

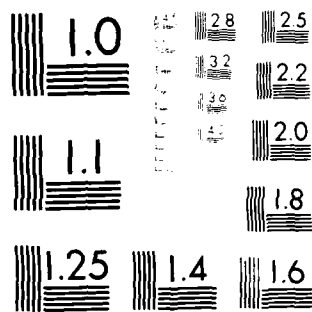
NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS
JENNINGS POND DAM (CT.) (U) CORPS OF ENGINEERS WALTHAM
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CONNECTICUT RIVER BASIN
CHESTER, CONNECTICUT



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JENNINGS POND DAM CT 00396

PHASE I INSPECTION REPORT NATIONAL DAM INSPECTION PROGRAM

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DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
WALTHAM, MASS. 02154

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FEBRUARY, 1981

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) Jennings Pond Dam is a stone masonry and earth embankment structure approximately 115 feet long and 21.5 feet high. The assessment of the dam is based on a visual inspection, past operational performance and hydraulic/hydrologic computations. The dam is judged to be in FAIR condition with several areas that require attention. The dam is classified as SMALL and has a HIGH hazard potential. The test flood according to these guidelines ranges from 1/2 the PMF to the PMF.		



DEPARTMENT OF THE ARMY
NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254

REPLY TO
ATTENTION OF:

NEDED-E

MAR 18 1961

Honorable William A. O'Neill
Governor of the State of Connecticut
State Capitol
Hartford, Connecticut 06115

Dear Governor O'Neill:

Inclosed is a copy of the Jennings Pond Dam (CT-00396) Phase I Inspection Report, which was prepared under the National Program for Inspection of Non-Federal Dams. The report is based upon a visual inspection, a review of past performance, and a preliminary hydrological analysis. A brief assessment is included at the beginning of the report.

The preliminary hydrologic analysis has indicated that the spillway capacity for the Jennings Pond Dam would likely be exceeded by floods greater than 5 percent of the Probable Maximum Flood (PMF). Our screening criteria specifies that a dam of this class which does not have sufficient spillway capacity to discharge fifty percent of the PMF, should be adjudged as having a seriously inadequate spillway and the dam assessed as unsafe, non-emergency, until more detailed studies prove otherwise or corrective measures are completed.

The term "unsafe" applied to a dam because of an inadequate spillway does not indicate the same degree of emergency as that term would if applied because of structural deficiency. It does indicate, however, that a severe storm may cause overtopping and possible failure of the dam, with significant damage and potential loss of life downstream.

It is recommended that within twelve months from the date of this report the owner of the dam engage the services of a professional or consulting engineer to determine by more sophisticated methods and procedures the magnitude of the spillway deficiency. Based on this determination, appropriate remedial mitigating measures should be designed and completed within 24 months of this date of notification. In the interim a detailed emergency operation plan and warning system should be promptly developed. During periods of unusually heavy precipitation, round-the-clock surveillance should be provided.

MAR 18 1981

NEDED-E

Honorable William A. O'Neill

I have approved the report and support the findings and recommendations described in Section 7, with qualifications as noted above. I request that you keep me informed of the actions taken to implement these recommendations since this follow-up is an important part of the non-Federal Dam Inspection Program.

A copy of this report has been forwarded to the Department of Environmental Protection, the cooperating agency for the State of Connecticut. This report has also been furnished to the owner of the project, Town of Chester, Chester, CT.

Copies of this report will be made available to the public, upon request to this office, under the Freedom of Information Act, thirty days from the date of this letter.

I wish to take this opportunity to thank you and the Department of Environmental Protection for the cooperation extended in carrying out this program.

Sincerely,



C.E. EDGAR, III
Colonel, Corps of Engineers
Division Engineer

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JENNINGS POND DAM

CT 00396

CONNECTICUT RIVER BASIN

CHESTER, CONNECTICUT

PHASE I INSPECTION REPORT
NATIONAL DAM INSEPTION PROGRAM

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NATIONAL DAM INSPECTION PROGRAM

PHASE I INSPECTION REPORT

Identification Number:	CT 00396
Name:	Jennings Pond Dam
Town:	Chester
County and State:	Middlesex County, Connecticut
Stream:	Pattaconk Brook
Date of Inspection:	October 22, 1980

BRIEF ASSESSMENT

Jennings Pond Dam is a stone masonry and earth embankment structure approximately 115 feet long and 21.5 feet high. The downstream face of the dam is stone masonry with earth on the upstream side. The spillway is located near the center of the dam and is 38 feet long. The pond and dam was once used for water power by a local manufacturer but all power conduits have since been plugged and abandoned. The present use of the dam is for recreational purposes only. There is an upper gate platform for the control of a 2.8-foot x 4-foot low-level discharge box. The control for the low-level discharge conduit is on the upstream face. The platform is isolated in the pond and was inaccessible at the time of the inspection and because of this its condition is unknown. The drainage area is 8.41 square miles and the reservoir has 96 acre-feet of storage capacity.

The assessment of the dam is based on a visual inspection, past operational performance and hydraulic/hydrologic computations. The dam is judged to be in FAIR condition with several areas that require attention. These areas include seepage through the dam in the vicinity of the spillway, brush and trees growing on the embankments and along the toe of the dam, erosion of the channel slope just downstream of the dam, bulging of the downstream face and the questionable operating status of the discharge conduit.

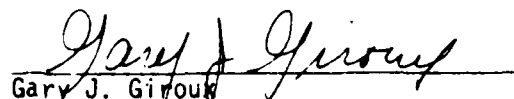
The dam is classified as SMALL and has a HIGH hazard potential in accordance with guidelines established by the Corps of Engineers. The test flood according to these guidelines ranges from 1/2 the Probable Maximum Flood (PMF) to the PMF. The

test flood for this dam is 1/2 the PMF and is calculated to be 5,000 cfs. The spillway capacity at the top of the dam is 515 cfs or 10 percent of the test flood outflow. The test flood outflow will overtop the dam by 5.1 feet.

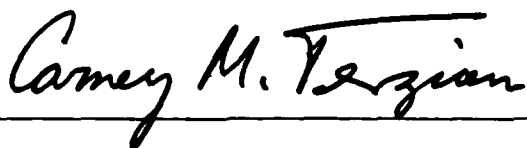
It is recommended that the Owner engage the services of a qualified registered engineer experienced in the design of dams to investigate seepage through the dam, removal of trees on the embankment and along the toe of the dam, prepare a detailed hydraulic/hydrologic study to determine the spillway's adequacy, study the sloughing of the channel embankment downstream of the dam and the bulging face and evaluate the condition of the discharge conduit and gate. It is also recommended that the Owner remove brush from the embankment and along the toe of the dam, repair the upstream retaining wall as well as all joints and cracked concrete and initiate an annual technical inspection program.

The Owner should implement the recommendations and remedial measures described above and in greater detail in Section 7 within one year after receipt of this Phase I Inspection Report.

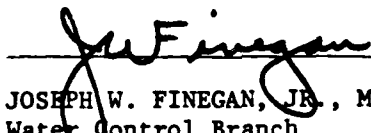

Joseph F. Merluzzo
Connecticut P.E. #7639
Project Manager


Gary J. Giroux
Connecticut P.E. #11477
Project Engineer

This Phase I Inspection Report on Jennings Pond Dam (CT-00396) has been reviewed by the undersigned Review Board members. In our opinion, the reported findings, conclusions, and recommendations are consistent with the Recommended Guidelines for Safety Inspection of Dams, and with good engineering judgement and practice, and is hereby submitted for approval.



CARNEY M. TERZIAN, MEMBER
Design Branch
Engineering Division

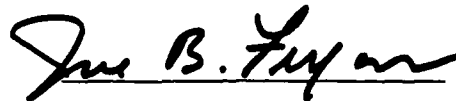


JOSEPH W. FINEGAN, JR., MEMBER
Water Control Branch
Engineering Division



ARAMAST MAHTESIAN, CHAIRMAN
Geotechnical Engineering Branch
Engineering Division

APPROVAL RECOMMENDED:



JOE B. FRYAR
Chief, Engineering Division

PREFACE

This report is prepared under guidance contained in the Recommended Guidelines for Safety Inspection of Dams, for Phase I Inspections. Copies of these guidelines may be obtained from the Office of Chief of Engineers, Washington, D.C. 20314. The purpose of a Phase I Inspection 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 investigations and analyses involving topographic mapping, subsurface investigations, testing, and detailed computational evaluations are beyond the scope of a Phase I Inspection; 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 continued care and inspection can there be any chance that unsafe conditions be detected.

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 variety 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.

The Phase I Inspection does not include an assessment of the need for fences, gates, "no trespassing" signs, repairs to existing fences and railings and other items which may be needed to minimize trespass and provide greater security for the facility and safety to the public. An evaluation of the project for compliance with Occupational Safety and Health Administration's (OSHA) rules and regulations is also excluded.

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Inventory of Dams



JENNINGS POND DAM.

PHASE I INSPECTION REPORT
JENNINGS POND DAM CT 00396

SECTION 1 - PROJECT INFORMATION

1.1 General

a. Authority - Public Law 92-367, August 8, 1972 authorized the Secretary of the Army, through the Corps of Engineers, to initiate a National Program of Dam Inspections throughout the United States. The New England Division of the Corps of Engineers has been assigned the responsibility of supervising the inspection of dams within the New England Region. Storch Engineers has been retained by the New England Division to inspect and report on selected dams in the State of Connecticut. Authorization and notice to proceed were issued to Storch Engineers under a letter of October 30, 1980 from William E. Hodgson, Jr., Colonel, Corps of Engineers. Contract No. DACW33-80-C-0035 has been assigned by the Corps of Engineers for this work.

b. Purpose of Inspection -

(1) Perform technical inspection and evaluation of non-Federal dams to identify conditions which threaten the public safety and thus permit correction in a timely manner by non-Federal interests.

(2) Encourage and prepare the states to initiate quickly effective dam safety programs for non-Federal dams.

(3) To update, verify and complete the National Inventory of Dams.

1.2 Description of Project

a. Location - Jennings Pond Dam is located in the Town of Chester, Middlesex County, Connecticut (See Location Map). The dam and reservoir are approximately 1,500 feet southwest of the center of town. Route 148 runs along the north side of

the pond and stream. The coordinates of the dam are approximately 41°-24.00' north latitude and 72°-27.26' west longitude. The dam is located on Pattaconk Brook and is approximately 9,500 feet upstream from its confluence with the Connecticut River.

b. Description of Dam and Appurtenances - Jennings Pond Dam is a stone masonry and earth embankment dam approximately 115 feet long and 21.5 feet high. A majority of the downstream face is vertical stone masonry with earth on the upstream side. The top of the dam is approximately 22 feet wide.

The spillway is located near the center of the dam and is 38 feet long. The spillway is stone masonry capped with concrete. At the base of the spillway there is a concrete apron extending 18 feet into the downstream channel.

There is a gate inlet platform on the upstream side of the dam, just behind the spillway. This structure is isolated in the pond and was inaccessible at the time of the inspection. The gate controls a 2.8-foot by 4-foot low-level discharge conduit that passes through the base of the dam. It is not known if the gate is operational because of its isolation. A sluice gate structure exists at the north end of the dam. The gate controls what once was a power conduit that discharges some distance downstream from the dam. The entrance to the sluice gate structure has been blocked with earth although the gate stem turns.

There is also what appears to be another power conduit located adjacent to the spillway. This conduit has long since been abandoned. Location of the control to this conduit could not be determined.

c. Size Classification - Jennings Pond Dam has a maximum height of 21.5 feet and a maximum capacity of 96 acre-feet at the top of the dam. In accordance with the Recommended Guidelines for Safety Inspection of Dams established by the Corps of Engineers, the dam is classified as SMALL (height less than 40 feet, storage less than 1,000 acre-feet).

d. Hazard Classification - Jennings Pond Dam is classified as having a HIGH hazard potential. Failure of the dam could result in the loss of more than a few lives and cause significant property damage. Approximately 1,230 feet downstream, the flood wave would strike three homes. the first floor sills of the houses are approximately 5 feet above the streambed. Estimated flow and water depth in the channel just prior to dam failure is 515 cfs at 4 feet and just after dam failure is 4,500 cfs at 9 feet. Therefore, the water level would rise approximately 4 feet above the first floor sills.

e. Ownership - The Jennings Pond Dam is owned by:

Town of Chester
Chester Town Hall
Chester, Connecticut 06412
(203) 526-2796

f. Operator - Operating personnel are under the direction of:

Mr. James L. Grote
Fire Marshall
25 Grote Road
Chester, Connecticut 06412
(203) 526-5947

g. Purpose of Dam - The dam originally supplied power for industrial use. Presently, the pond is used for recreation.

h. Design and Construction History - Jennings Pond Dam was constructed around 1870. No information is available on the design or construction of the dam.

i. Normal Operational Procedures - No maintenance is done on the dam and the discharge gate is isolated in the pond. The operator inspects the dam during severe weather and the Town has a warning system that would be implemented if necessary, however, this warning system is not specific. A copy of the warning system is contained in Appendix B.

1.3 Pertinent Data

a. Drainage Area - Jennings Pond drainage basin is located in the Towns of Chester, Killingworth and Haddam, Connecticut and is irregular in shape. The area of

the drainage basin is 8.41 square miles (Appendix D - Plate 4). Approximately 10 percent of the drainage basin is natural storage and about 90 percent is undeveloped. The topography is rolling with elevations ranging from 550 (NGVD) to 38.0 (NGVD) at the spillway crest.

b. Discharge at Damsite - There are no records available for discharge at the dam.

(1) Outlet works (conduit) size:	2.8 feet by 4.0 feet
Invert elevation (feet above NGVD):	23.5
Discharge Capacity at top of dam:	295 cfs
(2) Maximum known flood at damsite:	unknown
(3) Ungated spillway capacity at top of dam:	515 cfs
Elevation (NGVD):	41.0
(4) Ungated spillway capacity at test	
flood elevation:	2,300 cfs
Elevation (NGVD):	46.1
(5) Gated spillway capacity at normal pool	
elevation:	N/A
Elevation (NGVD):	N/A
(6) Gated spillway capacity at test flood	
elevation:	N/A
Elevation (NGVD):	N/A
(7) Total Spillway capacity at test flood	
elevation:	2,300 cfs
Elevation (NGVD):	46.1
(8) Total project discharge at top of dam:	810 cfs
Elevation (NGVD):	41.0

(9) Total project discharge at test flood	
elevation:	5,295 cfs
Elevation (NGVD):	46.1
c. Elevation (feet above NGVD)	
(1) Streambed at toe of dam:	19.5
(2) Bottom of cutoff:	unknown
(3) Maximum tailwater:	22.5
(4) Normal pool:	38.0
(5) Full flood control pool:	N/A
(6) Spillway crest (ungated):	38.0
(7) Design surcharge (original design):	unknown
(8) Top of dam:	41.0
(9) Test flood surcharge:	46.1
d. Reservoir (length in feet)	
(1) Normal pool:	700
(2) Flood control pool:	N/A
(3) Spillway crest pool:	700
(4) Top of dam:	750
(5) Test flood pool:	800
e. Storage (acre-feet)	
(1) Normal pool:	75
(2) Flood control pool:	N/A
(3) Spillway crest pool:	75
(4) Top of dam:	95
(5) Test flood pool:	150

- f. Reservoir Surface (acres)
- (1) Normal pool: 7
 - (2) Flood control pool: N/A
 - (3) Spillway crest: 7
 - (4) Test flood pool: 9
 - (5) Top of dam: 8
- g. Dam
- (1) Type: stone masonry
earth embankment
 - (2) Length: 115 feet
 - (3) Height: 21.5 feet
 - (4) Top width: 22 feet
 - (5) Side slopes: vertical at downstream
masonry portion; earth
embankment upstream
 - (6) Zoning: unknown
 - (7) Impervious core: unknown
 - (8) Cutoff: unknown
 - (9) Grout curtain: unknown
 - (10) Other: N/A
- h. Diversion and Regulating Tunnel: N/A
- i. Spillway
- (1) Type: masonry broad crested
 - (2) Length of weir: 38 feet
 - (3) Crest elevation: 38.0
 - (4) Gates: N/A

(5) U/S Channel:	none
(6) D/S Channel:	concrete apron- natural channel
(7) General:	N/A

j. Regulating Outlets

(1) Invert elevation (NGVD):	23.5
(2) Size:	2.8 feet by 4.0 feet
(3) Description:	masonry box
(4) Control Mechanism:	manually operated gate
(5) Other:	gate is isolated

SECTION 2 - ENGINEERING DATA

2.1 Design Data

No design computations or drawings are available for this dam.

2.2 Construction Data

The dam was constructed around 1870. No construction drawings or data are available for this dam.

2.3 Operation Data

The reservoir was used for water power but is not used as such any more. The power conduit has been abandoned and plugged. The gate to the discharge conduit is not accessible and its operating status is unknown. No operating records for this dam have been maintained.

2.4 Evaluation of Data

- a. Availability - No design, construction or operation data is available for this dam.
- b. Adequacy - No information is available.
- c. Validity - No information is available.

SECTION 3 - VISUAL INSPECTION

3.1 Findings

a. General - A visual inspection was conducted on October 22, 1980 by members of the engineering staff of Storch Engineers, D. Baugh and Associates, Inc. and Matthews Associates. A copy of the visual inspection check list is contained in Appendix A of this report. Selected photos of the dam are contained in Appendix C.

In general, the overall condition of the dam and its appurtenant structures is FAIR.

b. Dam - The dam is a stone masonry and earth embankment structure. A majority of the downstream face is stone masonry as shown in the Overview Photo. The earth embankments and the top of the dam are heavily overgrown with trees and brush (Photos 1, 2, 3, 4 and 5). The crest of the dam shows no signs of settlement. There are several areas of seepage through the face of the dam (See Location on Photo Location Plan - Plate 3). The seepage was clear and showed no signs of particle movement. The amount of water, however, was not measurable. The masonry of the downstream face of the dam just below the spillway was in fair condition with the joints in need of repair.

The upstream face of the dam has a stone masonry retaining wall that is generally in fair condition (Photos 2 and 3) and one location the wall is falling into the pond (See Photo Location Plan - Plate 3). The channel embankment adjacent to the dam is eroding and sloughing into the channel (Photo 4). Also at this location, the downstream face of the dam is bulging.

c. Appurtenant Structures - The spillway is 38 feet long and 15 feet wide (Overview and Photo 1). The crest of the spillway is capped with concrete that has spalled in places. The spillway abutments are concrete and are in good condition.

There is a concrete apron below the spillway (Photos 1 and 4). This apron is in good condition.

A 2.8-foot x 4-foot low-level discharge conduit passes through the base of the dam (Photo 6). The gate to the conduit is on the upstream face. Control to the gate is mounted on a concrete structure that is isolated in the pond and is not readily accessible (Photos 2 and 3). The condition of the concrete is fair with some spalling. There are also two power conduits that have long since been abandoned (Photos 7, 8 and 9). The entrance to one of the conduits has been blocked with earth (Photo 7).

d. Reservoir Area - The area immediately adjacent to the pond is gently sloped and in a natural state. The shoreline shows no signs of sloughing or erosion. A rapid rise in the water level of the pond will not endanger life or property.

e. Downstream Channel - The downstream channel is natural and comprised of rock and gravel. The area adjacent to the downstream channel is overgrown with brush and trees (Photo 10). Approximately 150 feet downstream there is an abandoned warehouse (Photo 10).

3.2 Evaluation

Overall, the general condition of the dam is FAIR. The visual inspection revealed items that lead to this assessment, such as:

- a. Seepage through the dam;
- b. Missing mortar and poor condition of the joints;
- c. Unknown condition of the low-level discharge conduit;
- d. Sloughing or erosion of the channel embankment adjacent to the dam and a bulge in the downstream face;
- e. Trees and brush on the dam, along the toe of the dam and downstream channel.

SECTION 4 - OPERATIONAL AND MAINTENANCE PROCEDURES

4.1 Operational Procedures

a. General - The operation of this facility was for water power but this purpose was abandoned sometime ago. Presently, the pond is used for recreation. The water level is kept at the spillway crest only because the discharge valve is not operated.

b. Description of Any Warning System in Effect - There is a warning system in effect for this dam which is instituted by local authorities. This warning system is not specific, however, and does not constitute a formal warning system. A copy of the town's procedures is contained in Appendix B.

4.2 Maintenance Procedures

a. General - There is no specific maintenance program for this dam.

b. Operating Facilities - The gate to the discharge conduit is isolated in the pond and not readily accessible and because of this its condition is unknown.

4.3 Evaluation

There is no regularly scheduled maintenance program. A systematic and complete maintenance program should be instituted at the dam and a formal warning system should be developed.

SECTION 5 - EVALUATION OF HYDRAULIC/HYDROLOGIC FEATURES

5.1 General

Jennings Pond Dam is a stone masonry and earth embankment dam approximately 115 feet long and 21.5 feet high. The majority of the downstream face is stone masonry. There is a 38-foot long, 3-foot deep and 15-foot wide spillway near the center of the dam. A 2.8-foot x 4-foot low-level discharge conduit passes through the base of the dam with a gate on the upstream face of the dam. This gate is isolated and its condition is unknown.

The watershed encompasses 8.41 square miles and is 90 percent undeveloped. The topography is rolling with terrain rising 512 feet from the spillway crest. Located within the watershed is Pattaconk and Cedar Lake Reservoirs and Cedar Swamp.

The pond has a total capacity of approximately 75 acre-feet at the spillway crest and 95 acre-feet when the pond is at the top of the dam.

5.2 Design Data

No design data for the original dam is available.

5.3 Experience Data

No historical data for recorded discharges or water surface elevation are available for this dam, however, the dam has withstood floods past major floods such as; March 1936 and September 1938 as well as the more recent floods of January and February 1978 and January 1979. The flood of record in the Chester area occurred in September 1938.

5.4 Test Flood Analysis

Based on the Recommended Guidelines for Safety Inspection of Dams, the dam is classified as a SMALL structure with a HIGH hazard potential. The test flood for these conditions ranges for 1/2 the Probable Maximum Flood (PMF) to the PMF. One half of the PMF was used for this dam because of the dam's small size.

Using the guide curves established by the Corps of Engineers (halfway between rolling and flat and coastal terrain because of the natural storage within the watershed), the test flood inflow is 5,045 cfs. The routing procedure established by the Corps' guidelines gives an approximate outflow of 5,000 cfs. The spillway capacity of the dam is approximately 515 cfs or 10 percent of the routed test flood outflow. The test flood will overtop the dam by 5.1 feet.

The water level behind the dams is uncontrolled and therefore the storage behind the dam was assumed to begin at the elevation of the spillway crest. Storage was determined by an average area depth analysis. Capacity curves for the spillway assumed a broad crested weir.

5.5 Dam Failure Analysis

A dam failure analysis was performed using the Rule of Thumb method in accordance with guidelines established by the Corps of Engineers. Failure was assumed to occur when the water level in the pond was at the top of the dam.

The spillway discharge just prior to dam failure is 515 cfs and the calculated dam failure discharge is 6,535 cfs.

Failure of Jennings Pond Dam could result in the loss of more than a few lives and the flood wave could damage three homes located approximately 1,230 feet downstream. The first floor sills of these homes are approximately 5 feet above the streambed. Estimated flow and water depth at this location just prior to dam failure is 515 cfs and 3 feet and after dam failure is 4,500 cfs and 9 feet. Therefore, the water level would rise approximately 4 feet above the first floor sills of these homes. Available mapping indicates there is no hazard potential beyond this point.

SECTION 6 - EVALUATION OF STRUCTURAL STABILITY

6.1 Visual Observations

The general structural stability of the dam is fair as evidenced by its vertical, horizontal and lateral alignment. The stone masonry wall on the upstream face of the dam is in fair condition and in one location the wall is falling into the pond. The earth embankment portions of the dam show no evidence of instability. The channel embankment downstream of the dam is sloughing and indicates instability. Also at this location the downstream masonry of the dam embankment is bulging. The cause of the sloughing and bulging should be investigated to determine the structural stability of the dam.

6.2 Design and Construction Data

The dam was constructed around 1870. No plans or construction information are available for this dam.

6.3 Post-Construction Changes

The only post-construction change was the abandonment of the power conduits.

6.4 Seismic Stability

The dam located in Seismic Zone 1 and in accordance with Recommended Phase I Guidelines does not warrant a seismic analysis.

SECTION 7 ASSESSMENT, RECOMMENDATIONS AND REMEDIAL MEASURES

7.1 Dam Assessment

a. Condition - After considering the available information, the results of inspection, contacts with the Owner and hydraulic/hydrologic computations, the general condition of Jennings Pond Dam is FAIR.

b. Adequacy of Information - The information available is such that an assessment of the safety of the dam was based on the available data, the visual inspection results and computations developed for this report.

c. Urgency - It is considered that the recommendations and remedial measures suggested below should be implemented within one year after receipt of this Phase I Inspection Report.

7.2 Recommendations

The following recommendations should be carried out under the direction of a qualified registered engineer.

a. Seepage through the dam should be investigated further to determine its origin and monitored to determine any changes.

b. Cracking and movement of the upstream retaining wall should be investigated and means of repair established.

c. Trees, including stumps and root systems, should be removed from the top of the dam, embankment slopes and within 20 feet of the toe and backfilled with proper material.

d. The condition of the low-level discharge conduit and gate should be evaluated and both the conduit and gate made operable if need be.

e. Study the sloughing of the channel embankment downstream of the dam and the bulge in the downstream face to determine its cause and its overall effect on the structural stability of the dam.

f. Perform a detailed hydraulic/hydrologic investigation to assess further the potential of overtopping the dam and the need for and the means to increase the project discharge capacity.

7.3 Remedial Measures

a. Operation and Maintenance Procedures -

(1) Remove all brush from the earth embankment, downstream face of the dam and within 20 feet of the toe of the dam.

(2) Repair all joints as well as cracked and spalled concrete.

(3) Institute a program of annual technical inspection by a qualified Engineer.

(4) Develop plans for around-the-clock surveillance during periods of unusually heavy rains and institute a formal warning system for use in the event of an emergency.

7.4 Alternatives

There are no practical alternatives to the above recommendations.

APPENDIX A
INSPECTION CHECK LIST

INSPECTION CHECK LIST

PARTY ORGANIZATION

PROJECT Jennings Pond Dam

DATE 10/22/80

TIDE 1:00 p.m.

WEATHER Partly Cloudy, 50's

W.S. ELEV. _____ U.S. _____ DN.S. _____

PARTY:

- | | |
|---|--------------------------------------|
| 1. <u>Gary Giroux, SE, Hyd./Struct.</u> | 6. <u>Michael Pozzato, MA, Mech.</u> |
| 2. <u>Hermann Hani, SE, Technician</u> | 7. _____ |
| 3. <u>Ben Cohen, SE, Civil</u> | 8. _____ |
| 4. <u>Floyd Austin, DBA, Civil</u> | 9. _____ |
| 5. <u>Peter Austin, DBA, Civil</u> | 10. _____ |

PROJECT FEATURE	INSPECTED BY	REMARKS
1. <u>Dam Embankment</u>	F. Austin P. Austin	Fair
2. <u>Mechanical</u>	M. Pozzato	Condition Unknown
3. <u>Spillway</u>	G. Giroux B. Cohen	Good
4. <u>Discharge Channel</u>	G. Giroux H. Hani	Good
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____
9. _____	_____	_____
10. _____	_____	_____

INSPECTION CHECK LIST

PROJECT Jennings Pond Dam DATE 10/22/80
 PROJECT FEATURE _____ NAME _____
 DISCIPLINE _____ NAME _____

AREA EVALUATED	CONDITIONS
<u>DAM EMBANKMENT</u>	
Crest Elevation	41.0 (NGVD)
Current Pool Elevation	38.1 (NGVD)
Maximum Impoundment to Date	Unknown
Surface Cracks	N/A (Masonry Dam)
Pavement Condition	N/A
Movement or Settlement of Crest	None
Lateral Movement	None
Vertical Alignment	Good
Horizontal Alignment	Good
Condition at Abutment and at Concrete Structures	Good
Indications of Movement of Structural Items on Slopes	None
Trespassing on Slopes	Problem (Some doesn't appear to be a problem)
Vegetation on Slopes	Brush and trees growing on embankment
Sloughing or Erosion of Slopes or Abutments	Some erosion near south abutment
Rock Slope Protection - Riprap Failures	N/A
Unusual Movement or Cracking at or near Toes	More Visible
Unusual Embankment or Downstream Seepage	More Visible
Piping or Boils	None
Foundation Drainage Features	None
Toe Drains	None
Instrumentation System	None

INSPECTION CHECK LIST

PROJECT Jennings Pond Dam

DATE 10/22/80

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED

CONDITION

CULLET WORKS - INTAKE CHANNEL AND INTAKE STRUCTURE

a. Approach Channel

Underwater

Slope Conditions

Bottom Conditions

Rock Slides or Falls

Log Boom

Debris

Condition of Concrete Lining

Drains or Weep Holes

b. Intake Structure

Underwater

Condition of Concrete

Stop Logs and Slots

INSPECTION CHECK LIST

PROJECT Jennings Pond Dam

DATE 10/22/80

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - CONTROL TOWER</u>	
a. Concrete and Structural	N/A
General Condition	
Condition of Joints	
Spalling	
Visible Reinforcing	
Rusting or Staining of Concrete	
Any Seepage or Efflorescence	
Joint Alignment	
Unusual Seepage or Leaks in Gate Chamber	
Cracks	
Rusting or Corrosion of Steel	
b. Mechanical and Electrical	
Air Vents	
Float Wells	
Crane Hoist	
Elevator	
Hydraulic System	
Service Gates	Condition and operation unknown
Emergency Gates	Gate was in accessible
Lightning Protection System	
Emergency Power System	
Wiring and Lighting System in Gate Chamber	

INSPECTION CHECK LIST

PROJECT Jennings Pond Dam

DATE 10/22/80

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED

CONDITION

OUTLET WORKS - TRANSITION AND CONDUIT

General Condition of Concrete

N/A

Rust or Staining on Concrete

Spalling

Erosion or Cavitation

Cracking

Alignment of Monoliths

Alignment of Joints

Numbering of Monoliths

INSPECTION CHECK LIST

PROJECT Jennings Pond Dam

DATE 10/22/80

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED	CONDITION
<u>OUTLET WORKS - SPILLWAY WEIR, APPROACH AND DISCHARGE CHANNELS</u>	
a. Approach Channel	
General Condition	Unknown - Underwater
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	Mostly Brush
Floor of Approach Channel	Unknown
b. Weir and Training Walls	
General Condition of Concrete	Good
Rust or Staining	None
Spalling	Southerly training wall
Any Visible Reinforcing	None
Any Seepage or Efflorescence	Northerly side of spillway
Drain Holes	None
c. Discharge Channel	
General Condition	Good
Loose Rock Overhanging Channel	None
Trees Overhanging Channel	Some
Floor of Channel	Concrete apron and natural channel in good condition
Other Obstructions	Bridges downstream

INSPECTION CHECK LIST

PROJECT Jennings Pond Dam

DATE 10/22/80

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED

CONDITION

OUTLET WORKS - OUTLET STRUCTURE AND OUTLET CHANNEL

General Condition of Concrete

N/A

Rust or Staining

Spalling

Erosion or Cavitation

Visible Reinforcing

Any Seepage or Efflorescence

Condition at Joints

Drain holes

Channel

Outlet discharges into spillway channel

Loose Rock or Trees Overhanging
Channel

Condition of Discharge Channel

INSPECTION CHECK LIST

PROJECT Jennings Pond Dam

DATE 10 22/80

PROJECT FEATURE _____

NAME _____

DISCIPLINE _____

NAME _____

AREA EVALUATED

CONDITION

OUTLET WORKS - SERVICE BRIDGE

N/A

a. Super Structure

Bearings

Anchor Bolts

Bridge Seat

Longitudinal Members

Under Side of Deck

Secondary Bracing

Deck

Drainage System

Railings

Expansion Joints

Paint

b. Abutment & Piers

General Condition of Concrete

Alignment of Abutment

Approach to Bridge

Condition of Seat & Backwall

APPENDIX B

ENGINEERING DATA

Any information pertaining to the history, maintenance and past inspection reports are located at:

State of Connecticut
Department of Environmental
Protection
Water Resources Unit
State Office Building
Hartford, Connecticut 06115



STATE OF CONNECTICUT

DEPARTMENT OF AGRICULTURE & NATURAL RESOURCES
STATE OFFICE BUILDING • HARTFORD, CONNECTICUT 06115

October 23, 1970

Report on DAMS

Mr. Robert J. Elair
First Selectman
Straits Road
Chester, Connecticut 06412

Dear Bob:

Enclosed please find a Xerox copy of the report of Bill O'Brien of the Water Resources Commission relative to the condition of the dams in the Pataconk Brook part of town.

It is my interpretation of his report that there is at present no major repairs needed to insure downstream protection and therefore the threat is minimal.

If you decide to proceed with an application for an acquisition assistance grant, please let us know.

Sincerely,

Carl N. Otte, Coordinator
Open Space Program

CNO/hpb
Enc.

DEPARTMENT MESSAGE
10 OCT 1970

SAVE TIME - Use duplicate message and acceptable
Use carbon if generally used a copy. If not carbon, use first line.

TO: Carl N. Site Coordinator	AGENCY: Agriculture and Natl. Res. State Parks Program	DATE: October 15, 1970
FROM: William H. O'Brien, III Civil Engineer	AGENCY: Water Resources Commission	TELEPHONE:
SUBJECT: Stanley Forks (Pattaconk Brook) Dam - Chester		

The following are our comments on the subject dams based on a field inspection on October 14, 1970 and as you had previously requested:

1. Lower Jennings Pond Dam. This dam is on the Pattaconk Brook and is approximately one thousand feet downstream from Straits Road and shown on the U. S. G. S. map as Jennings Pond. The dam is a masonry structure laid up without mortar. It appears to be curved slightly in the upstream direction. The dam is approximately 15 feet high and appears to be in sound condition with no noticeable movement of the stone work. There are many small trees growing on the top of this dam which should be removed at the earliest possible time to prevent future damage to the structure as a result of root growth or blowing over in a strong wind. There is a deep gully eroded in the downstream southerly abutment which has caused a partial wash out of a downstream training wall. This does not effect the safety of the dam at this time, however some repairs should be made in this area to prevent further deterioration of the structure. There were no other items of concern at this structure. The Pattaconk Fish and Game Club stocks and manages this pond. This dam would cause damage in the event of failure and is therefore under the jurisdiction of the Water Resources Commission.

2. Upper Jennings Pond Dam. This dam is immediately upstream from Lower Jennings Pond Dam and is on the west side of Straits Road. The pond formed by this dam is approximately 1 acre in area and the normal water level is approximately 4 feet below the pavement of Straits Road. The dam is a concrete wall with a definite batter in the upstream direction some 10 feet in height and approximately 50 feet west of the bridge on Straits Road. There appears to be no cause for concern regarding the safety of this dam at this time. There are numerous trees growing on the earth section of the dam which is downstream from a masonry wall on the north side of the spillway and downstream from a concrete wall on the south side of the spillway. These trees do not appear to present a hazardous situation from the standpoint of the safety of the dam, they are however likely to cause an eventual deterioration of these upstream walls and as such it may be in the best interest of the owner to remove these trees.

INTERDEPARTMENT MESSAGE

FIG 201 12 09

SAVE TIME: Use 1 letter messages are acceptable.

Use carbon if you really need a copy. If typed often, ignore faint lines.

TO	AGENCY	DATE
FROM	AGENCY	TELEPHONE
SUBJECT Stanley Works (Pattaconk Brook) Dam - Chester		

3. George E. Abbott and Company, Inc. Dam. This is a dam on Pattaconk Brook approximately one thousand feet upstream (west of Upper Jennings Pond Dam) and is on the north side of Route 148. This is a dry masonry dam some 6 feet high and the entire length of the masonry structure is capped by an 8 inch concrete capstone for the entire length of the structure. The pond is approximately a quarter acre in size. The dam appears to have been well built with a significant batter in the upstream direction and no sign of shifting in the masonry. There did not appear to be any cause for concern over the safety of this structure.

4. The pond shown on U. S. G. S. (Deep River quadrangle) just west of the intersection of Hoopole Hill Road and Route 148 is apparently no longer in existence because of the construction of new Route No. 9.

5. There are the remnants of an old masonry dam on the south side of Route 148 a few hundred feet downstream from Perry Shop Pond Dam. The average remains of this dam are approximately 5 feet high and there is virtually no storage volume possible behind this structure. The entire flow on 10/14/70 was through a hole in the base of this structure. This dam could not cause damage in the event of failure and is therefore not under the jurisdiction of the Water Resources Commission.

6. Perry Shop Pond Dam. This is a very poorly built structure with earth on the upstream side and a deteriorating dry masonry wall on the downstream side. The average height of the dam is approximately 8 feet above the stream bed with a large stone masonry spillway at the south end of the pond in a configuration resembling a stone step. This spillway apparently was about 70 feet in width and maintained a normal pond approximately 6 feet above the stream bed. This spillway had a 10 by 10 inch timber across the top of it. About half of the spillway has washed out to some extent maintaining a normal pond elevation approximately 4 1/2 to 5 feet above the stream bed. There are numerous large trees growing on the earth embankment. There is considerable siltation in the pond and it appears that the maximum depth of the pond may be on the order of 3 feet with a total area of approximately 1/2 acre. With the present spillway capacity it is doubtful that this dam will become over topped and it would also appear that the dam could withstand minor

INTERDEPARTMENT MESSAGE

OTO 201 12 89

SAVE TIME: Handwritten messages are acceptable.

Use carbon if you really need a copy. If typewritten, ignore first line.

TO	AGENCY	DATE
FROM	AGENCY	TELEPHONE
SUBJECT Stanley Works (Pattaconk Brook) Dams - Chester		

over topping without failure. The irregularity in the top elevation of the dam would concentrate flows and certain areas which would make failure by over topping somewhat more likely than otherwise but probable. It is the undersigned opinion that failure of this dam under normal conditions would not cause damage downstream and it is questionable if failure under high water conditions would cause any damage. It is a probability that if this dam were to fail it would fail in such a manner as not to increase the hazard to downstream properties and lives.

Since the pond appears to serve no useful purpose, it may be best to consider either breaching the dam at the spillway or raising the pond elevation which would require that some significant work be done to the structure with the approval of the Water Resources Commission.

7. This is a masonry dam on Pattaconk Brook approximately 500 feet east (downstream from) Wig Hill Road. The entire dam is of dry masonry construction from abutment to abutment and at least some of which is founded on ledge on both ends of the dam. The spillway section is some 4 feet below the top of the remainder of the dam and is approximately 50 feet in width towards the south end of the structure. There is a rectangular masonry culvert through the dam some 3 by 3 feet, the invert of which is approximately 3 feet above stream bed on the downstream side. The dam appears to have been very well constructed and has a definite batter in the upstream direction. There is no apparent leaning or bulging of this dam.

8. Dam at Wig Hill Road. This is a dry masonry dam across the Pattaconk Brook founded on ledge with a bridge on Wig Hill Road going across the spillway. The normal water level in this pond is approximately 8 feet above the stream bed. The roadway is approximately 10 feet above the normal pond level (spillway level). One of the steel I beamed supports for the bridge rests on ledge at approximately the same elevation as the spillway and approximately 20 feet towards the pond. The opening under the bridge is approximately 5 feet high by 20 feet across. Because of the extremely small impoundment behind this dam and the numerous ledge out croppings, failure of this dam would allow only a limited amount of water to be released downstream. It is

Town Office Building

65 Main Street
Chester, Connecticut 06412
Selectman 526-5253
9553



Office of the Selectmen

RECEIVED

January 29, 1981

JAN 30 1981

STORCH ENGINEERS
WETHERSFIELD

Storch Engineers
161 Main Street
Wethersfield, Connecticut 06109

Attention: Mr. Benjamin D. Cohen

Dear Mr. Cohen:

In the event of any impending failure of dams in the Town of Chester or danger from flooding, the Town has designated the Chester Firehouse as Emergency Headquarters.

Those persons who would be affected would be notified by door to door contact, also public address system by Police, Fire Personnel and Highway Department. Those persons affected would be requested to go to the Firehouse which has provision to house and feed them.

All property would be under Police supervision until the emergency was over. A determination would be made by the Chief Executive Officer or in his or her absence the line of authority would go to Second, then Third Selectman for notification, as well as, when the emergency was over.

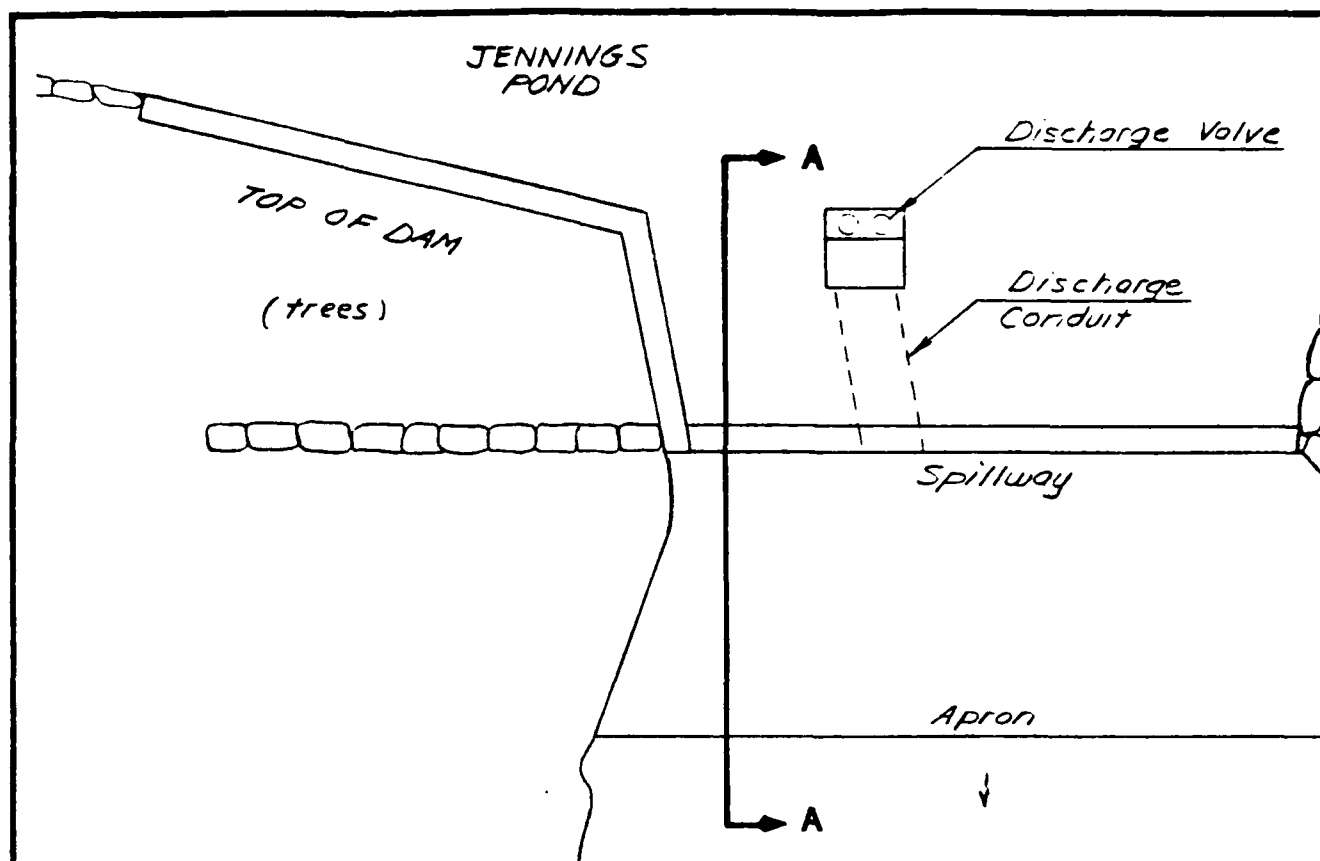
Sincerely,



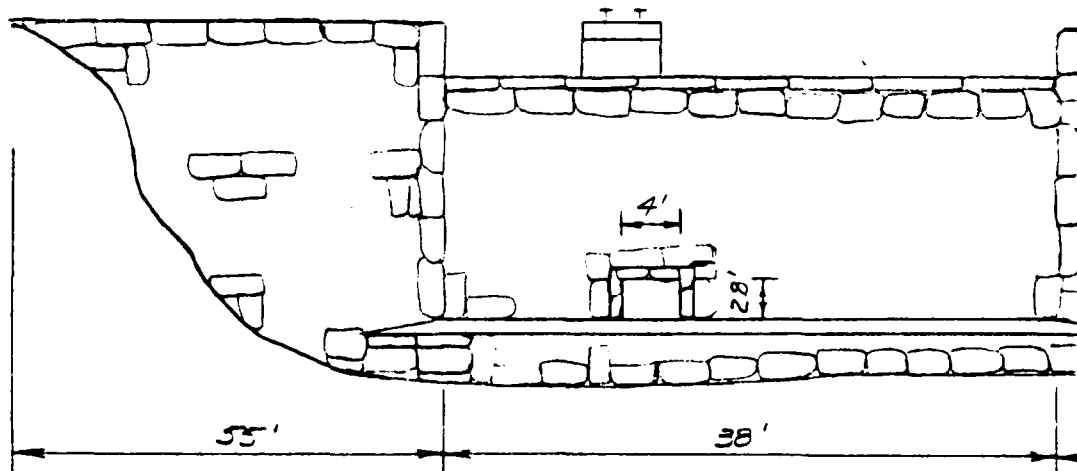
Robert J. Blair,
First Selectman

RJB:ccf

cc: Mr. James L. Grote, Fire Marshall



PLAN

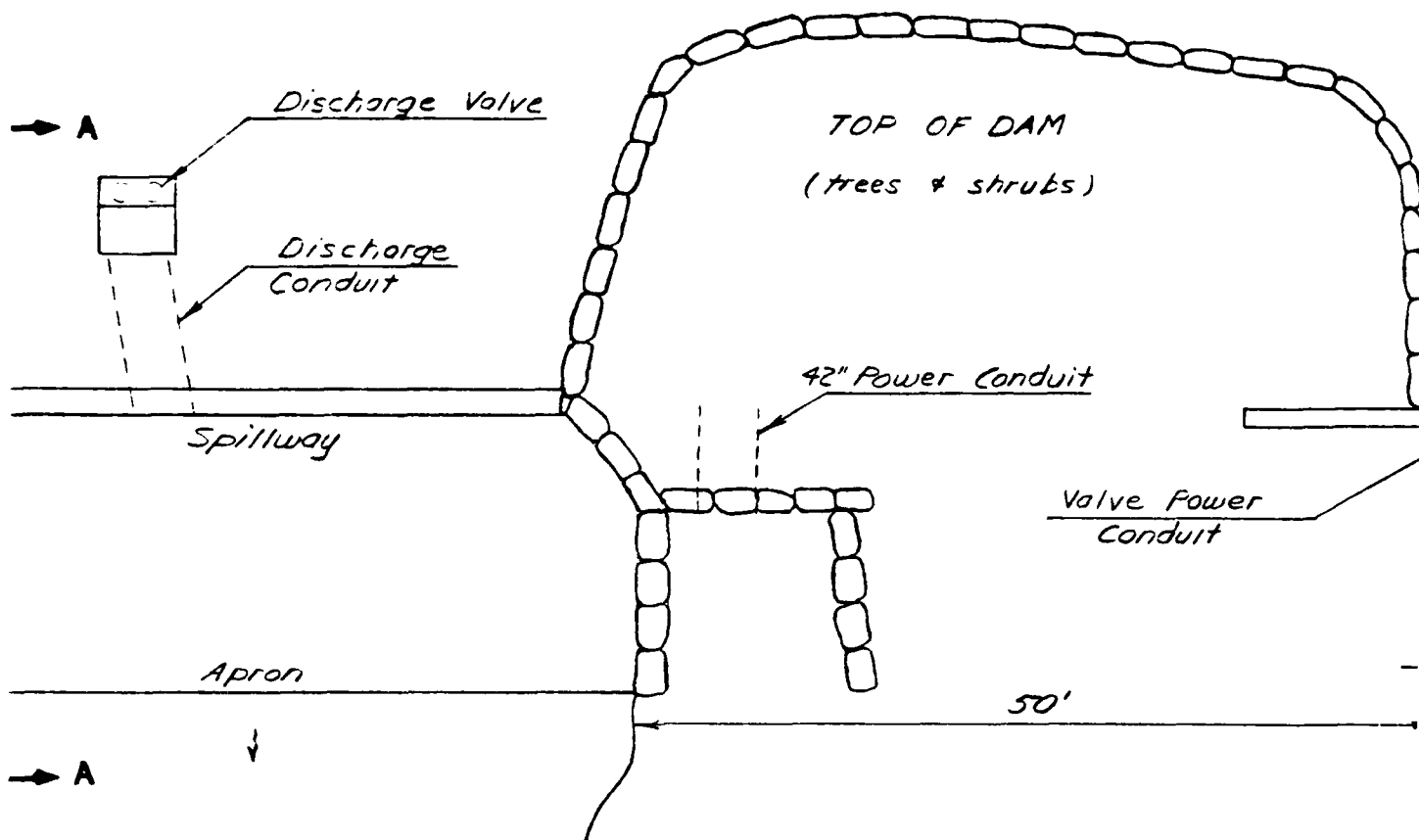


ELEVATION

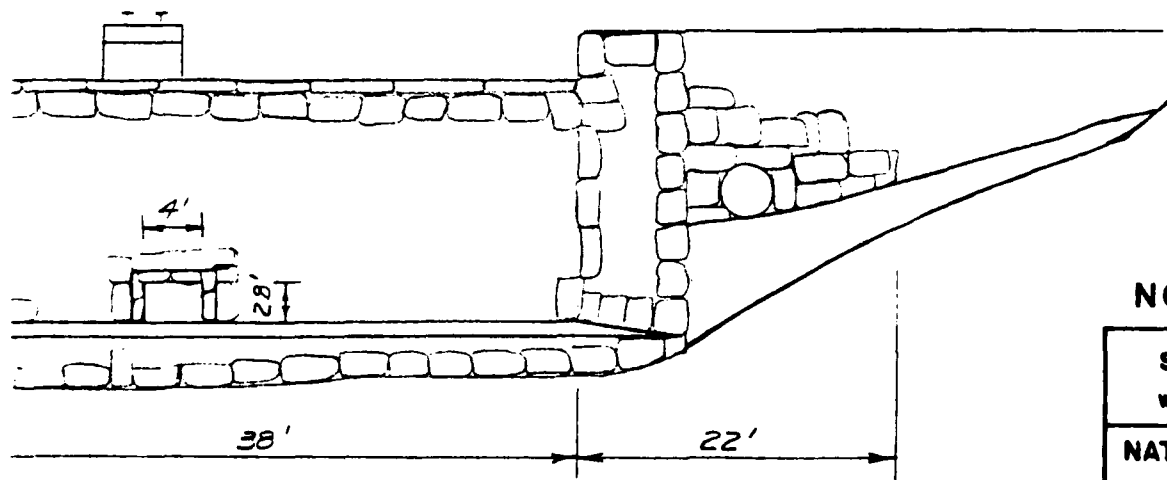
PLATE I

①

②



PLAN



ELEVATION

②

NOT TO SCALE

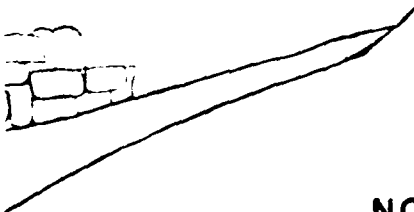
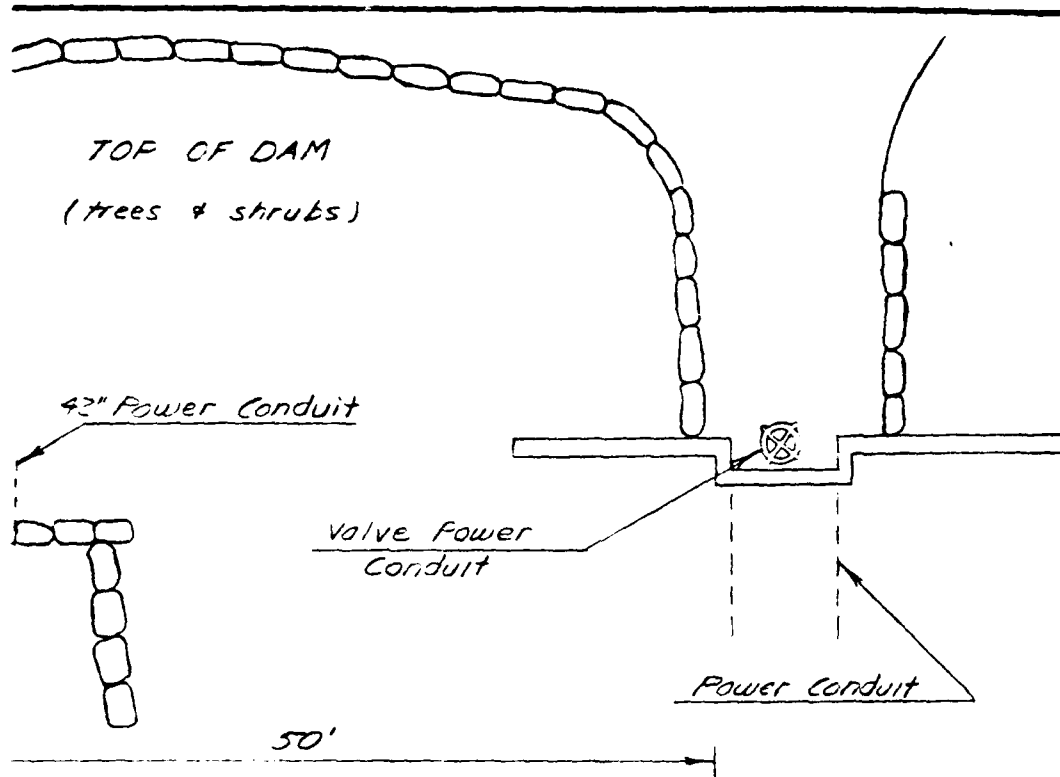
STORCH ENGINEERS

WETHERSFIELD, CONNECTICUT

NATIONAL PROGRAM OF

JENNING

2



NOT TO SCALE

PLATE 1

STORCH ENGINEERS
WETHERSFIELD, CONNECTICUT

U.S. ARMY ENGINEER DIV NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM MASS

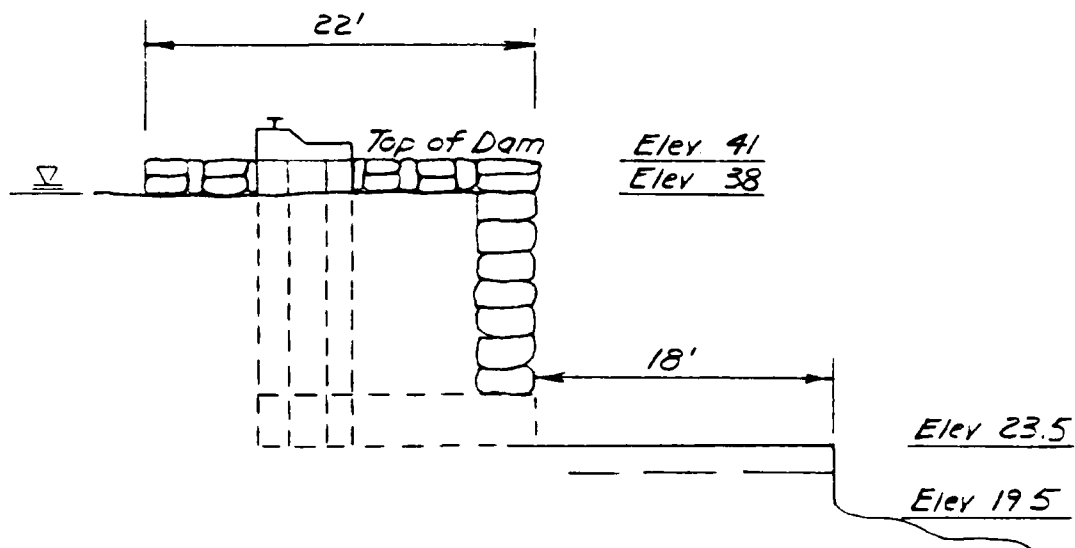
NATIONAL PROGRAM OF INSPECTION OF NON-FED DAMS

JENNINGS POND DAM

3 of 3

SCALE AS SHOWN

DATE FEBRUARY 1981



SECTION A-A

PLATE 2

STORCH ENGINEERS
WETHERSFIELD, CONNECTICUT

U.S. ARMY ENGINEER DIV NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM MASS.

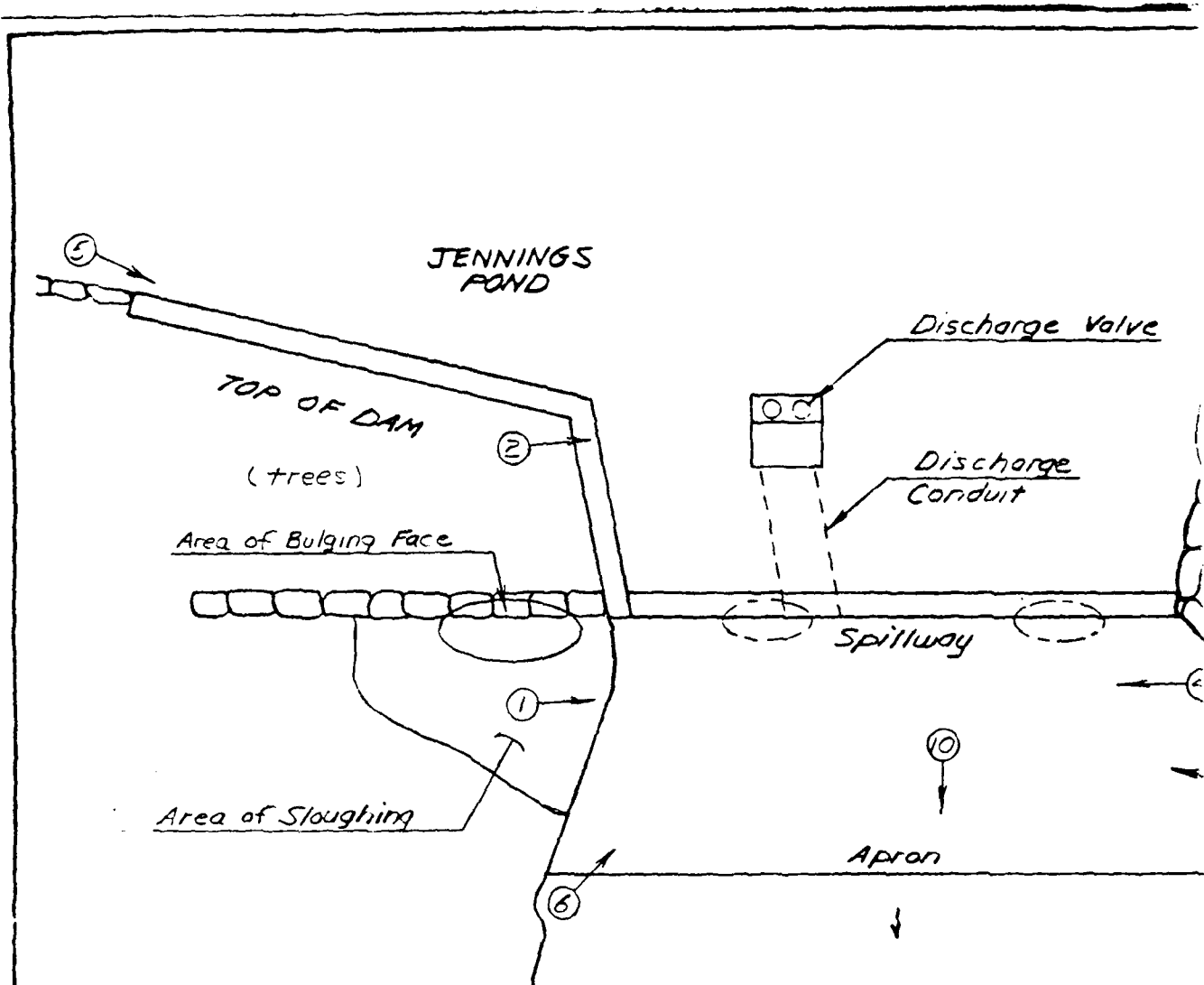
NATIONAL PROGRAM OF INSPECTION OF NON-FED DAMS

JENNINGS POND DAM

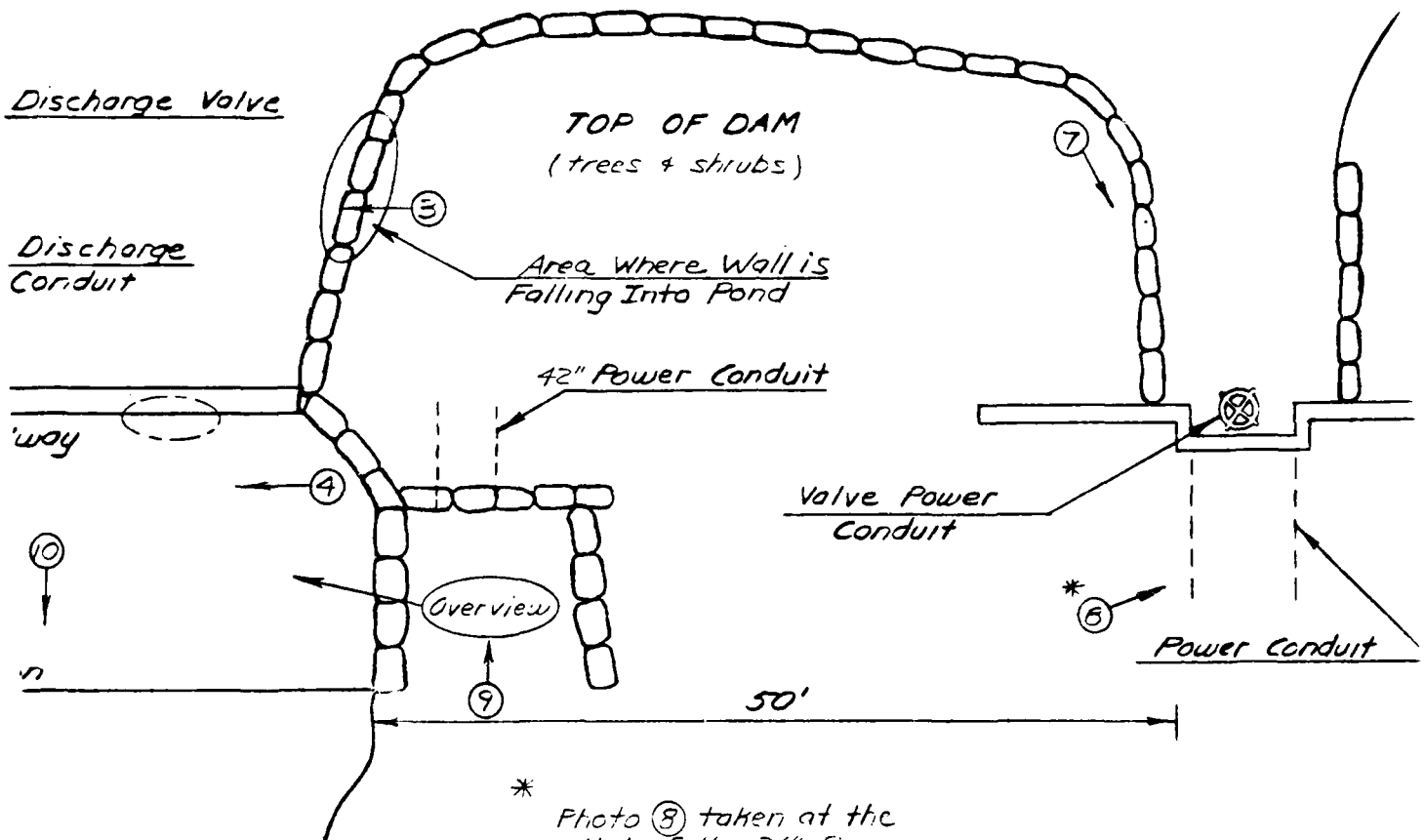
NOT TO SCALE

SCALE: AS SHOWN

DATE: FEBRUARY 1981



PLAN



AN

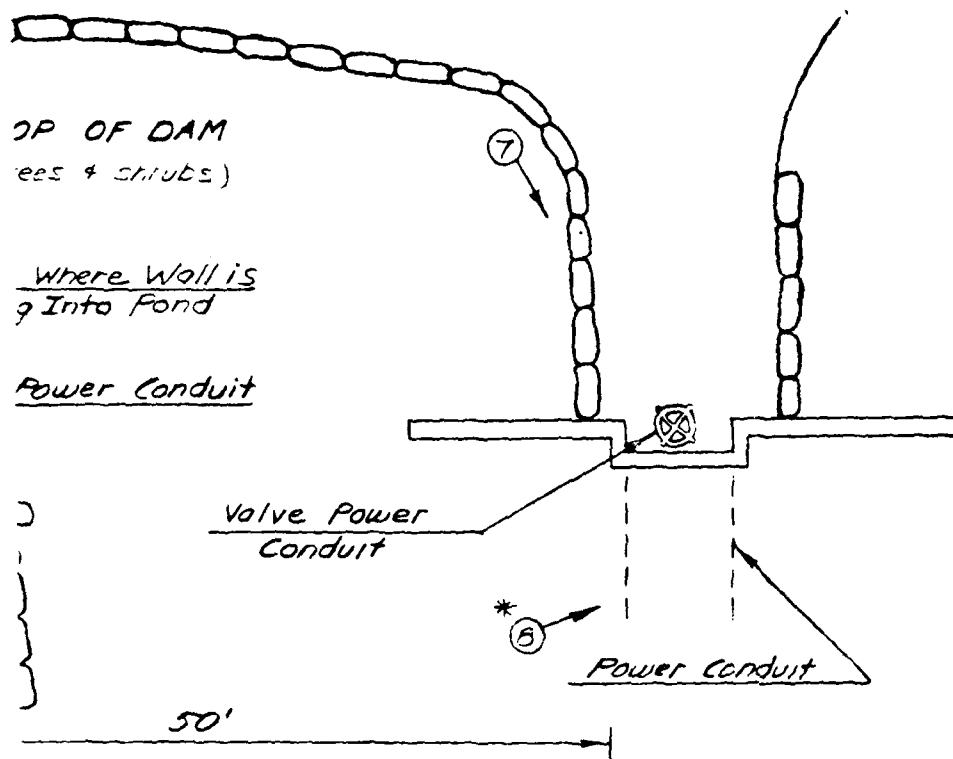
* Photo ⑧ taken at the outlet of the 36" Power conduit, approximately 500' downstream of Gate



PHOTO LOCATION PLAN

STORCH ENGINEERS WETHERSFIELD, CONNECTICUT		U.S. ARMY ENGINEER DIVISION CORPS OF ENGINEERS WALTHAM, MASS.	
NATIONAL PROGRAM OF INSPECTION OF NON-FERROUS			
JENNINGS POND DAM			
			SCALE: AS SHOWN
			DATE: FEBRUARY 1961

NOT TO SCALE



to ⑤ taken at the
end of the 36" Power
Conduit, approximately 50'
stream of Gate



PHOTO LOCATION PLAN

PLATE 3

STORCH ENGINEERS
WETHERSFIELD, CONNECTICUT

U.S. ARMY ENGINEER DIV. NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM MASS

NATIONAL PROGRAM OF INSPECTION OF NON-FED DAMS

JENNINGS POND DAM

3 of 3

NO SCALE

SCALE: AS SHOWN

DATE FEBRUARY 1981

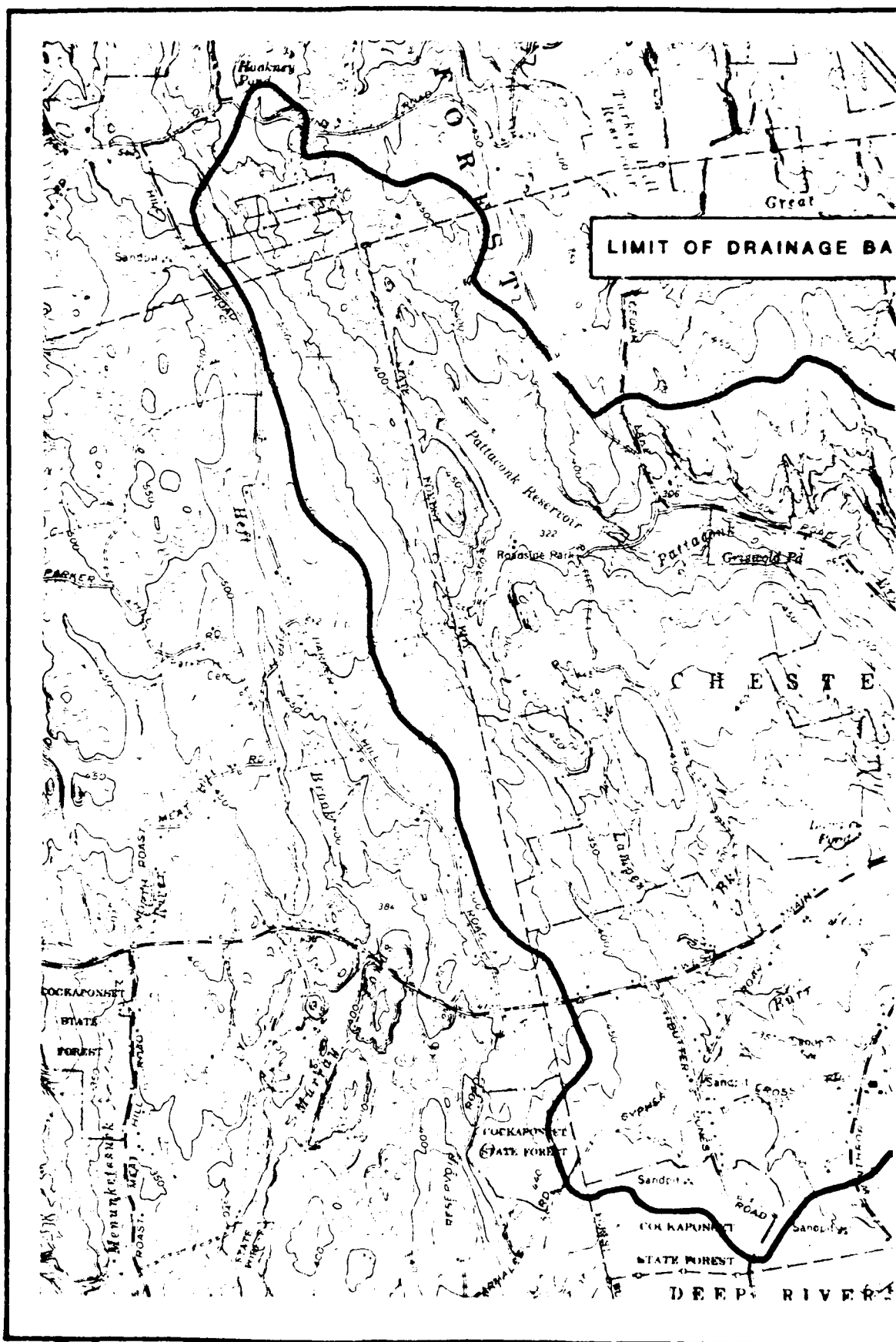
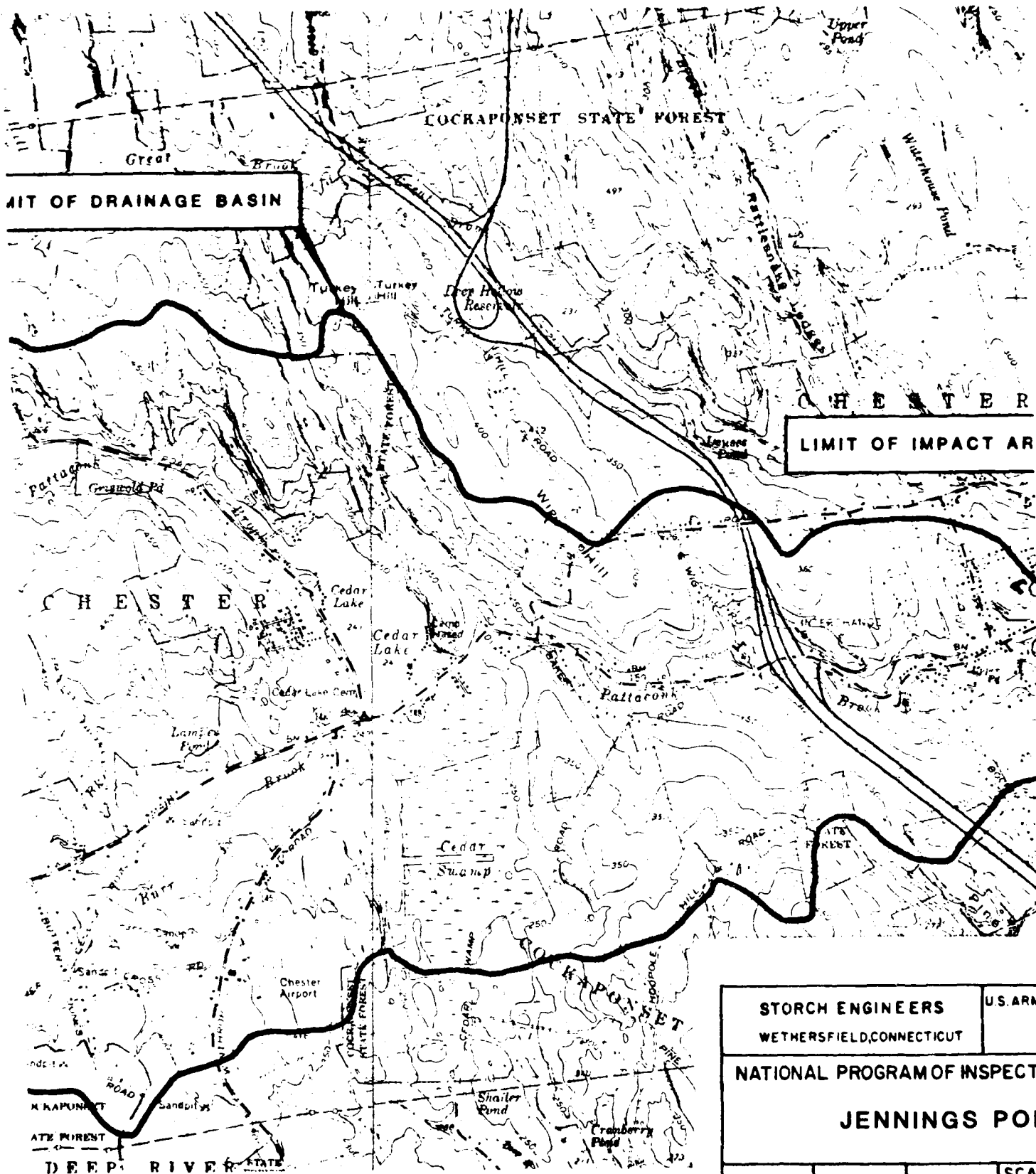


Plate 4

1043



1:24000

STORCH ENGINEERS		U.S. ARMY	
WETHERSFIELD, CONNECTICUT		C	
NATIONAL PROGRAM OF INSPECTION			
JENNINGS POND			
			SCALE
			DATE

243

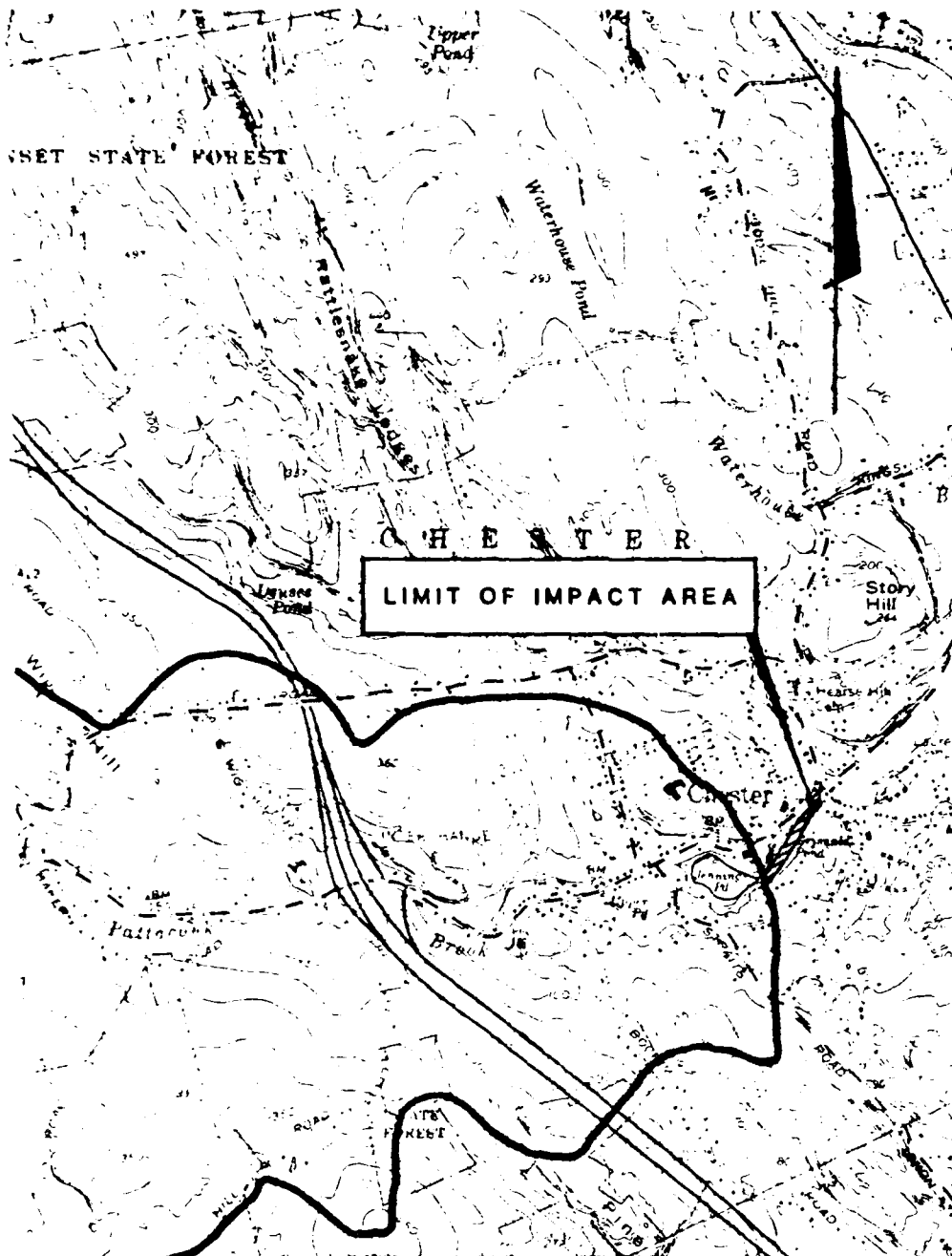


PLATE 4

STORCH ENGINEERS
WETHERSFIELD, CONNECTICUT

U.S. ARMY ENGINEER DIVISION NEW ENGLAND
CORPS OF ENGINEERS
WALTHAM MASS

NATIONAL PROGRAM OF INSPECTION OF NON-FED. DAMS

JENNINGS POND DAM

3

1:24000

SCALE AS SHOWN

DATE FEBRUARY 1981

APPENDIX C

PHOTOGRAPHS



PHOTO 1
SPILLWAY - NORTH ABUTMENT



PHOTO 2
TOP OF DAM - NORTH ABUTMENT



PHOTO 3
TOP OF DAM - SOUTH ABUTMENT - DISCHARGE CONTROL



PHOTO 4
SPILLWAY - SOUTH ABUTMENT



PHOTO 5
UPSTREAM FACE OF DAM



PHOTO 6
LOW LEVEL DISCHARGE



PHOTO 7
INLET - POWER CONDUIT



PHOTO 8
OUTLET - POWER CONDUIT



PHOTO 9

OUTLET - POWER CONDUIT



PHOTO 10

DOWNSTREAM CHANNEL

APPENDIX D

HYDRAULIC AND HYDROLOGIC COMPUTATIONS

STORCH ENGINEERS
Engineers - Landscape Architects
Planners - Environmental Consultants

JOB Phase I Dam Inspection - #4463

SHEET NO. _____ OF _____

CALCULATED BY GJG DATE 12/2/90

CHECKED BY RDC DATE 12/10/90

Determination of Test Flood

NAME OF DAM Jennings Pond Dam

DRAINAGE AREA 5382 acres 8.41 SM

INFLOW Size: Small Hazard: High Test Flood: 1/2 PMF

Natural Storage at Pataconk and Cedar Lake Res. and Cedar Swamp will lower the peak inflow. ∴ use curve between rolling and flatland coastal.

$$\text{Inflow} = 1200/2 = 600 \text{ cfs/SM}$$

$$Q = 600(8.41) = 5045 \text{ cfs}$$

Estimating the effect of surcharge storage on the Maximum Test Flood

1. $Q_{p1} = \underline{5045} \text{ cfs}$

2a. $H_1 = \underline{8.2'} \text{ (elev.)}$

b. $\text{STOR}_1 = \underline{.09''}$

c. $Q_{p2} = Q_{p1} (1 - \text{STOR}_1/9.5) = \underline{5000} \text{ cfs}$

3a. $H_2 = \underline{8.1'} \quad \text{STOR}_2 = \underline{.08''}$

b. $\text{STOR}_A = \underline{.085''}$

$$Q_{PA} = 5045(1 - .085/9.5) = \underline{5000} \text{ cfs}$$

$H_A = \underline{8.1'} \quad \text{STOR}_A = \underline{.09''}$

Test Flood = 5000 cfs

Capacity of the spillway when the pond elevation is at the top of the dam

$Q = \underline{515} \text{ cfs or } \underline{10} \% \text{ of the Test Flood}$

STORCH ENGINEERS
Engineers - Landscape Architects
Planners - Environmental Consultants

JOB Phase I Dam Inspection 4463

SHEET NO _____

OF _____

CALCULATED BY GJE

DATE 2/3/80

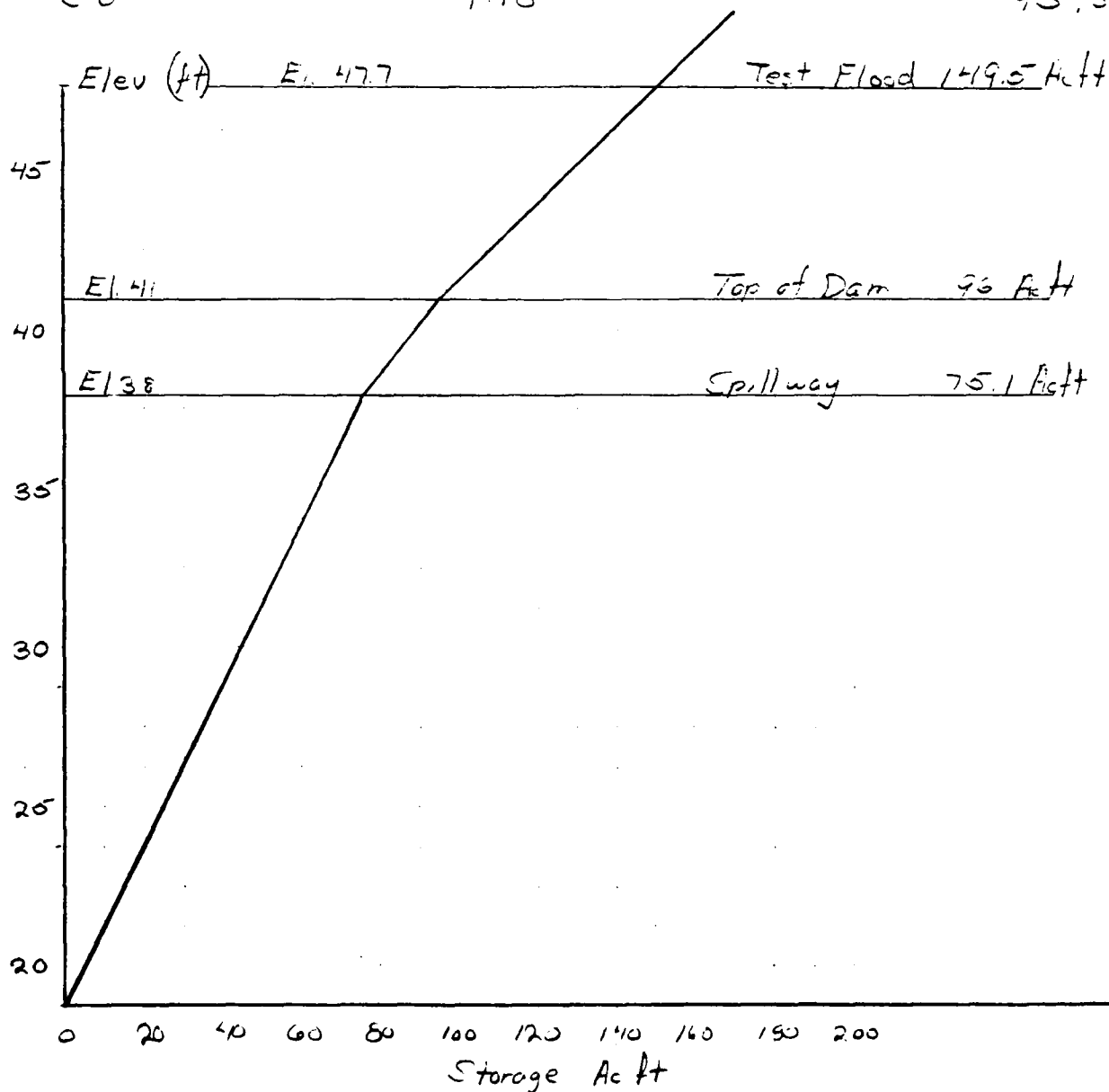
CHECKED BY DOC

DATE 12/5/80

AREA - CAPACITY

Name of Dam: Jennings Pond Dam

ELEV	DEPTH	AREA	AVG. AREA	VOL	Σ VOL
38		6.6			0
41	3		6.98	20.9	
		7.35			20.9
	9		8.27	74.39	
50		9.18			95.3



STORCH ENGINEERS
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Planners - Environmental Consultants

JOB Phase I Dam Inspection 4463

SHEET NO _____ OF _____

CALCULATED BY GJG

DATE 7-90

CHECKED BY PCC

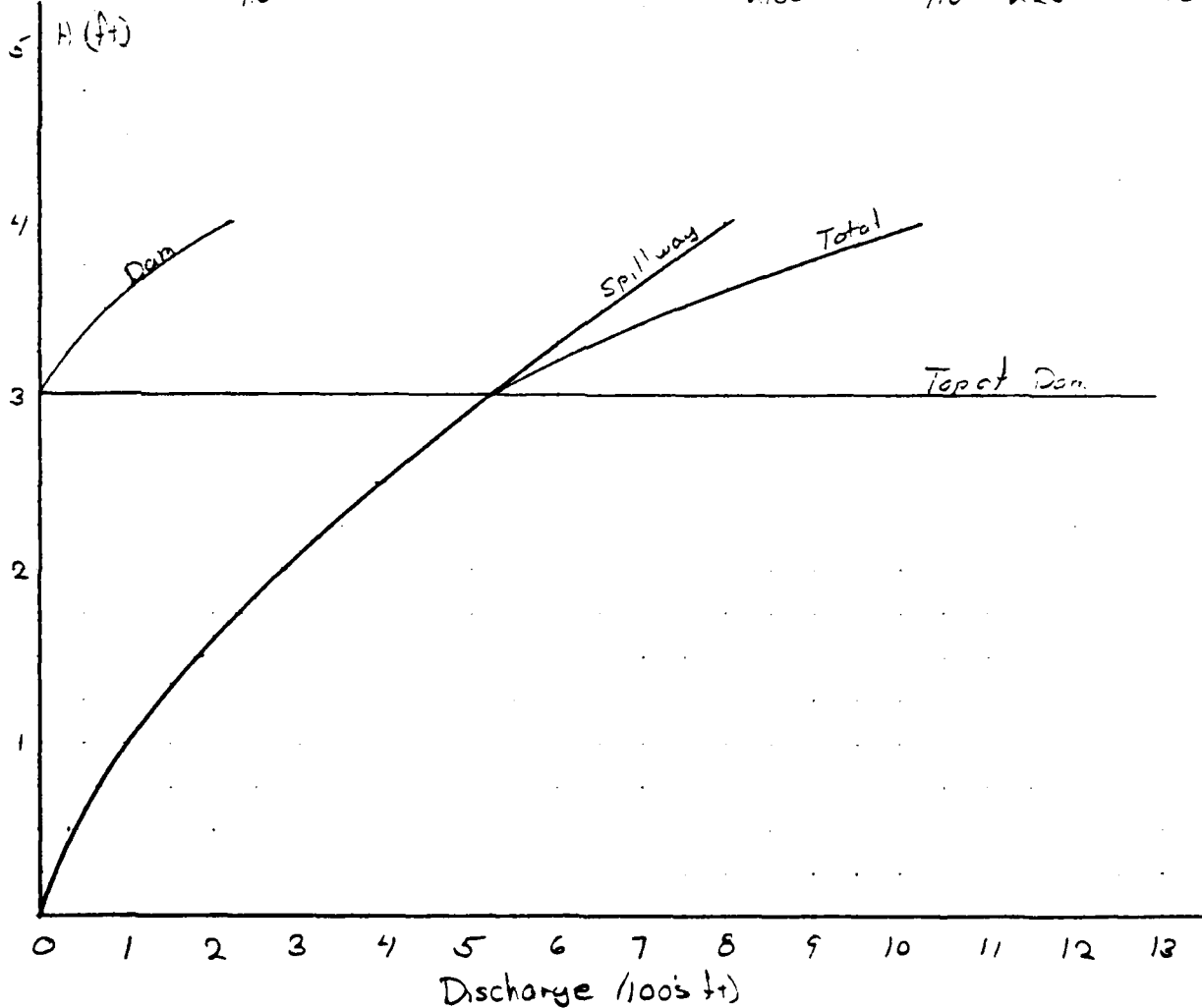
DATE 12/5/87

Stage Discharge

NAME OF DAM Jennings Pond Dam

$$Q = CLH^{3/2}$$

Elev	Spillway I				Spillway II				Dam				QT
	C	L	H	Q	C	L	H	Q	C	L	H	Q	
		35	0	0						57			0
2.63			.5	35									35
2.65			1.0	100									100
2.65			1.5	185									185
2.67			2.0	280									280
			2.5	390									390
			3.0	515									515
			3.5	655									655
			4.0	800									800
										57	0	0	515
									2.7		.5	50	735
									2.63		1.0	220	1020



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JOE Phase I Dam Inspection - #4463

SHEET NO. _____ OF _____

CALCULATED BY: 3.1 DATE: 7/80

CHECKED BY: E.S. DATE: 12/3/80

Downstream Hydrographs

"Rule of Thumb" Guidance for Estimating Downstream Failure Hydrographs

NAME OF DAM

Section I at Dam

1. $S = \frac{96.0}{8/27 W_b \sqrt{g}} \text{ Acft}$
2. $Q_{p1} = \frac{2}{27} (39) \sqrt{32.2} (215)^{1.5} = 6,535$
3. See Sections

Section II at

- 4a. $H_2 = \underline{9.0'}$ $A_2 = \underline{1,110}$ $L_2 = \underline{330}$ $V_2 = \underline{8.4}$ Acft
- b. $Q_{p2} = Q_{p1} (1 - V_2/S) = \underline{5,964}$ cfs
- c. $H_2 = \underline{8.6'}$ $A_2 = \underline{1,040}$
 $A_A = \underline{1,075}$ $V_2 = \underline{8.1}$ Acft
 $Q_{p2} = 6,537 (1 - 8.1/96.0) = 5,982$ cfs $H = 8.6'$

Section III at

- 4a. $H_3 = \underline{10.3'}$ $A_3 = \underline{1,180}$ $L_3 = \underline{300}$ $V_3 = \underline{8.1}$ Acft
- b. $Q_{p3} = Q_{p2} (1 - V_3/S) = \underline{5,425}$ cfs
- c. $H_3 = \underline{9.9'}$ $A_3 = \underline{1,090}$
 $A_A = \underline{1,078}$ $V_3 = \underline{7.7}$ Acft
 $Q_{p3} = 5,982 (1 - 7.7/87.9) = 5,477$ cfs $H = 9.9'$

Section IV at

- 4a. $H_4 = \underline{9.9'}$ $A_4 = \underline{1,090}$ $L_4 = \underline{300}$ $V_4 = \underline{7.5}$ Acft
- b. $Q_{p4} = Q_{p3} (1 - V_4/S) = \underline{4,966}$ cfs
- c. $H_4 = \underline{9.5'}$ $A_4 = \underline{1,020}$
 $A_A = \underline{1,067}$ $V_4 = \underline{7.3}$ Acft
 $Q_{p4} = 5,477 (1 - 7.3/80.5) = 4,977$ cfs $H = 9.5'$

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JOB Phase I Dam Inspection - #4463

SHEET NO. _____ OF _____

CALCULATED BY BDC DATE 11/7/80

CHECKED BY Guh DATE 12/3/80

Downstream Hydrographs (Continued)

Section V at

4a. $H_5 = \underline{9.5'}$ $A_5 = \underline{4,020}$ $L_5 = \underline{300}$ $V_5 = \underline{70}$ Acft

b. $Q_{p5} = Q_{p4} (1 - V_5/S) = \underline{4,499}$ cfs

c. $H_5 = \underline{9.1'}$ $A_5 = \underline{940}$ $V_5 = \underline{7.0}$ Acft
 $A_A = \underline{1,024}$

$Q_{p5} = 4,977(1 - 70/73.1) = 4,497$ cfs $H = 9.1'$

Section VI at

4a. $H_6 = \underline{\hspace{2cm}}$ $A_6 = \underline{\hspace{2cm}}$ $L_6 = \underline{\hspace{2cm}}$ $V_6 = \underline{\hspace{2cm}}$ Acft

b. $Q_{p6} = Q_{p5} (1 - V_6/S) = \underline{\hspace{2cm}}$ cfs

c. $H_6 = \underline{\hspace{2cm}}$ $A_6 = \underline{\hspace{2cm}}$ $V_6 = \underline{\hspace{2cm}}$ Acft
 $A_A = \underline{\hspace{2cm}}$

Section VII at

4a. $H_7 = \underline{\hspace{2cm}}$ $A_7 = \underline{\hspace{2cm}}$ $L_7 = \underline{\hspace{2cm}}$ $V_7 = \underline{\hspace{2cm}}$ Acft

b. $Q_{p7} = Q_{p6} (1 - V_7/S) = \underline{\hspace{2cm}}$ cfs

c. $H_7 = \underline{\hspace{2cm}}$ $A_7 = \underline{\hspace{2cm}}$ $V_7 = \underline{\hspace{2cm}}$ Acft
 $A_A = \underline{\hspace{2cm}}$

$Q_{p7} = \underline{\hspace{2cm}}$

STORCH ENGINEERS / STORCH ASSOCIATES
 Engineers - Landscape Architects
 Planners - Environmental Consultants

JOB Jennings Pond Dam

SHEET NO. _____

OF _____

CALCULATED BY ZSC

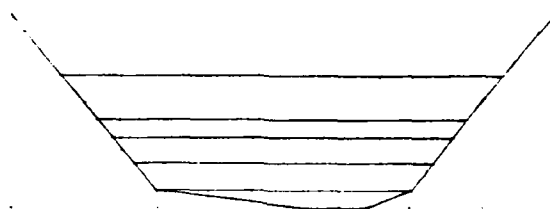
DATE 11/17/20

CHECKED BY GJG

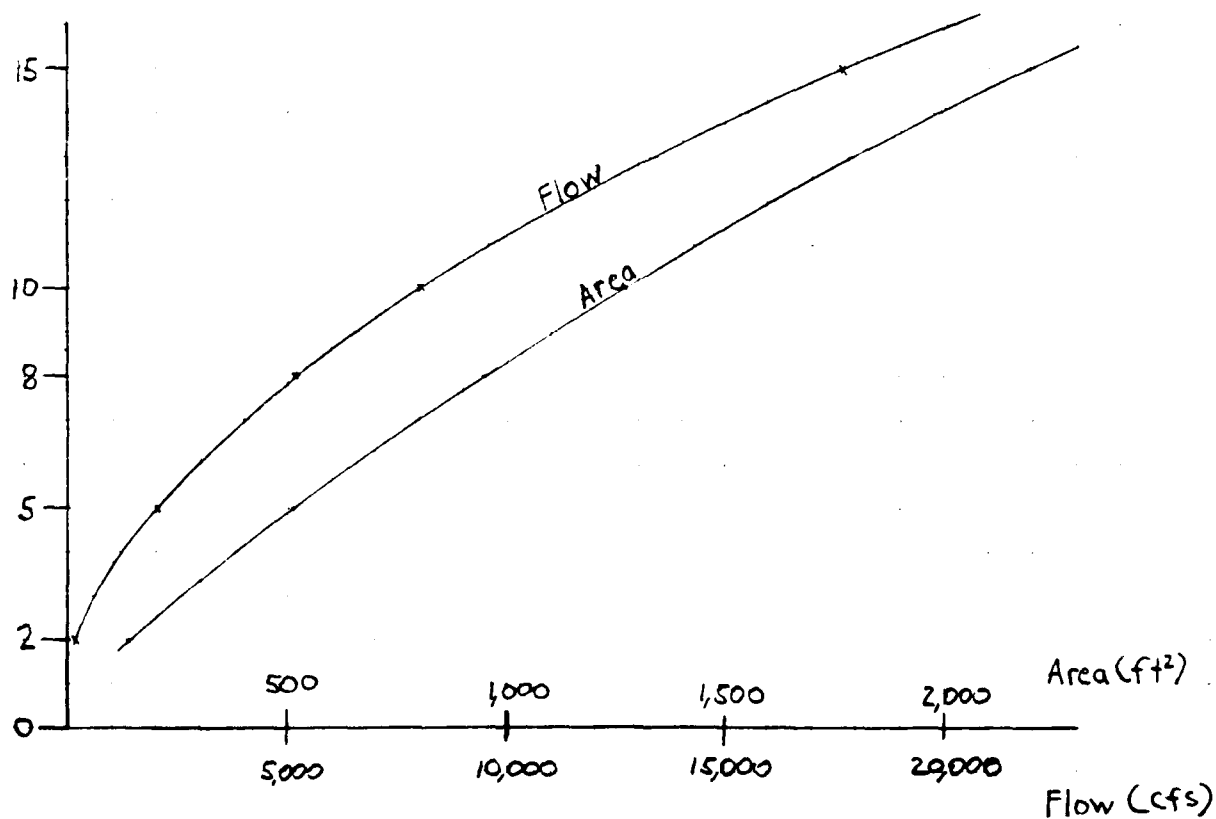
DATE 12/3/20

SCALE _____

$C = 0.682$
 $n = 0.075$



D	WP	A	R	R ^{3/2}	S ^{1/2}	V	Q
2	112	137	1.22	1.14	0.082	1.87	257
5	136	509	3.74	2.41	"	3.95	2,010
8	156	947	6.07	3.33	"	5.45	5,163
10	168	1,271	7.56	3.85	"	6.31	8,024
15	200	2,191	10.96	4.93	"	8.08	17,705



STORCH ENGINEERS - STORCH ASSOCIATES
 Engineers - Landscape architects
 Planners - Environmental Consultants

JOB Jennings Pond Dam

SHEET NO _____

OF _____

CALCULATED BY BDC

DATE 1/7/85

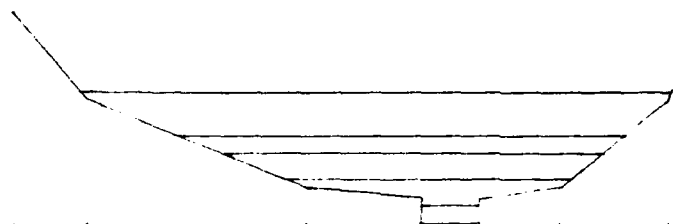
CHECKED BY CLG

DATE 2.3.85

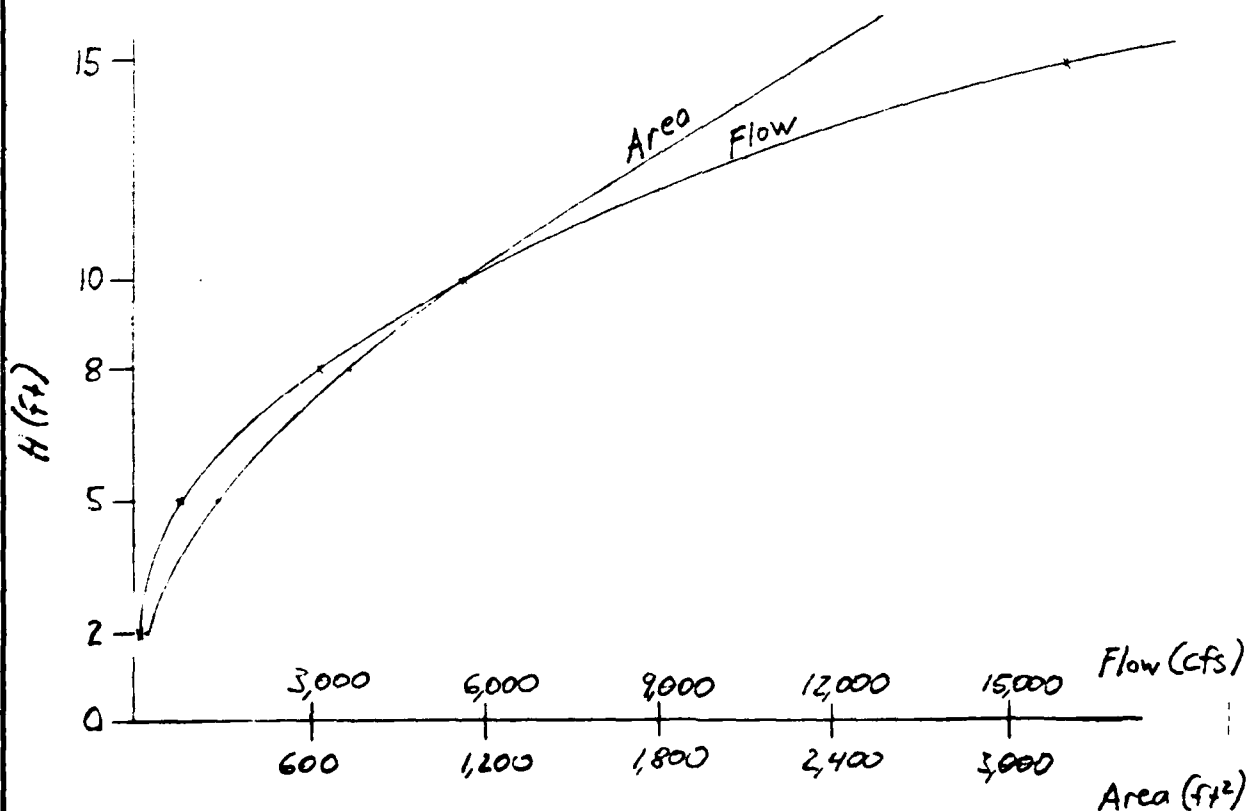
SCALE _____

$S = 0.68\%$

$n = 0.075$



D	WP	A	R	$R^{3/2}$	$S^{1/2}$	V	Q
2	30	52	1.73	1.44	0.082	2.36	123
5	130	286	2.20	1.69	"	2.77	793
8	174	742	4.26	2.63	"	4.31	3,196
10	202	1,124	5.40	3.08	"	5.04	5,070
15	270	2,319	8.59	4.19	"	6.87	15,933



APPENDIX E

INFORMATION AS CONTAINED IN
THE NATIONAL INVENTORY OF DAMS

NOT AVAILABLE AT THIS TIME