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National Dam Safety Program, Congers Lake Dam (Inventory Number NY 972), Passaic River Basin, Lower Hudson River Area, Rockland County, New York. Phase I Inspection Report.

12. SUPPLEMENTARY NOTES

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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.

Examination of available documents and a visual inspection of the dam and appurtenant structures did not reveal conditions which constitute an immediate hazard to human life or property. → (over)

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Using the Corps of Engineers' screening criteria, it has been determined that the dam would be overtopped for all storms exceeding approximately 23 percent of the Probable Maximum Flood (PMF). Therefore, the spillway is adjudged "seriously inadequate," and the dam is assessed as unsafe, non-emergency.)

The "unsafe" classification applied to a dam because of a "seriously inadequate spillway" is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. However, it does mean that, based on an initial screening and preliminary computations, there appears to be a serious deficiency in spillway capacity, so that if a severe storm were to occur, overtopping and failure of the dam would take place, significantly increasing the hazard to loss of life downstream.

No signs of instability were noted in the embankment; therefore, a stability analysis is not considered necessary at this time. It is ~~therefore~~ recommended that, within three months of owner notification, detailed hydrologic and hydraulic investigations of the structure should be undertaken to more accurately determine the site-specific characteristics of the watershed and their effects upon the overtopping potential of the dam. The results of this investigation and analyses will determine the appropriate remedial measures required to achieve a spillway capacity adequate to discharge the outflow from at least the 1/2 PMF. In the interim, a detailed emergency action plan must be developed and implemented during periods of unusually heavy precipitation. Also, around-the-clock surveillance must be provided during these periods.

Regular inspections should be made of the dam and appurtenant structures. A thorough checklist should be compiled for use by the owner's representative as a guide for the inspections. Maintenance items should be completed annually.

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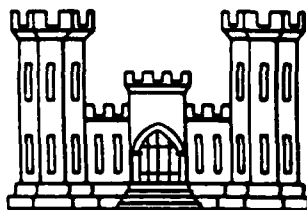
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**PASSAIC RIVER BASIN
LOWER HUDSON RIVER AREA**

CONGERS LAKE DAM

**ROCKLAND COUNTY, NEW YORK
INVENTORY NO. N.Y. 972**

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



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NEW YORK DISTRICT CORPS OF ENGINEERS

JUNE 1981

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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 "Probable Maximum Flood" for the region (greatest reasonably possible storm runoff), or fractions thereof. Because of the magnitude and rarity of such a storm event, a finding that a spillway will not pass the test flood should not be interpreted as necessarily posing a highly inadequate condition. The test flood provides a measure of relative spillway capacity and serves as an aid 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 I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
CONGERS LAKE DAM
I.D. No. NY 972
DEC DAM No. 214A-290 PASSAIC RIVER BASIN
ROCKLAND COUNTY, NEW YORK

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PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam: Congers Lake Dam (I.D. No. NY 972)
State: New York
County: Rockland
Stream: East Branch Hackensack River
Dates of Inspection: 10 January 1981
7 March 1981

ASSESSMENT

Examination of available documents and a visual inspection of the dam and appurtenant structures did not reveal conditions which constitute an immediate hazard to human life or property.

Using the Corps of Engineers' screening criteria, it has been determined that the dam would be overtopped for all storms exceeding approximately 23 percent of the Probable Maximum Flood (PMF). Therefore, the spillway is adjudged "seriously inadequate," and the dam is assessed as unsafe, non-emergency.

The "unsafe" classification applied to a dam because of a "seriously inadequate spillway" is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. However, it does mean that, based on an initial screening and preliminary computations, there appears to be a serious deficiency in spillway capacity, so that if a severe storm were to occur, overtopping and failure of the dam would take place, significantly increasing the hazard to loss of life downstream.

No signs of instability were noted in the embankment; therefore, a stability analysis is not considered necessary at this time. It is therefore recommended that, within three months of owner notification, detailed hydrologic and hydraulic investigations of the structure should be undertaken to more accurately determine the site-specific characteristics of the watershed and their effects upon the overtopping potential of the dam. The results of this investigation and analyses will determine the appropriate remedial measures required to achieve a spillway capacity adequate to discharge the outflow from at least the 1/2 PMF. In the interim, a detailed emergency action plan must be developed and implemented

during periods of unusually heavy precipitation. Also, around-the-clock surveillance must be provided during these periods.

Regular inspections should be made of the dam and appurtenant structures. A thorough checklist should be compiled for use by the owner's representative as a guide for the inspections. Maintenance items should be completed annually.

The following remedial measures must be completed within one year.

1. Fill and compact low areas along the crests. Seed or riprap the area.
2. Regrade the upstream slopes to the original design of 1V:3H and riprap to the original height of 3 feet above the normal pool level.
3. Fill, compact, and seed areas where runoff from the crests has eroded soil from behind the stone walls on the downstream sides of the embankments.
4. Remove trees and brush from the embankments, crests, and areas within 20 feet of the downstream toe. Root systems for trees with a trunk diameter greater than 3 inches should be removed and the resultant holes backfilled, compacted and reseeded.
5. Install a staff gage to monitor reservoir levels above normal pool.

SUBMITTED: 

Granville Kester, Jr., P.E.
Vice President
MICHAEL BAKER, JR. of New York, INC.

APPROVED: 

Colonel W.M. Smith, Jr.
New York District Engineer

DATE: _____

30 JUN 1981



Overall View of Dam
Congers Lake Dam
I.D. No. NY 972
10 January 1981

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
CONGERS LAKE DAM
I.D. No. NY 972
DEC DAM No. 214A-290
PASSAIC RIVER BASIN
ROCKLAND COUNTY, NEW YORK

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

- a. Authority - The Phase I Inspection reported herein was authorized by the Department of the Army, New York District, Corps of Engineers, to fulfill the requirements of the National Dam Inspection Act, Public Law 92-367.
- b. Purpose of Inspection - This inspection was conducted to evaluate the existing conditions of the dam, to identify deficiencies and hazardous conditions, to determine if these deficiencies constitute hazards to life and property, and to recommend remedial measures where required.

1.2 DESCRIPTION OF PROJECT

- a. Description of Dam and Appurtenances - Congers Lake Dam is an earthfill dam consisting of two embankments separated by an area of high natural ground. The left¹ embankment is approximately 290 feet long and 7.8 feet high.² The natural ground separating the embankments is 152 feet long and has a maximum height of about 1 foot above the embankment crests. The right embankment is 268 feet long and rises to a maximum height of about 4.8 feet above the existing ground. The upstream slopes on the left and right embankments are 1V:1.6H (Vertical to Horizontal) and 1V:2H, respectively. The downstream faces of both embankments consist of a vertical stone wall. The crest widths of the left and right embankments average

¹Facing downstream.

²Measured from the downstream toe of the dam to the minimum top of dam elevation.

22 feet and 17 feet, respectively, and minimum crest elevations on the left and right embankments are 998.7 feet T.B.M.³ and 1000.9 feet T.B.M., respectively. A wood sheathing seepage barrier driven into the foundation soils is included in the entire length of the upstream embankment, according to the design drawings. The spillway is cut into the left embankment about 100 feet from the left abutment and has a crest elevation of 996.4 feet T.B.M. A vertical concrete pier forms the right edge of the spillway. The left edge of the spillway slopes to the embankment crest at about a 1V:3.5H slope. Bottom width of the spillway is 35.5 feet. The bottom of the spillway is made of stone and broken concrete, covered with asphalt (Photo 1). A concrete pier, 3 feet wide, is located in the spillway about 10 feet left of the right edge of the spillway and a concrete slab has been laid over the spillway between the pier and the right edge of the spillway. There are no outlet works for Congers Lake Dam.

- b. Location - Congers Lake Dam is located on the East Branch Hackensack River in Rockland County, New York, approximately 1 mile southeast of the unincorporated community of Congers. A Location Plan is included in Appendix E of this report.
- c. Size Classification - Congers Lake Dam is 7.8 feet high and the reservoir storage capacity at the crest of the dam (elevation 998.7 feet T.B.M.) is 466 acre-feet. Therefore, the dam is in the "small" size category as defined by the Recommended Guidelines for Safety Inspection of Dams (Reference 15, Appendix D).
- d. Hazard Classification - Five homes are located within 800 feet of the downstream end of the dam. Gilchrist Drive crosses East Branch Hackensack River about 875 feet downstream of the dam. There is danger of loss of human life from large flows downstream of the dam. Congers Lake Dam is therefore considered in the "high" hazard category as defined by the Recommended Guidelines for Safety Inspection of Dams.

³All elevations are referenced to a Temporary Bench Mark (T.B.M.) located on the right downstream corner of the concrete slab over the right side of the spillway, with an assumed elevation of 1000.0 feet.

- e. Ownership - Congers Lake Dam is owned by the Town of Clarkstown, New York. The contact person is Mr. Ed Ghiazza (Telephone 914-634-4100).
- f. Purpose of the Dam - The dam is used to impound water for recreational purposes.
- g. Design and Construction History - Congers Lake Dam was originally constructed around 1892 by the St. Rita Lake Company. The spillway was rebuilt and/or repaired around 1912, 1914 and again at some later date.
- h. Normal Operating Procedures - The reservoir is normally maintained at the crest of the spillway, elevation 996.4 feet T.B.M.

1.3 PERTINENT DATA

- a. Drainage Area - The total drainage area upstream of Congers Lake Dam is 4.10 square miles. Rockland Lake located about 10,500 feet upstream of Congers Lake Dam, controls an area of 2.31 square miles. The discharge from Rockland Lake and runoff from an additional area of 1.04 square miles flows into Swartwout Lake, located about 5500 feet upstream of Congers Lake Dam. Discharge from Swartwout Lake Dam and runoff from an additional drainage area of 0.75 square mile flows into Congers Lake.

Total Drainage Area (square miles) - 4.10

- b. Discharge at Dam cubic feet per second (c.f.s.) -

Spillway at Top of Dam (Minimum) 337.0

- c. Elevations (T.B.M. Datum) -

Average Top of Dam - 1001.2
 Top of Dam (Minimum) 998.7
 Spillway Crest 996.4

- d. Reservoir Surface Area (Acres) -

Top of Dam (Minimum) 130.5
 Spillway Crest 112.3

SECTION 2: ENGINEERING DATA

2.1 GEOLOGY

Congers Lake Dam is located in the "Triassic Lowland" physiographic province of New York State. The province is situated entirely in Rockland County, and is characterized largely by Triassic Period (180 to 225 million years ago) sedimentary strata that have been subjected to block faulting and intrusion of the Palisades diabase sill. The Lowland is bounded on the east by the Palisades sill forming a precipitous ridge and on the north by the sill and the Triassic border fault. The province is situated on the downthrown side of the fault. Drainage from the sedimentary strata exposed is to the south and is generally controlled by north-south joints. The region has been repeatedly glaciated by the major ice sheet advances which occurred during the Pleistocene Epoch. The most recent ice advance occurred approximately 11,000 years ago. Local bedrock consists of red mudstone and feldspathic sandstone, and gray arkosic sandstone, according to available geologic maps by J. G. Broughton (1970) and others (References 1, 2 and 3, Appendix D). These strata are part of the Newark Group, Brunswick Formation, which has been determined to be Upper Triassic age.

2.2 SUBSURFACE INVESTIGATION

Original subsurface data is very limited. According to the available soils report (preliminary) for Rockland County, prepared by the USDA Soil Conservation Service (Reference 4, Appendix D), local surface materials consist of "Wethersfield loam" soils. These soils are deep red, well drained loam or silty soils which have developed in low lime glacial till dominated by sandstone. At depths from 2 feet to 4 feet, the soil becomes extremely firm. This condition persists to depths of 6 feet or more. The presence of hardpan (the above extremely firm and usually clayey material) is shown on the available design drawing (Plate 2, Appendix E). The masonry portions of the dam are founded on this layer.

2.3 DAM AND APPURTENANT STRUCTURES

The Congers Lake Dam was originally constructed around 1892 by the St. Rita Lake Company for recreational purposes. The structure has essentially remained the

same with the exception that the spillway was rebuilt and/or repaired around 1912, 1914 and again at a later date.

The dam is an earthfill type with uncemented stone retaining walls supporting the downstream embankments (there are two separate embankments divided by a natural knoll). A seepage barrier of wood sheathing was driven into the foundation soils during construction on the upstream side of the dam and incorporated within the embankments (Plate 2, Appendix E). Two 12-inch cast iron outlet pipes were designed immediately left of the spillway for regulation of the lake level. The original spillway was an open rectangular channel 30 feet wide with masonry side walls and a paved concrete bottom. Riprap covered the original upstream slope with the exception of the top few feet.

At some later date the spillway was reconstructed because its paved bottom was being undercut and washing was occurring behind the masonry side walls. From field observations for this investigation, it appears that concrete piers were last installed across the spillway for stoplogs or liftgates. These structures have deteriorated badly and have been partly knocked out (Photo 3). The 12-inch outlet pipes were not found during the field inspection.

2.4 CONSTRUCTION RECORDS

The available records consist of a drawing labelled General Plan of Dam, which was compiled during 1914, and an application submitted to the New York State Conservation Commission for reconstruction of the spillway on 30 March 1914. The plan is included in Appendix E as Plate 2. The application and a letter discussing the origin of the design drawing are included in Appendix F as background documentation.

2.5 OPERATION RECORDS

No operation records were found during this investigation.

2.6 EVALUATION OF DATA

Engineering data were obtained entirely from files of the New York State Department of Environmental Conservation. The available data are considered adequate and reliable for Phase I Inspection purposes.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

- a. General - The visual inspection of Congers Lake Dam was conducted on 10 January 1981. The weather was cold and windy, with temperatures ranging from 5°F to 10°F. At the time of the inspection, approximately 6 inches of snow covered the ground. The reservoir was frozen and the elevation of the ice on the reservoir was 996.7 feet T.B.M. Deficiencies found during the inspection will require remedial treatment. A Field Sketch of conditions found during the inspection is included in Appendix E. The complete Visual Inspection Checklist is presented as Appendix B. Because there was a snow cover on the dam during the initial inspection, a follow-up inspection was carried out on 7 March 1981.
- b. Spillway - At the time of the inspection, the spillway was found to be badly deteriorated. Only part of the old lift gate or stoplog structure is still present. The left stone wall that originally protected the embankment has collapsed. The bottom of the spillway was very irregular and partly protected from erosion by a combination of stone, concrete and asphalt. There is an abundance of riprap in the spillway discharge channel. Some logs, railroad ties and other debris are present, but are not clogging the channel.
- c. Embankment - Both embankments are heavily overgrown with brush and large trees (Photo 4). The upstream slopes are moderately eroded. Wave action has caused a few vertical scarps approximately 2 feet high at the waterline. Little riprap was observed along the upstream slopes. The areas immediately downstream of the stone retaining walls are heavily overgrown with trees. The retaining walls are in good condition. Runoff from the crests has slightly eroded the embankment materials from behind the walls locally. The vertical alignment of the crest varies about 4 feet from the minimum top of dam to the maximum top of dam. The horizontal alignment was found to be satisfactory. Both crests were partly overgrown with large trees. No seepage, surface cracks, unusual movement at the toe or erosion, or sloughing at the abutments was observed; however, snow covered the embankments.

- d. 7 March 1981 Inspection - The only additional deficiency noted during the second inspection was that there is a large eroded area on the crest and upstream face of the dam near the right abutment. This area is approximately 12 feet wide and a maximum of 2 feet deep. It is approximately 8 feet long, extending from the upstream face of the dam into the dam crest.
- e. Outlet Works - No outlet works of any kind were observed during the inspection.
- f. Downstream Channel - The channel downstream of the dam is a natural stream channel with trees and brush on the banks. The stream slope is shallow, approximately 0.2 percent, and the valley is wide with moderate side slopes.
- g. Reservoir - The slopes surrounding the reservoir are gentle and moderately wooded or grass covered. Sedimentation, although not directly observed, is expected to be minor. No instrumentation for monitoring reservoir levels was observed.

3.2 EVALUATION

The visual inspection revealed several deficiencies in this structure. The following items were noted:

- 1. The spillway is badly deteriorated. On the left side, the stone wall that originally protected the embankment has collapsed and the bottom of the spillway was very irregular.
- 2. The vertical alignment of the dam varies about 4 feet.
- 3. Little riprap was observed along the upstream slopes with a few vertical scarps approximately 2 feet high at the waterline.
- 4. A large area of erosion was observed between the crest and the upstream face of the dam near the right abutment.
- 5. There is slight erosion behind the retaining walls from runoff from the crest.
- 6. The embankments are heavily overgrown with brush and large trees.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

There are no formal operating procedures. The operation of the dam is an automatic function controlled by the crest of the spillway at elevation 996.4 feet T.B.M.

4.2 MAINTENANCE OF THE DAM

Maintenance of the dam is the responsibility of the Town of Clarkstown. A regular inspection or maintenance schedule has not been instituted.

4.3 WARNING SYSTEM

At the time of inspection, there was no warning system or emergency action plan in operation.

4.4 EVALUATION

Past maintenance of the dam has been inadequate. Regular inspections should be made of the dam and appurtenant structures. A check list should be compiled by the owner's representative as a guide for the inspections. Maintenance items should be corrected annually. A warning system and emergency action plan should be developed and put into operation.

SECTION 5: HYDRAULIC/HYDROLOGIC

5.1 DRAINAGE AREA CHARACTERISTICS

Delineation of the watershed above Congers Lake Dam was made using the Haverstraw, NY and Nyack, NY-NJ USGS 7.5 minute quadrangles. The drainage area is about 40 percent residential, 30 percent wooded, 15 percent open areas with the remaining 15 percent consisting of the lake surfaces of Congers Lake, Swartwout Lake and Rockland Lake. Slopes in the watershed vary from 35 percent in parts of the wooded areas to less than 2 percent in some of the low, open areas. The total drainage area above Congers Lake Dam is 4.10 square miles. A Watershed Map is included in Appendix E of this report.

5.2 ANALYSIS CRITERIA

A hydrologic analysis of the watershed and hydraulic analysis of dam was conducted using the U.S. Army Corps of Engineers' Flood Hydrograph Package HEC-1 DB computer program (Reference 12, Appendix D). The unit hydrograph was defined using the Snyder Unit Hydrograph Method. Estimates of Snyder hydrograph coefficients were based upon average coefficients from the Hydrologic Flood Routing Model for Lower Hudson River Basin (Reference 16, Appendix D). Precipitation data was taken from Hydro-meteorological Report No. 33 (Reference 8, Appendix D). Rainfall losses were estimated at an initial loss of 1.0 inch and a constant loss rate of 0.1 inch per hour thereafter. The hydraulic capacity of the dam, reservoir, and spillway was determined by incorporating the Modified Puls Routing Method. All flood routings were begun with the reservoir at normal pool level. Outlet discharge capacity was computed by hand. The Probable Maximum Flood (PMF) and 1/2 Probable Maximum Flood (1/2 PMF) were developed and routed through the reservoir.

5.3 SPILLWAY CAPACITY

The capacity of the spillway at the minimum top of dam was determined to be 337 cubic feet per second (c.f.s.).

5.4 RESERVOIR CAPACITY

The storage capacity of Congers Lake at normal pool is 187 acre-feet. The storage capacity of the reservoir at the minimum top of dam is 466 acre-feet. Therefore, flood control storage of the reservoir between the spillway crest and top of dam is 279 acre-feet. This

volume represents a total of 1.28 inches of runoff from the watershed.

5.5 FLOODS OF RECORD

No records concerning the effects of significant floods on the dam and spillway are available.

5.6 OVERTOPPING POTENTIAL

The maximum capacity of the spillway is 337 c.f.s. before overtopping would occur. The peak outflow of the PMF is 7832 c.f.s. and the 1/2 PMF is 2521 c.f.s.. Therefore, the spillway is capable of passing 23 percent of the PMF before overtopping would occur.

5.7 EVALUATION

Congers Lake Dam is a "small" size - "high" hazard dam requiring the spillway to pass a flood in the range of the 1/2 PMF to PMF. The PMF and 1/2 PMF were routed through the watershed and dam. It was determined that the spillway is capable of passing 23 percent of the PMF before overtopping the dam. Therefore, the spillway is judged to be "seriously inadequate."

Conclusions pertain to present conditions and the effect of future development on the hydrology has not been considered.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF EMBANKMENT STABILITY

- a. Visual Observations - No signs of instability were noted during the visual inspection. However, moderate erosion and sloughing has occurred on the upstream embankment slopes, especially at the water line, and on the left side of the spillway where the original masonry wing wall has collapsed and been removed. Also, runoff from the crests of the left and right embankments has locally eroded the embankments slightly by washing behind the downstream masonry support walls. The embankments are heavily overgrown by trees and high brush.
- b. Design and Construction Data - Design, construction, and/or reconstruction data concerning the stability of the dam were not available.
- c. Operating Records - Operating records are not available.
- d. Post Construction Changes - No post construction changes have been made which affect the stability of the structure. The Town of Clarkstown has made application to the U.S. Department of the Interior, Bureau of Outdoor Recreation, for a grant to make local park improvements. Part of the program includes reconstruction of the Congers Lake Dam spillway.

6.2 STABILITY ANALYSIS

The results of previous stability analyses were not available for reference during this evaluation. The embankments are assumed to be homogeneous types constructed of sandy silt. The left embankment is 7.8 feet high and the right embankment is 4.8 feet high. The crest widths of the left and right embankments are approximately 22 feet and 17 feet, respectively. The upstream slope of the left embankment was measured as being 1V:1.6H. The upstream slope of the right embankment is 1V:2H. The downstream slopes are supported by nearly vertical stone (uncemented) walls. No facilities are available to draw down the reservoir as observed during the visual inspection.

The upstream slopes are overly steep; however, there were no signs of instability. There are no signs of instability related to the stone walls supporting the downstream slopes. The existing crest widths are more than adequate. A stability analysis is not considered necessary at this time.

6.3 SEISMIC STABILITY

Congers Lake Dam is located in Seismic Zone 1 which presents no hazard from earthquakes, according to the Recommended Guidelines for Safety Inspection of Dams. This determination is contingent on the requirements that static stability conditions are satisfactory and conventional safety margins exist.

SECTION 7: ASSESSMENT/RECOMMENDATIONS

7.1 ASSESSMENT

- a. Safety - Examination of available documents and visual inspections of Congers Lake Dam did not reveal any conditions considered to be hazardous.

Using the Corps of Engineers screening criteria for review of spillway adequacy, it has been determined that the dam would be overtopped for all storms exceeding approximately 23 percent of the PMF. The overtopping of the dam could result in dam failure, increasing the hazard to loss of life downstream. Therefore, the spillway is adjudged as "seriously inadequate," and the dam is assessed as unsafe, non-emergency.

The "unsafe," classification applied to a dam because of a "seriously inadequate spillway," is not meant to connote the same degree of emergency as would be associated with an "unsafe" classification applied for a structural deficiency. However, it does mean that, based on an initial screening and preliminary computations, there appears to be a serious deficiency in spillway capacity so that if a severe storm were to occur, overtopping and failure of the dam would take place, significantly increasing the hazard to loss of life downstream of the dam.

No signs of instability were noted in the embankment; therefore, no stability analysis will be required.

- b. Adequacy of Information - The information available and the observations and measurements made during the visual inspection are considered sufficient for this Phase I Inspection Report.
- c. Need for Additional Investigation - Detailed hydrologic and hydraulic investigations of the watershed and reservoir area are considered necessary to more accurately determine the overtopping potential of the dam.
- d. Urgency - The detailed hydrologic and hydraulic investigations must be initiated within three months of owner notification. Within one year, remedial measures resulting from these investigations must be initiated, with completion of these

measures during the following year. In the interim, a detailed emergency action plan must be developed and implemented during periods of unusually heavy precipitation. Also, around-the-clock surveillance must be provided during these periods. The problem areas listed below must be corrected within one year of notification.

7.2 RECOMMENDED MEASURES

Regular inspections should be made of the dam and appurtenant structures. A thorough checklist should be compiled for use by the owner's representative as a guide for the inspections. Maintenance items should be completed annually.

A formal warning system and emergency action plan should be developed and put into operation as soon as possible.

The following remedial measures must be completed within one year.

1. Fill and compact low areas along the crests. Seed or riprap the area.
2. Regrade the upstream slopes to the original design of 1V:3H and riprap to the original height of 3 feet above the normal pool level.
3. Fill, compact, and seed areas where runoff from the crests has eroded soil from behind the stone walls on the downstream sides of the embankments.
4. Remove trees and brush from the embankments, crests, and areas within 20 feet of the downstream toe. Root systems for trees with a trunk diameter greater than 3 inches should be removed and the resultant holes backfilled, compacted and reseeded.
5. Install a staff gage to monitor reservoir levels above normal pool.

APPENDIX A
PHOTOGRAPHS

CONTENTS

- Photo 1: Spillway and Left Abutment
- Photo 2: Spillway and Adjacent Embankment, Knoll Between Left and Right Embankments in Background
- Photo 3: Remains of Structure for Lift Gate or Stoplogs
- Photo 4: Typical Overgrowth on Embankments
- Photo 5: Upstream Slope of Left Embankment
- Photo 6: Downstream Stone Wall of Left Embankment
- Photo 7: Upstream Slope of Right Embankment
- Photo 8: Downstream Stone Wall of Right Embankment

Note: Photographs were taken on 7 March 1981.

CONGERS LAKE DAM



Photo 1. Spillway and Left Abutment
7 March 1981



Photo 2. Spillway and Adjacent Embankment, Knoll
Between Left and Right Embankments in Background
7 March 1981

CONGERS LAKE DAM



Photo 3. Remains of Structure for Lift Gate or Stoplogs
7 March 1981



Photo 4. Typical Overgrowth on Embankments
7 March 1981

CONGERS LAKE DAM



Photo 5. Upstream Slope of Left Embankment
7 March 1981



Photo 6. Downstream Stone Wall of Left Embankment
7 March 1981

CONGERS LAKE DAM



Photo 7. Upstream Slope of Right Embankment
7 March 1981



Photo 8. Downstream Stone Wall of Right Embankment
7 March 1981

APPENDIX B
VISUAL INSPECTION CHECKLIST

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam Congers Lake Dam

Fed. I.D. # NY 972 DEC Dam No. 214A-290

River Basin Passaic River

Location: Town Congers County Rockland

Stream Name Each Branch Hackensack River

Tributary of Hackensack River

Latitude (N) 41°08.2' Longitude (W) 73°56.6'

Type of Dam Earth

Hazard Category High

Date(s) of Inspection 10 January 1981

Weather Conditions Clear, 10°F., 6 in. snow cover.

Reservoir Level at Time of Inspection Elevation 996.7 ft. T.B.M.*

b. Inspection Personnel Jeffrey A. Quay, Larry A. Diday, David W. Hupe

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

Ed Ghiazza - Superintendent of Recreation and Parks

10 Maple Avenue

New City, NY 10956

914/634-4100

d. History:

Date Constructed 1892 Date(s) Reconstructed 1912

1914

Designer Unknown

Constructed By St. Rita Lake Company

Owner Town of Clarkstown, NY

*Temporary Bench Mark (T.B.M.) is right downstream corner of concrete slab over right side of spillway. Assumed elevation is 1000.0 ft.

2) Embankment

a. Characteristics

- (1) Embankment Material Sandy silt.

- (2) Cutoff Type Driven wood sheathing.

- (3) Impervious Core None

- (4) Internal Drainage System None

- (5) Miscellaneous _____

b. Crest

- (1) Vertical Alignment Varies about 4 ft. from the minimum top of dam
to the maximum top of dam.

- (2) Horizontal Alignment Satisfactory

- (3) Surface Cracks None were observed. However, snow covered the
embankments.

- (4) Miscellaneous Both crests were partly overgrown with large trees.

c. Upstream Slope

- (1) Slope (Estimate) (V:H) Left embankment-1V:1.6H, Right embankment-1V:2H.

- (2) Undesirable Growth or Debris, Animal Burrows Both embankments are
heavily overgrown with brush and large trees.

- (3) Sloughing, Subsidence, or Depressions The upstream slopes are moderately eroded. Wave action has caused a few vertical scarps approximately 2 ft. high at the water line.
- (4) Slope Protection The upstream slopes should be completely riprapped; little riprap was observed during the visual inspection.
- (5) Surface Cracks or Movement at Toe None was observed.

d. Downstream Slope

- (1) Slope (Estimate - V:H) Nearly vertical stone retaining walls.
- (2) Undesirable Growth or Debris, Animal Burrows The areas immediately downstream of the walls are heavily overgrown with trees.
- (3) Sloughing, Subsidence or Depressions The retaining walls were observed to be in good condition. Runoff from the crests has slightly eroded the embankment materials from behind the walls locally.
- (4) Surface Cracks or Movement at Toe None was observed.
- (5) Seepage None was observed.
- (6) External Drainage System (Ditches, Trenches, Blanket) None
- (7) Condition Around Outlet Structure No outlets were observed.

(8) Seepage Beyond Toe None was observed.

e. Abutments - Embankment Contact _____

(1) Erosion at Contact None was observed.

(2) Seepage Along Contact None was observed.

3) Drainage System

a. Description of System None

b. Condition of System _____

c. Discharge from Drainage System _____

4) Instrumentation (Monumentation/Surveys, Observation Wells, Weirs, Piezometers, Etc.) None

5) Reservoir

a. Slopes The slopes are gentle and are moderately wooded or grass covered.

b. Sedimentation Sedimentation is expected to be minor.

c. Unusual Conditions Which Affect Dam Swartwout Lake Dam (earth) located upstream.

6) Area Downstream of Dam

a. Downstream Hazard (No. of Homes, Highways, etc.) Five homes, located within 800 ft. downstream and Gilchrist Drive, which crosses the river 875 ft. below the dam.

b. Seepage, Unusual Growth None observed

c. Evidence of Movement Beyond Toe of Dam None observed

d. Condition of Downstream Channel The channel is a natural stream channel with trees and brush on the banks. The stream slope is shallow and the valley is wide with moderate side slopes.

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

a. General The spillway consists of an open, generally rectangular shaped channel and an open, trapezoidal shaped channel of broken concrete coated with asphalt. The two parts of the spillway are separated by a 3 ft. wide concrete pier.

b. Condition of Service Spillway The spillway is badly deteriorated. Only part of an old lift gate or stop log structure is still present. The left stone wall that originally protected the embankment has collapsed. The bottom of the spillway is very irregular and is partly protected from erosion by a combination of stone, concrete, and asphalt.

c. Condition of Auxiliary Spillway None

d. Condition of Discharge Conveyance Channel There is abundant riprap in the discharge channel. Some logs, railroad ties and other debris are present, but are not clogging the channel.

8) Reservoir Drain/Outlet - None

Type: Pipe _____ Conduit _____ Other _____

Material: Concrete _____ Metal _____ Other _____

Size: _____ Length _____

Invert Elevations: Entrance _____

Exit _____

Physical Condition (Describe): Unobservable _____

Material: _____

Joints: _____ Alignment _____

Structural Integrity: _____

Hydraulic Capability: _____

Means of Control: Gate _____ Valve _____ Uncontrolled _____

Operation: Operable _____ Inoperable _____ Other _____

Present Condition (Describe): _____

9) Structural - Not Applicable

a. Concrete Surfaces _____

b. Structural Cracking _____

c. Movement - Horizontal & Vertical Alignment (Settlement) _____

d. Junctions with Abutments or Embankments _____

e. Drains - Foundation, Joint, Face _____

f. Water Passages, Conduits, Sluices _____

g. Seepage or Leakage _____

h. Joints - Construction, etc. _____

i. Foundation _____

j. Abutments _____

k. Control Gates _____

l. Approach & Outlet Channels _____

m. Energy Dissipators (Plunge Pool, etc.) _____

n. Intake Structures _____

o. Stability _____

p. Miscellaneous _____

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

a. Description and Condition None _____

APPENDIX C
HYDROLOGIC/HYDRAULIC ENGINEERING
DATA AND COMPUTATIONS

MICHAEL BAKER, JR., INC.
THE BAKER ENGINEERS

Box 280
Beaver, Pa. 15009

Subject CONGERS LAKE DAM S.O. No. _____
APPENDIX C - HYDROLOGY AND Sheet No. _____ of _____
HYDROLOGIC CALCULATIONS Drawing No. _____
Computed by _____ Checked by _____ Date _____

<u>SUBJECT</u>	<u>PAGE</u>
CHECK LIST FOR DAMS	1
DRAINAGE AREA MAP	5
HYDRAULIC DATA	6
CROSS SECTIONS OF DAM	8
TOP OF DAM PROFILE	9
SPILLWAY PROFILE	10
SPILLWAY RATING	11
HEC-1 ANALYSIS	16

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	<u>Elevation*</u> (ft.)	<u>Surface Area</u> (acres)	<u>Storage Capacity</u> (acre-ft.)
1) Top of Dam	998.7	130.5	466
2) Design High Water (Max. Design Pool)	-	-	-
3) Auxiliary Spillway Crest	-	-	-
4) Pool Level with Flashboards	-	-	-
5) Service Spillway Crest	996.4	112.3	187

DISCHARGES

	<u>Volume</u> (cfs)
1) Average Daily	25
2) Spillway @ Maximum High Water - Top of Dam -	337
3) Spillway @ Design High Water	-
4) Spillway @ Auxiliary Spillway Crest Elevation	-
5) Low Level Outlet	-
6) Total (of all facilities) @ Maximum High Water	337
7) Maximum Known Flood	-
8) At Time of Inspection	30

*Temporary Bench Mark (T.B.M.) is right downstream corner of concrete slab over right side of spillway. Assumed elevation is 1,000.0 ft.

CREST:

ELEVATION: 998.7

Type: Earth, heavy tree vegetation.

Width: 16 ft. Length: 290 ft.-lt. emb, 268 ft.-rt. emb.

Spillover Open uncontrolled rectangular channel and trapezoidal channel.

Location Left side of left embankment.

SPILLWAY:

SERVICE

AUXILIARY

996.4 ft. T.B.M. Elevation None

Uncontrolled, open rectangular channel and trapezoidal channel Type

Rectangular ch. = 10 ft., trapezoidal ch. = 290 ft. @ min. top of dam elev. Width

Type of Control

X Uncontrolled

Controlled:

- Type (Flashboards; gate)

- Number

- Size/Length

Invert Material

Anticipated Length of Operating Service

- Chute Length

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

HYDROMETEROLOGICAL GAGES:

Type: None were observed.

Location: _____

Records: _____

Date: _____

Max. Reading: _____

FLOOD WATER CONTROL SYSTEM:

Warning System: None

Method of Controlled Releases (mechanisms):

None

DRAINAGE AREA: Total above Congers Lake Dam = 4.10 sq. mi, drainage area above
Rockland Lake = 2.31 sq.mi., drainage area between Swartwout Lake
and Rockland Lake = 1.04 sq.mi., drainage area between Congers Lake
and Swartwout Lake = 0.75 sq. mi.

DRAINAGE BASIN RUNOFF CHARACTERISTICS: For total D.A. (4.10 sq.mi.)

Land Use - Type: 38% Res., 31% wooded, 15% open, 16% lake surfaces.

Terrain - Relief: Wooded areas steeply sloped (10%-35%), residential areas
moderately sloped (2%-10%), open areas mildly sloped (<5%).

Surface - Soil: Poor permeability

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)

No sedimentation problem areas exist at the present time or are expected
in the future. The steepest slopes in the drainage area are heavily
wooded and are included in the Hoor Mountain State Park, thereby limiting
future development in this area. The possibility of sedimentation problems
at Congers Lake is almost nonexistent due to Rockland Lake and Swartwout
Lake being located upstream of Congers Lake and the low stream gradient
(approximately 0.2%) of East Branch Hackensack River between Congers Lake
and Richland Lake.

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

There are no potential backwater problem areas for levels anticipated for
the spillway design flood.

Dikes - Floodwalls (overflow & non-overflow) - Low reaches along the
Reservoir perimeter: None

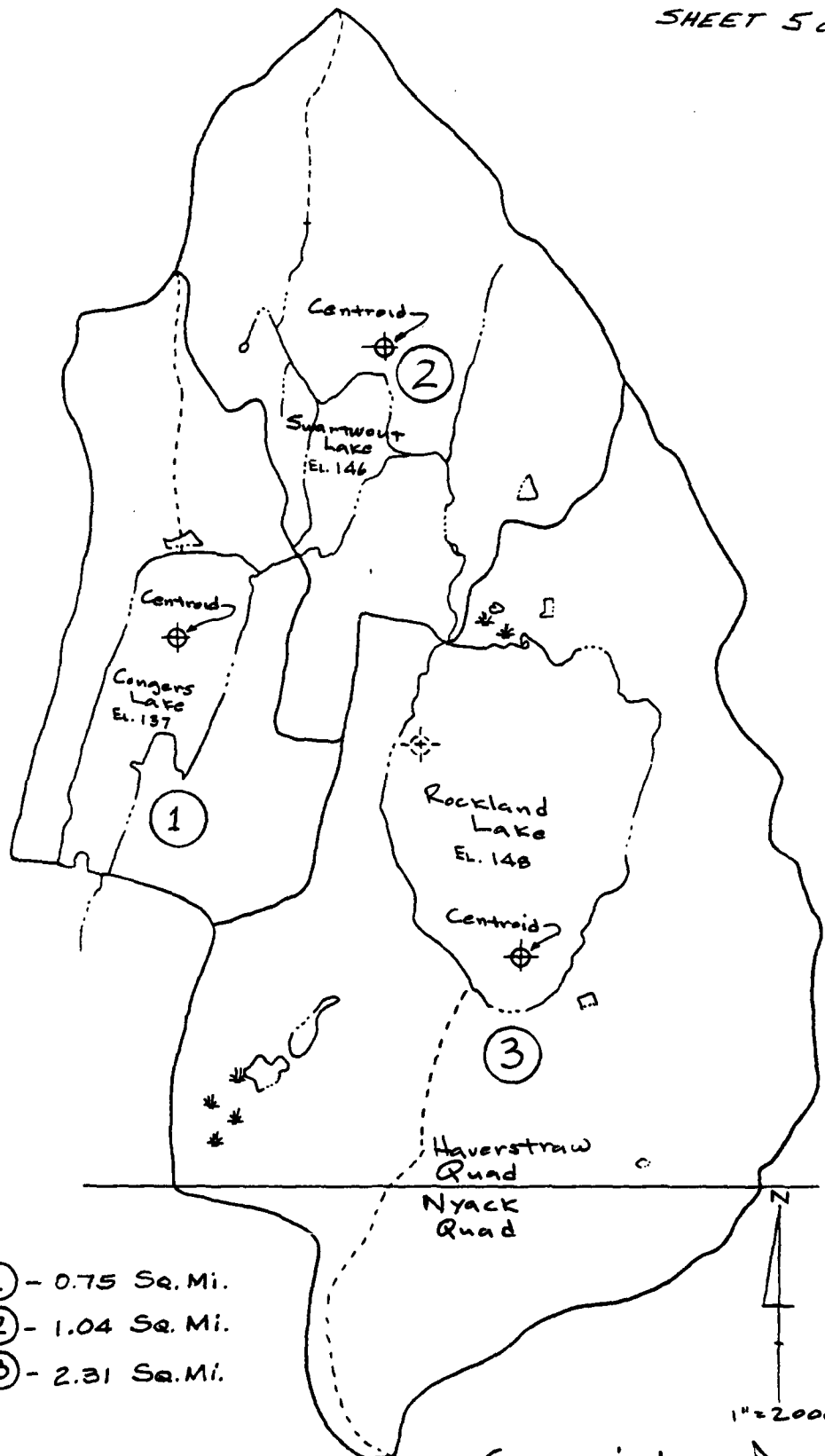
Location: _____

Elevation: _____

Reservoir:

Length @ Maximum Pool (Top of dam) 5,100 ft. _____

Length of Shoreline (@ Spillway Crest) 12,500 ft. _____



- Drainage Area ① - 0.75 Sq. Mi.
- " ② - 1.04 Sq. Mi.
- " ③ - 2.31 Sq. Mi.

CONGER'S LAKE DAM
DRAINAGE AREA MAP

MICHAEL BAKER, JR., INC.
THE BAKER ENGINEERS

Box 280
Beaver, Pa. 15009

Subject NEW YORK DAMS

S.O. No. 3988-00-APP-15

Sheet No. 6 of 28

CONGERS LAKE Dam

Drawing No. _____

Computed by JE

Checked by WLS

Date 1/14/81

ROCKLAND LAKE Area ①

DRAINAGE AREA - $48.29/3 = 16.09 \text{ in}^2 = 1,477.8 \text{ Ac} = 2.31 \text{ mi}^2$
 LAKE AREA ELEV 148 - $8.61/3 = 2.87 \text{ in}^2 = 263.5 \text{ Ac} = 0.41 \text{ mi}^2$
 ELEV 150 - $9.89/3 = 3.29 \text{ in}^2 = 302.4 \text{ Ac} = 0.47 \text{ mi}^2$
 ELEV 160 - $14.67/3 = 4.89 \text{ in}^2 = 449.6 \text{ Ac} = 0.70 \text{ mi}^2$

L - 5.7 in - 11,400 ft = 2.16 mi

L_{ca} - 2.0 in - 4,000 ft = 0.76 mi

SWARTWOUT LAKE Area ②

DRAINAGE AREA - $21.76/3 = 7.25 \text{ in}^2 = 666.1 \text{ Ac} = 1.04 \text{ mi}^2$
 LAKE AREA ELEV 146 - $1.30/3 = 0.43 \text{ in}^2 = 39.8 \text{ Ac} = 0.06 \text{ mi}^2$
 ELEV 150 - $2.37/3 = 0.79 \text{ in}^2 = 72.5 \text{ Ac} = 0.11 \text{ mi}^2$
 ELEV 160 - $6.12/3 = 2.04 \text{ in}^2 = 187.3 \text{ Ac} = 0.29 \text{ mi}^2$

L - 3.6 in - $\frac{7,600}{7,200} \text{ ft} = \frac{1.44}{1.36} \text{ mi}$

L_{ca} - 1.5 in - $\frac{3,000}{3,200} \text{ ft} = \frac{0.57}{0.61} \text{ mi}$

CONGERS LAKE Area ③

DRAINAGE AREA - $15.61/3 = 5.20 \text{ in}^2 = 477.8 \text{ Ac} = 0.75 \text{ mi}^2$
 LAKE AREA ELEV 137 - $3.67/3 = 1.22 \text{ in}^2 = 112.3 \text{ Ac} = 0.18 \text{ mi}^2$
 ELEV 140 - $4.44/3 = 1.48 \text{ in}^2 = 135.9 \text{ Ac} = 0.21 \text{ mi}^2$
 ELEV 150 - $6.21/3 = 2.07 \text{ in}^2 = 190.1 \text{ Ac} = 0.30 \text{ mi}^2$

L - 4.0 in - 8,000 ft = 1.52 mi

L_{ca} - 1.5 in - 3,000 ft = 0.57 mi

PRECIPITATION DATA

HMR-33 ZONE 1

PMP 24 hr. - 200 mi² = 21.8 inches

D.A. Less than 10 mi²

Duration	% of 200 mi ²	inches
6 hr. PMP	111	24.20
12 hr. "	123	26.81
24 hr. "	133	28.99
48 hr. "	142	30.96

TP-40

100YR - 24 hr Rainfall = 7.5 inches
 " 12 hr " = 6.4 "
 " 6 hr " = 5.3 "

MICHAEL BAKER, JR., INC.
THE BAKER ENGINEERS

Box 280
Beaver, Pa. 15009

Subject New York Dams S.O. No. _____
Congers Lake Dam Sheet No. 7 of 28
Snyders Coeff. Drawing No. _____
Computed by LAD Checked by JAQ Date 2/4/81

Snyders Unit Hydrograph Coefficients

Area ① $C_p = 0.63$ $L = 2.16$ Mi.
 $C_T = 2.0$ $L_{CA} = 0.76$ Mi.
 $T_p = C_T (L \times L_{CA})^{0.3} = 2.0 (2.16 \times 0.76)^{0.3}$
 $T_p = 2.32$ ✓

Area ② $C_p = 0.63$ $L = 1.44$ Mi.
 $C_T = 2.0$ $L_{CA} = 0.61$ Mi.
 $T_p = C_T (L \times L_{CA})^{0.3} = 2.0 (1.44 \times 0.61)^{0.3}$
 $T_p = 1.92$ ✓

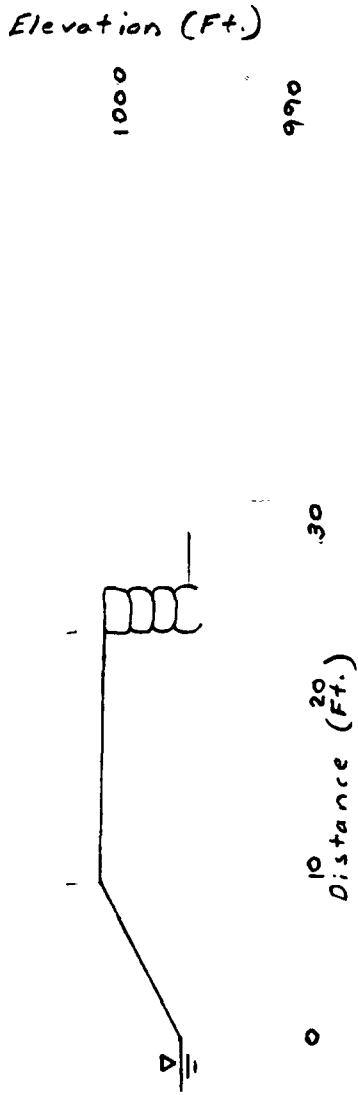
Area ③ $C_p = 0.63$ $L = 1.52$ Mi.
 $C_T = 2.0$ $L_{CA} = 0.57$ Mi.
 $T_p = C_T (L \times L_{CA})^{0.3} = 2.0 (1.52 \times 0.57)^{0.3}$
 $T_p = 1.92$ ✓

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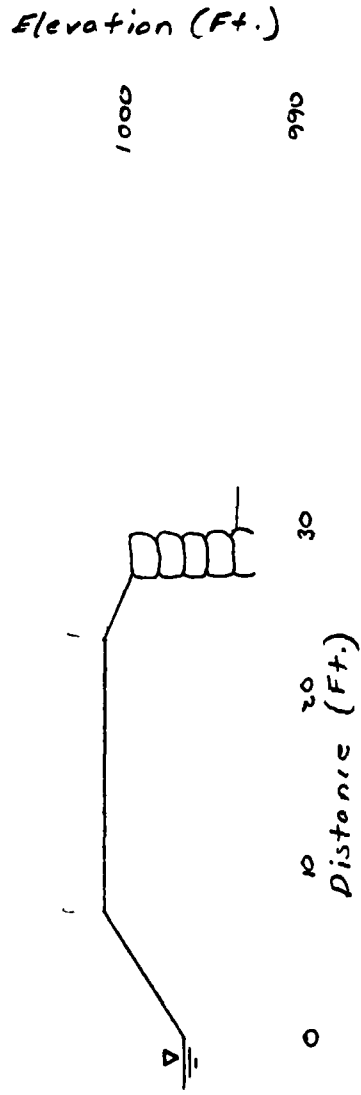
Box 280
Beaver, Pa. 15009

Subject NEW YORK DAMS S.O. No. _____
CROSS-SECTIONS Sheet No. 8 of 28
LONGERS LAKE Drawing No. _____
Computed by DGK Checked by _____ Date 1-15-81

CROSS SECTION NO. 2 STA. 6+00
RIGHT EMBANKMENT



CROSS SECTION NO. 1 STA. 2+00
LEFT EMBANKMENT

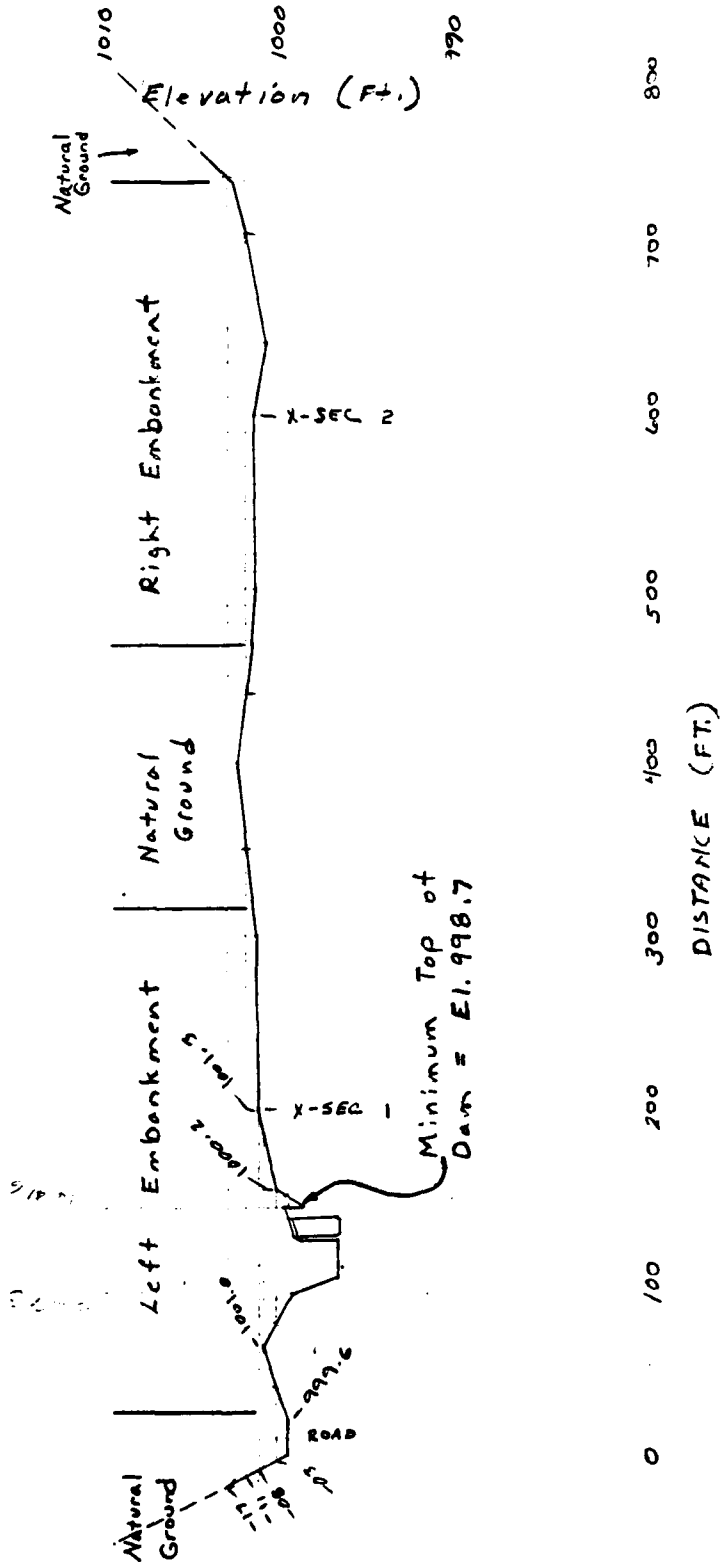


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Box 280
 Beaver, Pa. 15009

Subject NEW YORK DAMS S.O. No. _____
DAM PROFILE Sheet No. 9 of 28
CONGERS LAKE Drawing No. _____
 Computed by DCK Checked by MLK Date 1-13-81

TOP OF DAM PROFILE

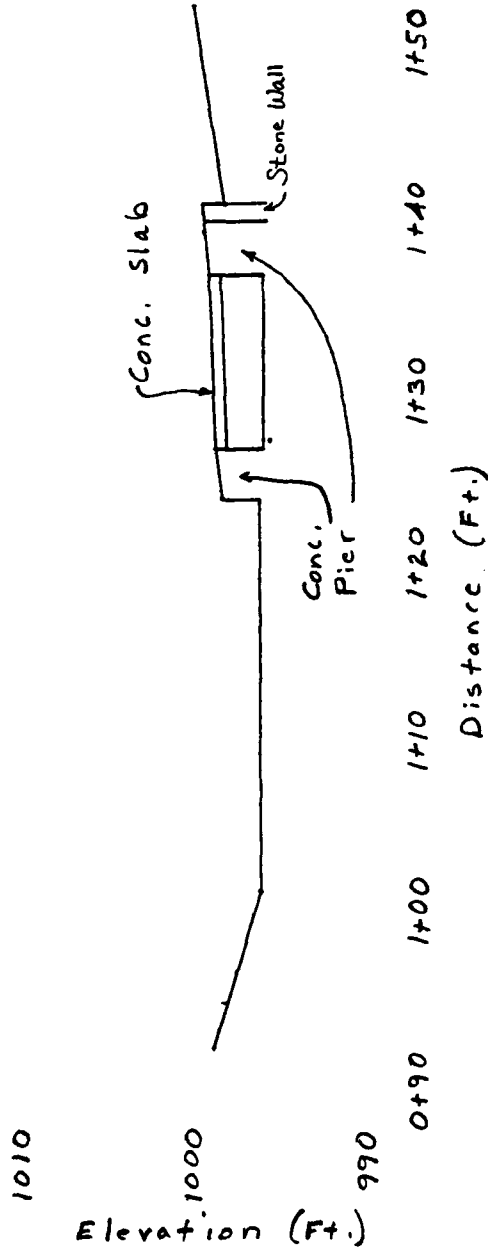


MICHAEL BAKER, JR., INC.
THE BAKER ENGINEERS

Box 280
Braver, Pa. 15009

Subject New York Dams S.O. No. _____
Conger Lake Dam Sheet No. 10 of 28
Spillway Drawing No. _____
Computed by LAD Checked by _____ Date 1/13/01

SPILLWAY PROFILE



MICHAEL BAKER, JR., INC.
THE BAKER ENGINEERS

Box 280
Beaver, Pa. 15009

Subject New York Dams

Congers Lake Dam

Spillway Rating

Computed by LAD

Checked by ALL
JHQ

S.O. No. _____

Sheet No. 11 of 28

Drawing No. _____

Date 1/14/81

Spillway Elevation (Ft.)	Depth y (Ft.)	Area A (Sq. Ft.)	Topwidth T (Ft.)	Hydraulic Depth $D = A/T$ (Ft.)	Velocity $V = \sqrt{gD}$ (Ft./sec.)	Flow $Q = AV$ (cfs)	Head $H = V^2/2g$ (Ft.)	Reservoir Elevation $E_R = E_s + H$ (Ft.)
(137.0) 996.4	0	0	32.5	0	0	0	0	996.4
997.6	0.6	15.3	33.9	0.45	3.81	58.3	0.23	997.2
(138.6) 998.0	1.6	50.8	37.2	1.37	6.63	336.8	0.68	998.7
(139.6) 999.0	2.6	85.6	40.5	2.11	8.25	706.2	1.06	1000.1
(140.6) 1000.0	3.6	129.4	48.6	2.66	9.26	1198.2	1.33	1001.3
(141.6) 1001.0	4.6	178.0	48.6	3.66	10.86	1933.0	1.83	1002.8
(142.6) 1002.0	5.6	226.6	48.6	4.66	12.25	2776.5	2.33	1004.3
(143.6) 1003.0	6.6	275.2	48.6	5.66	13.50	3716.1	2.83	1005.8

NOTE: el 996.4 \pm el. 137 M.S.L.

(adj. by 859.4)

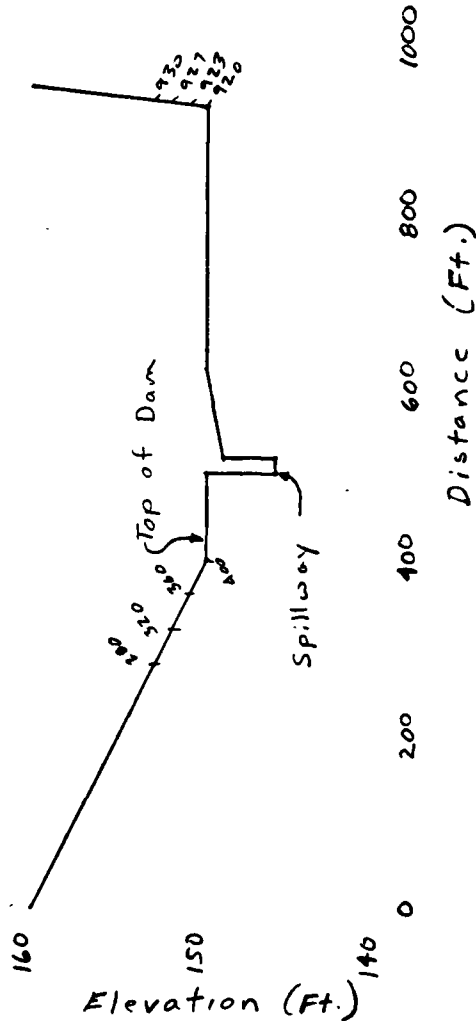
MICHAEL BAKER, JR., INC.
THE BAKER ENGINEERS

Box 280
Beaver, Pa. 15009

Subject New York Dam S.O. No. _____
Swartwout Lake Sheet No. 12 of 28
Spillway Rating Drawing No. _____
Computed by SAO Checked by _____ Date 1/16/31

PROFILE THROUGH SPILLWAY, TOP
OF DAM, and ADJOINING AREAS

Spillway: Width = 19 Ft.
Breath of Crest = 6 Feet
Crest = Broadcrested Weir



MICHAEL BAKER, JR., INC.
THE BAKER ENGINEERS

Box 280
Beaver, Pa. 15009

Subject New York Dams S.O. No. _____
Swartwout Lake Sheet No. 13 of 23
Spillway Rating Drawing No. _____
Computed by LAD Checked by ALB Date 1/16/81

Weir Flow

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

$L = 19 \text{ Ft.}$

H varies from 0.4 Ft.
to 7.0 Ft

C varies with H , Pg 5-40
Table 5-3 King and Brater
Handbook

Elevation (Ft.)	H (Ft.)	L (Ft.)	C	Q (cfs)
146.	0	19.	0	0
146.5	0.5	19.	2.50	16.8
147.	1.0	19.	2.68	50.9
148.	2.0	19.	2.65	142.4
149.	3.0	19.	2.66	262.6
150.	4.0	19.	2.70	410.4
151.	5.0	19.	2.79	592.7
152.	6.0	19.	2.88	804.2
153.	7.0	19.	2.88	1013.4

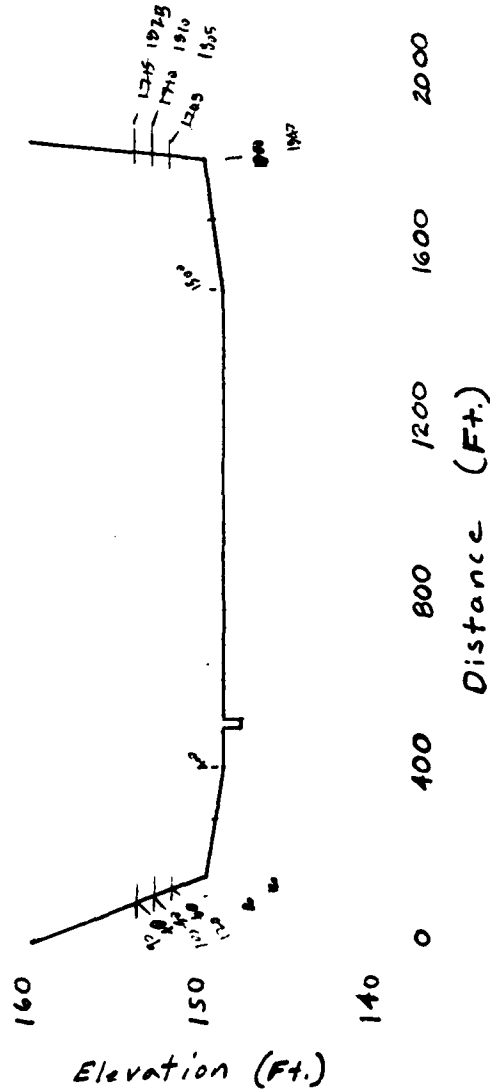
MICHAEL BAKER, JR., INC.
THE BAKER ENGINEERS

Box 280
Beaver, Pa. 15009

Subject New York Dams S.O. No. _____
Rockland Lake Sheet No. 14 of 28
Spillway Rating Drawing No. _____
Computed by LAD Checked by _____ Date 1/16/81

PROFILE THROUGH NATURAL OUTLET
FOR LAKE AND ADJOINING AREAS

Outlet Channel : Width = 20 Ft.
Height = 1 Ft.



MICHAEL BAKER, JR., INC.
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Box 280
Beaver, Pa. 15009

Subject New York Dams

Rockland Lake

Spillway Rating

Computed by LAD

Checked by MB

S.O. No. _____

Sheet No. 15 of 28

Drawing No. _____

Date 1/19/81

Spillway Elevation (Ft.)	Depth Y (Ft.)	Area A (Sq. Ft.)	Topwidth T (Ft.)	Hydraulic Depth $D = A/T$ (Ft.)	Velocity $V = \sqrt{gD}$ (Ft./sec)	Flow $Q = AV$ (cfs)	Head $H = V^2/2g$ (Ft.)	Reservoir Elevation $E_R = E_s + H$ (Ft.)
148.0	0	0	20.	0	0	0	0	0
149.0	1.0	20.	20.	1.0	5.67	113.5	0.5	149.5
150.0	2.0	40.	20.	2.0	8.02	321.0	1.0	151.0
151.0	3.0	60.	20.	3.0	9.83	589.7	1.5	152.5
152.0	4.0	80.	20.	4.0	11.35	907.9	2.0	154.0
153.0	5.0	100.	20.	5.0	12.69	1268.9	2.5	155.5
154.0	6.0	120.	20.	6.0	13.90	1668.0	3.0	157.0

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

1	RUNOFF HYDROGRAPH AT
2	ROUTE HYDROGRAPH TO
3	ROUTE HYDROGRAPH TO
4	RUNOFF HYDROGRAPH AT
5	COMBINE 2 HYDROGRAPHS AT
6	ROUTE HYDROGRAPH TO
7	RUNOFF HYDROGRAPH AT
8	COMBINE 2 HYDROGRAPHS AT
9	ROUTE HYDROGRAPH TO
10	END OF NETWORK

 FLOOD HYDROGRAPH PACKAGE I.L.C. 11
 DAN SAFETY VERSION JULY 1973
 LAST MODIFICATION 26 FEB 79
 48J UPDATE 05 JUN 79

RUN DATE 02/23/81
 TIME 11.43

NATIONAL PROGRAM FOR INSPECTION OF NON-FEDERAL DAMS
 HYDROLOGIC AND HYBRIDIC ANALYSIS OF LAKES/LAKE WAYS
 UNIT HYDROGRAPH BY SYDERS METHOD

NO 600
 UNIT 0
 MMIN 10
 TDAY 0
 TMR 0
 INTR 0
 METR 0
 JPLT 0
 IPRI 0
 INSTAN 0
 JOEPR 5
 NAI 0
 LRUPT 0
 TRAGE 0

MULTI-PLAN ANALYSES TO BE PERFORMED

NPLAN= 1 NRTIU= 4 LRTIU= 1
 KIAJS= 1.00 0.25 0.20 0.22

SUB-AREA RUNOFF COMPUTATION

RJAUFF HYDROGRAPH TO RUCKLAND LAKE ISUBAREA J1

ISTAU 1
 ICGUP 0
 IECUN 0
 ITAPE 0
 JPLT 0
 JPRI 0
 INAME 1
 ISTAGE 0
 IAGIU 0

HYDROGRAPH DATA

INYDC 1
 LUNG 1
 TAKEA 2.31
 SNAP 0.0
 TRSDA 2.31
 TRSPC 0.0
 RATIO 0.0
 ISNUM 0
 ISAME 1
 LUAL 0

PRECIP DATA
 SPEE 0.0
 PMS 21.80
 R6 111.00
 R12 123.00
 R24 133.00
 R48 142.00
 R72 0.0
 R96 0.0

TRSPC COMPUTED BY THE PROGRAM IS 0.800

LOSS DATA
 LRUPT 0
 STAKR 0.0
 DLEKR 0.0
 RTIUL 1.00
 ERAIN 0.0
 STKRS 0.0
 RTIUN 1.00
 STRTL 1.00
 UNSTL 0.0
 ALSMA 0.0
 RIIMP 0.0

UNIT HYDROGRAPH DATA
 IP= 2.32 CP=0.63 NIA= 0

RECESSION DATA
 SRTIQ= -1.50
 URCSNE= -0.02
 K1UR= 2.00

UNIT HYDROGRAPH 76 END-OF-PERIOD URGINATES, LAU= 2.34
 HOURS, CP= 0.64
 VUL= 1.00
 8. 27. 60. 90. 120. 150. 179. 223. 268. 311. 357.
 376. 377. 411. 416. 412. 395. 307. 300. 314. 490.
 269. 243. 230. 212. 196. 181. 168. 155. 143. 135.
 123. 113. 105. 97. 90. 83. 77. 71. 66. 61.

RJUTING FOR CHANNEL X-SEC U.S. OF ROCKLAND LAKE (SUAREA 2)

INSTA	ICOMP	TECUN	ITAPE	JPLI	JPKI	INAKE	ISTAGE	IAUJL
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

ROUTING DATA	IPMP	LSM
0.0	0.0	0.0

LAG	AMSKK	X	TSK	STJKA	ISPRAT
0.0	0.0	0.0	0.0	0.0	0.0

NORMAL DEPTH CHANNEL ROUTING

UNIT	Q1123	Q1123	ELVIT	ELMAX	HLNTH	SEL
0.0	0.0	0.0	1019.4	1019.4	3150	0.00000

CROSS SECTION COORDINATES--STA, ELEV, STA, ELEV--ETC

STA	ELEV	STA	ELEV
0.0	1019.40	1009.40	1009.40
1019.40	1019.40	1007.40	1009.40
1110.00	1019.40	1009.40	1019.40

STORAGE	0.0	142.74	142.74	236.19	288.54	5.97	12.13	21.58	35.82	55.88	111.04

OUTFLOW	0.0	9.27	29.63	69.10	138.60	239.75	409.17	649.72	905.72	1111.87	1440.11

STAGE	1006.40	1007.48	1007.77	1008.45	1009.14	1009.82	1010.50	1011.19	1011.87	1012.56

FLOW	0.0	9.27	29.63	69.10	138.60	239.75	409.17	649.72	905.72	1111.87

MAXIMUM STAGE IS	1015.3

MAXIMUM STAGE IS	1014.5

MAXIMUM STAGE IS	1013.2

MAXIMUM STAGE IS	1011.2

***** SUB-AREA KUNDUFF COMPUTATION *****

RJUTING HYDROGRAPH TO SHAKEMOUT LAKE (SUAREA 2)

INSTA	ICOMP	TECUN	ITAPE	JPLI	JPKI	INAKE	ISTAGE	IAUJL
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

HYDRO	AREA	SNAP	TKSQA	TKSQC	RATIC	IS-NU	IS-AGE	LUGAL
1	1.04	0.0	1.04	0.0	0.0	0	1	0

***** PRECIP DATA *****

SPFE	PMS	MS	R24	MS	R72	MS
0.0	71.80	111.00	123.00	133.00	142.00	0.0

***** SHEET 21 OF 26 *****

IRSPC COMPUTED BY THE PROGRAM IS 0.000

LOSS DATA
 LRUPT STAKR ULTKR RTIOL GRAIN STMKR RTIUR STIRL UNLIL ALXMX RTIMP
 0 0.0 0.0 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.0 0.0

UNIT HYDROGRAPH DATA
 IP= 1.92 CP=0.03 RTAF= 0

RESOLUTION DATA
 STRTU= -1.50 QKCSN= -0.05 RTIUR= 2.00

UNIT HYDROGRAPH 63 END-OF-PERIOD URDINATE S LAU= 1.00 HOURS CP= 0.03 VOL= 1.00
 6. 21. 93. 68. 96. 125. 159. 181. 202. 216.
 225. 227. 205. 186. 182. 182. 158. 140. 127. 115.
 105. 86. 74. 63. 53. 44. 44. 44.
 40. 33. 30. 25. 23. 20. 19. 17.
 15. 11. 10. 9. 8. 7. 6. 6.
 6. 5. 4. 4. 4. 3. 3. 2.
 2. 2. 2.

END-OF-PERIOD FLOW
 40.0A HR.MN PERIOD RAIN EXCS LOSS CUMP Q MU.DA HR.MN PERIOD RAIN EXCS LOSS CUMP Y
 SUM 24.76 21.00 3.71 8990.
 1.629.11.535.11 96.11.200.021

COMBINE HYDROGRAPHS

COMBINE HYDROGRAPHS (SUBAREAS 1 + 2)

I STAQ ICOMP IEGN ITAPE JPLT JPRT I NAME I STAGE I AUTU
 5 2 0 0 0 0 0 1 0 0

HYDROGRAPH ROUTING

ROUTING FOR SMARTMOUT LAKE (SUBAREA 2)

I STAQ ICOMP IEGN ITAPE JPLT JPRT I NAME I STAGE I AUTU
 6 1 0 0 0 0 0 1 0 0

ROUTING DATA
 JLUSS GLOSS AVG IRES ISAKE IUPI IPMP LSTR
 0.0 0.0 0.0 1 1 0 0 0 0

I STPS MSTUD LAG ANSKR X I SK STJRA I SPRAI
 1 0 0 0.0 0.0 0.0 0.0 -1003.

STAGE 1005.40 1005.40 1007.40 1008.40 1009.40 1010.40 1011.40 1012.40
 FLOW 0.0 16.30 50.90 142.40 262.60 410.40 592.70 809.20 1013.40

SURFACE AREA= 0. 40. 73. 187.
 CAPACITY= 0. 133. 359. 1608.

ELEVATION= 995. 1005. 1009. 1019.

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

RATIOS APPLIED TO FLOWS

OPERATION	STATION	AREA	PLAN	RATIO 1	RATIO 2	RATIO 3	RATIO 4
				1.00	0.75	0.50	0.25
HYDROGRAPH AT	1	2.31	1	5222	3924	2924	1311
	(	5.98)	(	148.44)	111.33)	74.22)	37.11)
ROUTED TO	2	2.31	1	4959	3675	2276	781
	(	5.98)	(	141.57)	104.06)	65.03)	22.10)
ROUTED TO	3	2.31	1	4713	3419	2082	675
	(	5.98)	(	133.45)	96.81)	58.96)	19.10)
HYDROGRAPH AT	4	1.98	1	2620	1965	1310	655
	(	2.69)	(	74.20)	55.65)	37.10)	18.55)
2 COMBINED	5	3.33	1	6104	4824	2873	807
	(	8.68)	(	189.82)	136.61)	81.42)	24.56)
ROUTED TO	6	3.33	1	6636	4764	2822	799
	(	8.68)	(	187.91)	134.91)	79.92)	22.63)
HYDROGRAPH AT	7	3.73	1	1890	1417	945	472
	(	1.94)	(	53.51)	40.13)	26.75)	13.38)
2 COMBINED	8	3.13	1	8091	5784	3392	903
	(	13.62)	(	229.10)	163.78)	96.26)	25.56)
ROUTED TO	9	3.13	1	7832	5327	2924	480
	(	10.62)	(	221.79)	150.84)	71.39)	13.59)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	ALLOCATION STORAGE OUTFLOW	INITIAL VALUE 1007.40	SPILLWAY GREST 1007.40	TOP OF DAM 1008.50
		878.	578.	1171.
		0.	0.	114.

RATIO OF PNE	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX. OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	1.14	1440.	4934.	17.41	42.34	42.3
0.75	0.95	1428.	5675.	16.67	42.50	42.0
0.5	0.1	1.5	2.0	4.8	4.3	0.
0.25	0.36	1233.	791.	11.50	44.00	44.0

PLAN 1 STALLING

RATIO	MAXIMUM FLOW CFS	MAXIMUM STAGE FT	TIME HOURS
1.00	4713.	1015.3	43.00
0.75	3512.	1014.3	43.33
0.50	2082.	1013.3	43.07
0.25	675.	1011.2	45.17

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1		INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION		1005.40	1007.40	1008.50
STORAGE		133.	153.	286.
OUTFLOW		0.	0.	263.

RATIO OF P#	MAXIMUM RESERVOIR ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME UP FAILURE HOURS
1.00	1011.59	3.09	526.	6638.	18.17	43.00	0.0
0.75	1011.01	2.61	483.	6764.	17.00	43.17	0.0
0.50	1010.42	2.02	433.	2822.	15.00	43.07	0.0
0.25	1009.56	1.16	365.	739.	11.23	45.20	0.0

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	ELEVATION STORAGE OUTFLOW	INITIAL VALUE 187. 0.	SPILLWAY CHEST 938.40 137. 0.	TOP OF DAM 988.70 400. 337.	RATIO OF PMF	MAXIMUM RESERVOIR 4-S-C-LEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM WHEELFLOW CF3	DURATION OVER TOP HOURS	TIME OF MAX WHEELFLOW HOURS	TIME OF FAILURE HOURS
					0.75	1002.74	4.04	1042.	5327.	21.00	43.67	0.0
					0.50	1001.82	3.12	903.	2521.	19.00	45.00	0.0
					0.25	997.20	0.50	532.	480.	11.00	49.17	0.0

SHEET 20 OF 25

APPENDIX D

REFERENCES

REFERENCES

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2. Broughton, John G. and others, "Geologic Map of New York - Lower Hudson Sheet," New York State Museum and Science Service, Map and Chart Series No. 15, 1970.
3. Dunbar, Carl O. and Waage, Karl M., Historical Geology, John Wiley and Sons, Inc., New York, 1969.
4. Soil Conservation Service, Soils Inventory and Their Interpretations for Specific Uses (Interim Report), Rockland County, New York, U.S. Dept. of Agriculture, August 1970.
5. Bureau of Reclamation, U.S. Dept. of the Int., Design of Small Dams, A Water Resources Technical Publication, 1977.
6. Chow, Ven Te, Handbook of Applied Hydrology, McGraw - Hill Book Company, New York, 1964.
7. Chow, Ven Te, Open Channel Hydraulics, McGraw - Hill Book Company, New York, First Edition, 1959.
8. HMR 33, "Seasonal Variations of Probable Maximum Precipitation, East of the 105th Meridian for Areas 10 to 1000 Square Miles and Durations of 6 to 48 Hours," (1956).
9. King, Horace Williams and Brater, Ernest F., Handbook of Hydraulics, Fifth Edition, McGraw - Hill Book Company, New York, 1963.
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14. U.S. Army, "Inventory of United States Dams," Corps of Engineers, 9 September 1978.
15. U.S. Army, Office of the Chief of Engineers, "Appendix D, Recommended Guidelines for Safety Inspection of Dams," National Program of Inspection of Dams, Volume 1, Corps of Engineers, Washington, D.C., May 1975.
16. George, Thomas S. and Taylor, Robert S., Hydrologic Flood Routing Model For Lower Hudson River Basin, Water Resources Engineers, Inc., 8001 Forbes Place, Suite 312, Springfield, Virginia, January 1977.
17. U.S. Army, Office of the Chief of Engineers, Engineering Circular EC-1110-2-163 (Draft Engineering Manual), "Spillway and Freeboard Requirements for Dams, Appendix C, Hydrometeorological Criteria and Hyetograph Estimates," (August 1975).
18. U.S. Army, Office of the Chief of Engineers, Engineering Circular EC-1110-2-188, "Engineering and Design, National Program of Inspection of Non-Federal Dams," Corps of Engineers, Washington, D.C., 30 December 1977.
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20. U.S. Department of Commerce, "Technical Paper No. 40, Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years," Weather Bureau, Washington, D.C., May 1961.
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APPENDIX E

DRAWINGS

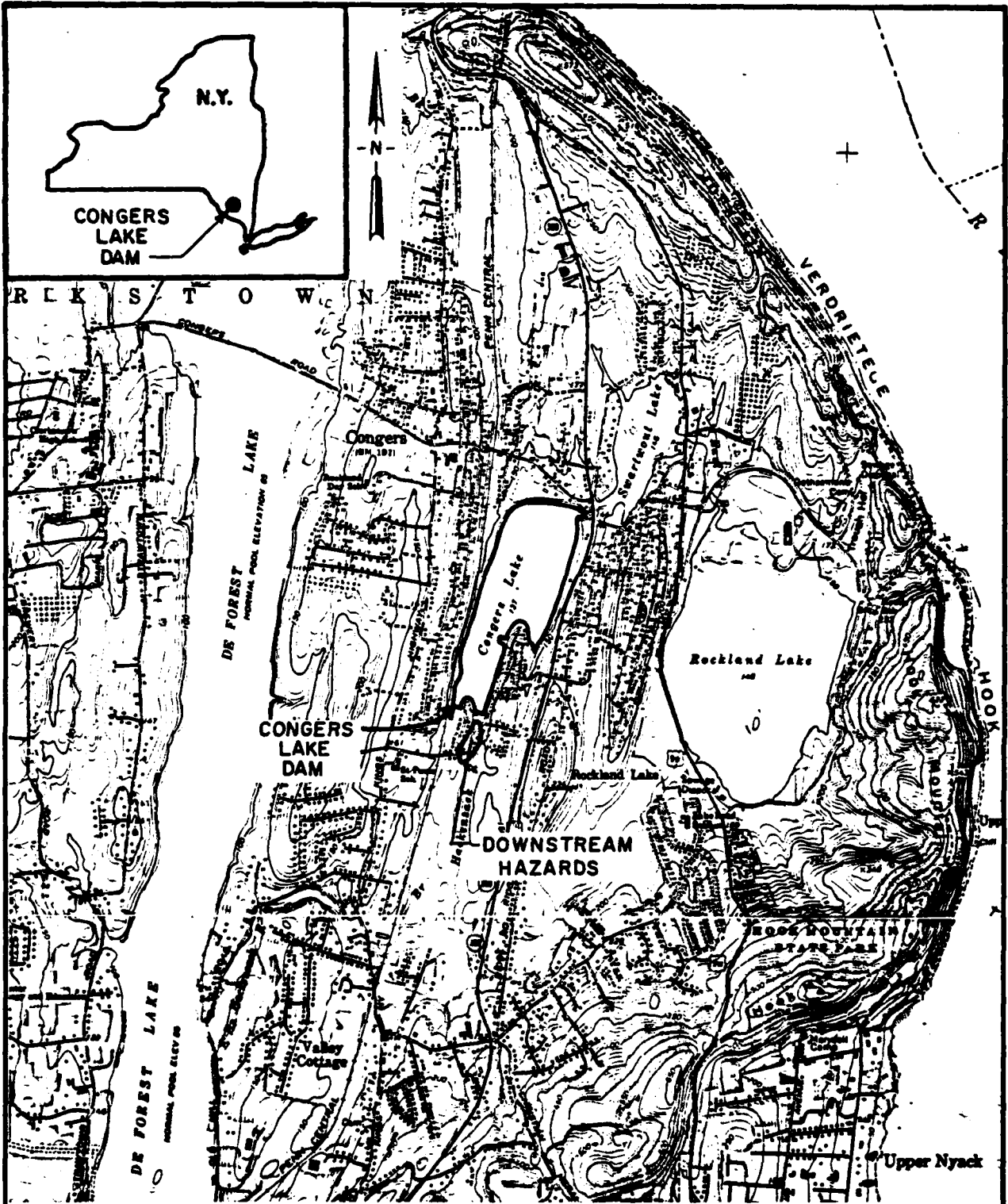
CONTENTS

Location Plan

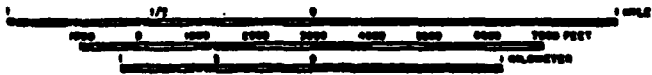
Watershed Map

Plate 1: Field Sketch

Plate 2: General Plan of Dam (1914)

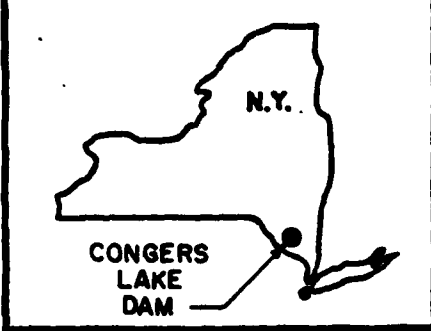
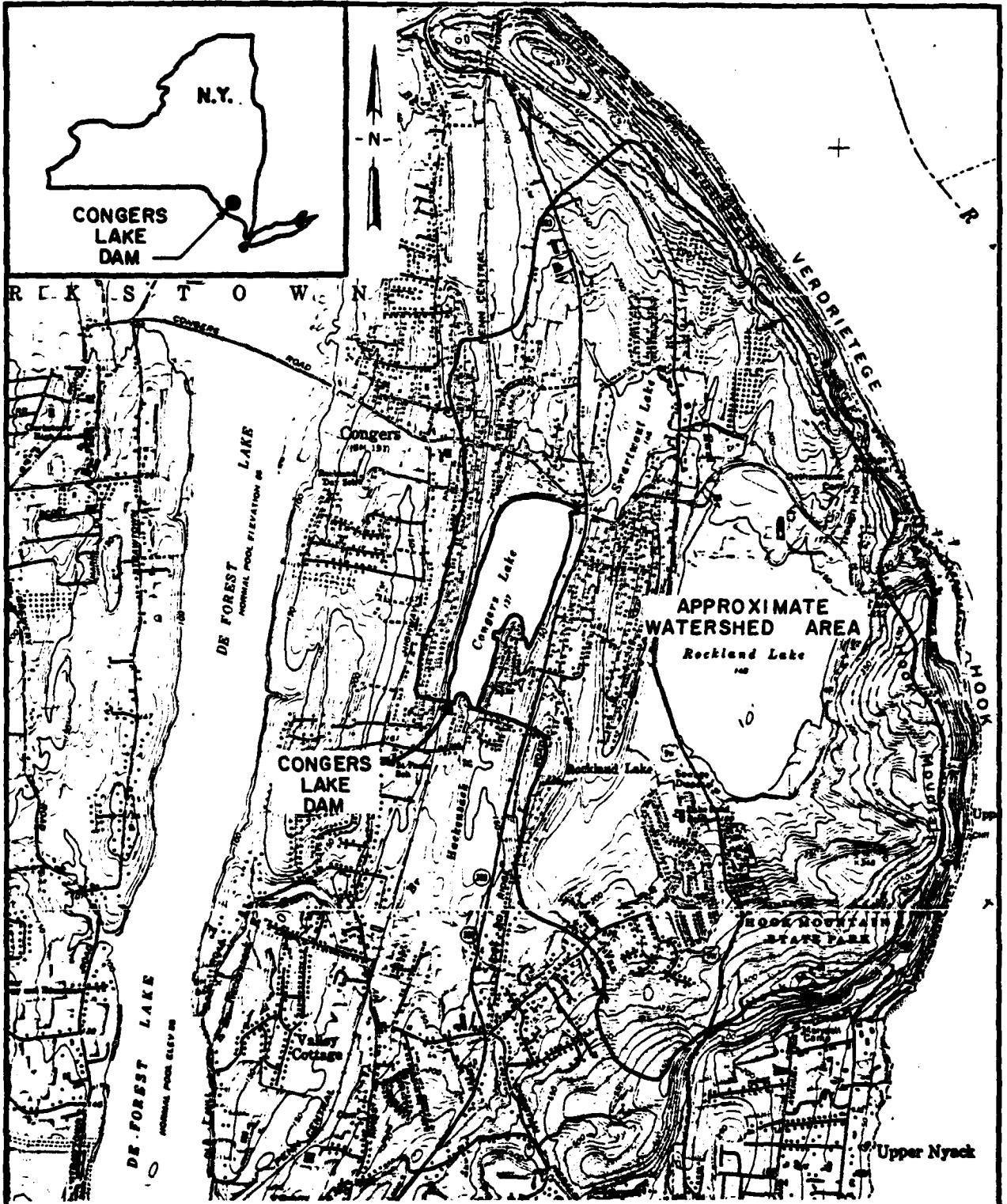


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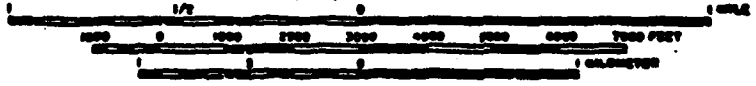
LOCATION PLAN
CONGERS LAKE DAM

REFERENCES:
1. U.S.G.S. 7.5' NYACK, NY-N.J.
QUADRANGLE, 1957
2. U.S.G.S. 7.5' HAVERSTRAW, N.Y.
QUADRANGLE, PHOTOREVISED 1979



R E K L S T O W N

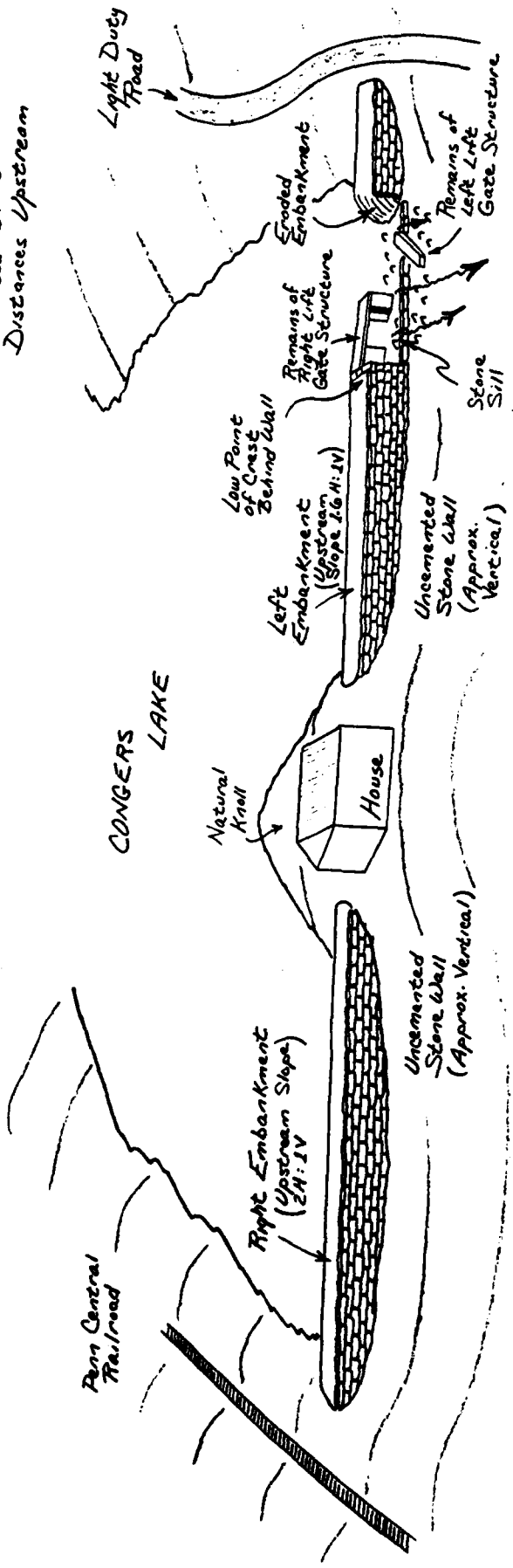
SCALE 1:24000



WATERSHED MAP
CONGERS LAKE DAM

- REFERENCES:
 1. U.S.G.S. 7.5' NYACK, NY-N.J. QUADRANGLE, 1967
 2. U.S.G.S. 7.5' HVERSTRAWNY QUADRANGLE, PHOTOREVISED 1979

Rockland and
Swartwout Lakes
Situations Similar
Distances Upstream



- Not to Scale -

FIELD SKETCH

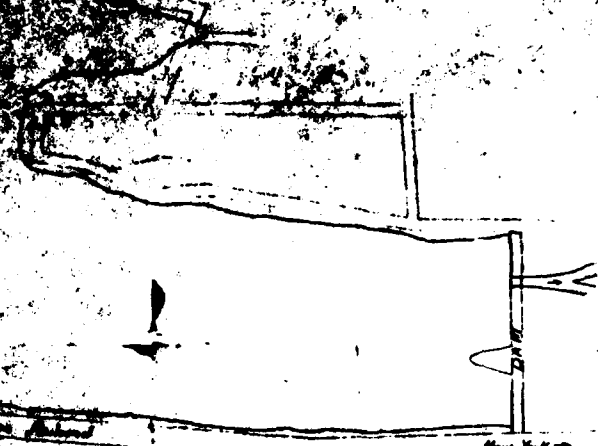
CONGERS LAKE DAM, NEW YORK

Michael Baker, Jr., Inc.

10 January 1981

PLATE 1

DWH 1-81

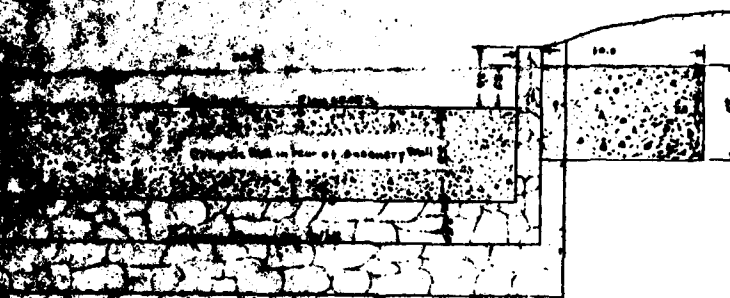


Plan View

North

Location

Scale 1/4" = 1' inch

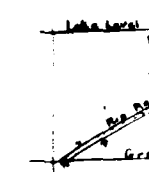


Cross-Section B-D

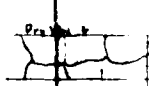
Scale 3/4" = 1' inch



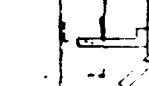
Cross-Section B-D



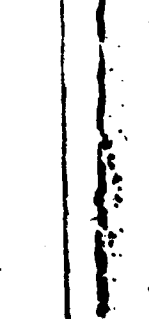
Plan View



Plan View



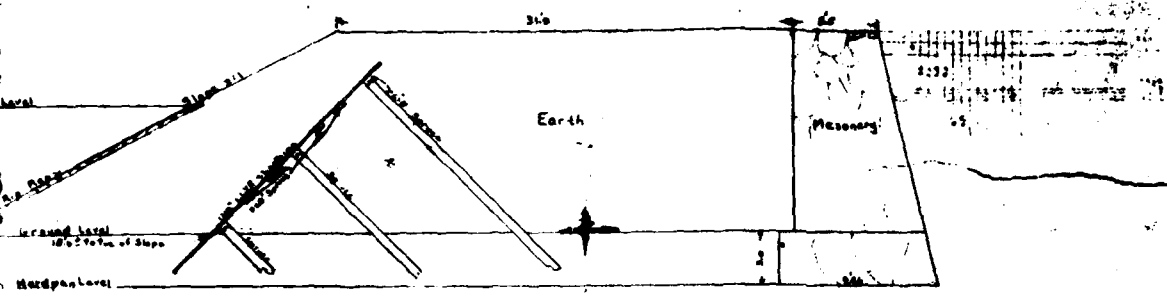
Plan View



Plan View

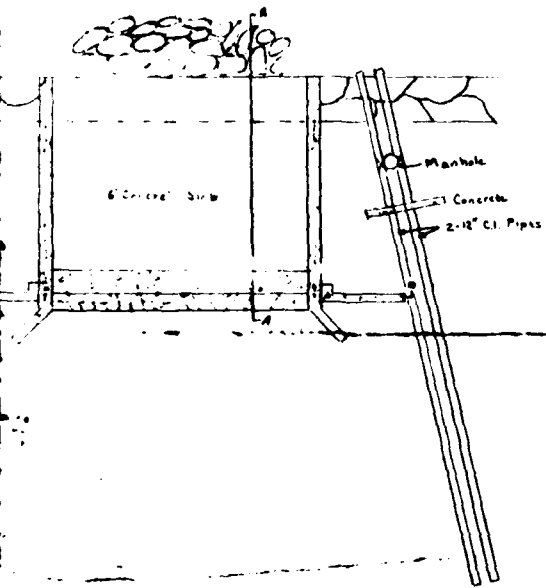


Profile of Dam



Typical Cross Section of Dam

Scale 5'-11inch



Plan of Spillway

Scale 10'-11inch

GENERAL PLAN OF DAM AT SOUTH END OF ST RITA'S LAKE

Congers, Rockland Co., N.Y.

Property of
ST RITA'S LAKE CO.

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FROM COPY OF ORIGINAL

2

PLATE 2

APPENDIX F
BACKGROUND DOCUMENTS

150

RECEIVED

St. Nicholas Rectory

135 SECOND STREET
NEW YORK

November 12, 1914

1914
REV. JOHN A. NAGELISEN, P. R.
DIVISION OF WATERS
Chief Engineer

*Alam Canal No 51
No 290 Low Hudson River
Hudson*

Richard W. Sherman, Chief Engineer,
Conservation Commission, Albany.

Dear Sir:-

The General Plan of Dam and its Spillway, the map of which was compiled by John A. Lee, C.E., March 27, 1914, gives the minute description of the Dam and the manner in which it was built in the early years of the 90's of the last century and repaired in the Summer of 1912.

I have filed with The St. Rita Lake Company the set of Resolutions which the Commission officially adopted and approved on the 3th of April 1914 and you so graciously sent me under the date of October 30, 1914. My sincerest thanks for the courtesy extended to me in this matter. I am

Yours very respectfully,

John A. Nagelisen

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FROM COPY FURNISHED TO DDC

RE *EN*

GEORGE E. VAN KENNEN
FEB 16 1914
JAMES W. FLEMING

DIVISION OF INLAND WATERS

ALBERT ~~Chief~~ *Chief* Engineer
SECRETARY
JOHN J. FARRELL
ASST. SECRETARY

STATE OF NEW YORK



CONSERVATION COMMISSION
ALBANY

COM'R MOORE.

Dam No. *290*
Lower Hudson Water
DIVISION OF INLAND WATERS
JOHN DEMOORE
JAMES J. FOX
RICHARD W. SHERMAN
ALEX. RICE MCKIM

RECEIVED

FEB 7 1914

DIVISION OF INLAND WATERS
J. C. M.

Serial No. *151*
Application filed *March 30-1914*
Approved by Commission
Material Tag No.
Foundations inspected
Final inspection

RECEIVED *

FEB 16 1914

DIVISION OF INLAND WATERS

* *Resubmitted with new signature*

APPLICATION FOR CONSTRUCTION OR RECONSTRUCTION OF A DAM

#198 Bangers N.Y.
Address of Applicant

Application is hereby made to the Conservation Commission of the State of New York, in compliance with the provisions of Chap. LXV of the Consolidated Laws, the Conservation Law, for approval of the detailed specifications and plans, marked

herewith submitted, for the ~~Construction~~ ^{Repair} of the dam herein described. All provisions of law will be complied with in the erection of the said dam, whether specified herein or not.

Feb. 3-14
(Date)

{ Signature of Applicant } *"St. Rita Lake Co."*

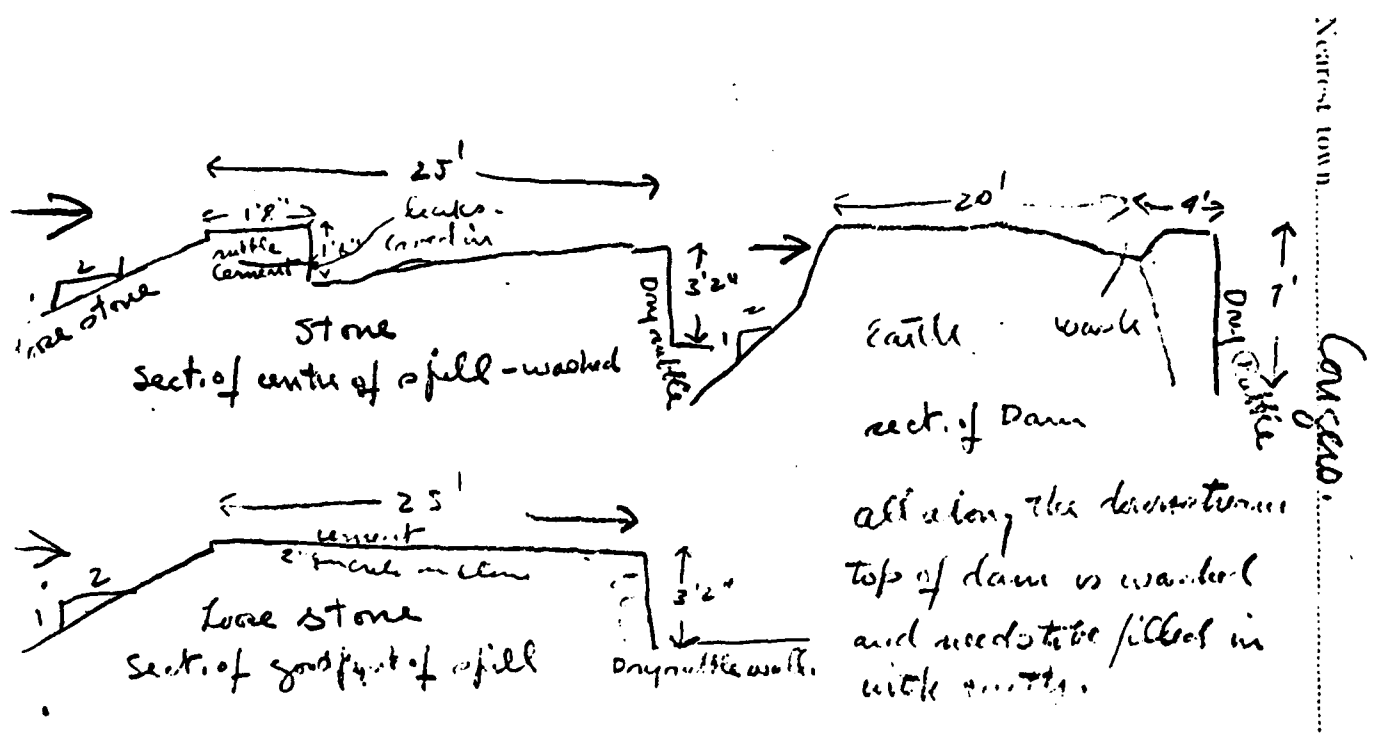
*Clarkstown, Rockland Co. N.Y.
per John A. Nageliver, Secy.*

18-20-11-5000 (10-10-33)

Fill out a form as complete as possible for each dam in your district and send to State Conservation Commission, Albany, N. Y.

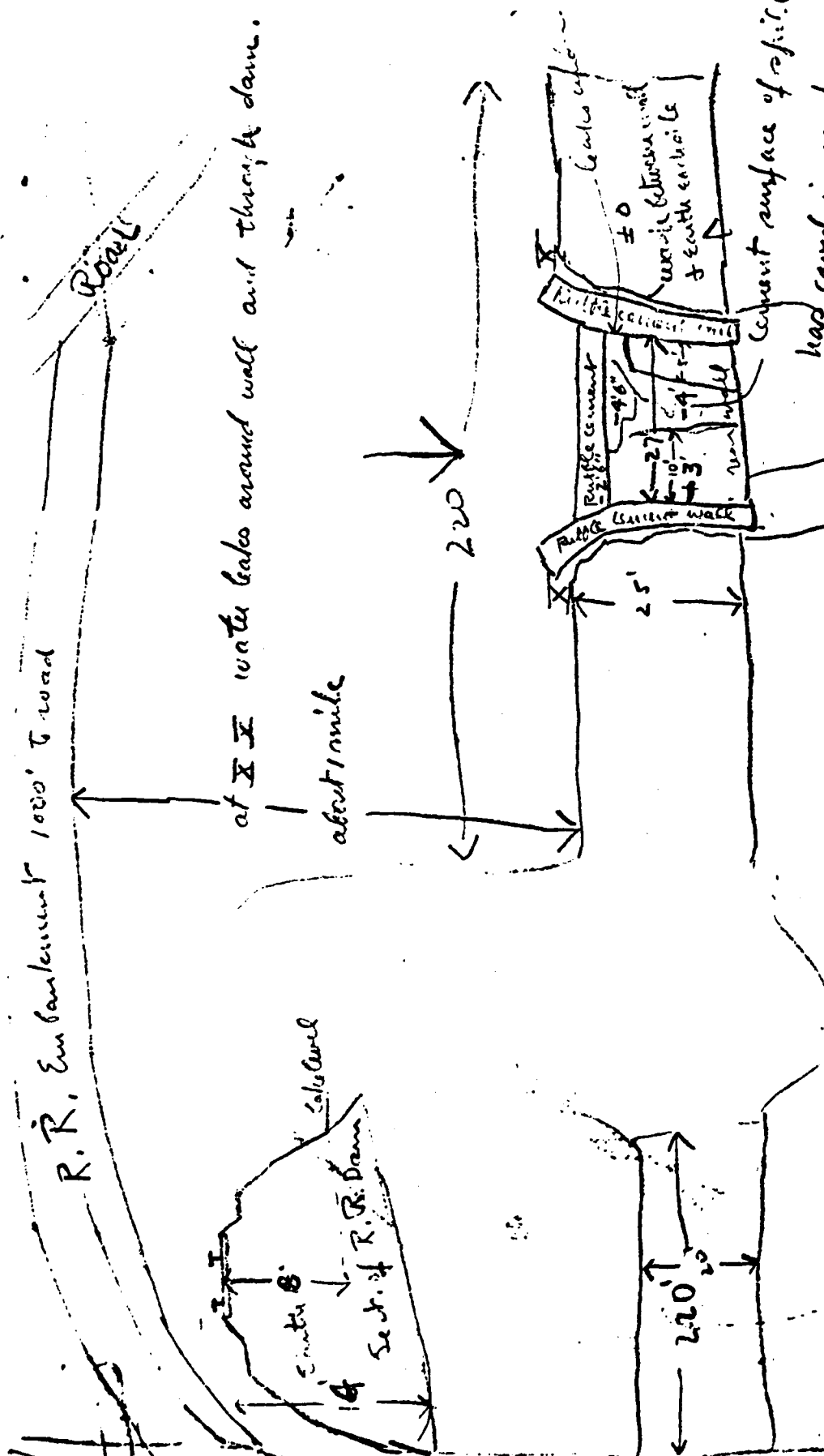
- 1. Name and address of owners County has tax title - Congress Board of Trade Plan
- 2. Date of construction 1900
- 3. Uses of impounded water Pleasure
- 4. Character of foundation bed Earth + Hard Pan
- 5. Material of waste spill Cement
- 6. Length of waste and depth below dam 27' x 3'
- 7. Total length of dam including waste 440'
- 8. Material of dam Loose Stone
- 9. Discharges, size and location No discharges.

Below sketch section of waste and section of dam, with greatest heights and top thickness and bottom thickness. On opposite side sketch general plan of dam and give distance from a bridge or from a tributary stream.



7/2/12 P. F. Richardson
 88-12 U R Dist.
 (Signature, address and date.)

117 063



at XX water takes around wall and through dam.
 about 1 mile

Concrete surface of spillway
 has cured in as shown.

Places where water takes out more
 showing under near water

Note - Corps Bend of Trade Plans to rebuild spillway
 Address Sect., G. F. Odell, Corp., Rockland Co., N.Y.

7
 056
 H7

LOCATION AND GENERAL DATA

Site of dam is on South end of St. Peter's Lake (New Lake or McQuinn's Lake)
(Name of stream)
 a branch of Inflow from Swanton Lake
(Name of stream), within the
 limits of the town of Blackburn, County of Rockland
1 1/2 miles south west of Rockland Lake 1 mile south of Cargers
(Give approximate distance from well-known bridge, dam, village or mouth of stream, so that work can be located on map of state)

Purpose of dam Pleasure purposes (It was built for ice crops originally and to cover the low-lying swamps in the midst of Cargers by the promoters)
 Reasons for making changes in existing structure Repairs made to spillway only because of its leaking condition for 3 or 4 ft below crest.

DATA AND DIMENSIONS

General: Dam as constructed 1892

Materials of which dam is to be constructed Earth + rock fill, masonry & concrete.

Area of watershed above dam Three or four square miles.

Area of water surface of pond at level of spillway crest About 220 acres.

Capacity of reservoir (at above level) Five million cubic feet.

Length of spillway crest Eighty feet feet.

Maximum depth of water on spillway crest ~~Eight~~ THREE feet.

Maximum discharging capacity of spillway About ~~three~~ five hundred cubic feet per second.

Maximum discharging capacity of spillway per square mile of drainage area ~~one~~ One hundred cubic feet per second.

• RNS

Masonry or timber portion: *Spillway + wingwalls*

Length on top..... *Twenty*feet.
Length in stream bed..... *Fifty*feet.
Maximum height above stream bed..... *Eight + ten and one half respectively*feet.
Maximum height above foundation bed..... *Thirteen and one half + sixteen respectively*feet.
Maximum width of base..... *Five*feet.
Maximum width of top..... *Two*feet.
Elevation of top above maximum water level in pond..... *Two*feet.
Elevation of top above spillway crest..... *Two and one half*feet.
Nature of foundations..... *Red sand stone*

Earth portion:

Embankment:

Length on top..... *Four hundred + fifty*feet.
Length in stream bed..... *Four hundred*feet.
Maximum height above stream bed..... *Five*feet.
Maximum width of base..... *Sixty*feet.
Maximum width of top..... *Thirty five*feet.
Elevation of top above maximum water level in pond..... *Four to five*feet.
Elevation of top above spillway crest..... *Four and one half to five and one half*feet.
Slope, upstream face..... *one to two and one half or three*feet.
Slope, downstream face..... *ten to one*

Core wall:

Material.....
Elevation of top above spillway crest..... *core wall*feet.
Width of top.....feet.
Batter of faces.....
Maximum height above foundations.....feet.
Maximum width of base.....feet.

Sheeting or other cut-off. Two inch sheeting driven length of dams on lake side

Is fishway provided? No.

General description of regulating works, gate houses, outlet pipes, penstocks, forebays, canals, flashboards, gates, log chutes, etc.

Two 12" C.I. pipes layed along old bed of stream

Names of owners of property which will be submerged by construction of dam, with approximate submerged area owned by each.

None

It is intended to complete work covered by this application by _____ (Date)

REPORT UPON APPLICATION

CONSERVATION COMMISSION — DIVISION OF INLAND WATERS

Albany. April 6 - 14

I have carefully examined the plans of the above dam, and find that if the work is constructed in accordance with the plans, filed March 30 - 1914 with good workmanship and the specified materials that it will be safe.

Approved:

R. W. Sullivan
Chief Engineer.

Inspector of Docks and Dams.

APPROVAL BY COMMISSION

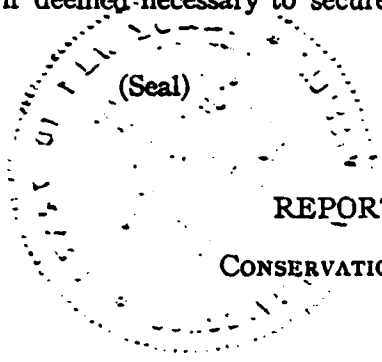
STATE OF NEW YORK

CONSERVATION COMMISSION

ALBANY

On April 1914 the Conservation Commission, by resolution duly adopted, approved of the above application for the { construction } of dam 290 Lower Hudson on Outlet of St Peter's Lake and hereby gives permission for the { reconstruction } of said dam within one months from date in accordance with the specifications and plans, and subject before erection to the approval by the Inspector of the materials of construction and of the foundation bed when stripped and prepared, and subject to the inspection of the work during and after construction. This approval may be amended if deemed necessary to secure a safe structure.

Blair G. Taylor
Secretary to Commission.



REPORT ON INSPECTION OF FOUNDATION

CONSERVATION COMMISSION — DIVISION OF INLAND WATERS

Albany.....

Work on the above dam was started....., contracts for the same having been awarded to.....

On
.....
.....
.....

Approved:

.....
Inspector of Docks and Dams.

.....
Chief Engineer.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
 DAM INSPECTION REPORT
 (By Visual Inspection)

Town of Clarkstown
 owner

Dam Number	River Basin	Town	County	Hazard Class*	Date & Inspector
290	L. Hudson	Clarkstown	Racine	B-C	1/19/75 KDH

- | Type of Construction | Use |
|--|--|
| <input type="checkbox"/> Earth w/concrete spillway | <input type="checkbox"/> Water Supply |
| <input type="checkbox"/> Earth w/drop inlet pipe | <input type="checkbox"/> Power |
| <input checked="" type="checkbox"/> Earth w/stone or riprap spillway + Asphalt | <input checked="" type="checkbox"/> Recreation |
| <input type="checkbox"/> Concrete | <input type="checkbox"/> Fish and Wildlife |
| <input type="checkbox"/> Stone | <input type="checkbox"/> Farm Pond |
| <input type="checkbox"/> Timber | <input type="checkbox"/> No Apparent Use-Abandoned |

- | Estimated Impoundment Size | Estimated Height of Dam above Streambed |
|---|---|
| <input type="checkbox"/> 1-5 acres | <input checked="" type="checkbox"/> Under 10 feet |
| <input type="checkbox"/> 5-10 acres | <input type="checkbox"/> 10-25 feet |
| <input checked="" type="checkbox"/> Over 10 acres | <input type="checkbox"/> Over 25 feet |

- Condition of Spillway
- Service satisfactory Auxiliary satisfactory
- In need of repair or maintenance In need of repair or maintenance
- Explain: Concrete has broken away but asphalt has been placed in spillway

- Condition of Non-Overflow Section
- Satisfactory
- In need of repair or maintenance Explain: minor leaks

- Condition of Mechanical Equipment
- Satisfactory
- In need of repair or maintenance Explain: _____

- Evaluation (From Visual Inspection)
- No defects observed beyond normal maintenance
- Repairs required beyond normal maintenance
- *Explain Hazard Class, if Necessary _____

congers Lake

DAM INSPECTION REPORT
(By Visual Inspection)

Dam Number	River Basin	Town	County	Hazard Class	Date & Inspector
290	d. Hudson	Clarkstown	Rockland	C	4/8/80 FFR/R

Stream = E. R. Hackensack River, Owner = Town of Clarkstown

Type of Construction

- Earth w/Concrete Spillway & Asphalt
- Earth w/Drop Inlet Pipe
- Earth w/Stone or Riprap Spillway
- Concrete
- Stone
- Timber
- Other _____

Use

- Water Supply
- Power
- Recreation - High Density
- Fish and Wildlife
- Farm Pond
- No Apparent Use-Abandoned
- Flood Control
- Other _____

Estimated Impoundment Size 120 Acres### Estimated Height of Dam above Streambed 10 Ft.

Condition of Spillway

- Service satisfactory
- In need of repair or maintenance
- Auxiliary satisfactory
- In need of repair or maintenance

Explain: Asphalt on section of spillway that is broken away and erosion around spillway.

Condition of Non-Overflow Section

- Satisfactory
- In need of repair or maintenance

Explain: _____

Condition of Mechanical Equipment

- Satisfactory
- In need of repair or maintenance

Explain: None

Siltation ?

- High
- Low

Explain: _____

Remarks: Trees on dam embankment

Evaluation (From Visual Inspection)

- Repairs req'd. beyond normal maint.
- No defects observed beyond normal maint.

DATE
ILMED
— 8