

AD-A086 184

NEW YORK STATE DEPT OF ENVIRONMENTAL CONSERVATION ALBANY F/8 13/13
NATIONAL DAM SAFETY PROGRAM. ERIEVILLE RESERVOIR DAM (INVENTORY--ETC (11)
JUN 80 6 KOCH

DACN51-79-C-0001

NL

UNCLASSIFIED

1-11-87

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

AD-A086 184

END
DATE
8-80
DTIC

54

LEVEL II

OSWEGO RIVER BASIN

⑦

ADA 086184

ERIEVILLE RESERVOIR DAM

MADISON COUNTY, NEW YORK

INVENTORY NO. N.Y. 369

**PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM**



**APPROVED FOR PUBLIC RELEASE;
DISTRIBUTION UNLIMITED
CONTRACT NO. DACW-51-79-C0001**

THIS DOCUMENT IS BEING RELEASED PRACTICALLY
THE COPY FOR THE PUBLIC CONTAINS A
SIGNIFICANT NUMBER OF PAGES WHICH DO NOT
REPRODUCE LEGIBLY.

**DTIC
ELE
JUL 07 1980
E**

DDC FILE COPY

NEW YORK DISTRICT CORPS OF ENGINEERS

MARCH, 1980

80 7 3 104

DISCLAIMER NOTICE

**THIS DOCUMENT IS BEST QUALITY
PRACTICABLE. THE COPY FURNISHED
TO DTIC CONTAINED A SIGNIFICANT
NUMBER OF PAGES WHICH DO NOT
REPRODUCE LEGIBLY.**

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
AD-AC86 284		
4. TITLE (and Subtitle) Phase I Inspection Report Erieville Reservoir Dam Oswego River Basin, Madison County, NY Inspection No. NY 369		5. TYPE OF REPORT & PERIOD COVERED Phase I Inspection Report National Dam Safety Program
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) George Koch, P.E.		8. CONTRACT OR GRANT NUMBER(s) DACW-51-79-C-0001
9. PERFORMING ORGANIZATION NAME AND ADDRESS New York State Department of Environmental Conservation 50 Wolf Road Albany, NY 12233		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS 11) 3 2 1 1
11. CONTROLLING OFFICE NAME AND ADDRESS New York State Department of Environmental Con- servation/ 50 Wolf Road Albany, New York 12233		12. REPORT DATE 2 June 1980
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Department of the Army 26 Federal Plaza/ New York District, CofE New York, New York 10007		13. NUMBER OF PAGES
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; Distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20; if different from Report) National Dam Safety Program Erieville Reservoir Dam (Inventory Number NY 369), Oswego River Basin, Madison County, New York, Phase I Inspection Report		
18. SUPPLEMENTARY NOTES Madison County, New York, Phase I Inspection Report		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Dam Safety National Dam Safety Program Visual Inspection Hydrology, Structural Stability Erieville Reservoir Dam Madison County Nelson		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report provides information and analysis on the physical condition of the dam as of the report date. Information and analysis are based on visual inspection of the dam by the performing organization. Inspection of this dam revealed that there are a number of deficiencies on this structure some of which are rather serious. Further analysis is required to evaluate and remedy these deficiencies.		

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED 315970
SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

→The most serious of these deficiencies are the two areas of seepage on the downstream slope of the northern section of the dam. Investigations into the causes and possible treatments for these wet areas should be commenced within 3 months of the date of the notification of the owner. Remedial measures on these areas should be completed within 12 months.

→The hydrologic/hydraulic analyses performed indicate that the outflows from the Probable Maximum Flood (PMF) will result in the dam being overtopped. The outflows from one-half of the PMF will not result in the dam being overtopped. Therefore, the spillway capacity is rated as inadequate. However, since the outflows from one half the PMF will result in flow around the southwestern end of the embankment, further investigation is required to determine the effects of this condition. Investigation of this problem should be commenced within 3 months and appropriate remedial actions should be completed within 12 months.

→The valves for the service spillway pipes are located at the downstream end of the two pipes. This is an undesirable situation since the pipes are constantly subjected to a pressure head. The existing valves should be removed and replaced by valves at the upstream end of the pipes. ←

Until remedial measures are taken on the wet areas, the water surface in the reservoir should be maintained at a level several feet below the auxiliary spillway crest.

There were a number of other deficiencies noted on this structure. Trees and brush were growing on the downstream slope. There were two depressed sections of riprap on the upstream face. There was a swampy area and a small pond beyond the downstream toe on the southwestern end of the dam. These deficiencies should be corrected within 12 months of the date of notification.

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Investigations. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general condition of the dam is based upon available data and visual inspections. Detailed investigation, and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Investigation; however, the investigation is intended to identify any need for such studies.

In reviewing this report, it should be realized that the reported condition of the dam is based on observations of field conditions at the time of inspection along with data available to the inspection team. In cases where the reservoir was lowered or drained prior to inspection, such action, while improving the stability and safety of the dam, removes the normal load on the structure and may obscure certain conditions which might otherwise be detectable if inspected under the normal operating environment of the structure.

It is important to note that the condition of a dam depends on numerous and constantly changing internal and external conditions, and is evolutionary in nature. It would be incorrect to assume that the present condition of the dam will continue to represent the condition of the dam at some point in the future. Only through frequent inspections can unsafe conditions be detected and only through continued care and maintenance can these conditions be prevented or corrected.

Phase I inspections are not intended to provide detailed hydrologic and hydraulic analyses. In accordance with the established Guidelines, the Spillway Test flood is based on the estimated "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

Accession For	
NTIS GRA&I	☒
DDC TAB	☐
Unannounced	☐
Justification	
By _____	
Distribution/_____	
Availability Codes	
Dist	Availand/or special
A	23 Q7D

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
ERIEVILLE RESERVOIR DAM I.D. No. NY 369
#93D-553
OSWEGO RIVER BASIN
MADISON COUNTY, NEW YORK

TABLE OF CONTENTS

	<u>PAGE NO.</u>
- ASSESSMENT	-
- OVERVIEW PHOTOGRAPH	-
1 PROJECT INFORMATION	1
1.1 GENERAL	1
1.2 DESCRIPTION OF PROJECT	1
1.3 PERTINENT DATA	3
2 ENGINEERING DATA	4
2.1 GEOTECHNICAL DATA	4
2.2 DESIGN RECORDS	4
2.3 CONSTRUCTION RECORDS	4
2.4 OPERATION RECORDS	4
2.5 EVALUATION OF DATA	4
3 VISUAL INSPECTION	5
3.1 FINDINGS	5
3.2 EVALUATION OF OBSERVATIONS	6
4 OPERATION AND MAINTENANCE PROCEDURES	7
4.1 PROCEDURE	7
4.2 MAINTENANCE OF DAM	7
4.3 WARNING SYSTEM IN EFFECT	7
4.4 EVALUATION	7

	<u>PAGE NO.</u>
5 HYDRAULIC/HYDROLOGIC	8
5.1 DRAINAGE AREA CHARACTERISTICS	8
5.2 ANALYSIS CRITERIA	8
5.3 SPILLWAY CAPACITY	8
5.4 RESERVOIR CAPACITY	9
5.5 FLOODS OF RECORD	9
5.6 OVERTOPPING POTENTIAL	9
5.7 EVALUATION	10
6 STRUCTURAL STABILITY	11
6.1 EVALUATION OF STRUCTURAL STABILITY	11
7 ASSESSMENT/RECOMMENDATIONS	12
7.1 ASSESSMENT	12
7.2 RECOMMENDED MEASURES	12

APPENDIX

- A. PHOTOGRAPHS
- B. VISUAL INSPECTION CHECKLIST
- C. HYDROLOGIC/HYDRAULIC ENGINEERING DATA AND COMPUTATIONS
- D. SUBSURFACE BORING LOGS
- E. REFERENCES
- F. DRAWINGS

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam: Erieville Reservoir Dam (I.D. No. NY 369)
State Located: New York
County: Madison
Watershed: Oswego River Basin
Stream: Unnamed Tributary of Chittenango Creek
Date of Inspection: November 29, 1979

ASSESSMENT

Inspection of this dam revealed that there are a number of deficiencies on this structure some of which are rather serious. Further analysis is required to evaluate and remedy these deficiencies.

The most serious of these deficiencies are the two areas of seepage on the downstream slope of the northern section of the dam. Investigations into the causes and possible treatments for these wet areas should be commenced within 3 months of the date of the notification of the owner. Remedial measures on these areas should be completed within 12 months.

Until remedial measures are taken on the wet areas, the water surface in the reservoir should be maintained at a level several feet below the auxiliary spillway crest.

The hydrologic/hydraulic analyses performed indicate that the outflows from the Probable Maximum Flood (PMF) will result in the dam being overtopped. The outflows from one-half of the PMF will not result in the dam being overtopped. Therefore, the spillway capacity is rated as inadequate. However, since the outflows from one half the PMF will result in flow around the southwestern end of the embankment, further investigation is required to determine the effects of this condition. Investigation of this problem should be commenced within 3 months and appropriate remedial actions should be completed within 12 months.

The valves for the service spillway pipes are located at the downstream end of the two pipes. This is an undesirable situation since the pipes are constantly subjected to a pressure head. The existing valves should be removed and replaced by valves at the upstream end of the pipes.

There were a number of other deficiencies noted on this structure. Trees and brush were growing on the downstream slope. There were two depressed sections of riprap on the upstream face. There was a swampy area and a small pond beyond the downstream toe on the southwestern end of the dam. These deficiencies should be corrected within 12 months of the date of notification.

George Koch

George Koch
Chief, Dam Safety Section
New York State Department
of Environmental Conservation
NY License No. 45937

--
Approved By:

Clark H. Benn

Col. Clark H. Benn
New York District Engineer

Date:

7 June 80

OVERVIEW
ERIEVILLE RESERVOIR DAM
I.D. No. NY 369



ERIEVILLE RESERVOIR DAM
(TUSCARORA LAKE DAM)
I.D. No. NY 369
#93D-553
OSWEGO RIVER BASIN
MADISON COUNTY, N.Y.

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase I inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers, to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367.

b. Purpose of Inspection

This inspection was conducted to evaluate the existing conditions of the dam, to identify deficiencies and hazardous conditions, to determine if these deficiencies constitute hazards to life and property, and to recommend remedial measures where required.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam

The Erieville Reservoir (also known as Tuscarora Lake) Dam is an earth dam with a gated service spillway and a masonry auxiliary spillway channel.

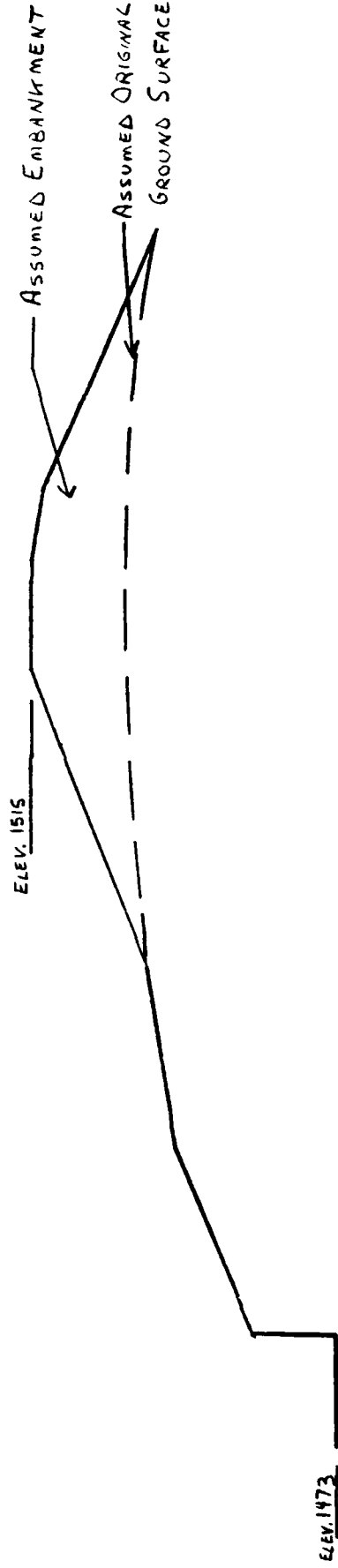
The dam is a total of 2,000 feet long. The main embankment section extends from the northern end of the dam to the auxiliary spillway channels. This section is about 900 feet long and a maximum of 25 feet high. The remaining portion of the dam extends from the auxiliary spillway, around a 90 degree bend in the embankment, and to the southwestern end of the dam (at Erieville Road). This section is 1100 feet long and about 10 feet high. Typical sections for each of these segments are shown on the next page. These sections indicate what has been assumed to be the division between the dam embankment and the natural ground surface. The crest of the dam is 15 feet wide. The embankment slopes on both sections are 1 vertical on 2.75 horizontal on the upstream face and vary from 1 on 2.5 to 1 on 3.5 on the downstream face. The flatter downstream slopes occur on the lower portions of the embankment. The lower portion of the upstream face is lined with riprap.

The service spillway consists of two 20 inch diameter pipes, each controlled by a valve. There is a gatehouse at the downstream toe of the dam which houses the two valves and their control mechanism. The invert elevation of these two pipes may be low enough to permit them to be used as a reservoir drain. However, the exact elevations were not available for the preparation of this report.

ERIEVILLE RESERVOIR DAM N.Y. 369

NORTHERN EMBANKMENT SECTION

SCALE 1"=20'



SOUTHERN EMBANKMENT SECTION



The auxiliary spillway is an ungated masonry channel which passes through the center of the dam. The rectangular channel is 20 feet wide and has high vertical sidewalls. A 1.5 foot high concrete wall with a 4 foot wide opening in the center has been placed across the inlet to the channel, effectively raising the crest of a portion of the spillway. There are provisions to place stop logs across the 4 foot wide opening. A row of steel sheet piling driven along the upstream face of the spillway acts as a cutoff wall. The wall extends across the spillway and approximately 25 feet beyond either end of the spillway. A bridge composed of steel beams and a wood plank deck crosses the top of the auxiliary spillway channel at the elevation of the embankment crest.

b. Location

The Erieville Reservoir Dam is located in the town of Nelson on Erieville Road (County Route 67). The hamlet of Nelson is located approximately four miles north of the dam.

c. Size Classification

The dam is 25 feet high and has a maximum storage capacity of 10,362 acre-feet. Therefore, the dam is in the intermediate size category as defined by the Recommended Guidelines for Safety Inspection of Dams.

d. Hazard Classification

The dam is classified as "high" hazard due to the presence of several county roads and five houses downstream of the dam.

e. Ownership

The dam is owned by the New York State Department of Transportation, Waterways Maintenance Subdivision. It is located in DOT - Region 2, whose headquarters are in Utica, New York. The addresses of the Main Office and the Regional Office area as follows:

New York State DOT
Main Office-State Campus
1220 Washington Avenue
Albany, New York 12232
Mr. Joseph Stellato
Director
(518)457-4420

New York State DOT
Region 2 Office
Utica State Office Building
207 Genesee Street
Utica, New York 13501
Frank W. Jennings
Regional Waterways Maintenance Engineer
(315)797-6120

f. Purpose of Dam

The dam was constructed to provide water for the Erie Canal. The reservoir is still used to feed water to the DOT Barge Canal, and is now also used for recreational purposes.

g. Design and Construction History

The dam was completed in 1850. The auxiliary spillway channel was reconstructed in the early 1950's. A set of plans for these modifications were available in the Utica DOT office.

h. Normal Operating Procedures

Stop logs are placed across the opening of the auxiliary spillway to increase storage capacity during the Barge Canal's operating season. Water is then released as required for the canal through the operation of the service spillway gates.

1.3 PERTINENT DATA

a. <u>Drainage Area (sq. mi.)</u>	5.31
b. <u>Discharge at Dam</u>	(cfs)
Service Spillway 1515	232
Service Spillway 1507.5	212
Auxiliary Spillway with stop logs 1515	1364
Auxiliary Spillway without stop logs 1515	1372
c. <u>Elevation (USGS Datum)</u>	
Top of Dam	1515.0
Auxiliary Spillway - with stop logs	1507.5
Auxiliary Spillway - without Stop logs	1506.0
Invert of Service Spillway Outlet	1470±
d. <u>Reservoir - Surface Area</u>	(@ Elev.) (acres)
Top of Dam	1515 477
Auxiliary Spillway Crest	1507.5 378
Auxiliary Spillway Crest	1506 362
e. <u>Storage Capacity</u>	(@ Elev.) (acre-feet)
Top of Dam	1515 10362
Auxiliary Spillway Crest	1507.5 7162
Auxiliary Spillway Crest	1506 6609

f. Dam

Embankment Type: Earth fill with riprap on upstream slope
Embankment Length (ft): 2000
Slope (V:H) Upstream 1 on 2.75
 Downstream varies from 1 on 2.5 to 1 on 3.5
Crest Width: 15 feet

g. Service Spillway

Type: Two 20 inch diameter cast iron pipes controlled by valves on outlet end. May also act as a reservoir drain.

h. Auxiliary Spillway

Type: Masonry rectangular channel with high sidewalls. Channel has a 4 foot wide notch whose crest elevation is 1506.0. There are provisions for stop logs across this notch. Above elevation 1507.50 and also downstream the channel is 20 feet wide steel sheet piling cutoff wall located across inlet to spillway channel. Steel beam bridge with wood plank deck crosses the auxiliary spillway channel.

i. Reservoir Drain - see Service Spillway.

j. Appurtenant Structures

Gatehouse - Circular masonry building containing control mechanism for the two service spillway valves. Spillway discharges beneath gatehouse.

Erieville Road - asphalt concrete paved surface and had gravel shoulders, 50 feet wide. On the reservoir side, vertical stone block wall; natural high ground on the opposite side of the road.

SECTION 2: ENGINEERING DATA

2.1 GEOTECHNICAL DATA

a. Geology

The Erieville Reservoir Dam is located in the Susquehanna Hills section of the Glaciated Alleghany Plateau physiographic province of New York State. This plateau is underlain by a great thickness of sedimentary rocks from the Devonian Era which lie almost horizontal. Severe trenching by streams and glacial erosion has carved the upland into a rugged terrain. The Susquehanna Hills rise to elevations of 1700 to 2000 feet between the rolling relatively narrow valleys. The surficial soils and features of the area are the result of glaciations during the Cenozoic Era, the last of which was the Wisconsin glaciation.

b. Subsurface Investigations

No subsurface records from the original construction of the dam were available. Four drill holes have been progressed during the past year on the northern end of the dam. Information concerning these subsurface investigations have been included in Appendix F. DOT had also installed plastic pipe in the four drill holes to convert them into water observation holes. Water level readings in these holes are taken weekly.

2.2 DESIGN RECORDS

No information was available concerning the design of the dam. A plan which served as a guide for the reconstruction of the auxiliary spillway channel in 1951 was available in the DOT Utica office.

2.3 CONSTRUCTION RECORDS

No information was available concerning the original construction of the dam. A detailed plan of the dam and the area immediately downstream was prepared in 1978 by DOT and has been included in Appendix F.

2.4 OPERATION RECORDS

Reservoir level readings and gate opening data are taken several times each week. Records are kept in the Regional Waterways Maintenance Office in Utica.

2.5 EVALUATION OF DATA

The data presented in this report was obtained from the Department of Environmental Conservation files and from the Department of Transportation Regional Waterways Maintenance Office in Utica. While information concerning the dam was somewhat limited, it appears that the available data was reliable and adequate for Phase I.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of the Erieville Reservoir Dam was conducted on November 29, 1979. The weather at the time of the inspection was clear and the temperature was in the mid-thirties. At the time of the inspection, one valve on the service spillway was completely closed and the other was open approximately 1 inch. The water level in the reservoir at the time of the inspection was approximately 3 feet below the auxiliary spillway crest (water surface at elevation 1504.5).

b. Embankment

Inspection of the embankment and the slope beyond the downstream toe revealed several deficiencies. There were two areas on the slope below the main embankment section (northern end of dam), where clear water seepage was observed. One of these areas was along the laid up stone wall near the gatehouse at the toe of the natural slope. Concentrated flows were emerging from beneath the wall in several locations. The other area of seepage was adjacent to the auxiliary spillway channel approximately midway down the channel. The ground was wet and soft in this area and water was flowing through the side wall of the spillway. Both of these wet areas were beyond the toe of the embankment and in what is believed to be the natural soil. Several plastic pipes had been installed on this slope by DOT to act as observation wells.

The downstream slope on the other segment of the dam has some brush and trees growing on it. Several animal burrow holes were observed on this slope. In addition, the area beyond the toe of this segment is somewhat wet and swampy. There was a small pond located a short distance beyond the downstream toe near the point where the embankment takes a 90 degree bend.

On the upstream side, there were several areas where the slope was irregular. Riprap had been displaced or removed in several areas. There were two areas where there were substantial depressions in the riprap. These areas were each about 40 feet long and they were located on the southwestern segment of the embankment (not the main section). Finally, there were potholes and other minor irregularities in the road along the crest of the embankment.

c. Service Spillway

Visual inspection of the service spillway was limited to observations which could be made from within the gatehouse. Since the valves to the two spillway pipes were located at the outlet end of the pipes, inspection of the pipes was impossible. The valves were each operated at the time of the inspection. One valve appeared to be in satisfactory condition but the other valve was in need of repair. When this valve was opened, water spurted up through the control mechanism. The more the valve was opened, the worse the leakage became. The gatehouse itself and the outlet channel for the service spillway were in satisfactory condition.

d. Auxiliary Spillway

The auxiliary spillway channel was in satisfactory condition. Mortar was in place on most joints on the sidewalls with only minor cracks and a few pieces missing. The bottom of the channel was concrete and masonry and was

in good condition. There was a step in the spillway approximately midway down the slope. The outlet of a pipe which was apparently some type of drain was located at the base of this step. This pipe was flowing at a rate of approximately 5 gallons per minute. Another drain pipe outleted through the southwestern side wall of the channel. Flow in this pipe was slightly less than the flow in the other pipe. In addition to these pipes, there was a moderate flow coming through the northern channel wall, slightly downstream of the point where the drain pipes outlet.

The bridge crossing the auxiliary spillway channel was in satisfactory condition.

e. Downstream Channel

The outlet channel was in satisfactory condition. Flows from the service spillway and the auxiliary spillway channel join at the auxiliary channel's outlet. Water then flows through a 6 foot diameter CMP culvert under Erieville Road.

f. Reservoir

There were no signs of soil instability in the reservoir area. The area at the southwestern end of the dam was lower than the top of the embankment. Therefore, as the water level in the reservoir rises, water will flow around the end of the dam and down Erieville Road before it flows over the top of the dam. Erieville Road is approximately 4 feet below the top of dam elevation.

3.2 EVALUATION OF OBSERVATIONS

Visual inspection revealed several deficiencies on this structure. The following items were noted:

1. Two areas of seepage on the slope below the main embankment section.
2. Valves on the service spillway pipes were located at the downstream end of the pipes.
3. Brush and trees growing on the downstream slope of the embankment.
4. The wet, swampy area and the pond located beyond the toe of the embankment at the southwestern end of the dam.
5. The two depressed sections of riprap on the upstream face.
6. Potholes and minor irregularities in the road which runs along the crest.
7. The leakage through the stem of the valve on one of the service spillway pipes when it is opened.
8. The low area beyond the southwestern end of the dam which would permit flow around the end of the dam when the water surface rose to levels near the top of the dam.

SECTION 4: OPERATION AND MAINTENANCE PROCUDURES

4.1 PROCEDURES

This reservoir is operated as a feeder to the New York State barge canal system. Stop logs are placed across the opening in the lower portion of the auxiliary spillway during the barge canal's operating season (April thru November). Water is then released as required by the Barge Canal through the operation of the service spillway valves. DOT attempts to maintain the water surface at the higher auxiliary spillway crest (elevation 1507.5) during the navigation season.

Stop logs are removed at the end of the operating season and the water level is dropped to approximately two feet below the higher auxiliary spillway crest.

4.2 MAINTENANCE OF DAM

The dam is visually inspected annually by DOT. The grass on the embankment is mowed annually. Other minor maintenance functions are performed as required.

4.3 WARNING SYSTEM IN EFFECT

No apparent warning system is present.

4.4 EVALUATION

The operation procedures are generally satisfactory. The maintenance procedures, however, are deficient. Increased maintenance efforts are required to correct a number of the deficiencies which were noted in section 3 of the report.

SECTION 5: HYDROLOGIC/HYDRAULIC

5.1 DRAINAGE AREA CHARACTERISTICS

Delineation of the watershed draining into the reservoir pool area was made using the USGS 7.5 minute quadrangles for Erieville, Morrisville, West Eaton and Cazenovia, New York. The drainage area is 5.31 square miles and consists of open fields and some wooded land. It is adjacent to the western boundary of the drainage area for the Eaton Brook Reservoir Dam. Relief in the drainage area is moderate to steep with slopes ranging from 3 per cent to 10 per cent.

5.2 ANALYSIS CRITERIA

The analysis of the flood water retarding capability of this dam was performed using the Corps of Engineers HEC-1 computer program, Dam Safety version. This program develops an inflow hydrograph based upon the "Clark Unit Hydrograph" method and then uses the "Modified Puls" flood routing procedure. The spillway design flood selected for analysis was the Probable Maximum Flood (PMF) in accordance with the Recommended Guidelines of the U.S. Army Corps of Engineers.

5.3 SPILLWAY CAPACITY

The dam has a service spillway consisting of two pipes with valves on the downstream end. Due to the invert elevations of these pipes they may also function as a reservoir drain. A fact sheet concerning the dam provided by DOT states that these are cast-iron pipes and are each 20 inches in diameter.

While the valves on the two pipes are functional, it was unclear whether both valves could be fully opened during periods of heavy precipitation. To account for this uncertainty, two cases of operation were analyzed. The total discharge capacity of the spillways was computed first assuming that both valves were closed, then assuming that the valves were both fully opened.

The auxiliary spillway was also analyzed for two conditions. In the first case, it was assumed that the stop logs were in place and the water surface was at the auxiliary spillway crest (elevation 1507.5). This case represents the normal operating conditions during the barge canal's operating season. The spillway, in this case, was analyzed as a sharp crested weir with a discharge coefficient (c) ranging from 2.78 to 3.32.

The second condition assumed that the stop logs had been removed and the water surface was at elevation 1506. For this condition, the four foot wide section of the channel from which the stop logs had been removed was analyzed as a broad crested weir with a discharge coefficient (c) of 2.6. The two remaining 8 foot wide sections were considered as sharp crested weirs with discharge coefficients similar to those specified above.

The results of the analyses performed for the various conditions are shown below. The cases analyzed are as follows:

Case 1 - Normal operating conditions; initial water surface at elevation 1507.5; stop logs in place

Case 2 - Winter operating conditions - initial water surface at elevation 1506; stop logs in place.

Case 3 - Same conditions as Case 1; discharge capacity for flow around end of dam has been included.

Case	PMF			ONE HALF PMF			Spillway* Capacity(cfs)
	Peak Inflow (cfs)	Peak Outflow (cfs)	Max. W.S. Elevation	Peak Inflow (cfs)	Peak Outflow (cfs)	Max. W.S. Elevation	
Gates Closed	19,314	9,579	1516.2	9,657	925	1513.2	1364
Gates Opened	19,314	10,900	1516.1	9,657	1087	1513.0	1597
Gates Closed	19,314	7,246	1516.0	9,657	715	1512.2	1372
Gates Opened	19,314	6,619	1515.9	9,657	868	1511.9	1605
Gates Closed	19,314	9,957	1515.9	9,657	1,524	1513.1	3444

*Computed capacity with water surface at top of dam.

5.4 RESERVOIR CAPACITY

Storage capacity of the reservoir between the auxiliary spillway crest (elevation 1507.5) and the top of the dam is 3200 acre feet, which is equivalent to a runoff depth of 11.31 inches over the drainage area. The total storage capacity of the dam is 10,362 acre feet.

5.5 FLOODS OF RECORD

The maximum known flood is believed to have occurred as a result of Hurricane Agnes on June 23, 1972. At that time, the water level rose to one foot above the auxiliary spillway crest or to elevation 1508.5. According to DOT, the stop logs were probably in place during this storm. Records indicate that the valve on one of the service spillway pipes was fully opened while the other valve was three quarters open. The calculated discharge capacity for this water level was 242 cfs.

5.6 OVERTOPPING POTENTIAL

As indicated in the table presented in section 5.3, the dam would be overtopped by outflows from the PMF to a computed depth of 1.2 feet for the worst case. Outflows from one-half the PMF will not overtop the dam but in all cases studied the water surface will reach a level which will result in flow around the end of the dam and across Erieville Road.

5.7 EVALUATION

The dam does not have sufficient spillway capacity to pass the PMF. While outflows from one half the PMF will not result in the dam being overtopped, the water surface will reach a level which will result in flow around the southwestern end of the dam. Therefore, the spillway is assessed as being inadequate, and further studies are required to determine the effects of water flowing around the end of the dam.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

Visual observations of the structure revealed several deficiencies related to the stability of the structure. There were two areas where seepage was noted on the downstream face. The largest volume of seepage was flowing through and beneath a laid up stone wall which runs along the toe of the natural slope near the gatehouse. Another wet area existed adjacent to the northern sidewall of the auxiliary spillway, approximately midway along the channel. There were also two notable depressions in the riprap on the upstream slope of the dam.

b. Design and Construction Data

No information was available concerning the original design or construction of this dam. A plan showing the dam and the area immediately downstream was prepared during 1978 by DOT. It has been included in Appendix F along with logs from several drill holes which have been progressed recently on the downstream slope of the dam.

c. Seismic Stability

The dam is located in Seismic Zone 2. No seismic stability analysis was performed on this structure since it is considered to be beyond the scope of this report.

SECTION 7: ASSESSMENT/RECOMMENDATION

7.1 ASSESSMENT

a. Safety

The Phase I inspection of the Erieville Reservoir Dam revealed conditions which if left untreated could pose a significant hazard to the dam. Two areas of seepage on the downstream slope present the most serious problem. Corrective treatments are required to eliminate this potentially dangerous situation. Until these treatments are completed, the water surface in the reservoir should be maintained at a level several feet below the auxiliary spillway crest. By maintaining a lower water surface, the pressure head acting on the embankment will be lower than normal.

Analysis performed indicate that the outflows from the PMF will result in the dam being overtopped. The outflows from one-half the PMF will not overtop the dam but they will result in flow around the southwestern end of the dam along Erieville Road. This could be a dangerous condition. Further analysis will be required to determine the severity of this problem.

Other deficiencies noted such as the brush and trees growing on the downstream slope and the depressed sections of riprap could present a hazard unless they are repaired.

b. Adequacy of Information

The information which was available for the preparation of this report was generally adequate. No as-built plans for the auxiliary spillway channel exist and the information concerning the service spillway was limited. Due to this lack of information, the hydraulic analyses performed had to be based on approximations.

c. Need for Additional Investigations

Investigations into the causes of seepage on the downstream slope and into possible treatments for these wet areas are required. An investigation into the effects of water flowing around the southwestern end of the dam is also required to determine whether this is an acceptable situation or if modifications are necessary.

d. Urgency

The investigations into the wet area and into the effects of flow around the end of the dam should be commenced within 3 months of the date of notification of the owner. Remedial measures deemed appropriate as a result of the investigations should be completed within 12 months.

Other deficiencies outlined below should also be corrected within 1 year of the date of notification of the owner.

7.2 RECOMMENDED MEASURES

- a. A method of treatment of the two wet areas on the downstream slope should be designed and implemented.
- b. Until remedial measures are taken on the wet areas, the water surface in the reservoir should be maintained at approximately elevation 1504 (about 3 feet below the auxiliary spillway crest) and the stop logs

on the auxiliary spillway should not be replaced.

- c. Modifications deemed necessary as a result of the investigation into flow around the southwestern end of the dam should be made.
- d. The existing valves on the service spillway pipes should be removed and replaced by valves at the upstream end of the pipe.
- e. The brush and trees growing on the downstream slope of the embankment on the southwestern end of the dam should be cut.
- f. The swampy area and the ponds located beyond the toe of the embankment should be drained by regrading or establishing ditches leading away from these areas.
- g. The two depressed sections of riprap on the upstream face should be repaired.
- h. The potholes and minor irregularities on the crest should be repaired.
- i. Develop an emergency action plan for notification and evacuation of downstream residents.

APPENDIX A

PHOTOGRAPHS



Downstream Slope at Northern End of Dam



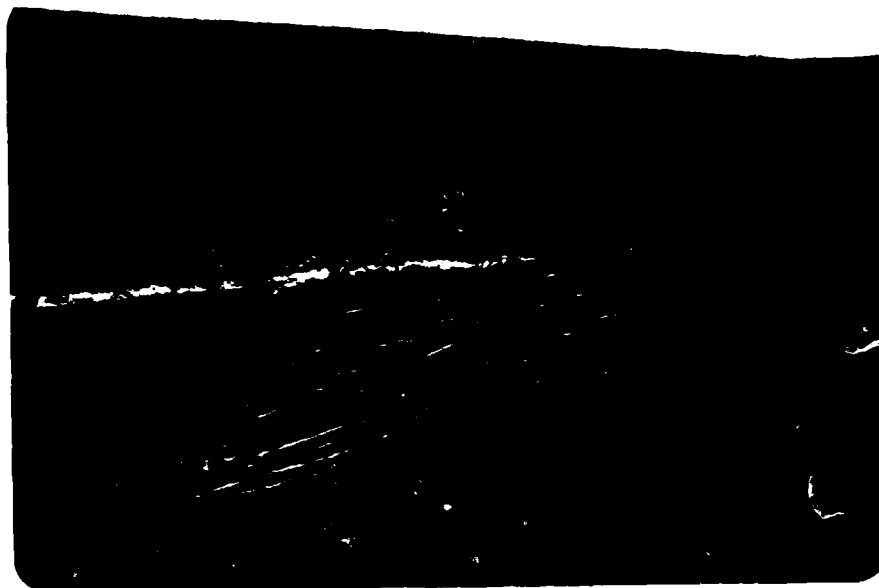
Downstream Slope at Southwestern End of Dam



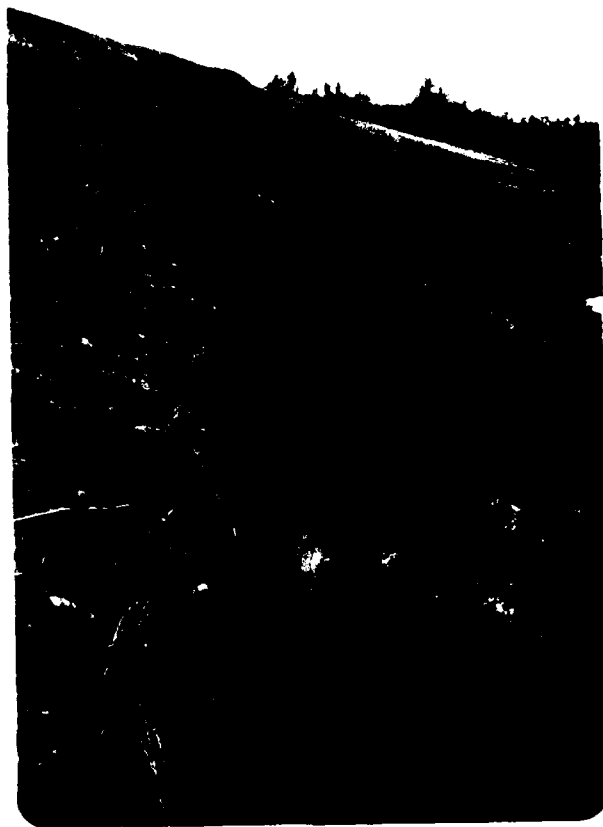
Downstream Slope - Wet Area at Base of Wall Near Center of Picture



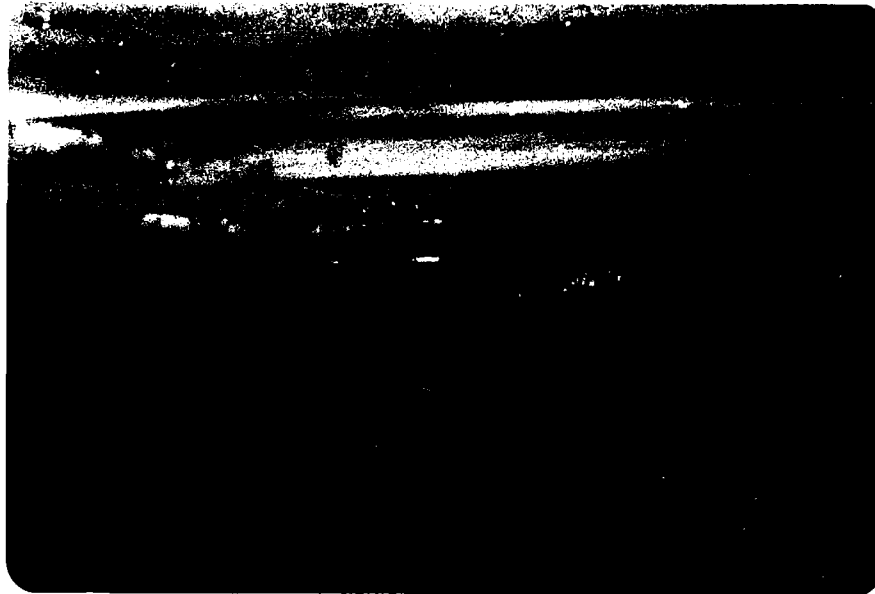
One of the Observation Wells Installed on Downstream Slope



Wall at Toe of Slope on Northern Embankment Section



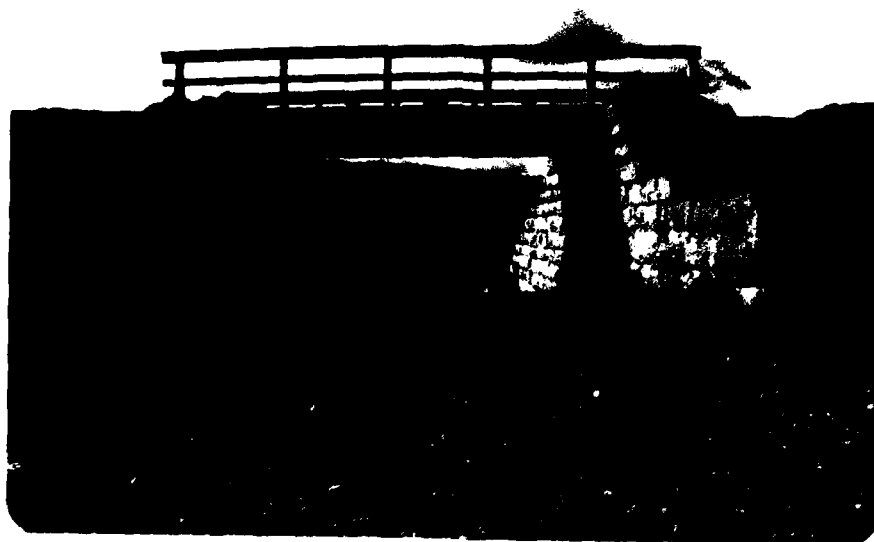
Seepage Emerging From Beneath The Wall



Rip-rap on Upstream Slope at Northern End of Dam



Depressed Section of Riprap on Upstream Slope at Southwestern End of Dam



Crest of Auxiliary Spillway - Note Opening in Center with Provisions for Stop Logs



Auxiliary Spillway Channel



Drainage Pipe Outletting into Auxiliary Spillway Channel



Wet Area Adjacent to Auxiliary Spillway Channel, Note Seepage Through Channel Wall



Bend in Auxiliary Spillway Channel, Wet Area to Right of Channel



Gatehouse at Downstream Toe Containing Service Spillway Valves

APPENDIX B
VISUAL INSPECTION CHECKLIST

1

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam ERIEVILLE RESERVOIR DAM
Fed. I.D. # 369 DEC Dam No. 930-553
River Basin OSWEGO
Location: Town NELSON County MADISON
Stream Name UNNAMED
Tributary of CHITTENANGO CREEK
Latitude (N) 42° 53.6' Longitude (W) 75° 45.3'
Type of Dam EARTH
Hazard Category C
Date(s) of Inspection 11/29/79
Weather Conditions COLD-WINDY 35°
Reservoir Level at Time of Inspection 3' BELOW CREST OF WALL IN AUX. SPILL.

b. Inspection Personnel W. LYNICK R. WARRENDER

c. Persons Contacted (Including Address & Phone No.) _____

d. History:

Date Constructed 1850 Date(s) Reconstructed _____

Designer _____

Constructed By _____

Owner N.Y.S. DOT

2) Embankment

a. Characteristics

- (1) Embankment Material _____
- (2) Cutoff Type NONE
- (3) Impervious Core NONE
- (4) Internal Drainage System SOME DRAINS ON SPILLWAY - SOME AT BASE OF HILL - IT IS UNCLEAR WHETHER THEY ARE A SYSTEM
- (5) Miscellaneous _____

b. Crest

- (1) Vertical Alignment SATISFACTORY - ROADWAY POTHOLES ALONG CREST.
- (2) Horizontal Alignment CURVILINEAR - SATISFACTORY
- (3) Surface Cracks NONE NOTED
- (4) Miscellaneous _____

c. Upstream Slope

- (1) Slope (Estimate) (V:H) 1 ON 2 AND FLATTER
- (2) Undesirable Growth or Debris, Animal Burrows NO - BRUSH HAD BEEN CUT
- (3) Sloughing, Subsidence or Depressions 2 LARGE DEPRESSIONS IN RIPRAP - 1-30' WIDE & OTHER 60' WIDE. - SEVERAL MINOR AREAS OF DISPLACED OR REMOVED RIPRAP.

(4) Slope Protection RIPRAP TO WITHIN 4' OF CREST

(5) Surface Cracks or Movement at Toe NO

d. Downstream Slope

(1) Slope (Estimate - V:H) 1 ON 2 OR FLATTER

(2) Undesirable Growth or Debris, Animal Burrows SEVERAL BURROWS

NEAR GATEHOUSE - TREES CLEARED FROM MAIN EMBANKMENT
DOWNSTREAM SLOPE OF LOWER DIKE AT WESTERN END NOT CLEARED.

(3) Sloughing, Subsidence or Depressions

IRREGULAR SURFACE OF DOWNSTREAM SLOPE ^{BEYOND 1/2 OF} MAIN
EMBANKMENT ~~DOWN~~

(4) Surface Cracks or Movement at Toe NO

(5) Seepage YES - SIGNIFICANT SEEPAGE IN SEVERAL SPOTS BEYOND
TOE OF THE EMBANKMENT

(6) External Drainage System (Ditches, Trenches; Blanket) NONE

(7) Condition Around Outlet Structure (GATEHOUSE) - SATISFACTORY

(8) Seepage Beyond Toe YES - SEVERAL SPOTS - ON SLOPE BEYOND
TOE OF EMBANKMENT.

e. Abutments - Embankment Contact

SOUTH WEST ABUTMENT - ERIEVILLE ROAD (ASPHALT PAVED)

NORTH ABUTMENT - NATURAL HILLSIDE

(1) Erosion at Contact NONE

(2) Seepage Along Contact NONE

3) Drainage System

a. Description of System POSSIBLY AN INTERNAL SYSTEM.

PIPES COMING OUT OF WALLS AT GATEHOUSE, WALL ON TOE
OF SLOPE, & WALL OF THE AUXILIARY SPILLWAY

b. Condition of System FUNCTIONAL

c. Discharge from Drainage System YES 2 PIPES AT GATEHOUSE

DISCHARGE ABOUT .25 GAL/MIN 2 PIPES IN AUXILIARY
SPILLWAY 5 GAL/MIN

4) Instrumentation (Monumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.)

2 OBSERVATION WELLS ON THE DOWNSTREAM
SLOPE OF THE EMBANKMENT

5) Reservoir

- a. Slopes MODERATELY STEEP
- b. Sedimentation NONE APPARENT - WITH RESERVOIR DRAWN DOWN THERE WAS SOME GRAVEL EXPOSED
- c. Unusual Conditions Which Affect Dam NONE

6) Area Downstream of Dam

- a. Downstream Hazard (No. of Homes, Highways, etc.) ERIEVILLE ROAD
2 HOUSES & TOWN ROAD IN WETLAND DOWNSTREAM
- b. Seepage, Unusual Growth BEYOND TOE NEAR CENTER A SMALL POND
EXISTS - ENTIRE AREA BEYOND WESTERN EMBANKMENT IS WET
AND SWAMPY.
- c. Evidence of Movement Beyond Toe of Dam NONE
- d. Condition of Downstream Channel 6' CMP CULVERT UNDER ERIEVILLE
ROAD - BEYOND that Open farmland & swampy areas (broad valley)

7) Spillway(s) (Including Discharge Conveyance Channel)

- a. General
- b. Condition of Service Spillway 2- 36" DIAMETER STEEL PIPES
LOCATED AT DOWNSTREAM TOE, FUNCTIONAL & OPERATING.
1 PIPE CLOSED & LEAKING (CLOSED BECAUSE WHEN IT IS
OPENED IT LEAKS & SPRAYS THE GATE HOUSE INTERIOR).
THE OTHER PIPE WAS OPENED 1" AT TIME OF INSPECTION
IT WAS OPERATED DURING INSPECTION.

6

c. Condition of Auxiliary Spillway SATISFACTORY - MASONRY CHANNEL -
MORTAR IS IN PLACE WITH ONLY MINOR CRACKS & MISSING PIECES
MASONRY WALLS WITH CONCRETE FLOOR IN UPPER PORTION
CONCRETE & MASONRY FLOOR ON LOWER PORTION
STEEL & TIMBER DECKED

d. Condition of Discharge Conveyance Channel SATISFACTORY
CHANNEL OF AUX. SPILLWAY EXTENDS DOWN SLOPE &
INTERSECTS WITH FLOW FROM SERVICE SPILLWAY

8) Reservoir Drain/Outlet - SEE SERVICE SPILLWAY

Type: Pipe _____ Conduit _____ Other _____

Material: Concrete _____ Metal _____ Other _____

Size: _____ Length _____

Invert Elevations: Entrance _____ Exit _____

Physical Condition (Describe): _____ Unobservable _____

Material: _____

Joints: _____ Alignment _____

Structural Integrity: _____

Hydraulic Capability: _____

Means of Control: Gate _____ Valve _____ Uncontrolled _____

Operation: Operable _____ Inoperable _____ Other _____

Present Condition (Describe): _____

9) Structural

- a. Concrete Surfaces AUX SPILLWAY WIER - SATISFACTORY
MASONRY - SATISFACTORY JOINTS WELL POINTED - MINOR
CRACKS & SMALL PIECES OF MORTAR MISSING AT EXTREME DOWNSTREAM
END OF AUX. SPILLWAY; SOME SLAB CONCRETE OR INUERT ALSO REMOVED
- b. Structural Cracking NONE
- c. Movement - Horizontal & Vertical Alignment (Settlement) NONE
- d. Junctions with Abutments or Embankments SATISFACTORY
- e. Drains - Foundation, Joint, Face DRAIN PIPES IN AUX. SPILLWAY
CHANNEL - FLOWING FREE
- f. Water Passages, Conduits, Sluices SERVICE SPILLWAY - SATISFACTORY BUT
LARGELY UNOBSERVABLE
- g. Seepage or Leakage SOME SEEPAGE COMING THROUGH WALL
ON AUXILIARY SPILLWAY

- h. Joints - Construction, etc. _____

- i. Foundation _____

- j. Abutments _____

- k. Control Gates SEE SERVICE SPILLWAY

- l. Approach & Outlet Channels SATISFACTORY

- m. Energy Dissipators (Plunge Pool, etc.) NONE

- n. Intake Structures _____

- o. Stability _____

- p. Miscellaneous _____

10) Appurtenant Structures (~~Power House~~, ~~Lock~~, Gatehouse, ~~Other~~)

a. Description and Condition

GATEHOUSE IN GOOD CONDITION - VALVE ARE
WELL PROTECTED - THERE ARE TWO DRAIN PIPES
ON EITHER SIDE OF THE GATEHOUSE - FLOWING AT
A RATE OF ABOUT 25 GAL/MIN

APPENDIX C
HYDROLOGIC/HYDRAULIC
ENGINEERING DATA AND COMPUTATIONS

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

1

AREA-CAPACITY DATA:

	<u>Elevation</u> (ft.)	<u>Surface Area</u> (acres)	<u>Storage Capacity</u> (acre-ft.)
1) Top of Dam	<u>1515.0</u>	<u>477</u>	<u>10362</u>
2) Design High Water (Max. Design Pool)	<u> </u>	<u> </u>	<u> </u>
3) Auxiliary Spillway Crest - Without Stoplogs	<u>1506.0</u>	<u>362</u>	<u>6,609</u>
4) Pool Level with Flashboards	<u>1507.5</u>	<u>378</u>	<u>7,162</u>
5) Service Spillway Crest	<u>1470±</u>	<u> </u>	<u> </u>

DISCHARGES

	<u>Volume</u> (cfs)
1) Average Daily	<u> </u>
2) Spillway @ Maximum High Water	<u>232</u>
3) Spillway @ Design High Water	<u> </u>
4) Spillway @ Auxiliary Spillway Crest Elevation	<u>212</u>
5) Low Level Outlet	<u> </u>
6) Total (of all facilities) @ Maximum High Water	<u>1604</u>
7) Maximum Known Flood	<u>242</u>

CREST:

ELEVATION: 1515.0Type: EARTHWidth: 15 feetLength: 2,000 ftSpillover MASONRY CHANNELLocation NEAR CENTER OF DAM

SPILLWAY:

PRINCIPAL

EMERGENCY

1470±Elevation 15062-20" D.I.A. PIPEType RECTANGULAR MASONRY CHANNELWidth 20 ftType of ControlUncontrolled

Controlled:

GATES ON DOWNSTREAM ENDType STOP LOGS - ON LOWER PORTION
(Flashboards; gate)2

Number

20 INCH

Size/Length

Invert Material

Anticipated Length
of operating service

Chute Length

Height Between Spillway Crest
& Approach Channel Invert
(Weir Flow)

OUTLET STRUCTURES/EMERGENCY DRAWDOWN FACILITIES:

Type: Gate X Sluice _____ Conduit _____ Penstock _____Shape: Z-ROUND GATESSize: 20 INCHElevations: Entrance Invert 1470±Exit Invert 1470±

Tailrace Channel: Elevation _____

HYDROMETEROLOGICAL GAGES:

Type: NONE

Location: _____

Records:

Date - NONE

Max. Reading - _____

FLOOD WATER CONTROL SYSTEM:

Warning System: NONE

Method of Controlled Releases (mechanisms):

OPERATION OF SERVICE SPILLWAY

DRAINAGE AREA: 5.31 sq. mi.

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: FORESTED & PASTURELAND

Terrain - Relief: MODERATE TO STEEP

Surface - Soil: GLACIAL TILL

Runoff Potential (existing or planned extensive alterations to existing
(surface or subsurface conditions)

NONE

Potential Sedimentation problem areas (natural or man-made; present or future)

NONE

Potential Backwater problem areas for levels at maximum storage capacity
including surcharge storage:

HOMES RING RESERVOIR & ARE NEAR THE
EDGE OF NORMAL WATER SURFACE

Dikes - Floodwalls (overflow & non-overflow) - Low reaches along the
Reservoir perimeter:

Location: ERIEVILLE ROAD - POTENTIAL END AROUND

Elevation: _____

Reservoir:

Length @ Maximum Pool _____ (Miles)

Length of Shoreline (@ Spillway Crest) _____ (Miles)

PROJECT GRID

JOB ERIEVILLE RESERVOIR DAM		SHEET NO. 1	CHECKED BY	DATE
SUBJECT HYDROLOGIC/HYDRAULIC ANALYSIS		COMPUTED BY RLW		DATE 2/4/80
<u>DRAINAGE AREA</u>				
ERIEVILLE QUAD		15.86 IN ²		
WEST EATON QUAD		9.40 IN ²		
MORRISVILLE QUAD		6.24 IN ²		
CAZENOVIA QUAD		5.68 IN ²		
TOTAL		36.98 IN ² (91.83 ACRES) = 3395.9 ACRES = 5.3150 MI.		
<u>CLARK HYDROGRAPH COEFFICIENTS</u>				
L = 15380 FT - 4960 = 10420 FT = 1.97 MI.				
S _t = .5%				
$S_{10/25} = \frac{1560 - 1508}{2.47 - .29} = 69.72 \text{ FT/MI.}$				
$TC = \frac{(5.33)(1.97)^{.602} (.5)^{.231}}{(69.72)^{.448}} = 1.02$				
$R = \frac{(17.6)(1.97)^{.337} (.5)^{.258}}{(69.72)^{.88}} = .48$				
<u>HR #33 PMP RAINFALL</u>				
ZONE I		PMP RAIN = 20" (200 MI ² - 24 hr)		
6 hr = 113%		24 hr = 134%		
12 hr = 126%		48 hr = 145%		

PROJECT GRID

JOB	ERIEVILLE RESERVOIR DAM		SHEET NO.	2	CHECKED BY	DATE
SUBJECT	HYDROLOGIC/HYDRAULIC ANALYSIS		COMPUTED BY	RLW	DATE	2/4/80
$TASPC = 1 - \frac{7000}{(5.31)^{1.478}} = 1 - .216 = .784$						
LOSS DATA: 1.0" CONTINUOUS = .1"						
BASE FLOW = 2 cfs/50 mi ² 2(5.31) = 10.62 USE 10 cfs						
<u>ELEVATIONS -</u>						
TOP OF DAM			ELEVATION 1515			
AUXILIARY SPILLWAY CREST						
ABOVE WALL - 2-8' WIDE SECTIONS			1507.5			
BOTTOM - 4' WIDE SECTION			1506.0			
PRINCIPAL SPILLWAY INVERT			1470.0 ±			
ELEVATION OF ERIEVILLE ROAD AT SOUTHWESTERN END OF DAM			1511			
<u>SURFACE AREAS</u>						
AREAS TAKEN FROM 1968 SOUNDINGS DATA & FROM USGS SHEET						
<u>ELEVATION</u>		<u>SURFACE AREA (ACRES)</u>				
1463		3.5				
1468		26.6				
1473		55.9				
1483		128.6				
1493		219.1				
1503		324.2				
1515		477.1				

PROJECT GRID

JOB ERIEVILLE RESERVOIR DAM		SHEET NO. 3	CHECKED BY	DATE
SUBJECT HYDROLOGIC/HYDRAULIC COMPUTATIONS		COMPUTED BY RLW		DATE 3/3/80

EXTRAPOLATE SURFACE AREA TO GET A FIGURE FOR THE TOP OF THE DAM

ELEV.

1493 $A_1 = 219.1$ $R = \sqrt{\frac{(219.1)(43560)}{\pi}} = 1743 \text{ ft}$

1503 $A_2 = 324.2$ $R = \sqrt{\frac{(324.2)(43560)}{\pi}} = 2120 \text{ ft}$

$H/V = \frac{377}{10} = 37.7 \text{ ft/ft}$

1515 $R = 2120 + (37.7)(12) = 2572$

$A_3 = \pi(2572)^2 = 477.1 \text{ ACRE}$

DISCHARGE CAPACITY CALCULATIONS

CALCULATE CAPACITY FOR 2 CONDITIONS

1. STOPLOGS IN PLACE

USE TABLE 5-3 HANDBOOK OF HYDRAULICS TO FIND C

W.S. ELEV.	C	H	Q (cfs)
1507.5	-	0	0
1509.0	2.81	1.5	103.2
1510.0	3.29	2.5	260.1
1511.0	3.31	3.5	483.5
1512.0	3.32	4.5	683.8
1514.0	3.32	6.5	1100.4
1515.0	3.32	7.5	1363.8

MAXIMUM KNOWN WATER SURFACE (ELEV. 1508.5)

$Q = (2.7)(20)(1.0)^{3/2} = 54 \text{ cfs}$

PROJECT GRID

JOB ERIEVILLE RESERVOIR DAM				SHEET NO. 4		CHECKED BY		DATE	
SUBJECT HYDROLOGIC / HYDRAULIC COMPUTATIONS						COMPUTED BY RLW		DATE 3/3/80	
SPILLWAY CAPACITY (CONT.)									
2 STOPLOGS REMOVED									
TWO SECTIONS - 1. NARROW FLASHBOARD SECTION									
- 2. 2 SECTIONS ON EITHER SIDE									
W.S. ELEV.		NARROW SECTION			2 OTHER SECTIONS			TOTAL Q	
		C	H	Q (cfs)	C	H	Q (cfs)	FLASHWAY	
1506.0	-	0	0	-	-	-	-	0	
1507.5	2.6	1.5	19.1	-	0	0	-	19.1	
1509.0	2.6	3.0	44.0	2.81	1.5	82.6	-	136.6	
1510.0	2.6	4.0	83.2	3.29	2.5	208.1	-	291.3	
1511.0	2.6	5.0	116.3	3.31	3.5	346.8	-	463.1	
1512.0	2.6	6.0	152.2	3.32	4.5	507.1	-	659.9	
1514.0	2.6	8.0	235.3	3.32	6.5	880.3	-	1115.6	
1515.0	2.6	10.0	281.9	3.32	7.5	1091.1	-	1373.0	
Flow AROUND END OF DAM DOWN ERIEVILLE ROAD									
W.S. ELEV.		C	H	Q (cfs)					
1511.0	2.6	0	0						
1512.0	2.6	1	130						
1514.0	2.6	3	1080.8						
1515.0	2.6	4	2080.0						
SERVICE SPILLWAY CAPACITY									
2 - 20" PIPES - INVERT ELEV. 1470.3									
$Q = A \sqrt{2gH}$ $A = \pi \left(\frac{1}{2}\right)^2 = 2.18$ OUTLET INVERT = 1470 MAX. POINT OF OUTLET = 1470.83									
W.S. AT AUX. SPILLWAY CREST W.S. AT TOP OF DAM									
$Q = 2 \left[2.18 \sqrt{2(2.2)(1507.5 - 1470.83)} \right] = 711.9 \text{ cfs}$ $Q = 2 \left[2.18 \sqrt{2(2.2)(1515 - 1470.83)} \right] = 232.5 \text{ cfs}$									
W.S. AT MAX. FLOOD ELEVATION (ELEV. 1508.5)									
APPROX. $Q = \left[2.18 \sqrt{2(2.2)(1508.5 - 1470.83)} \right] (1 + .75) = 1187.9 \text{ cfs}$									

NEW YORK STATE
DEPT OF ENVIRONMENTAL CONSERVATION
FLOOD PROTECTION BUREAU

ENRIEVILLE RESERVOIR DAM
PMP WITH RAYDS - ANALYSIS
DATE

JOB SPECIFICATION	
THR	INIT
0	0
NWT	LRPT
0	0
	TRACE
	0

-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 2 LRTIO= 1

● 新 華 書 局 經 銷 ●

SUB-AREA RUNOFF COMPUTATION:

JPR	0	1	0	0
NAME	1	0	0	0
ISTAGE	0	0	0	0
IAUTO	0	0	0	0

ISNEW	ISAME	LOCAL
0	1	0

R72 0. R96 0.

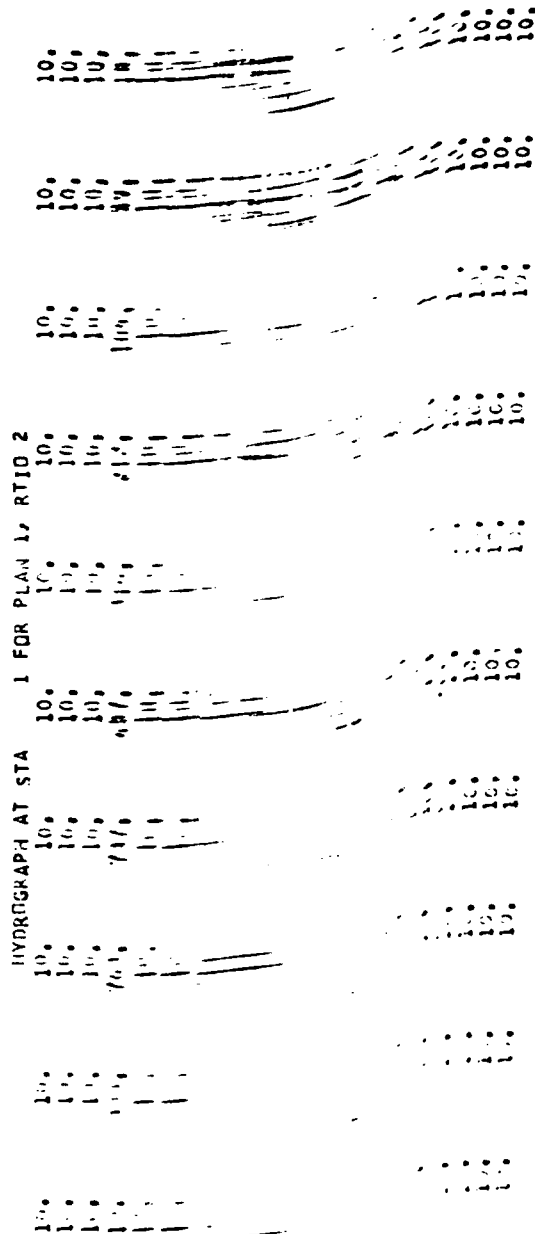
RTL	CNSTL	ALSNX	RTIMP
00	0.10	0.	0.

UNIT HYDROGRAPH DATA
TC= 1.02 R= 0.48 NIA= 0

IR= 1.00
IDURS, CP= 0.71 VOL= 1.00

PERIOD	RATI	EXCS	LUSS	COMP Q
76	1.06	1.01	0.05	6162.
77	1.32	1.27	0.05	6973.
78	1.32	1.27	0.05	7848.
79	1.61	1.56	0.05	8754.
80	5.09	5.04	0.05	13675.
81	1.23	1.18	0.05	19314.
82	1.23	1.18	0.05	16286.

1.01	5.00	10	0.00	0.	0.00	10.	1.02	10.00	105	0.06	0.01	0.05	2146.
1.01	5.30	11	0.00	0.	0.00	10.	1.02	10.00	86	0.06	0.01	0.05	2875.
1.01	6.00	12	0.00	0.	0.00	10.	1.02	10.00	87	0.06	0.01	0.05	955.
1.01	6.30	13	0.01	0.	0.01	10.	1.02	20.00	88	0.06	0.01	0.05	342.
1.01	7.00	14	0.01	0.	0.01	10.	1.02	20.00	89	0.06	0.01	0.05	154.
1.01	7.30	15	0.01	0.	0.01	10.	1.02	21.00	90	0.06	0.01	0.05	95.
1.01	8.00	16	0.01	0.	0.01	10.	1.02	21.00	91	0.06	0.01	0.05	95.
1.01	8.30	17	0.01	0.	0.01	10.	1.02	22.00	92	0.06	0.01	0.05	95.
1.01	9.00	18	0.01	0.	0.01	10.	1.02	22.00	93	0.06	0.01	0.05	95.
1.01	9.30	19	0.01	0.	0.01	10.	1.02	23.00	94	0.06	0.01	0.05	95.
1.01	10.00	20	0.01	0.	0.01	10.	1.02	23.00	95	0.06	0.01	0.05	95.
1.01	10.30	21	0.01	0.	0.01	10.	1.03	0.	96	0.06	0.01	0.05	95.
1.01	11.00	22	0.01	0.	0.01	10.	1.03	0.30	97	0.	0.	0.	80.
1.01	11.30	23	0.01	0.	0.01	10.	1.03	1.00	98	0.	0.	0.	47.
1.01	12.00	24	0.01	0.	0.01	10.	1.03	1.30	99	0.	0.	0.	22.
1.01	12.30	25	0.07	0.	0.07	10.	1.03	2.00	100	0.	0.	0.	13.
1.01	13.00	26	0.07	0.	0.07	10.	1.03	2.30	101	0.	0.	0.	11.
1.01	13.30	27	0.09	0.	0.09	10.	1.03	3.00	102	0.	0.	0.	10.
1.01	14.00	28	0.09	0.	0.09	10.	1.03	3.30	103	0.	0.	0.	10.
1.01	14.30	29	0.11	0.	0.11	10.	1.03	4.00	104	0.	0.	0.	10.
1.01	15.00	30	0.11	0.	0.11	10.	1.03	4.30	105	0.	0.	0.	10.
1.01	15.30	31	0.13	0.	0.13	10.	1.03	5.00	106	0.	0.	0.	10.
1.01	16.00	32	0.13	0.26	0.16	303.	1.03	5.30	107	0.	0.	0.	10.
1.01	16.30	33	0.10	0.15	0.05	763.	1.03	6.00	108	0.	0.	0.	10.
1.01	17.00	34	0.10	0.05	0.05	737.	1.03	6.30	109	0.	0.	0.	10.
1.01	17.30	35	0.08	0.03	0.05	457.	1.03	7.00	110	0.	0.	0.	10.
1.01	18.00	36	0.08	0.03	0.05	316.	1.03	7.30	111	0.	0.	0.	10.
1.01	18.30	37	0.01	0.	0.01	212.	1.03	8.00	112	0.	0.	0.	10.
1.01	19.00	38	0.01	0.	0.01	104.	1.03	8.30	113	0.	0.	0.	10.
1.01	19.30	39	0.01	0.	0.01	39.	1.03	9.00	114	0.	0.	0.	10.
1.01	20.00	40	0.01	0.	0.01	18.	1.03	9.30	115	0.	0.	0.	10.
1.01	20.30	41	0.01	0.	0.01	12.	1.03	10.00	116	0.	0.	0.	10.
1.01	21.00	42	0.01	0.	0.01	10.	1.03	10.30	117	0.	0.	0.	10.
1.01	21.30	43	0.01	0.	0.01	10.	1.03	11.00	118	0.	0.	0.	10.
1.01	22.00	44	0.01	0.	0.01	10.	1.03	11.30	119	0.	0.	0.	10.
1.01	22.30	45	0.01	0.	0.01	10.	1.03	12.00	120	0.	0.	0.	10.
1.01	23.00	46	0.01	0.	0.01	10.	1.03	12.30	121	0.	0.	0.	10.
1.01	23.30	47	0.01	0.	0.01	10.	1.03	13.00	122	0.	0.	0.	10.
1.02	0.30	48	0.01	0.	0.01	10.	1.03	13.30	123	0.	0.	0.	10.
1.02	1.00	49	0.04	0.	0.04	10.	1.03	14.00	124	0.	0.	0.	10.
1.02	1.30	50	0.04	0.	0.04	10.	1.03	14.30	125	0.	0.	0.	10.
1.02	2.00	51	0.04	0.	0.04	10.	1.03	15.00	126	0.	0.	0.	10.
1.02	2.30	52	0.04	0.	0.04	10.	1.03	15.30	127	0.	0.	0.	10.
1.02	3.00	53	0.04	0.	0.04	10.	1.03	16.00	128	0.	0.	0.	10.
1.02	3.30	54	0.04	0.	0.04	10.	1.03	16.30	129	0.	0.	0.	10.
1.02	4.00	55	0.04	0.	0.04	10.	1.03	17.00	130	0.	0.	0.	10.
1.02	4.30	56	0.04	0.	0.04	10.	1.03	17.30	131	0.	0.	0.	10.
1.02	5.00	57	0.04	0.	0.04	10.	1.03	18.00	132	0.	0.	0.	10.
1.02	5.30	58	0.04	0.	0.04	10.	1.03	18.30	133	0.	0.	0.	10.
1.02	6.00	59	0.04	0.	0.04	10.	1.03	19.00	134	0.	0.	0.	10.
1.02	6.30	60	0.04	0.	0.04	10.	1.03	19.30	135	0.	0.	0.	10.
1.02	7.00	61	0.17	0.12	0.05	145.	1.03	20.00	136	0.	0.	0.	10.
1.02	7.30	62	0.17	0.12	0.05	466.	1.03	20.30	137	0.	0.	0.	10.
1.02	8.00	63	0.17	0.12	0.05	711.	1.03	21.00	138	0.	0.	0.	10.
1.02	8.30	64	0.17	0.12	0.05	789.	1.03	21.30	139	0.	0.	0.	10.
1.02	9.00	65	0.17	0.12	0.05	814.	1.03	22.00	140	0.	0.	0.	10.
1.02	9.30	66	0.17	0.12	0.05	822.	1.03	22.30	141	0.	0.	0.	10.
1.02	10.00	67	0.17	0.12	0.05	822.	1.03	23.00	142	0.	0.	0.	10.
1.02	10.30	68	0.17	0.12	0.05	822.	1.03	23.30	143	0.	0.	0.	10.
1.02	11.00	69	0.17	0.12	0.05	822.	1.04	0.	144	0.	0.	0.	10.
1.02	11.30	70	0.17	0.12	0.05	822.	1.04	0.30	145	0.	0.	0.	10.
1.02	12.00	71	0.17	0.12	0.05	822.	1.04	1.00	146	0.	0.	0.	10.
1.02	12.30	72	0.17	0.12	0.05	822.	1.04	1.30	147	0.	0.	0.	10.
1.02	12.50	73	0.17	0.12	0.05	1633.	1.04	2.00	148	0.	0.	0.	10.



[illegible]

PEAK OUTFLOW IS 125, AT TIME 43.50 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL	VOLUME
CFS	925	867	549	240		40324
CNS	26	25	18	6		1142
INCHES		1.52	4.55	5.89		
MM		38.56	115.48	149.52		149.52
AC-FT		430	1287	1806		1666
THOUS CU YD		530	1587	2055		2055

STATION 1, PLAN 1, RATIO 2

END-OF-PERIOD HYDROGRAPH URDIAHES

[illegible]

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FORMULATED PLAIN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
 AREA IN SQUARE MILES (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAIN	RATIOS APPLIED TO FLOWS	
				RATIO 1	RATIO 2
HYDROGRAPH AT	1	5.31	1	0.50	1.00
	(	0.00)	(	9657.	19314.
ROUTED TO	1	5.31	1	273.46)	546.92)
	(	0.00)	(	925.	9579.
				26.21)	271.24)

PLAID 1

ELEVATION
STORAGE
OUTFLUX

INITIAL VALUE
1597.50
7162.
0.

SPILLWAY CREST
1507.50
7162.
0.

TOP HF NAM
1515.00
10302.
1304.

RATIO
IF
2 IF
0.50
1.00

MAXIMUM
REFSERVING
U.S. ELEV
1513.25
1516.20

MAXIMUM DEPTH 1.20
RIVER DAM 3.

MAXIMUM
STORAGE
AC-FT
9542.
10945.

MAXIMUM
SURFLOW
CFS
225.
6156

0.
4.50

TIME OF
MAX OUTFLOW
HOURS
43.50
41.50

TIME OF
FAILURE
HOURS
0.
0.

 FLOOD HYDROGRAPH PACKAGE (HLS-1)
 DATA SAFETY VERIFICATION JULY 1973
 LAST MODIFICATION 26 FEB 73
 MODIFIED BY J. H. HOFFMAN, JR.

 NEW YORK STATE
 DEPT OF ENVIRONMENTAL CONSERVATION
 FLOOD PROTECTION BUREAU

1 AL FLEVILLE RESERVOIR DAM
 2 42 PWF WITH RATIO STOP LOGS REMOVED GATES CLOSED
 3 A DATE
 4 1 100
 5 31 5

0 2 0 0

1

2

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

INFLOW HYDROGRAPH

75

145

134

126

113

90

50

31

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

K1 ROUTING HYDROGRAPH AT DAM NO BREACH

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

1

-1500

1512

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1527

1528

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

1517

1518

1519

1520

1521

1522

1523

1524

1525

1526

1510

1511

1512

1513

1514

1515

1516

PEAK FLOW AND STORAGE (FLOOD OF PERIOD) SUMMARY FORMULATED PLAN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND (CUMULIC METERS PER SECOND)
 AREA IN SQUARE MILES (SQUARE KILOMETERS)

RATIOS APPLIED TO FLOWS

OPERATION	STATION	AREA	PLAN	RATIO 1	RATIO 2
				0.50	1.00
HYDROGRAPH AT	1	5.31 (0.00)	1	9027.	19314.
				(273.36)	(546.92)
ROUTED TO	1	5.31 (0.00)	1	715.	7426.
				(20.26)	(210.23)

..... PLAN

RATIN OF P.I.F	MAXIMUM RESERVOIR W.S.-FLEV	MAXIMUM DEPTH INVER DAM	MAXIMUM STORAFE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.50	1512.24	0.	9000.	715.	0.	43.50	0.
1.00	1515.98	0.90	10835.	7426.	4.00	42.00	0.

 NEW YORK STATE
 DEPT. OF ENVIRONMENTAL CONSERVATION
 FLOOD PROTECTION BUREAU

 FLOOD HYDROGRAPH PACKAGE (ENC-1)
 DAI SAFETY VERSTAD JULY 1978
 LAST MODIFICATION 20 FEB 79
 (SPECIFIED FOR HIC/JELL APR 79)

1 A1 ERIEVILLE RESERVOIR DAM
 2 A2 DAM WITH RATING SLIP LOGS REMOVED GATES OPENED

3 A DATE
 4 9 100
 5 31 5

6 J 1 2 1
 7 J1 .5 1
 8 K 0 1

9 K1
 10 A 1 0 5.31
 11 P 0 20 113 126 134 145

12 T
 13 I 1.02 .43
 14 X 10 10 1

15 K 1 1
 16 K1 ROUTE 1 HYDROGRAPH AT DAM NO BREACH

17 I 1 1
 18 Y1 1
 19 Y4 1506 1507.5 1509 1510 1511 1512 1514 1515

20 Y5 0 231 352.8 510.3 684.8 884.4 1345.6 1605.3
 21 SA 3.5 26.6 55.9 128.6 219.1 324.2 477.1

22 SE 1463 1468 1473 1483 1493 1503 1515
 23 SS 1506
 24 SO 1515 3.0 1.5 2000

25 K 99
 26 A
 27 A
 28 A
 29 A
 30 A

INFLOW HYDROGRAPH

1
 .1
 1
 1

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
 AREA IN SQUARE FEET (SQUARE KILOMETERS)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS	
				RATIO 1	RATIO 2
HYDROGRAPH AT	1	5.31	1	0.50	1.00
	(	0.00)	(	9.57	19314
ROUTED TO	1	5.31	1	273.46	546.92
	(	0.00)	(	358	6619
				24.57	187.43

14V74 1.....

RATIO OF PHE	MAXIMUM RESERVOIR W.S. ELEV	MAXIMUM DEPTH "BEVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.50	1511.92	0.06	9950.	606.	0.	43.50	0.
1.00	1515.86	0.06	10778.	6619.	3.50	42.50	0.

 NEW YORK STATE
 DEPT OF ENVIRONMENTAL CONSERVATION
 FLOOD PROTECTION BUREAU

 FLOOD HYDROGRAPH PACKAGE (HEC-1)
 DAM SAFETY VERSION JULY 1978
 LIST MODIFICATION 26 FEB 79
 MODIFIED FOR HUNTERWELL APR 79

 A1 ERIEVILLE RESERVOIR DAM
 A2 PMF WITH RATIOS STOP LOGS IN PLACE GATES CLOSED WITH END AROUND FLOW

 A DATE
 B 100
 C 30
 D 0
 E 0
 F 0
 G 0
 H 0
 I 0
 J 1
 K 0
 L 1
 M 0
 N 0
 O 0
 P 0
 Q 0
 R 0
 S 0
 T 0
 U 0
 V 0
 W 0
 X 0
 Y 0
 Z 0

INFLOW HYDROGRAPH

 A 1
 B 0
 C 0
 D 0
 E 0
 F 0
 G 0
 H 0
 I 0
 J 0
 K 0
 L 0
 M 0
 N 0
 O 0
 P 0
 Q 0
 R 0
 S 0
 T 0
 U 0
 V 0
 W 0
 X 0
 Y 0
 Z 0

K1 ROUTED HYDROGRAPH AT DAM NO BREACH

 A 1
 B 1
 C 1
 D 1
 E 1
 F 1
 G 1
 H 1
 I 1
 J 1
 K 1
 L 1
 M 1
 N 1
 O 1
 P 1
 Q 1
 R 1
 S 1
 T 1
 U 1
 V 1
 W 1
 X 1
 Y 1
 Z 1

 A 1
 B 1
 C 1
 D 1
 E 1
 F 1
 G 1
 H 1
 I 1
 J 1
 K 1
 L 1
 M 1
 N 1
 O 1
 P 1
 Q 1
 R 1
 S 1
 T 1
 U 1
 V 1
 W 1
 X 1
 Y 1
 Z 1

 A 1
 B 1
 C 1
 D 1
 E 1
 F 1
 G 1
 H 1
 I 1
 J 1
 K 1
 L 1
 M 1
 N 1
 O 1
 P 1
 Q 1
 R 1
 S 1
 T 1
 U 1
 V 1
 W 1
 X 1
 Y 1
 Z 1

 A 1
 B 1
 C 1
 D 1
 E 1
 F 1
 G 1
 H 1
 I 1
 J 1
 K 1
 L 1
 M 1
 N 1
 O 1
 P 1
 Q 1
 R 1
 S 1
 T 1
 U 1
 V 1
 W 1
 X 1
 Y 1
 Z 1

 A 1
 B 1
 C 1
 D 1
 E 1
 F 1
 G 1
 H 1
 I 1
 J 1
 K 1
 L 1
 M 1
 N 1
 O 1
 P 1
 Q 1
 R 1
 S 1
 T 1
 U 1
 V 1
 W 1
 X 1
 Y 1
 Z 1

 A 1
 B 1
 C 1
 D 1
 E 1
 F 1
 G 1
 H 1
 I 1
 J 1
 K 1
 L 1
 M 1
 N 1
 O 1
 P 1
 Q 1
 R 1
 S 1
 T 1
 U 1
 V 1
 W 1
 X 1
 Y 1
 Z 1

 A 1
 B 1
 C 1
 D 1
 E 1
 F 1
 G 1
 H 1
 I 1
 J 1
 K 1
 L 1
 M 1
 N 1
 O 1
 P 1
 Q 1
 R 1
 S 1
 T 1
 U 1
 V 1
 W 1
 X 1
 Y 1
 Z 1

 A 1
 B 1
 C 1
 D 1
 E 1
 F 1
 G 1
 H 1
 I 1
 J 1
 K 1
 L 1
 M 1
 N 1
 O 1
 P 1
 Q 1
 R 1
 S 1
 T 1
 U 1
 V 1
 W 1
 X 1
 Y 1
 Z 1

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FORMULATED PLAN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
 AREA IN SQUARE MILES (SQUARE KILOMETERS)

RATIOS APPLIED TO FLOWS

OPERATION	STATION	AREA	PLAN	RATIO 1	RATIO 2
				0.50	1.00
HYDROGRAPH AT	1	5.31	1	9657.	19314.
	(	0.00)	(	273.46)	546.92)
ROUTED TO	1	5.31	1	1524.	9957.
	(	0.00)	(	43.15)	281.96)

PLAN 1

.....	ELEVATION STORAGE OUTFLOW	INITIAL VALUE 1507.50 7162. 0.	SPILLWAY CREST 1507.50 7162. 0.	TOP OF DAM 1515.00 10362. 3444.	RATIO OF PHF 0.50 1.00	MAXIMUM RESERVOIR W.S.ELEV 1513.07 1515.93	MAXIMUM DEPTH OVER DAM 0. 0.93	MAXIMUM STORAGE AC-FT 468. 10810.	MAXIMUM OUTFLOW CFS 1524. 9937.	DURATION OVER TOP HOURS 0. 3.00	TIME OF MAX OUTFLOW HOURS 43.00 41.50	TIME OF FAILURE HOURS 0. 0.

 NEW YORK STATE
 DEPT OF ENVIRONMENTAL CONSERVATION
 FLOOD PROTECTION BUREAU

 FLOOD HYDROGRAPH PACKAGE (HEC-1)
 LA1 SAFETY VERSION JULY 1978
 LAST MODIFICATION 26 FEB 79
 MODIFIED FOR HONEYWELL APR 79

1 A1 FRIEVELLE RESERVOIR DAM
 2 A2 PIF WITH RATIUS STOP LOGS IN PLACE GATES ~~WITH~~ WITH END AROUND FLOW
 3 A DATE
 4 B 100 0 30 0 0 0 0 0
 5 B1 5
 6 J 1 2 1
 7 J1 .5 1
 8 K 0 1
 9 K1
 10 M 1 0 5.31
 11 P 0 20 113 126 134 145
 12 T
 13 V 1.02 .48
 14 X 10 10 1
 15 K 1 1
 16 K1 ROUTED HYDROGRAPH AT DAM NO SPEACH
 17 Y 1 1
 18 Y1 1
 19 Y4 1506 1507.5 1509 1510 1511 1512 1514 1515
 20 Y5 0 0 319.4 479.1 655.2 858.3 1330.4 1597.2
 21 SA 3.5 26.6 55.9 128.6 219.1 324.2 477.1
 22 SE 1463 1468 1473 1483 1493 1503 1515
 23 S915C7.5
 24 SD 1515 3.0 1.5 2000
 25 K 99
 26 A
 27 A
 28 A
 29 A
 30 A

INFLOW HYDROGRAPH

1

.7H

1

.1

-1507.5

-1

1512

1514

1515

858.3

1330.4

1597.2

324.2

477.1

1503

1515

S915C7.5

3.0

1.5

2000

K 99

A

A

A

A

A

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1

ELEVATION STORAGE OUTFLOW	INITIAL VALUE 1507.50 7162. 0.	SPILLWAY CREST 1507.50 7162. 0.	TOP OF DAM 1515.00 10362. 1597.	RATIO OF PMF 0.50 1.00	MAXIMUM RESERVOIR W.S. ELEV 1512.97 1516.11	MAXIMUM DEPTH OVER DAM 0. 1.11	MAXIMUM STORAGE AC-FT 9421. 10900.	MAXIMUM OUTFLOW CFS 1087. 8916.	DURATION OVER TCP HOURS 0. 4.00	TIME OF MAX OUTFLOW HOURS 43.00 42.00	TIME OF FAILURE HOURS 0. 0.
---------------------------------	---	--	--	------------------------------------	---	--	--	---	---	---	---

PEAK FLOW AND STORAGE (END OF PERIOD) SUMMARY FORMULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
 FLOWS IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
 AREA IN SQUARE MILES (SQUARE KILOMETERS)

RATIOS APPLIED TO FLOWS

OPERATION	STATION	AREA	PLAN	RATIO 1	RATIO 2
				0.50	1.00
HYDROGRAPH AT	1	5.31	1	9657.	19314.
	(	0.00)	(	273.46)	(546.92)
ROUTED TO	1	5.31	1	1087.	8916.
	(	0.00)	(	30.78)	(252.47)

APPENDIX D
SUBSURFACE BORING LOGS

REGION MA
 COUNTY FAIRFIELD
 FIN FAIRFIELD DAM
 PROJECT FAIRFIELD DAM
 SOIL SERIES FAIRFIELD
 COORD. LOC. FAIRFIELD
 DATE START 6-21-79 DATE FINISH 6-26-79

SUBSURFACE EXPLORATION LOG

HOLE DH1
 LINE 1
 STA 1
 OFFSET 0
 SURF. ELEV. 151.1
 DEPTH TO WATER 2.5

CASING O.D. 3.5 I.D. 3.0 WEIGHT OF HAMMER - CASING 300 LBS. HAMMER FALL - CASING 15"
 SAMPLER O.D. 2.5 I.D. 2.0 WEIGHT OF HAMMER - SAMPLER 300 LBS. HAMMER FALL - SAMPLER 15"

DEPTH BELOW SURFACE	BLOW COUNT	CLOG NO.	SAMPLE NO.	BLOWS CH SAMPLER	DESCRIPTION OF SOIL AND ROCK	TEST NO.
0						
1	9				BR. SILTY FINE SAND GRAVELLY M.N.P.	152
2	23					
3	5					
4	11					
5	15					
6	17	1	3	3		
7	35					
8	24				BR. SILTY FINE SAND W.N.P.	28
9	31					
10	23	2	3	3		
11	12					
12	9				BR. SILTY FINE SAND W.N.P.	28
13	12					
14	9					
15	13	3	2	5		
16	11					
17	14				BR. GR. SILTY FINE SAND, GRAVELLY W.N.P.	28
18	21					
19	15					
20	18	4	2	1		
21	21					
22	26				BR. SILTY FINE SAND W.N.P.	19
23	18					
24	21	5	4	3		
25	16					
26	20					
27	23				BR. SILTY FINE SAND W.N.P.	17
28	16					
29	20	6	3	2		
30	20					
31	30					
32	33				GR. BR. SILTY FINE SAND, W/GRAVEL W.N.P.	13
33	17					
34	20	7	4	3		
35	23					
36	54					
37	60				GR. BR. SILTY FINE SAND, W/GRAVEL W.N.P.	18
38	63					
39	26	8	13	7		
40	23					
41	42					
42	42				GR. BR. SANDY SILT, LAYERED SLAYEY SILT	23
43	62					
44	68	9	9	9		
45	54					
46	137					
47	153					
48	160					

THE SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED
 FOR STATE DESIGN AND ESTIMATE PURPOSES. IT IS MADE AVAIL-
 ABLE TO AUTHORIZED USERS ONLY THAT THEY MAY HAVE
 ACCESS TO THE SAME INFORMATION AVAILABLE TO THE STATE.
 IT IS PRESENTED IN GOOD FAITH, BUT IS NOT INTENDED AS A
 SUBSTITUTE FOR INVESTIGATIONS, INTERPRETATION OR
 JUDGMENT OF SUCH AUTHORIZED USERS.

CONTRACTOR SM

DRILL RIG OPERATOR G. LA MAN QUE
 SOIL & ROCK DESCRIP. J. QUINN
 REGIONAL SOILS ENGR. Robert D. Day
 SHEET 1 OF 2
 STRUCTURE NAME/NO.

HOLE DH1

SM 20-12/78

REGION 2COUNTY MADISONPIN F 154 05 201 03PROJECT ERIEVILLE RESERVOIR DAM

SOIL SERIES

COORD. LOC.

DATE START 6-21-79 DATE FINISH 6-26-79STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
SOIL MECHANICS DIVISION

SUBSURFACE EXPLORATION LOG

HOLE D.H. 1

LINE

STA

OFFSET

SURF. ELEV. 151.21DEPTH TO WATER 20.0

CASING O.D. 2 7/8 I.D. 2 1/2 WEIGHT OF HAMMER - CASING 300 LBS. HAMMER FALL - CASING 15"
 SAMPLER O.D. 2 I.D. 1 1/2 WEIGHT OF HAMMER - SAMPLER 300 LBS. HAMMER FALL - SAMPLER 15"

DEPTH FEET	BLOWS ON SURFACE CASING	SAMPLE NO.	BLOWS ON SAMPLER	DESCRIPTION OF SOIL AND ROCK	WATER CONTENT
50	NO	10, 13, 15, 17		GR. SANDY GRAVEL, CLAYEY SILT... M. PL.	81.2
	C				
	A				
55	NO	11		GR. GRAVELLY SILT, CLAYEY... M. PL.	13.9
				ENDED HOLE AT 56.5	
				INSTALLED PLASTIC PIPE FOR WATER	
				OBSERVATION.	
				0.0 - 20.0 SPINNED CASING DRY	
				20.0 - 50.0 WASHED OUT CASING	
				50.0 - 55.0 NO CASING	

THE SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FOR STATE DESIGN AND ESTIMATE PURPOSES. IT IS MADE AVAILABLE TO AUTHORIZED USERS ONLY THAT THEY MAY HAVE ACCESS TO THE SAME INFORMATION AVAILABLE TO THE STATE. IT IS PRESENTED IN GOOD FAITH, BUT IS NOT INTENDED AS A SUBSTITUTE FOR INVESTIGATIONS, INTERPRETATION OR JUDGMENT OF SUCH AUTHORIZED USERS.

CONTRACTOR SM

DRILL RIG OPERATOR G. LAMONCUE
 SOIL & ROCK DESCRIP. In Record
 REGIONAL SOILS ENGR. Richard A. Lamoreaux
 SHEET 2 OF 2
 STRUCTURE NAME/NO. _____

HOLE D.H. 1

COUNTY Albany

SUBSURFACE EXPLORATION LOG

PROJECT ALBANY COUNTY WATER MAIN

SOIL SERIES

COORD. LOC.

DATE START 6-27-79

DATE FINISH 7-3-79

HOLE DH 2

LINE

STA

OFFSET

SURF. ELEV.

DEPTH TO WATER 25.5

7-3-79

CASING O.D. 2 7/8 I.D. 2 1/2 WEIGHT OF HAMMER - CASING 300 LBS. HAMMER FALL - CASING 12
SAMPLER O.D. 4 I.D. 1 1/2 WEIGHT OF HAMMER - SAMPLER 200 LBS. HAMMER FALL - SAMPLER 5

DEPTH FEET BELOW SURFACE	BLU NO	NO	BLU NO	NO	DESCRIPTION OF SOIL AND ROCK	NO
0	1	1	1	1	BR. SILTY GRAVEL, SANDY. D. NP.	4.5
5	17	1.9	2	5	BR. SAND, SILTY. W. NP.	17.0
10	1	2	1	1	BR. GR. SAND, GRAVELLY. W. NP.	18.0
15	22	3	3	4	BR. FINE SAND, SILTY. W. NP.	21.0
20	13	4	1	1	BR. GRAVELLY SAND, SILTY. W. NP.	18.0
25	13	5	3	3	BR. GRAVELLY SAND, SILTY. W. NP.	18.0
30	23	6	6	5	GR. GRAVELLY SAND, SILTY. M. NP.	7.0
35	74	7	27	43	GR. GRAVELLY SILT, SANDY W/STONE FRAG. M. NP.	8.0
40	8	23	117	111	EXPED. HOLE 445	
					SPOONED CASING DRY 0-10.0	
					WASHED OUT CASING 10.0-40.0	
					INSTALLED PLASTIC PIPE 1" - 41.5	

THE SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FOR STATE DESIGN AND ESTIMATE PURPOSES. IT IS MADE AVAILABLE TO AUTHORIZED USERS ONLY THAT THEY MAY HAVE ACCESS TO THE SAME INFORMATION AVAILABLE TO THE STATE. IT IS PRESENTED IN GOOD FAITH, BUT IS NOT INTENDED AS A SUBSTITUTE FOR INVESTIGATIONS, INTERPRETATION OR JUDGMENT OF SUCH AUTHORIZED USERS.

CONTRACTOR SM

DRILL RIG OPERATOR G. LAMARQUE
SOIL & ROCK DESCRIP. J. QUINN
REGIONAL SOILS ENGR. G. LAMARQUE
SHEET 1 OF 1
STRUCTURE NAME NO.

HOLE DH 2

ERICVILLE

HOLE 212.3
LINE 212.3
STA 212.3
OFFSET 212.3
SURF. ELEV. 212.3
DEPTH TO WATER 212.3

CASING O.D. 2 3/8 I.D. 2 1/8 WEIGHT OF HAMMER - CASING 3300 LBS. HAMMER FALL - CASING 1/2 IN.
SAMPLER O.D. 2 I.D. 1 1/2 WEIGHT OF HAMMER - SAMPLER 300 LBS. HAMMER FALL - SAMPLER 1/2 IN.

THE INFORMATION CONTAINED HEREIN IS UNCLASSIFIED EXCEPT WHERE SHOWN OTHERWISE. IT IS MADE AVAILABLE TO THE PUBLIC IN ORDER TO PROMOTE TRANSPARENCY AND ACCOUNTABILITY. IT IS NOT INTENDED AS A GUARANTEE OF ACCURACY OR COMPLETENESS. FOR MORE INFORMATION, VISIT WWW.FBI/FOIA.

HOLE 2448

SECTION 2
SHEET 1
PIN 104.05 201.03
PROJECT PRISONERS
SOIL SERIES
COORD. LOC.
DATE START 10-14-79 DATE

SUBSURFACE EXPLORATION LOG

HOLE _____
 LINE _____
 STA _____
 OFFSET _____
 SURF. ELEV. _____
 DEPTH TO WATER _____

CASING O.D. 2 7/8 I.D. 2 1/2 WEIGHT OF HAMMER - CASING 300 LBS. HAMMER FALL - CASING 16 IN.
SAMPLER O.D. 2 I.D. 1 1/2 WEIGHT OF HAMMER - SAMPLER 300 LBS. HAMMER FALL - SAMPLER 16 IN.

DEPTH FEET	BLOW COUNT	BLOWS IN 10 FEET	BLOWS ON SAMPLER				DESCRIPTION OF SOIL AND ROCK	WATER CONTENT	SAMPLER
			1	2	3	4			
0									
1	3	1	1	4	4		BR GRAVELLY SAND, SILTY w/ROOT FIBERS	M-NP	7
3	4	2	3	3	3		BR GRAVELLY SAND, SILTY	W-NP	5.1
5	4	3	3	1	2		BR GRAVELLY SAND, SILTY	W-NP	6.2
5.6	6	4		2	1		GR BR SILTY SAND, ORGANIC	W-NP	38.4
7	5	5	4	1	3		BR SILTY SAND	W-NP	19.0
9	24	6	2	4	6		BR SILTY SAND GRAVELLY	W-NP	11.2
10.5	20	7	7	3	5		BR GRAVELLY SILT, SANDY	W-NP	Sam. 11.2
12.5	23	8	5	7			BR SANDY SILT, GRAVELLY	W-NP	21.1
13.5	30	9	8	8	9		BR SAND, SILTY	M-NP	14.4
15.0	27	10	9	9			MOTTLED GR BR SILT, w/CLAY	W-LP	19.2
16.5	30	11	2	4	7		BR SILTY SAND, GRAVELLY	W-NP	16.3
18.0	39	12	19	15	18		BR BR SILTY GRAVEL, CLAYEY	W-PL	15.6
19.5	50	13	7	8	12		GR GRAVELLY SAND, SILTY	W-NP	8.4
20.0	60	14	?	16	11		BR GR CLAYEY SILT, SANDY	W-PL	13.5
21.5	68	15	12	9	13		BR SANDY SILT, w/STONE FRAG.	W-NP	21.1
23.5	64	16	8	12	10		GR SANDY SILT	W-NP	23.1
25.0	62	17	10	12	11		GR SILTY SAND, STONE FRAG.	W-NP	10.1
25.5	62	17	11	12	11		GR SILTY SAND	W-NP	12.1
27.0	64	18	11	15	17		GR SANDY GRAVEL, SILTY	W-NP	11.1
28.5	76	19	11	15	26		GR SILTY GRAVEL, SANDY	W-NP	9.1
30.0	103	20	13	26			GR SILTY GRAVEL, CLAYEY	W-PL	6.7
31.5	45	21	28	25	22		GR SANDY SILT, STONE FRAG.	M-NP	5.1
33.0	85	22	24	38	33		GR SANDY SILT, STONE FRAG.	M-NP	50.1
34.5	140	23	29	45	46		GR SANDY SILT, STONE FRAG.	M-NP	7.1
35.0	483	24	26	32	1.1		GR SANDY SILT w/ STONE FRAG.	M-NP	6.1
36.5	26	25	40	59			GR SILTY SAND, GRAVELLY	M-NP	
37.5									
							10-29-79 CHECKED G.W. 35'		
							INSTALLED PLASTIC PIPE TO 35'		

THE SUBSURFACE INFORMATION SHOWN HEREON WAS OBTAINED FOR STATE DESIGN AND ESTIMATE PURPOSES. IT IS MADE AVAILABLE TO AUTHORIZED USERS ONLY THAT THEY MAY HAVE ACCESS TO THE SAME INFORMATION AVAILABLE TO THE STATE. IT IS PRESENTED IN GOOD FAITH, BUT IS NOT INTENDED AS A SUBSTITUTE FOR INVESTIGATIONS, INTERPRETATION OR JUDGMENT OF SUCH AUTHORIZED USERS.

JNTRACTOR

DRILL RIG OPERATOR C. GOLDSMITH
SOIL & ROCK DESCR. J. L. LINDA
REGIONAL SOILS ENGR. Edward H. B. B.
SHEET 1 OF 1
STRUCTURE NAME NO. _____

HOLE

APPENDIX E

REFERENCES

APPENDIX E

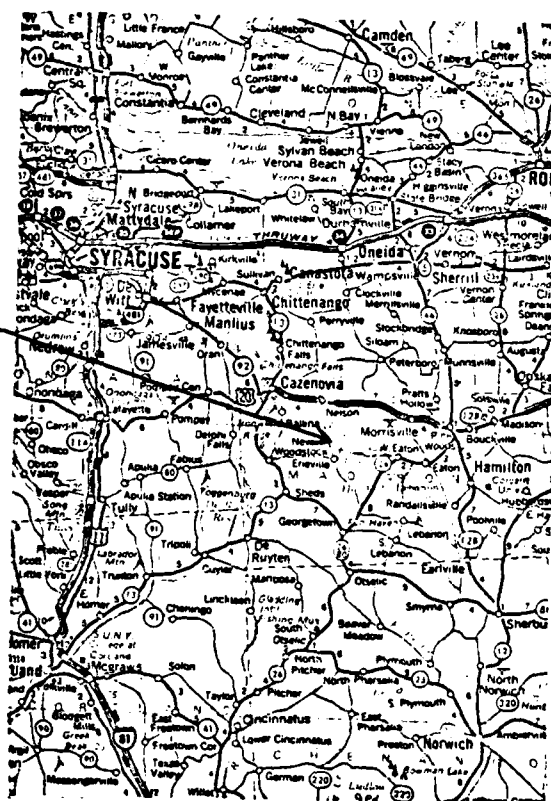
REFERENCES

- 1) U.S. Department of Commerce; Weather Bureau;
Hydrometeorological Report No. 33 - Seasonal Variation of the Probable
Maximum Precipitation East of the 105th Meridian for Areas from 10 to
1,000 Square Miles and Durations of 6, 12, 24, and 48 Hours, April 1956.
- 2) H.W. King and E.F. Brater, Handbook of Hydraulics, 5th edition,
McGraw-Hill, 1963.
- 3) University of the State of New York, Geology of New York, Education
Leaflet 20, Reprinted 1973.
- 4) Elwyn E. Seelye, Design, 3rd edition, John Wiley and Sons, Inc., 1960.
- 5) U.S. Department of the Interior, Bureau of Reclamations;
Design of Small Dams, 2nd edition (rev. reprint), 1977.

APPENDIX F

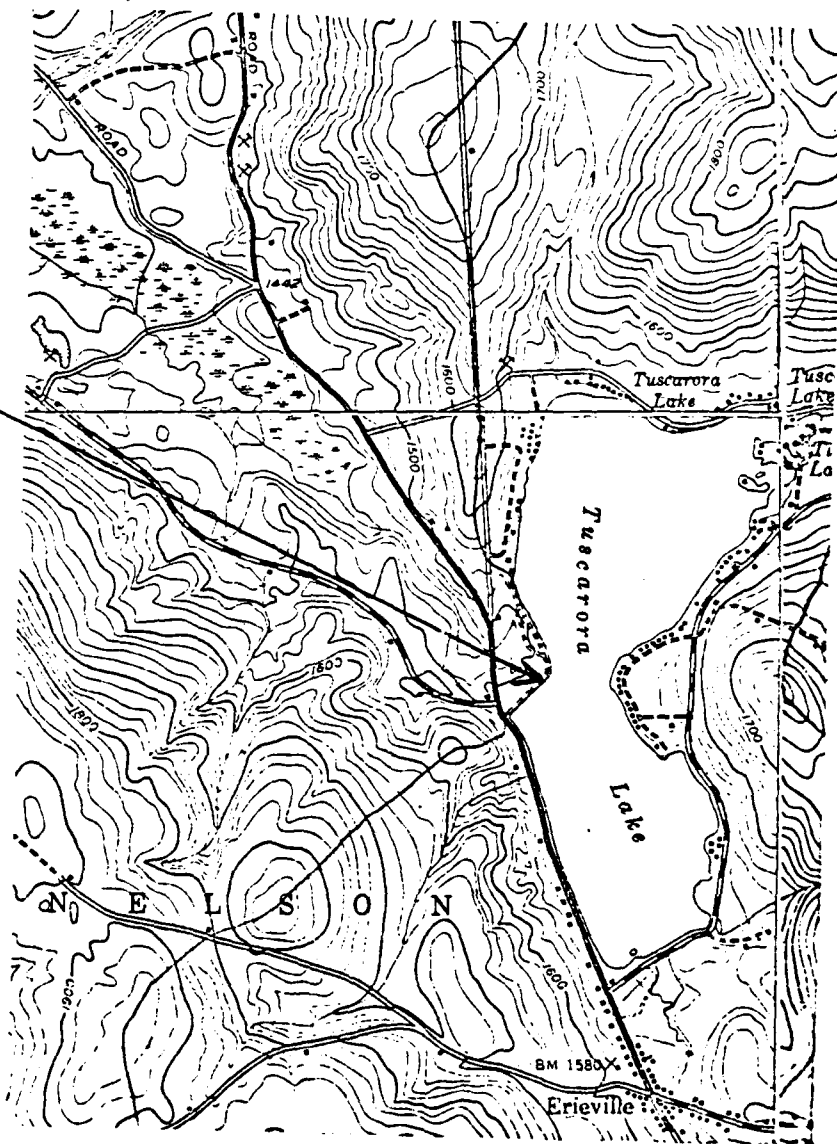
DRAWINGS

DAM SITE



VICINITY MAP
ERIEVILLE RESERVOIR DAM
I.D. No. NY 369

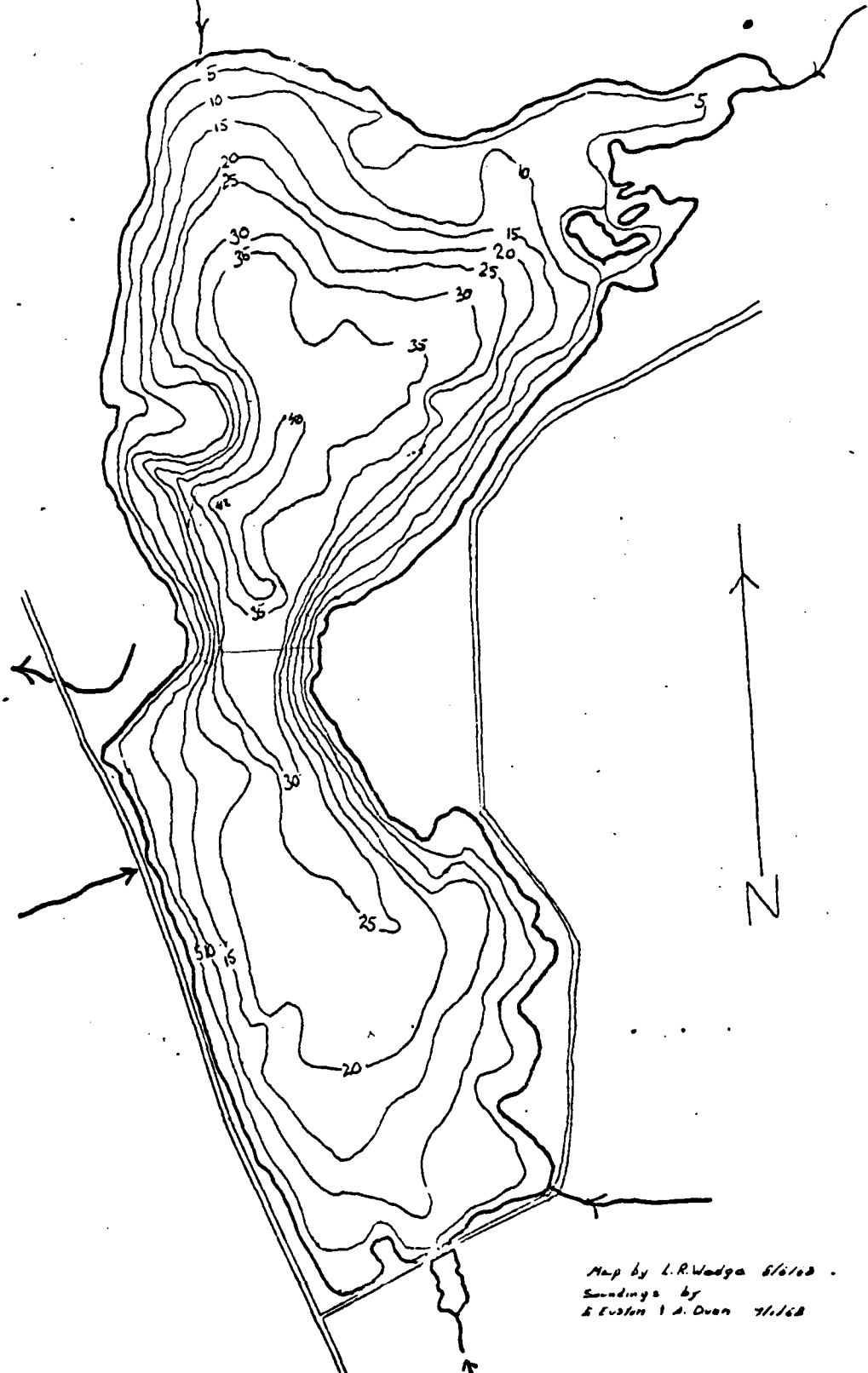
DAM SITE



TOPOGRAPHIC MAP
ERIEVILLE RESERVOIR DAM
I.D. No. NY 369

ERIEVILLE RESERVOIR

S P164

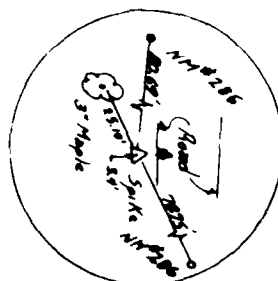


Map by L.R. Wadga 6/6/68
Soundings by
E. Evelyn & D. Owen 7/6/68

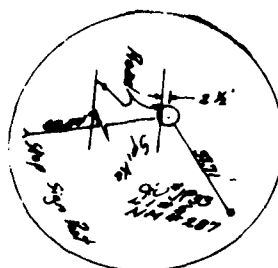
HC 47-2 (5/76)

IN CHARGE OF Ed Williams July 4, 1977 DESIGNED BY _____ CHECKED BY _____ ESTIMATED BY _____

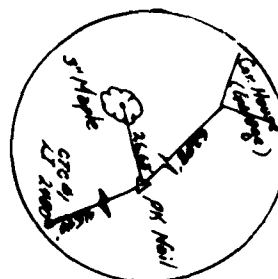
E 11 + 23



E 11 + 23



H 8 + 00

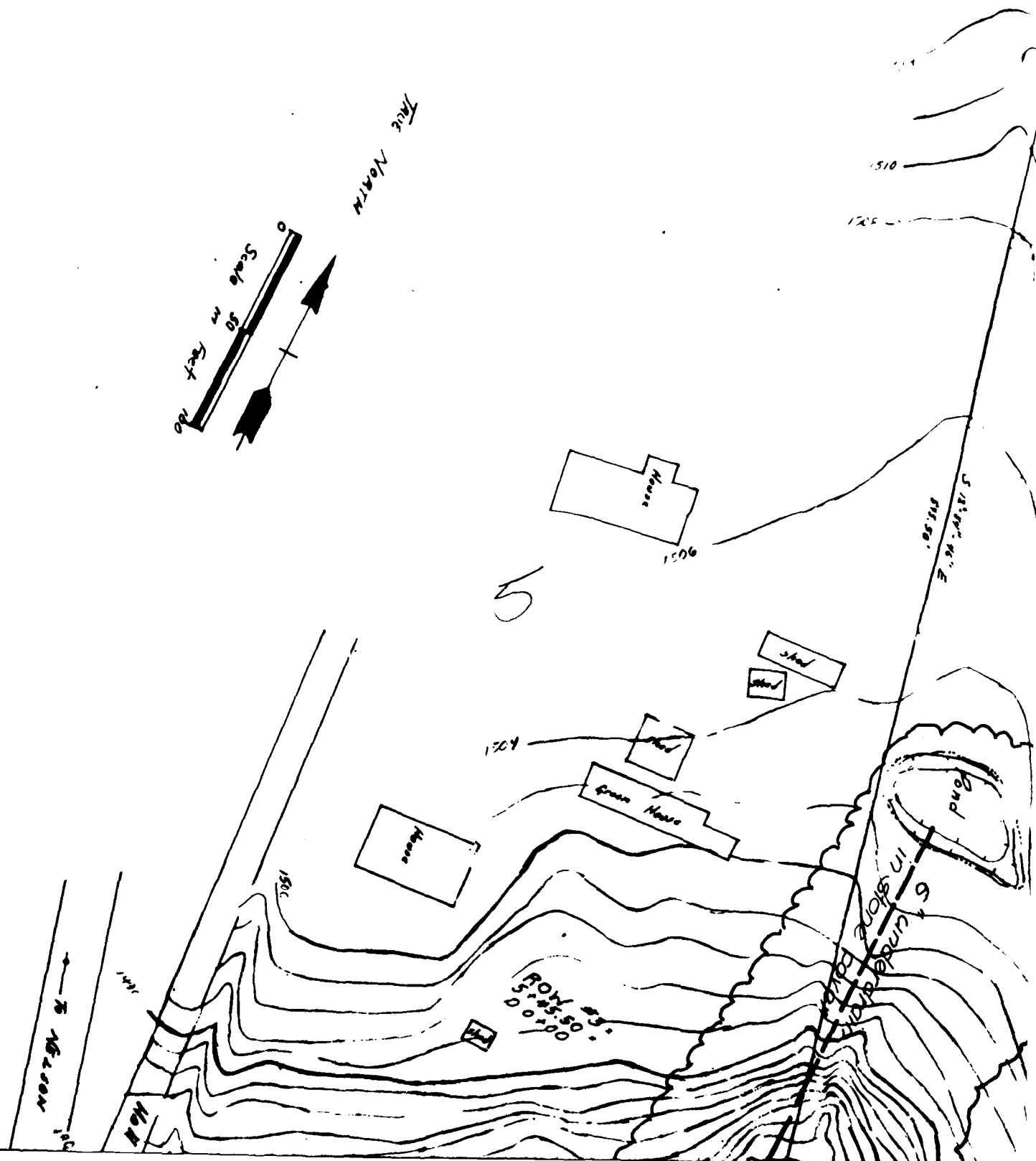


Base Line Ties

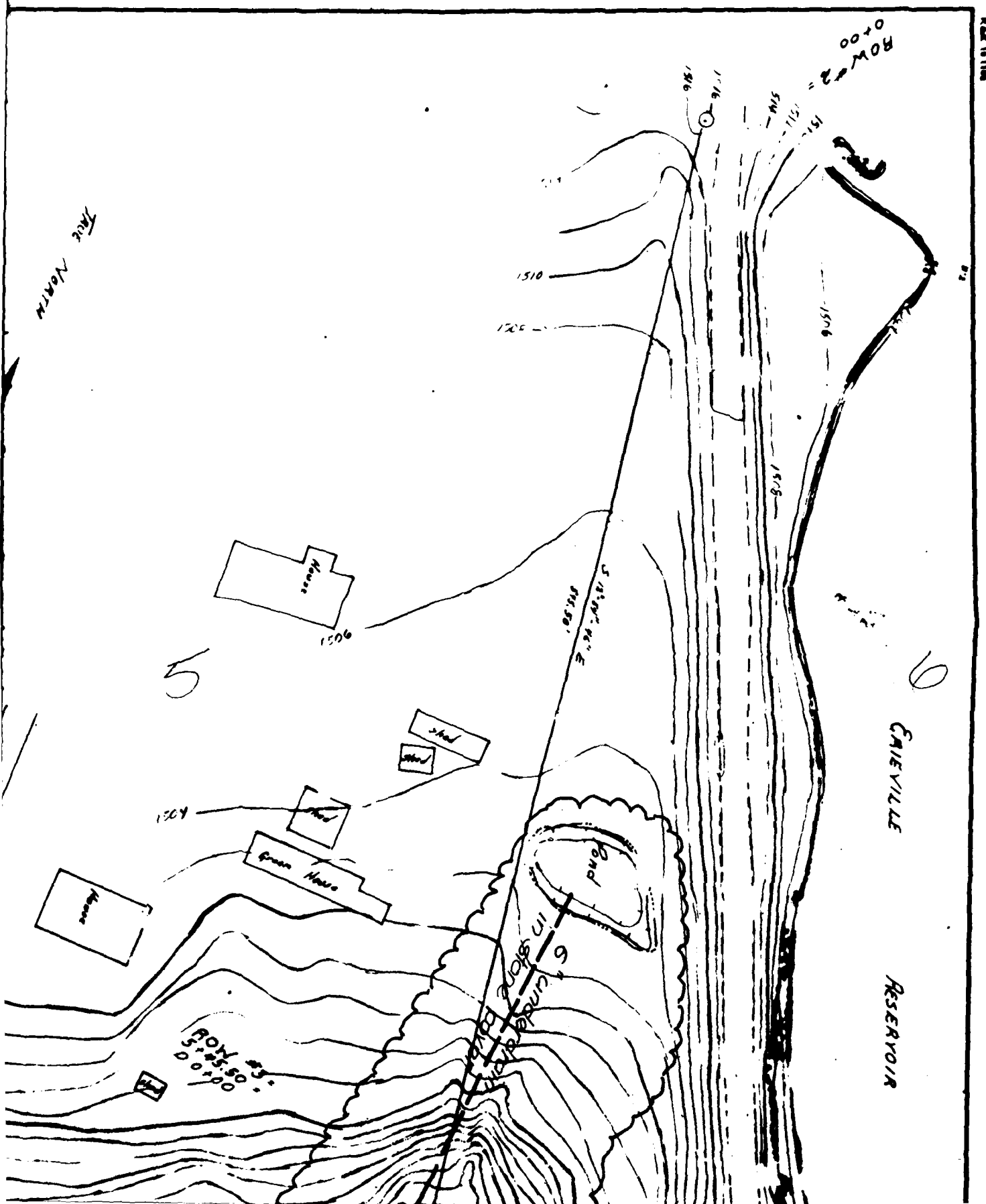
4

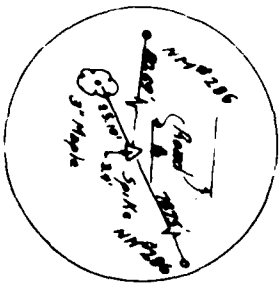
to Nelson

CHECKED BY

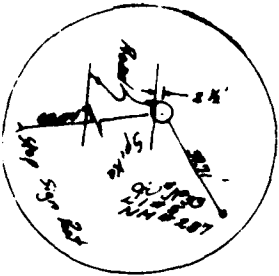


DATE _____

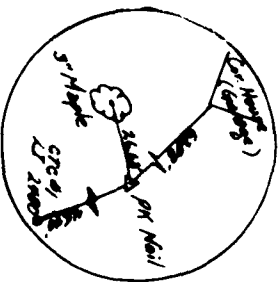




E 11 + 23



E 9 + 15 = H 10 + 00



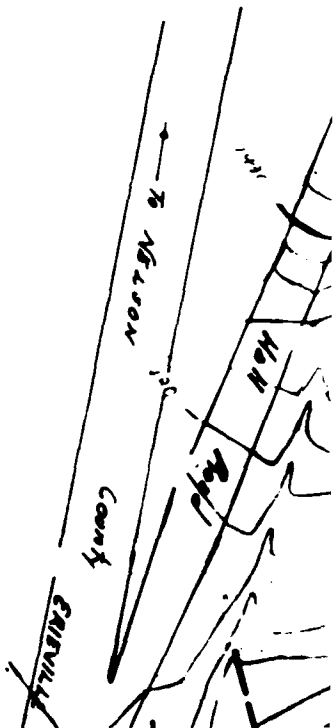
H 8 + 00

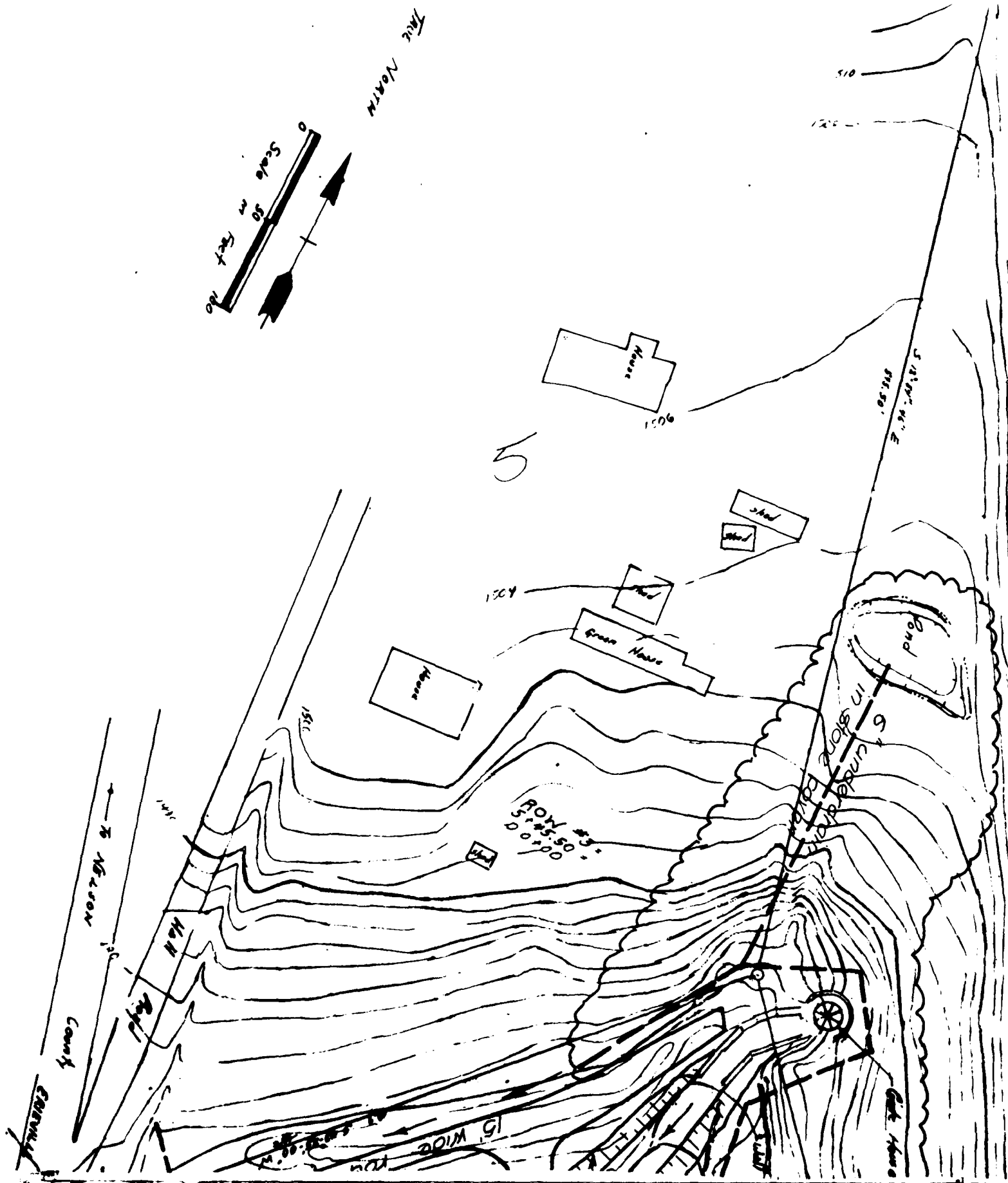
Base Line Ties

7

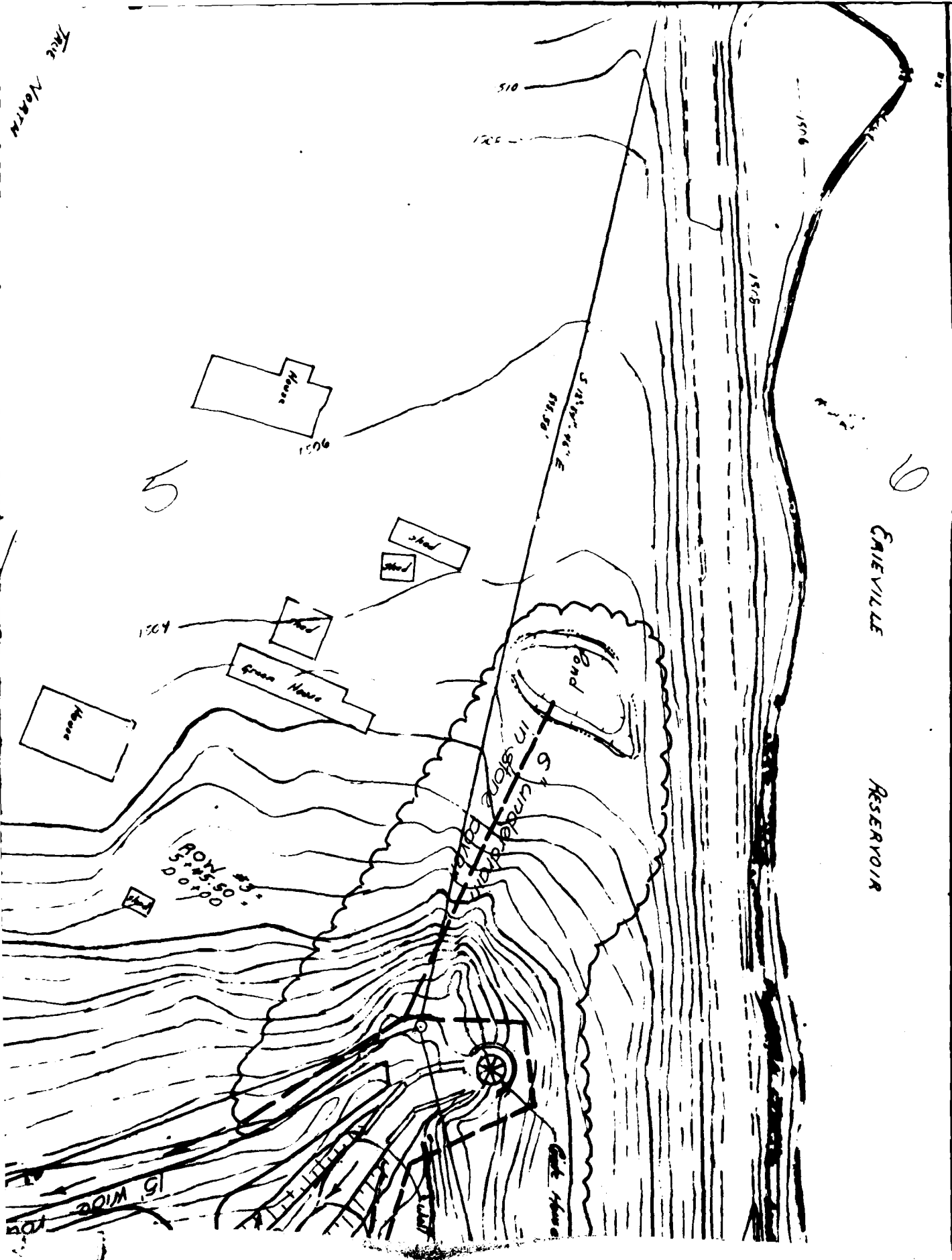
CR/IEVILLE
(TUSCA)
MAD.
See

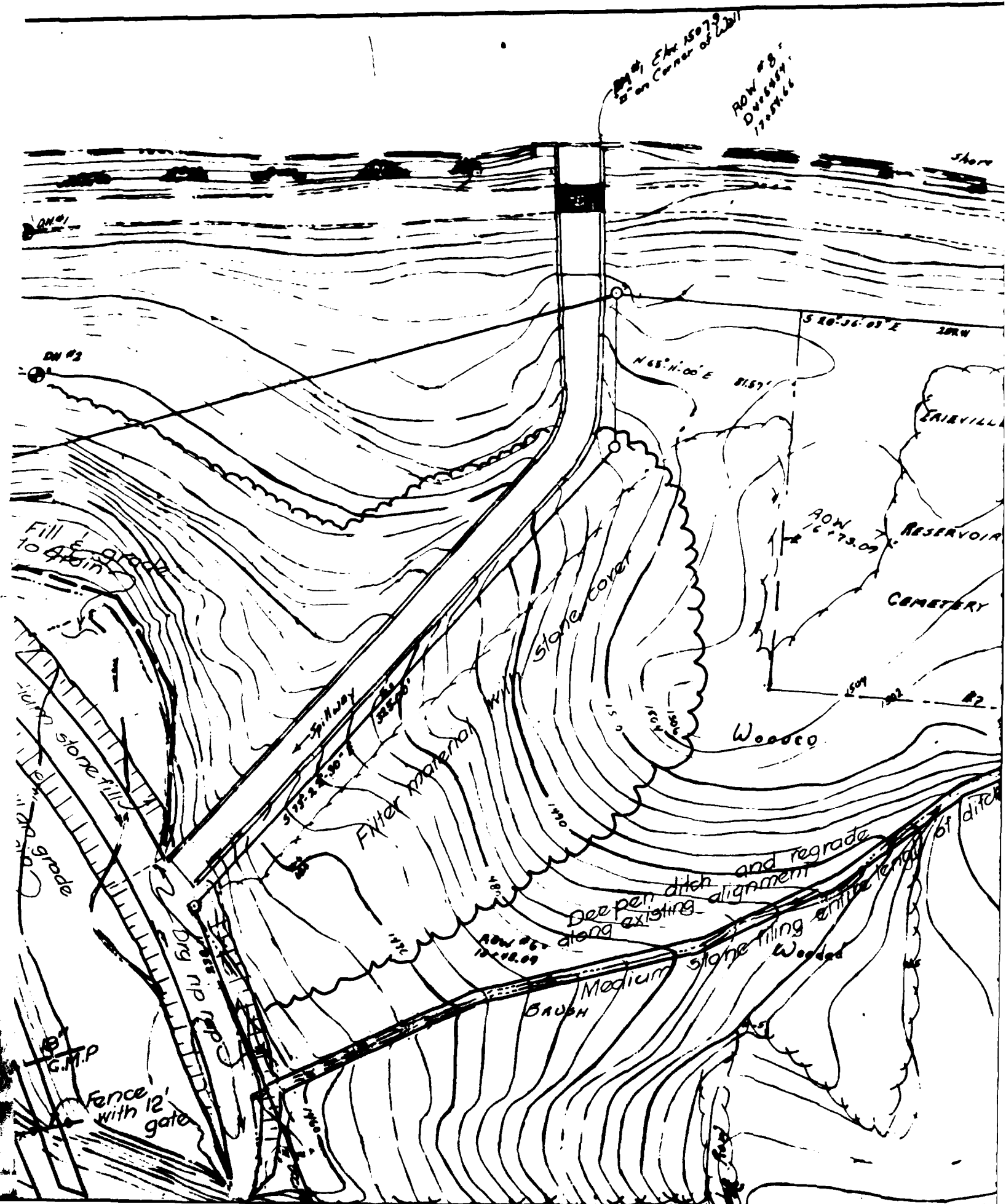
805454
1919





TRAIL NORTH





FED. ROAD REG. NO.	STATE	FEDERAL PROJECT NO.	NO.	SHEETS
1	N.Y.			

ERIEVILLE

ROW #9 -
20+44.07 -
R0+00

shore line

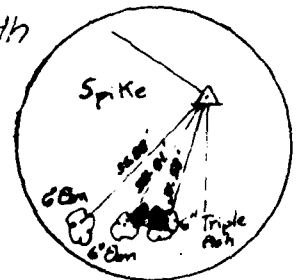
R0+57

RESERVOIR

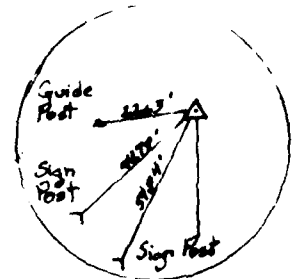
BASE LINE TIES



R0+57



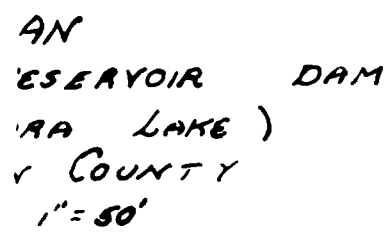
52+92



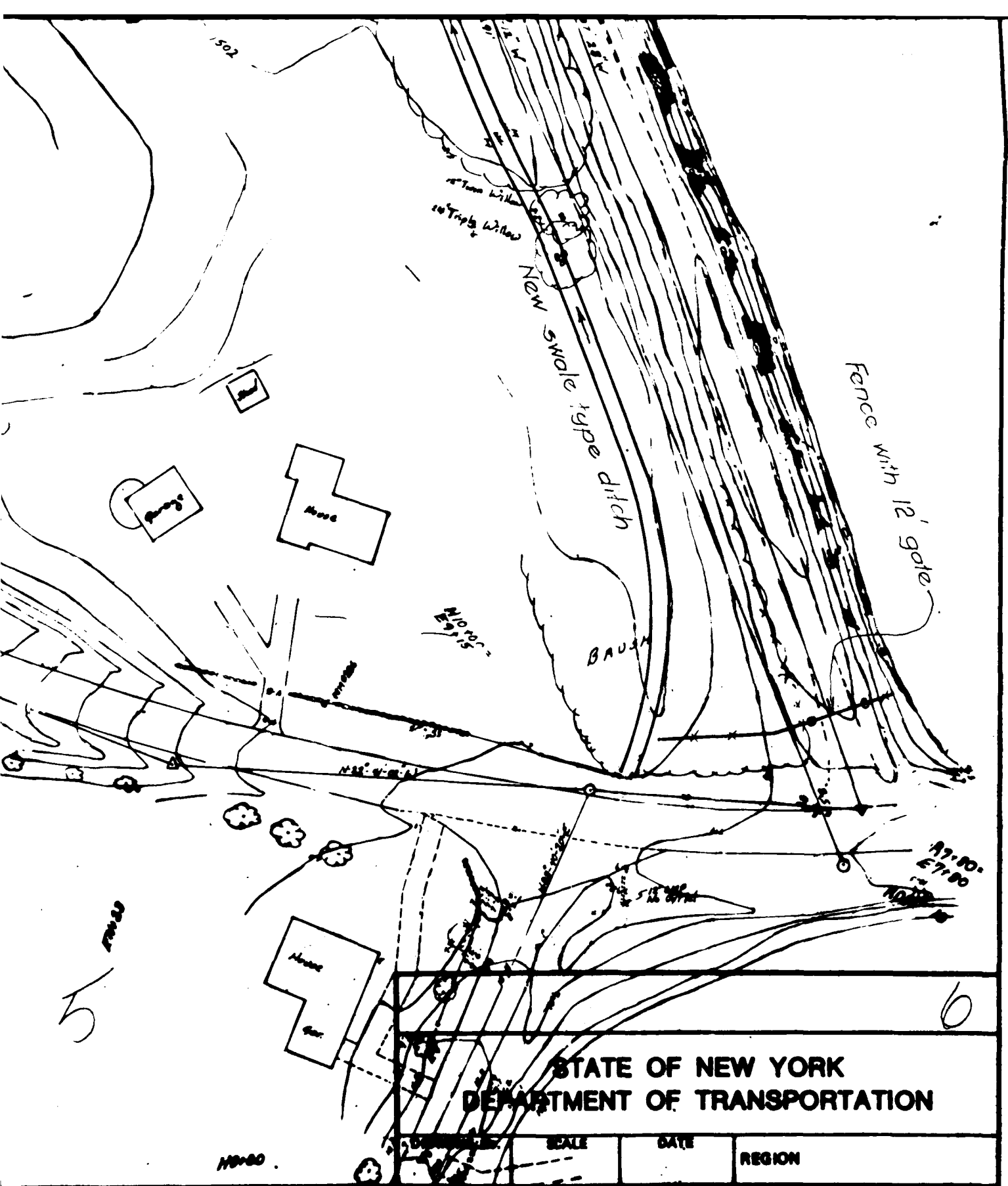
R7+80

3





4



END

DATE
FILMED

8-80

DTIC