem.
2. Prepare preliminary designs for the proposed improvements.
3. Make preliminary cost estimates of the improvements.
4. Prepare a preliminary engineering report which presents the results of the study.

IV. DEPOSIT AND REFUND

The Board shall deposit a total of $600 with the Commission to partially defray the cost of the investigation. Upon receipt of a request from the Board to terminate proceeding further with the investigation, or upon a breach of this

agreement by either of the parties, the Commission shall provide the Board with a statement of all expenses incurred in the investigation and shall refund to the Board any unexpended funds.

V. RIGHTS-OF-ENTRY

The Board agrees to obtain written permission from any affected landowners for field investigations and construction by the Commission, required by this agreement.

VI. INDEMNIFICATION

The Board hereby accepts responsibility for, and holds the Commission, its employees, and the State Engineer, free from all claims and damages to public or private property, rights, or persons arising out of this investigation. In the event a suit is initiated or judgment entered against the Commission, its employees, or the State Engineer, the Board shall indemnify it for any judgment arrived at or judgment satisfied.

VII. CHANGES TO THE AGREEMENT

Changes to any contractual provisions herein will not be effective or binding unless such changes are made in writing, signed by both parties, and attached hereto.

NORTH DAKOTA STATE WATER COMMISSION
By:

VERNON FAHY
State Engineer

DATE: 12/2/87

WITNESS:

MCINTOSH COUNTY WATER RESOURCE DISTRICT
By: Clarence L. Wetzel

CLARENCE L. WETZEL
Chairman

DATE: 12/3/87

WITNESS: Ramona Hoffman