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NATIONAL DAM SAFETY PROGRAM. N.J. NO NAME DAM NUMBER 58 (NJ00654--ETC(U)
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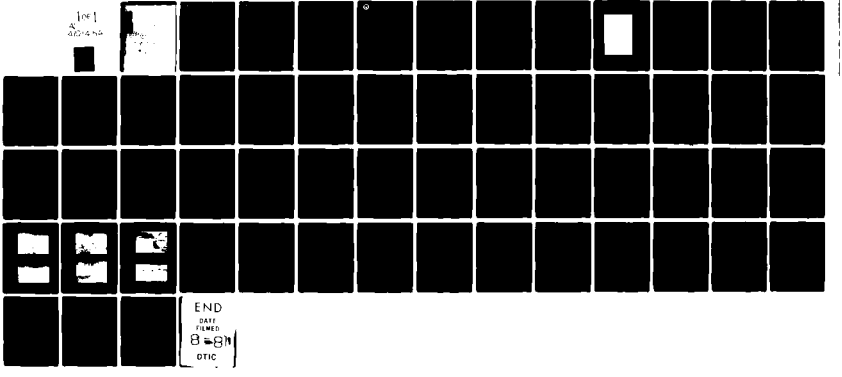

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(6) National Dam Safety Program. N.J. No Name Dam Number 58 (NJ00653), Wallkill River Basin, Tributary to Papakating Creek, Sussex County, New Jersey. Phase I Inspection Report.

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Approved for public release; distribution unlimited.

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18. SUPPLEMENTARY NOTES

Copies are obtainable from National Technical Information Service, Springfield, Virginia 22151.

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Dams
Embankments
Visual Inspection
Structural Analysis
National Dam Safety Program
N.J. No Name Dam No. 58, New Jersey
Spillways

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report cites results of a technical investigation as to the dam's adequacy. The inspection and evaluation of the dam is as prescribed by the National Dam Inspection Act, Public Law 92-367. The technical investigation includes visual inspection, review of available design and construction records, and preliminary structural and hydraulic and hydrologic calculations, as applicable. An assessment of the dam's general condition is included in the report.

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

DEPARTMENT OF THE ARMY
PHILADELPHIA DISTRICT, CORPS OF ENGINEERS
CUSTOM HOUSE—2 D & CHESTNUT STREETS
PHILADELPHIA, PENNSYLVANIA 19106

IN REPLY REFER TO
NAPEN-N

30 JUN 1981

Honorable Brendan T. Byrne
Governor of New Jersey
Trenton, New Jersey 08621

Dear Governor Byrne:

Inclosed is the Phase I Inspection Report for N.J. No Name No. 58 Dam, Sussex County, New Jersey which has been prepared under authorization of the Dam Inspection Act, Public Law 92-367. A brief assessment of the dam's condition is given in the front of the report.

Based on visual inspection, available records, calculations and past operational performance, New Jersey No Name No. 58 Dam, initially listed as a high hazard potential structure but reduced to a low hazard potential structure as a result of this inspection, is judged to be in fair overall condition. However, the spillway is considered inadequate, as 25 percent of the 100 year design flood would cause the dam to be overtopped. The low hazard potential classification means that in the event of failure of the dam, no loss of life and only minimal economic loss is expected. For the same reasons no further studies or increase of spillway capacity are recommended. However, to assure the continued functioning of the dam and its impoundment, the following remedial actions could be undertaken by the owner:

a. The gate valve for the 24-inch outlet pipe should be located and the control tested to ensure its proper functioning.

b. Silt should be removed from the outlet pipe.

c. Trees and brush should be removed from the embankment, the crest should be regraded, the crest and back slope should be reseeded and the animal burrows should be filled.

d. The earth in the spillway channel should be removed, the deteriorated concrete repaired and the undercut portions of the sidewalls refilled.

e. Written operating procedures and a periodic maintenance plan should be developed to ensure the safety of the dam.

NAPEN-N
Honorable Brendan T. Byrne

A copy of the report is being furnished to Mr. Dirk C. Hofman, New Jersey Department of Environmental Protection, the designated State Office contact for this program. Within five days of the date of this letter, a copy will also be sent to Congressman Courter of the Thirteenth District. Under the provision of the Freedom of Information Act, the inspection report will be subject to release by this office, upon request, five days after the date of this letter.

Additional copies of this report may be obtained from the National Technical Information Services (NTIS), Springfield, Virginia 22161 at a reasonable cost. Please allow four to six weeks from the date of this letter for NTIS to have copies of the report available.

An important aspect of the Dam Inspection Program will be the implementation of the recommendations made as a result of the inspection. We accordingly request that we be advised of proposed actions taken by the State to implement our recommendations.

Sincerely,

for Kenneth L. Mosier Maj CE ODE
JAMES G. TON
Colonel, Corps of Engineers
Commander and District Engineer

1 Incl
As stated

Copies furnished:
Mr. Dirk C. Hofman, P.E., Deputy Director
Division of Water Resources
N.J. Dept. of Environmental Protection
P.O. Box CN029
Trenton, NJ 08625

Mr. John O'Dowd, Acting Chief
Bureau of Flood Plain Regulation
Division of Water Resources
N.J. Dept. of Environmental Protection
P.O. Box CN029
Trenton, NJ 08625

NEW JERSEY NO NAME DAM NO. 58 (NJ00653)

CORPS OF ENGINEERS ASSESSMENT OF GENERAL CONDITIONS

This dam was inspected on 26 March 1981 by Louis Berger and Associates, Inc. under contract to the State of New Jersey. The State, under agreement with the U.S. Army Engineer District, Philadelphia, had this inspection performed in accordance with the National Dam Inspection Act, Public Law 92-367.

New Jersey No Name No. 58 Dam, initially listed as a high hazard potential structure but reduced to a low hazard potential structure as a result of this inspection, is judged to be in fair overall condition. The spillway is considered inadequate, as 25 percent of the 100 year design flood would cause the dam to be overtopped. The low hazard potential classification means that in the event of failure of the dam, no loss of life and only minimal economic loss is expected. For the same reasons no further studies or increase of spillway capacity are recommended. However, to assure the continued functioning of the dam and its impoundment, the following remedial actions could be undertaken by the owner:

a. The gate valve for the 24-inch outlet pipe should be located and the control tested to ensure its proper functioning.

b. Silt should be removed from the outlet pipe.

c. Trees and brush should be removed from the embankment, the crest should be regraded, the crest and back slope should be reseeded and the animal burrows should be filled.

d. The earth in the spillway channel should be removed, the deteriorated concrete repaired and the undercut portions of the sidewalls refilled.

e. Written operating procedures and a periodic maintenance plan should be developed to ensure the safety of the dam.

APPROVED: Kenneth R Moden Maj CE DDE
for JAMES G. TON
Colonel, Corps of Engineers
Commander and District Engineer

DATE: 30 June 1981

PHASE I REPORT
NATIONAL DAM INSPECTION PROGRAM

Name of Dam N.J. No Name Dam No. 58 Fed ID# NJ 00653

State Located	New Jersey
County Located	Sussex
Coordinates	Lat. 4111.8 - Long. 7439.0
Stream	Tributary to Papakating Creek
Date of Inspection	26 March 1981

ASSESSMENT OF GENERAL CONDITIONS

N.J. No Name Dam No. 58 is considered to be in fair overall condition, although the spillway capacity can accommodate only 24% of the 100-year design flood. In view of the fact that no loss of life and only minimal property damage would result from a dam failure, it is recommended that the dam's hazard classification be downgraded to low. For the same reasons no further studies or increase of spillway capacity are recommended. However, to assure the continued functioning of the dam and its impoundment, the following remedial actions could be undertaken by the owner: 1) removal of silt from the outlet pipe and inspection of the gate valve; 2) removal of trees and brush from the embankment, regrading and reseeding of the crest, and refilling the rodent burrows; and 3) cleaning the spillway channel, repairing deteriorated concrete, and refilling the undercut portions of the spillway sidewalls.

A. Perera P.E.
Project Manager

OVERVIEW OF NO NAME DAM No. 58

MARCH , 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 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. 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. The test flood provides a measure of relative spillway capacity and serves as an aide in determining the need for more detailed hydrologic and hydraulic studies, considering the size of the dam, its general condition and the downstream damage potential.

PHASE I INSPECTION REPORT
NATIONAL DAM INSPECTION PROGRAM
NAME OF DAM N.J. No Name Dam No. 58 FED #NJ 00653

SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority

This report is authorized by the Dam Inspection Act, Public Law 92-367, and has been prepared in accordance with Contract FPM-36 between Louis Berger & Associates, Inc. and the State of New Jersey and its Department of Environmental Protection, Division of Water Resources. The state, in turn, is under agreement with the U.S. Army Corps of Engineers, Philadelphia to have this inspection performed.

b. Purpose of Inspection

The purpose of this inspection is to evaluate the structural and hydraulic condition of N.J. No Name Dam No. 58 and appurtenant structures and to determine if the dam constitutes a hazard to human life or property.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

N.J. No Name Dam No. 58 is a 110-foot-long earthen structure with a crest width of 25 feet and a downstream slope that varies from 3H:1V to 1H:1V. A 10-foot-wide, 3-foot-thick stone drain extends along the entire downstream toe of the dam and the upstream face is protected by hand placed riprap as large as 24 inches in diameter. A 24-inch-diameter steel outlet pipe is located about 11 feet from the left abutment at invert elevation 555.6, and the principal spillway, which is located 300 feet to the north of the dam, consists of a 6.3-foot-long concrete weir with 1.6-foot-high sidewalls. The maximum height of the dam is about 18.2 feet, and the upstream slope, extent of the riprap, and location of the controls for the outlet pipe are unknown.

b. Location

The dam impounds a small lake 3,500 feet southwest of the falls on the West Branch tributary to the Papakating Creek in the community of Woodburne, Wantage Township, Sussex County, New Jersey. Access to the dam is possible via an unnamed dirt road which intersects Pidgeon Hill Road about 4,300 feet southwest of the junctions of Haggerty Road and County Road 565. The dam is located about one-half mile west-southwest of Highpoint Regional High School.

c. Size Classification

N.J. No Name Dam No. 58 has a maximum height of 18.2 feet and a maximum storage capacity of 167 acre-feet. Accordingly, this dam is in the small size category as defined by the criteria in the Recommended Guidelines for Safety Inspection of Dams (storage less than 1,000 acre-feet and height less than 40 feet).

d. Hazard Classification

The dam is located in a sparsely inhabited area of Sussex County characterized by low, rolling topography. The downstream valley is completely uninhabited for 2,600 feet, at which point the stream passes through a 5-foot-diameter reinforced concrete pipe culvert under Pidgeon Hill Road. About 6,000 feet downstream of the dam, the stream passes through an 8' x 10' box culvert under the Ross Corner-Sussex Road. Except for one home on the east side of Pidgeon Hill Road and another on the west side of Ross Corner-Sussex Road there are no residences between the dam and Papakating Creek. Although the roads could be flooded, it is felt that damage would be minimal and the homes are well above flood elevations. Accordingly, it is recommended that this dam be downgraded to a low hazard classification.

e. Ownership

This dam is owned by Westgate Associated, 345 Boulevard, Hasbruck Heights, New Jersey 07604.

f. Purpose of Dam

Although no state application for construction permit was located, it is believed that this dam was constructed for developmental and investment purposes.

g. Design and Construction History

Nothing is known concerning the design or construction, although it is reputed to have been constructed in the early 1960s.

h. Normal Operation Procedures

Nothing is known concerning operations, and the dam has apparently been unattended for several years.

1.3 PERTINENT DATA

a. Drainage Area

N.J. No Name Dam No. 58 has a drainage area of 0.78 square miles that consists primarily of rolling woodlands.

b. The spillway capacity at maximum pool elevation is 255 cfs

c. Elevations (ft. above NGVD)

Top of dam - 573.8
Principal spillway crest - 571.0
Streambed at centerline of dam - 555.4

d. Reservoir

Length of maximum pool (top of dam) - 1,500 feet

Length of normal pool (principal spillway crest) - 1,425 feet

e. Storage (acre-feet)

Top of dam - 167
Normal pool - 122

f. Reservoir Surface (acres)

Top of dam - 18.7
Normal pool - 14.7

g. Dam

Type - Earth with a concrete spillway

Length - 110 feet

Height - 18.2 feet

Top width - 25 feet

Side slopes - 3H:1V and 1H:1V downstream.
Upstream unknown

Zoning - Unknown

Impervious core - Unknown

Cutoff - Unknown

Grout curtain - Unknown

h. Diversion and Regulating Tunnel - None

i. Spillway

Type - Concrete weir located 300 feet north of the left abutment

Crest elevation - 571

Crest width - 6.3 feet

Gates - None

j. Regulating Outlets

Low level outlet is a 24-inch-diameter steel outlet pipe at invert elevation 555.6. No gate controls were located.

SECTION 2 - ENGINEERING DATA

2.1 DESIGN

Information pertaining to the design was not available for review. An extensive search failed to locate any design data, and it appears that the dam may have been constructed without permit. However, a geotechnical review provided an overall assessment of probable foundation conditions. The dam is located in a region underlain by Ordovician Martinsburg shale. The overburden consists of recent alluvium of stratified sand and gravel stream deposits while the residual soil is a thick-bedded, glaciated shale with clay to gravel-size particles. It appears that the embankment was constructed on the existing overburden but adjoins the bedrock at both abutments.

2.2 CONSTRUCTION

No information was obtained pertaining to the construction. Field measurements provided sufficient as-built data to assess the hydraulic capacity of the spillway.

2.3 OPERATION

There is no information available pertaining to operations at this dam.

2.4 EVALUATION

a. Availability

While the original design and construction data are not available, the field reconnaissance revealed sufficient overall geometry to enable the inspection team to complete its evaluation.

b. Adequacy

In view of the hazard classification and present condition of the dam, the information obtained is believed to be adequate to perform the following assessment.

c. Validity

No design information was available for evaluation.

SECTION 3 - VISUAL INSPECTION

3.1 FINDINGS

a. General

Visual inspection of N.J. No Name Dam No. 58 was conducted on March 26, 1981. While the dam was in a fair overall condition, it appears that routine maintenance had been neglected for an extended period of time. At the time of the inspection, about 2 inches of water was discharging over the spillway weir and a tailwater was noted at the low level drain outlet. The water in the outlet channel is believed to emanate from the stone toe drain, although the iron-rich color of the pool and silt indicates that some leakage through the steel drain is also probable.

b. Dam

The dam is a straight, relatively low structure lying between two naturally higher abutment zones. It is approximately 110 feet long with a 6.3-foot-wide concrete spillway weir located 300 feet north of the left abutment. The dam crest is 25 feet wide and has a fairly uniform line although the grade is slightly irregular. The dam is overgrown with dense thickets and trees up to 9 inches in diameter. The embankment, which consists of crushed shale and clay fill, appears very stable, although there was a lack of grass cover on the 1H:1V sloping portion of the downstream face. While no erosion was observed in that area, several rodent burrows were noted in the soft clayey fill. There is a narrow foot path along the upstream face near the waterline, but no sloughing or severe erosion was observed anywhere on the embankment. The riprap along the upstream face appeared uniformly distributed, although it did not extend to the dam crest and some minor wave erosion was noted at the waterline. The stone toe drain appeared relatively level and apparently stabilizes the steeper portion of the downstream slopes in addition to relieving hydrostatic pressure within the embankment. The channel and valley downstream of the dam was somewhat marshy, with a small standing pool of water immediately adjacent to the toe drain and outlet

pipe. There is a 6-inch-thick layer of soft, orange-colored silt built up within the outlet pipe, and the controls for the gate valve could not be located anywhere at the dam.

c. Appurtenant Structures

The spillway consists of a small concrete weir located about 300 feet to the north of the left abutment. Minor spalling of the concrete wingwalls was noted and the downstream ends of the sidewalls were slightly undercut. A layer of coarse sand and gravel has built up in front of the concrete sill of the weir to an elevation slightly higher than the sill itself. The opening of the weir is 30 percent constricted by a pile of earth. It is apparent that someone recently dumped earth across the entire weir in order to block the spillway and raise the lake surface elevation. The makeshift earth dam has been breached and the water elevation has returned to the normal pool elevation. The earth remaining in the spillway channel is considered inconsequential since the next large storm will clear the spillway completely.

d. Reservoir Area

The area surrounding the lake is essentially underdeveloped and densely wooded. The terrain consists of moderately steep to rolling hills with a few homes near the hilltops west of the lake. The lake itself appears relatively pristine and exhibits few signs of human habitation. No sedimentation was observed at the dam, although a light gravel buildup was noted at the mouth of the spillway.

e. Downstream Channel

The channel downstream of the dam is part of a relatively wide valley. The valley is now partly vegetated with marsh growth and thinly forested. The new stream channel to the north is at a higher elevation and joins the valley about 400 feet downstream of the dam. The downstream area is completely uninhabited as far as Pidgeon Hill Road more than 1/2 mile away. There are no homes in the flood plain between the dam and Papakating Creek approximately 9,500 feet downstream.

SECTION 4 - OPERATIONAL PROCEDURES

4.1 PROCEDURES

N.J. No Name Dam No. 58 impounds a recreational lake and was designed to be self-regulating (requiring no manual operational procedures). There is a gated low-level drain, but the controls for the gate valve could not be located and it is extremely unlikely that the drain has been operated since the dam was built. Communication with Mr. Parrot, the owners representative, reveals that the property is being held for development purposes, but no O&M procedures are currently in effect at the dam.

4.2 MAINTENANCE OF DAM

Maintenance at the dam appears to have been completely neglected in recent years. As indicated in paragraph 4.1, no maintenance is performed by the owner, nor does it appear that the dam has ever been properly attended, because there are trees as large as 9 inches in diameter growing out of the embankment and the dam is probably less than 20 years old.

4.3 MAINTENANCE OF OPERATING FACILITIES

There is no maintenance performed on the operational components of this dam. However, it appears as if someone has recently attempted to block the spillway completely by dumping a load of earth in the narrow spillway channel. The makeshift dam has since been breached, and the spillway discharge is clearing the remainder of earth from the channel.

4.4 DESCRIPTION OF ANY WARNING SYSTEM IN EFFECT

There is no warning system in effect at this dam. However, due to its low hazard classfication, isolated location, and the absence of inhabitants in the downstream area, the lack of a warning system is not considered a serious deficiency at this dam.

4.5 EVALUATION OF OPERATIONAL ADEQUACY

As designed, formal regulatory procedures at this dam appear superfluous. However, the lack of embankment and concrete maintenance should be corrected. While the dam's design requires no attendant operational

personnel, the lack of any maintenance or monitoring procedures is considered a serious deficiency that could eventually result in severe problems. The potential for dam-related difficulties is emphasized by the apparently unauthorized attempt to block the spillway and raise the water level in the lake to an elevation dangerously close to the rest of the earthen portion of the dam.

SECTION 5 - HYDRAULIC/HYDROLOGIC

5.1 EVALUATION OF FEATURES

a. Design Data

Based on the criteria in the Recommended Guidelines for Safety Inspection of Dams, a 100-year frequency event was selected as the design storm by the inspection team. Precipitation data were obtained from Technical Paper 40 and NOAA Technical Memorandum NWS Hydro - 35. The inflow to the reservoir for the selected 100-year storm was computed utilizing the HEC-1 computer program. This gave a peak inflow to the reservoir of 1,403 cfs and routing reduced the peak to 1,055 cfs. The spillway has a maximum discharge capacity of approximately 255 cfs before overtopping occurs and therefore can accommodate only 24 percent of the 100-year design flood.

b. Experience Data

There are no data available with respect to the hydraulic performance of this dam.

c. Visual Observations

The spillway appears to function adequately, although its capacity is somewhat limited. The section of the rim of the lake where the spillway is located was found to be more than a foot lower in elevation than the dam. Because this portion of the lake edge is gently sloping, natural terrain, overtopping would have no detrimental effect and about 50 feet of the rim surrounding the concrete weir can function, safely, as an auxiliary spillway outlet.

d. Overtopping Potential

Because the spillway can accommodate only 24 percent of the 100-year design flood, there seems to be a high potential for overtopping at this dam. However, there are no signs or indications that any portion of this earthen dam has ever been overtopped.

e. Drawdown

Assuming that the gate valve to the 24-inch-diameter drain pipe can be located and is operable, it would take about 30 hours to lower the water level to elevation 555.4.

SECTION 6 - STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observation

Although the crest of the dam has a slightly irregular grade, the dam appears to be in a fair overall condition. The change in grade on the downstream slope is uniform along the length of the dam, and the large stone at the toe apparently aids in stabilizing the embankment. No sloughing, cracking, or settlement was observed, and the embankment blends uniformly into the abutment areas. The seepage observed at the downstream toe is attributable to the toe drain and possibly some leakage through the outlet pipe. In either event, it does not appear to be a cause for concern with respect to the structural integrity of the dam.

b. Design and Construction Data

The geometry of the dam, while somewhat unusual, reflects a conservative design approach in that the width of the dam is considerably greater than contemporary standards would require for a dam of such modest height. As previously noted, however, no design or construction data were located, and the internal composition and foundation conditions are unknown. The NJDEP apparently has no dam application or microfilm records regarding this structure.

c. Operating Records

There are no operating records available or data regarding earlier inspections.

d. Post Construction Changes

While nothing could be learned about post construction modifications, it appears quite likely that the dam is presently in its initial configuration, although the crest width is considerably wider than normally dictated by design.

e. Seismic Stability

No Name Dam No. 58 is located in Seismic Zone 1, in which seismic activity is slight, and additional structural loading imparted is generally insignificant. Experience indicates that earthen dams in Zone 1 that are stable under static loading conditions will maintain their structural integrity when subjected to the negligible dynamic loads imposed by the weak seismicity characteristic of this area. This dam is considered to be structurally stable under static loading conditions.

SECTION 7 - ASSESSMENTS/RECOMMENDATIONS/ REMEDIAL ACTIONS

7.1 DAM ASSESSMENT

a. Safety

Subject to the limitations of the Phase I visual inspection, No Name Dam No. 58 is judged to be in fair overall condition. The embankment is constructed of a relatively impermeable fill and is protected by riprap on its upstream face and a stone drain at the downstream toe. Due to its large width to height ratio, the danger of structural instability is considered to be negligible, as is the damage potential from overtopping. The discharge capacity of the spillway is inadequate to accommodate the design flood. However, in view of the lack of downstream hazards, it is recommended that the hazard classification be downgraded to low.

b. Adequacy of Information

Although no records were located, the information gathered for the Phase I inspection is deemed to be adequate regarding the dam's safe operation and structural stability. It is believed that little other engineering information is available.

c. Urgency

While no urgency is attached to the remedial work described below, the owner could undertake the recommended action in order to ensure the continued functioning of the dam and its impoundment.

d. Necessity for Further Study

On the basis of the low hazard classification and general condition of this dam, additional studies are considered unnecessary within the purview of Public Law 92-367.

7.2 RECOMMENDATIONS/REMEDIAL MEASURES

a. Recommendations

It is recommended that the owner undertake the following remedial work:

1. The gate valve for the 24-inch outlet pipe should be located and the control tested to ensure its proper functioning.

2. The silt should be removed from the outlet pipe.

3. The trees and brush should be removed from the embankment, the crest should be regraded, the crest and back slope should be reseeded, and the animal burrows should be filled.

4. The earth in the spillway channel should be removed, the deteriorated concrete repaired, and the undercut portions of the sidewalls refilled.

b. O&M Maintenance and Procedures

In view of the assessment contained herein, no additional procedures other than those previously described and normal maintenance appear to be required. While a downstream warning system is considered unnecessary, the owner should develop a periodic inspection and maintenance program whereby any further deterioration could be noted and corrective measures undertaken. It is further recommended that the low-level drain be opened several times a year to ensure its proper functioning.

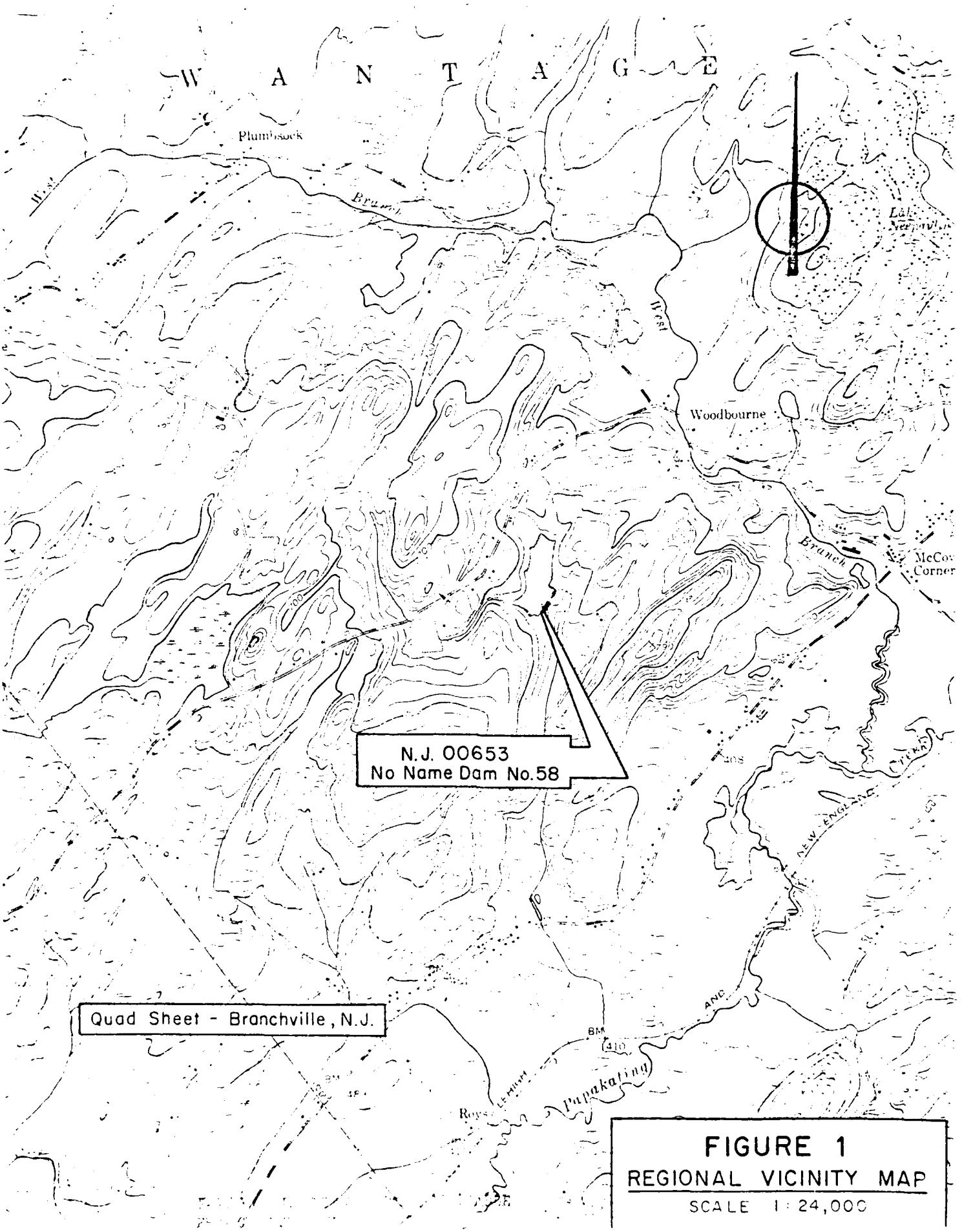
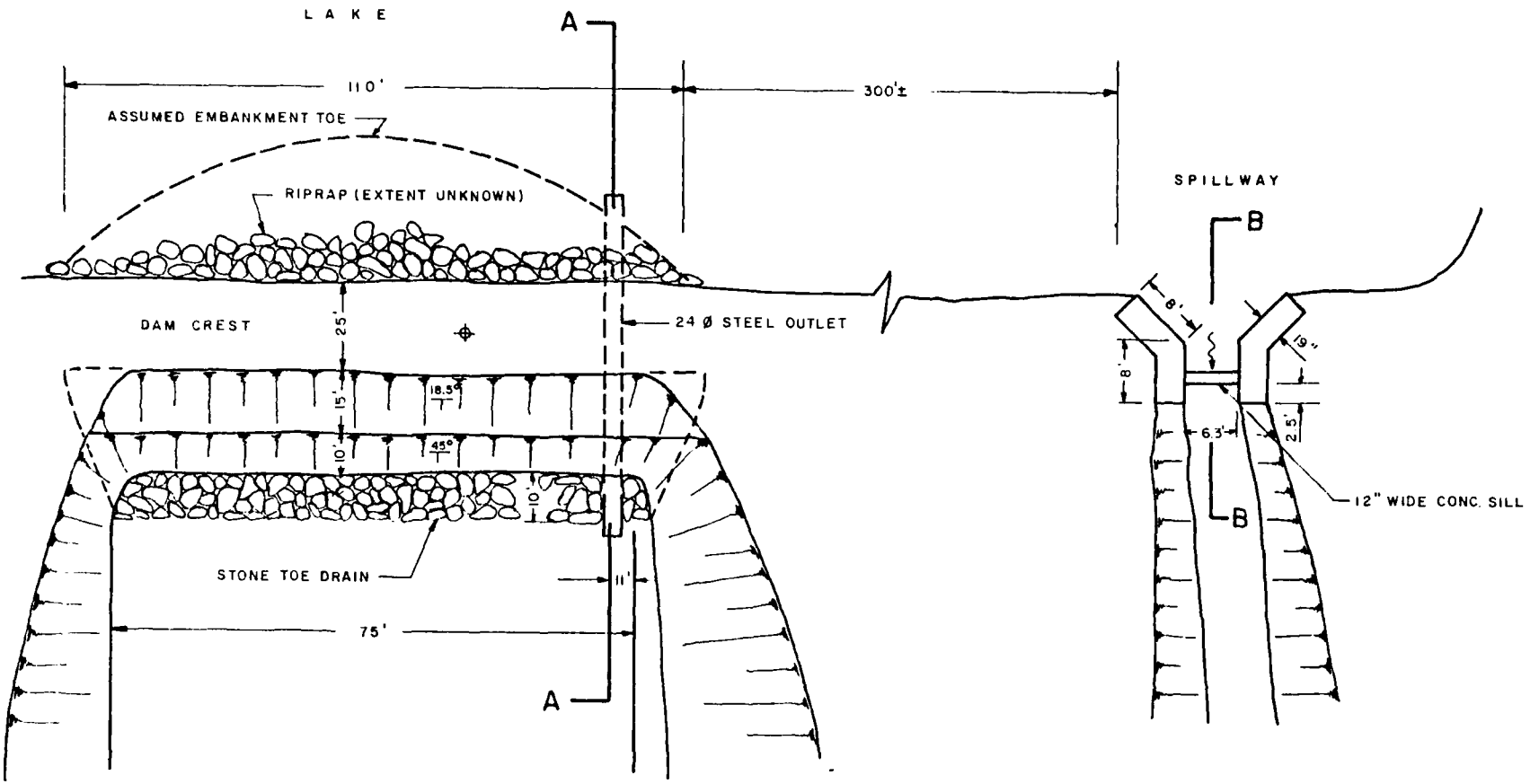


FIGURE 1

REGIONAL VICINITY MAP

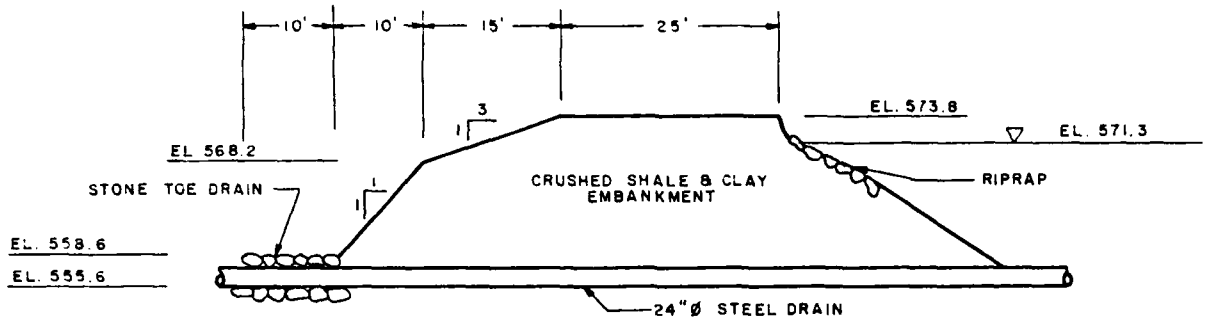
SCALE 1:24,000



PLAN OF DAM AND SPILLWAY

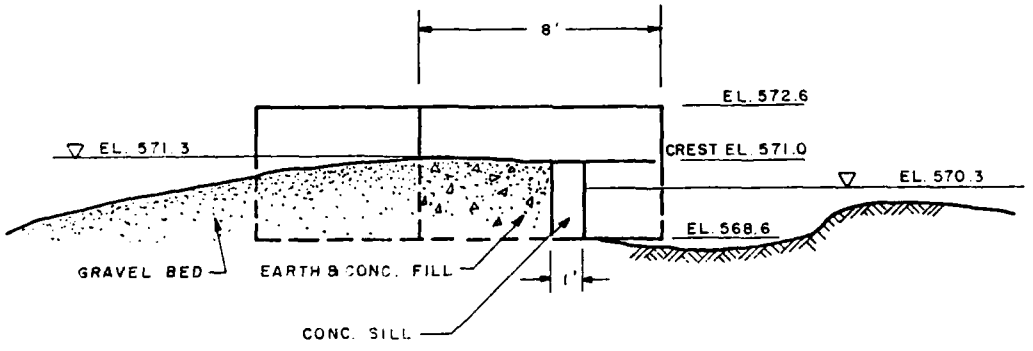
NOT TO SCALE

N. J. NO NAME DAM No. 58
FIGURE 2



DAM SECTION A-A

NOT TO SCALE



SPILLWAY SECTION B-B

NOT TO SCALE

N.J. NO NAME DAM No. 58
FIGURE 3

Check List
Visual Inspection
Phase 1

Name Dam N.J. No Name Dam No. 58 County Sussex State N.J. Coordinators N.J.D.E.P.

Date(s) Inspection March 26, 1981 Weather Clear Temperature 50° F

Pool Elevation at Time of Inspection 571± M.S.L. Tailwater at Time of Inspection 556± M.S.L.

Inspection Personnel:

T. Chapter

A. Perera

J. Moylt N.J.D.E.P.

A. Perera Recorder

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	None observed	
UNUSUAL MOVEMENT OR CRACKING AT OR BEYOND THE TOE	None observed	
SLOUGHING OR EROSION OF EMBANKMENT AND ABUTMENT SLOPES	Footpath along the upstream slope at the water's edge. No sloughing observed but several rodent burrows noted on downstream slope.	Embankment is composed of crushed shale and clay fills. Little grass cover established on the downstream slope but soil appears stable. Rodent burrows should be filled and grass established.
VERTICAL AND HORIZONTAL ALINEMENT OF THE CREST	Horizontal plane of crest is slightly irregular.	Undulations are minor and appear to be of little consequence but crest could be regraded.
RIPRAP FAILURES	Riprap on the upstream face seems reasonably uniform. No failures observed.	

(N)

EMBANKMENT

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
VEGETATION	Entire dam is overgrown with trees (up to 9" diameter) and thickets.	The embankment should be cleared of all undesirable vegetation including trees, brush, thickets, etc.
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM	The embankment grades smoothly into the abutments. Entire rim of the lake is uniform in elevation and geometry along this section of the water's edge.	Spillway is located about 300' north of dam in a slight saddle on the lake's rim.
ANY NOTICEABLE SEEPAGE	Considerable seepage through the downstream stone toe drain. Downstream valley is marshy in nature. Shallow pool of standing water at the foot of the drain.	Water does not appear to be moving and has an iron-rich color, suggesting leakage from the 24"-diameter outlet pipe.
STAFF GAGE AND RECORDER	None	
DRAINS	Stone drain along D/S toe. Stone size up to 18" diameter. Stone bed is at least 10' wide x 3' thick and may also function as a stabilizer for the D/S embankment.	

OUTLET WORKS

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	Not applicable	
INTAKE STRUCTURE	Not applicable	
OUTLET STRUCTURE	24"-diameter steel pipe in good condition although partly filled with silt (∿ 6 inches). Valve may be leaking.	Silt should be removed and valve tested.
OUTLET CHANNEL	Pipe ties into natural valley which was the original channel of the stream. Valley is relatively wide and unobstructed although somewhat overgrown with marsh vegetation.	No constriction to flow.
EMERGENCY GATE	Not observed or located	Controls for gates should be located and tested.

UNGATED SPILLWAY (Located 300' ± North of the Dam)

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	Fair condition. Light spalling on edges of the wingwalls. Slight undercutting of downstream sidewalls. Spillway was filled with earth in attempt to raise water elevation. Earth was breached but weir is still partially blocked.	Concrete deterioration should be repaired and undercut areas refilled. Earth remaining in spillway should be cleared.
APPROACH CHANNEL	Sand and gravel lake bottom between wingwalls. Partially constricted by earth.	Earth should be removed.
DISCHARGE CHANNEL	Clear natural channel.	No constrictions observed
BRIDGE AND PIERS	None	

INSTRUMENTATION

VISUAL EXAMINATION	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	None	
OBSERVATION WELLS	None	
WEIRS	None	
PIEZOMETERS	None	
OTHER		

RESERVOIR

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	Slopes are approximately 6:1, densely wooded, and undeveloped with exception of 6 or 7 homes well uphill on the west side of the lake.	Relatively remote and pristine lake.
SEDIMENTATION	None observed in area of the dam.	

DOWNSTREAM CHANNEL

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)	Approximately 120' wide and flanked by 2:1 slopes for several hundred feet. Lightly wooded and overgrown with brush. Slightly marshy in areas.	
SLOPES	Slopes about 2:1 near dam but flatten several hundred feet downstream.	Right slope appears to be a spoil embankment.
APPROXIMATE NO. OF HOMES AND POPULATION	One home 2600 feet downstream at Pidgeon Hill Road and another 6000 feet downstream near Ross' Corner-Sussex Road. Channel passes under both roads.	Homes are well above and back from the stream channel. Not in the flood plain. Road may be partially flooded but damage would be minimal.

CHECK LIST
ENGINEERING DATA
DESIGN, CONSTRUCTION, OPERATION

ITEM	REMARKS
PLAN OF DAM	Not Available
REGIONAL VICINITY MAP	Available - U.S.G.S. QUADRANGLE - Branchville, N.J.
CONSTRUCTION HISTORY	Not Available
TYPICAL SECTIONS OF DAM	" "
HYDROLOGIC/HYDRAULIC DATA	" "
OUTLETS - PLAN - DETAILS -CONSTRAINTS -DISCHARGE RATINGS	" "
RAINFALL/RESERVOIR RECORDS	" "

ITEM	REMARKS
SPILLWAY PLAN	Not Available
SECTIONS	
DETAILS	
OPERATING EQUIPMENT PLANS & DETAILS	" "

ITEM	REMARKS
DESIGN REPORTS	Not Available
GEOLOGY REPORTS	" "
DESIGN COMPUTATIONS	" "
HYDROLOGY & HYDRAULICS	" "
DAM STABILITY	" "
SEEPAGE STUDIES	" "
MATERIALS INVESTIGATIONS	" "
BORING RECORDS	" "
LABORATORY	" "
FIELD	" "
POST-CONSTRUCTION SURVEYS OF DAM	" "
BORROW SOURCES	" "

ITEM	REMARKS
MONITORING SYSTEMS	Not Available
MODIFICATIONS	" "
HIGH POOL RECORDS	" "
POST CONSTRUCTION ENGINEERING STUDIES AND REPORTS	" "
PRIOR ACCIDENTS OR FAILURE OF DAM	" "
DESCRIPTION	" "
REPORTS	" "
MAINTENANCE	" "
OPERATION	" "
RECORDS	" "

March, 198

View of Dam Crest

March, 198

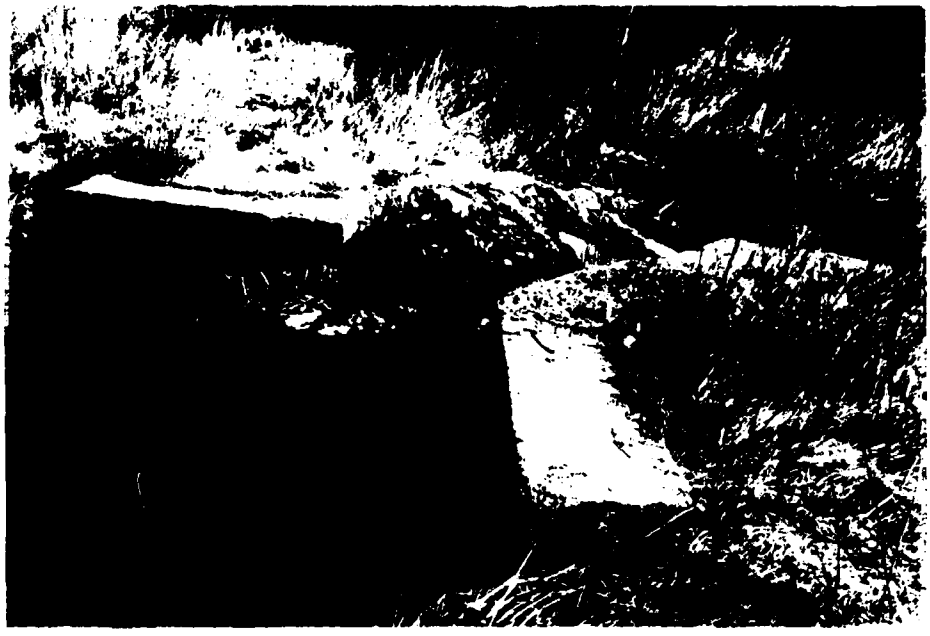
View of Upstream Face of Dam

March , 1981

View of Stone Toe Drain

March , 1981

View of 24" Ø Steel Outlet Pipe



March ,1981

Upstream View of Spillway 300' North of Dam

March , 1981

Downstream View of Spillway

CHECK LIST
HYDROLOGIC AND HYDRAULIC DATA
ENGINEERING DATA

DRAINAGE AREA CHARACTERISTICS: 0.78 sq. mi.

ELEVATION TOP NORMAL POOL (STORAGE CAPACITY): 571 NGVD (122 acre-feet)

ELEVATION TOP FLOOD CONTROL POOL (STORAGE CAPACITY): N/A

ELEVATION MAXIMUM DESIGN POOL: Unknown

ELEVATION TOP DAM: 573.8 NGVD (167 acre-feet)

CREST: Spillway

a. Elevation 571 NGVD
b. Type Concrete Weir
c. Width 1 ft.
d. Length 6.3 ft.
e. Location Spillover 300 ft. north of dam
f. Number and Type of Gates None

OUTLET WORKS: Low-level drain

a. Type 24"-dia. steel pipe - Gate location unknown
b. Location 11' from left abutment
c. Entrance inverts Unknown
d. Exit inverts El.- 555.6
e. Emergency draindown facilities Same

HYDROMETEOROLOGICAL GAGES: None

a. Type
b. Location
c. Records

MAXIMUM NON-DAMAGING DISCHARGE: 255 cfs

BY _____ DATE 12/[illegible]

CHKD. BY _____ DATE _____

SUBJECT _____

LOUIS BERGER & ASSOCIATES INC.

SHEET NO. A-2 OF [illegible]

PROJECT [illegible]

[illegible] tc Time of Concentration Location

Time of concentration:

A = .76 Sq. Mi.

1. Length along watercourse = 4150'

ΔH = 70' Slope = $\frac{70' \times 100}{4150'}$ = 1.7 %

Assume channel velocity of 2 fps ∴ $t_c = \frac{4150'}{3600}$ = [illegible] hrs.

Length of overland flow = 2100

ΔH = 140' Slope = $\frac{140' \times 100}{2100'}$ = 6.7 %

Assume overland velocity of 3 fps ∴ $t_c = \frac{2100}{3 \times 3600}$ = 0.19 hrs.

Total t_c = 0.58 hrs + 0.19 hrs = 0.77 hrs.

2.- California Culverts Method:

$t_c = \left(\frac{11.9 \times 1.15^3}{6250}\right)^{0.385}$ = 0.40 hrs.

t_c overland flow = .19 hrs

t_c Total = .59 hrs.

3.- SCS Method:

Assume C_N for watershed = 61 based on Dutchess Hydrologic Soil Group B - good pasture land

S [illegible] = 3.4 %

L = 6250'

$L = \frac{1900 (S+1)^{0.7}}{1900 \sqrt{S}^{0.5}} = \frac{6250^{0.8} \cdot 7.39^{0.7}}{1900 (3.4)^{0.5}}$ = 1.26 hrs

[illegible] L/0.6 = 2.1 hrs.

Avg [illegible] 1.1 hrs

[illegible] = Computer Model DR (Card 2)

[illegible] = .6 t_c = .6(1.1) = .66 Hrs.

[illegible] = .05 - 6 min = .1 hrs

BY _____ DATE _____ **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A2 OF A-2

CHKD. BY _____ DATE _____ N.J. Rt. 1 Proj. E No. 5E PROJECT C.E. 276

SUBJECT Test Storm: 100 Year Freq.

Precipitation data from TP-40 & NOAA Technical Memorandum NWS Hydro-35

Time	Precip.	Δ	RΔ	Time	Precip.	Δ	RΔ
0.1	.91	.91	.03	3.1	4.30	.05	.91
0.2	1.46	.55	.03	3.2	4.34	.04	.35
0.3	1.81	.35	.03	3.3	4.38	.04	.23
0.4	2.07	.26	.03	3.4	4.41	.03	.17
0.5	2.30	.23	.02	3.5	4.45	.04	.12
0.6	2.46	.16	.03	3.6	4.48	.03	.10
0.7	2.63	.17	.02	3.7	4.52	.04	.09
0.8	2.77	.14	.04	3.8	4.56	.04	.08
0.9	2.89	.12	.03	3.9	4.60	.04	.07
1.0	3.00	.11	.03	4.0	4.63	.03	.06
1.1	3.10	.10	.03	4.1	4.66	.03	.06
1.2	3.20	.10	.04	4.2	4.69	.03	.05
1.3	3.29	.09	.03	4.3	4.72	.03	.05
1.4	3.36	.07	.03	4.4	4.75	.03	.05
1.5	3.44	.08	.04	4.5	4.78	.03	.04
1.6	3.51	.07	.04	4.6	4.82	.04	.05
1.7	3.58	.07	.05	4.7	4.85	.03	.04
1.8	3.65	.07	.05	4.8	4.87	.02	.04
1.9	3.71	.06	.05	4.9	4.90	.03	.04
2.0	3.76	.05	.05	5.0	4.93	.03	.04
2.1	3.82	.06	.05	5.1	4.96	.03	.03
2.2	3.87	.05	.07	5.2	4.98	.02	.03
2.3	3.92	.05	.07	5.3	5.01	.03	.03
2.4	3.97	.05	.07	5.4	5.04	.03	.03
2.5	4.02	.05	.10	5.5	5.06	.02	.03
2.6	4.07	.05	.11	5.6	5.09	.03	.03
2.7	4.12	.05	.14	5.7	5.12	.03	.03
2.8	4.17	.05	.16	5.8	5.15	.03	.02
2.9	4.21	.04	.26	5.9	5.17	.02	.03
3.0	4.25	.04	.55	6.0	5.20	.03	.02

BY _____ DATE 3/31/81

CHKD. BY _____ DATE _____

SUBJECT _____

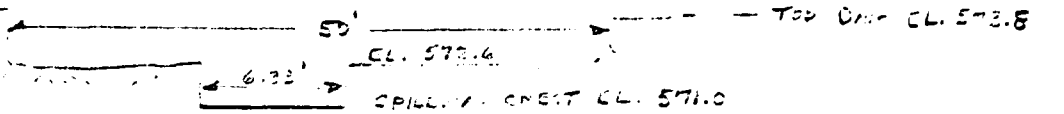
LOUIS BERGER & ASSOCIATES INC.

N. J. [illegible] No 5E

STAGE DISCHARGE CALCULATIONS

SHEET NO. A3 OF [illegible]

PROJECT SC 276



FLOW OVER SPILLWAY CREST
$L = 6'4" = 6.33'$

FLOW OVER 50' SECTION
$L = 50'$

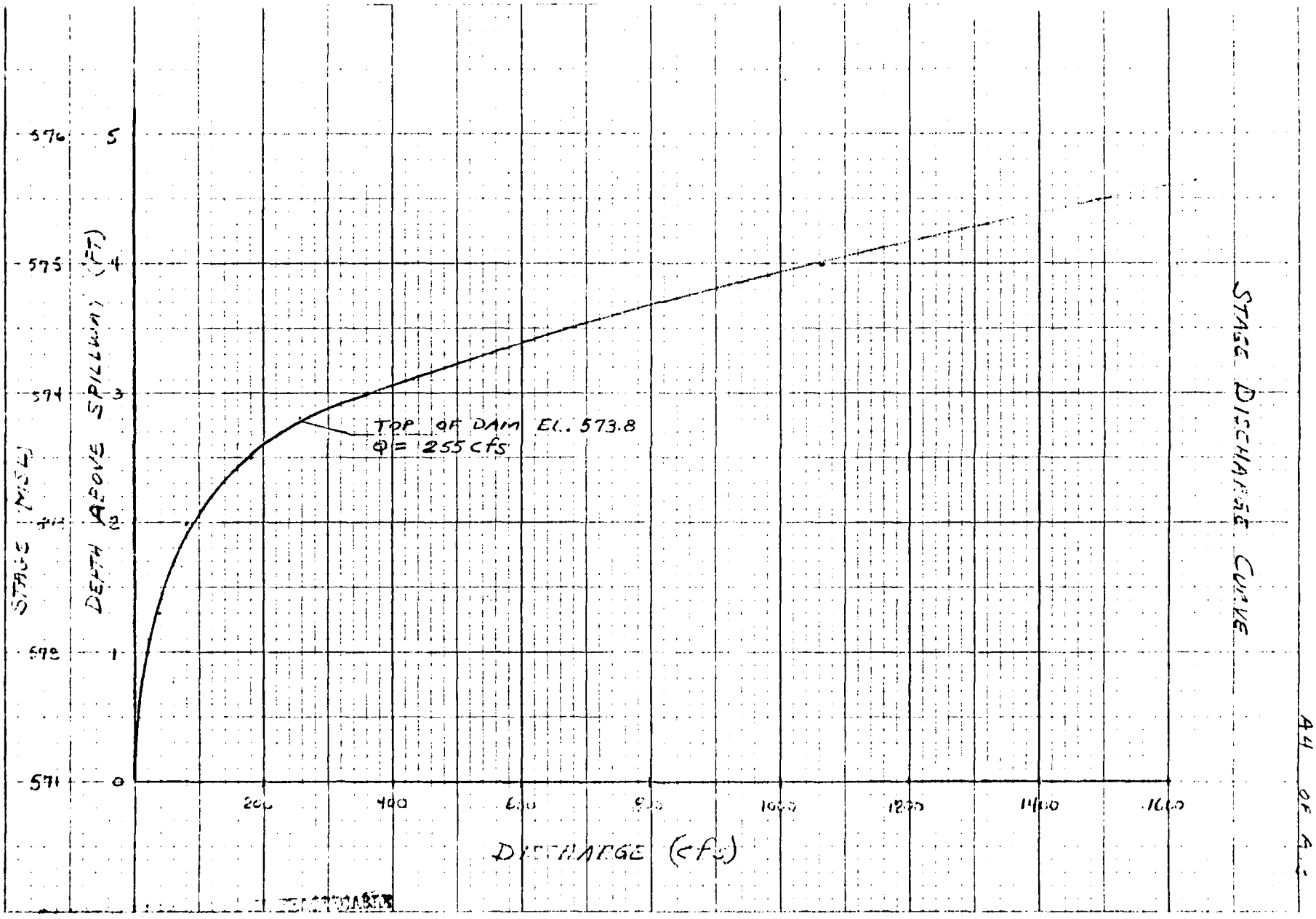
FLOW OVER DAM
$L = 110$

$Q = CLH^{3/2}$

Elev	H	*C	Q	H	*C	Q	H	*C	Q	ΣQ
571.0	0									0
571.5	.5	2.6	6							6
572	1.0	2.7	17							17
572.6	1.6	2.7	35	0						35
573.1	2.1	2.6	47	.4	2.6	33				80
573.6	2.6	2.64	66	.9	2.7	115				181
573.8	2.8	2.64	78	1.2	2.7	177	0			255
574.1	3.1	2.64	87	1.4	2.7	224	.3	2.6	47	358
575	4.0	2.64	133	2.4	2.64	491	1.3	2.7	440	1064
576	5.0	2.64	187	3.4	2.64	829	2.3	2.64	991	2006

* NOTE:

Source of C in Weir Formula $Q = CLH^{3/2}$ is from Handbook of Hydraulics King & Brater, Table 5-3 Pg. 5-46 For a Broad Crested Weir with a Length approximately 10'.


STAGE DISCHARGE CURVE
STAGE (MSL)
DEPTH ABOVE SPILLWAY (FT)
DISCHARGE (cfs)
TOP OF DAM EL. 573.8
Q = 255 cfs
571
572
573
574
575
576
0
1
2
3
4
5
200
400
600
800
1000
1200
1400
1600

BY _____ DATE 12-72

CHKD. BY _____ DATE _____

SUBJECT _____

LOUIS BERGER & ASSOCIATES INC.

SHEET NO. A-5 OF A-5

PROJECT 72-74

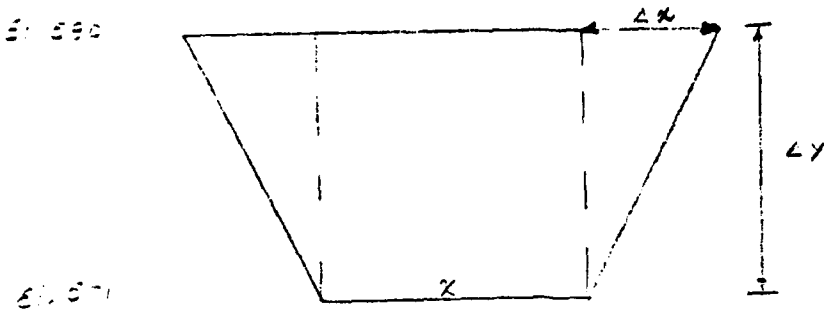
Mt. Holly Dam No. 2

Surcharge Storage

Area of Lake @ el. 571 * = 14.7 ac.

Area at 550' Contour = 27.5 ac.

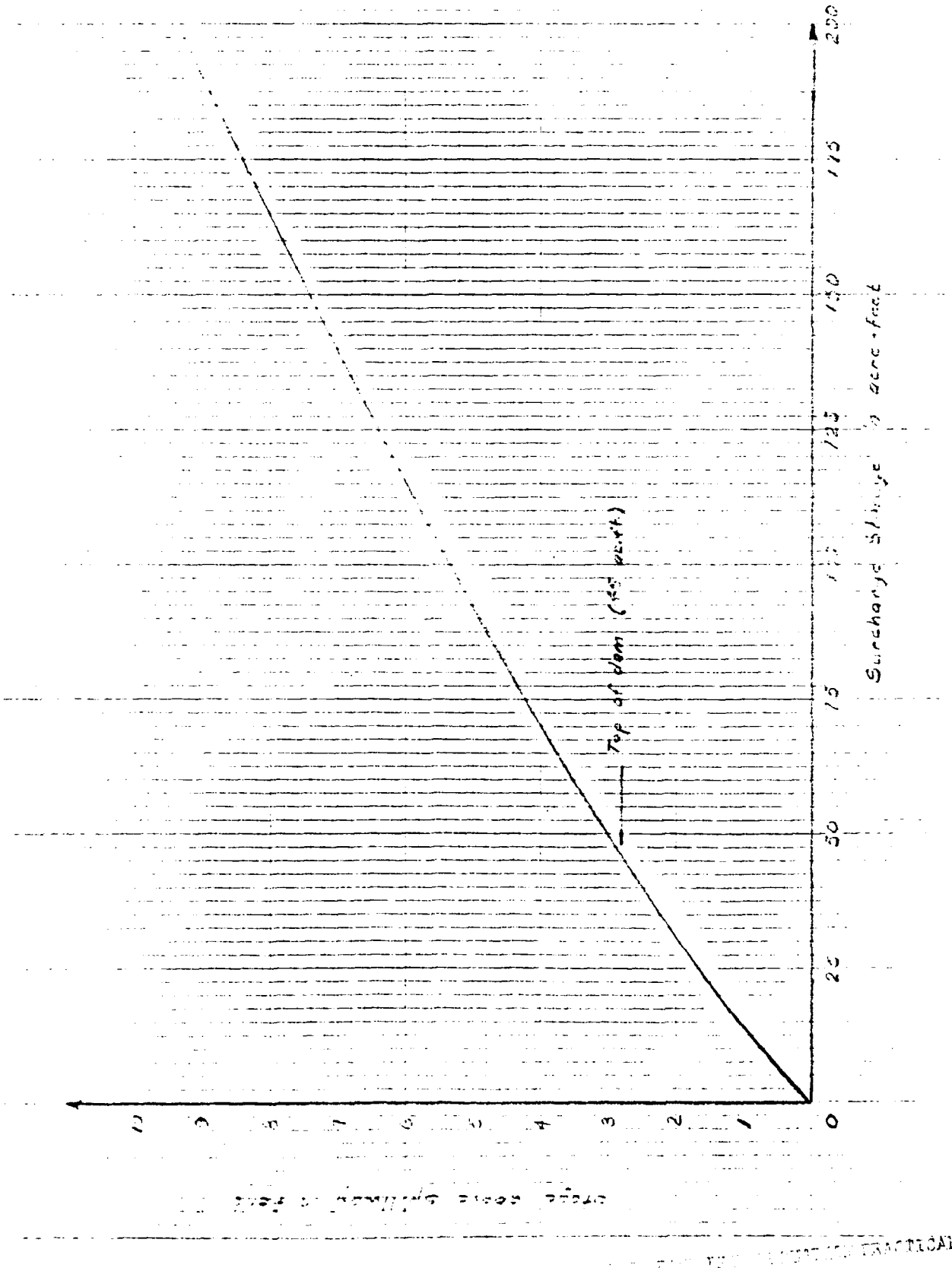
Δ Sur Stor. = $\Delta y (x + \Delta x)$



Elev.	No. 200 Spray (Δy) Ft.	$(x+\Delta x)$ Sq.	Surcharge Storage Ac. Ft.
572	1	15.4	15.4
573	2	16.1	31.5
574	3	16.9	50.4
575	4	17.5	70.0
576	5	18.3	91.5
577	6	19.0	114.0
578	7	19.7	137.9
579	8	20.4	163.2
580	9	21.1	189.9

* El. of lake estimated on basis of slope of original stream course and upstream edge of lake.

NJ No Name Dam No. 58
Stage - Surcharge Storage
Curve



Stage above spillway in feet

IMPRACTICABLE

BY ... DATE ...
CHKD. BY ... DATE ...
SUBJECT ...

LOUIS BERGER & ASSOCIATES INC.

SHEET NO ... OF ...
PROJECT ...

DRAWDOWN PIPE : 24" STEEL PIPE AVG. INV. L = 30'
VOLUME STORAGE TO SPILLWAY CREST

Top DAM EL. 573.6

SPILLWAY CREST ELEV. 571

$\Delta H = 15.6'$ MAX

FRICTION LOSS IN 24" STEEL

Friction loss in pipe = h_f

$h_f = 29.1 (n^2)\left(\frac{L}{r^{4/3}}\right)$; $n = .012$

$h_f = 29.1 (.012)^2 \left(\frac{30}{(.5)^{4/3}}\right) = 0.317$

$Q = C A \sqrt{2gh}$

or $Q = A \sqrt{\frac{2gH}{K_L}}$

$Q = 3.1 A \sqrt{H}$

VOLUME

A = 14.7 EL. 571

H = 9.6 EL. 562

A = 12 EL. 559

AVG. A = 13.5

EL. 555.4

VOL = $\frac{14.7+13.5}{2} \times 15.6$

VOL = 220.6 AC FT

ELEV	H_L	K_e	$f\frac{L}{D}$	K_L	ΣK_L	Q	VOL AC FT	DRAWDOWN TIME
571	15.6	.5	.317	1.0	1.817	74	89.52	17.2
563	7.6	.5	.317	1.0	1.817	52	23.72	6.6
559	3.6	.5	.317	1.0	1.817	35	9.32	6.4
555.4	0					0		

Σ TIME = 30 HRS

1 DAY 6 HRS

$T_{HRS} = \frac{VOL(AC FT) \times 43{,}560 \text{ SQ FT/AC}}{Q_{AVG.} \times 3600 \text{ SEC/HR}}$ HRS

BY _____ DATE _____ **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. A-5 OF _____

CHKD. BY _____ DATE _____ Millham Nash PROJECT _____

SUBJECT HEC-1 Input Summary

Elev MSL	Height Above Spillway Crest	Surface Storage Area (Acres)	Discharge cfs
571	0	14.7	0
571.5	.5		6
572.0	1.0		17
572.5	1.5		35
573.0	2.0		80
573.5	2.5		181
574.0	3.0		358
575.0	4.0		1064
576.0	5.0		2006
581.0		27.5	

BY _____ DATE _____ **LOUIS BERGER & ASSOCIATES INC.** SHEET NO _____ OF _____

CHKD. BY _____ DATE _____ _____ PROJECT _____

SUBJECT _____

```
A1  NO NAME LAKE DAM NO. 58
A2  J. CERAVOLO
A3  MARCH 31, 1981
B     100       0       6       0       0       0       0       0       0       0
B1      3
K       0       1                                       1
K1  INFLOW HYDROGRAPH TO RESERVOIR
M       0       2     .78               .78
O      60
O1    .03     .03     .03     .03     .02     .03     .02     .04     .03     .03
O1    .03     .04     .03     .03     .04     .04     .05     .05     .05     .05
O1    .05     .07     .07     .07     .10     .11     .14     .16     .26     .55
O1    .91     .35     .23     .17     .12     .10     .09     .08     .07     .06
O1    .06     .05     .05     .05     .04     .05     .04     .04     .04     .04
O1    .03     .03     .03     .03     .03     .03     .03     .02     .03     .02
T                                                     0.5     0.1
W2              .66
X       0       0       1
K       1       2                                       1
K1  ROUTED FLOW THROUGH RESERVOIR
Y                               1       1                               -1
Y1      1
Y4    571   571.5     572   572.6     573   573.5   573.7     574     575     576
Y5      0       6      17      35      80     181     230     358    1064    2006
$A   14.7    27.5
$E    571     580
$$    571
$D  573.7
K      99
```

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

RUNOFF HYDROGRAPH AT	1
ROUTE HYDROGRAPH TO	2
END OF NETWORK	

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
100	0	6	0	0	0	0	0	0	0

JOPER	NWT	LROPT	TRACE
3	0	0	0

INFLOW HYDROGRAPH TO RESERVOIR

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

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
0	2	0.78	0.00	0.78	0.00	0.000	0	0	0

PRECIP PATTERN

0.03	0.03	0.03	0.03	0.02	0.03	0.02	0.04	0.03	0.03
0.03	0.04	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.05
0.05	0.07	0.07	0.07	0.10	0.11	0.14	0.16	0.26	0.55
0.91	0.35	0.23	0.17	0.12	0.10	0.09	0.08	0.07	0.06
0.06	0.05	0.05	0.05	0.04	0.05	0.04	0.04	0.04	0.04
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.02

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	0.00	0.00	1.00	0.00	0.00	1.00	0.50	0.10	0.00	0.00

SUB-AREA RUNOFF COMPUTATION

PRECIP DATA

NP	STORM	DAJ	DAK
60	0.00	0.00	0.00

TC= 0.00 LAG= 0.66

RECESSION DATA

STRTQ= 0.00 QRCSN= 0.00 RTIOR= 1.00

UNIT HYDROGRAPH 35 END OF PERIOD ORDINATES, TC= 0.00 HOURS, LAG= 0.66 VOL= 1.00

31.	92	184.	313.	437.	508.	530	517.	468	409
329	249	197.	156.	127.	101.	79	64.	51.	40
32	25	20	16.	13	10.	8.	6.	5.	4.
4	3	2	1.	0					

LOUIS BERGER & ASSOCIATES INC.

BY _____ DATE _____ SHEET NO. _____ OF _____

CHKD. BY _____ DATE _____ PROJECT _____

SUBJECT _____

MO	DA	HR	MN	PERIOD	RAIN	EXCS	LOSS	END-OF-PERIOD FLOW COMP Q
1	01	0	06	1	0.03	0.00	0.03	0.
1	01	0	12	2	0.03	0.00	0.03	0
1	01	0	18	3	0.03	0.00	0.03	0.
1	01	0	24	4	0.03	0.00	0.03	0.
1	01	0	30	5	0.02	0.00	0.02	0.
1	01	0	36	6	0.03	0.00	0.03	0.
1	01	0	42	7	0.02	0.00	0.02	0.
1	01	0	48	8	0.04	0.00	0.04	0
1	01	0	54	9	0.03	0.00	0.03	0.
1	01	1	00	10	0.03	0.00	0.03	0.
1	01	1	06	11	0.03	0.00	0.03	0.
1	01	1	12	12	0.04	0.00	0.04	0.
1	01	1	18	13	0.03	0.00	0.03	0.
1	01	1	24	14	0.03	0.00	0.03	0.
1	01	1	30	15	0.04	0.00	0.04	0.
1	01	1	36	16	0.04	0.00	0.04	0.
1	01	1	42	17	0.05	0.04	0.01	1.
1	01	1	48	18	0.05	0.04	0.01	5.
1	01	1	54	19	0.05	0.04	0.01	12.
1	01	2	00	20	0.05	0.04	0.01	25.
1	01	2	06	21	0.05	0.04	0.01	42.
1	01	2	12	22	0.07	0.06	0.01	63.
1	01	2	18	23	0.07	0.06	0.01	86.
1	01	2	24	24	0.07	0.06	0.01	111.
1	01	2	30	25	0.10	0.09	0.01	137.
1	01	2	36	26	0.11	0.10	0.01	165.
1	01	2	42	27	0.14	0.13	0.01	195.
1	01	2	48	28	0.16	0.15	0.01	231.
1	01	2	54	29	0.26	0.25	0.01	275.
1	01	3	00	30	0.55	0.54	0.01	342.
1	01	3	06	31	0.91	0.90	0.01	452.
1	01	3	12	32	0.35	0.34	0.01	608.
1	01	3	18	33	0.23	0.22	0.01	806.
1	01	3	24	34	0.17	0.16	0.01	1031.
1	01	3	30	35	0.12	0.11	0.01	1227.
1	01	3	36	36	0.10	0.09	0.01	1353.
1	01	3	42	37	0.09	0.08	0.01	1403.
1	01	3	48	38	0.08	0.07	0.01	1385.
1	01	3	54	39	0.07	0.06	0.01	1309.
1	01	4	00	40	0.06	0.05	0.01	1195.
1	01	4	06	41	0.06	0.05	0.01	1054.
1	01	4	12	42	0.05	0.04	0.01	913.
1	01	4	18	43	0.05	0.04	0.01	793.
1	01	4	24	44	0.05	0.04	0.01	690.
1	01	4	30	45	0.04	0.03	0.01	603.
1	01	4	36	46	0.05	0.04	0.01	528.
1	01	4	42	47	0.04	0.03	0.01	463.
1	01	4	48	48	0.04	0.03	0.01	409.
1	01	4	54	49	0.04	0.03	0.01	363.
1	01	5	00	50	0.04	0.03	0.01	325.

MO	DA	HR.	MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1	01	5.	06	51	0.03	0.02	0.01	292
1	01	5	12	52	0.03	0.02	0.01	264
1	01	5	18	53	0.03	0.02	0.01	240
1	01	5.	24	54	0.03	0.02	0.01	219
1	01	5.	30	55	0.03	0.02	0.01	200
1	01	5.	36	56	0.03	0.02	0.01	183
1	01	5	42	57	0.03	0.02	0.01	167
1	01	5.	48	58	0.02	0.01	0.01	154
1	01	5	54	59	0.03	0.02	0.01	143
1	01	6.	00	60	0.02	0.01	0.01	133
1	01	6.	06	61	0.00	0.00	0.00	123
1	01	6.	12	62	0.00	0.00	0.00	113
1	01	6.	18	63	0.00	0.00	0.00	103
1	01	6.	24	64	0.00	0.00	0.00	91
1	01	6.	30	65	0.00	0.00	0.00	78
1	01	6.	36	66	0.00	0.00	0.00	66
1	01	6.	42	67	0.00	0.00	0.00	54
1	01	6.	48	68	0.00	0.00	0.00	44
1	01	6.	54	69	0.00	0.00	0.00	35
1	01	7.	00	70	0.00	0.00	0.00	28
1	01	7.	06	71	0.00	0.00	0.00	22
1	01	7.	12	72	0.00	0.00	0.00	17.
1	01	7.	18	73	0.00	0.00	0.00	14.
1	01	7.	24	74	0.00	0.00	0.00	11
1	01	7.	30	75	0.00	0.00	0.00	9
1	01	7.	36	76	0.00	0.00	0.00	7
1	01	7.	42	77	0.00	0.00	0.00	5
1	01	7.	48	78	0.00	0.00	0.00	4.
1	01	7.	54	79	0.00	0.00	0.00	3
1	01	8.	00	80	0.00	0.00	0.00	3
1	01	8.	06	81	0.00	0.00	0.00	2
1	01	8.	12	82	0.00	0.00	0.00	2
1	01	8.	18	83	0.00	0.00	0.00	1
1	01	8.	24	84	0.00	0.00	0.00	1
1	01	8.	30	85	0.00	0.00	0.00	1
1	01	8.	36	86	0.00	0.00	0.00	1
1	01	8.	42	87	0.00	0.00	0.00	0
1	01	8.	48	88	0.00	0.00	0.00	0
1	01	8.	54	89	0.00	0.00	0.00	0
1	01	9.	00	90	0.00	0.00	0.00	0
1	01	9.	06	91	0.00	0.00	0.00	0
1	01	9.	12	92	0.00	0.00	0.00	0.
1	01	9.	18	93	0.00	0.00	0.00	0
1	01	9.	24	94	0.00	0.00	0.00	0
1	01	9.	30	95	0.00	0.00	0.00	0
1	01	9.	36	96	0.00	0.00	0.00	0
1	01	9.	42	97	0.00	0.00	0.00	0
1	01	9.	48	98	0.00	0.00	0.00	0
1	01	9.	54	99	0.00	0.00	0.00	0
1	01	10.	00	100	0.00	0.00	0.00	0
					SUM	5.20	4.26	0.94	21432.
						(132)	(108)	(24)	(606.95

CFS	1403.	357.	214.	214.	21432.
CMS	40.	10.	6.	6.	607.
INCHES		4.26	4.26	4.26	4.26
mm		108.10	108.20	108.20	108.20
AC-FT		177.	177.	177.	177.
THOUS CU M		218.	218.	218.	218.

ROUTED FLOW THROUGH RESERVOIR

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
2	1	0	0	0	0	1	0	0

ROUTING DATA

GLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
0.0	0.000	0.00	1	1	0	0	0

STAGE	571.00	571.50	572.00	572.60	573.00	573.50	573.70	574.00	575.00
FLOW	0.00	6.00	17.00	35.00	80.00	181.00	230.00	358.00	1064.00
SURFACE AREA=	15.	28.							
CAPACITY=	0.	187.							
ELEVATION=	571.	580.							

CREL	SPWID	COQW	EXPW	ELEVL	COQL	CAREA	EXPL
571.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COQD	EXPD	DAMWID
573.7	0.0	0.0	0.

END-OF-PERIOD HYDROGRAPH ORDINATES

MO. DA	HR. MN	PERIOD	HOURS	INFLOW	OUTFLOW	STORAGE	STAGE
1.01	0.06	1	0.10	0.	0.	0.	571.0
1.01	0.12	2	0.20	0.	0.	0.	571.0
1.01	0.18	3	0.30	0	0.	0.	571.0
1.01	0.24	4	0.40	0	0.	0	571.0
1.01	0.30	5	0.50	0.	0.	0.	571.0
1.01	0.36	6	0.60	0.	0.	0.	571.0
1.01	0.42	7	0.70	0.	0.	0.	571.0
1.01	0.48	8	0.80	0.	0.	0.	571.0
1.01	0.54	9	0.90	0.	0.	0.	571.0
1.01	1.00	10	1.00	0.	0.	0.	571.0
1.01	1.06	11	1.10	0.	0.	0.	571.0
1.01	1.12	12	1.20	0.	0.	0.	571.0
1.01	1.18	13	1.30	0.	0.	0.	571.0
1.01	1.24	14	1.40	0.	0.	0.	571.0
1.01	1.30	15	1.50	0.	0.	0.	571.0
1.01	1.36	16	1.60	0.	0.	0.	571.0
1.01	1.42	17	1.70	1.	0.	0.	571.0
1.01	1.48	18	1.80	5.	0.	0.	571.0
1.01	1.54	19	1.90	12.	0.	0.	571.0
1.01	2.00	20	2.00	25.	0.	0.	571.0
1.01	2.06	21	2.10	42.	0.	1.	571.0
1.01	2.12	22	2.20	63.	1.	1.	571.1
1.01	2.18	23	2.30	86.	1.	2.	571.1
1.01	2.24	24	2.40	111.	2.	2	571.2
1.01	2.30	25	2.50	137.	3.	3	571.2
1.01	2.36	26	2.60	165.	4.	5.	571.3
1.01	2.42	27	2.70	195.	5.	6.	571.4
1.01	2.48	28	2.80	231.	6	8.	571.5
1.01	2.54	29	2.90	275.	9	10.	571.6
1.01	3.00	30	3.00	342.	13	12.	571.8
1.01	3.06	31	3.10	452.	17	15.	572.0
1.01	3.12	32	3.20	608	25.	20.	572.3
1.01	3.18	33	3.30	806.	36.	25.	572.6
1.01	3.24	34	3.40	1031	85	32	573.0

BY _____ DATE _____
CHKD. BY _____ DATE _____
SUBJECT _____

LOUIS BERGER & ASSOCIATES INC.

SHEET NO _____ OF _____
PROJECT _____

BY _____ DATE _____ **LOUIS BERGER & ASSOCIATES INC.** SHEET NO. 112 OF 213

CHKD. BY _____ DATE _____ NJ HD [illegible] TR Dam PROJECT [illegible]

SUBJECT _____ HEC-1 Output

1.01	3.30	35	3.50	1227.	179.	40.	573.5
1.01	3.36	36	3.60	1353.	341.	49.	574.0
1.01	3.42	37	3.70	1403.	611.	56.	574.4
1.01	3.48	38	3.80	1385.	818.	62.	574.7
1.01	3.54	39	3.90	1309.	955.	66.	574.8
1.01	4.00	40	4.00	1195.	1031.	68.	575.0
1.01	4.06	41	4.10	1054.	1055.	69.	575.0
1.01	4.12	42	4.20	913.	1037.	68.	575.0
1.01	4.18	43	4.30	793.	990.	67.	574.9
1.01	4.24	44	4.40	690.	926.	65.	574.8
1.01	4.30	45	4.50	603.	853.	63.	574.7
1.01	4.36	46	4.60	528.	778.	61.	574.6
1.01	4.42	47	4.70	463.	704.	59.	574.5
1.01	4.48	48	4.80	409.	633.	57.	574.4
1.01	4.54	49	4.90	363.	567.	55.	574.3
1.01	5.00	50	5.00	325.	508.	54.	574.2
1.01	5.06	51	5.10	292.	454.	52.	574.1
1.01	5.12	52	5.20	264.	407.	51.	574.1
1.01	5.18	53	5.30	240.	365.	50.	574.0
1.01	5.24	54	5.40	219.	339.	49.	574.0
1.01	5.30	55	5.50	200.	314.	48.	573.9
1.01	5.36	56	5.60	182.	294.	47.	573.9
1.01	5.42	57	5.70	167.	273.	46.	573.8
1.01	5.48	58	5.80	154.	254.	45.	573.8
1.01	5.54	59	5.90	143.	235.	44.	573.7
1.01	6.00	60	6.00	133.	223.	44.	573.7
1.01	6.06	61	6.10	123.	213.	43.	573.6
1.01	6.12	62	6.20	113.	203.	42.	573.6
1.01	6.18	63	6.30	103.	193.	41.	573.5
1.01	6.24	64	6.40	91.	183.	41.	573.5
1.01	6.30	65	6.50	78.	174.	40.	573.5
1.01	6.36	66	6.60	66.	165.	39.	573.4
1.01	6.42	67	6.70	54.	155.	38.	573.4
1.01	6.48	68	6.80	44.	146.	38.	573.3
1.01	6.54	69	6.90	35.	136.	37.	573.3
1.01	7.00	70	7.00	28.	127.	36.	573.2
1.01	7.06	71	7.10	22.	118.	35.	573.2
1.01	7.12	72	7.20	17.	109.	34.	573.1
1.01	7.18	73	7.30	14.	100.	34.	573.1
1.01	7.24	74	7.40	11.	92.	33.	573.1
1.01	7.30	75	7.50	9.	84.	32.	573.0
1.01	7.36	76	7.60	7.	78.	32.	573.0
1.01	7.42	77	7.70	5.	75.	31.	573.0
1.01	7.48	78	7.80	4.	71.	30.	572.9
1.01	7.54	79	7.90	3.	67.	30.	572.9
1.01	8.00	80	8.00	3.	64.	29.	572.9
1.01	8.06	81	8.10	2.	61.	29.	572.8
1.01	8.12	82	8.20	2.	58.	28.	572.8
1.01	8.18	83	8.30	1.	55.	28.	572.8
1.01	8.24	84	8.40	1.	52.	28.	572.7
1.01	8.30	85	8.50	1.	49.	27.	572.7
1.01	8.36	86	8.60	1.	46.	27.	572.7
1.01	8.42	87	8.70	0.	44.	26.	572.7
1.01	8.48	88	8.80	0.	42.	26.	572.7
1.01	8.54	89	8.90	0.	39.	26.	572.6
1.01	9.00	90	9.00	0.	37.	25.	572.6
1.01	9.06	91	9.10	0.	35.	25.	572.6
1.01	9.12	92	9.20	0.	35.	25.	572.5
1.01	9.18	93	9.30	0.	34.	25.	572.5
1.01	9.24	94	9.40	0.	34.	24.	572.5
1.01	9.30	95	9.50	0.	33.	24.	572.5
1.01	9.36	96	9.60	0.	33.	24.	572.5
1.01	9.42	97	9.70	0.	32.	23.	572.5
1.01	9.48	98	9.80	0.	32.	23.	572.5
1.01	9.54	99	9.90	0.	31.	23.	572.5
1.01	10.00	100	10.00	0.	31.	23.	572.5

PEAK OUTFLOW IS	1055.	AT TIME	4.10 HOURS			
CFS	1055.	306.	187.	187.	18698.	
CMS	30	9.	5.	5.	529.	
INCHES		3.65	3.72	3.72	3.72	
MM		92.73	94.40	94.40	94.40	
AC-FT		152.	155	155	155	
THOUS CU M		187	191	191	191	

BY AC DATE 7/11/

CHKD. BY _____ DATE _____

SUBJECT NJ No Name SE Dam
HEC-1 Output Summary

LOUIS BERGER & ASSOCIATES INC.

SHEET NO. A11 OF A13

PROJECT 97-076

RUNOFF SUMMARY, AVERAGE FLOW IN CUBIC FEET PER SECOND (CUBIC METERS PER SECOND)
AREA IN SQUARE MILES(SQUARE KILOMETERS)

HYDROGRAPH AT	1	1403.	357.	214.	214.	0.78
		(39.73)	(10.11)	(6.07)	(6.07)	(2.02)
ROUTED TO	2	1055.	306.	187.	187.	0.78
		(29.88)	(8.67)	(5.29)	(5.29)	(2.02)

SUMMARY OF DAM SAFETY ANALYSIS

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	571.00	571.00	573.70
STORAGE	0.	0.	44.
OUTFLOW	0.	0.	230.

RATIO OF PMF	MAXIMUM RESERVOIR W.S. ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
0.00	574.99	1.29	69.	1055.	2.40	4.10	0.00