

Water Division No. 3No. 940-3JAMES RIVERDistrict 076

(Blanks to be filled by the Engineer for the W. R. C.)

VESTED RIGHT

APPLICATION FOR PERMIT

To Appropriate Water within the State of South Dakota

(NOTE--Draw a line through items not applicable.)

1. Name of applicant South Dakota Department of Game, Fish and Parks
 Postoffice address Pierrre, County Hughes, State South Dakota

I. If a corporation

- (a) Name of same _____
 (b) Date and place of incorporation _____
 (c) Amount of capital stock _____
 (d) Amount paid in _____
 (e) Names and addresses of directors _____

(NOTE—A certified copy of articles of incorporation must accompany the application.)

II. Method of accomplishing the work and financial resources of the applicant:

- (a) Method of accomplishing work (Whether by contract, employment of others, or by direct labor) _____

- (b) Cash on hand, \$ _____ (c) Treasury stock, \$ _____
 (d) Bonds to be issued, \$ _____ (e) Other resources, \$ _____

2. Name of diversion work NINE MILE LAKE - Marshall County
As required to fill lake to outlet level - approximately 210
 3. Amount of water claimed acre feet per year cubic feet per second _____
 4. Source of water supply Dry Draw
One point in the watershed located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$;
 5. Location of point of diversion Sec. 31, T. 127, R. 55
 _____ on _____ bank _____ County.

6. Annual period or periods during which water is to be used All year round

7. To be used for:

- I. Irrigation or domestic use: Gravity, overhead sprinkling or combination system? _____

- (a) Number of acres to be irrigated _____ acres.

- (b) Legal subdivisions to be irrigated _____

(NOTE—A list of lands to be irrigated, giving each subdivision or fraction with acreage thereof, should be written here, or may be appended as a part of this application. Same must also be shown on accompanying map.)

- (c) Statement as to domestic use (giving location, etc.) To the ordinary high water mark of
the inundated portions of Sec. 31, 32, T. 127, R. 55 and Sec. 5, T. 126, R. 55

II. Stockwatering, mining, milling, power, fish culture, fire protection and public recreation:

- (a) Nature of use Public recreational purposes
 Name any of the above uses claimed _____

- (b) Amount of power to be generated _____ horse power.

Amount claimed for engine cooling _____

- (c) Location of plant _____

- (d) Method of developing power _____

- (e) Point where water will be returned to stream _____

8. Estimated cost of work:

(a) Head Gates, \$----- (b) Pumping plant, \$-----
(c) Fluming, \$----- (d) Canal-earth, \$----- Rock, \$-----
(e) Other structures ----- \$----- Total, \$-----

9. Description of diversion works:

I. Nature of works: (Reservoir, dam, ditch, flume, pumping plant, etc.)

II. Dimensions of works. Information requested not applicable. Nine Mile Lake is

(a) Dam: Height ----- a meandered lake. Maximum depth is approximately 15 feet. feet; length at bottom ----- feet; length at top -----

----- feet; thickness at bottom ----- feet; thickness at top -----

feet; slope at front water face -----; slope at back face -----

material used in construction -----

(b) Reservoir: Capacity when filled ----- acre feet. Surface area at highwater mark 210 ----- acres.

DEPTH AT OUTLET- FEET	SURFACE AREA AT EACH DEPTH AT OUTLET-- ACRES	FEET	ACRE- FEET CAPACITY
1			

(c)* Head gate: Width ----- feet; height ----- feet;

Material -----

(d) Canal: Total length ----- miles.

LOCATION BELOW HEADGATE	DEPTH	BOTTOM WIDTH	WIDTH AT WATER-LINE	GRADE PER MILE
A* ----- Mile	----- feet	----- feet	----- feet	----- feet
At ----- Mile	----- feet	----- feet	----- feet	----- feet
At ----- Mile	----- feet	----- feet	----- feet	----- feet
At ----- Mile	----- feet	----- feet	----- feet	----- feet
At ----- Mile	----- feet	----- feet	----- feet	----- feet
At ----- Mile	----- feet	----- feet	----- feet	----- feet

(Give dimensions where reductions in size are made.)

10. Time required for completion of work ----- years. Not applicable - a meandered lake

11. Time required for complete application of water to the proposed beneficial use ----- years.

12. Choice of newspaper for publication of notice of intention to appropriate -----

STATE OF SOUTH DAKOTA

County of Hughes } ss.

I, Walter J. Fillmore, being first duly sworn on my oath depose and say: That my relation to the above described undertaking is that of owner, that I have read the above foregoing statement, examined the map accompanying the same, and that I know of my own personal knowledge that the matters therein stated and shown are true.

Signed _____

Subscribed and sworn to before me this 7 day of December 1961

Notary Public (or other qualified officer.)

Remarks by State Water Resources Commission:

"VESTED RIGHT" CLAIMED

STATE OF SOUTH DAKOTA

County of

HUGHES

ss.

Pierre, South Dakota,

JANUARY 28, 1963

This is to certify that the foregoing application was received by the Commission at 11:30 o'clock

9 a.m. upon the 12th day of DECEMBER, 1961

State Water Resources Commission

By:

Burton Stone
for Chief Engineer, Executive Officer

Number of permit

940-3

Date of first receipt of application

DECEMBER 12, 1961

Date of return to applicant for correction, amendments or changes required as follows:

19

Date of receipt of corrected application

19

Date from which applicant may claim right

1889

19

Approved

JANUARY 28, 1963

Recorded in Book

8

Page

28

This is to certify that we have examined the foregoing application for a permit to appropriate water of the State of South Dakota, and we hereby grant the same as stated herein, subject, however, to the following limitations and conditions:

1st. The equivalent of at least one-fifth of the work above specified is ~~to be~~ completed ~~on or before~~

19

2nd. The whole of said work is ~~to be~~ completed ~~on or before~~

19

3rd. The limit of time for proof of beneficial use of water appropriated in accordance herewith is

COMPLETED

19

4th. The water appropriated shall be used for the purpose of

PUBLIC RECREATION

5th. The prior right of all persons who, by compliance with the laws of the State of South Dakota, have acquired a right to the use of water must not be injuriously affected by this appropriation.

6th. The amount of the appropriation herein granted shall not exceed 210 acre feet annually cubic feet per second; neither shall it exceed the capacity of the above described system of diversion works, nor the least amount of water that experience may hereafter indicate as necessary for the production of crops in the exercise of the best husbandry; and further, said appropriation must be limited to not more than one-seventieth (1/70) of one cubic foot of water per second of time for each acre of land to which water is actually

used for public recreation

and beneficially applied for irrigation on or before

June 30, 1955

said water to be used

during the following described annual period:

continuously

28th

Witness my hand this

day of

JANUARY, 1963

State Water Resources Commission

By:

for Chief Engineer, Executive Officer

Certificate of Construction Issued

JANUARY 28, 1963

Water License Issued

JANUARY 28, 1963

STATE OF SOUTH DAKOTA

WATER LICENSE No. 940-3

WHEREAS, On the 12th day of December 61
the South Dakota Department of Game, Fish and Parks

of Pierre County of Hughes and State of
South Dakota Vested Right
duly made application (No. 940-3) to us for a permit to use 210 acre feet
annually a dry draw
of the waters of
Marshall public recreation
County of , State of South Dakota, for
purposes; and

WHEREAS, On the 28th day of January 63
Vested Right / Permit No. 940-3 was issued to said applicant... recognizing
for the diversion of said water, ~~and providing for~~ the
completion of the work of diversion therein described ~~on or before~~ ~~day of~~
and ~~the~~ application to beneficial use of said
water ~~on or before~~ ~~day of~~ ~~year~~
and,

WHEREAS, On the 12th day of December 61
the holder of said permit duly made proof of the completion of adequate works for the diversion of 210 acre feet
annually ~~annually~~ of said waters, as evidenced by our Certificate No. 940-3
dated January 28, 1963 confirming the completion of works of sufficient capacity for
diverting and conveying to the place of intended use 210 acre feet annually
of water, with date of
priority of 1889 and,

WHEREAS, On the 12th day of December 61
proof was duly made of the application to beneficial use of 210 acre feet annually
to be used in place for public recreation

NOW, THEREFORE, By the virtue of the authority vested in us by the laws of the State of South Dakota,
We hereby grant and confirm to the South Dakota Department of Game, Fish and Parks
of Pierre Vested Right 940-3
the holder and owner of said permit No.

a water right, dating from 1889 to the use of 210 acre feet
annually
~~XXXXXX~~ of the waters of a dry draw

In the County of Marshall and State of South Dakota, or so much thereof as may be
necessary for the purposes hereinafter mentioned, to be diverted at a point in the NE 1/4 NE 1/4 Section 31,
T127N, R55W

and ~~XXXXXX~~ stored in place

for the purpose of public recreation

subject, however, to the laws of the State of South Dakota applicable to a license for the use of the waters of the
State, and subject, also to the local or community customs, rules and regulations which have been or may be
adopted from time to time by a majority of the users from a common source of supply, canal or lateral from
which such water may be taken, when such rules and regulations have for their object the economical use of such
water.

WITNESS, My hand and seal of our office at Pierre, South Dakota,
this 28th day of January A. D. Nineteen
Hundred and Sixty-Three

State Water Resources Commission

By:

J. W. GRIMES
Chief Engineer, Executive Officer

STATE OF SOUTH DAKOTA

Water License No. _____

To _____

Source of Supply _____

County _____

Am't _____ c. f. s.

Point of Diversion _____

Place of Use _____

Purpose _____

Date of Priority _____

Recorded _____

in Book _____ of _____ Page _____

Permit No. 940-3Water Division No. 3 James River Water District

Certificate of Completion of Works

TO ALL WHOM IT MAY CONCERN:

This is to Certify, That the South Dakota Department of Game, Fish and Parksof Pierre, County of Hughes, and State of South Dakotathe holder Verted Right of Permit No. 940-3, Issued upon ApplicationNo. 940-3, bearing date of priority of 1889, authorizing the diversion of210 acre feet annually ~~to the place of intended use~~ of the waters of a dry drawCounty of Marshall, State of South Dakota, at a point in theNE 1/4 NE 1/4, Section 31, T127N, R55Wfor public recreationpurposes, has fully complied with the provisions of the laws of the State of South Dakota relating to proof of completion of the works of diversion set out and described in said Permit; that said works are recognized as satisfactory~~conditions~~ for diverting and conveying to the place of intended use 210 acre feet annually ~~to the place of intended use~~~~to the place of intended use~~ of water; and that the ~~use of said water~~ the use of said water are described as follows,to-wit: to be used in place for public recreationWitness my hand this 28th day of January, A. D. 1963

State Water Resources Commission

By J. W. GRIMES
Chief Engineer, Executive Officer

Location No.

Water Division No. Water District

Proof of Application of Water to Beneficial Use**PETITION OF HOLDER**

Ques. 1. State your name, residence, occupation and postoffice address.

Ans. South Dakota Department of Game, Fish and Parks, Pierre, S. Dak.

Ques. 2. If acting in behalf of a corporation, state its name, principal place of business (if a foreign corporation, give name and postoffice of statutory agent,) your position with reference to same, and your authority for appearing in its behalf.

Ans.

Ques. 3. State date of posting and date of recording notice of appropriation.

Ans.

Ques. 4. State source of water supply and give exact location of point of diversion.

Ans. Dry Draw- one point in the watershed located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 31, T 127, R 55

Ques. 5. Describe your works of diversion giving length and height of each dam and state amount of water they are capable of conveying from point of diversion to place of use, and give name of canal or ditch or other works by which water is conducted to such place of use, and date of completion of same.

Ans. A meandered lake - depth 15 feet - 210 acres

Ques. 6. State for what purpose water is used and describe place of use. (If for irrigation, name each subdivision in which used, and number of acres in each subdivision that have ACTUALLY been irrigated with said water.)

Ans. Fish and wildlife propagation, conservation and recreation

Ques. 7. If for other than irrigation purpose, state how applied, amount of horse power generated, etc.

Ans. Used in place in lake or reservoir

Ques. 8. What is the minimum amount of water required for the use specified above?

Ans. As required to fill lake to outlet level - approximately 210 acre feet per year

Ques. 9. If you are not the person or representative of the corporation to whom above mentioned permit was originally issued, please state how ownership was acquired by present holder.

Ans.

Ques. 10. State when, how, in what amount and to what extent, the water diverted under above mentioned permit has been used.

Ans. A meandered lake. Used by the public for uses specified except for that
amount lost by evaporation and seepage

(Sign) W. J. McElmore

I hereby certify that the foregoing testimony was read to the above subscriber before its signing, that I believe him to be the person he represents himself to be and that said testimony was subscribed and sworn to before me, at my office in Pierre, County of Hughes

State of South Dakota, on this 7 day of December, A. D. 1961
Edward Robinson
Witnesses. 11-6-65

I, the undersigned, do hereby certify that I am a duly qualified elector residing in the immediate vicinity of the diversion works designated in the foregoing testimony, that I have no interest in the works, water or land above described, that I have read the foregoing testimony and that I know of my own personal knowledge that the matters therein stated are true.

Lot or Section No. -----	
PROOF OF APPLICATION OF WATER TO BENEFICIAL USE	
PETITION OF HOLDER	
Amount of Water ----- c. f. s.	
Source -----	
County -----	
Purpose -----	
Place of Use -----	
Date of recording -----	
Received and filed -----	

30	19
31	32



Nine Mile Lake
DEPT. GAME, FISH & PARK
Pierre, South Dakota

SOUTH DAKOTA
Department of
Water & Natural Resources

Joe Foss Building
523 East Capitol
Pierre, South Dakota 57501-3181

September 21, 1988

Richard Beringson, Secretary
Department of Game, Fish and Parks
Anderson Building
445 E Capitol
Pierre SD 57501

Dear Mr. Beringson:

I am writing to notify you that pursuant to the Notice of Intent to Validate Vested Water Right Claims dated June 20, 1988 that I intend to oppose validation of all Department of Game, Fish and Parks Vested Water Right Claims for lakes for the following reasons:

1. Until the outlet elevation for each lake is surveyed and the outlet elevation is set by the Water Management Board.
2. To allow the Vested Water Right Claim to be amended, if necessary, as follows:
 - a) Include the outlet elevation;
 - b) To correct the amount of water claimed;
 - c) To add the qualification that a vested claim is subject where necessary to installation of a concrete outlet structure to assure retention of the outlet as the established elevation; and
 - d) To add any amendments and qualifications necessary to clarify a Vested Right Claim.

Also, that I intend to oppose validation of all Department of Game, Fish and Parks Vested Water Right Claims for dams to allow the Vested Water Right Claim to be amended, if necessary, as follows:

1. To include the spillway elevation;
2. To correct the amount of water claimed; and
3. To add any amendments and qualifications necessary to clarify a Vested Right Claim.

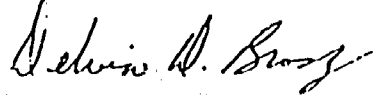


September 21, 1988
Richard Beringson, Secretary
Page 2

We will be working with your staff on these validations. We have already discussed setting outlet elevations before validating claims for lakes. Although the work necessary to complete the validation process will take several years to complete, the results should be of benefit to the public and to your Department. As the work is completed to validate each claim, the claim will be presented to the Water Management Board for validation.

Please advise if you have any questions.

Very truly yours,



JOHN HATCH, Chief Engineer
Water Rights Division
605 773-3352

cc: Ron Koth, Department of Game, Fish and Parks

Amendment to Vested Water Right No. 940-3

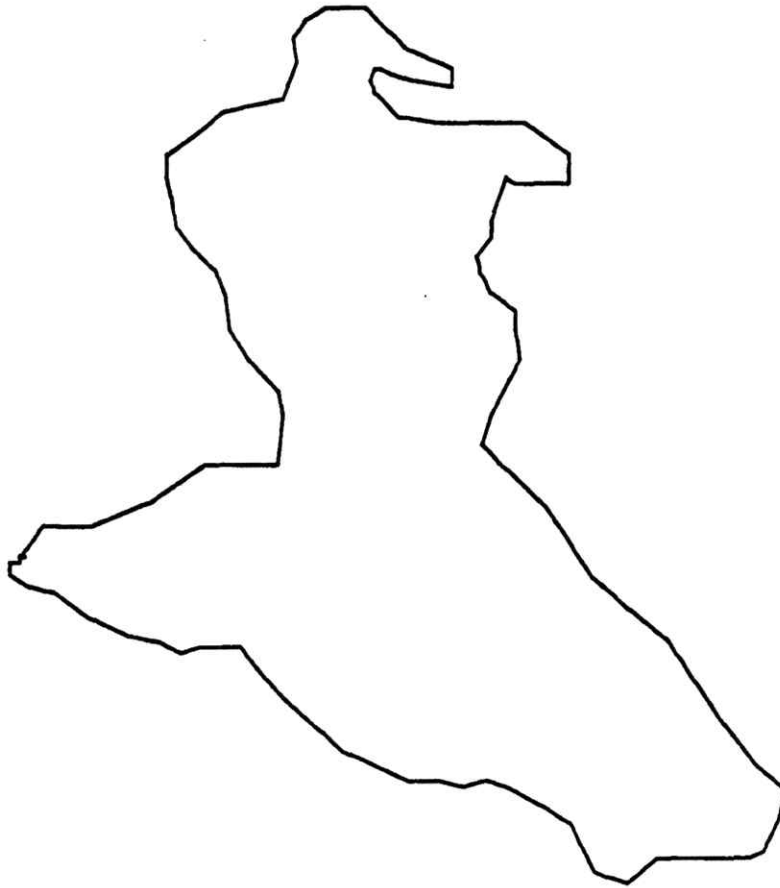
**From September 9, 1987 Hearing to Establish OHWM and
Outlet Elevation for Nine Mile Lake
(See September 9, 1987 Board Minutes)**

1. The Ordinary High Water Mark for Nine Mile Lake be established at an elevation of 1825.5 fmsl.
2. That the outlet elevation for Nine Mile Lake is established at 1824.9 fmsl and that Vested Water Right Claim No. 940-3 be amended to establish the outlet elevation at 1824.9 fmsl.
3. That Vested Right Claim No. 940-3 be amended to correct the amount of water claimed from "as required to fill lake to outlet level-approximately 210 acre-feet annually" to "sufficient water to fill Nine Mile Lake annually to the outlet elevation 1824.9 fmsl".
4. That Vested Right Claim No. 940-3 be amended to add the following qualification "that a concrete outlet structure be installed to assure retention of the outlet at elevation 1824.9 fmsl".

**** proper notice of hearing was published of proposed amendments -- see minutes file**

ORDINARY HIGH WATER MARK INVESTIGATION NINE MILE LAKE

AUGUST 1987



MARSHALL COUNTY

DIVISION OF WATER RIGHTS

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Abstract

This report contains the results of an investigation performed to determine the Ordinary High Water Mark (OHWM) and outlet elevation for Nine Mile Lake in Marshall County. The primary factors involved in determining the OHWM for Nine Mile Lake were: 1) the lake's hydrologic characteristics and 2) the physical features such as erosion lines, vegetation characteristics, and weathering.

Based on the findings in this report the recommended elevation of the Ordinary High Water Mark for Nine Mile Lake is 1825.5 feet above mean sea level (fmsl) and the recommended outlet elevation is 1824.9 fmsl.

INTRODUCTION

At the request of the South Dakota Department of Game, Fish, and Parks, an investigation was conducted to establish the Ordinary High Water Mark and Outlet Elevation for Nine Mile Lake.

The Water Management Board is required by SDCL 43-17-21 to establish an ordinary high water mark on public lakes. The Ordinary High Water Mark (OHWM) according to SDCL 43-17-20(2) is defined in decisions rendered by the courts of this state.

In the case of Anderson v. Ray, 37 S.D.17,156 N.W. 591 (1916) the Court wrote:

In the case of freshwater rivers and lakes in which there is no ebb and flow of the tide, but which are subject to irregular and occasional changes of height, without fixed quantity or time, except that they are periodical, recurring with the wet or dry seasons of the year-high water mark, as a line between the riparian owner and the public, is to be determined by examining the bed and banks, and ascertaining where the presence and action of the water are so common and usual, and so long-continued in all ordinary years, as to mark upon the soil of the bed a character distinct from that of the banks, in respect to vegetation, as well as respects the nature of the soil itself.

In the case of Flisrand v. Madson, 35 S.D. 457, 152 N.W. 796,800-801 (1915) the court wrote:

Neither high or low water mark means the highest or lowest point reached by the waters of a lake during periods of extreme and continued freshets, or periods of extreme and continued drought, but does mean the high and low points of variation of such waters under ordinary conditions, unaffected by either extreme.

The South Dakota Supreme Court further defined "Ordinary High Water Mark" in the Waubay Lake Case by stating that:

...under ordinary circumstances, the OHWM will be set at the level where there is a distinct mark which evidences erosion and changes in the character of the soil, and destruction of terrestrial vegetation, which have occurred under the ordinary and continuous conditions of the lake, disregarding periods of extreme and periodic freshets, and disregarding the highest water mark which does not evidence soil and soil changes and destruction of vegetation occasioned under ordinary conditions. If a single distinct mark, occasioned under ordinary circumstances and evidencing all of the factors delineated above does not exist, i.e., there is conflicting evidence of the role of the OHWM, it is the level where significant major, and substantial terrestrial vegetation ends, that the OHWM is to be set. (cites omitted)

A meander line was established on Nine Mile Lake in 1892. The elevation of the meander line varies from 1824 fmsl to 1890 fmsl (figure 1) and the meandered area of the lake is 269 acres. It

should be noted that the meander line is not a boundary line, but a traverse run roughly following the bank or shore of a lake for the purpose of locating the water boundaries approximately. The meander line defines neither the boundaries of the lake nor the extent of the area of land which is owned by the abutting landowner, but is a means of approximating the amount of land subject to sale. A portion of the land subject to sale was platted in 1974. The plat maps are included in this report (Appendix A).

GENERAL INFORMATION

Nine Mile Lake is situated within the Coteau Des Prairies Division of the Central Lowland physiographic province. The 265 acre lake is located approximately 3 miles north and 3 1/2 miles west of Lake City, South Dakota, in Sections 31 and 32, T127N-R55W and Section 5, T126N-R55W (figure 2). The topography of Nine Mile Lake's 3050 acre drainage basin (figure 3a) is typical of the Coteau Des Prairies, with high relief - 2050 fmsl to 1824 fmsl, escarpment slopes of 4% to 13%, and approximately 100 (figure 3b) acres of undrained depressions. Land in the drainage basin is approximately 80% pasture and hayland, and 20% cropland. The principal crops are sunflowers, corn, alfalfa, wheat, barley, oats, and millet. Nine Mile Lake, which is classified as a warm water semi-permanent lake (Board Rules 74:03:03:48 and 74:03:02:30(5)). It has a maximum depth of 14 feet, a median depth of 6 feet (figure 4) (Statewide Fisheries Surveys, 1984) and a storage capacity of approximately 2240 acre feet (ac-ft) at the outlet elevation (figure 5). The lake has good access, and is used for fishing, hunting, and wildlife habitat.

WATER RIGHTS

The South Dakota Department of Game, Fish, and Parks holds Vested Water Right Claim No. 940-3. The amount of water claimed is "as required to fill lake to outlet level-approximately 210 acre-feet annually" to be used "in place" at Nine Mile Lake for public recreation. The priority date of the Vested Water Right Claim is 1889.

GEOLOGY

Nine Mile Lake is a "kettle lake" located on the high plateau of the Coteau Des Prairies. The rugged morainal topography of the coteau was formed by rock debris deposited from the melting of stagnant glacial ice. The lake occupies a "kettle" created by the final melting away of a block of ice that was surrounded or buried by sediments after it became detached and isolated from the main ice mass.

The surficial deposits of this area are made up primarily of Pleistocene glacial deposits of late Wisconsin Age. There are three types of glacial sediments: (1) Till, a heterogeneous mixture of clay, silt, sand, gravel, and boulders; (2)

glaciofluvial sediments, mainly stratified sand and gravel deposited by glacial melt water; (3) glaciolacustrine sediments, usually clay, silt, and fine sand deposited in lakes (Flint, 1955). According to the log of a SDGS test hole located approximately 3/4 mile east of Nine Mile Lake (fig. 6) (Division of Geological Survey, 1971), the glacial deposits, consisting primarily of till, are approximately 500 feet thick in this area.

Groundwater in the Nine Mile Lake area occurs in confined bed rock aquifers and in a complicated system of confined and unconfined, often discontinuous and lenticular aquifers in glacial drift. There is no aquifer mapped in the vicinity of Nine Mile Lake (Koch, 1975).

Data suggests no hydrologic connection of any consequence between Nine Mile Lake and any glacial aquifer. A ground reconnaissance of the shoreline of the lake identified three features that would indicate that any groundwater connection is at best limited: (1) the lack of any sandy beaches except at the outlet; (2) a high collapse ridge and very steep basin side-slopes; and (3) outcrops and cutbanks composed of glacial till.

The driller's log of a well constructed approximately 300 feet west of the lake, for a William Spiry (figure 7), also suggests that any groundwater connection is limited (Division of Water Rights, 1987). The log identifies a glacial aquifer 42 feet below land surface or approximately 17 feet below the bottom of the lake. The static water level of the well is approximately 14 feet below the present lake level.

SOILS INFORMATION

The soil cover of the 3050 acre, Nine Mile Lake drainage basin consists of the loams of the Forman-Aastad-Buse Association (figure 8) (U.S. Dept of Agriculture, 1975).

Aastad soils, which are composed of a thick surface layer of dark-gray loam and a subsoil of dark-gray and grayish-brown clay loam, are found in swales and along foot-slopes. Forman soils lie on rises and the sides of ridges. They are made up of a dark-gray loam surface layer, a very dark grayish-brown loam to brown clay loam subsoil, and a calcareous clay loam underlying layer. Buse soils cover the tops of ridges and knolls. They are made up of a dark-gray loam surface layer, a calcareous clay loam transitional layer, and a lower layer of clay loam.

Soils of the Forman-Aastad-Buse Association are moderately deep to deep, moderately well to well-drained, moderately fine to moderately coarse-textured, have moderate rates of water transmission, and have moderate infiltration rates when thoroughly wetted. Runoff from soils of the Forman-Aastad-Buse Association is medium to rapid, and the drainage pattern is poorly defined over much of the drainage basin. These soils are classified by the SCS as type "B" soils for evaluating runoff.

The soil cover immediately adjacent to Nine Mile Lake consists of soils typical to short side slopes adjacent to lakes (FrD) and on

side slopes of long drainageways (BkF). The soil cover at the outlet (Wa) consists of mixed soils and soil materials found along sluggish drainageways. The hazard of erosion to these soil types is high, thus, no prominent soil change is obvious, or it is obscured at the shoreline of the lake.

HISTORICAL TRENDS

Historical trends of Nine Mile Lake stage elevations are not available prior to the biannual lake level measurements by the Division of Water Rights, beginning November 2, 1983. The stage elevations are shown on graph #1.

HYDROLOGIC FACTORS AFFECTING LAKE LEVEL FLUCTUATIONS

The lake level of Nine Mile Lake fluctuates in response to the hydrologic factors affecting the lake. These factors include: precipitation, runoff, evaporation, surface water outflow, and possibly groundwater-surface water interaction.

Precipitation falling directly on the surface of the lake furnishes a major volume of water to Nine Mile Lake. Water input resulting from precipitation is the product of precipitation times the surface area of the lake or:

$$PI = (\text{precipitation}) \times (\text{surface area})$$

Where PI=input due to precipitation (ac-ft)

Fifty-two years of precipitation records collected by the National Weather Service at Britton, South Dakota (U.S. Department of Agriculture, 1930-1987) were statistically analyzed using the Weibull Probability Method (Walpole, 1978). The analysis predicts return periods or chance of reoccurrence based on past occurrences. The chance of reoccurrence of annual precipitation events is shown on graph #2. The Marshall County Study, (Koch, 1975) shows there is a direct correlation between annual precipitation and stage elevations for lakes in Marshall County.

Runoff from the 3050 acre drainage basin is the next most important source of water input to Nine Mile Lake. Annual yield estimates based on soil type, land use, and regional climate can be made using the SCS method "A" (U.S. Department of Agriculture, 1969). The chance of reoccurrence of runoff events is shown on graph #3.

Evaporation from the surface of Nine Mile Lake accounts for a major water output from Nine Mile Lake. Lake evaporation is estimated to be 33 inches per year (in/yr) from Nine Mile Lake (Spuhler, 1971).

Surface water outflow allows for water output from Nine Mile Lake when the stage elevation exceeds the outlet elevation of 1824.9 fmsl. DWNr, Division of Water Rights field investigations suggest the lake overflows frequently. Outflow has not been quantified.

Groundwater-surface water interaction may account for water input or output at a lake. Insufficient data is available to quantify groundwater-surface water interaction at Nine Mile Lake, but it is assumed to be essentially nonexistent due to a relatively impermeable layer of glacial till isolating aquifers from the surface. However, the alluvial material at the outlet may account for minor amounts of outflow when the stage elevation of the lake is below the outlet elevation.

HYDROLOGIC BUDGET

A hydrologic budget is used to assess the effects of the hydrologic factors acting on a lake. In its most basic form, the budget states that the lake storage fluctuates in response to the difference between the input and output of water at the lake. Water input to a lake includes precipitation, runoff, and groundwater recharge. Water output from a lake includes losses due to evaporation, surface outflow, and leakage to groundwater.

The hydrologic budget can be written in equation form as:

$$\Delta S = P_i + R_o + G_{wi} - E - G_{wo} - O$$

Where ΔS = change in storage

P_i = precipitation falling on the lake surface

R_o = runoff

G_{wi} = groundwater input

E = evaporation

G_{wo} = groundwater output

O = surface outflow

Because the groundwater-surface water interaction is assumed to be negligible at Nine Mile Lake, the equation can be simplified to:

$$\Delta S = P_i + R_o - E - O$$

It should be noted that the hydrologic budget cannot be used to estimate the frequency of a change in storage or of obtaining a given elevation at Nine Mile Lake. The budget can only be used to evaluate an unknown variable if the other four variables are known or the effects on the stage of the lake caused by one of the hydrologic factors affecting the lake.

Hypothetical Application of the Hydrologic Budget

Assumptions:

- A. The lake level remains constant at 1826.00 fmsl.
- B. Annual evaporation loss equals 33 in/yr, (i.e. average evaporation).
- C. Annual precipitation equals 15.2 in/yr, (i.e. 80% reoccurrence).
- D. Annual yield equals 0.275 acre-inch per acre (i.e. 50% reoccurrence).

Find:

a. Annual surface water outflow.

Solution:

$\hat{S}$ = zero

Pi = 342 ac-ft (from Figure 10)

Ro = 70 ac-ft (from Figure 3b)

E = 255 ac-ft (from Figure 11)

O = ?

$\hat{S} = P_i + R_{op} - E - O$

zero = 342 + 70 - 255 - ?

? = 157 ac-ft

Therefore it can be seen, for this example, Nine Mile Lake would have spilled 157 acre-feet at the outlet if the stage elevation remained constant at 1826.00, annual evaporation loss was 33 in/yr, annual precipitation was an 80% reoccurrence event (15.2 in/yr), and annual runoff added to the lake was a 50% reoccurrence event (70 ac-ft per year).

LAKE INVESTIGATIONS

The elevations in this report are referenced to a United States Geological Survey bench mark. The bench mark is located near the corner of sections 25, 30, 31, and 36, T127N, Rs 55 and 56W; 936 feet N and 143 feet W from T-Rd N; 3 ft N of telephone pole; in concrete post; standard "TT 17 JF 1951" set at an elevation of 1880.252 fmsl.

FIELD INVESTIGATION

Field investigations were conducted at Nine Mile Lake; September 22, 1986; June 8, 1987; June 10, 1987; and June 16, 1987.

Physical evidences used to identify the OHWM for Nine Mile Lake include: beach lines; beach scarps, scarp or escarpment; erosion; soil stratification; and effects on terrestrial vegetation.

The shoreline of Nine Mile Lake consists primarily of outcrops of glacial till, with sandy beaches confined to areas adjacent to the outlet and the inlets of the lake (figure 8) (photos 1 and 2). The hazard of erosion to glacial till is high and steep escarpments are common at the perimeter of the lake (photo 3). The elevation of the toe of the escarpments of till range from 1825.24 to 1825.81 fmsl., with a mean elevation of 1825.49.

Where sandy beaches are present at Nine Mile Lake, the beaches terminate inland at a prominent scarp, which is an almost vertical slope approximately 0.5 feet high, along the beach, caused by erosion (wave action). The elevation of the toe of the beach scarp ranges from 1825.44 to 1825.50 fmsl, with a mean elevation of beach scarp of 1825.47.

Concentrations of boulders are found at and slightly below the base of wavecut cliffs. The boulders are similar to those cropping out of the cliffs, and probably are a residuum created by erosion. Most of the boulders exhibit a distinct water line or "band" due to physical, biological, and/or chemical weathering (Ollier, 1979) (photo 7). The elevation of the bands on boulders 3 to 5 feet in diameter ranges from 1825.31 to 1825.89 fmsl, with a mean elevation of 1825.51 fmsl.

A subtle change in slope was found on the lake bed at an elevation ranging from 1825.37 to 1826.21 fmsl. The change in slope is the result of erosion and soil stratification. The mean elevation of the slope change is 1825.67.

The effect on terrestrial vegetation is also used to aide in the determination of the OHWM of Nine Mile Lake. Substantial terrestrial vegetation ends at elevations ranges from 1825.43 to 1826.11 fmsl, with a mean of 1825.67.

Trees, being the largest and most permanent expression of upland growth, are commonly used to assist in OHWM determinations when suitable species and sites can be located. A conspicuous fringe of trees is found growing at the shoreline of Nine Mile Lake (photos 4 & 5). Most trees normally do not survive inundations of their roots by water for extended periods of time. Trees at the perimeter of Nine Mile Lake show washed and exposed roots from 1824.21 to 1826.27 fmsl (photo 6). Tree cores taken of trees growing at or above the OHWM may be as much as 80 years old (photo 8).

The water quality of Nine Mile Lake suggests the lake is "flushed" frequently (figure 12). The relatively low TDS of a grab sample at the lake indicated the water does not remain in Nine Mile Lake for long periods of time. Koch, (1975) states that "water from ground-water connected lakes normally has specific conductance less (usually much less) than 2,000 micromhos per centimeter at 25°C". Annalysis of the grab sample from Nine Mile Lake reports a conductivity of 719 umhos/cm at 25°C; however, physical evidence does not suggest a ground water connection as stated earlier in this report.

MAN MADE INFLUENCES

In 1977, the directly contributing watershed to Nine Mile Lake was increased by approximately 50 acres by draining a slough, located in Section 29, into the lake. This increased drainage would contribute less than 10 ac-ft of additional runoff to the lake annually (table #1).

Table #1

Effects of draining 50 acre slough on annual runoff.

% chance occurrence	Total input from 50 acre slough
90	0.3 ac-ft
80	0.4 ac-ft
70	0.6 ac-ft
60	0.8 ac-ft
50	1.1 ac-ft
40	1.7 ac-ft
30	2.5 ac-ft
20	3.6 ac-ft
10	6.5 ac-ft

Conclusions

Nine Mile Lake is a kettle lake with a surface area of 265 acres, with a watershed of 3050 acres. The hydrologic factors affecting the lake include precipitation falling directly on the surface of the lake, runoff, evaporation, surface water outflow, and possibly groundwater-surface water interaction, although thought insignificant.

Erosion, soil characteristics (changes in slope, soil stratification), vegetation changes, and weathering of boulders, delineate the elevation of 1825.5 feet above msl for the recommended OHWM for Nine Mile Lake.

The hydrologic budget is inadequate to predict the water level in Nine Mile Lake, because each component of the budget is independent, and extremely variable. However, a conservative analysis of the hydrologic budget demonstrates the lake will spill frequently. The field investigation shows this to be the case. The outlet for Nine Mile Lake is at an elevation of 1824.9 fmsl.



KENT BUHLER
Natural Resources Engineer

Recommendation of Chief Engineer

1. That the Ordinary High Water Mark for Nine Mile Lake be established at an elevation of 1825.5 fmsl.
2. That the outlet elevation for Nine Mile Lake is 1824.9 fmsl and that Vested Water Right Claim No. 940-3 be amended to establish the outlet elevation at 1824.9 fmsl.
3. That Vested Water Right Claim No. 940-3 be amended to correct the amount of water claimed from "as required to fill lake to outlet level-approximately 210 acre-feet annually" to "sufficient water to fill Nine Mile Lake annually to the outlet elevation 1824.9 fmsl".
4. That a concrete outlet structure be installed to assure retention of the outlet at elevation 1824.9 fmsl.

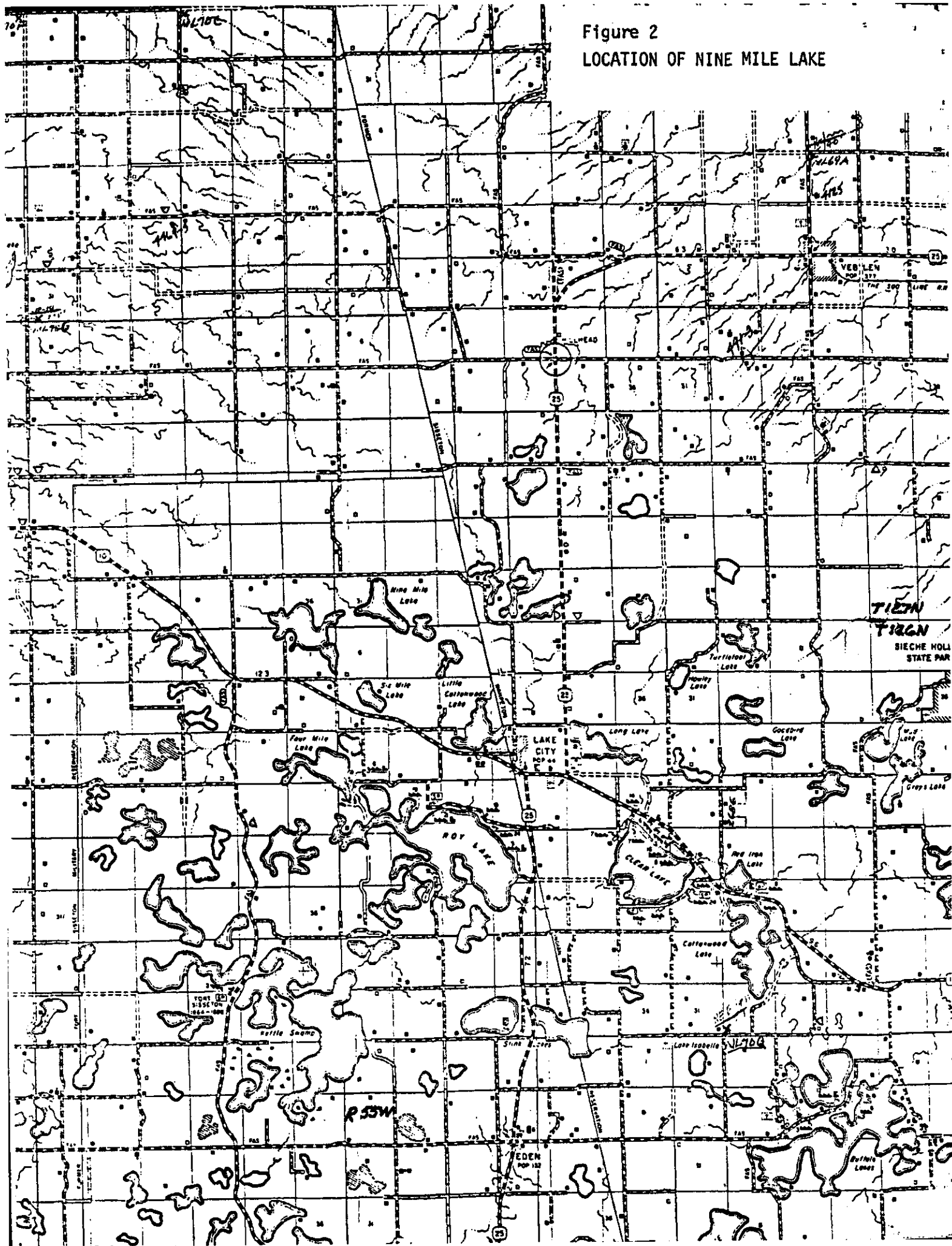


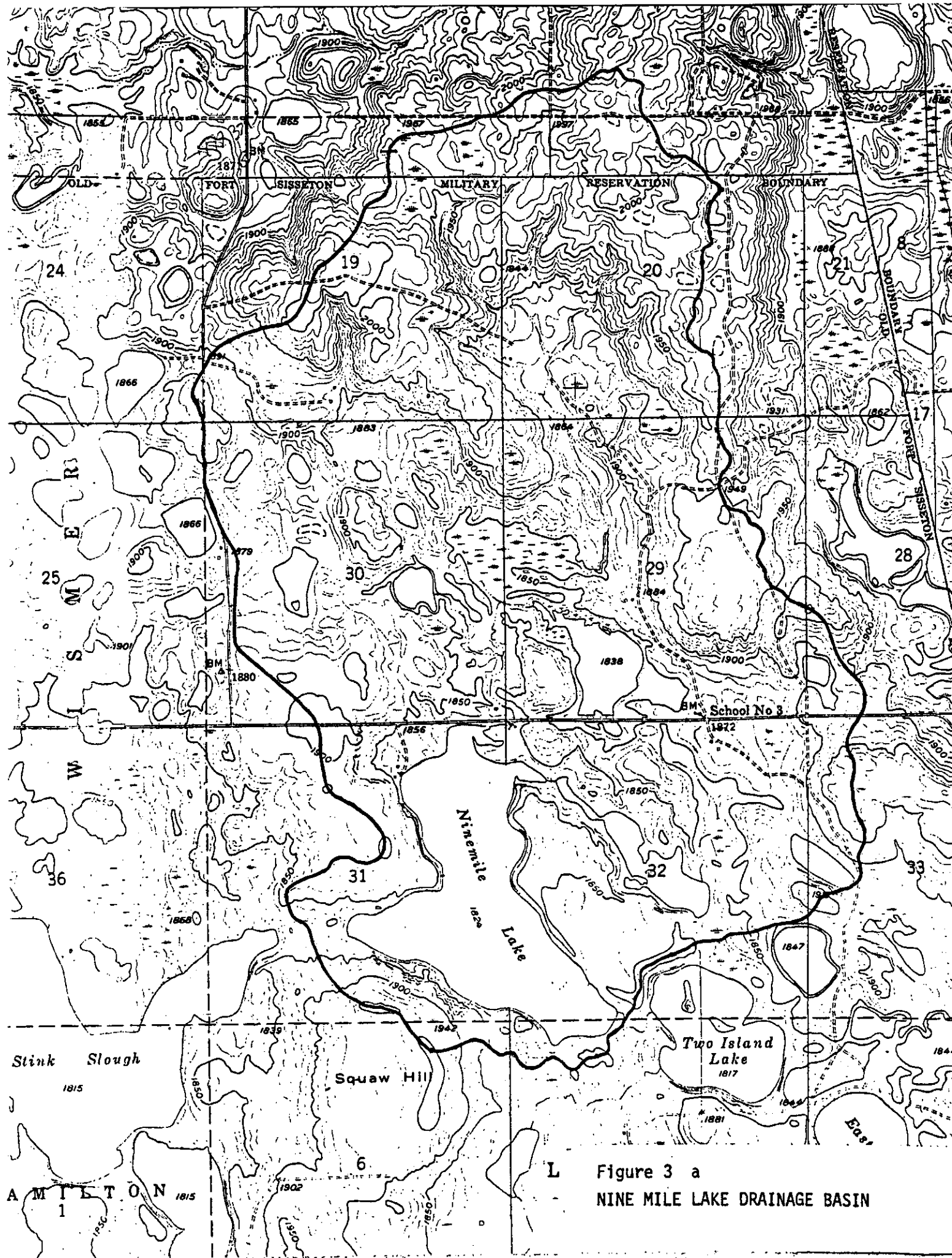
JOHN HATCH, Chief Engineer
Water Rights Division

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Figure 2
LOCATION OF NINE MILE LAKE





L Figure 3 a
NINE MILE LAKE DRAINAGE BASIN

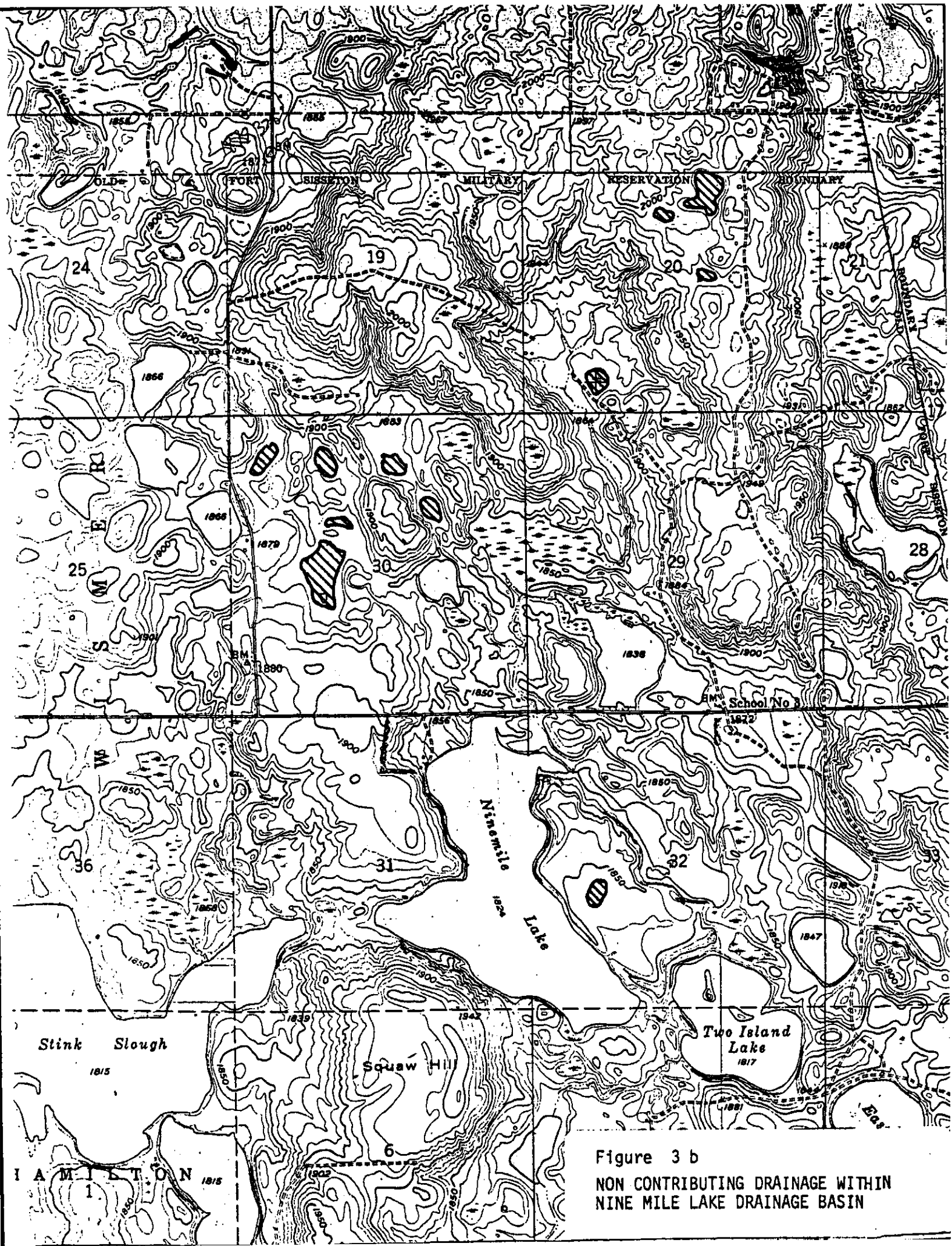
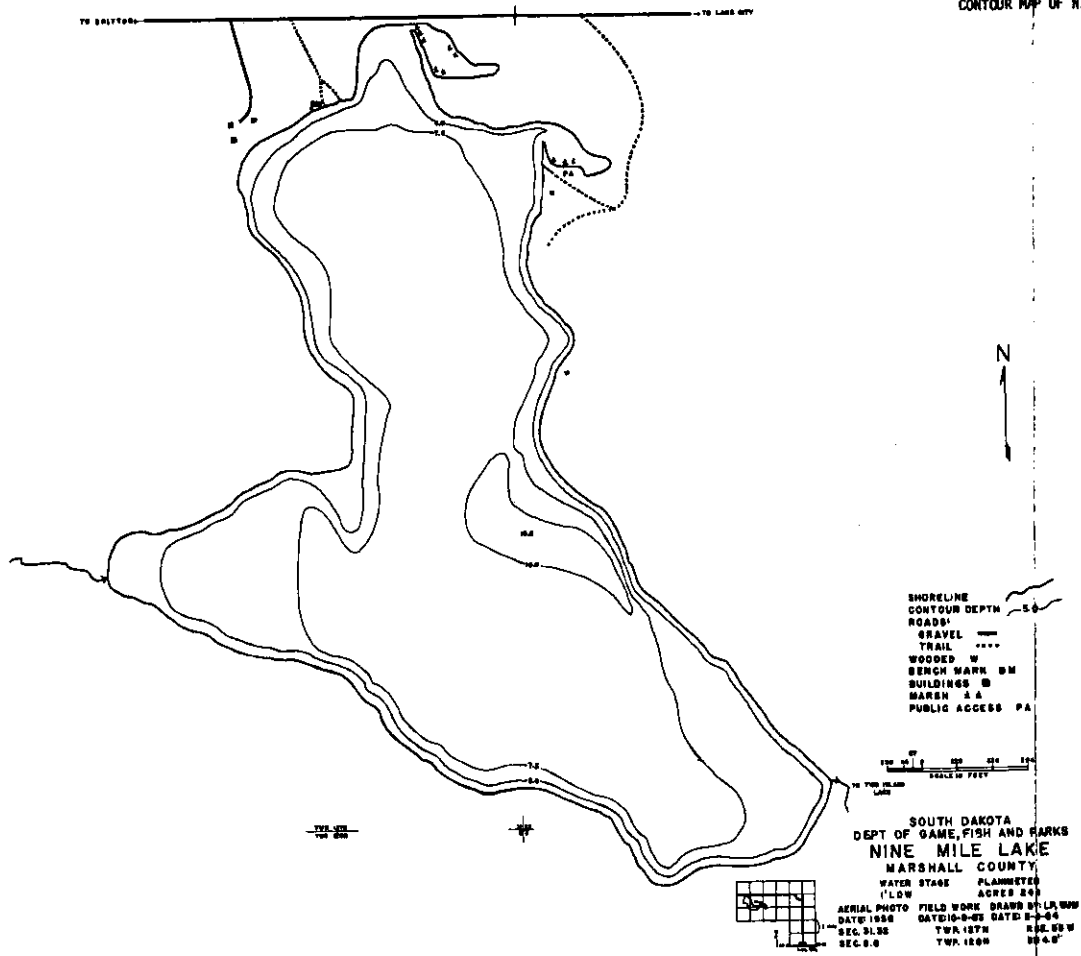


Figure 3 b
NON CONTRIBUTING DRAINAGE WITHIN
NINE MILE LAKE DRAINAGE BASIN

Figure 4
CONTOUR MAP OF NINE MILE LAKE



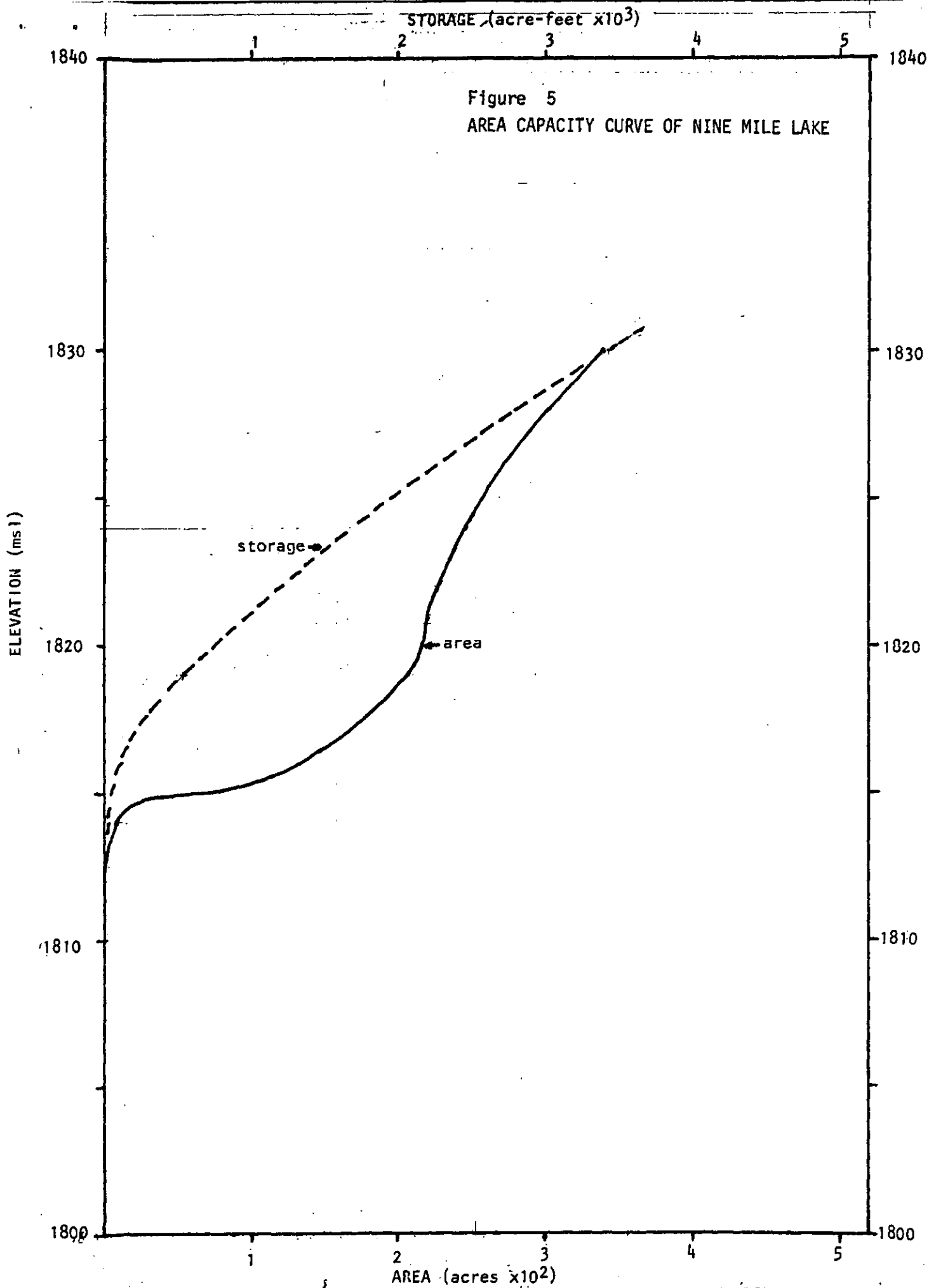
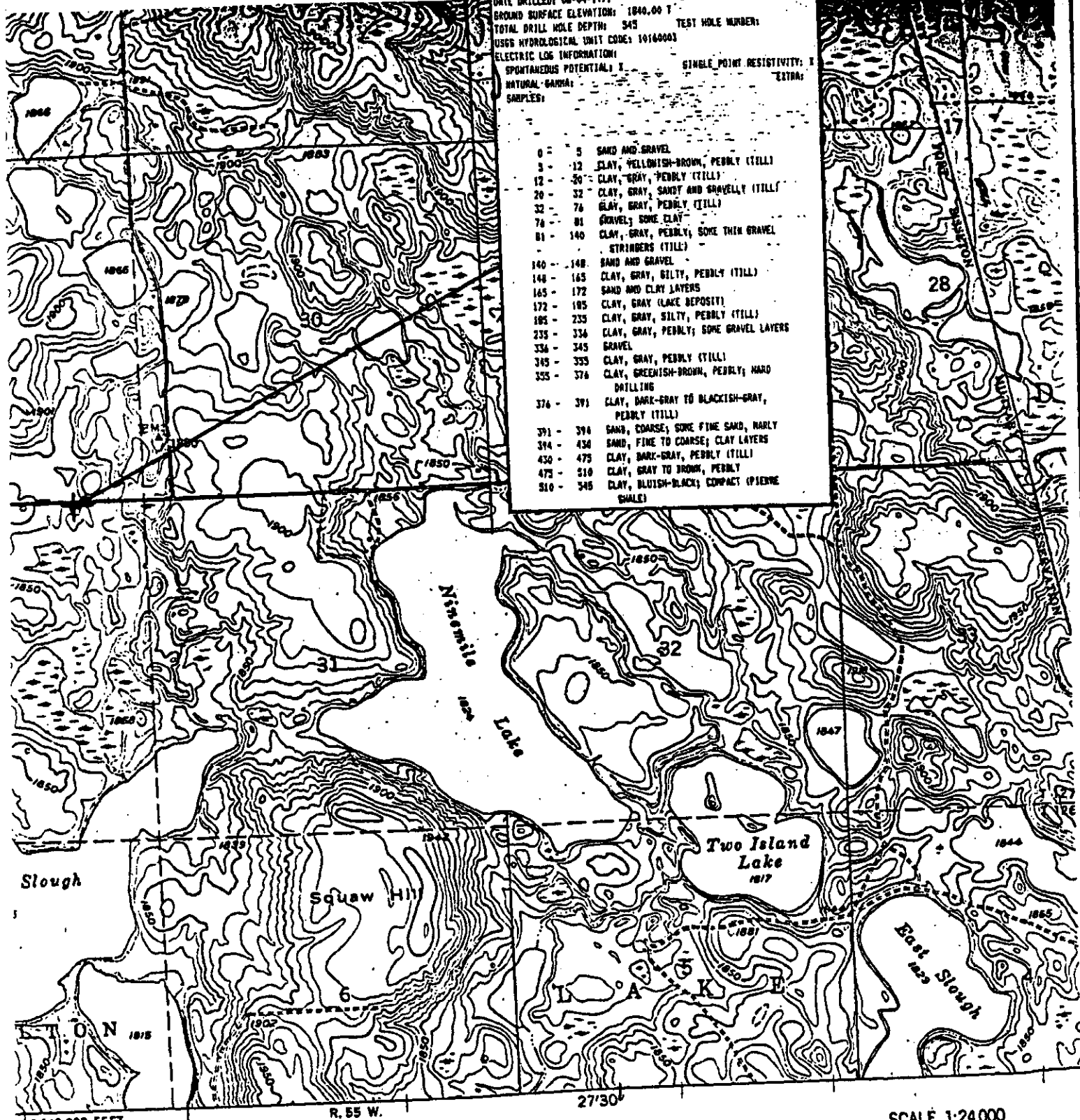


Figure 6

WELL LOG AND LOCATION OF SDGS TEST HOLE

COUNTY: MARSHALL
 LEGAL LOCATION: NW 1/4 SEC. 34, T. 37 N., R. 54 W.
 LATITUDE: 45.4631
 LONGITUDE: 97.2919
 LAND OWNER:
 PROJECT: MARSHALL COUNTY STUDY
 DRILLING COMPANY: SDGS
 DRILLER:
 GEOLOGIST: H. KOCH
 DATE DRILLED: 08-04-1971
 GROUND SURFACE ELEVATION: 1840.00
 TOTAL DRILL HOLE DEPTH: 545
 TEST HOLE NUMBER:
 USGS HYDROLOGICAL UNIT CODE: 10160003
 ELECTRIC LOG INFORMATION:
 SPONTANEOUS POTENTIAL: X
 NATURAL GAMMA: X
 SAMPLES:
 DRILLER'S LOG:
 GEOLOGIST'S LOG:
 DRILLING METHOD: ROTARY
 SINGLE POINT RESISTIVITY: X
 EXTRA:

0 - 5 SAND AND GRAVEL
 5 - 12 CLAY, YELLOWISH-BROWN, PEBBLY (TILL)
 12 - 20 CLAY, GRAY, PEBBLY (TILL)
 20 - 32 CLAY, GRAY, SANDY AND GRAVELLY (TILL)
 32 - 76 CLAY, GRAY, PEBBLY (TILL)
 76 - 81 GRAVEL, SOME CLAY
 81 - 140 CLAY, GRAY, PEBBLY, SOME THIN GRAVEL
 STRINDERS (TILL)
 140 - 148 SAND AND GRAVEL
 148 - 165 CLAY, GRAY, SILTY, PEBBLY (TILL)
 165 - 172 SAND AND CLAY LAYERS
 172 - 185 CLAY, GRAY (LAKE DEPOSIT)
 185 - 235 CLAY, GRAY, SILTY, PEBBLY (TILL)
 235 - 334 CLAY, GRAY, PEBBLY, SOME GRAVEL LAYERS
 334 - 345 GRAVEL
 345 - 355 CLAY, GRAY, PEBBLY (TILL)
 355 - 376 CLAY, GREENISH-BROWN, PEBBLY, HARD
 DRILLING
 376 - 391 CLAY, DARK-GRAY TO BLACKISH-GRAY,
 PEBBLY (TILL)
 391 - 394 SAND, COARSE, SOME FINE SAND, HARD
 394 - 434 SAND, FINE TO COARSE, CLAY LAYERS
 434 - 475 CLAY, DARK-GRAY, PEBBLY (TILL)
 475 - 510 CLAY, GRAY TO BROWN, PEBBLY
 510 - 545 CLAY, BLuish-BLACK, COMPACT (PIEDMONT
 SHALE)



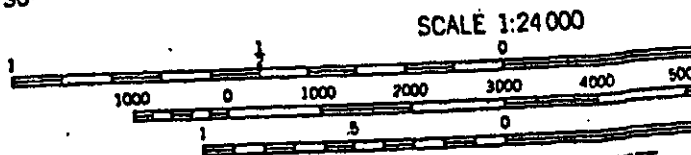
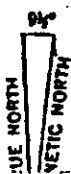
d, and published by the Geological Survey
 Department of the Interior program
 pment of the Missouri River Basin

and USC&GS

aerial photographs by photogrammetric methods
 is taken 1956. Field check 1958

ion. 1927 North American datum

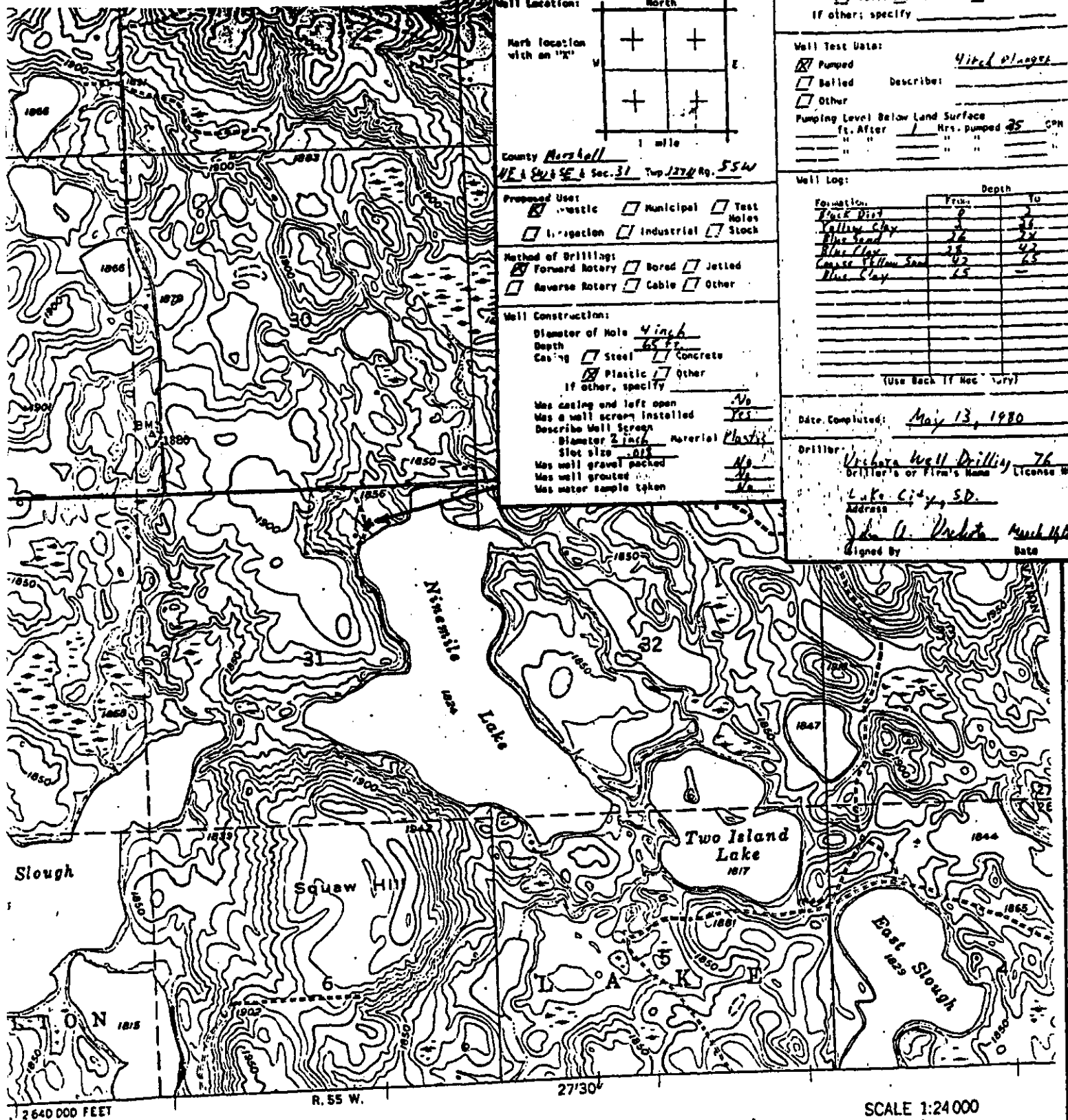
South Dakota coordinate system.



SCALE 1:24 000
 CONTOUR INTERVAL 10 FEET
 DATUM IS MEAN SEA LEVEL

Figure 7

WELL LOG AND LOCATION OF WILLIAM SPIRY DOMESTIC WELL



Well Owner:
Name A. William Spiry
Address Britton, S.D.

Well Location:
North
Mark location with an "X"
1 mile

County Marshall
NE 1/4 Sec. 31 Twp. 127 N. R. 55 W.

Proposed Use:
☒ Domestic ☐ Municipal ☐ Test
☐ Irrigation ☐ Industrial ☐ Stock

Method of Drilling:
☒ Forward Rotary ☐ Bored ☐ Jetted
☐ Reverse Rotary ☐ Cable ☐ Other

Well Construction:
Diameter of Hole 4 inch
Depth 65 ft.
Casing ☐ Steel ☐ Concrete
☒ Plastic ☐ Other
If other, specify _____
Was casing and left open No
Was a well screen installed Yes
Describe Well Screen
Diameter 2 inch Material Plastic
Slot size 0.01
Was well gravel packed No
Was well grouted No
Was water sample taken No

Water Level Information:
Static water level 35 below land surface
if flowing: closed in pressure PSI
rate of flow GPM
Controlled by:
☐ Valve ☐ Reducers ☐ Other
If other, specify _____

Well Test Data:
☒ Pumped 416 gal. per min.
☐ Bailed Describe: _____
☐ Other _____
Pumping Level Below Land Surface
ft. After 1 Hrs. pumped 35 GPM

Well Log:

Formation	From	To
Black Dirt	0	10
Yellow Clay	10	25
Blue Sand	25	35
Blue Clay	35	45
Coarse Yellow Sand	45	65
Blue Clay	65	

(Use Back if Not Necessary)

Date Completed: May 13, 1980
Driller: Vickery Well Drilling 76
Driller's or Firm's Name License No.
Lake City, S.D.
Address
John W. Vickery March 1978
Signed By Date

and published by the Geological Survey
Department of the Interior program
ment of the Missouri River Basin
and USC&GS
erial photographs by photogrammetric methods
is taken 1956. Field check 1958
ion. 1927 North American datum

91°
TRUE NORTH
MAGNETIC NORTH

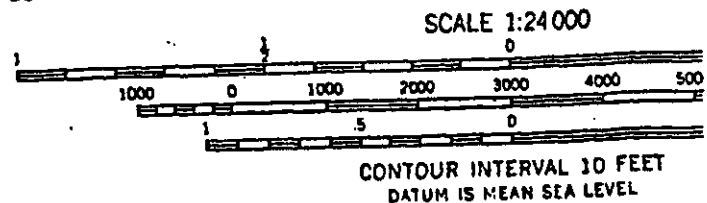


Figure 8
SOIL COVER ON NINE MILE LAKE DRAINAGE
BASIN



PRECIPITATION INPUT PI TERM OF ANNUAL HYDROLOGIC BUDGET

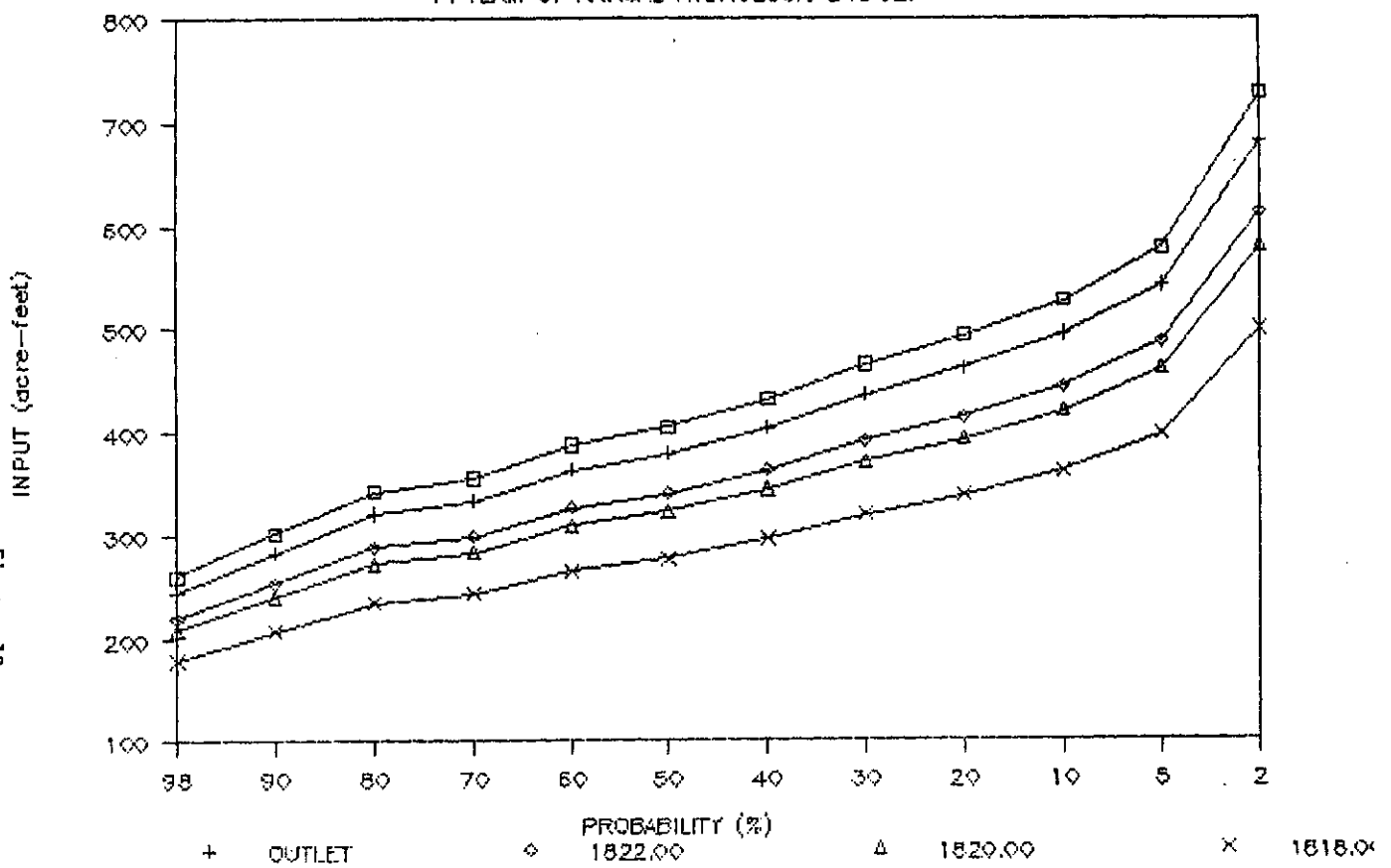


Figure 10
PI TERM OF THE ANNUAL HYDROLOGIC BUDGET

EVAP. TERM of ANNUAL HYDROLOGIC BUDGET

ASSUMING AVERAGE EVAP. of 33 in./yr.

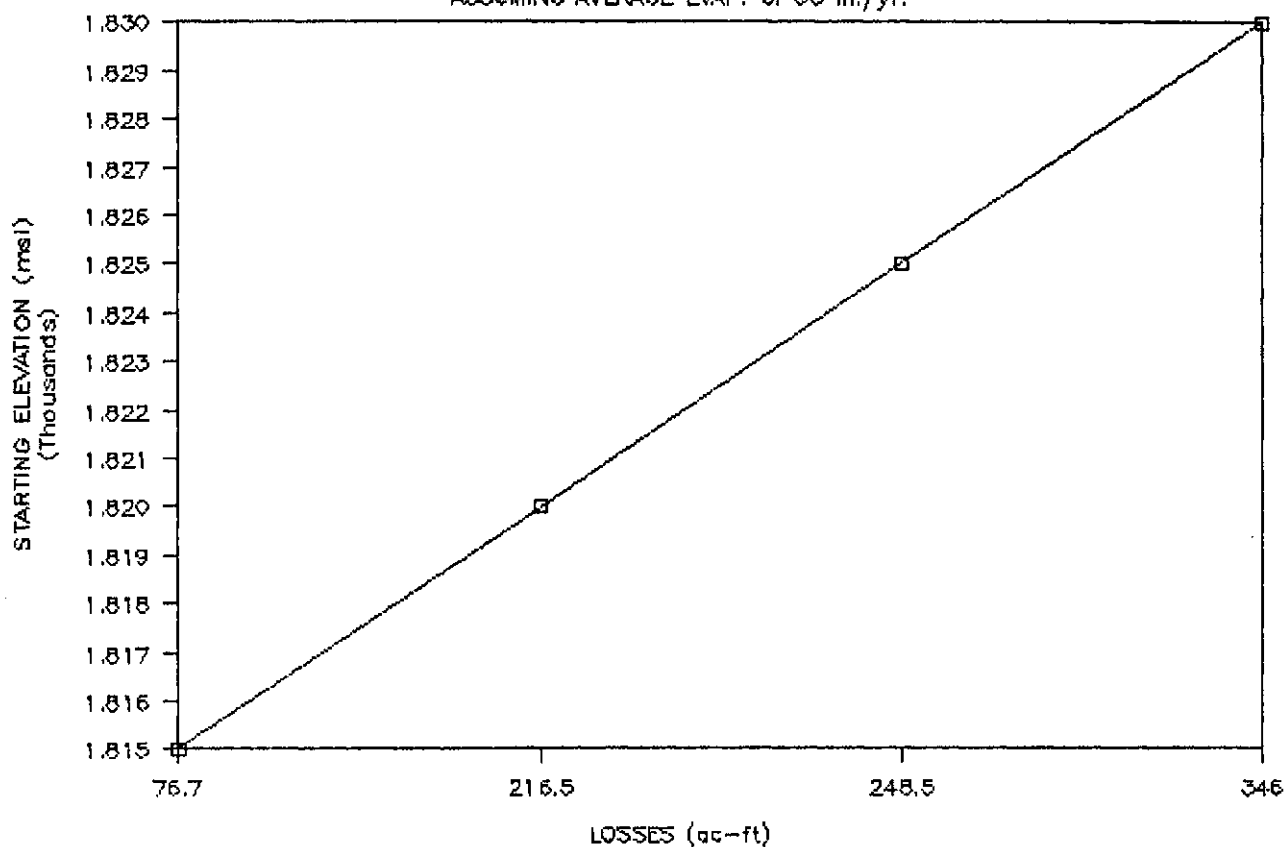


Figure 11
E TERM OF THE ANNUAL HYDROLOGIC BUDGET

**SOUTH DAKOTA DEPARTMENT OF WATER AND NATURAL RESOURCES
WATER QUALITY DATA**

Sampler KEVIN FUHLER Project NINE MILE Agency Code 200301

Received in Lab by AKG Date & Time 9/24/86 C900

Station Identification _____

Site Location NINE MILE LAKE MARSHALL CO T R Sec. 0

STORET Number _____

Name of Water _____

Nearest Town BRITTON

Date 22 SEPT 86

Time 6:00PM

Type of Sample CRAP

Sample Depth _____

FIELD ANALYSES Duplicate

Water Temperature	11°F	10°F	°F	°C	Visual Observations
Air Temperature	21°F	20°F	°F	°C	Precip — n l m h
Conductivity/°C	94	Micromho			Wind — c m s
Flow	61				Odor — y n
Secchi Disk	78	meters			Septic — y n
Alkalinity to pH 4.5	431	mgCaCO ₃ /l			Dead Fish — y n
Dissolved Oxygen	300	mg/l			Film — y n
pH	400	su			Turbidity — y n
					Width —
					Water Depth —
					Ice Cover —
					Color —

BILLING CODE	LAB ANALYSES	PRESERVATIVE		BOTTLE A	BOTTLE B	BOTTLE C	UNIT
		LAB METHOD "A"	LAB METHOD "B"				
	Fecal Coliform	31616	31615				/100 ml
	Conductivity/°C	95		719/25°			Micromho
	BOD5	310					mg/l
	Lab pH	403		8.36			su
	Alkalinity (P)	415		2.0			mg/l
	Alkalinity (T)	410		171			mg/l
	HCO ₃	440					mg/l
	T. Solids	500		590			mg/l
	T. Diss. Solids	70300		532			mg/l
	T. Susp. Solids	530		58			mg/l
	Hardness-CaCO ₃	900					mg/l
	Ca	916	915				mg/l
	Mg	927	925				mg/l
	Na	929	930				mg/l
	K	937	935				mg/l
	Cl	940					mg/l
	SO ₄	945	946				mg/l
	Ammonia-N	610	608		0.04		mg/l
	NO ₃ -NO ₂ -N	630	631		<0.1		mg/l
	TRN-N	625	623		0.74		mg/l
	Total PO ₄ -P	665			0.092		mg/l
	Ortho PO ₄ -P	70507	671	<0.005			mg/l

METALS - Preservative Used

As	1002	ug/l
Cd	1027	ug/l
Cr	1034	ug/l
Cu	1042	ug/l
Pb	1051	ug/l

FIELD COMMENTS:

Figure 12
WATER QUALITY OF NINE MILE LAKE
(September 22, 1986)

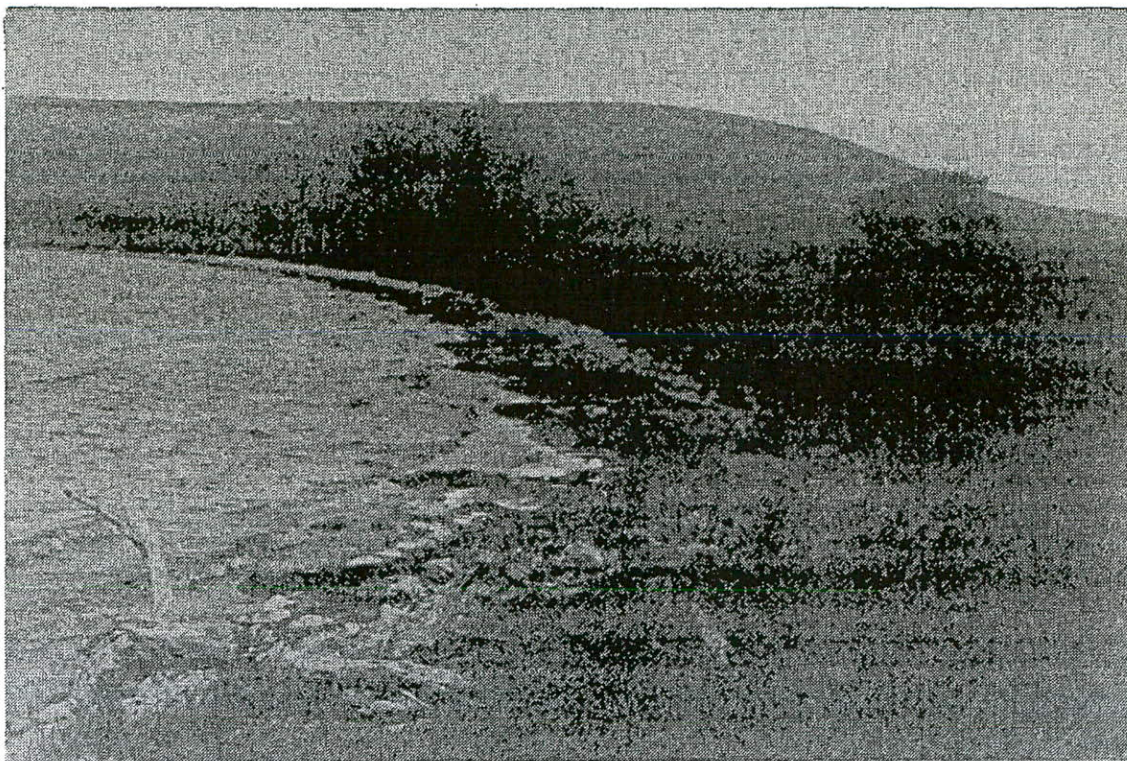
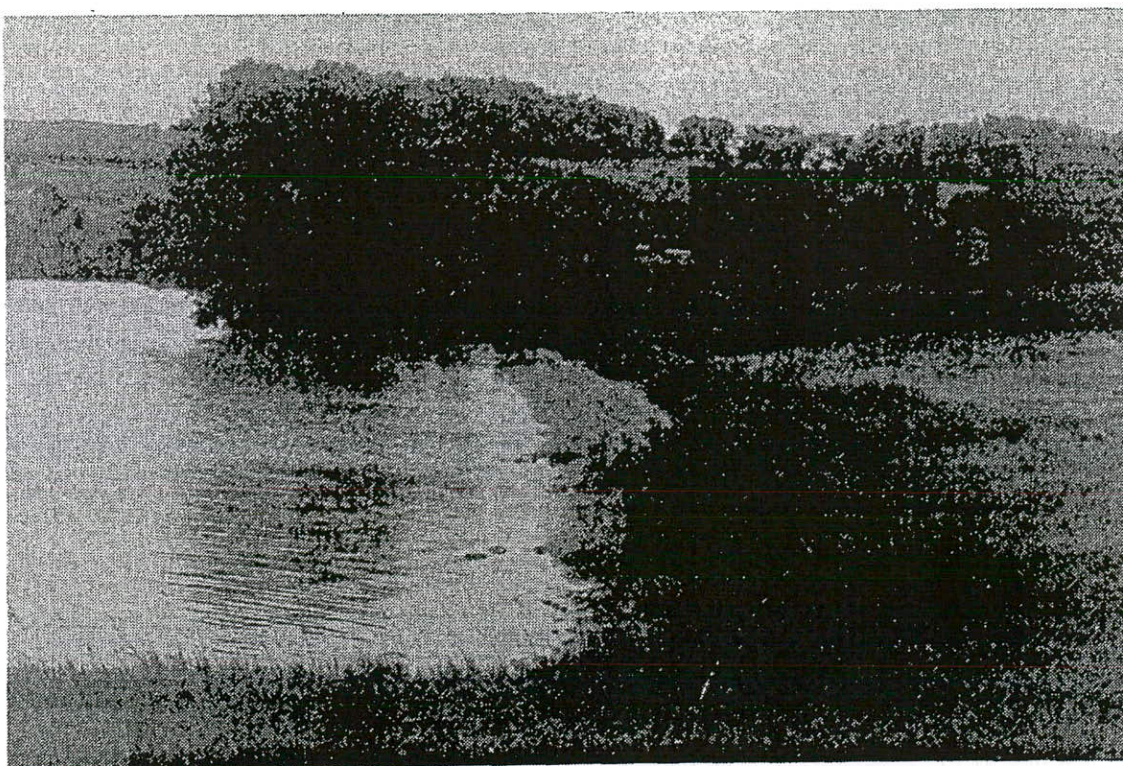


Photo #1

OUTLET



SAND BEACH ON NORTH-WEST SIDE OF LAKE AT INLET
Photo #2 ELEVATION OF BEACH SCARPMENTS TOE = 1825.4

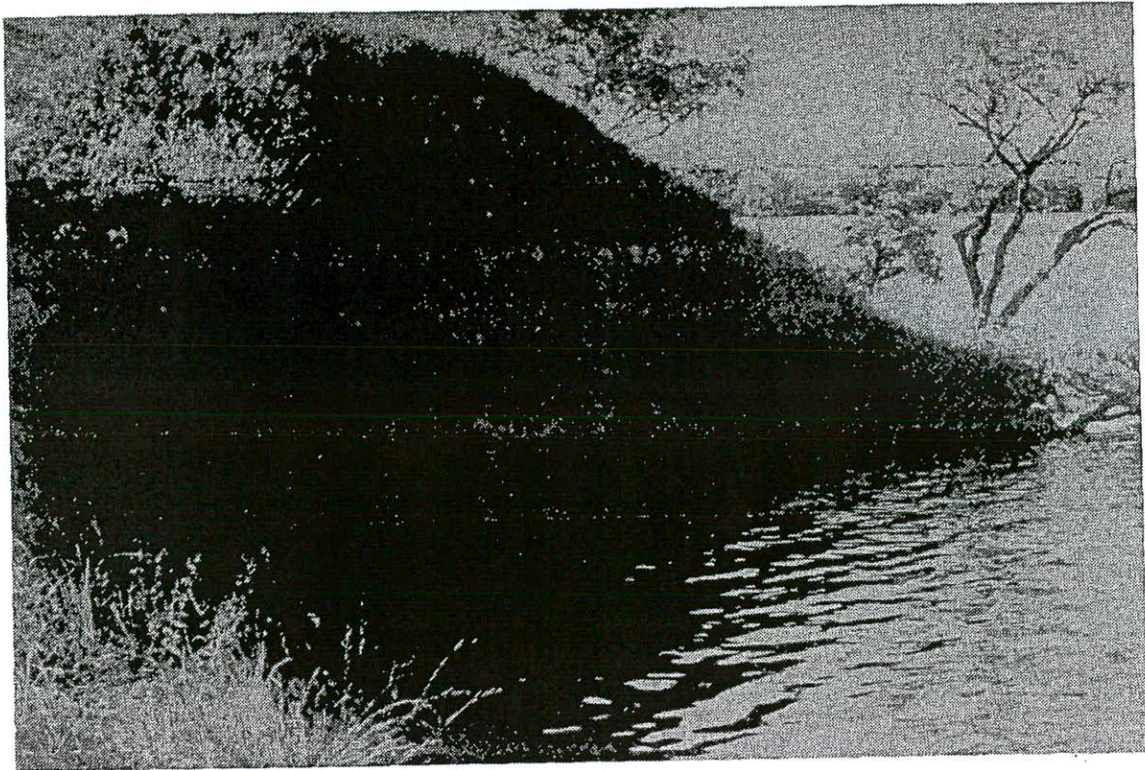


Photo #3 STEEP BANK OF GLACIAL TILL AT WATERS EDGE



Photo #4 BOULDER LINE AND TREE FRINGE

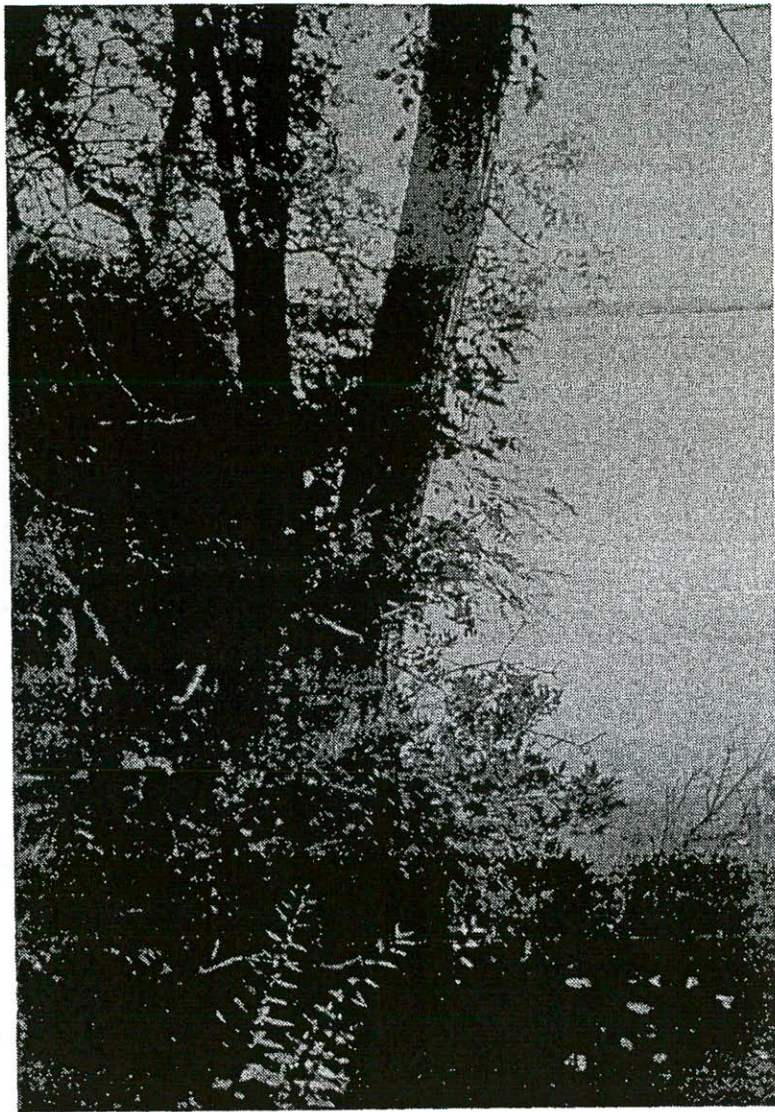


Photo #5 TREES GROWING AT OR BELOW OHWM



Photo #6 WASHED EXPOSED ROOTS UP TO 1826.29

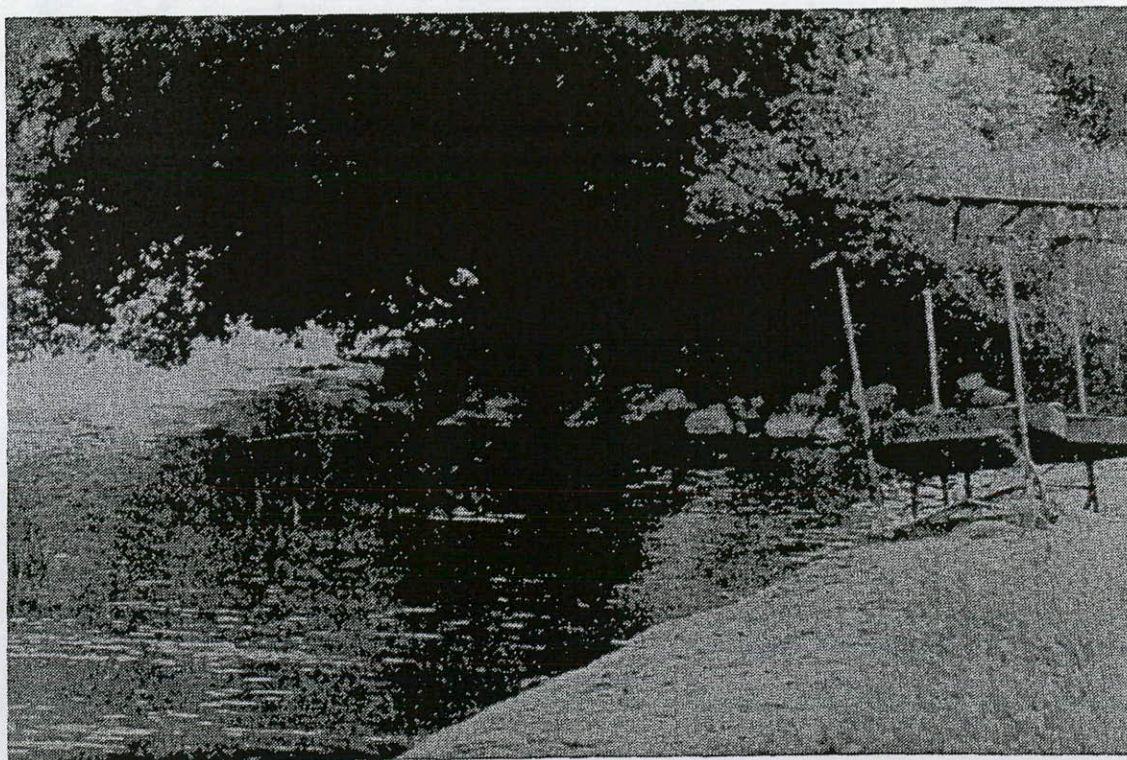


Photo #7 WEATHERING LINE ON BOULDERS
ELEVATION = 1825.5

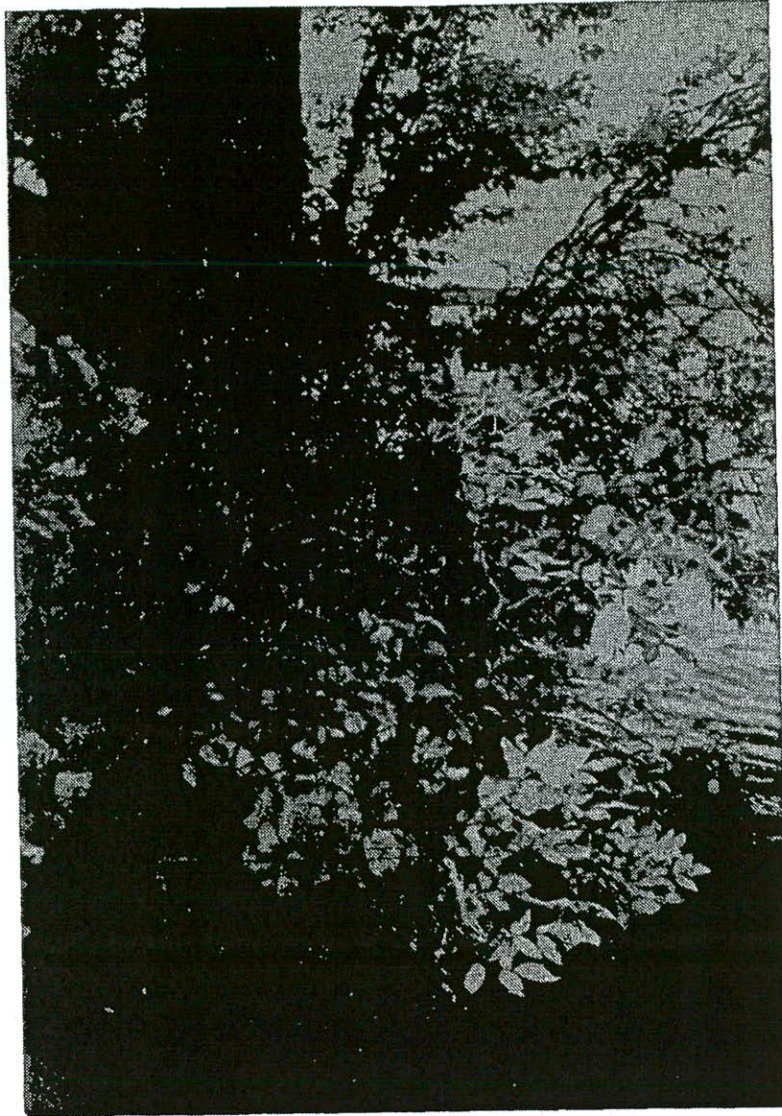
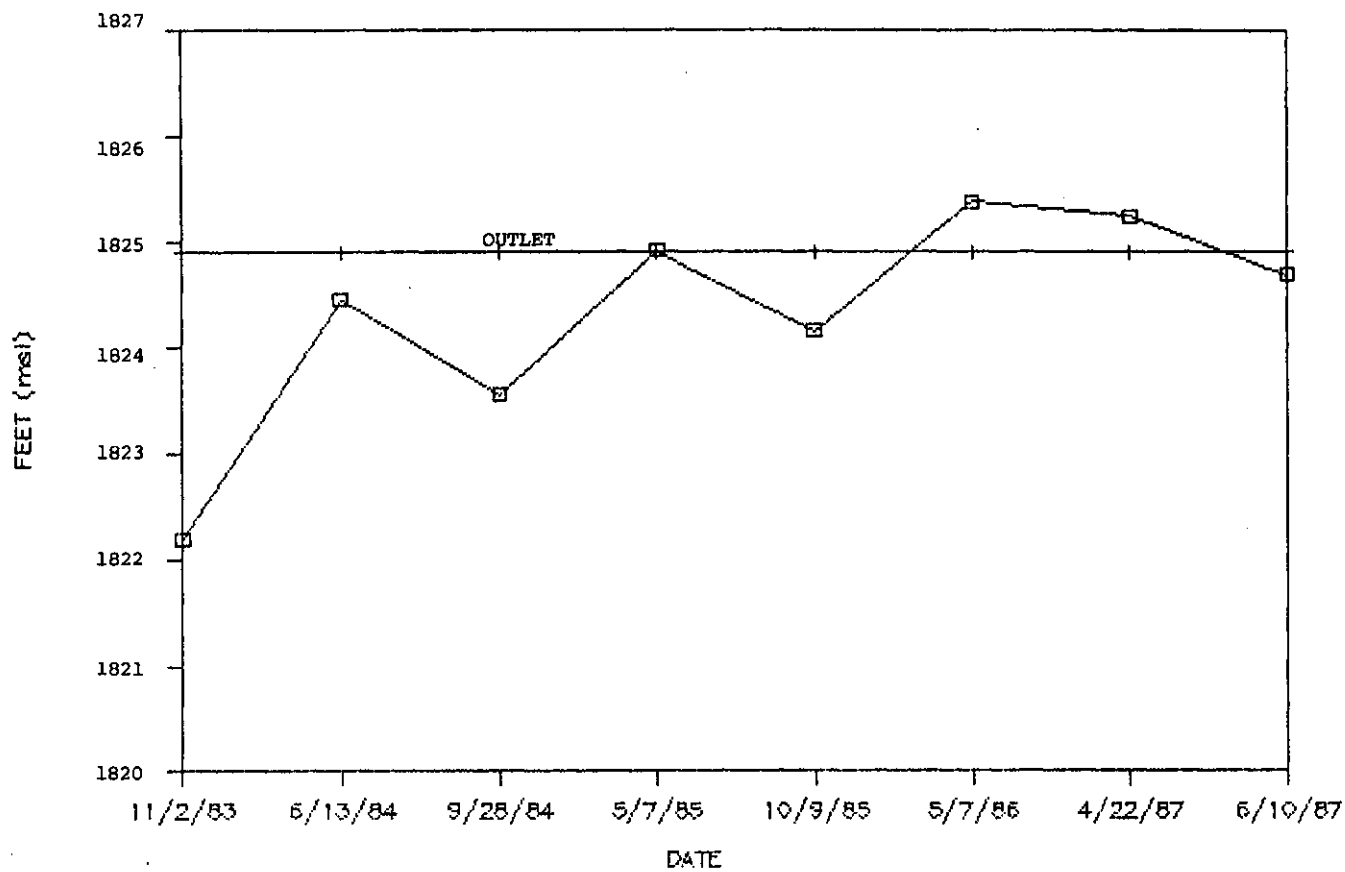


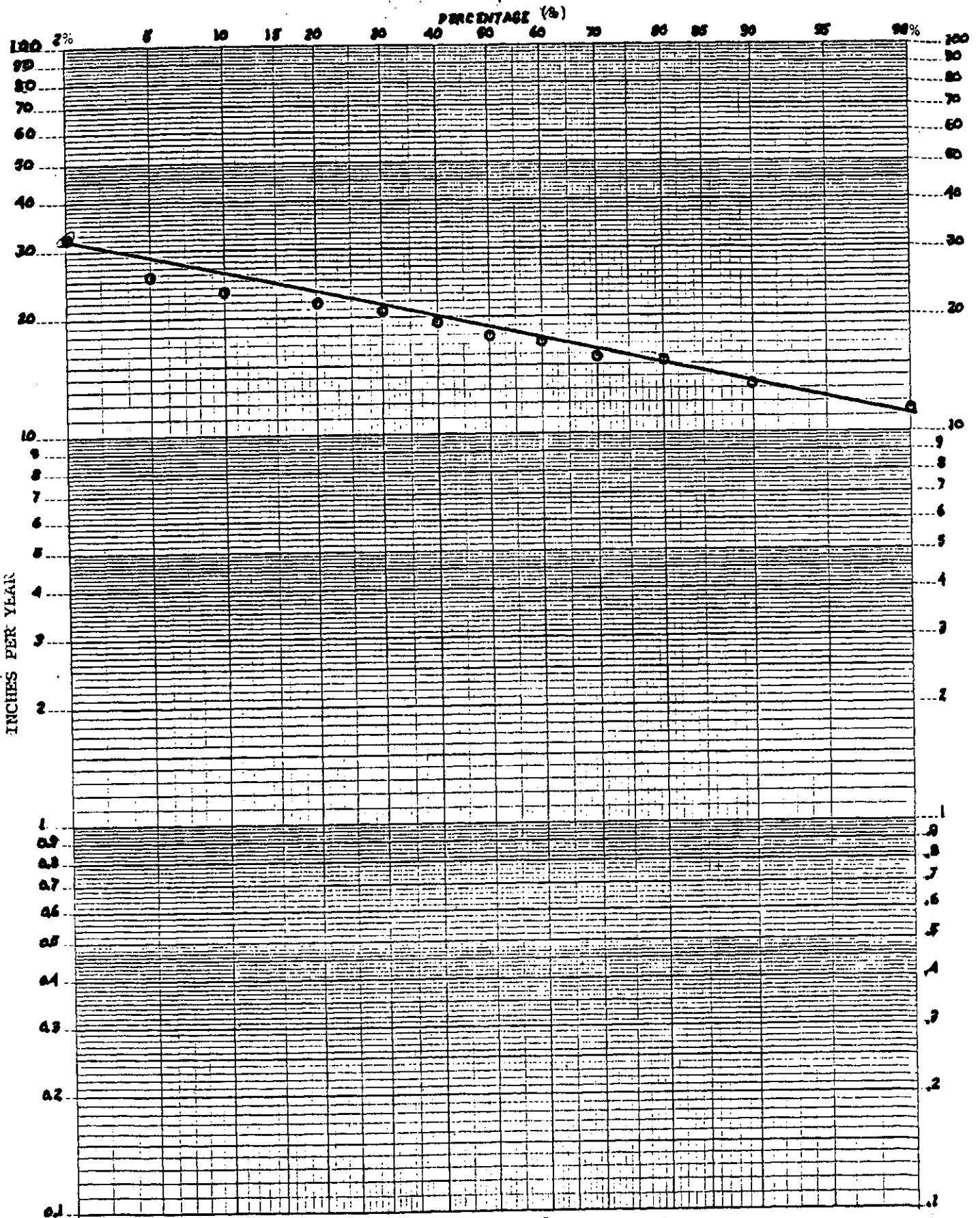
Photo #8
80 YEAR OLD ELM TREE TROWING ABOVE OHWM

STAGE ELEVATIONS



GRAPH #1
HISTORICAL TRENDS OF NINE MILE LAKE

PRECIPITATION PROBABILITY

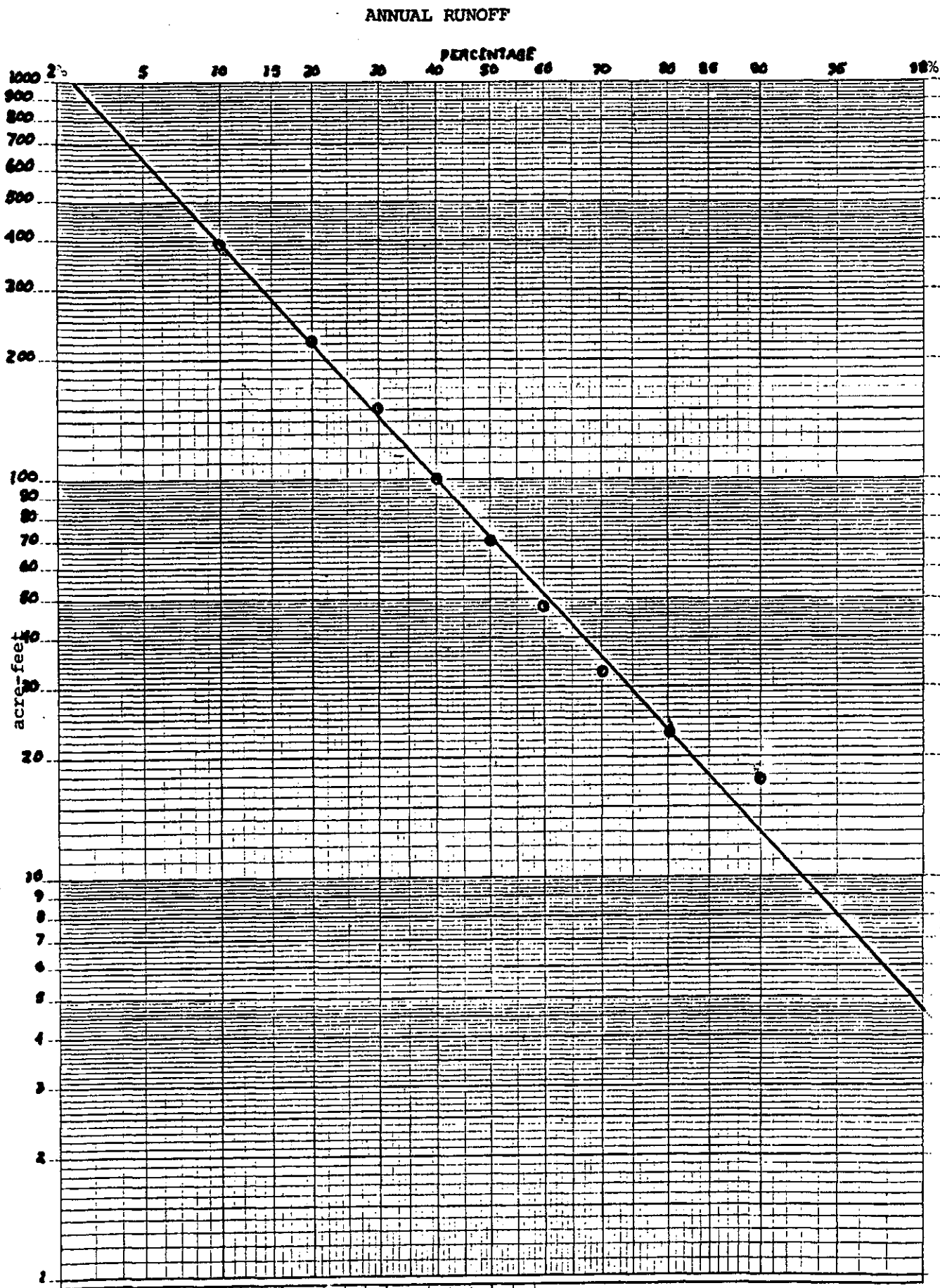


GRAPH #2
PRECIPITATION PROBABILITY

46 8082

46 8082

REPRODUCED FROM A JOURNAL OF THE
KLEINFELDER & ESSER CO. IN 1974



GRAPH #3 A
ANNUAL RUNOFF PROBABILITY

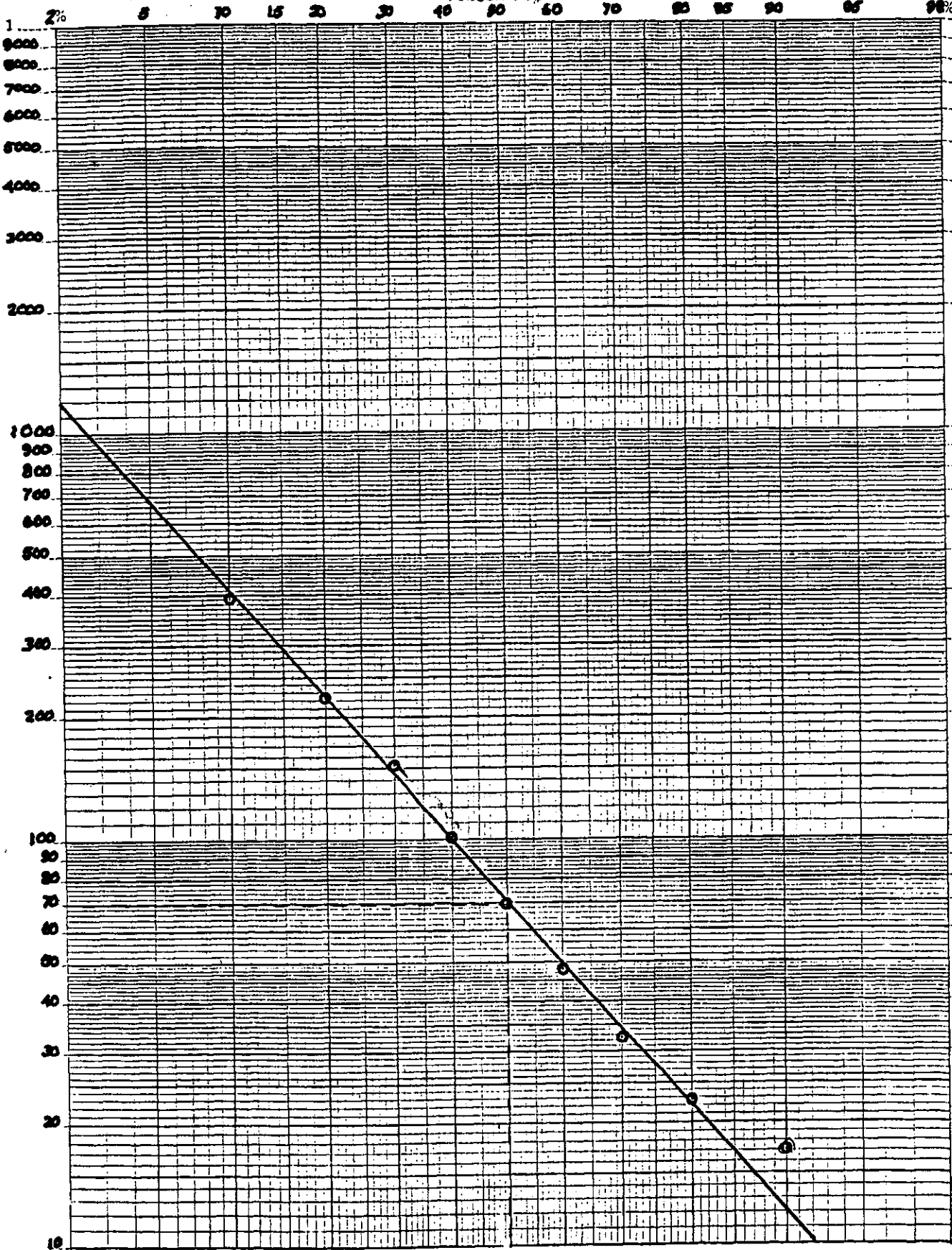
ANNUAL RUNOFF

PERCENTAGE

46 8082

PROBABILITY X 3 LOG CYCLES
KLUFFEL & ESSER CO. MADE IN U.S.A.

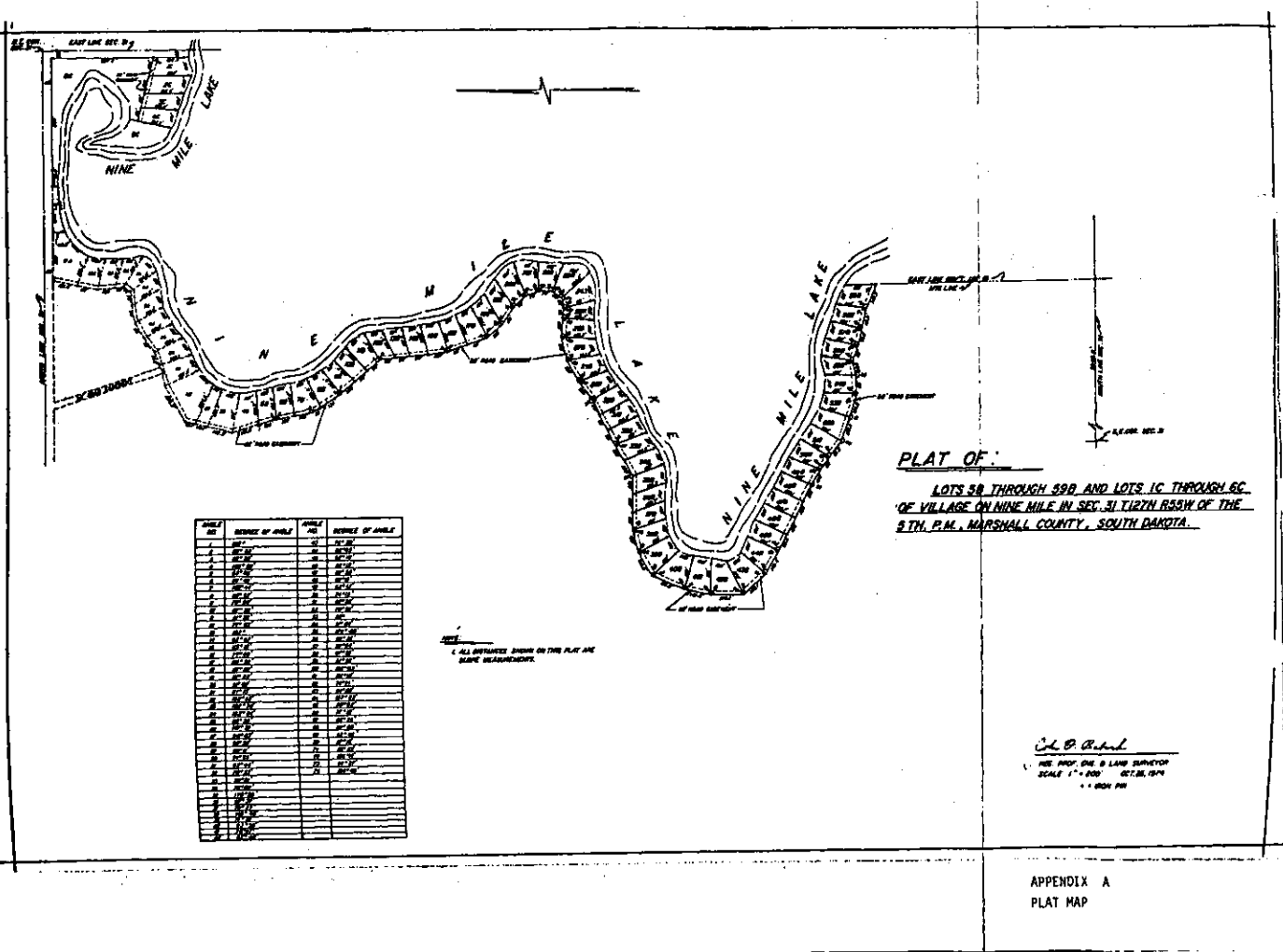
acre-feet



GRAPH #3 B

ANNUAL RUNOFF PROBABILITY

Book 3- Page 53



NORTH LINE SEC. 31

EASEMENT

MILE NINE

L A K E

PLAT OF

LOTS 10A, 11A, 12A
AND 4B OF VILLAGE ON N
R55W OF THE 5TH P.M.,
SOUTH DAKOTA.

John D. Bate

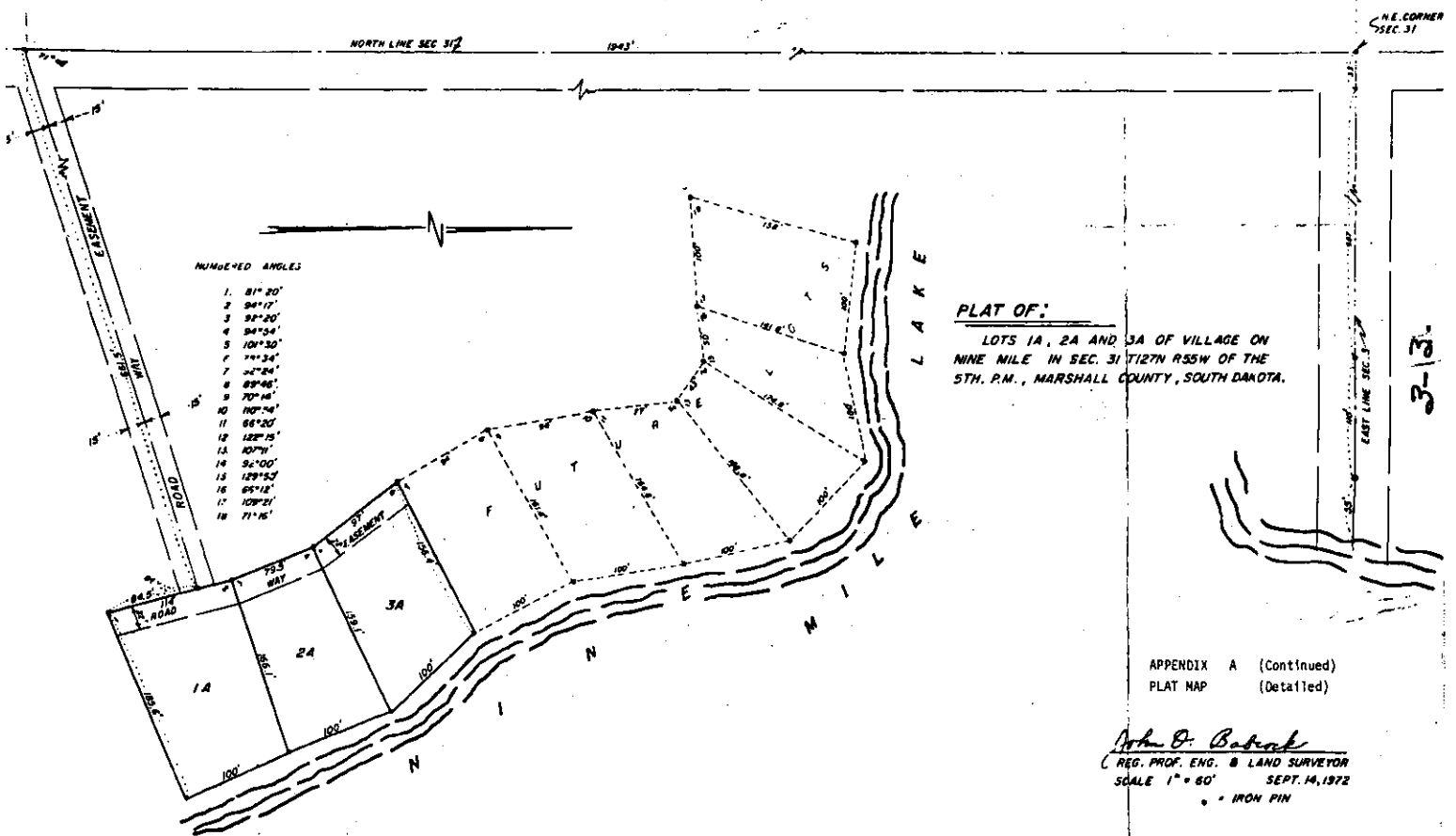
REG. PROF. ENG. & LAND SURVEYOR
AUG. 21, 1975

• IRON PIN

LOTS 10A, 11A, 12A AND LOTS 1B, 2B, 3B
AND 4B OF VILLAGE ON NINE MILE IN SEC. 31 T127N
R55W OF THE 5TH P.M., MARSHALL COUNTY,
SOUTH DAKOTA.

John D. Bate
REG. PROF. ENG. & LAND SURVEYOR
AUG 21, 1975
• • IRON PIN

APPENDIX A (Continued)
PLAT MAP (Detailed)



NUMBERED ANGLES

- 1 81° 20'
- 2 84° 15'
- 3 82° 20'
- 4 94° 15'
- 5 104° 30'
- 6 79° 15'
- 7 52° 24'
- 8 89° 48'
- 9 70° 14'
- 10 140° 34'
- 11 68° 10'
- 12 122° 15'
- 13 107° 11'
- 14 92° 00'
- 15 129° 30'
- 16 66° 18'
- 17 103° 19'
- 18 71° 18'

NORTH LINE SEC. 31-7

1943

N.E. COR.
SEC. 31

PLAT OF:

LOTS 4A, 5A, 6A, 7A, 8A & 9A OF VILLAGE ON
NINE MILE IN SEC. 31, T127N R55W OF THE 5TH.
R.M., MARSHALL COUNTY, SOUTH DAKOTA.

John O. Bakke

REG. PROF. ENG. & LAND SURVEYOR
SCALE 1" = 60' JUNE 18, 1973

APPENDIX A (Continued)
PLAT MAP (Detailed)

3-8

AGENDA

WATER MANAGEMENT BOARD MEETING September 9 & 10, 1987

Place: Room 216, Joe Foss Building, Pierre SD
Scheduled hearing times are estimates and may be delayed due to prior agenda items

September 9

- 8:30 am** Call to Order
Approval of July 8, 1987 minutes
Set March meeting place and date (March 2 & 3, 1988 in Pierre suggested)
Status and review of water rights litigation-Harold Deering and John Guhin
- 8:45 am** Consideration of Proposed Revisions to the Safety of Dams Rules
- 9:00 am** Administer Oath to Water Rights Staff
Cancellation Considerations
Extension of Time Request - Water Permit No. 1754-2, Earl Stombaugh
- 9:15 am** Consideration of Refusal to Comply With Well Construction Standards by Grosz Drilling Company - Terry Grosz
- 9:30 am** Consider Request for Special Water Management Board Meeting to Consider Water Permit Application No. 5146-3, City of Pierre
- 9:45 am** Break
- 10:00 am** Introduction of Water Rights Staff, Board and Legislative Oversight Committee
Consideration of New Permit Applications and Vested Right Validations
Consider Withdrawal of Water Permit Application Nos. 4170-3, David Doolittle; 3890-3, Larry Freeland; and 3304-3, Lloyd Meyer
Reconsideration of Water Permit Application No. 3090-3, Floyd E Timm - Deferred Status Since May 26, 1977
Consider Water Permit Application No. 5137-3, Huron Dressed Beef, Inc;
Cancellation of Water Permit No. 2680-3, Huron Dressed Beef, Inc;
Withdrawal of Water Permit Application No. 4900-3, Huron Dressed Beef, Inc.
- 10:30 am** Consider Establishing the Ordinary High Water Mark, Setting the Outlet Elevation and Amending Vested Water Right Claim No. 940-3 for Nine Mile Lake
- 11:00 am** Consider Withdrawal of Water Permit Application No. 4666-3, Leo Holzbauer
- 12:00 noon** Lunch
- 1:00 pm** Consideration of Findings of Fact, Conclusions of Law and Final Decision on:
1) Denial of Vested Water Right Claim No. 2020-2, Donald A Drake
Cancellation of Water Right Filing No. 0524-2, Golden West Mining Co.
2) Approval of Water Permit Application No. 5120-3, City of Iroquois
3) Cancellation of Water Right Filing No. 0501-1, Henry Bruch, et.al.
- Recess**

Rules Chapter 74:02:08, Safety of Dams prior to construction of the dam for review and approval. A breach analysis and downstream flood routing report shall be completed prior to determining the hazard classification for the dam.

2. Approval of this Permit authorizes storage of up to 58.9 acre feet of water annually.

Mr. Freeman MOVED, SECONDED by Mrs. Loucks that Water Permit Application Nos. 1393-1, 1396-1, 1398-1, 2024-2, 2026-2, 2312A-3, 2728A-3, 3317A-3, 3558A-3, 5127A-3, 5133-3, 5141-3, 5142-3, 5143-3, 5145-3 be APPROVED with the staff recommended qualifications. MOTION CARRIED.

Vested Right Validations

466A-1, Arvid Magnuson, Spearfish SD

Application is for validation of a vested right claim to store 18 acre-feet of water in a dam with a claimed priority date of March 21, 1948. Water is diverted to the dam from the Redwater Irrigation Association ditch and two artesian wells authorized by Water Right No. 466-1 to irrigate 377 acres. This vested right claim does not authorize irrigation of lands in addition to irrigated acreages authorized by Water Right No. 466-1 and the Redwater Irrigation Association coverage area.

5140-3, Marv's Truckstop and Cafe, Bath SD

Application is for validation of a vested right claim to appropriate 0.037 cfs from one well 900 to 1100 feet deep. The water use has a claimed priority date of January 1, 1947 and is used as a commercial water supply for Marv's Truckstop and Cafe.

Mr. Rollag MOVED, SECONDED by Mr. Rickenbach Vested Water Right Claim Nos. 466A-1 and 5140-3 be VALIDATED. MOTION CARRIED.

Readvertisements

2016-2, Wayne Peterson-Peterson & Sons, Inc., Edgemont SD

This notice is a readvertisement to correct the claimed priority date which is January 3, 1905 not June 1, 1904 as originally advertised on April 8 and 15, 1987.

Mr. Rickenbach MOVED, SECONDED by Mr. Freeman that Water Permit No. 2016-2 be APPROVED. MOTION CARRIED.

Ordinary High Water Mark - Nine Mile Lake

Ken Buhler presented the report prepared on the Ordinary High Water Mark Investigation of Nine Mile Lake (copy on file). Mr. Buhler stated no objections have been received on the proposed elevations. Personal notice was sent to all of the landowners.

Mr. Hatch stated that the Department of Game, Fish and Parks has advised that the Department has no objections to the proposed elevations.

Mr. Lloyd MOVED, SECONDED by Mr. Brink:

1. That the Ordinary High Water Mark for Nine Mile Lake be established at an elevation of 1825.5 fmsl.

2. That the outlet elevation for Nine Mile Lake is established at 1824.9 fmsl and that Vested Water Right Claim No. 940-3 be amended to establish the outlet elevation at 1824.9 fmsl.
3. That Vested Right Claim No. 940-3 be amended to correct the amount of water claimed from "as required to fill lake to outlet level-approximately 210 acre-feet annually" to "sufficient water to fill Nine Mile Lake annually to the outlet elevation 1824.9 fmsl".
4. That Vested Right Claim No. 940-3 be amended to add the following qualification "that a concrete outlet structure be installed to assure retention of the outlet at elevation 1824.9 fmsl."

MOTION CARRIED.

Consider Withdrawal of Water Permit Application No. 4666-3, Leo Holzbauer

Mr. Duvall stated that Water Permit Application No. 4666-3 was originally deferred by the board pending receipt of completed soil/water approval in 1981. Since that time No. 4666-3 was amended to change the location of the diversion point and subsequently soil/water approval was granted. Permit No. 4666A-3 was approved at the last meeting. At that time Permit No. 4666-3 should have been withdrawn because it had been advertised.

Mr. Freeman MOVED, SECONDED by Mr. Lloyd that Water Permit Application No. 4666-3 be WITHDRAWN. MOTION CARRIED.

Findings of Fact, Conclusions of Law and Final Decision

Cancellation of Water Right Filing No. 0501-1, Henry Bruch

Mr. Guhin stated he agreed with the proposed editorial changes suggested by staff.

Mr. Freeman MOVED, SECONDED by Mr. Brink to ADOPT the Proposed Changes to Proposed Findings of Fact, Conclusions of Law and Final Decision as prepared by staff attorney. MOTION CARRIED.

Mr. Brink MOVED, SECONDED by Mr. Lloyd to ADOPT the Findings of Fact, Conclusions of Law and Final Decision as AMENDED. MOTION CARRIED.

Meeting recessed at 3:30 pm.

Meeting reconvened at 9:00 am, September 10, 1987.

Consideration of Proposed Rules

74:02:28 Underground Storage Tanks (UST)

Steve Pirner, Office Administrator of the Office of Water Quality gave a brief history of the chain of events and process that led to the Proposed Rules.

Bill Markley, Office of Water Quality gave a brief overview of underground and aboveground tanks and problems faced in the past. Mr. Markley stated the staff had two addition changes to the proposed draft. Referring to the Federal Register prepared by EPA (copy on file), EPA refers to "independent corrosion



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SOUTH DAKOTA

**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

JOE FOSS BUILDING
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PIERRE, SOUTH DAKOTA 57501-3182
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Memo to File

Nine Mile Lake in Marshall County

VWR No. 940-3

The OHWM was set by the Water Management Board on September 9 & 10, 1987.

OHWM elevation 1825.5 fmsl NGVD29

The outlet elevation was set by the Water Management Board on September 9 & 10, 1987.

Outlet elevation 1824.9 fmsl NGVD29