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NATIONAL DAM SAFETY PROGRAM. WANAKSINK LAKE DAM (INVENTORY NUMB--ETC(U)
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DELAWARE RIVER BASIN

WANAKSINK LAKE DAM

SULLIVAN COUNTY, NEW YORK

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

NEW YORK DISTRICT CORPS OF ENGINEERS

AUGUST 1978

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Wanaksink Lake Dam
Sullivan County
Fowlwood Brook

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.

Wanaksink Lake Dam was found to be in good condition although some maintenance actions were recommended.

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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 "Probably 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.

PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
WANAKSINK LAKE DAM I.D. No. NY 330
DEC #195 DELAWARE RIVER BASIN
SULLIVAN COUNTY
(FORMERLY LORDS RESERVOIR DAM)

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PHASE 1 REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam:	Wanaksink Lake Dam (I.D. No. NY 330) (formerly Lords Reservoir Dam)
State Located:	New York
County Located:	Sullivan
Stream:	Fowlwood Brook (tributary of Neversink River)
Date of Inspection:	November 15, 1978

ASSESSMENT

The Wanaksink Lake Dam consists of an earth dam having riprap on the upstream face and layed-up masonry on the downstream face. The masonry walled spillway is located near the center of the structure. The visual inspection of the dam revealed the following deficiencies which require remedial action or periodic observation:

1. The low level reservoir drain is plugged and inoperative. Restore this system to proper working condition.

2. Periodically and systematically monitor the conditions of observed settlement and movement adjacent the spillway. If further movement occurs, investigation and remedial action will be required.

3. Remove the brush observed at the abutments and provide a periodic program of mowing and cutting.

4. Initiate a program of periodic inspection and maintenance of the dam and appurtenances. Document this information for future reference.

The total discharge capacity of the spillway is adequate to pass the Probable Maximum Flood (PMF) without stoplogs. The spillway is capable of discharging one-half the PMF with the maximum height of stoplogs in place.

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

Approved By:

Col. Clark H. Benn
New York District Engineer

Date: 17 April 79

Overview of Wanaksink Lake Dam
Downstream Face

Overview of Wanaksink Lake Dam
Upstream Face

PHOTO #1

North Abutment, Downstream Face

PHOTO #2

Spillway, Downstream Face

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SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority

The Phase 1 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

Evaluation of the existing conditions of the subject dam to identify deficiencies and hazardous conditions, determine if they constitute hazards to life and property and recommend remedial measures where necessary.

1.2 DESCRIPTION OF PROJECT

a. Description of Project

The Wanaksink Lake Dam consists of a 420 feet long earth embankment containing a 3 feet wide spillway located near the center of the dam. The dam is 21.5 feet high having a riprapped upstream slope of 1:1.8 and a masonry downstream slope of 1:1.25. The crest of the embankment is 12 feet wide. Wood sheeting was called for on the plans to act as a cut-off. The wood extends from the crest to the base of the dam near the center line. Masonry 6 feet in width forms the downstream face. The plan and section of the dam indicates that the embankment is composed of "Selected Material". The ungated spillway is constructed of recently placed concrete. The original spillway walls are composed of masonry blocks. The spillway crest is 8.5 feet lower than the crest of the dam. This narrow channel controls flow with the use of 6 inch high stoplogs, 3 of which were in place at the time of inspection. The low level reservoir drain, located directly beneath the spillway, has been plugged and is inoperative.

b. Location

Wanaksink Lake Dam is located on Fowlwood Brook a tributary of the Neversink and Delaware Rivers. The dam is situated within the Town of Thompson, Sullivan County.

c. Size Classification

The dam is 21.5 feet high and has an impoundment capacity of 5800 acre-feet. Since the impoundment capacity is in excess of 1,000 acre-feet, the dam is classified as an "intermediate" size dam.

d. Hazard Classification

The dam is classified as high hazard because of the numerous homes located along Fowlwood Brook and the Village of Glen Wild approximately 3 miles below the dam.

e. Ownership

The dam is owned and operated by the Wanaksink Lake Club, Inc., Rockhill, NY 12775. Mr. James D. Henry is the President (Tel: (914) 796-3524) and Mr. Ernest Greenwell is the Secretary (Tel: (914) 796-3877) of this organization.

f. Purpose of the Dam

The original purpose of the dam was water supply for the Delaware and Hudson Canal. However, currently it provides recreational facilities for the property owners surrounding Wanaksink Lake.

g. Design and Construction History

The dam and its appurtenant structures were designed and built by the Delaware and Hudson Canal Company about 1852. The sluicegate was reconstructed in 1926 and again in 1976.

h. Normal Operating Procedures

Water flows over an ungated spillway.

1.3 PERTINENT DATA

a.	Drainage Area (sq. mi)	2.0
b.	Discharge at Dam Site (cfs)	
	Maximum known flood (Date: Unknown)	170
	Spillway at Maximum Pool (El. 1516.0)	325
	Maximum Capacity of low level outlets	None
	Total Discharge, Max. Pool (El. 1516.0)	325
	Average Daily Discharge	Unknown
c.	Elevation (ft. above MSL-Datum)	
	Top of Dam	1517.5
	Spillway Crest	1509.0
	Tailrace Channel	1498.5
d.	Reservoir	
	Length of maximum Pool, miles	1.55
	Length of Shoreline (Spillway Crest) miles	4.82
	Surface area (Spillway Crest) acres	325.00
e.	Storage, (Acre-feet)	
	Spillway Crest	3000
	Top of Dam	6,360
f.	Dam	
	Embankment Type: Earth	
	Length (ft.)	420
	Upstream slope	1:1.82
	Downstream slope	1:1.25
	Impervions Core None	

Crest Elevation, ft.		1517.5
Crest Width, ft.		12.0
Crout curtain	None	

g. Spillway

Type:	Concrete lined	
Length, ft.		3.0
Crest Elevation MSL		1509.0
Upstream Channel	Not Visible	
Downstream Channel	Riprapped	

h. Regulating Outlet — None

i. Cutoff — Wood sheeting cutoff at the center of the embankment along the length of the dam

SECTION 2: ENGINEERING DATA

2.1 DESIGN

a. Geology

The Wanaksink Lake Dam is located in the "Appalachian Uplands" physiographic province of New York State. This province (the northern extreme of the Appalachian Plateau) was formed by dissection of the uplifted but flat lying sandstones and shales of the Middle and Upper Devonian Catskill Delta. Relief is high to moderate. Maximum dissection occurs in the Catskill Mountain area, where only the mountain peaks approximate the original plateau surface. Drainage is generally southwest toward the Delaware River system.

b. Subsurface Investigations

No subsurface investigation could be located for this dam. However, the "Dam Report" filed by Mr. Richard L. Hyde on August 23, 1914 states that the dam is founded on gravel.

The "General Soil Map of New York State" prepared by Cornell University Agriculture Experiment Station indicates that the surficial soils are Lackawanna and Wurtsboro of glacial till origin. These soils are generally stony sand silt and gravel with a trace of clay, having poor internal drainage characteristics. Boulders are also common in these soils; depth to bedrock is variable.

c. Embankment and Appurtenant Structures

The dam was designed and built by the Delaware and Hudson Canal Company about 1852. The spillway area was reconstructed in 1926 and again in 1976. Four drawings were located concerning the construction of the dam and have been included in Appendix F. The embankment was constructed of "selected material" with the downstream face and spillway walls formed of sandstone block masonry construction. The upstream face of the dam is riprapped.

2.2 CONSTRUCTION RECORDS

No construction records are available.

2.3 OPERATION RECORDS

No maintenance or operation record or manual is available.

2.4 EVALUATION OF DATA

Some of the data presented in this report has been made available by Mr. Ernest Greenwell and Mr. James D. Henry of the Wanaksink Lake Club, Inc. This information has been invaluable in the preparation of this report, and appears adequate and reliable for Phase 1 Inspection purposes.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of Wanaksink Lake Dam and the surrounding watershed was conducted on November 15, 1978. The weather was cloudy and temperatures ranged in the forties. The lake level was 2.1 feet above spillway crest at the time of the inspection due to the presence of 3-6 inch high (total 18 inches) flashboards.

b. Embankments and Abutments

The embankment crest exhibits some minor settlement; the largest depression, approximately 6 inches. Slight distoration of the riprap on the upstream face was observed, which could be related to uneven placement. A bulge (approximately 10 feet long) located south of the spillway on the downstream face was observed. This bulge could be a result of the seepage and subsequent grouting program conducted by the owner. The structure, as viewed from the downstream area, exhibits signs of previous settlement. The embankment appears to have settled differentially from the spillway. The masonry blocks are tipped substantially near the spillway walls (see photograph #2), then diminish with distance from these walls. This may indicate heave of the spillway section or general settlement of the embankment portions due to loading conditions. These problem areas do not, at present, constitute hazardous conditions, but they should be periodically monitored and observed. No problems were observed in the abutment areas, other than the presence of small trees and brush. Recently placed fill between the toe of the dam and the access road (see photograph #9) obscured any observation below the dam. This fill was placed (source: Mr. Ernest Greenwell) to cover the small depressions resulting from the removal of brush and small trees from the area. The area was being seeded at the time of visual inspection. No drainage system was incorporated in the construction of the dam. No seepage was observed during visual inspection of the dam.

c. Spillway

The spillway is a 3 feet wide concrete lined sluiceway having a crest 8.5 feet below the top of dam. Stoplogs are used to control the lake level. The low level reservoir drain is inoperative. The original design of the spillway included the use of masonry walls 4.5 feet apart, extending from the base to the top of the dam. This area was filled with concrete in 1926. In 1976, a grouting and spillway wall lining program was instituted to control seepage encountered along the masonry spillway walls. This program has succeded in controling this flow.

The riprapped tailrace channel is in good condition, but the flow is constricted by the presence of a masonry culvert beneath the access road near the toe of the dam. No problems have been reported due to this culvert.

d. Regulating Outlets

No regulating outlets other than the spillway are operational. The 24 inch diameter low-level drain corroded and became useless and was subsequently sealed.

e. Downstream Channel

The downstream channel is a natural stream bed. No debris was observed in the channel.

f. Reservoir

No signs of instability or sedimentation was observed in the reservoir area.

3.2 Evaluation of Observations

Alghough deficiencies were observed, these problem areas do not constitute conditions which are considered hazardous or dangerous. Deficiencies noted should be periodically and systematically monitored.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

The Wanaksink Lake was previously used as a storage reservoir by the Delaware and Hudson Canal Company, and later for the generation of electrictiy. Currently, the lake is used for recreational purposes. The maximum discharge capacity of the spillway without stoplogs is 325 cfs. From the spillway crest elevation 8 stoplogs can be placed to raise the lake level 4.0 feet. With all stoplogs in place the maximum spillway discharge capacity is 62 cfs. The dimensions of the stoplogs are 3 feet wide and 6 inches high.

4.2 MAINTENANCE OF THE DAM

There is no operation and maintenance manual for the dam. The embankment and spillway appear to be in good condition considering the age of the structure. Recent repairs to the spillway channel and control of reported seepage have in general restored the dam and appurtenances to appropriate operating levels. However, the low level reservoir drain is inoperative.

4.3 MAINTENANCE OF OPERATING FACILITIES

The low level reservoir drain is inoperative. This condition should be investigated to determine if this system can be put back into service.

4.4 WARNING SYSTEM IN EFFECT

There is no warning system in effect or in preparation.

4.5 EVALUATION

The spillway is in good condition, with the exception of the plugged low level reservoir drain.

SECTION 5: HYDRAULIC/HYDROLOGIC

5.1 DRAINAGE AREA CHARACTERISTICS

The Wanaksink Lake is located on the Fowlwood Brook, a tributary of the Neversink River. The total drainage area at Wanaksink Dam is 2 square miles. The topography is characterized by gentle slopes interspersed with swamps.

5.2 ANALYSIS CRITERIA

For the purpose of this investigation, the design features were analyzed to determine the capacity of the spillway through the development of Probable Maximum Flood (PMF) for the watershed and the subsequent routing of the PMF through the reservoir using HEC-1.

The unit hydrograph was defined by the Snyder Coefficients, Tp and Cp. The Probable Maximum Precipitation (PMP) was 21.0 inches (Figure 1), Hydrometerological Report (HMR #33) for a 24 hour duration, 200 square mile basin. The percentages of the PMP applied to other duration storms were interpolated from the plot of drainage area versus percent of the 24 hour, 200 square mile depth (Figure 2, HMR #33). The PMF inflow hydrograph was determined by applying the PMP to the unit hydrograph for the basin and the peak inflow was 3,600 cfs. After routing the peak inflow through the impounded storage, the peak outflow was determined to be 130 cfs. Half of PMF peak inflow was 1,800 cfs and the routed peak outflow was 50 cfs.

5.3 SPILLWAY CAPACITY

The ungated concrete spillway is 3 feet wide and the maximum head possible between the crest of the spillway and the top of the dam is 8.5 feet. The level of the reservoir can be raised by using stoplogs over the spillway and there were 3-6 inch high stoplogs in place over the spillway at the time of inspection.

The maximum computed capacity of the spillway without stoplogs is 325 cfs. This capacity will be reduced to 62 cfs with the use of the maximum allowable number of stoplogs (8 stoplogs - 4 feet high). The culvert downstream is adequate to pass the PMF outflow.

There is a 28 feet wide road running east-west near the north abutment of the dam. The surface of the road is 7 feet above the crest of the spillway and 1.5 feet below the top of the dam. This road, according to caretaker, will act as emergency spillway if necessary. However, the HEC-1 analysis indicates that PMF level will remain 2 feet below the surface of the road.

5.4 RESERVOIR CAPACITY

The reservoir capacity at spillway level is 3,000 acre-feet and the same at emergency spillway level is 5,800 acre-feet. The storage capacity curve is shown in Appendix D. The curve indicates a surcharge storage above spillway crest of 2,800 acre-feet which is equivalent to a runoff depth of 26.25 inches (PMP = 21 inches) over the drainage area.

5.5 FLOODS OF RECORD

The higest and lowest water levels recorded since completion of Wanaksink Dam are as follows:

	Date	Elevation (feet)	Discharge (cfs)
Higest	August 1955	1514.8	170
Lowest	Unknown	Unknown	Unknown

The highest water level was probably created by raising the reservoir level with stoplogs.

5.6 OVERTOPPING POTENTIAL

The maximum capacity of the spillway is 325 cfs with the stoplogs removed. Since the reservoir can store PMF, no overtopping potential exists.

5.7 EVALUATION

The spillway is adequate to discharge PMF. However, there is no low level drain. The 2 foot diameter low level drain corroded and became useless and was subsequently sealed. The dam must be provided with a low level drain to empty the reservoir in case of emergency. The stoplogs should be removed when the reservoir is full and heavy downpour is expected.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

The following visual observations are indicative of distress within the earth embankment, but these conditions do not appear to be active and warrent only continued observation at bi-monthly intervals. Further investigation is not considered necessary at this time due to the successful spillway rehabilitation and grouting program described below in "d. Post-Construction Changes". While the spillway is in good condition, apparent settlement of the embankment portions has resulted (see photograph #2). Some minor settlement of the crest was observed, the maximum being approximately 6 inches. Slight distoration of the riprap on the upstream face was observed, probably the result of uneven placement. A bulge (approximately 10 feet long) located south of the spillway on the downstream face was evident.

b. Design and Construction Data

No design computations or other data regarding the structural stability of the spillway or the earth embankment are available.

c. Operating Records

No records of operation are available and no significant operational problems were reported.

d. Post-Construction Changes

The dam and appurtenant structures were constructed about 1852. The spillway was repaired in 1926 by placing concrete in the deep spillway section from near the base to the present spillway crest. In 1976, a grouting program and spillway wall lining was undertaken to control the reported seepage encountered along the spillway walls. Approximately 4000 cubic feet of grout was placed on both sides of the spillway and pumped until it emerged in the joints of the spillway walls. This program has been successful and no seepage was observed during the Phase 1 Inspection.

e. Seismic Stability

The dam is located in Seismic Zone 1. Therefore, a seismic analysis is not warrented.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

a. Safety

The Phase 1 Inspection of Wanaksink Lake Dam did not indicate conditions which constitute an immediate hazard to human life or property. The present condition of the earth embankment is not considered to be unstable. However, previous settlement and movement of the downstream face near the spillway require further observation at periodic intervals to prevent the development of hazardous conditions.

b. Adequacy of Information

The information reviewed is adequate for Phase 1 Inspection purposes.

c. Urgency

The settlement and movement of the embankment portion of the dam should be periodically monitored.

d. Need for Additional Investigation

No additional investigations are required.

7.2 RECOMMENDED MEASURES

a. The low level reservoir drain must be restored to proper working condition.

b. Periodically and systematically monitor the conditions of observed settlement and movement adjacent to the spillway. If further movement occurs, immediately contact the NYS Department of Environmental Conservation, Dam Safety Section at (518) 457-6310.

c. Remove the brush observed at the abutments and provide a periodic program of mowing and cutting.

d. Initiate a program of periodic inspection and maintenance of the dam and appurtenances. Document this information for future reference.

APPENDIX A

PHOTOGRAPHS

PHOTOS #3 & 4

Spillway Channel and Access Road Culvert
Looking West

PHOTO #6

Old Photograph of Dam (5-31-13)
Looking North

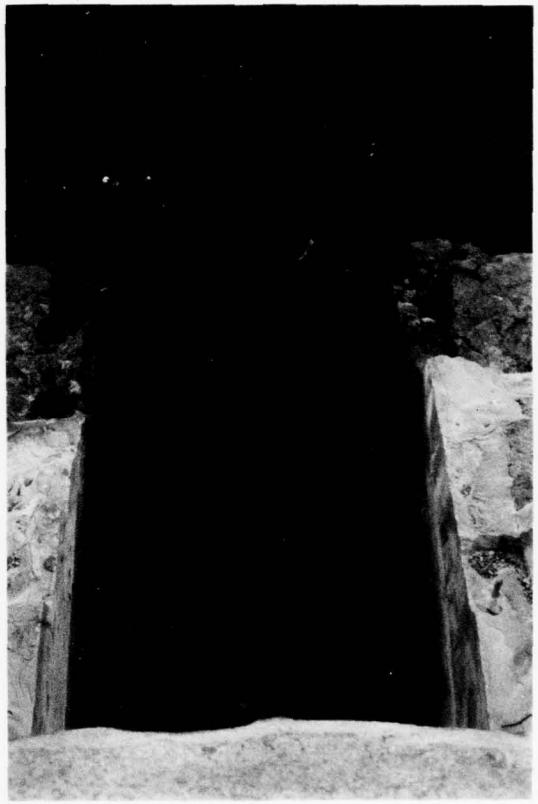


PHOTO #5

Spillway Channel
Looking Upstream from Crest

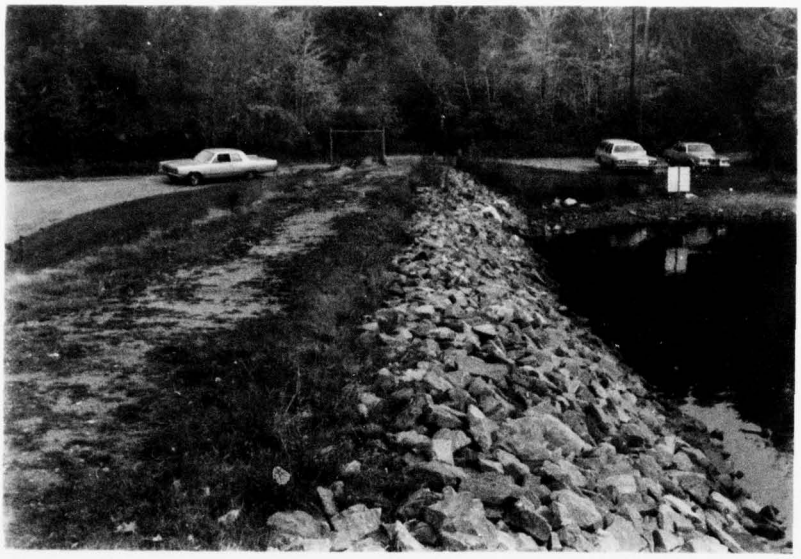


PHOTO #7

Crest and Upstream Face
Looking North from Spillway

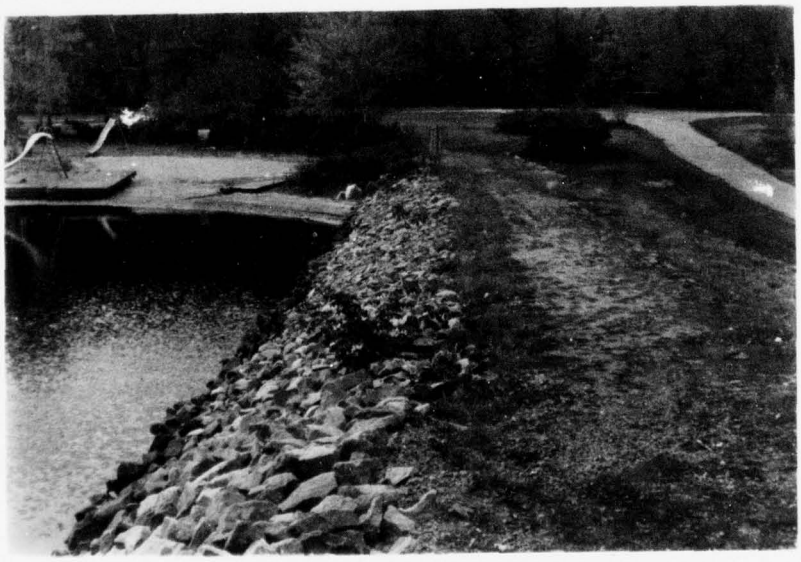


PHOTO #8

Crest and Upstream Face
Looking South from Spillway

PHOTO #9

New Fill Placed at Toe
Looking North from Spillway Channel

APPENDIX B

ENGINEERING DATA CHECKLIST

Check List
Engineering Data
Design Construction Operation

Name of Dam WANAKSINK LAICE

I.D. # N.Y. 330

Item	Remarks		
	Plans	Details	Typical Sections
Dam	None	None	Yes
Spillway(s)	Yes	None	Yes
Outlet(s)	NONE	NONE	NONE
Design Reports	NONE		
Design Computations	NONE		
Discharge Rating Curves	NONE		
Dam Stability	NONE		
Seepage Studies	NONE		
Subsurface and Materials Investigations	NONE		

Item	Remarks
Construction History	NONE, ONLY RECONSTRUCTION HISTORY AVAILABLE.
Surveys, Modifications, Post-Construction Engineering Studies and Reports	YES. SEEPAGE WAS OBSERVED AROUND SPILLWAY AND THE OWNER PUMPED 4,000 CUBIC Feet OF CONCRETE IN 1976. NO SEEPAGE WAS OBSERVED DURING INSPECTION. THE ABOVE STATEMENT WAS MADE BY CARETAKER. Spillway channel also Lined with concrete.
Accidents or Failure of Dam Description, Reports	NONE.
Operation and Maintenance Records Operation Manual	NONE.

APPENDIX C

VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam Wanaksink Lake

I.D. # NY 330 DEC # 195 Delaware River Basin

Location: Town Thompson County Sullivan

Stream Name Fowlwood Brook

Tributary of Neversink River

Longitude (W), Latitude (N) 74°34'-37"/41°37'-29"

Hazard Category C - High

Date(s) of Inspection November 15, 1978

Weather Conditions 45° cloudy

b. Inspection Personnel R. McCarly, Muhammad Islam, Ernest Greenwell, James D. Henry

c. Persons Contacted Wanaksink Lake Club - Ernest Greenwell (sec'y) (914) 796-3877 & James D. Henry (Pres.) (914) 796-3524

d. History:

Date Constructed 1852, Spillway Reconstructed 1926 & 1976

Owner Wanaksink Lake Club Inc. Rockhill NY. 12775

Designer Delaware and Hudson Canal Co.

Constructed by Delaware and Hudson Canal Co.

2) Technical Data

Type of Dam Earth Dam, masonry - downstream face, riprap - upstream face

Drainage Area 2.0 square miles

Height 21.5 feet Length 420 feet

Upstream Slope 1:1.8 Downstream Slope 1:1.25

2) Technical Data (Cont'd.)

External Drains: on Downstream Face NONE @ Downstream Toe NONE

Internal Components:

Impervious Core NONE

Drains NONE

Cutoff Type wood sheeting extending vertically from crest (see plan)

Grout Curtain NONE

3) Embankment

THERE ARE SOME minor BULGES ON THE UPSTREAM SIDE OF SPILLWAY AND A BIG ONE ON THE DOWNSTREAM SIDE

a. Crest

(1) Vertical Alignment SOME SETTLEMENTS. LARGEST DEPRESSION - 6"

(2) Horizontal Alignment THERE IS A BIG BULGE (10' LONG) ON DOWNSTREAM SIDE OF EMBANKMENT NEAR THE SPILLWAY. SOME OF THE STONES ARE ABOUT TO FALL OFF AT BULGE.

(3) Surface Cracks none observed

(4) Miscellaneous

b. Slopes

(1) Undesirable Growth or Debris, Animal Burrows NONE OBSERVED on Slopes - small shrubs & brush at abutments

(2) Sloughing, Subsidence or Depressions ONLY AS MENTIONED ABOVE.

(3) Slope Protection RIPRAP ON UPSTREAM SIDE. COURSE SANDSTONE masonry LAID HORIZONTALLY ON THE DOWNSTREAM SIDE.

(4) Surface Cracks or Movement at Toe NO SURFACE CRACKS OBSERVED.

(5) Seepage NONE OBSERVED.

(6) Condition Around Outlet Structure GOOD EXCEPT BULGE AS NOTED ABOVE. Bulge probably due to grouting procedures to control seepage

c. Abutments

(1) Erosion at Embankment and Abutment Contact NONE OBSERVED

(2) Seepage along Contact of Embankment and Abutment NONE OBSERVED

(3) Seepage at toe or along downstream face NONE OBSERVED · new fill placed

d. Downstream Area - below embankment

(1) Subsidence, Depressions, etc. COULD NOT BE ASCERTAINED BECAUSE TOE OF THE DAM WAS FRESHLY RESURFACED WITH EARTH.

(2) Seepage, unusual growth NONE OBSERVED.

(3) Evidence of surface movement beyond embankment toe NONE OBSERVED.

(4) Miscellaneous —

e. Drainage System

NONE

(1) Condition of relief wells, drains, etc. NONE

(2) Discharge from Drainage System NONE

4) Instrumentation

(1) Monumentation/Surveys SURVEY BENCHMARKS.

(2) Observation Wells NONE

(3) Weirs NONE

(4) Piezometers NONE

(5) Other —

5) Reservoir

a. Slopes PARTLY RIPRAPPED. NO PROBLEMS MENTIONED or observed

b. Sedimentation NONE REPORTED.

6) Spillway(s) (including tail race channel)

a. General CONCRETE SLUICEWAY IS IN GOOD CONDITION.

b. Principle Spillway SLUICEWAY 3 FEET WIDE AND 6.2 FEET HIGH CLOSED BY WOODEN PLANKS. CONCRETE SLUICEWAY IS IN GOOD CONDITION.

c. Emergency or Auxiliary Spillway NONE

d. Condition of Tail race channel TAIL RACE CHANNEL IS RIPRAPPED AND IS IN GOOD CONDITION.

access road at toe of dam with laid-up stone culvert will constrict flow & may overtop road erosion of access road during overtopping is not considered serious problem

e. Stability of Channel side/slopes GOOD.

7) Downstream Channel

a. Condition (debris, etc.) GOOD CONDITION. CLEAN. NO DEBRIS.

b. Slopes OK.

c. Approximate number of homes THERE IS A SUMMER CAMP 2 MILES DOWN STREAM OF THE DAM. THERE ARE 3 HOMES BELOW THE DAM AND THE TOWN OF GLEN WILDS IS 3 MILES BELOW THE DAM.

8) Miscellaneous THE 3 HOMES AND THE TOWN OF GLEN WILDS WILL PROBABLY BE AFFECTED IF THE DAM FAILS.

9) Structural

a. Concrete Surfaces newly installed concrete sides of spillway are in good condition concrete was placed to prevent infiltration into existing masonry spillway joints

b. Structural Cracking none observed

c. Movement - Horizontal & Vertical Alignment (Settlement) none observed at crest - masonry blocks appear to have settled ≈ 6 inches differentially from spillway section

d. Junctions with Abutments or Embankments no problems observed

e. Drains - Foundation, Joint, Face none

f. Water passages, conduits, sluices operational as noted

g. Seepage or Leakage previously reported seepage was completely controlled by grouting program adjacent to spillway (1976)

h. Joints - Construction, etc. grouting & repair work undertaken since 1976 has remedied all serious problems

i. Foundation unobserved)

j. Abutments no problems observed

k. Control Gates operational

l. Approach & Outlet Channels good condition: approach outlet channel is confined by access road culvert

m. Energy Dissipators (plunge pool, etc.) Riprapped channel between spillway and access road (see photo)

n. Intake Structures good condition of intake area of spillway

o. Stability appears adequate

p. Miscellaneous

APPENDIX D

HYDROLOGIC/HYDRAULIC

ENGINEERING DATA AND COMPUTATIONS

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	1517.5	-	6,360
2) Design High Water (Max. Design Pool)	-	-	-
3) Auxiliary Spillway Crest	1516.0	-	5,800
4) Pool Level with Flashboards	Variable	Variable	Variable
5) Service Spillway Crest	1509.0	325	3,000

DISCHARGES

	Volume (cfs)
1) Average Daily	Unknown
2) Spillway @ Maximum High Water	-
3) Spillway @ Design High Water	-
4) Spillway @ Auxiliary Spillway Crest Elevation	325
5) Low Level Outlet	-
6) Total (of all facilities) @ Maximum High Water	325
7) Maximum Known Flood	170

CREST: ELEVATION: 1517.5

Type: EARTH EMBANKMENT

Width: 12 FEET Length: 420 FEET

Spillover CONCRETE SLUICEWAY

Location AT ABOUT CENTER OF DAM

SPILLWAY:

PRINCIPAL		EMERGENCY
1509.0	Elevation	NONE
CONCRETE SLUICEWAY	Type	
3 FEET	Width	
	Type of Control	
—	Uncontrolled	
	Controlled:	
STOPLOGS 6" ~~NONE~~ HIGH	Type (Flashboards; gate)	
3 IN PLACE AT TIME OF INSPECTION	Number	
OVER 3' LONG, 6" ~~NONE~~ HIGH	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 _____ Sluice _____ Conduit _____ Penstock _____

Shape : NONE OTHER THAN SPILLWAY

Size: _____

Elevations: Entrance Invert _____

Exit Invert _____

Tailrace Channel: Elevation _____

HYDROMETEROLOGICAL GAGES:

Type : NONE

Location: _____

Records:

Date - _____

Max. Reading - _____

FLOOD WATER CONTROL SYSTEM:

Warning System: NONE

_____

Method of Controlled Releases (mechanisms):

NO WATER IS REQUIRED TO BE ~~RELEASE~~ RELEASED, HOWEVER WATER CAN BE RELEASED BY REMOVING STOP LOGS FROM SPILLWAY, PROVIDED LAKE LEVEL IS ABOVE SPILLWAY LEVEL.

DRAINAGE AREA: 2 SQUARE MILES.

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: WOODS

Terrain - Relief: GENTLE SLOPES

Surface - Soil: -

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:

NONE

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

Location: NONE

Elevation:

Reservoir:

Length @ Maximum Pool 1.55 (Miles)

Length of Shoreline (@ Spillway Crest) 4.82 (Miles)

SPILLWAY RATING CURVE

For Rectangular Channel

$$C = 3.235 + \frac{1}{60H - .56} + .428\frac{H}{P}$$

$$Q = CLH^{3/2}$$ where C = Coefficient of discharge

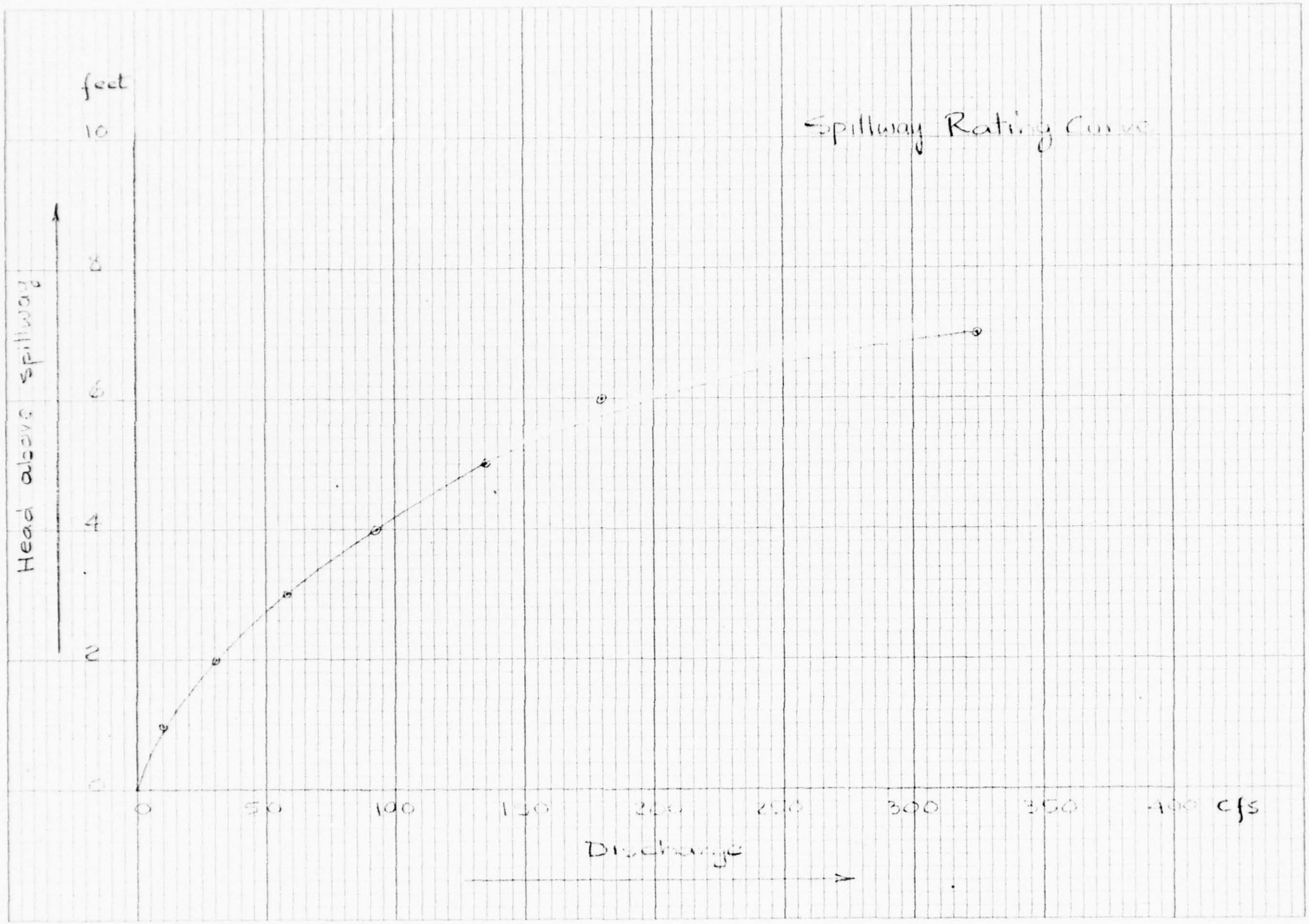
H = Head over spillway

P = Height of spillway (upstream)

Q = Discharge over spillway

L = Length of spillway.

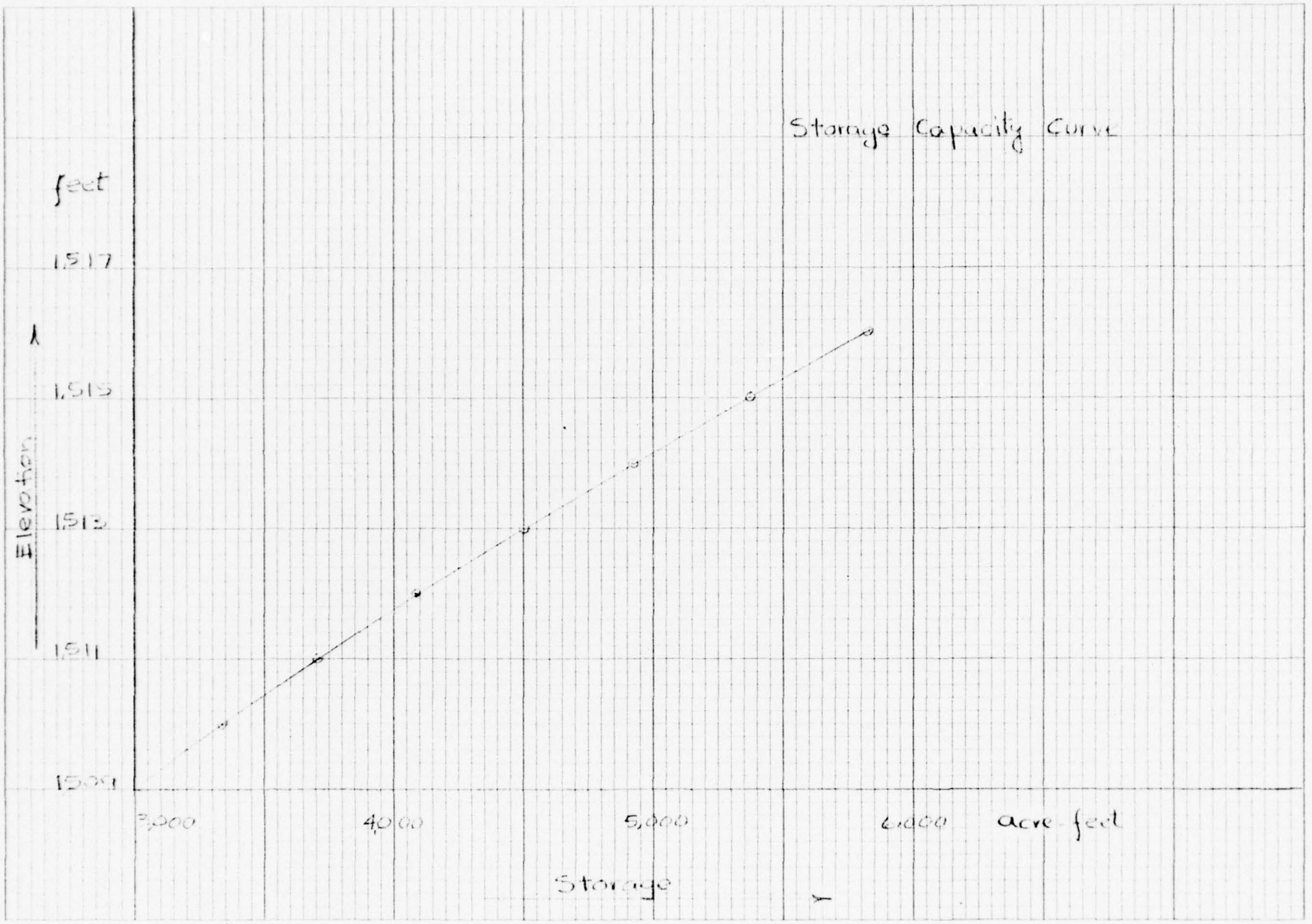
H in feet	P in feet	C	L in feet	Q in cfs.
1	2.7	3.41	3	10
2	2.7	3.62	3	31
3	2.7	3.72	3	58
4	2.7	3.87	3	93
5	2.7	4.03	3	135
6	2.7	4.08	3	180
7	2.7	4.08	3	325



Storage Capacity Curve

Elevation Feet	Volume Acre-feet
1509	3,000
1510	3,345
1511	3,710
1512	4,095
1513	4,500
1514	4,925
1515	5,370
1516	5,835

46 0700



WANAKSINK LAKE DAM

D.A. = Drainage area in square miles

L = River mileage from the given station to the upstream limit of the drainage area

L_{CA} = River mileage from the station to the center of gravity of the drainage area

PMP = Probable Maximum Precipitation in inches

t_p = Lag time from mid-point of unit rainfall duration, t_r, to peak of unit hydrograph, in hours.

t_r = Unit rainfall duration, equal to $\frac{t_p}{550}$, in hours.

C_t = Coefficient depending upon units and drainage basin characteristics

t_R = Unit rainfall duration other than standard unit, t_r, adopted in specific study, in hours.

t_{pR} = lag time from mid-point of unit rainfall duration, t_R, to peak of unit hydrograph, in hours

D.A = 2 square miles, L = 2.12 miles, L_{CA} = .947 miles

PMP = 21 inches C_t = 2,

C_p = 0.625 from average 640 C_p = 400

$t_p = C_t (L \cdot L_{CA})^{0.3} = 2(2.12 \times .947)^{0.3} = 2.47$ hours

$t_r = \frac{t_p}{5.5} = \frac{2.47}{5.5} = .45$ hours (Use 1 hr. hydrograph)

$t_{pR} = t_p + 0.25(t_R - t_r) = 2.47 + 0.25(1 - .45) = 2.61$ hrs.

From HMR 33 – Figure 2, Depth - Area - Duration

6 hour % = 111, 12 hour % = 123

24 hour % = 133, 48 hour % = 142

```
**************************
HEC-1 VERSION DATED JAN 1973
UPDATED AUG 74
CHANGE NO. 01
**************************
```

WANAKSINK LAKE DAM
RESERVOIR ROUTING OF PMF
13 FEET CHUTE SPILLWAY

ETON $

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
150	1	0	0	0	0	0	0	2	0

JOPER	NWT
5	0

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

RTIOS= 0.50 1.00

********** ********** ********** ********** **********

SUB-AREA RUNOFF COMPUTATION

COMPUTE PMF

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME
1	0	0	0	0	0	1

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	2.00	0.	2.00	0.	0.	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.	21.00	111.00	129.00	133.00	142.00	0.	0.

TRSPC COMPUTED BY THE PROGRAM IS 0.734

LOSS DATA

STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0.	0.	1.00	0.	0.	1.00	1.00	0.10	0.	0.

UNIT HYDROGRAPH DATA
TP= 2.01 CP=0.63 NTA= 0

RECESSION DATA
STRTQ= 4.00 QRCSN= 4.00 RTIOR= 1.00

APPROXIMATE CLARK COEFFICIENTS FROM GIVEN SNYDER CP AND TP ARE TC= 2.91 AND R= 2.38 INTERVALS

UNIT HYDROGRAPH 15 END-OF-PERIOD ORDINATES, LAG= 2.59 HOURS, CP= 0.63 VOL= 1.00

64.	210.	297.	249.	163.	106.	69.	45.	30.	19.
13.	8.	5.	4.	2.					

END-OF-PERIOD FLOW

TIME	RAIN	EXCS	COMP Q
1	0.01	0.	4.
2	0.01	0.	4.
3	0.01	0.	4.
4	0.01	0.	4.
5	0.01	0.	4.
6	0.01	0.	4.

8	0.02	0.	4.
9	0.02	0.	4.
10	0.02	0.	4.
11	0.02	0.	4.
12	0.02	0.	4.
13	0.12	0.	4.
14	0.14	0.	4.
15	0.17	0.	4.
16	0.44	0.03	6.
17	0.16	0.06	14.
18	0.13	0.03	27.
19	0.01	0.	35.
20	0.01	0.	32.
21	0.01	0.	24.
22	0.01	0.	17.
23	0.01	0.	12.
24	0.01	0.	10.
25	0.10	0.00	8.
26	0.10	0.00	7.
27	0.10	0.00	7.
28	0.10	0.00	7.
29	0.10	0.00	7.
30	0.10	0.00	7.
31	0.31	0.21	21.
32	0.31	0.21	64.
33	0.31	0.21	125.
34	0.31	0.21	176.
35	0.31	0.21	210.
36	0.31	0.21	232.
37	1.71	1.61	335.
38	2.05	1.95	602.
39	2.57	2.47	1190.
40	6.50	6.40	2009.
41	2.40	2.30	3039.
42	1.88	1.78	3647.
43	0.15	0.05	3407.
44	0.15	0.05	2650.
45	0.15	0.05	1951.
46	0.15	0.05	1234.
47	0.15	0.05	831.
48	0.15	0.05	568.
49	0.	0.	393.
50	0.	0.	269.
51	0.	0.	180.
52	0.	0.	116.
53	0.	0.	74.
54	0.	0.	46.
55	0.	0.	22.
56	0.	0.	12.
57	0.	0.	7.
58	0.	0.	6.
59	0.	0.	5.
60	0.	0.	5.
61	0.	0.	4.
62	0.	0.	4.
63	0.	0.	4.
64	0.	0.	4.
65	0.	0.	4.
66	0.	0.	4.
67	0.	0.	4.
68	0.	0.	4.
69	0.	0.	4.
70	0.	0.	4.
71	0.	0.	4.
72	0.	0.	4.

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74  0.  0.  4.
75  0.  0.  4.
76  0.  0.  4.
77  0.  0.  4.
78  0.  0.  4.
79  0.  0.  4.
80  0.  0.  4.
81  0.  0.  4.
82  0.  0.  4.
83  0.  0.  4.
84  0.  0.  4.
85  0.  0.  4.
86  0.  0.  4.
87  0.  0.  4.
88  0.  0.  4.
89  0.  0.  4.
90  0.  0.  4.
91  0.  0.  4.
92  0.  0.  4.
93  0.  0.  4.
94  0.  0.  4.
95  0.  0.  4.
96  0.  0.  4.
97  0.  0.  4.
98  0.  0.  4.
99  0.  0.  4.
100 0.  0.  4.
101 0.  0.  4.
102 0.  0.  4.
103 0.  0.  4.
104 0.  0.  4.
105 0.  0.  4.
106 0.  0.  4.
107 0.  0.  4.
108 0.  0.  4.
109 0.  0.  4.
110 0.  0.  4.
111 0.  0.  4.
112 0.  0.  4.
113 0.  0.  4.
114 0.  0.  4.
115 0.  0.  4.
116 0.  0.  4.
117 0.  0.  4.
118 0.  0.  4.
119 0.  0.  4.
120 0.  0.  4.
121 0.  0.  4.
122 0.  0.  4.
123 0.  0.  4.
124 0.  0.  4.
125 0.  0.  4.
126 0.  0.  4.
127 0.  0.  4.
128 0.  0.  4.
129 0.  0.  4.
130 0.  0.  4.
131 0.  0.  4.
132 0.  0.  4.
133 0.  0.  4.
134 0.  0.  4.
135 0.  0.  4.
136 0.  0.  4.
137 0.  0.  4.
138 0.  0.  4.
```

[illegible]	[illegible]	[illegible]	4.
140	0.	0.	4.
141	0.	0.	4.
142	0.	0.	4.
143	0.	0.	4.
144	0.	0.	4.
145	0.	0.	4.
146	0.	0.	4.
147	0.	0.	4.
148	0.	0.	4.
149	0.	0.	4.
150	0.	0.	4.
SUM	21.67	18.19	24022.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	3647.	2766.	972.	329.	24020.
INCHES		12.87	18.08	18.38	18.62
AC-FT		1372.	1929.	1960.	1986.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 1

2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	3.	7.	13.	17.	16.
12.	2.	6.	5.	4.	4.	4.	4.	4.	4.
10.	32.	62.	83.	105.	116.	166.	331.	595.	1002.
1520.	1823.	1703.	1325.	926.	617.	416.	284.	196.	135.
90.	58.	37.	23.	11.	6.	3.	3.	3.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1823.	1383.	486.	165.	12010.
INCHES		6.43	9.04	9.19	9.31
AC-FT		686.	964.	980.	993.

HYDROGRAPH AT STA 1 FOR PLAN 1, RTIO 2

4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	6.	14.	27.	35.	32.
24.	17.	12.	10.	8.	7.	7.	7.	7.	7.
21.	64.	125.	176.	210.	232.	335.	662.	1190.	2005.
3039.	3647.	3407.	2650.	1851.	1234.	831.	568.	393.	269.
180.	116.	74.	46.	22.	12.	7.	6.	5.	5.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	3647.	2766.	972.	329.	24020.
INCHES		12.87	18.08	18.38	18.62
AC-FT		1372.	1929.	1960.	1986.

HYDROGRAPH ROUTING

IROUTE PMF THRU RESERVOIR:

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME
1	1	0	0	0	0	1

ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME
0.	0.	0.	1	1

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA
1	0	0	0.	0.	0.	3000.

STORAGE=	3000.	3345.	3710.	4095.	4500.	4925.	5370.	5835.	0.	0.
OUTFLOW=	0.	10.	31.	58.	93.	135.	180.	325.	0.	0.

STATION 1, PLAN 1, RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	1.	1.	1.	1.	2.	2.	3.	5.
6.	14.	22.	30.	36.	40.	43.	44.	45.	46.
47.	47.	47.	47.	46.	46.	46.	46.	45.	45.
45.	45.	44.	44.	44.	44.	43.	43.	43.	43.
43.	42.	42.	42.	42.	41.	41.	41.	41.	40.
40.	40.	40.	40.	39.	39.	39.	39.	39.	38.
38.	38.	38.	37.	37.	37.	37.	37.	36.	36.
36.	36.	36.	35.	35.	35.	35.	35.	35.	34.
34.	34.	34.	34.	33.	33.	33.	33.	33.	33.
32.	32.	32.	32.	32.	31.	31.	31.	31.	31.
31.	31.	30.	30.	30.	30.	30.	30.	30.	29.
29.	29.	29.	29.	29.	29.	29.	28.	28.	28.

STOR

3000.	3000.	3000.	3001.	3001.	3001.	3001.	3001.	3001.	3002.
3002.	3002.	3002.	3002.	3002.	3003.	3003.	3004.	3005.	3006.
3006.	3006.	3009.	3009.	3010.	3010.	3010.	3011.	3011.	3011.
3012.	3013.	3017.	3023.	3031.	3040.	3052.	3072.	3111.	3176.
3280.	3417.	3561.	3684.	3775.	3835.	3874.	3900.	3916.	3926.
3931.	3934.	3934.	3932.	3930.	3927.	3923.	3920.	3916.	3913.
3909.	3906.	3902.	3899.	3895.	3892.	3888.	3885.	3881.	3878.
3875.	3871.	3868.	3865.	3861.	3858.	3855.	3852.	3848.	3845.
3842.	3839.	3836.	3833.	3830.	3826.	3823.	3820.	3817.	3814.
3811.	3808.	3805.	3802.	3800.	3797.	3794.	3791.	3788.	3785.
3782.	3780.	3777.	3774.	3771.	3768.	3766.	3763.	3760.	3758.
3755.	3752.	3750.	3747.	3744.	3742.	3739.	3737.	3734.	3732.
3729.	3727.	3724.	3722.	3719.	3717.	3714.	3712.	3710.	3707.
3705.	3702.	3700.	3698.	3695.	3693.	3691.	3688.	3686.	3684.
3682.	3679.	3677.	3675.	3673.	3670.	3668.	3666.	3664.	3662.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	47.	47.	45.	40.	4018.
INCHES		0.22	0.84	2.24	3.11
AC-FT		23.	89.	239.	332.

STATION 1, PLAN 1, RTIO 2

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	2.	2.	3.	4.	6.	10.
22.	40.	60.	81.	97.	109.	117.	121.	124.	126.
127.	127.	127.	126.	125.	124.	124.	123.	122.	121.
120.	119.	118.	117.	116.	115.	114.	113.	112.	112.
111.	110.	109.	108.	107.	106.	106.	105.	104.	103.
102.	101.	101.	100.	99.	98.	98.	97.	96.	95.

89.	88.	87.	86.	86.	85.	85.	84.	83.	83.
82.	82.	81.	81.	80.	80.	79.	79.	78.	77.
77.	76.	76.	75.	75.	74.	74.	73.	73.	72.
72.	71.	71.	70.	70.	70.	69.	69.	68.	68.
67.	67.	66.	66.	65.	65.	65.	64.	64.	63.

STOR

3000.	3001.	3001.	3001.	3002.	3002.	3002.	3003.	3003.	3003.
3004.	3004.	3004.	3005.	3005.	3005.	3006.	3008.	3010.	3013.
3015.	3017.	3018.	3019.	3020.	3020.	3021.	3021.	3022.	3022.
3023.	3027.	3035.	3047.	3063.	3081.	3104.	3145.	3221.	3352.
3559.	3833.	4120.	4365.	4543.	4662.	4738.	4786.	4816.	4833.
4841.	4843.	4840.	4835.	4827.	4818.	4809.	4799.	4790.	4780.
4770.	4761.	4751.	4742.	4733.	4724.	4714.	4705.	4696.	4687.
4679.	4670.	4661.	4652.	4644.	4635.	4627.	4619.	4610.	4602.
4594.	4586.	4578.	4570.	4562.	4554.	4546.	4539.	4531.	4523.
4516.	4508.	4501.	4494.	4486.	4479.	4472.	4465.	4458.	4451.
4444.	4437.	4430.	4423.	4416.	4410.	4403.	4396.	4390.	4383.
4377.	4370.	4364.	4358.	4351.	4345.	4339.	4333.	4326.	4320.
4314.	4308.	4302.	4296.	4290.	4285.	4279.	4273.	4267.	4262.
4256.	4250.	4245.	4239.	4234.	4228.	4223.	4218.	4212.	4207.
4202.	4197.	4191.	4186.	4181.	4176.	4171.	4166.	4161.	4156.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	127.	126.	120.	103.	10060.
INCHES		0.59	2.24	5.74	7.80
AC-FT		63.	239.	613.	832.

********** ********** ********** ********** **********

PEAK FLOW SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS

OPERATION	STATION	PLAN	RATIOS APPLIED TO FLOWS 0.50	1.00
HYDROGRAPH AT	1	1	1823.	3647.
		2	0.	0.
ROUTED TO	1	1	47.	127.
		2	0.	0.

LIST OF REFERENCES

APPENDIX E

APPENDIX E

REFERENCES

1) U.S. Department of Commerce, Technical Paper No. 40, Rainfall Frequency Atlas of the United States, May 1961.

2) Soil Conservation Service, National Engineering Handbook, Section 4, Hydrology, August 1972 (U.S. Department of Agriculture).

3) H.W. King and E.F. Brater, Handbook of Hydraulics, 5th edition, McGraw-Hill, 1963.

4) T.W. Lambe and R.V. Whitman, Soil Mechanics, John Wiley and Sons, 1965.

5) W.D. Thornbury, Principles of Geomorphology, John Wiley and Sons, 1969.

6) University of the State of New York, Geology of New York, Education Leaflet 20, Reprinted 1973.

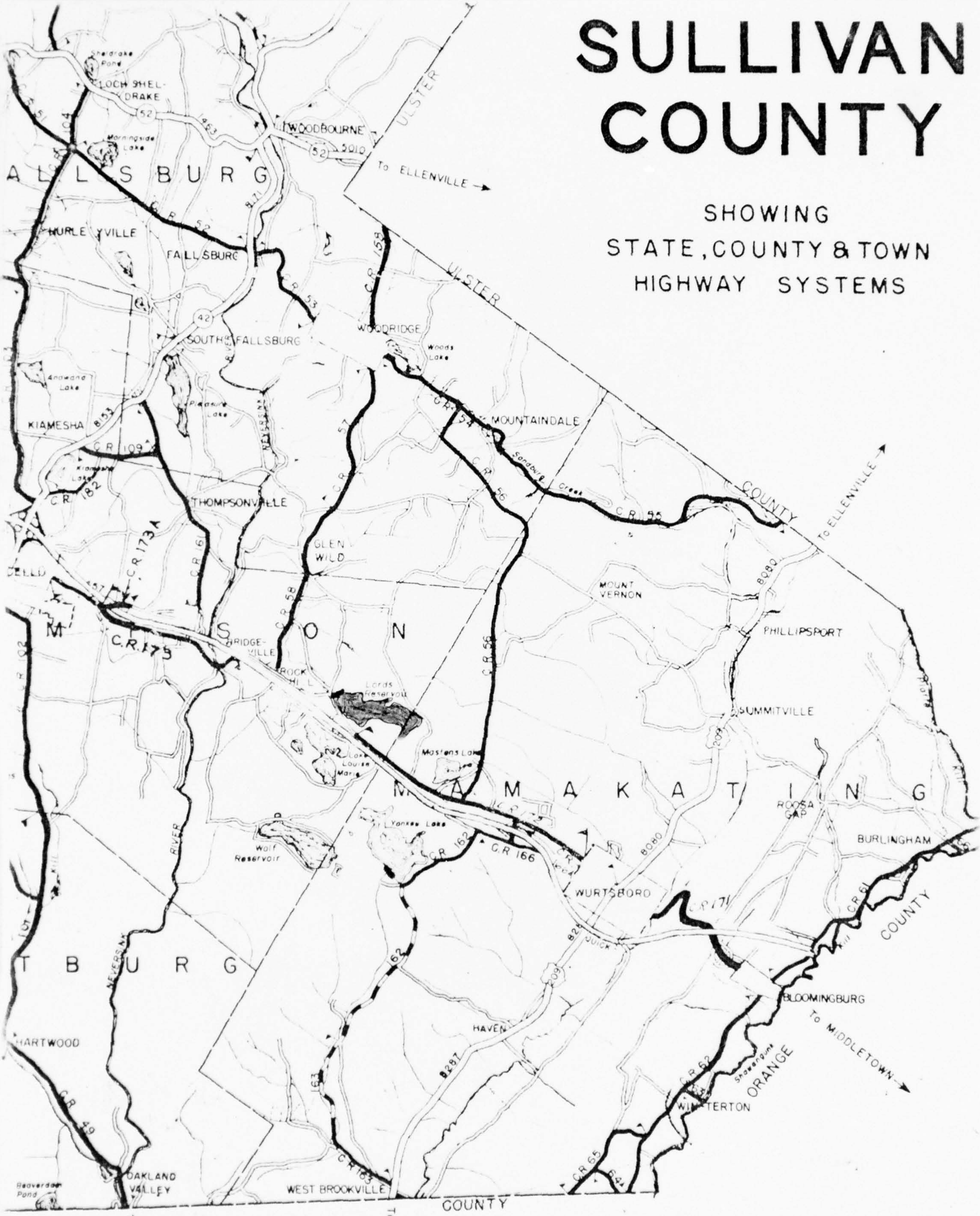
7) Cornell University Agriculture Experiment Station (compiled by M.G. Cline and R.L. Marshall), General Soil Map of New York State and Soils of New York Landscapes, Information Bulletin 119, 1977.

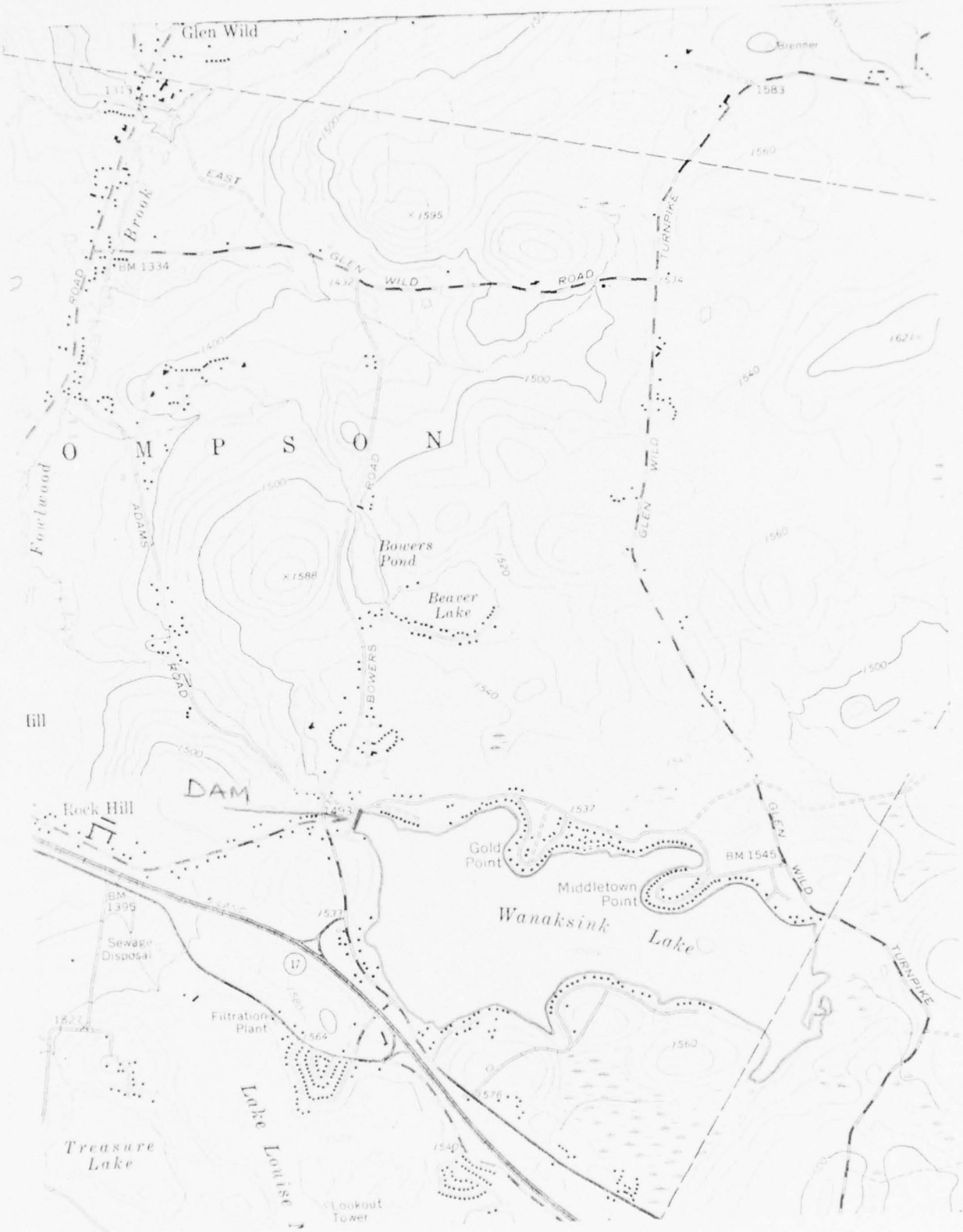
APPENDIX F

DRAWINGS

SULLIVAN COUNTY

SHOWING
STATE, COUNTY & TOWN
HIGHWAY SYSTEMS





TOPOGRAPHIC MAP

Map 163
Dam 195

Form IWI. 6-15-14-2000 (14-15258)

(NOTICE: After filling out one of these forms as completely as possible for each dam in your district, return it at once to the Conservation Commission, Albany.)

STATE OF NEW YORK

CONSERVATION COMMISSION

ALBANY

DAM REPORT

August 25, 1914
(Date)

CONSERVATION COMMISSION,

DIVISION OF INLAND WATERS.

GENTLEMEN:

I have the honor to make the following report in relation to the structure known as the Lodge Reservoir Dam.

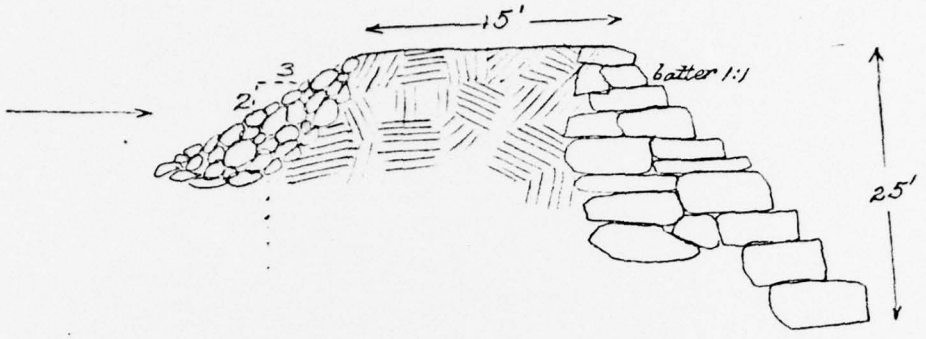
This dam is situated upon the Fowlwood Brook
(Give name of stream)
in the Town of Thompson, Sullivan County, about 6 miles (State distance) from the Village or City of Monticello.
The distance down (Up or down) stream from the dam, to the Neversink River (Give name of nearest important stream or of a bridge), is about 4 miles (State distance).

The dam is now owned by Thomas Watts
(Give name in full)
and was built in or about the year 1867, and was extensively repaired or reconstructed during the year ?.

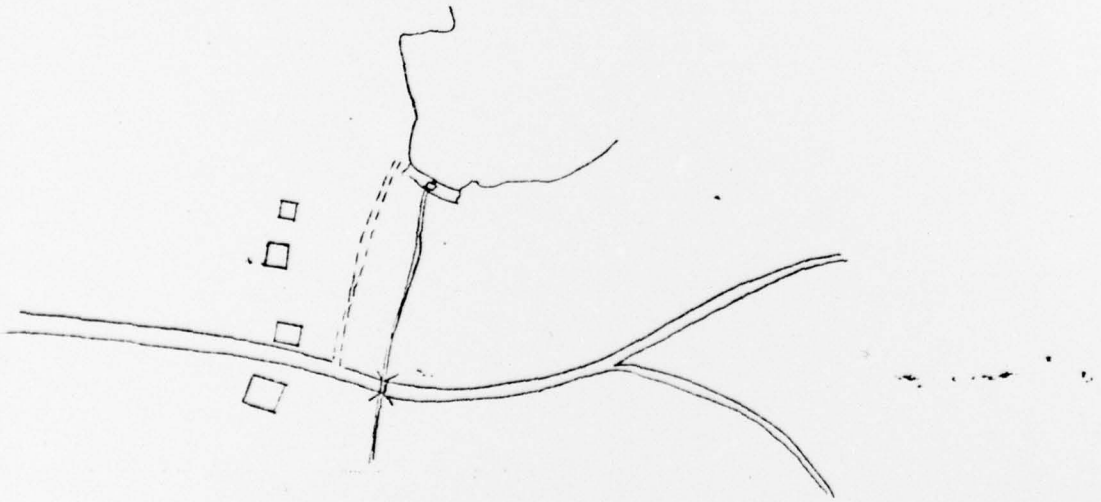
As it now stands, the spillway portion of this dam is built of rubble masonry sealed (State whether of masonry, concrete or timber) and the other portions are built of earth with rubble downstream pitching up (State whether of masonry, concrete, earth or timber with or without rock fill).

As nearly as I can learn, the character of the foundation bed under the spillway portion of the dam is gravel and under the remaining portions such foundation bed is gravel.

(In the space below, make one sketch showing the form and dimensions of a cross section through the spillway or waste-weir of this dam, and a second sketch showing the same information for a cross section through the other portion of the dam. Show particularly the greatest height of the dam above the stream bed, its thickness at the top, and thickness at the bottom, as nearly as you can learn.)



(In the space below, make a third sketch showing the general plan of the dam, and its approximate position in relation to buildings or other conspicuous objects in the vicinity.



The total length of this dam is 420 feet. The spillway or waste-weir portion, is about ——— feet long, and the crest of the spillway is about ——— feet below the top of the dam.

The number, size and location of discharge pipes, waste pipes or gates which may be used for drawing off the water from behind the dam, are as follows: one gate 4½ x 15' with removable boards

State briefly, in the space below, whether, in your judgment, this dam is in good condition, or bad condition, describing particularly any leaks or cracks which you may have observed.)

There is a settling of the dam away from the gate section which is not very great and appears to be with no masonry spillway, the gate is the only means of regulating the water and appears to be adequate here if attended to properly.

Reported by Richard L. Hyde
(Signature)

(Address—Street and number, P. O. Box or R. F. D. route)

(Name of place)

(SEE OTHER SIDE)

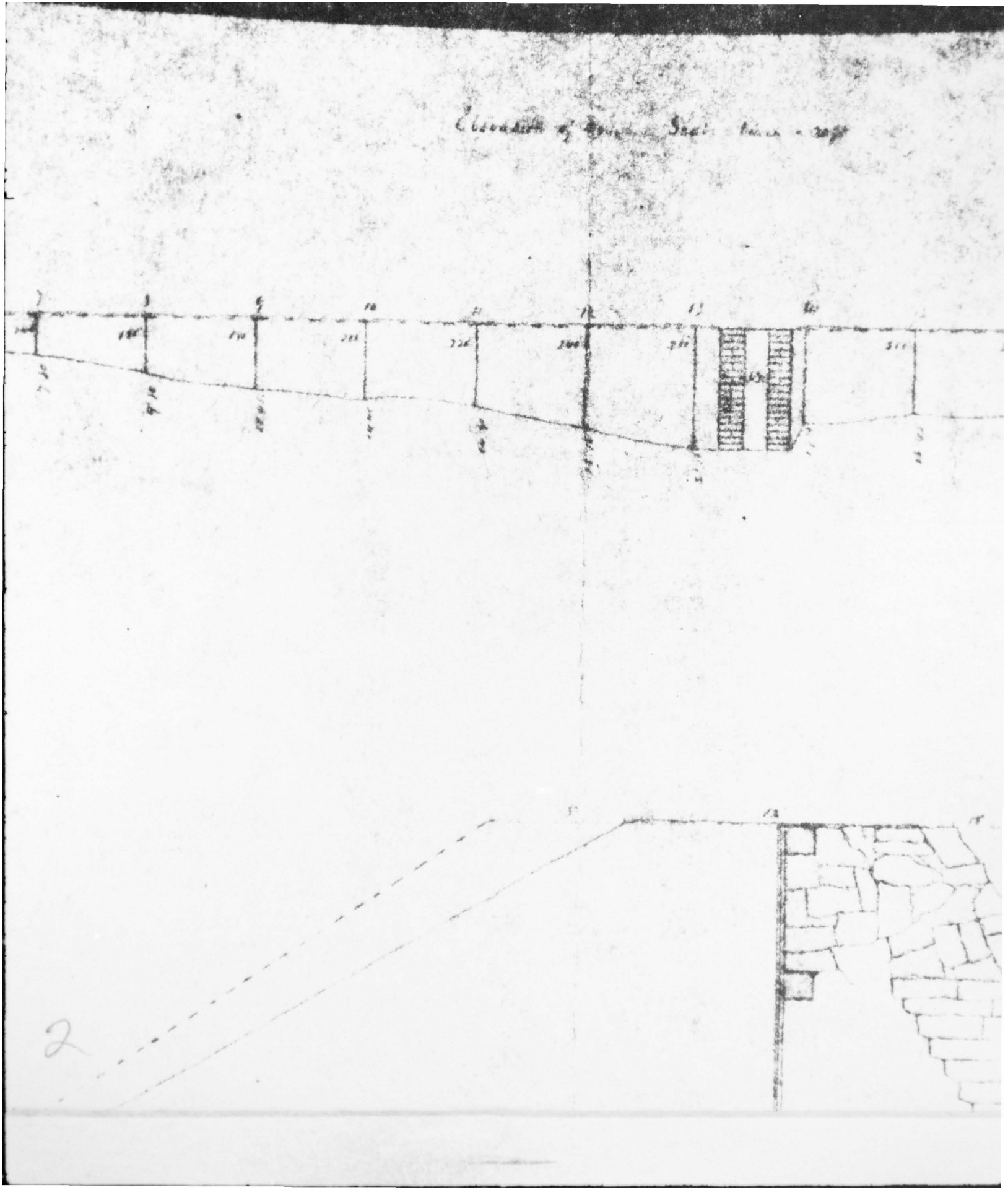
LIST OF DRAWINGS: WANAKSINK LAKE DAM

1. Profile and Section

2. Top Elevation

3. Proposed Concrete Bulkhead

4. Spillway Section



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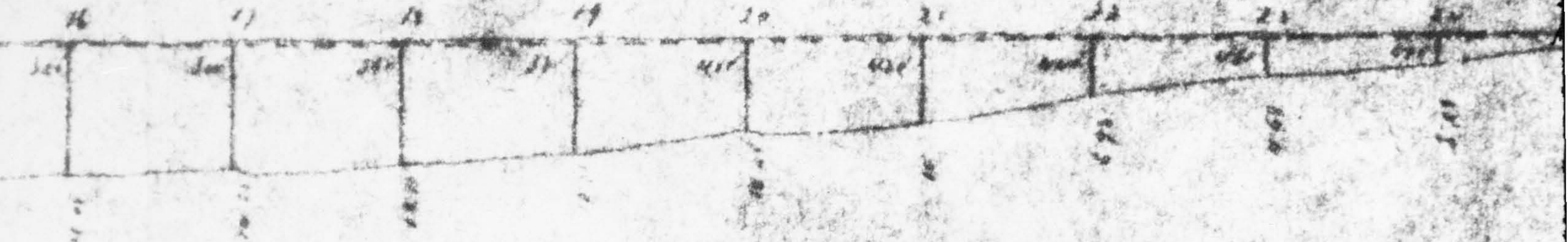


Lords Pond Reservoir Dam for [illegible] Del & Hud Canal

as near as can be made after the completion & use of the dam. Shows

Elevation of Stone bulkhead the being [illegible] by

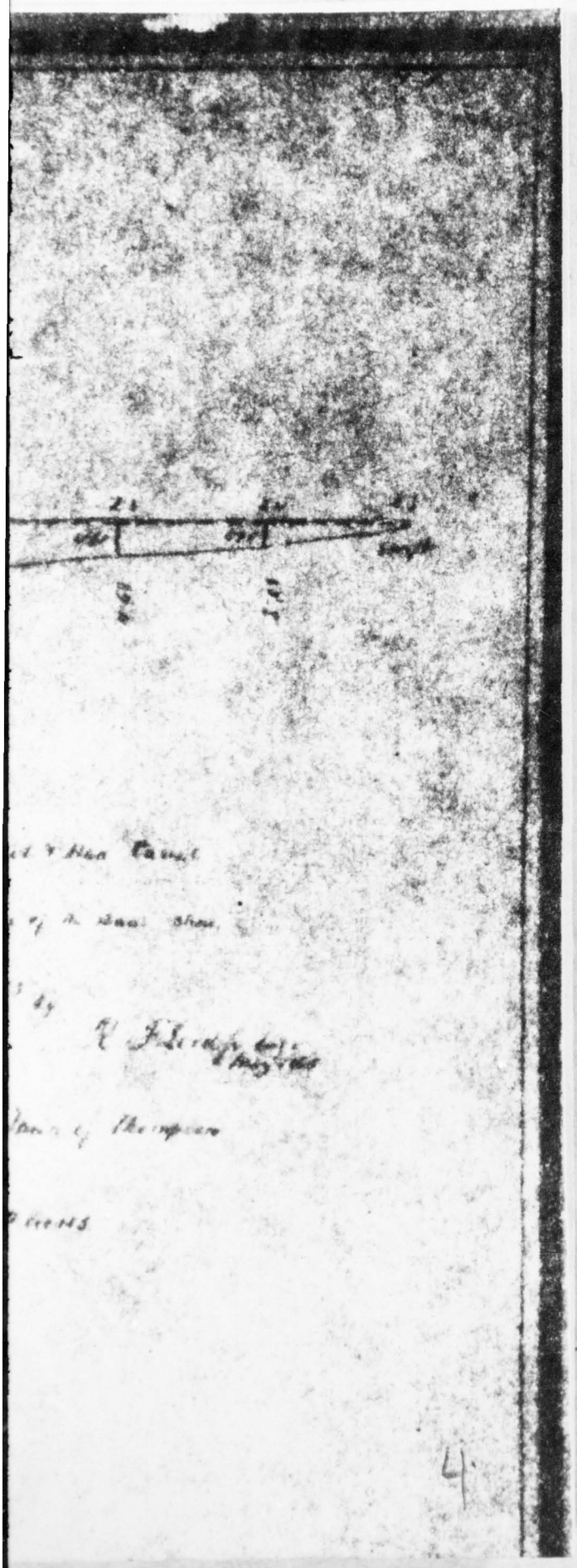
[illegible]

Also

Situated in Sullivan Co. N.Y. Town of Thompson

The Reservoir is said to flow [illegible] acres

[illegible] Elevation of bulkhead



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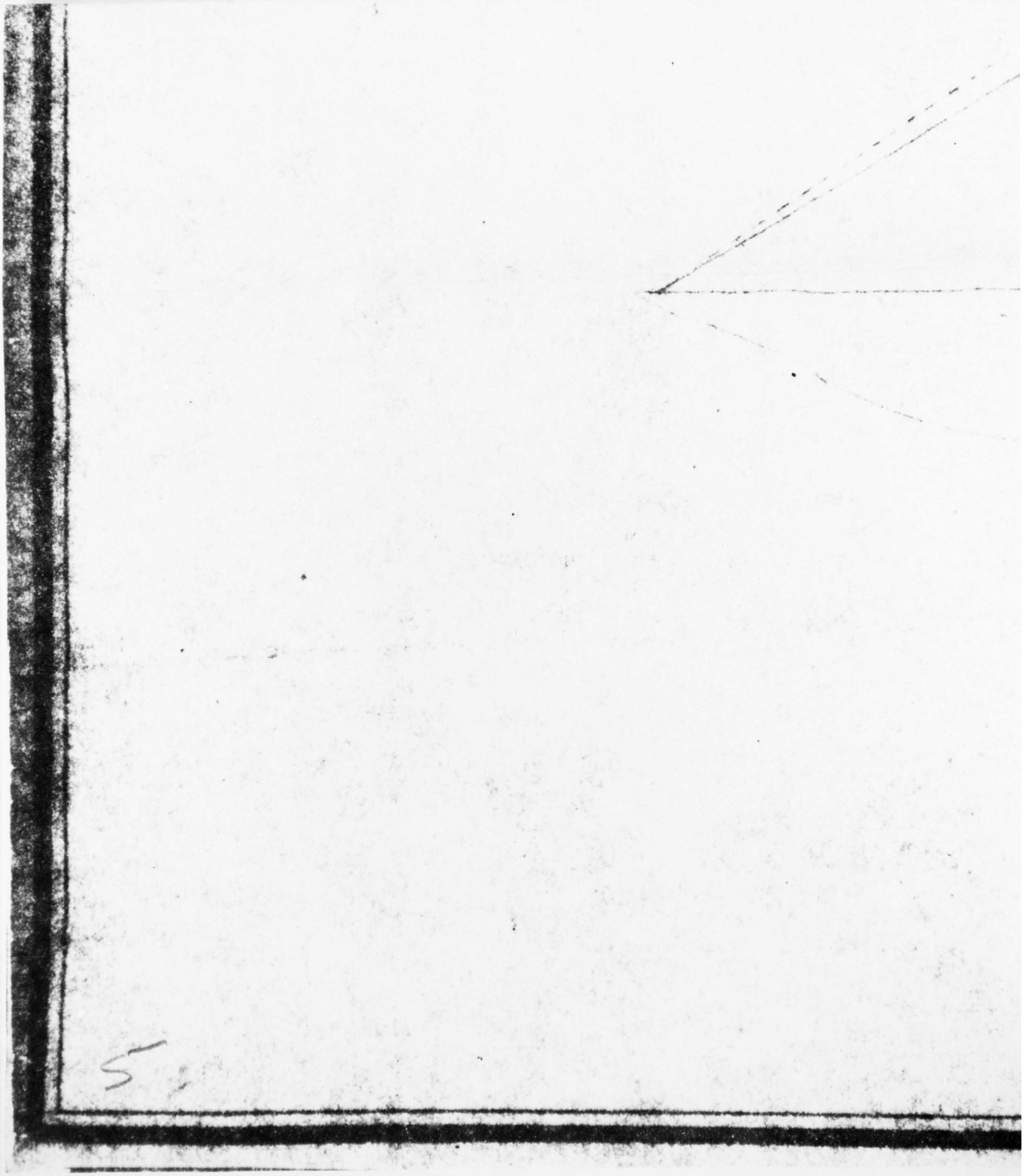

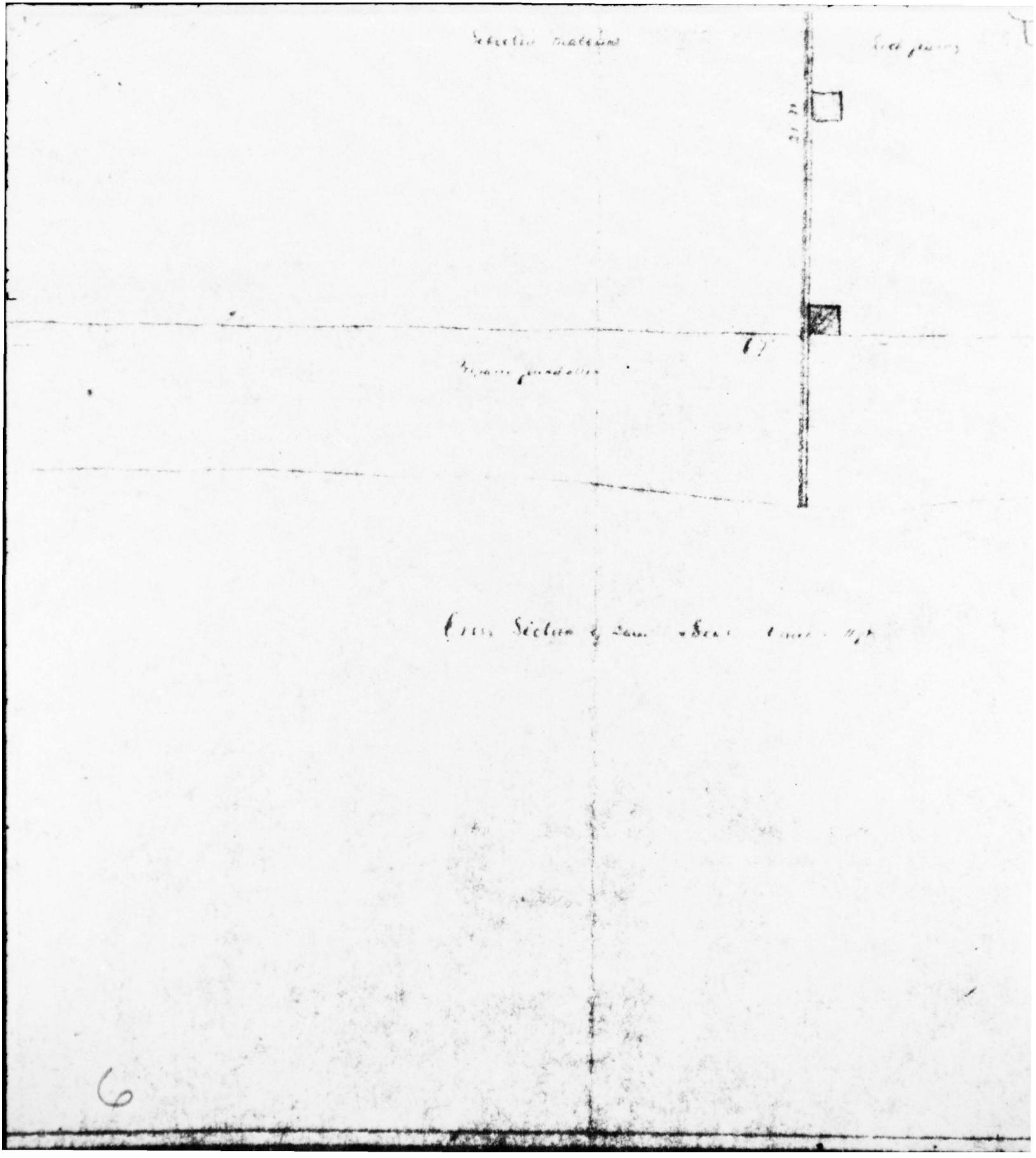

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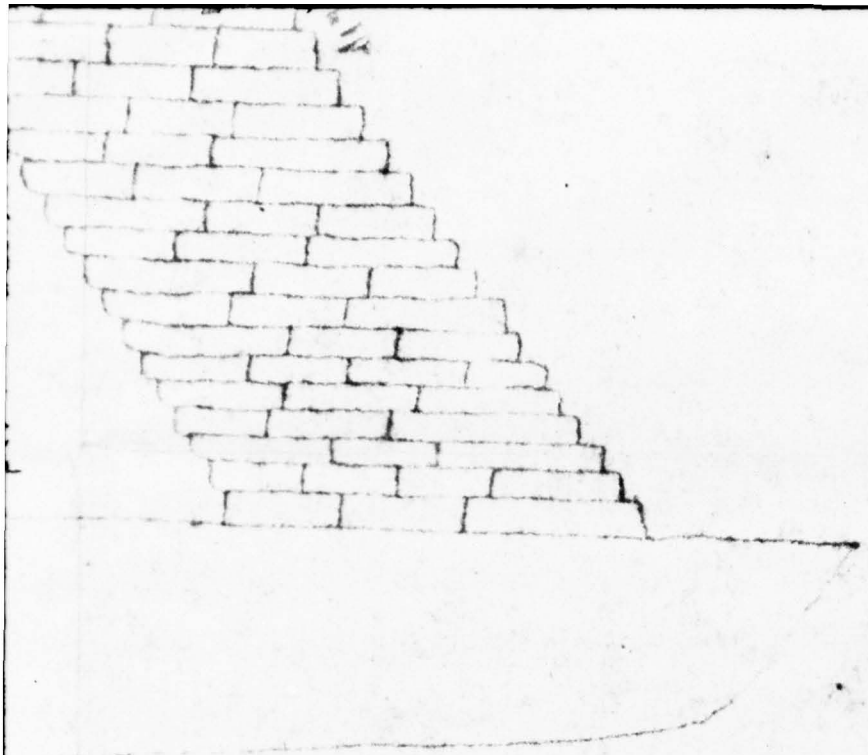
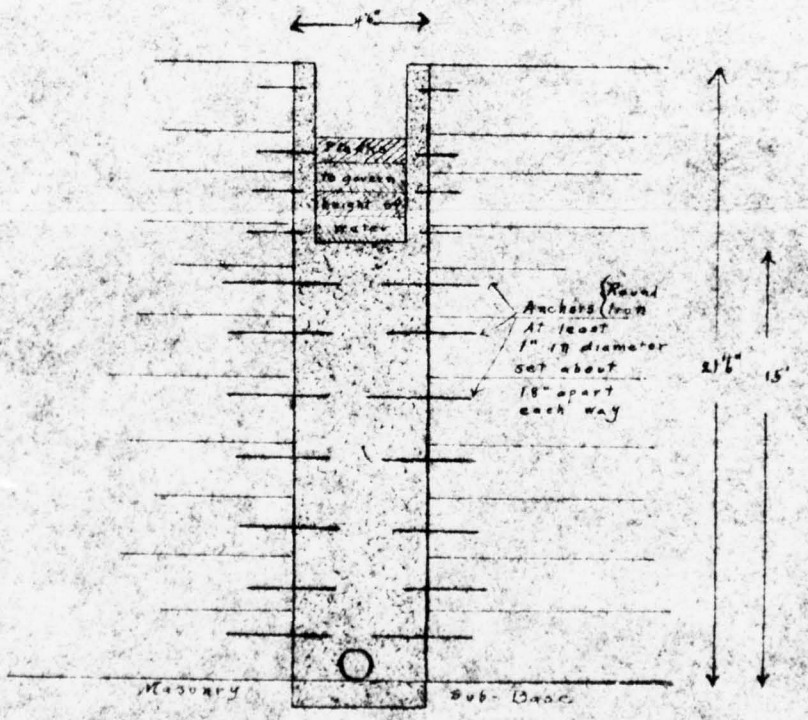
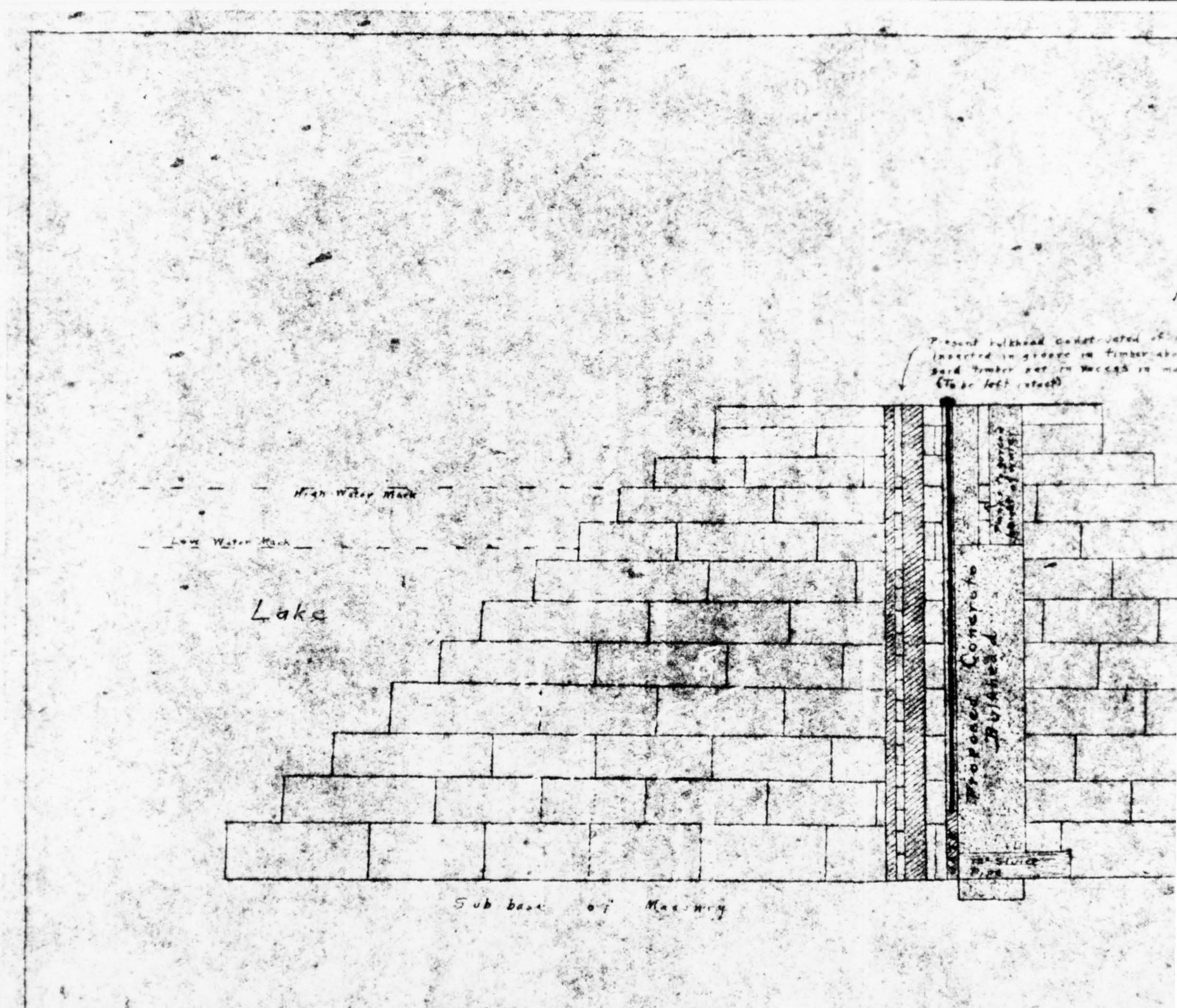
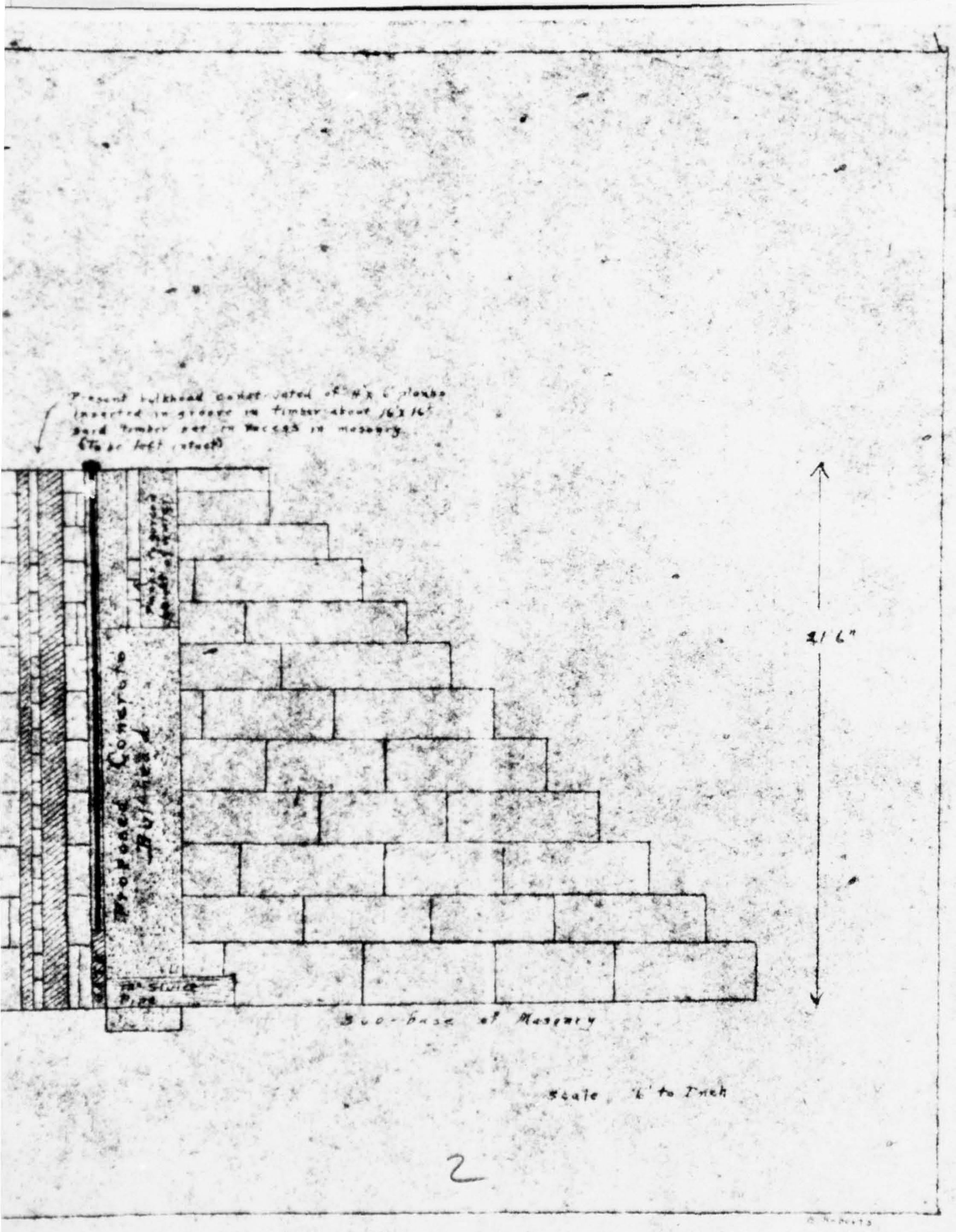
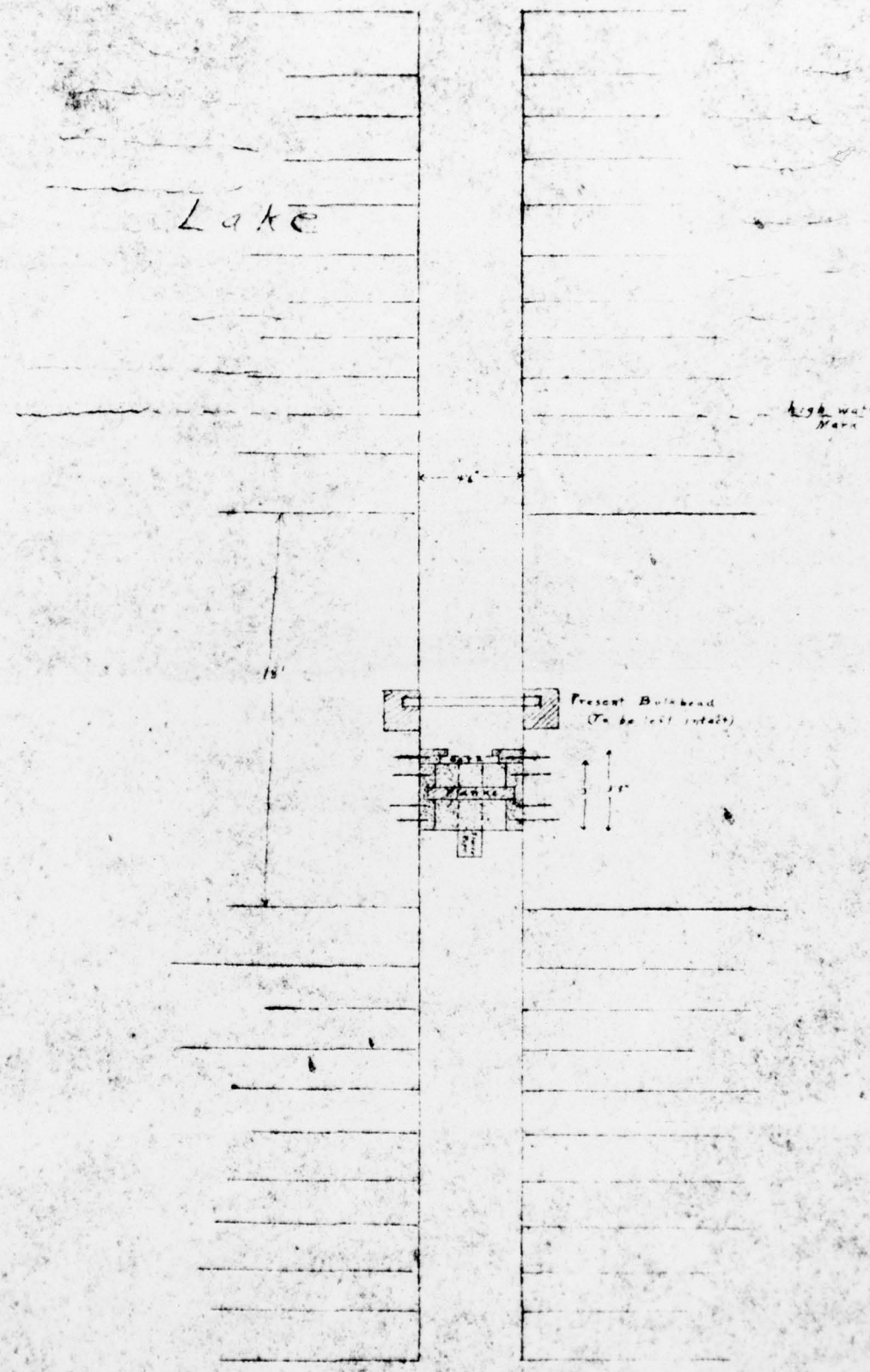




Proposed Concrete
Bulkhead


(To be left intact)
High Water Mark
Low Water Mark
Lake
Proposed Concrete Bulkhead
Sub base of Masonry


Present bulkhead constructed of 4"x 6" planks
inserted in groove in timber about 16"x 16"
Said timber set in recess in masonry
(To be left intact)
Proposed Concrete Bulkhead
21' 6"
Sub-base of Masonry
Scale, ¼' to Inch
2



Top Elevation