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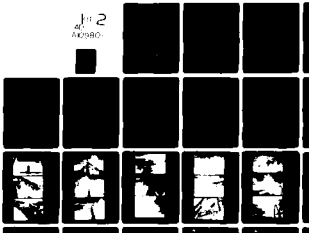

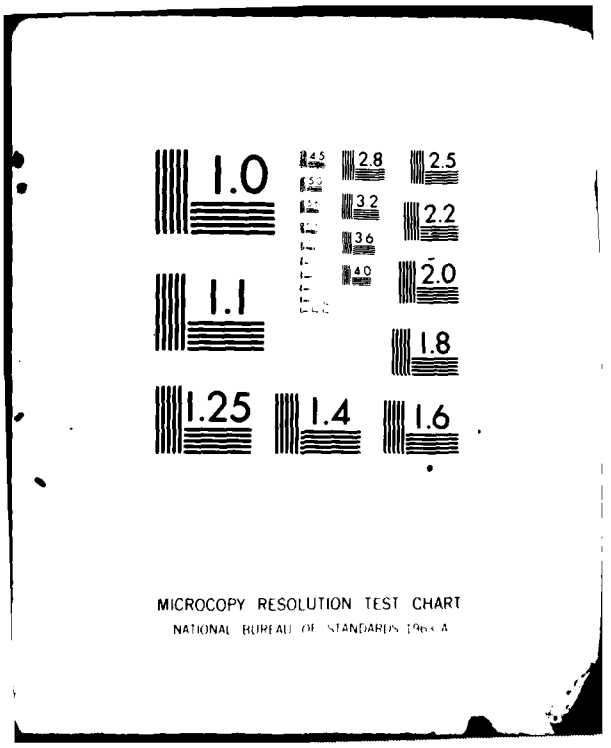
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LAKE CHAMPLAIN BASIN

(3)

CHAZY LAKE DAM

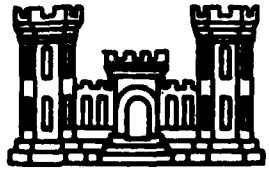
NEW YORK

LEVEL II

INVENTORY No. NY 236

PHASE I INSPECTION REPORT

NATIONAL DAM SAFETY PROGRAM



NEW YORK DISTRICT CORPS OF ENGINEERS

AUGUST 1981

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Chazy Lake Dam
Lake Champlain Basin
Clinton County

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.

The examination of documents and visual inspection of the Chazy Lake Dam did not reveal conditions which constitute an immediate hazard to human life or property. The dam, however, has a number of problem areas which require further investigation and remedial work. → and repair

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The hydrologic/hydraulic analysis indicates the spillway will pass only 4.2 percent of the PMF and 60 percent of the 1/2 PMF. The dam will be overtopped by 1.7 feet and 0.15 feet during the PMF and 1/2 PMF respectively. The depth of water at the downstream hazard will increase from 5 feet to 11.5 feet due to dam break. The roadway at the river crossing will be topped by 1.5 feet. The nearest residence is approximately 300 feet from the bridge and a few feet higher than the road. Therefore, the dam break analysis indicates that failure of the dam during the 1/2 PMF would not significantly increase the downstream hazard from that which would exist just prior to failure of the dam. The spillway capacity, therefore, is assessed as inadequate.

The structural stability analysis indicates unsatisfactory stability would result from loadings which could occur during normal operation of the dam. The analysis specifically indicates marginal or unsatisfactory stability for sliding for all loading conditions investigated. A structural stability investigation should be commenced within 3 months to determine the properties of the existing dam and foundation and the effect of these characteristics on the stability of the dam. Remedial work should be undertaken depending on the results of this investigation and completed within 18 months.

The inspection also disclosed the presence of longitudinal cracks through the top of the core wall, spillway crest and in the abutment walls of the spillway. Investigations should be undertaken to determine the cause of this cracking and remedial work should be undertaken depending on the results of this investigation. This investigation should be commenced within 3 months and the remedial work should be completed within 18 months of this notification.

Wet areas were found to exist beyond the toe of the embankment near the right abutment of the dam and in an area to the right of the spillway. An investigation should be undertaken to determine the source of these wet areas and remedial measures should be taken depending on the results of this investigation. This investigation should be commenced within 3 months and the remedial work should be completed within 18 months of this notification.

PREFACE

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

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

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

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

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APPENDIX

PHASE I INSPECTION REPORT

NATIONAL DAM SAFETY PROGRAM

Name of Dam:	Chazy Lake Dam ID. No. NY 236
State Located:	New York
County:	Clinton
Watershed:	Lake Champlain Basin
Stream:	Great Chazy River
Date of Inspection:	May 22, 1981

ASSESSMENT OF GENERAL CONDITIONS

The examination of documents and visual inspection of the Chazy Lake Dam did not reveal conditions which constitute an immediate hazard to human life or property. The dam, however, has a number of problem areas which require further investigation and remedial work.

The hydrologic/hydraulic analysis indicates the spillway will pass only 4.2 percent of the PMF and 60 percent of the 1/2 PMF. The dam will be overtopped by 1.7 feet and 0.15 feet during the PMF and 1/2 PMF respectively. The depth of water at the downstream hazard will increase from 5 feet to 11.5 feet due to dam break. The roadway at the river crossing will be topped by 1.5 feet. The nearest residence is approximately 300 feet from the bridge and a few feet higher than the road. Therefore, the dam break analysis indicates that failure of the dam during the 1/2 PMF would not significantly increase the downstream hazard from that which would exist just prior to failure of the dam. The spillway capacity, therefore, is assessed as inadequate.

The structural stability analysis indicates unsatisfactory stability would result from loadings which could occur during normal operation of the dam. The analysis specifically indicates marginal or unsatisfactory stability for sliding for all loading conditions investigated. A structural stability investigation should be commenced within 3 months to determine the properties of the existing dam and foundation and the effect of these characteristics on the stability of the dam. Remedial work should be undertaken depending on the results of this investigation and completed within 18 months.

The inspection also disclosed the presence of longitudinal cracks through the top of the core wall, spillway crest and in the abutment walls of the spillway. Investigations should be undertaken to determine the cause of this cracking and remedial work should be undertaken depending on the results of this investigation. This investigation should be commenced within 3 months and the remedial work should be completed within 18 months of this notification.

Wet areas were found to exist beyond the toe of the embankment near the right abutment of the dam and in an area to the right of the spillway. An investigation should be undertaken to determine the source of these wet areas and remedial measures should be taken depending on the results of this investigation. This investigation should be commenced within 3 months and the remedial work should be completed within 18 months of this notification.

The following deficiencies should be corrected with one year:

1. Repair concrete surfaces on the spillway and repair the concrete buttress at the center of the spillway.

2. Replace rubble fill behind the face wall where this material has been displaced.

3. Re-align the facewall section where vertical displacement has taken place.

4. Remove trees and brush from all embankment sections.

5. Replace the slope protection on the upstream face of the core wall section of the embankment.

6. A formalized inspection system should be adopted to develop data on the conditions and maintenance operations of the facility.

7. A flood warning and emergency evacuation plan should be implemented to alert the public should conditions occur which could result in failure of the dam.

Dale Engineering Company

John B. Stetson, President

Approved By: for Richard E. May, Jr.
Col. W. M. Smith, Jr.
Date: New York District Engineer

10 SEP 1981

1. OVERVIEW OF CHAZY LAKE DAM

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
CHAZY LAKE DAM I.D. NO. NY 236
LAKE CHAMPLAIN BASIN
CLINTON COUNTY, NEW YORK

SECTION 1: PROJECT INFORMATION

1.1 GENERAL

a. Authority

Authority for this report is provided by the National Dam Inspection Act, Public Law 92-367 of 1972. It has been prepared in accordance with a contract for professional services between Dale Engineering Company and the U.S. Army Corps of Engineers.

b. Purpose of Inspection

The purpose of this inspection is to evaluate the existing condition of the Chazy Lake Dam and appurtenant structures, owned by the Town of Dannemora, New York, and to determine if the dam constitutes a hazard to human life or property and to transmit findings to the U.S. Army Corps of Engineers.

This Phase I inspection report does not relieve an Owner or Operator of a dam of the legal duties, obligations or liabilities associated with the ownership or operation of the dam. In addition, due to the limited scope of services for these Phase I investigations, the investigators had to rely upon the data furnished to them. Therefore, this investigation is limited to visual inspection, review of data prepared by others, and simplified hydrologic, hydraulic and structural stability evaluations where appropriate. The investigators do not assume responsibility for defects or deficiencies in the dam or in the data provided.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances

The Chazy Lake Dam consists of two separate dike sections separated by a 50 foot length of earth knoll. The left portion (core wall section) of the dam is 1,100 feet long and reaches a maximum height of approximately 18 feet. The crest of the dam is 14 feet wide with the upstream slope 1 vertical to 2 horizontal and the downstream slope 1 vertical to 1-3/4 horizontal. The facility is an earthfill structure with a concrete core wall which extends approximately 8 feet below the natural ground level in the area. The top of the core wall extends to the surface of the embankment and is visible throughout the entire length of the structure. A gatehouse is situated about 290 feet from the left abutment of this section of the dam. The spillway is located approximately 520 feet from the left abutment. The right section of the dam (face wall section) is approximately 1,437 feet long. This portion of the facility consists of a concrete face wall which extends approximately 5 feet into the natural

ground surface. The stem of the wall is 18 inches thick. This face wall was constructed to raise the height of the structure approximately 5 feet above an existing earthen dike. The area behind the face wall is backfilled with rubble fill. The crest width of the rubble fill is approximately 5 feet and the downstream slope of the fill is 1 vertical to 1-1/2 horizontal. The spillway is a 30 foot wide broad-crested weir which discharges on a reinforced concrete apron. A single buttress at the center of the spillway provides structural support to the core wall which forms the spillway section. The gatehouse controls three 36 inch diameter pipes with gates which discharge through a 9 foot wide by 6 foot high reinforced concrete culvert. This culvert is splayed to a width of 18 feet at its discharge end. The gates are operated by mechanical controls situated in the gatehouse at the crest of the dam. A 12 foot high trash rack at the inlet to the discharge pipes prevents debris from entering the area near the gates.

The Town of Dannemora operates a recreational facility in the area between the two sections of the dam. The small earth knoll which separtes the two sections provides access to the water and provides a public beach and a boat dock.

b. Location

The dam is located in the Town of Dannemora, Clinton County, New York. The dam is situated approximately 6.4 miles northwest of Dannemora on N.Y. Route 374.

c. Size Classification

The maximum height of the dam is approximately 18 feet. The volume of the impoundment is approximately 90,000 acre feet. Therefore, the dam is in the large size classification as defined by the Recommended Guidelines for Safety Inspection of Dams.

d. Hazard Classification

Three permanent residences and one mobile home residence are located near the Great Chazy River approximately 2 miles downstream from the facility. Therefore, the dam is in the high hazard classification as defined by the Recommended Guidelines for Safety Inspection of Dams.

e. Ownership

The dam is owned by the Town of Dannemora.

Contact: John Kourofsky, Supervisor
Town of Dannemora
Dannemora New York 12929
Telephone: (518) 492-7541

f. Purpose of the Dam

The dam is used to control the level of Chazy Lake. The prime function of Chazy Lake is for recreational purposes and as a water supply for the Village of Dannemora.

g. Design and Construction History

The original dam at this site is reputed to have been constructed during the late 19th Century. The present facility was constructed from plans dated 1926. No other information is available regarding the design or construction of the facility. The 1926 plans substantially conform to the present configuration of the present facility. No information is available regarding the design or construction history of this dam.

h. Normal Operational Procedures

The water level in Chazy Lake is maintained at the spillway crest elevation during normal run-off conditions. The drainline gates are opened during the winter season to drop the lake level approximately 1 foot in order to minimize ice damage to boat docks on the lake shore. The facility is visited periodically by representatives of the Town of Dannemora who operate a small recreation area near the dam.

1.3 PERTINENT DATA

a. Drainage Area

The drainage area of the Chazy Lake Dam is 22.6 square miles.

b. Discharge at Dam Site

No discharge records are available for this site.

Computed discharges:

Spillway, top of dam	650 cfs
Gated drawdown,*	
water surface at spillway crest	330 cfs
water surface at top of dam	390 cfs

c. Elevation (feet above MSL)

Top of dam	1,545
Spillway crest	1,541
Stream bed at centerline of dam	1,527

d. Reservoir

Length of normal pool	21,000 ft.

* Discharge through three, 3 foot diameter sluice-gated pipes.

e. Storage

Top of dam	90,000 acre feet
Spillway pool	81,700 acre feet

f. Reservoir Area

Top of dam	1,930 acres
Spillway pool	1,818 acres

g. Dam

Type - earth fill
Length - 2,490 feet
Height - 18 feet
Freeboard between normal reservoir and top of dam - 4 feet
Top width - 14 feet
Side slopes- Downstream: 2 horizontal: 1 vertical
Upstream: 1-3/4 horizontal: 1 vertical
Zoning - Earthfill
Impervious core - Concrete extending from top of dam into natural ground
Grout Curtain - None

h. Spillway

Type - Uncontrolled, broad crested
Length - 30 feet
Crest elevation - 1541 feet
Gates - None
U/S Channel - Reservoir
D/S Channel - Natural

i. Regulating Outlets

Three, 3 foot diameter sluice-gated pipes. (Also through water distribution system)

SECTION 2: ENGINEERING DATA

2.1 GEOTECHNICAL DATA

a. Geology

Geologically, Chazy Lake Dam is located in the northeast sector of the Adirondack physiographic province which is part of the Appalachian Highlands, the major physiographic division. The St. Lawrence Valley physiographic province is located to the north and east of the lake. The area had been subjected to glacial activity, scouring and deposition. The lake is located in and is surrounded by glacial drift. Surrounding the glacial deposits and most likely beneath those deposits is the Precambrian Lyon Mountian granite gneiss. No bedrock exposures were seen in the vicinity of the dam.

The lake, which was present prior to construction of the dam, has a reported depth of about 100 feet and most likely was created by glacial scour.

b. Subsurface Investigations

Plans from 1926 indicate that the spillway and dike were to be keyed into natural ground. The 1899 report indicates the natural material of the bed is clay whereas the 1916 report indicates the material is gravel.

2.2 DESIGN RECORDS

No reports were available from the original design of the dam. The available drawings are included in Appendix G.

2.3 CONSTRUCTION RECORDS

No information was available concerning the original construction.

2.4 OPERATIONAL RECORDS

There are no operational records available for this dam.

2.5 EVALUATION OF DATA

The data presented in this report was obtained from the New York State Department of Environmental Conservation, Dam Safety Section. The information available appears to be reliable and adequate for a Phase I inspection report.

SECTION 3: VISUAL INSPECTION

3.1 FINDINGS

a. General

The Chazy Lake Dam was inspected on May 22, 1981. The Dale Engineering Company inspection team was accompanied by John Kourofsky, Supervisor of the Town of Dannemora. During the inspection, the weather was fair. Water level in the impoundment was 1541.25, approximately 3 inches of flow cresting the spillway.

b. Dam

The embankment of the left section of the dam structure is heavily overgrown with trees and brush. Mature trees are situated at the crest and on both slopes of the embankment so as to partially obscure the surface of the ground. The top of the concrete core wall is exposed throughout the entire length of the left section of the dam. Slope protection on the upstream face has deteriorated causing irregularity in the earthen crest elevation. There was no evidence in the field that this irregularity is due to subsidence but rather that it was caused by either general erosion of the crest or that the earthen crest was not constructed to the full height of the top of concrete core wall. The concrete core wall remains in good alignment with no evidence of structural deformation noted in the field. A longitudinal crack down the center of the top of the exposed core wall exists over much of the length of the wall. The cause for this crack is unexplained. Normal forces acting upon such a structure should not result in cracking along the center line of the wall.

The right section of the dam with the concrete face wall is also overgrown with trees and brush on the downstream slope. In many areas, the rubble backfill has been displaced by vandals and is depressed to an elevation 2 to 3 feet below the top of the concrete face wall. The concrete face wall has shown evidence of settlement with some slabs of the wall being depressed 3 to 4 inches below the top of adjacent slabs.

A substantial wet area was detected beyond the toe of slope near the right abutment of the face wall section. This area contained standing water to the depth of 6 to 8 inches and was heavily overgrown with wetland brush and grasses. The dense foiliage in this area precluded close examination to determine whether this was seepage or merely poor drainage beyond the toe of slope. A similar area existed near the right abutment of the core wall section of the dam. In this area, some dumping of debris was found to exist adjacent to the wet area. Rust colored deposits indicative of iron precipitation was found in this area.

c. Spillway

The spillway for the facility is situated in the core wall embankment section. The spillway is 30 feet wide with concrete abutment walls on each side of the spillway retaining the earthfill embankment. There were sizable areas of surface deterioration noted on both wing walls. There was also evidence of cracking longitudinally along the center line of the

wing wall. This cracking again is not explained by the normal forces which would be expected on such a facility. The center buttress which supports the core wall near the center of the spillway also showed some signs of deterioration when viewed through the cascading water.

d. Reservoir Drain

The mechanical equipment, which operates the gates for the reservoir drain, was found to be in operating condition. The representative of the Town of Dannemora who accompanied the inspection team indicated that the gates are operated annually to lower the water surface during the winter months.

e. Reservoir Area

The reservoir area covers approximately 1,800 acres. There are no known areas of slope instability on the reservoir banks.

3.2 EVALUATION

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

1. Longitudinal cracking has taken place along the center of the core wall, spillway crest, and in the abutment walls of the spillway,
2. Wet areas have been detected near the right abutment of the face wall section and to the right of the spillway in the core wall section,
3. Concrete surfaces on the spillway are deteriorated;
4. Rubble fill behind the face wall has been displaced;
5. Vertical displacement of the face wall sections has taken place;
6. The slopes of the embankment sections are heavily overgrown with trees and brush,
7. Slope protection on the core wall section of the embankment has been displaced.

SECTION 4: OPERATION AND MAINTENANCE PROCEDURES

4.1 PROCEDURES

This reservoir facility is used to maintain a level in Chazy Lake consistent with recreational activities in the impoundment and for water supply purposes. The facility is visited periodically by personnel from the Town of Dannemora. During the summer months, the town operates a recreational facility near the center of the dam.

4.2 MAINTENANCE OF THE DAM

Maintenance and operation of the dam is controlled by the Town of Dannemora. Conditions at the site indicate that maintenance activities have been minimal during recent years.

4.3 MAINTENANCE OF OPERATING FACILITIES

The valves controlling the impoundment drain are in operating condition and well maintained.

4.4 DESCRIPTION OF WARNING SYSTEM

No warning system is in effect at present.

4.5 EVALUATION

The following operation and maintenance procedures should be adopted by the Owner:

1. A formalized inspection system should be adopted to develop data on the conditions and maintenance operations at the facility.

2. A flood warning and emergency evacuation plan should be implemented to alert the public should conditions occur which could result in failure of the dam.

3. A program for regular maintenance should be developed and implemented.

SECTION 5: HYDROLOGIC/HYDRAULIC

5.1 DRAINAGE AREA CHARACTERISTICS

The Chazy Dam is located in the Town of Dannemora in the northeast corner of the State of New York. The dam has a drainage area of 22.6 square miles of which 2.85 square miles is comprised of Chazy Lake. The watershed is essentially undeveloped, except for the perimeter of Chazy Lake, and is characterized by steeply sloping hills.

5.2 ANALYSIS CRITERIA

The purpose of this investigation is to evaluate the dam and spillway with respect to their flood control potential and adequacy. This has been assessed through the evaluation of the Probable Maximum Flood (PMF) for the watershed and the subsequent routing of the flood through the reservoir and the dam's spillway system. The PMF event is that hypothetical flow induced by the most critical combination of precipitation, minimum infiltration loss and concentration of run-off of a specific location that is considered reasonably possible for a particular drainage area.

The hydrologic analysis was performed using the unit hydrograph method to develop the flood hydrograph. Due to the limited scope of this Phase I investigation, certain assumptions, based on experience and existing data, were used in this analysis and in the determination of the dam's spillway capacity to pass the PMF. In the event that the dam could not pass 1/2 the Probable Maximum Flood without overtopping, additional analyses are to be performed on potential dam failures if the dam is designated as a High Hazard Classification. This process was done with the concept that, if the dam was unable to satisfy this criteria, further refined hydrologic investigations would be required.

The U.S. Army Corps of Engineers' Hydrologic Engineering Center's Computer Program HEC-1 DB using the Modified Puls Method of flood routing was used to evaluate the dam, spillway capacity, and downstream hazard.

Unit hydrographs were defined by Snyder coefficients, C_t and C_p. Snyder's C_t was estimated to be 2.0 for the drainage area and C_p was estimated to be 0.625.

In this analysis, the reservoir pool was assumed to be at the spillway crest elevation at the start of the storm and outflow through the low level outlet and water transmission system was neglected.

The Probable Maximum Precipitation (PMP) was 15.1 inches according to Hydrometeorological Report (HMR #33) for a 24-hour duration storm, 200 square mile basin, while loss rates were set at 1.0 inches initial abstraction and 0.1 inch/hour continuous loss rate. The loss rate function yielded 82 percent run-off from the PMF. The peak for the PMF inflow hydrograph was 29,128 cfs and the 1/2 PMF inflow peak was 14,564 cfs. The

storage capacity of the reservoir above the spillway reduced these peak flows to 15,322 cfs for the PMF and 1,076 cfs for the 1/2 PMF flow.

5.3 SPILLWAY CAPACITY

The spillway is a broad crested weir with a length of 30 feet and a discharge capacity at the top of dam elevation of 645 cfs.

SPILLWAY CAPACITY

Flood	Peak Discharge	Capacity as % of Flood Discharge
PMF	15,322 cfs	4.2%
1/2 PMF	1,076 cfs	60%

5.4 RESERVOIR CAPACITY

The reservoir storage capacity was obtained from the plans included in Appendix G and USGS mapping. The resulting estimates of the reservoir storage capacity are shown below:

Top of Dam	90,000 Acre Feet
Spillway Crest	81,700 Acre Feet

5.5 FLOODS OF RECORD

There is no information on water levels at the dam site.

5.6 OVERTOPPING POTENTIAL

The HEC-1 DB analysis indicates that the dam will be overtopped as follows:

Flood	Maximum Depth Over Dam
PMF	1.7 Feet
1/2 PMF	0.15 Feet

A dam break analysis was performed to determine the significance of various dam failures on the downstream hazard. This analysis was performed with the 1/2 PMF assuming the spillway section of the dam to fail at the maximum elevation resulting from the 1/2 PMF. The flood elevations, due to various dam failures and the flood elevations that would exist just before the corresponding dam break induced flood wave, are shown below. These flood elevations are compared where the river crosses Plank Road, which is the area of the downstream hazard.

	Flood Elevations @ Plank Road	
	Just Prior to Dam Break	Due to Dam Break
Failure Time = 0.1 hrs.	1460.9	1467.4
Failure Time = 0.3 hrs.	1460.9	1467.4
Failure Time = 0.5 hrs.	1460.9	1467.4

The above elevations were estimated from USGS quad sheets. These elevations are not exact and their significance is in the difference between the elevations for the flood levels with and without the dam failure. The worst of these three cases indicates that the flood depth would increase from about 5 feet to 11.5 feet due to a dam failure. The dam break induced flood wave will overtop Plank Road by about 1.5 feet near the river. The closest residence is about 300 feet from the river in this area and a few feet higher than the road level at the river. Therefore, it is unlikely that the downstream hazard will be significantly increased by a dam failure under 1/2 PMF conditions.

5.7 EVALUATION

The hydrologic/hydraulic analysis establishes the spillway capacity as 4.2% of the Probable Maximum Flood (PMF). The dam will be overtopped by 1.7 feet by the PMF and 0.15 feet under the 1/2 PMF. However, the dam break analysis indicates that failure of the dam under the 1/2 PMF will not significantly increase the downstream hazard to loss of life from that which would exist just prior to the dam failure. Therefore, the spillway is assessed as inadequate according to the Corps of Engineers' screening criteria.

SECTION 6: STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations

The dam structure establishes the northerly boundary of present day Chazy Lake and generally consists of an earthern embankment-concrete core wall section and a concrete faced (lake side) earthern dike section. The embankment core wall section forms the westerly half, approximately, of the dam's total length, and includes the location for the gatehouse and the separate spillway structure. The spillway structure is a 30-foot long buttressed concrete wall with an earthern embankment on the reservoir side. The spillway concrete wall and embankment apparently represent a continuation of the core wall and embankment from the adjacent dam sections.

The field observations indicate the dam retains structural stability. However, the various concrete sections (in the core wall, spillway structure and dike slabs) exhibit various degrees of spalling, cracking and splitting. Erosion of rubble material in the dikes, beneath and behind the concrete slab surfacing, has occurred at some locations. Much of the downstream slope of the earthen embankment portion of the dam is covered with brush and trees, in effect masking some areas, but no indication of embankment sloughing or significant erosion was noted. The upstream embankment zones, completely submerged at the time of the inspection, appear to have some of the riprap cover displaced.

Some ground surfaces adjacent to the downstream toe of the embankment section and dike section have experienced a condition of long-term saturation and presently show some shallow standing water such as the area to the east of the spillway apron and near the easterly limit of the dike section. These areas are lower than the surrounding terrain as well as being lower than the water level in the lake; it could not be ascertained if the condition is the result of surface drainage from the surrounding area or from dam seepage.

b. Design and Construction Data

Drawings included in Appendix G substantially conform to the existing facility. These plans indicate a total dam length of 2,586 feet, including a dike section 1,437 feet long and an earth embankment-concrete core wall section 1,069 feet long. The embankment-concrete core wall section has a maximum height of 30 feet above natural ground with the core wall penetrating 12 feet below original grade, presumably into soil. The upstream and downstream earthen embankments have a slope of approximately 2 horizontal to 1 vertical. The surface of the upstream embankment is provided with a two foot thickness of rubble and crushed stone. The present dike section, which has been increased to the present size over an older dike section by the placement of rubble material, has a maximum height of 9 feet above natural grade. The vertical concrete face slab protecting the dike's downstream surface penetrates 5 feet below the original ground. The downstream surface of the dike has a slope of 1.5 horizontal to 1 vertical.

The crest of the 30 foot long buttressed spillway is 4 feet below the top of the dam. The concrete abutments/training walls for the spillway extend a slight distance downstream to establish the side limits of the spillways concrete apron.

No information regarding structural stability studies for the spillway structure or embankment and dike sections have been made available. In regard to the dam's natural ground foundation, conflicting data exists: Dam report information dated 1899 indicates clay soils, whereas information dated 1916 indicates a foundation of gravel soil beaneath the spillway.

c. Operating Records

No operating records for the facility are available.

d. Post Construction Changes

There are no indications or documentation of significant post-construction changes.

e. Seismic Stability

No known faults exist in the immediate vicinity of the dam. A probable fault trending northwest could be located along the shoreline on the western side of the lake. Such a fault, not yet substantiated, would have a strike length of at least 12 miles.

The area is located within Zone 3 of the Seismic Probability Map. Dozens of earthquakes have been recorded within a radius of 9 miles from the dam site. Many of them having an intensity of IV or more on the Modified Mercalli scale. The earthquake closest to the dam, about one mile distant, occurred in 1943 and had an intensity of IV. Earthquakes of intensity VI occurred in 1934 and 1942. Several dozen earthquakes, many with intensities of IV-V, occurred during the 1970's. The most severe earthquake on record occurred in 1877 and had an intensity of VII.

6.2 STRUCTURAL STABILITY ANALYSIS

Drawings available for review show the plan alignment for the dam and cross sections for the spillway, embankment and dike sections. The available material does not include data on the engineering properties of the foundation and constructed sections, nor stability analysis.

The spillway structure represents a modification to the embankment-core wall section of the dam, consisting of an upstream embankment and core wall buttressed for reinforcement but no downstream embankment zone. Structurally, the spillway is not a gravity section (dam). For this study, a stability evaluation of the spillway has been made. Actual

properties of the spillway materials and foundation were not determined as part of this study; where information on properties was necessary, but lacking, assumptions felt to be practical were made. The stability computations assumed a cross section based upon dimensions indicated by the plans included in this report. It should be considered that, in areas where deterioration or loss of section has occurred, the section dimensions would be less than indicated by the plans; such occurrences could have some adverse effect on stability. Since the spillway section is not a gravity section, stability analysis conventional to gravity structures would not apply. The procedure utilized for evaluating the stability of this project's spillway is based upon an adaptation of the method used for studying thin-section retaining walls and bulkhead structures.

The loading conditions considered in the stability evaluation include: (1) normal summer-type operation with the lake level at the spillway crest; (2) winter conditions, with the lake level drawn down below the spillway crest but with an ice loading in effect; (3) lake level at the 1/2 PMF elevation; (4) lake level at the PMF level.

The results of the analysis (tabulated below) indicate stability against overturning is retained for all conditions studied, but that marginal or inadequate stability against sliding exists for all cases studied. The condition of seismic effects, in addition to the normal summer loading, would indicate similar stabilities (adequate against overturning, inadequate against sliding). The stability computations are presented in Appendix E.

RESULTS OF STABILITY COMPUTATIONS
DAM SPILLWAY

	Loading Condition	Factor of Safety Against Overturning	Factor of Safety Against Sliding
1.	Lake level at spillway elevation, no ice effects	4.30	1.10
2.	Lake level drawn down below spillway crest, 7.5 kips per lineal foot-acting ice load	2.66	0.90
3.	Lake level at 1/2 PMF elevation	3.95	0.90
4.	Lake level at PMF elevation	3.65	0.83

The type of soil comprising the embankment and foundation zones, and the soil properties, have significant effect on the structural stability of the spillway. Available information concerning the characteristics of these soils is indefinite. Properties applicable to cohesionless soils were assumed in the analysis. If the soils possess cohesion, the spillway's ability to resist overturning and sliding could be different than indicated by the above tabulation.

The analysis indicates marginal to inadequate resistance to sliding for the normal summer operation loading condition and a winter condition which includes the effects of ice. The spillway structure presumably has been subject to these loading conditions for a number of years without complete failure; however, the spillway's concrete wall and abutment sections have experienced an unusual type of cracking/splitting (e.g., vertical cracks parallel to the longitudinal axis of the dam have developed in the spillway wall) which may be related to inadequate structural resistance and a resulting lateral movement.

In considering the effects of winter conditions on the stability of the spillway, ice forces may be less than assumed in the analysis when the reservoir level is a sufficient depth below the spillway crest so to act against the sloping embankment. It was noted that the top of the upstream embankment is below the spillway crest. Concerning the effect of ice forces, benefit could result if riprap were placed to raise the embankment to the level of the spillway crest. It has also been experienced that where a reservoir continuously flows over a spillway ice does not form against that spillway.

Further studies are recommended to more adequately evaluate the stability of the spillway structure. The additional investigation should include determination of the type and properties of the embankment and foundation soils. The condition of the concrete wall and abutment sections similarly requires investigation to evauluate the effects of the cracking discussed previously.

Various sections of the dike structure have had the riprap and rubble material which provide backing to the concrete face slab lost through erosive or other forces. It appears that there has been no significant effect on the structural stability of the dikes. However, the missing material should be replaced to prevent progressive deterioration of the dike section and to insure that structural stability is retained.

The suspected dam seepage indicated for the area near the spillway and in the vicinity of the easterly limit of the diked section does not appear to be having a structural effect on the dam. It is recommended that those areas of low elevation, where surface water and/or seepage do stagnate, be filled and graded to prevent the occurrence of standing water. These areas could then more easily be monitored for continuing signs of ground water seepage. Locations of suspected seepage should be kept under scrutiny, because seepage conditions can change (worsen) and lead to problems with stability and reservoir retention.

SECTION 7: ASSESSMENT/REMEDIAL MEASURES

7.1 DAM ASSESSMENT

a. Safety

The Phase I inspection of the Chazy Lake Dam did not indicate conditions which constitute an immediate hazard to life or property.

The hydrologic/hydraulic analysis indicates that the spillway will pass only 4.2 percent of the PMF and 60 percent of the 1/2 PMF. The dam will be overtopped by 1.7 feet and 0.15 feet during the PMF and 1/2 PMF, respectively. The depth of water at the downstream hazard will increase from 5 feet to 11.5 feet due to a failure of the spillway. The roadway at the river crossing will be topped by 1.5 feet. The nearest residence is approximately 300 feet from the bridge and a few feet higher than the road. Failure of the dam during the 1/2 PMF would not significantly increase the downstream hazard from that which would exist just prior to the failure of the dam. The spillway capacity, therefore, is assessed as inadequate.

The stability analysis indicates marginal or unsatisfactory stability for sliding under all loading conditions investigated.

The following specific safety assessments are based on the Phase I visual examination, analysis of hydrology/hydraulics and structural stability analysis:

1. Longitudinal cracking has taken place along the center of the core wall, spillway crest, and in the abutment walls of the spillway.

2. Wet areas have been detected near the right abutment of the face wall section and to the right of the spillway in the core wall section.

3. Concrete surfaces on the spillway are deteriorated.

4. Rubble fill behind the face wall has been displaced.

5. Vertical displacement of the face wall sections has taken place.

6. The slopes of the embankment sections are heavily overgrown with trees and brush.

7. Slope protection on the core wall section of the embankment has been displaced.

8. No formalized inspection system is currently in effect.

9. No warning system is presently in effect to alert the public should conditions occur which could result in failure of the dam.

b. Adequacy of Information

The information available is adequate for the Phase I investigation.

c. Urgency

The items set forth in the safety assessment should be addressed by the Owner and appropriate improvements and repairs performed within 18 months of this notification. The recommended investigations should begin within 3 months.

d. Need for Additional Investigation

Further investigations relative to the structural stability of the structure should be performed to determine the appropriate measures necessary to provide stability under all loading conditions. Investigations should also be undertaken to determine the source of the wet areas beyond the toe of the embankment near the right abutment and to the right of the spillway section. Investigations to determine the cause of longitudinal cracking through the top of the core wall, spillway crest, and in the abutment walls of the spillway should be conducted. Appropriate remedial measures should be taken depending on the results of these investigations.

7.2 RECOMMENDED MEASURES

The following is a list of recommended measures to be undertaken to insure safety of the facility.

1. Repair concrete surfaces on the spillway and repair the concrete buttress at the center of the spillway.

2. Replace rubble fill behind the face wall where this material has been displaced.

3. Re-align the face wall section where vertical displacement has taken place.

4. Remove trees and brush from all embankment sections.

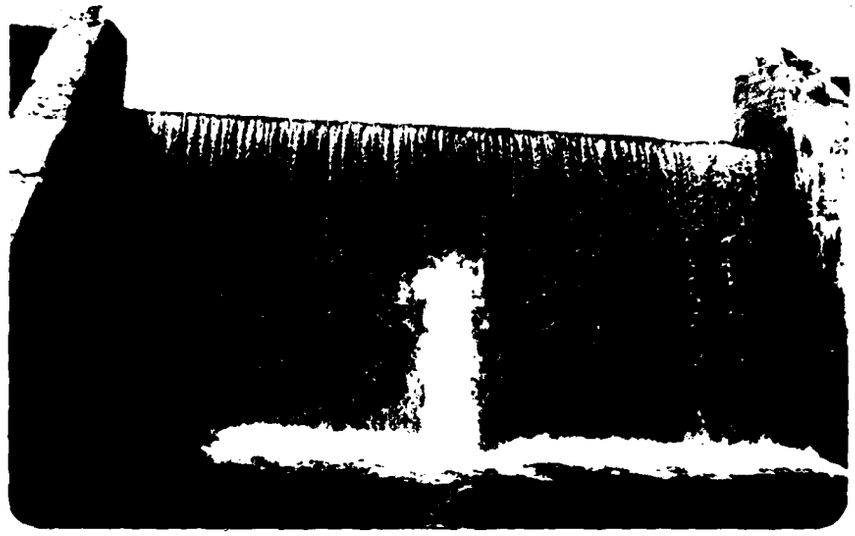
5. Replace the slope protection on the upstream face of the core wall section of the embankment.

6. A formalized inspection system should be adopted to develop data on the conditions and maintenance operations of the facility.

7. A flood warning and emergency evacuation plan should be implemented to alert the public should conditions occur which could result in failure of the dam.

APPENDIX A

PHOTOGRAPHS



2. PRINCIPAL SPILLWAY. TOP PORTION OF CENTER BUTTRESS IS DETERIORATED

3. SPILLWAY ABUTMENT WALLS
NOTE: DETERIORATED CONCRETE SURFACES

4. CLOSE-UP OF LONGITUDINAL CRACK ON LEFT ABUTMENT OF SPILLWAY

5. VIEW TOWARDS LEFT ABUTMENT OF CORE WALL SECTION. GATEHOUSE CONTROLS RESERVOIR DRAIN.

6. CORE WALL SECTION *NOTE: LONGITUDINAL* CRACK ALONG CENTER OF EXPOSED CORE WALL

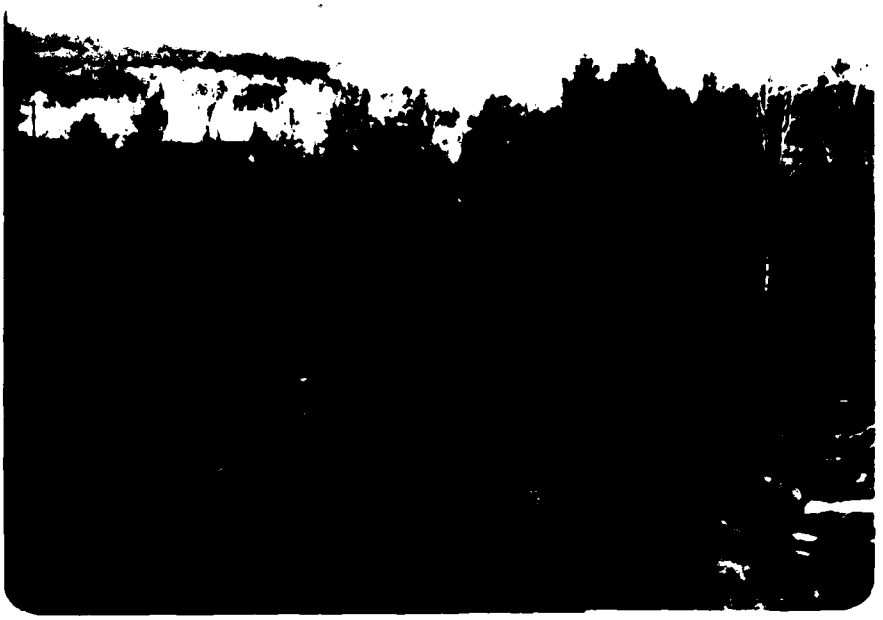
7. VIEW FROM RIGHT ABUTMENT OF CORE WALL SECTION. GRASSED AREA IS PART OF TOWN PARK

8. VIEW TOWARD LEFT ABUTMENT OF FACE WALL SECTION.
NOTE: BOAT DOCK IN BACKGROUND, PARKING LOT TO RIGHT

9. VIEW TOWARD RIGHT ABUTMENT OF FACE WALL SECTION

10. FACE WALL SECTION

NOTE: DISPLACEMENT OF FACE WALL SLABS AND RUBBLE BACKFILL



11. WET AREA BEYOND TOE OF SPILLWAY IN CORE WALL SECTION
NOTE: DUMPED DEBRIS

12. CLOSE-UP OF 11

13. CLOSE-UP OF AREA DEPICTED IN 11 SHOWING RUST-COLORED DEPOSITS

14. WET AREA BEYOND TOE OF FACE WALL SECTION TOWARD RIGHT ABUTMENT

15. DOWNSTREAM HAZARD. BRIDGE OVER RECEIVING STREAM IN BACKGROUND

16. OPERATING MECHANISM IN GATE HOUSE

APPENDIX B

VISUAL INSPECTION CHECKLIST

3-15-3(9/80)

VISUAL INSPECTION CHECKLIST

1) Basic Data

a. General

Name of Dam CHAZY LAKE DAM

Fed. I.D. # NY 236 DEC Dam No. _____

River Basin LAKE CHAMPLAIN

Location: Town DANNEMORA County CLINTON

Stream Name GREAT CHAZY RIVER

Tributary of LAKE CHAMPLAIN

Latitude (N) 44 - 46.3 Longitude (W) 73 - 48.5

Type of Dam EARTH FILL

Hazard Category HIGH

Date(s) of Inspection MAY 22, 1981

Weather Conditions FAIR

Reservoir Level at Time of Inspection 1541.75± (3 inches OVERTOP SPILLWAY)

b. Inspection Personnel F.W. BUSZEWSKI, J.A. GOMEZ, D.F. McCARTHY, H. MUSKATT. — DALE ENGINEERING CO J. KOUROFSKY - SUPERVISOR, TOWN OF DANNEMORA.

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

JOHN KOUROFSKY, SUPERVISOR

TOWN OF DANNEMORA TELEPHONE - 518 - 492-7541

DANNEMORA N.Y 12929

d. History:

Date Constructed ABOUT 1900 Date(s) Reconstructed 1926

Designer Mc INTOSH & CRANDALL

Constructed By UNKNOWN

Owner TOWN OF DANNEMORA

2) Embankment

a. Characteristics

(1) Embankment Material EARTH FILL - LEFT PORTION
RUBBLE FILL - RIGHT PORTION

(2) Cutoff Type CONCRETE CORE WALL

(3) Impervious Core CONCRETE CORE WALL

(4) Internal Drainage System NONE

(5) Miscellaneous CONCRETE FACE WALL ON 1437 ft. OF RIGHT SIDE OF DAM

b. Crest

(1) Vertical Alignment EARTHFILL IS NOT UNIFORM
CORE WALL GOOD ALIGNMENT, RUBBLE FILL DISPLACED IN SMALL AREAS.

(2) Horizontal Alignment GOOD NO MOVEMENT DETECTED
SOME SECTIONS OF FACE WALL MISALIGNED VERTICALLY

(3) Surface Cracks NONE NOTED IN EARTH SECTION
CRACK LONGITUDINALLY ALONG CENTER OF CORE WALL

(4) Miscellaneous

c. Upstream Slope

(1) Slope (Estimate) (V:H) 1:2

(2) Undesirable Growth or Debris, Animal Burrows MATURE TREES
AT TOP OF SLOPE

(3) Sloughing, Subsidence or Depressions SOME DISPLACEMENT
OF EARTH AT UPSTREAM FACE OF EMBANKMENT.
DISPLACEMENT OF RUBBLE AT UPSTREAM FACE OF
CONCRETE FACE WALL

(4) Slope Protection DISPLACED (SEE 3 ABOVE)

(5) Surface Cracks or Movement at Toe NO OBSERVATION

d. Downstream Slope

(1) Slope (Estimate - V:H) 1:2

(2) Undesirable Growth or Debris, Animal Burrows MATURE TREE GROWTH

(3) Sloughing, Subsidence or Depressions DEPRESSIONS IN RUBBLE FILL AT FACE WALL

(4) Surface Cracks or Movement at Toe NONE OBSERVED

(5) Seepage POSSIBLE SEEPAGE AT OR BEYOND TOE AT RIGHT OF SPILLWAY ! NEAR RIGHT ABUTMENT.

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

(7) Condition Around Outlet Structure CHANNEL IS FREE SOME PONDED WATER TO RIGHT OF SPILLWAY.

(8) Seepage Beyond Toe SEE (5) ABOVE

e. Abutments - Embankment Contact

NO SEEPAGE AT LEFT ABUTMENT POSSIBLE SEEPAGE AT RIGHT ABUTMENT.

(1) Erosion at Contact NONE OBSERVED.

(2) Seepage Along Contact SEE d.5 Above

3) Drainage System

a. Description of System NONE

b. Condition of System ~

c. Discharge from Drainage System ~

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

NONE

5) Reservoir

a. Slopes NO KNOWN AREAS OF SLOPE INSTABILITY.

b. Sedimentation NO KNOWN AREAS OF EXCESSIVE SEDIMENTATION

c. Unusual Conditions Which Affect Dam NONE

6) Area Downstream of Dam

a. Downstream Hazard (No. of Homes, Highways, etc.) 2 RESIDENCES + 1 TRAILER HOME APPROX 2 MILES DOWNSTREAM

b. Seepage, Unusual Growth 2 AREAS OF SEEPAGE (POSSIBLE) 1) TO RT OF SPILLWAY 2.) NEAR RT ABUTMENT

c. Evidence of Movement Beyond Toe of Dam NONE OBSERVED

d. Condition of Downstream Channel OPEN - HEAVY ALDER GROWTH.

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

30 FT. WIDE BROAD CRESTED WIER

a. General CONCRETE SURFACES DETERIORATED. SOME RE-BARS EXPOSED.

b. Condition of Service Spillway IN OPERATING CONDITION SOME CONCRETE CRACKING. NO DISPLACEMENT OF ELEMENTS. CRACKING NOTED LONGITUDINALLY IN CENTER OF ELEMENTS.

c. Condition of Auxiliary Spillway NO AUXILLARY SPILLWAY

d. Condition of Discharge Conveyance Channel OPEN FREE FLOWING NO EVIDENCE OF RECENT EROSION.

8) Reservoir Drain/Outlet

Type: Pipe ✓ Conduit _____ Other _____

Material: Concrete _____ Metal ? Other _____

Size: 3-36" PIPES Length 6x9 CONCRETE 68' LONG (SEE PLANS)

Invert Elevations: Entrance 93.5 (1528.5) Exit 82.5 (1522.5)

Physical Condition (Describe): Unobservable ✓

Material: _____

Joints: _____ Alignment GOOD

Structural Integrity: NO SIGNS OF STRUCTURAL DAMAGE OR DISTRESS.

Hydraulic Capability: TO BE COMPUTED

Means of Control: Gate N/A Valve ✓ Uncontrolled _____

Operation: Operable ✓ Inoperable _____ Other _____

Present Condition (Describe): OPERATED ANNUALLY TO DROP LAKE LEVEL DURING WINTER MONTHS.

9) Structural

a. Concrete Surfaces _____

b. Structural Cracking LONGITUDINAL CRACK IN CENTER OF EXPOSED TOP OF CORE WALL.

c. Movement - Horizontal & Vertical Alignment (Settlement) NONE OBSERVED ON CORE WALL SOME SETTLEMENT 4-6" AT TOP OF FACE WALL

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 ~ TRASH RACKS ON INLET OF CONTROL STRUCTURE IN GOOD CONDITION AS VIEWED THROUGH THE WATER.

o. Stability ~

p. Miscellaneous ~

93-15-3(9/80)

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

a. Description and Condition NONE

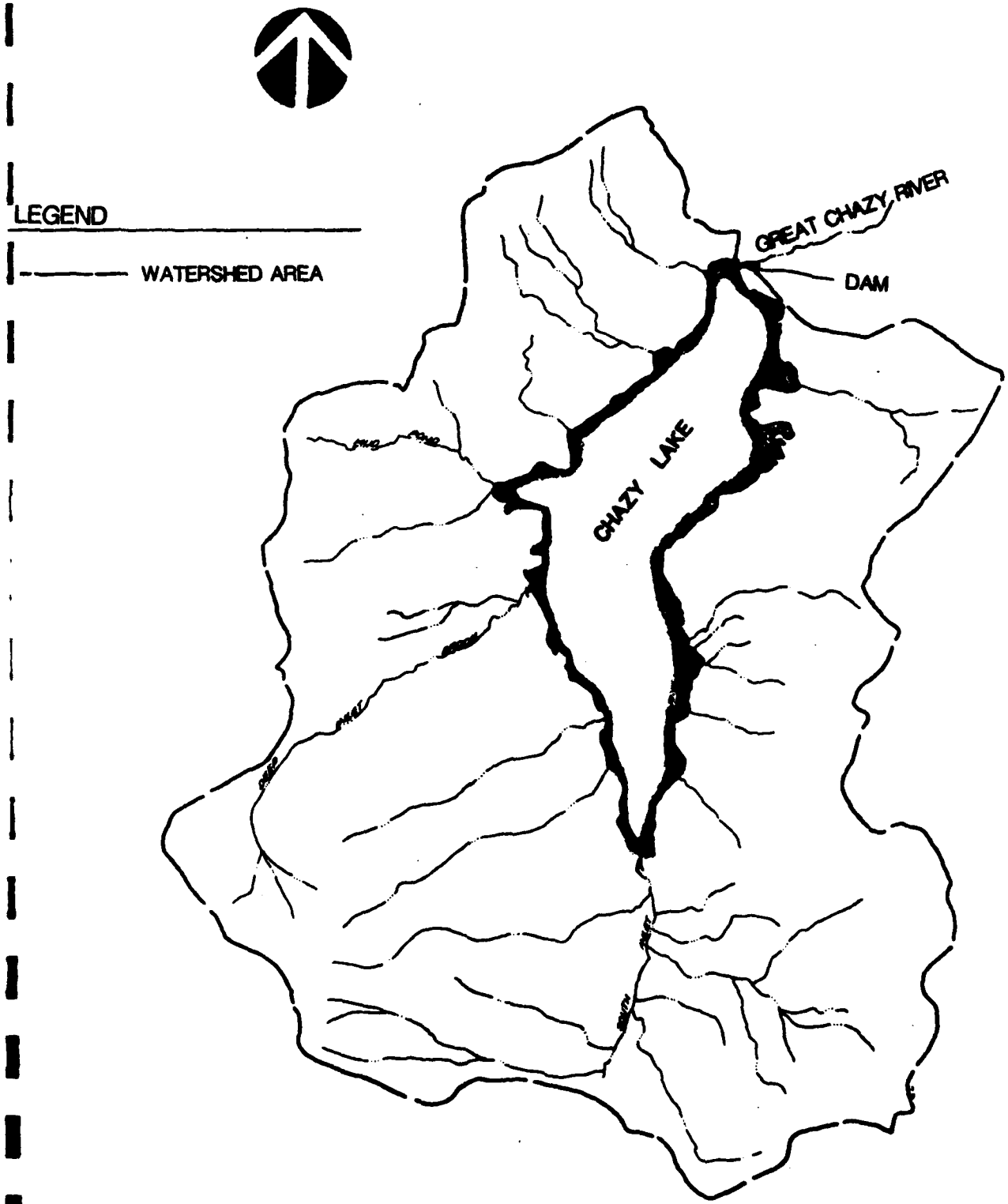
11) Operation Procedures (Lake Level Regulation):

LAKE LEVEL IS LOWERED 8" TO 1 ft DURING THE WINTER TO MINIMIZE ICE DAMAGE TO BOAT DOCKS

APPENDIX C

HYDROLOGIC/HYDRAULIC, ENGINEERING DATA AND COMPUTATIONS

DRAINAGE BASIN



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DESIGN BRIEF

PROJECT NAME N.Y.S. Dam Inspections 1981 DATE

SUBJECT Clazy Lake Dam ID # 336 PROJECT NO. 2530

Subarea Hydrologic Parameters DRAWN BY FDM

Subarea	Area	C_t	L	L_{CA}	$t_L = C_t (L \times L_{CA})^{0.3}$
1	22.59 mi²	2.0	2.41 mi	1.27 mi	2.80 + 0.17* HR = 2.97 HR

* Adjusted for travel time through reservoir

$$t = \frac{\text{travel distance}}{V_{wv}} \qquad V_{wv} = \sqrt{g\, D_m} \qquad g = 32.2 \text{ FT/SEC}^2$$

D_m = average depth of reservoir

D_m = 35 FT $\qquad V_{wv} = \sqrt{32.2(35)} = 33.6$ FT/SEC

travel distance = 21,000 FT

$$t = \frac{21{,}000 \text{ FT}}{33.6 \text{ FPS}} = 0.17 \text{ HR}$$

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DESIGN BRIEF

PROJECT NAME N. Y. S. Dam Inspections 1981 DATE

SUBJECT Chazy Lake Dam ID# 236 PROJECT NO. 2310

Depth - Area - Duration DRAWN BY FDM

PMP from HMR #33
for Lat. ~ 44° 46' Long. ~ 73° 48'
Index Rainfall = 15.1 for 200 mi², 24 HR
Zone 1

Duration	% Index*	Depth
6 HRS.	102	15.4 IN.
12 HRS.	114	17.2 IN.
24 HRS.	124	18.7 IN.
48 HRS.	133	20.1 IN.

* Adjusted for site area, Drainage Area = 22.6 mi²

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DESIGN BRIEF

PROJECT NAME N.Y.S. Dam Inspections 1981 DATE

SUBJECT Chazy Lake Dam PROJECT NO. 2520

Spillway Rating DRAWN BY LDM

Broad Crested weir, width = 6', Length = 30'

$Q = C L H^{3/2}$ "C" from Table 5-3 - "Handbook of Hydraulics" by King & Brater

Elevation	H (FT)	C	Q (CFS)
1541.0	0	—	0
1541.2	0.2	2.37	6
1541.4	0.4	2.51	19
1541.8	0.8	2.68	58
1542.0	1.0	2.68	80
1542.2	1.2	2.67	105
1542.4	1.4	2.65	132
1542.6	1.6	2.65	161
1542.8	1.8	2.65	192
1543.0	2.0	2.65	225
1543.5	2.5	2.66	315
1544.0	3.0	2.66	415
1544.5	3.5	2.67	524
1545.0	4.0	2.69	646
1545.5	4.5	2.72	779
1546.0	5.0	2.76	926
1546.5	5.5	2.83	1095
1547.0	6.0	2.94	1295
1547.5	6.5	3.08	1532
1548.0	7.0	3.32	1845

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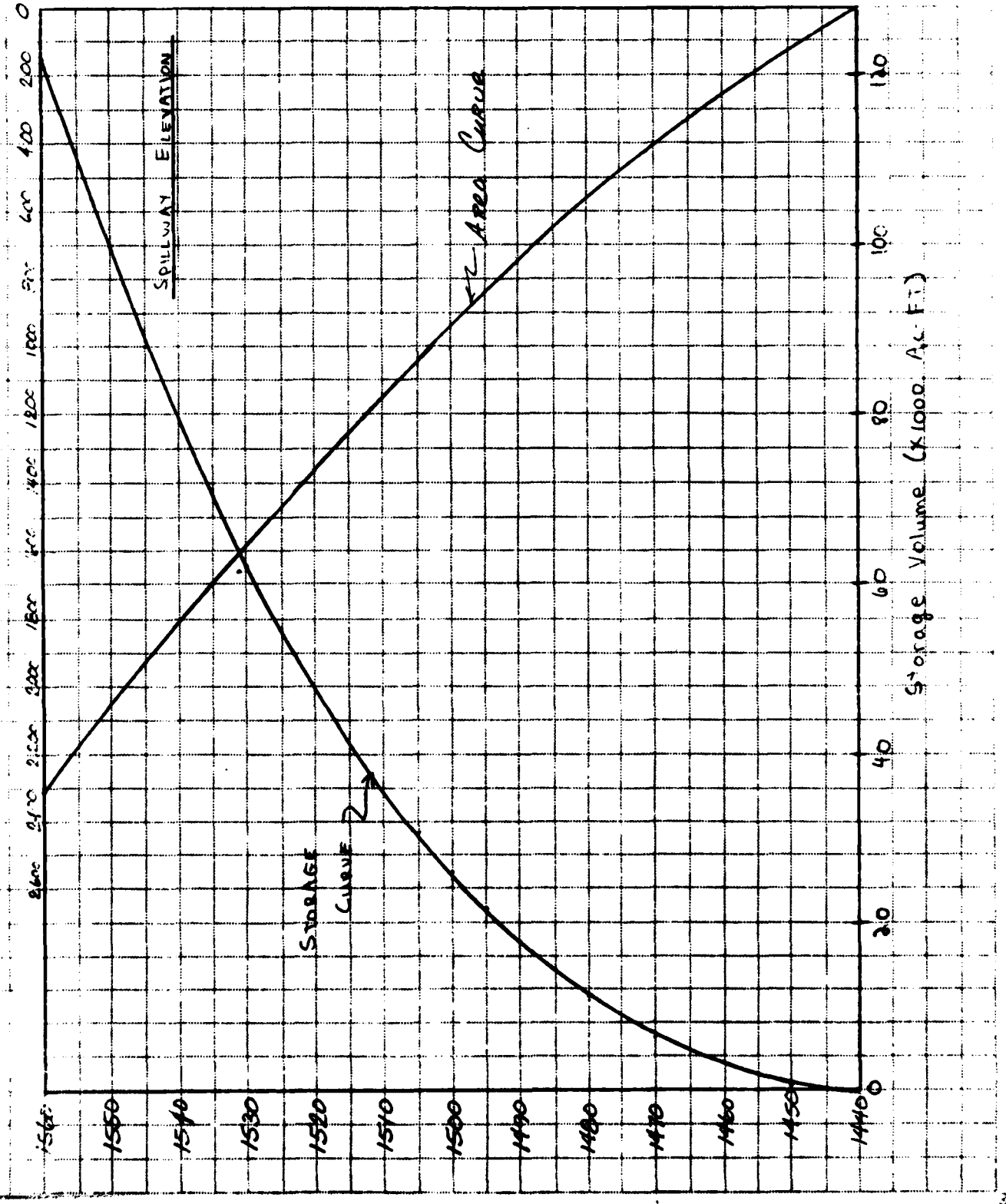
DESIGN BRIEF

PROJECT NAME N.Y.S. Dam Inspections 1981 DATE

SUBJECT Chazy Lake Dam PROJECT NO. 2580

Area Capacity Curve DRAWN BY FDM



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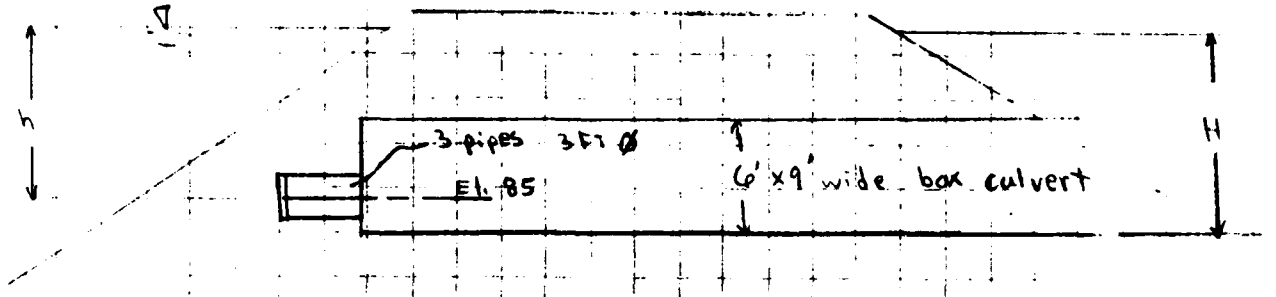
DESIGN BRIEF

PROJECT NAME N.Y.S. Dam Inspections 1981 DATE

SUBJECT Chazy Lake Dam PROJECT NO. 3530

Reservoir Drain Discharge Rating DRAWN BY T.D.M



3 pipes with 3 FT diameters empty into a 6'x9' box culvert. Check 3 cases to see which controls.

Entrance: using nomograph on p.565 - "Design of Small Dams"

Spillway elevation - H=12.5 ft. $\frac{H}{D} = \frac{12.5}{3} = 4.167$ D=3ft = 36 inches

Q=1110 cfs

top of dam - H=16.5 FT $\frac{H}{D} = \frac{16.5}{3} = 5.5$ FT D=36 inches

Q=130 cfs

Orifice equation: $Q = CA\sqrt{2gH}$ Assume C=0.6 $A = \pi \frac{3^2}{4} = 7.07\ FT^2$

Spillway: H=11 FT $Q = 0.6(7.07)\sqrt{64.4(11)} = 112.9$ cfs

top of Dam: H=15 FT $Q = 0.6(7.07)\sqrt{64.4(15)} = 131.5$ cfs

Friction: "Design of Small Dams" p.570

$$H_T = \left[\frac{1.555(1+K_e)}{D^4} + \frac{287.64\,n^2 L}{D^{16/3}}\right]\left(\frac{Q}{10}\right)^2$$

D=6 FT Assume K_e 0.7

L=53 FT. n=0.013

Spillway: $H_T = 96 - 82.5 - 0.9D = 13.5 - 0.9(6) = 8.1$ FT

$$8.1 = \left[\frac{1.555(1+0.7)}{(6)^4} + \frac{287.64\,(0.013)^2(53)}{(6)^{16/3}}\right]\left(\frac{Q}{10}\right)^2$$

Q=744 cfs

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DESIGN BRIEF

PROJECT NAME N.Y.S. Dam Inspections 1981 DATE

UBJECT Chazy Lake Dam PROJECT NO. 3130

Reservoir Drain Discharge Rating (continued) DRAWN BY FDM

Top of dam: H_T = 12.1 Ft Q = 909

Therefor, entrance controls

spillway: Q = 110 cfs/pipe (3 pipes) = 330 cfs

top of dam: Q = 130 cfs/pipe (3 pipes) = 390 cfs

CHECK LIST FOR DAMS
HYDROLOGIC AND HYDRAULIC
ENGINEERING DATA

AREA-CAPACITY DATA:

	Elevation (ft.)	Surface Area (acres)	Storage Capacity (acre-ft.)
1) Top of Dam	1545	1920	90,000
2) Design High Water (Max. Design Pool)	N/A	—	—
3) Auxiliary Spillway Crest	N/A	—	—
4) Pool Level with Flashboards	N/A	—	—
5) Service Spillway Crest	1541	1820	81,700

DISCHARGES

	Volume (cfs)
1) Average Daily	N/A
2) Spillway @ Maximum High Water (Top of Dam)	645
3) Spillway @ Design High Water	N/A
4) Spillway @ Auxiliary Spillway Crest Elevation	N/A
5) Low Level Outlet w/ water level at top of dam	390
6) Total (of all facilities) @ Maximum High Water	1035
7) Maximum Known Flood	Unknown
8) At Time of Inspection	N/A

CREST: ELEVATION: 1545

Type: _____

Width: _____ Length: 2490

Spillover _____

Location _____

SPILLWAY:

PRINCIPAL		EMERGENCY
N/A	Elevation	1541
_____	Type	broad crested
_____	Width	30 FT
	Type of Control	
_____	Uncontrolled	✓
	Controlled:	
_____	Type (Flashboards; gate)	_____
_____	Number	_____
_____	Size/Length	_____
	Invert Material	Concrete
	Anticipated Length of operating service	N/A
_____	Chute Length	N/A
_____	Height Between Spillway Crest & Approach Channel Invert (Weir Flow)	_____

HYDROMETEROLOGICAL GAGES:

Type : None at present

Location: _____

Records:

Date - _____

Max. Reading - _____

FLOOD WATER CONTROL SYSTEM:

Warning System: None at present

_____

Method of Controlled Releases (mechanisms):

Three, 3 FT. diameter sluice-gated pipes.

Also, through water distribution system.

DRAINAGE AREA: 22.6 SQ. Mi.

DRAINAGE BASIN RUNOFF CHARACTERISTICS:

Land Use - Type: Undeveloped, mostly forested

Terrain - Relief:

Surface - Soil: Not Known

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

Not Known

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

Un Known

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

None Known

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

Location: N/A

Elevation:

Reservoir:

Length @ Maximum Pool 4.0 ± (Miles)

Length of Shoreline (@ Spillway Crest) 12.1 ± (Miles)

```
A1       CHAZY LAKE DAM  FILE IS AB2F                                    PAGE    1

(0001)   A1       CHAZY LAKE DAM  FILE IS AB2F
(0002)   A2       HEC-1DB  (SNYDER PARAMETERS)
(0003)   A3       PMF - DAM OVERTOPPING ANALYSIS
(0004)   B     90         1         0         0         0         0         0         0         0         0
(0005)   B1     5          0         0         0         0         0         0         0         0         0
(0006)   J      1          7         1         0         0         0         0         0         0         0
(0007)   J1  0.2       0.3       0.4       0.5       0.6       0.8       1.        0         0         0
(0008)   K      0        100         0         0         0         0         1         0         0         0
(0009)   K1       RUNOFF FROM TOTAL AREA
(0010)   M      1          1     22.59         0     22.59         0         0         0         1         0
(0011)   P      0       15.2       102       114       124       133         0         0         0         0
(0012)   T      0          0         0         0         0         0       1.0       0.1         0     0.126
(0013)   W   2.97      0.625         0         0         0         0         0         0         0         0
(0014)   X   -2.0      -0.13       1.6         0         0         0         0         0         0         0
(0015)   K      1        200         0         0         0         0         1         0         0         0
(0016)   K1       ROUTE THRU RESERVOIR AND OVER SPILLWAY
(0017)   Y      0          0         0         1         1         0         0         0         0         0
(0018)   Y1     1          0         0         0         0         0     -1541        -1         0         0
(0019)   Y4  1541     1541.2    1541.4    1541.8    1542.0    1542.2    1542.4    1542.6    1542.8    1543.0
(0020)   Y41543.5     1544.0    1544.5    1545.0    1545.5    1546.0    1546.5    1547.0    1547.5    1548.0
(0021)   Y5     0          6        19        58        80       105       132       161       192       225
(0022)   Y5   315        415       524       646       779       926      1095      1295      1532      1845
(0023)   $S     0        850      2725      6025     10825     17350     21325     25775     30725     36225
(0024)   $S 42275      48850     55975     62650     71875     80650     89975     99925    110500    121700
(0025)   $E  1440       1450      1460      1470      1480      1490      1495      1500      1505      1510
(0026)   $E  1515       1520      1525      1530      1535      1540      1545      1550      1555      1560
(0027)   $S  1541          0         0         0         0         0         0         0         0         0
(0028)   $D  1545       2.65       1.5    2489.5         0         0         0         0         0         0
(0029)   K     99          0         0         0         0         0         0         0         0         0
(0030)   A
(0031)   A
(0032)   A
(0033)   A
(0034)   A
```

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

RUNOFF HYDROGRAPH AT	100
ROUTE HYDROGRAPH TO	200
END OF NETWORK	

****
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 26 FEB 79
****

RUN DATE?THU, JUL 30 1981
TIME?16:41:54

CHALK LAKE DAM FILE IS AB20
HEC-1DB (SNYDER PARAMETERS)
PMF - DAM OVERTOPPING ANALYSIS

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
9[illegible]	1	0	0	0	0	0	0	4	0

JOPER	NWT	LROPT	TRACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 7 LRTIO= 1
RTIOS= 0.20 0.30 0.40 [illegible] [illegible] 0.30 1.00

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

SUB-AREA RUNOFF COMPUTATION

RUNOFF FROM TOTAL AREA

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
100	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

INFLG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	22.59	0.00	22.59	0.00	0.00	0	1	

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	15.20	102.00	114.00	124.00	133.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS 0.827

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
	0.00	0.00	1.00	0.00	0.00	1.00	1.00	0.10	0.00	0.13

UNIT HYDROGRAPH DATA

TP= 2.97 CP= .63 STA=

RECESSION DATA
STRTQ= -2.00 QRCSN= -1.10 RTIOR= 1.60

UNIT HYDROGRAPH 15 END-OF-PERIOD ORDINATES, LAG= 2.98 HOURS, CP= 0.63 VOL= 1.0
502. 1742. 2800. 2979. 2230. 1465. 959. 628. 411. 269.
176. 115. 76. 50. 32.

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
									SUM	16.72	13.72	3.00	246443.
										(425.)(348.)(76.)(6978.48)			

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

HYDROGRAPH ROUTING

ROUTE THRU RESERVOIR AND OVER SPILLWAY

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
200	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVG	IPES	ISAME	IRES	IFRP	LSTR
0.0	0.000	0.00	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-1541.	-1

STAGE	1541.00	1541.20	1541.40	1541.60	1542.00	1542.20	1542.40	1542.60	1542.80
	1543.50	1544.00	1544.50	1545.00	1545.50	1546.00	1546.50	1547.00	1547.50
FLOW	0.00	6.00	19.00	58.00	85.00	105.00	132.00	161.00	192.00
	315.00	415.00	524.00	646.00	779.00	926.00	1095.00	1295.00	1532.00
CAPACITY=	0.	850.	2725.	6025.	10625.	17350.	21325.	25775.	30725.	36225.
	42275.	48850.	55975.	62650.	71875.	80650.	89975.	99925.	111500.	121700.
ELEVATION=	1440.	1450.	1460.	1470.	1480.	1490.	1495.	1500.	1505.	1510.
	1515.	1520.	1525.	1530.	1535.	1540.	1545.	1550.	1555.	1560.

CREL	SPWID	COQW	EXPW	ELEVL	COQL	CAREA	EXPL
1541.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0

DAM DATA

TOPEL	COQD	EXPD	DAMWID
1545.0	2.6	1.5	2400.

PEAK OUTFLOW IS 197. AT TIME 72.00 HOURS

PEAK OUTFLOW IS 351. AT TIME [illegible] HOURS

PEAK OUTFLOW IS 526. AT TIME [illegible] HOURS

PEAK OUTFLOW IS 1.76. AT TIME [illegible] HOURS

PEAK OUTFLOW IS 3282. AT TIME [illegible] HOURS

PEAK OUTFLOW IS 9205. AT TIME 46.00 HOURS

PEAK OUTFLOW IS 15322. AT TIME 46.00 HOURS

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

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)

OPERATION	STATION	AREA	PLAN	RATIOS APPLIED TO FLOWS						
				RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6	RATIO 7
				0.20	0.30	0.40	0.50	0.60	0.80	1.00
HYDROGRAPH AT	100	22.59	1	5826.	8738.	11651.	14564.	17477.	23302.	29128.
		(58.51)	(	164.96)(	247.44)(	329.92)(	412.41)(	494.89)(	659.85)(	824.81)(
ROUTED TO	200	22.59	1	197.	351.	526.	1070.	3286.	9275.	15322.
		(58.51)	(	5.58)(	9.94)(	14.89)(	30.46)(	93.10)(	262.66)(	433.88)(

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1541.00	1541.00	1545.00
STORAGE	82515.	82515.	89975.
OUTFLOW	0.	0.	646.

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
0.20	1542.83	0.00	85927.	197.	0.00	72.00	0.00
0.30	1543.68	0.00	87515.	351.	0.00	69.00	0.00
0.40	1544.51	0.00	89058.	526.	0.00	66.00	0.00
0.50	1545.15	0.15	90277.	1076.	26.00	56.00	0.00
0.60	1545.52	0.52	91018.	3288.	36.00	46.00	0.00
0.80	1546.16	1.16	92280.	9235.	44.00	46.00	0.00
1.00	1546.66	1.66	93286.	15322.	48.00	46.00	0.00

```
(0001)  A1      CHAZY LAKE DAM  FILE IS AB26-1
(0002)  A2      HEC-1DB  (SNYDER PARAMETERS)
(0003)  A3      0.5 PMF - DAM BREAK ANALYSIS
(0004)  B     300       0      12       0       0       0       0       0      -4       0
(0005)  B1      5       0       0       0       0       0       0       0       0       0
(0006)  J       3       1       1       0       0       0       0       0       0       0
(0007)  J1    0.5
(0008)  K       0     100       0       0       0       0       1       0       0       0
(0009)  K1      RUNOFF FROM TOTAL AREA
(0010)  M       1       1   22.59       0   22.59       0       0       0       1       0
(0011)  P       0    15.2     102     114     124     133       0       0       0       0
(0012)  T       0       0       0       0       0       0     1.0     0.1       0   0.126
(0013)  W    2.97   0.625       0       0       0       0       0       0       0       0
(0014)  X    -2.0   -0.10     1.6       0       0       0       0       0       0       0
(0015)  K       1     200       0       0       0       2       1       0       0       0
(0016)  K1      ROUTE THRU RESERVOIR AND OVER SPILLWAY
(0017)  Y       0       0       0       1       1       0       0       0       0       0
(0018)  Y1      1       0       0       0       0       0   -1541      -1       0       0
(0019)  Y4   1541  1541.2  1541.4  1541.8  1542.0  1542.2  1542.4  1542.6  1542.8  1543.0
(0020)  Y4 1543.5  1544.0  1544.5  1545.0  1545.5  1546.0  1546.5  1547.0  1547.5  1548.0
(0021)  Y5      0       6      19      56      83     115     132     161     192     225
(0022)  Y5    315     415     524     646     779     926    1095    1295    1532    1865
(0023)  SS      0     850    2725    6025   10825   17350   21325   25775   30725   36225
(0024)  SS  42275   48850   55975   62650   71875   80650   89975   99925  110500  121700
(0025)  SE   1440    1450    1460    1470    1480    1490    1495    1500    1505    1510
(0026)  SE   1515    1520    1525    1530    1535    1540    1545    1550    1555    1560
(0027)  SS   1541       0       0       0       0       0       0       0       0       0
(0028)  SD   1545    2.65     1.5  2489.5       0       0       0       0       0       0
(0029)  SB     30       0    1532     0.1    1541 1545.07
(0030)  SB     30       0    1532     0.3    1541 1545.07
(0031)  SB     30       0    1532     0.5    1541 1545.07
(0032)  K       1     800                                       2       1
(0033)  K1      ROUTE THRU RTE. 374 BRIDGE
(0034)  Y                               1       1
(0035)  Y1      1                                                      -1
(0036)  Y2            0.1
(0037)  Y3      0   30000
(0038)  Y4   1532    1533    1534    1535    1536    1537    1538    1539    1540    1541
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(0039)  Y4   1542   1543   1544   1545   1546
(0040)  Y5      0     35    180    340    510    670    905   1095   1250   2590
(0041)  Y5    595  11795  20455  32275  47600
(0042)  K       1   8800                               2      1
(0043)  K1        CHANNEL ROUTE DOWNSTREAM TO STATION 8800
(0044)  Y                                1      1
(0045)  Y1      1                                             1
(0046)  Y6  0.035  0.035  0.035   1487   1520   8000  0.008
(0047)  Y7    100   1520    500   1500    660   1490    666   1487    674   1487
(0048)  Y7    680   1490    740   1500    880   1529
(0049)  K       1  13800                               2      1
(0050)  K1        CHANNEL ROUTE DOWNSTREAM TO PLANK BOUNDARY ROAD BRIDGE
(0051)  Y                                1      1
(0052)  Y1      1                                            -1
(0053)  Y6  0.035  0.035  0.035   1462   1500   5000  0.003
(0054)  Y7    [illegible]   1500    540   1480   1260   1465   1266   1462   1274   1462
(0055)  Y7   1280   1465   2580   1480   3020   1500
(0056)  K       1  13801                               2      1
(0057)  K1        ROUTE THRU PLANK BOUNDARY ROAD BRIDGE
(0058)  Y                                1      1
(0059)  Y1      1                                            -1
(0060)  Y2      0   14.7   2100
(0061)  Y3      0    665  37725
(0062)  Y6   1456   1457   1458   1459   1460   1461   1462   1463   1464   1465
(0063)  Y4   1466   1467   1468   1469   1470   1471
(0064)  Y5      0     75    230    425    665    925   1250   1600   1960   2310
(0065)  Y5   2625   3433   6425  12650  22875  37725
(0066)  K      99      0      0      0      0      0      0      0      0      0
(0067)  A
(0068)  A
(0069)  A
(0070)  A
(0071)  A
```

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

RUNOFF HYDROGRAPH AT	100
ROUTE HYDROGRAPH TO	200
ROUTE HYDROGRAPH TO	800
ROUTE HYDROGRAPH TO	8500
ROUTE HYDROGRAPH TO	13000
ROUTE HYDROGRAPH TO	13501
END OF NETWORK	

****
FLOOD HYDROGRAPH PACKAGE (HEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 26 FEB 79
****

RUN DATE?FRI, JUL 24 1981
TIME?10:51:53

CRAZY LAKE DAM FILE IS AB2B-1
HEC-1DB (SNYDER PARAMETERS)
0.5 PMF - DAM BREAK ANALYSIS

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
300	0	12	0	0	0	0	0	4	0

JOPER	NWT	LROPT	TRACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 3 NRTIO= 1 LRTIO= 1

RTIOS= .5

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

SUB-AREA RUNOFF COMPUTATION

RUNOFF FROM TOTAL AREA

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
100	0	0	0	0	0	1	0	0

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	1	22.59	0.00	22.59	0.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
1.0	15.20	102.00	114.00	124.00	133.00	0.00	0.00

TRSPC COMPUTED BY THE PROGRAM IS 0.827

LOSS DATA

LROPT	STRKR	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
5.00	0.00	1.00	0.00	0.00	1.00	1.00	0.10	0.10	0.00	0.10

UNIT HYDROGRAPH DATA

TP= 2.97 CP= .63 VOL=

RECESSION DATA

STRTQ= -2.00 QRCSN= -0.10 RTIOR= 1.60

UNIT HYDROGRAPH 22 END-OF-PERIOD ORDINATES, LAG= 2.99 HOURS, CP= 0.63 VOL= 1.00

54.	204.	417.	668.	946.	1242.	1553.	1874.	2194.	2482.
2720.	2906.	3045.	3132.	3164.	3132.	3064.	2809.	2612.	2429.
2259.	2101.	1954.	1817.	1690.	1571.	1461.	1359.	1264.	1175.
1093.	1017.	945.	879.	818.	760.	707.	658.	612.	569.
529.	492.	457.	425.	396.	368.	342.	318.	296.	275.
256.	238.	221.	206.	191.	178.	166.	154.	143.	133.
124.	115.	107.	100.	93.	86.	80.	75.	69.	64.
60.	56.	52.	48.	45.	42.	39.	36.	34.	31.
29.	27.								

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	END-OF-PERIOD FLOW COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
									SUM	16.82	13.81	3.01	1022706.
										(427.)	(351.)	(76.)	(28959.78)

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

HYDROGRAPH ROUTING

ROUTE THRU RESERVOIR AND OVER SPILLWAY

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
200	1	0	0	0	2	1	0	0

ALL PLANS HAVE SAME ROUTING DATA

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

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-1541.	-1

STAGE	1541.00	1541.20	1541.40	1541.80	1542.00	1542.20	1542.40	1542.60	1542.80
	1543.50	1544.00	1544.50	1545.00	1545.50	1546.00	1546.50	1547.00	1547.50
FLOW	0.00	6.00	19.00	58.00	80.00	105.00	132.00	161.00	192.00
	315.00	415.00	524.00	646.00	779.00	926.80	1095.00	1295.00	1532.00
CAPACITY=	0.	0.	2725.	6025.	11825.	17350.	21325.	25775.	30725.	36225.
	42275.	48850.	55975.	62650.	71875.	80650.	89975.	99925.	110500.	121700.
ELEVATION=	1440.	1440.	1460.	1470.	1480.	1490.	1495.	1500.	1505.	1510.
	1515.	1520.	1525.	1530.	1535.	1540.	1545.	1550.	1555.	1560.

CREL	SPWID	COQW	EXPW	ELEVL	COQL	CAREA	EXPL
1541.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COQD	EXPD	DAMWID
1545.0	2.6	1.5	2490.

DAM BREACH DATA

BRWID	Z	ELBM	TFAIL	WSEL	FAILEL
50.	0.00	1532.00	0.10	1541.00	1545.07

STATION 200, PLAN 1, RATIO 1

BEGIN DAM FAILURE AT 51.20 HOURS

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	2.	2.	2.	3.	3.
3.	3.	3.	4.	4.	4.	4.	4.	5.	5.
5.	5.	6.	6.	7.	7.	8.	9.	10.	12.
13.	15.	16.	16.	22.	26.	30.	34.	40.	45.
52.	59.	68.	78.	87.	102.	117.	132.	150.	168.
188.	208.	230.	253.	275.	297.	318.	341.	362.	383.
402.	421.	439.	457.	473.	488.	502.	515.	528.	540.
552.	563.	572.	581.	590.	597.	605.	611.	617.	623.
625.	632.	637.	640.	644.	649.	663.	680.	696.	715.
731.	746.	759.	771.	782.	792.	5049.	4980.	4954.	4928.
4902.	4875.	4849.	4823.	4797.	4770.	4744.	4717.	4691.	4665.
4637.	4612.	4586.	4561.	4535.	4510.	4484.	4459.	4434.	4408.
4383.	4358.	4333.	4308.	4284.	4259.	4235.	4211.	4187.	4163.
4140.	4116.	4093.	4070.	4046.	4023.	4000.	3978.	3955.	3932.

STORAGE

82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82516.	82516.	82517.	82517.	82518.	82518.	82519.	82520.	82521.
82522.	82523.	82525.	82526.	82527.	82529.	82531.	82533.	82535.	82536.
82539.	82541.	82543.	82546.	82547.	82549.	82551.	82553.	82555.	82556.
82558.	82560.	82561.	82562.	82564.	82565.	82566.	82567.	82568.	82569.
82570.	82571.	82571.	82571.	82572.	82572.	82573.	82573.	82574.	82574.
82575.	82575.	82576.	82576.	82576.	82576.	82576.	82577.	82577.	82578.
82578.	82579.	82579.	82580.	82580.	82581.	82581.	82581.	82582.	82582.
82583.	82583.	82584.	82585.	82586.	82587.	82588.	82589.	82590.	82591.
82591.	82592.	82593.	82594.	82596.	82597.	82599.	82602.	82604.	82608.
82612.	82617.	82622.	82629.	82636.	82644.	82653.	82663.	82673.	82684.
82695.	82706.	82720.	82734.	82747.	82761.	82775.	82790.	82805.	82821.
82836.	82852.	82869.	82887.	82907.	82928.	82953.	82980.	83011.	83047.
83088.	83135.	83187.	83246.	83312.	83386.	83466.	83555.	83655.	83765.
83889.	84026.	84176.	84341.	84519.	84710.	84914.	85128.	85352.	85582.
85818.	86057.	86296.	86534.	86766.	86991.	87208.	87417.	87617.	87807.
87988.	88158.	88318.	88468.	88608.	88737.	88858.	88969.	89072.	89167.
89256.	89337.	89412.	89481.	89545.	89604.	89658.	89708.	89754.	89797.
89835.	89871.	89903.	89933.	89960.	89984.	90007.	90026.	90044.	90060.
90073.	90084.	90095.	90103.	90111.	90118.	90046.	89981.	89916.	89851.
89786.	89720.	89654.	89588.	89521.	89455.	89388.	89321.	89254.	89187.
89120.	89053.	88986.	88918.	88851.	88784.	88717.	88650.	88583.	88516.
88449.	88383.	88316.	88250.	88184.	88118.	88052.	87986.	87921.	87855.
87790.	87726.	87661.	87597.	87533.	87469.	87405.	87342.	87279.	87216.

STAGE

1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1
1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.2	1541.2
1541.2	1541.2	1541.2	1541.2	1541.2	1541.2	1541.2	1541.2	1541.3	1541.3

1541.5	1541.5	1541.6	1541.6	1541.6	1541.5	1541.5	1541.6	1541.6	1541.7
1541.7	1541.8	1541.9	1542.0	1542.1	1542.2	1542.3	1542.4	1542.5	1542.6
1542.8	1542.9	1543.0	1543.2	1543.3	1543.4	1543.5	1543.6	1543.7	1543.8
1543.9	1544.0	1544.1	1544.2	1544.3	1544.3	1544.4	1544.5	1544.5	1544.6
1544.6	1544.7	1544.7	1544.7	1544.8	1544.8	1544.8	1544.9	1544.9	1544.9
1544.9	1544.9	1545.0	1545.0	1545.0	1545.0	1545.0	1545.0	1545.0	1545.1
1545.0	1545.1	1545.1	1545.1	1545.1	1545.1	1545.0	1545.0	1545.0	1544.9
1544.9	1544.9	1544.8	1544.8	1544.8	1544.7	1544.7	1544.6	1544.6	1544.6
1544.5	1544.5	1544.5	1544.4	1544.4	1544.4	1544.3	1544.3	1544.3	1544.2
1544.2	1544.1	1544.1	1544.1	1544.0	1544.0	1544.0	1543.9	1543.9	1543.9
1543.8	1543.8	1543.8	1543.7	1543.7	1543.7	1543.6	1543.6	1543.6	1543.5

PEAK OUTFLOW IS 5120. AT TIME 51.30 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5049.	4616.	1834.	734.	220255.
CMS	143.	131.	52.	21.	6237.
INCHES		1.99	3.02	3.02	3.02
MM		46.28	76.75	76.79	76.79
AC-FT		2289.	3638.	3641.	3641.
THOUS CU M		2824.	4458.	4491.	4491.

THE DAM BREACH HYDROGRAPH WAS DEVELOPED USING A TIME INTERVAL OF 0.002 HOURS DURING BREACH FORMATION.
DOWNSTREAM CALCULATIONS WILL USE A TIME INTERVAL OF 0.200 HOURS.
THIS TABLE COMPARES THE HYDROGRAPH FOR DOWNSTREAM CALCULATIONS WITH THE COMPUTED BREACH HYDROGRAPH.
INTERMEDIATE FLOWS ARE INTERPOLATED FROM END-OF-PERIOD VALUES.

TIME (HOURS)	TIME FROM BEGINNING OF BREACH (HOURS)	INTERPOLATED BREACH HYDROGRAPH (CFS)	- COMPUTED BREACH HYDROGRAPH (CFS)	= ERROR (CFS)	ACCUMULATED ERROR (CFS)	ACCUMULATED ERROR (AC-FT)
51.200	0.000	792.	792.	0.	0.	0.
51.202	0.002	835.	810.	25.	25.	0.
51.204	0.004	877.	834.	43.	68.	0.
51.206	0.006	920.	865.	55.	123.	0.
51.208	0.008	962.	900.	62.	185.	0.
51.210	0.010	1005.	940.	64.	249.	0.
51.212	0.012	1047.	985.	63.	312.	0.
51.214	0.014	1091.	1032.	58.	370.	0.
51.216	0.016	1133.	1084.	49.	419.	0.
51.218	0.018	1175.	1138.	37.	456.	0.
51.220	0.020	1218.	1196.	22.	478.	0.
51.222	0.022	1260.	1255.	5.	483.	0.
51.224	0.024	1303.	1317.	-15.	468.	0.
51.226	0.026	1345.	1382.	-37.	431.	0.
51.228	0.028	1388.	1450.	-62.	370.	0.
51.230	0.030	1430.	1520.	-89.	281.	0.
51.232	0.032	1473.	1592.	-119.	162.	0.
51.234	0.034	1516.	1666.	-151.	11.	0.
51.236	0.036	1558.	1743.	-185.	-173.	-0.
51.238	0.038	1601.	1822.	-221.	-396.	-0.
51.240	0.040	1643.	1903.	-259.	-653.	-0.
51.242	0.042	1686.	1986.	-300.	-953.	-0.
51.244	0.044	1728.	2071.	-342.	-1295.	-0.
51.246	0.046	1771.	2157.	-386.	-1682.	-0.
51.248	0.048	1814.	2246.	-433.	-2114.	-0.
51.250	0.050	1856.	2337.	-481.	-2595.	-0.
51.252	0.052	1899.	2429.	-531.	-3125.	-1.
51.254	0.054	1941.	2524.	-582.	-3708.	-1.
51.256	0.056	1984.	2620.	-636.	-4343.	-1.
51.258	0.058	2026.	2717.	-691.	-5034.	-1.
51.260	0.060	2069.	2817.	-748.	-5782.	-1.
51.262	0.062	2112.	2918.	-806.	-6588.	-1.
51.264	0.064	2154.	3021.	-867.	-7455.	-1.
51.266	0.066	2197.	3125.	-928.	-8383.	-1.
51.268	0.068	2239.	3231.	-992.	-9375.	-2.
51.270	0.070	2282.	3339.	-1057.	-10432.	-2.
51.272	0.072	2324.	3448.	-1123.	-11555.	-2.
51.274	0.074	2367.	3558.	-1191.	-12746.	-2.
51.276	0.076	2410.	3670.	-1261.	-14007.	-2.
51.278	0.078	2452.	3784.	-1332.	-15339.	-3.

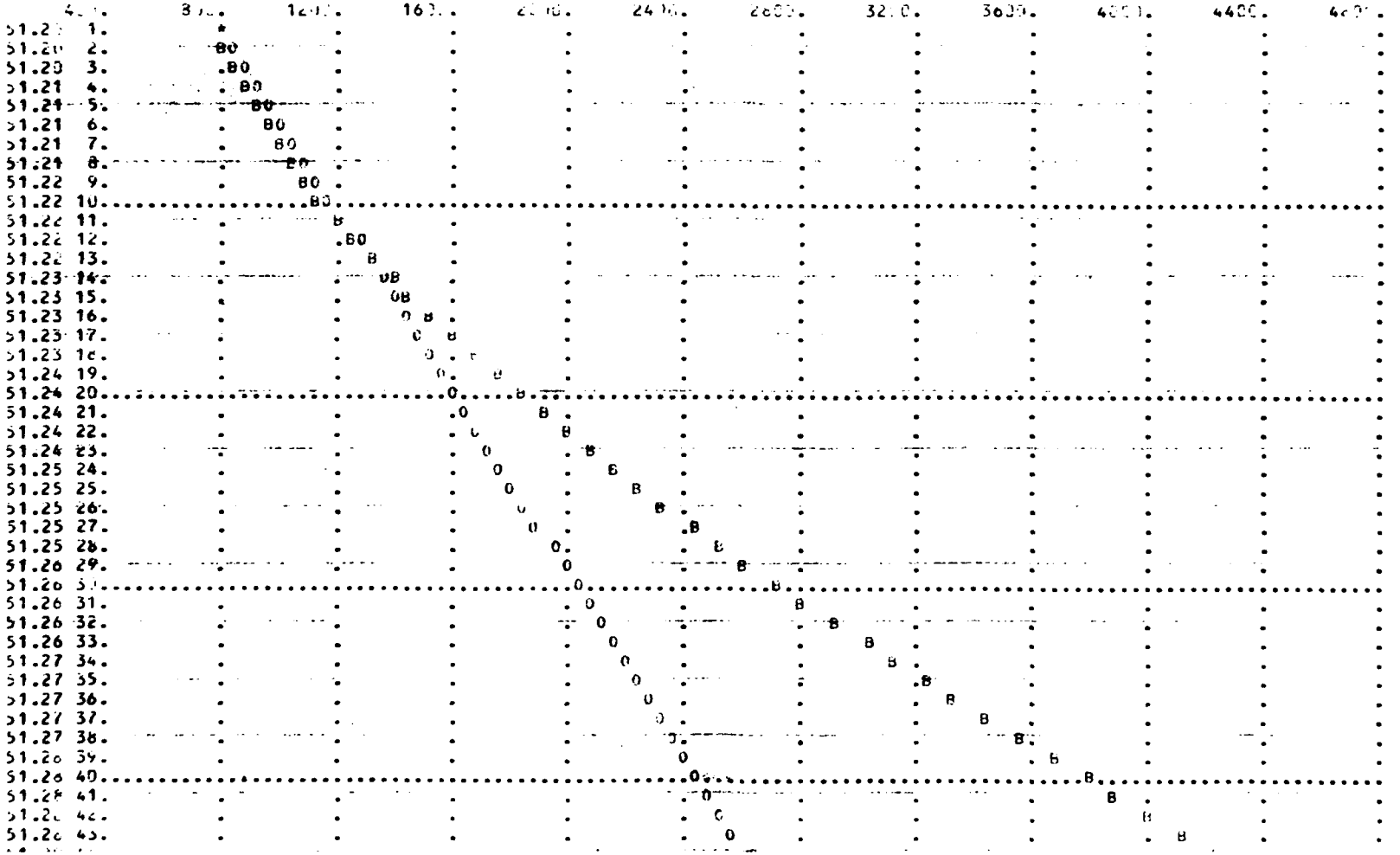
[illegible]	[illegible]	2693.	5099.	-1474.	-18745.	-3.
51.282	0.[illegible]	2557.	4911.	-1478.	-18226.	-3.
51.284	[illegible].284	2589.	4133.	-1554.	-19775.	-3.
51.286	0.086	2622.	4252.	-1630.	-21405.	-4.
51.288	0.088	2665.	4372.	-1707.	-23112.	-4.
51.290	0.090	2707.	4493.	-1786.	-24898.	-4.
51.292	0.092	2750.	4616.	-1866.	-26764.	-4.
51.294	0.094	2793.	4741.	-1947.	-28711.	-5.
51.296	0.096	2835.	4865.	-2030.	-30741.	-5.
51.298	0.098	2878.	4992.	-2114.	-32856.	-5.
51.300	0.100	2920.	5120.	-2200.	-35055.	-6.
51.302	0.102	2963.	5119.	-2156.	-37211.	-6.
51.304	0.104	3005.	5117.	-2112.	-39323.	-6.
51.306	0.106	3048.	5115.	-2067.	-41390.	-7.
51.308	0.108	3091.	5114.	-2023.	-43413.	-7.
51.310	0.110	3133.	5112.	-1979.	-45393.	-8.
51.312	0.112	3176.	5111.	-1935.	-47328.	-8.
51.314	0.114	3218.	5109.	-1891.	-49219.	-8.
51.316	0.116	3261.	5108.	-1847.	-51066.	-8.
51.318	0.118	3303.	5106.	-1803.	-52869.	-9.
51.320	0.120	3346.	5105.	-1759.	-54627.	-9.
51.322	0.122	3389.	5103.	-1715.	-56342.	-9.
51.324	0.124	3431.	5102.	-1671.	-58013.	-10.
51.326	0.126	3474.	5100.	-1627.	-59639.	-10.
51.328	0.128	3516.	5099.	-1583.	-61222.	-10.
51.330	0.13[illegible]	3559.	5097.	-1538.	-62760.	-10.
51.332	0.132	3601.	5096.	-1494.	-64255.	-11.
51.334	0.134	3644.	5094.	-1450.	-65705.	-11.
51.336	0.136	3687.	5093.	-1406.	-67111.	-11.
51.338	0.138	3729.	5091.	-1362.	-68474.	-11.
51.340	0.140	3772.	5090.	-1318.	-69792.	-12.
51.342	0.142	3814.	5088.	-1274.	-71066.	-12.
51.344	0.144	3857.	5087.	-1230.	-72296.	-12.
51.346	0.146	3899.	5086.	-1186.	-73483.	-12.
51.348	0.148	3942.	5084.	-1142.	-74625.	-12.
51.350	0.150	3985.	5083.	-1098.	-75723.	-13.
51.352	0.152	4027.	5081.	-1054.	-76777.	-13.
51.354	0.154	4070.	5080.	-1010.	-77787.	-13.
51.356	0.156	4112.	5078.	-966.	-78754.	-13.
51.358	0.158	4155.	5077.	-922.	-79676.	-13.
51.360	0.160	4197.	5076.	-878.	-80554.	-13.
51.362	0.162	4240.	5074.	-834.	-81388.	-13.
51.364	0.164	4282.	5073.	-790.	-82179.	-14.
51.366	0.166	4325.	5071.	-746.	-82925.	-14.
51.368	0.168	4368.	5070.	-702.	-83628.	-14.
51.370	0.170	4410.	5069.	-658.	-84286.	-14.
51.372	0.172	4453.	5067.	-615.	-84901.	-14.
51.374	0.174	4495.	5066.	-571.	-85471.	-14.
51.376	0.176	4538.	5065.	-527.	-85998.	-14.
51.378	0.178	4580.	5063.	-483.	-86481.	-14.
51.380	0.180	4623.	5062.	-439.	-86920.	-14.

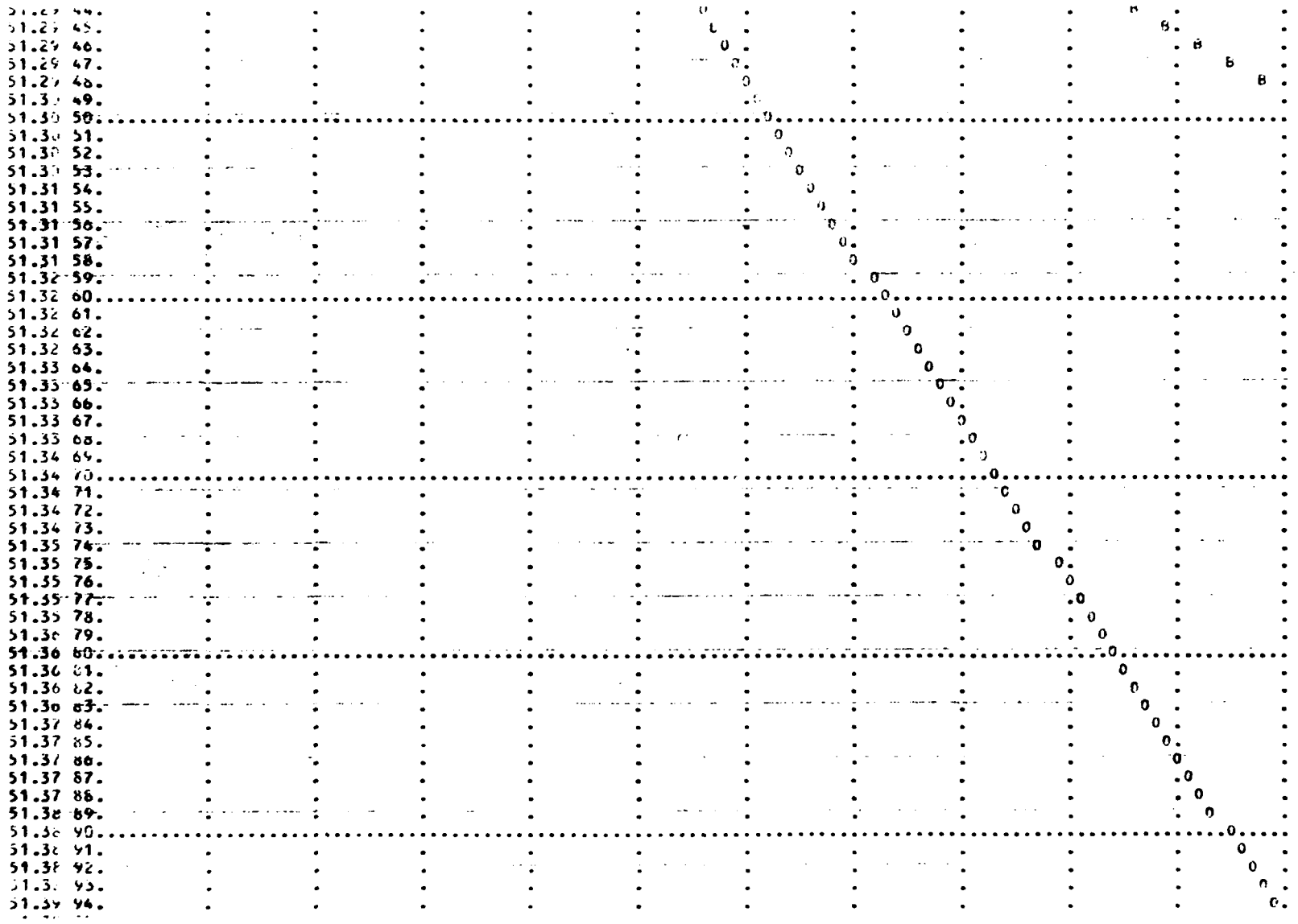
51.382	0.184	4800.	5101.	-395.	-87515.	-14.
51.384	0.184	4708.	5059.	-351.	-87866.	-14.
51.386	0.186	4751.	5058.	-307.	-87973.	-15.
51.388	0.188	4793.	5057.	-263.	-88236.	-15.
51.390	0.190	4836.	5055.	-219.	-88455.	-15.
51.392	0.192	4878.	5054.	-175.	-88631.	-15.
51.394	0.194	4921.	5053.	-132.	-88762.	-15.
51.396	0.196	4964.	5051.	-88.	-88850.	-15.
51.398	0.198	5006.	5050.	-44.	-88894.	-15.
51.400	0.200	5049.	5049.	-0.	-88894.	-15.

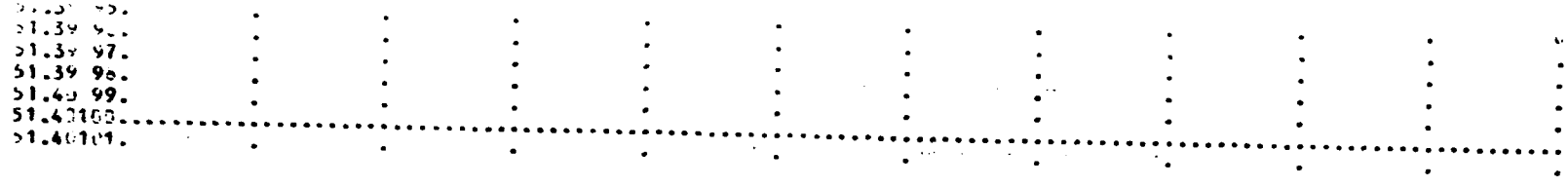
JVF

STATION 2

TIME (HRS) — (O) INTERPOLATED BREACH HYDROGRAPH; (B) COMPUTED BREACH HYDROGRAPH; (*) POINTS AT NORMAL TIME INTERVAL







OVN

DAM BREACH DATA

BRWID	Z	ELBM	TFAIL	WSEL	FAILEL
30.	0.00	1532.00	0.50	1541.00	1545.07

STATION 200, PLAN 2, RATIO 1

BEGIN DAM FAILURE AT 51.20 HOURS

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	2.	2.	2.	3.	3.
3.	3.	3.	4.	4.	4.	4.	4.	5.	5.
5.	5.	6.	6.	7.	7.	8.	9.	10.	12.
13.	15.	16.	18.	22.	26.	30.	34.	40.	45.
52.	59.	66.	78.	89.	102.	117.	132.	150.	168.
188.	208.	230.	253.	275.	297.	318.	341.	362.	383.
402.	421.	439.	457.	473.	488.	502.	515.	528.	540.
552.	563.	572.	581.	590.	597.	605.	611.	617.	623.
628.	632.	637.	640.	644.	649.	663.	680.	698.	715.
731.	746.	759.	771.	782.	792.	5150.	5031.	4974.	4948.
4921.	4895.	4869.	4842.	4816.	4789.	4763.	4736.	4710.	4683.
4656.	4630.	4603.	4578.	4552.	4527.	4501.	4476.	4450.	4425.
4400.	4375.	4350.	4325.	4300.	4275.	4250.	4226.	4202.	4179.
4155.	4131.	4108.	4084.	4061.	4038.	4015.	3992.	3969.	3946.

STORAGE

82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.

82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82516.	82516.	82517.	82517.	82518.	82518.	82519.	82520.	82521.
82522.	82523.	82525.	82526.	82527.	82529.	82531.	82533.	82535.	82536.
82539.	82541.	82543.	82546.	82547.	82549.	82551.	82553.	82555.	82556.
82558.	82560.	82561.	82562.	82564.	82565.	82566.	82567.	82568.	82569.
82571.	82571.	82571.	82571.	82572.	82572.	82573.	82573.	82574.	82574.
82575.	82575.	82576.	82576.	82576.	82576.	82576.	82577.	82577.	82578.
82578.	82579.	82579.	82580.	82580.	82581.	82581.	82581.	82582.	82582.
82583.	82583.	82584.	82585.	82586.	82587.	82588.	82589.	82590.	82591.
82591.	82592.	82593.	82594.	82596.	82597.	82599.	82602.	82604.	82608.
82612.	82617.	82622.	82629.	82636.	82644.	82653.	82663.	82673.	82684.
82695.	82708.	82720.	82734.	82747.	82761.	82775.	82790.	82805.	82821.
82836.	82852.	82869.	82887.	82907.	82928.	82953.	82980.	83011.	83047.
83086.	83135.	83187.	83246.	83312.	83386.	83466.	83555.	83655.	83765.
83889.	84026.	84176.	84341.	84519.	84710.	84914.	85128.	85352.	85582.
85818.	86057.	86296.	86534.	86766.	86991.	87208.	87417.	87617.	87807.
87986.	88158.	88318.	88468.	88608.	88737.	88858.	88969.	89072.	89167.
89256.	89337.	89412.	89481.	89545.	89604.	89658.	89708.	89754.	89797.
89835.	89871.	89903.	89933.	89960.	89984.	90007.	90026.	90044.	90060.
90073.	90084.	90095.	90103.	90111.	90118.	90100.	90032.	89966.	89901.
89836.	89770.	89703.	89637.	89570.	89503.	89436.	89369.	89301.	89234.
89166.	89099.	89032.	88964.	88897.	88829.	88762.	88695.	88627.	88560.
88493.	88426.	88360.	88293.	88227.	88161.	88095.	88028.	87963.	87897.
87832.	87767.	87702.	87638.	87574.	87509.	87446.	87382.	87319.	87255.

STAGE

1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1
1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.2	1541.2
1541.2	1541.2	1541.2	1541.2	1541.2	1541.2	1541.2	1541.2	1541.3	1541.3
1541.3	1541.3	1541.4	1541.4	1541.4	1541.5	1541.5	1541.6	1541.6	1541.7
1541.7	1541.8	1541.9	1542.0	1542.1	1542.2	1542.3	1542.4	1542.5	1542.6
1542.8	1542.9	1543.0	1543.2	1543.3	1543.4	1543.5	1543.6	1543.7	1543.8
1543.9	1544.0	1544.1	1544.2	1544.3	1544.3	1544.4	1544.5	1544.5	1544.6

1544.9	1544.9	1545.0	1545.	1545.	1545.	1545.0	1545.0	1545.0	1545.
1545.1	1545.1	1545.1	1545.1	1545.1	1545.1	1545.1	1545.0	1545.0	1545.
1544.9	1544.9	1544.9	1544.8	1544.8	1544.7	1544.7	1544.7	1544.6	1544.6
1544.6	1544.5	1544.5	1544.5	1544.4	1544.4	1544.3	1544.3	1544.3	1544.2
1544.2	1544.2	1544.1	1544.1	1544.1	1544.0	1544.0	1544.0	1543.9	1543.9
1543.9	1543.8	1543.8	1543.7	1543.7	1543.7	1543.6	1543.6	1543.6	1543.5

PEAK OUTFLOW IS 5683. AT TIME 51.50 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5631.	4608.	1825.	730.	219111.
CMS	142.	130.	52.	21.	6205.
INCHES		1.90	3.01	3.01	3.01
MM		48.20	76.35	76.39	76.39
AC-FT		2285.	3620.	3622.	3622.
THOUS CU M		2819.	4465.	4467.	4467.

THE DAM BREACH HYDROGRAPH WAS DEVELOPED USING A TIME INTERVAL OF 0.006 HOURS DURING BREACH FORMATION.
DOWNSTREAM CALCULATIONS WILL USE A TIME INTERVAL OF 0.200 HOURS.
THIS TABLE COMPARES THE HYDROGRAPH FOR DOWNSTREAM CALCULATIONS WITH THE COMPUTED BREACH HYDROGRAPH.
INTERMEDIATE FLOWS ARE INTERPOLATED FROM END-OF-PERIOD VALUES.

TIME (HOURS)	TIME FROM BEGINNING OF BREACH (HOURS)	INTERPOLATED BREACH HYDROGRAPH (CFS)	- COMPUTED BREACH HYDROGRAPH (CFS)	= ERROR (CFS)	ACCUMULATED ERROR (CFS)	ACCUMULATED ERROR (AC-FT)
51.200	0.000	792.	792.	0.	0.	0.
51.206	0.006	863.	810.	54.	54.	0.
51.212	0.012	935.	835.	100.	154.	0.
51.218	0.018	1006.	866.	141.	295.	0.
51.224	0.024	1078.	902.	176.	471.	0.
51.230	0.030	1149.	943.	207.	677.	0.
51.236	0.036	1221.	987.	233.	911.	0.
51.242	0.042	1292.	1036.	256.	1167.	1.
51.248	0.048	1364.	1088.	276.	1443.	1.
51.255	0.055	1435.	1143.	292.	1735.	1.
51.261	0.061	1507.	1201.	306.	2041.	1.
51.267	0.067	1578.	1261.	317.	2358.	1.
51.273	0.073	1650.	1324.	325.	2683.	1.
51.279	0.079	1721.	1390.	331.	3014.	2.
51.285	0.085	1792.	1459.	334.	3347.	2.
51.291	0.091	1864.	1530.	334.	3682.	2.
51.297	0.097	1935.	1603.	332.	4014.	2.
51.303	0.103	2007.	1679.	328.	4342.	2.
51.309	0.109	2078.	1756.	322.	4664.	2.
51.315	0.115	2150.	1836.	313.	4978.	2.
51.321	0.121	2221.	1919.	303.	5280.	3.
51.327	0.127	2293.	2003.	290.	5570.	3.
51.333	0.133	2364.	2089.	275.	5846.	3.
51.339	0.139	2436.	2176.	259.	6105.	3.
51.345	0.145	2507.	2266.	241.	6346.	3.
51.352	0.152	2579.	2357.	222.	6568.	3.
51.358	0.158	2650.	2450.	200.	6768.	3.
51.364	0.164	2722.	2545.	176.	6944.	3.
51.370	0.170	2793.	2642.	151.	7095.	4.
51.376	0.176	2864.	2740.	124.	7219.	4.
51.382	0.182	2936.	2840.	95.	7315.	4.
51.388	0.188	3007.	2942.	65.	7380.	4.
51.394	0.194	3079.	3046.	33.	7413.	4.
51.400	0.200	3150.	3150.	-0.	7413.	4.

STATION 2

TIME (HRS)

(O) INTERPOLATED BREACH HYDROGRAPH
(B) COMPUTED BREACH HYDROGRAPH
(*) POINTS AT NORMAL TIME INTERVAL

	400.	800.	1200.	1600.	2000.	2400.	2800.	3200.	0.	0.	0.	0.
51.2	1.	*										
51.21	2.	B O										
51.21	3.	.B O										
51.22	4.	. B O										
51.22	5.	. B O										
51.23	6.	. B O										
51.24	7.	. B .O										
51.24	8.	. B . O										
51.25	9.	. B . O										
51.25	10.	. B .O										
51.26	11.	. B O										
51.27	12.	. B O										
51.27	13.	. B .O										
51.28	14.	. B . O										
51.28	15.	. B . O										
51.29	16.	. B . O										
51.3	17.	. B . O										
51.3	18.	. B . O										
51.31	19.	. B . O										
51.32	20.	. B .O										
51.32	21.	. B . O										
51.33	22.	. B . O										
51.33	23.	. B O										
51.34	24.	. B .O										
51.35	25.	. B . O										
51.35	26.	. B . O										
51.36	27.	. B O										
51.36	28.	. B O										
51.37	29.	. B O										
51.38	30.	. B .O										
51.38	31.	. B O										
51.39	32.	. BO										
51.39	33.	. BO										
51.4	34.	. B.										

GVN

DAM BREACH DATA

BRWID	Z	ELBM	TFAIL	WSEL	FAILEL
5.	[illegible]	1532.00	[illegible]	1541.00	1545.07

STATION 2.0, PLAN 3, RATIO 1

BEGIN DAM FAILURE AT 51.25 HOURS

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	2.	2.	2.	3.	3.
3.	3.	3.	4.	4.	4.	4.	4.	5.	5.
5.	5.	6.	6.	7.	7.	8.	9.	10.	12.
13.	15.	16.	18.	22.	26.	30.	34.	40.	45.
52.	59.	68.	76.	89.	102.	117.	132.	150.	168.
188.	208.	230.	253.	275.	297.	318.	341.	362.	383.
402.	421.	439.	457.	473.	488.	502.	515.	528.	540.
552.	563.	572.	581.	593.	597.	605.	611.	617.	623.
628.	632.	637.	640.	644.	649.	663.	680.	698.	715.
731.	746.	759.	771.	782.	792.	1990.	3860.	5009.	4966.
4943.	4913.	4887.	4860.	4834.	4807.	4780.	4754.	4727.	4700.
4673.	4647.	4620.	4594.	4568.	4542.	4517.	4491.	4466.	4440.
4415.	4390.	4364.	4339.	4314.	4289.	4265.	4240.	4216.	4192.
4168.	4145.	4121.	4096.	4074.	4051.	4028.	4005.	3982.	3959.

STORAGE

82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.

82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.	82515.
82515.	82516.	82516.	82517.	82517.	82518.	82518.	82519.	82520.	82521.
82522.	82525.	82525.	82526.	82527.	82529.	82531.	82533.	82535.	82536.
82539.	82541.	82543.	82544.	82547.	82549.	82551.	82553.	82555.	82556.
82558.	82560.	82561.	82562.	82564.	82565.	82566.	82567.	82568.	82569.
82570.	82571.	82571.	82571.	82572.	82572.	82573.	82573.	82574.	82574.
82575.	82575.	82576.	82576.	82576.	82576.	82576.	82577.	82577.	82578.
82578.	82579.	82579.	82580.	82580.	82581.	82581.	82581.	82582.	82582.
82583.	82583.	82584.	82585.	82586.	82587.	82588.	82589.	82590.	82591.
82591.	82592.	82593.	82594.	82596.	82597.	82599.	82602.	82604.	82608.
82612.	82617.	82622.	82629.	82636.	82644.	82653.	82663.	82673.	82684.
82695.	82708.	82720.	82734.	82747.	82761.	82775.	82790.	82805.	82821.
82836.	82852.	82869.	82887.	82907.	82928.	82953.	82980.	83011.	83047.
83088.	83135.	83187.	83246.	83312.	83386.	83466.	83555.	83655.	83765.
83889.	84026.	84176.	84341.	84519.	84710.	84914.	85128.	85352.	85582.
85816.	86057.	86296.	86534.	86766.	86991.	87208.	87417.	87617.	87807.
87988.	88158.	88318.	88468.	88608.	88737.	88858.	88969.	89072.	89167.
89256.	89337.	89412.	89481.	89545.	89604.	89658.	89708.	89754.	89797.
89835.	89871.	89903.	89933.	89960.	89984.	90007.	90026.	90044.	90060.
90073.	90084.	90095.	90103.	90111.	90118.	90112.	90078.	90015.	89947.
89881.	89815.	89749.	89682.	89615.	89547.	89480.	89413.	89345.	89277.
89210.	89142.	89074.	89006.	88938.	88870.	88803.	88735.	88668.	88600.
88533.	88466.	88399.	88332.	88266.	88199.	88133.	88067.	88001.	87935.
87870.	87804.	87739.	87675.	87610.	87546.	87482.	87418.	87354.	87291.

STAGE

1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.3	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0	1541.0
1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1
1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.1	1541.2	1541.2
1541.2	1541.2	1541.2	1541.2	1541.2	1541.2	1541.2	1541.2	1541.3	1541.3
1541.3	1541.3	1541.4	1541.4	1541.4	1541.5	1541.5	1541.6	1541.6	1541.7
1541.7	1541.8	1541.9	1542.0	1542.1	1542.2	1542.3	1542.4	1542.5	1542.6
1542.8	1542.9	1543.0	1543.2	1543.3	1543.4	1543.5	1543.6	1543.7	1543.8
1543.9	1544.0	1544.1	1544.2	1544.3	1544.3	1544.4	1544.5	1544.5	1544.6
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1545.1	1545.1	1545.1	1545.1	1545.1	1545.1	1545.1	1545.1	1545.1	1545.1
1544.9	1544.9	1544.9	1544.8	1544.8	1544.8	1544.7	1544.7	1544.7	1544.6
1544.6	1544.6	1544.5	1544.5	1544.4	1544.4	1544.4	1544.3	1544.3	1544.3
1544.2	1544.2	1544.2	1544.1	1544.1	1544.0	1544.0	1544.0	1543.9	1543.9
1543.9	1543.8	1543.8	1543.8	1543.7	1543.7	1543.7	1543.6	1543.6	1543.6

PEAK OUTFLOW IS 5051. AT TIME 51.70 HOURS

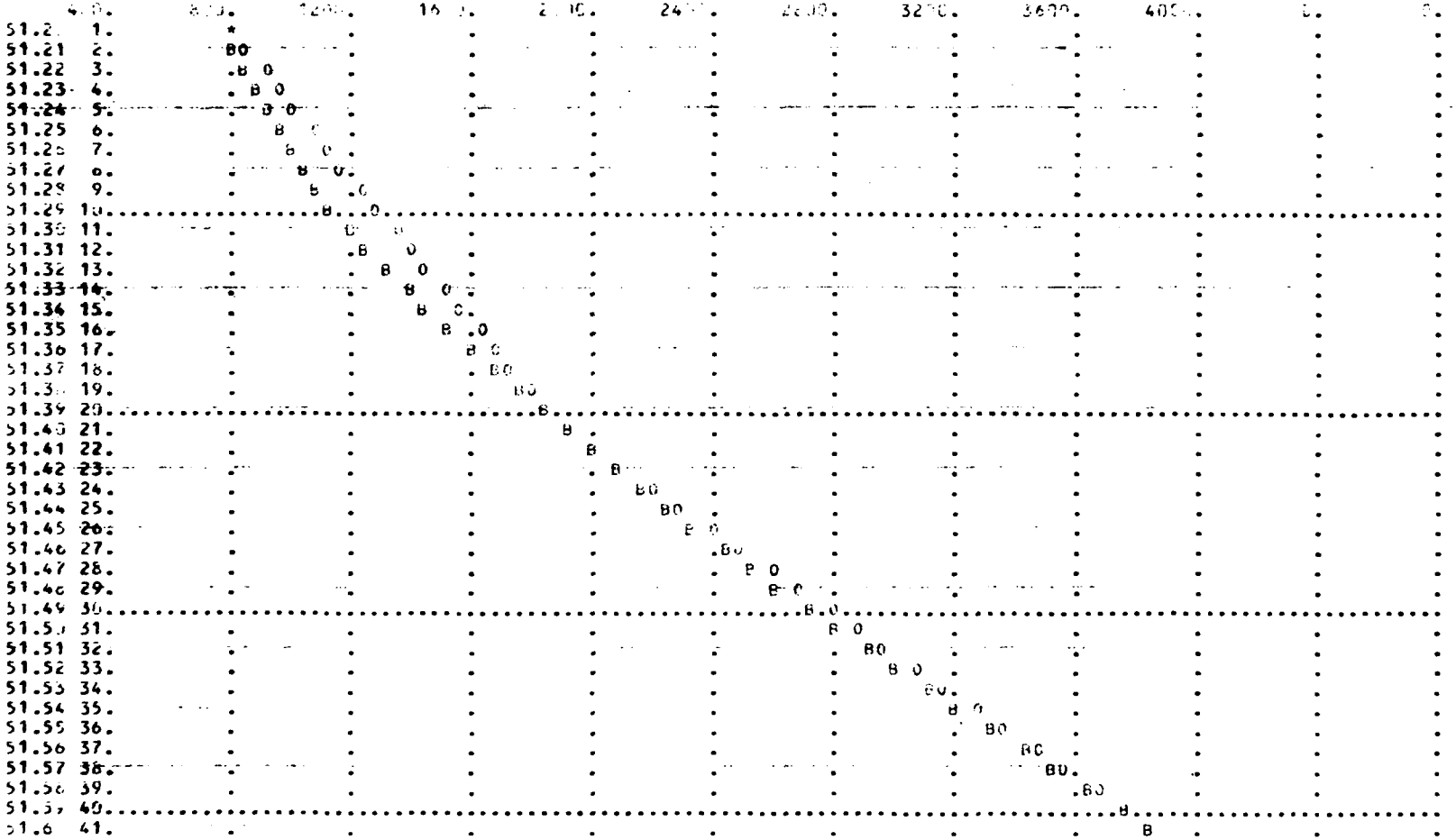
	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5009.	4605.	1810.	724.	217359.
CMS	142.	130.	51.	21.	6155.
INCHES		1.90	2.98	2.98	2.98
MM		48.17	75.73	75.78	75.78
AC-FT		2284.	3590.	3593.	3593.
THOUS CU M		2817.	4429.	4431.	4431.

THE DAM BREACH HYDROGRAPH WAS DEVELOPED USING A TIME INTERVAL OF 0.010 HOURS DURING BREACH FORMATION.
DOWNSTREAM CALCULATIONS WILL USE A TIME INTERVAL OF 0.200 HOURS.
THIS TABLE COMPARES THE HYDROGRAPH FOR DOWNSTREAM CALCULATIONS WITH THE COMPUTED BREACH HYDROGRAPH.
INTERMEDIATE FLOWS ARE INTERPOLATED FROM END-OF-PERIOD VALUES.

TIME (HOURS)	TIME FROM BEGINNING OF BREACH (HOURS)	INTERPOLATED BREACH HYDROGRAPH (CFS)	- COMPUTED BREACH HYDROGRAPH (CFS)	= ERROR (CFS)	ACCUMULATED ERROR (CFS)	ACCUMULATED ERROR (AC-FT)
51.200	0.000	792.	792.	0.	0.	0.
51.210	0.010	847.	810.	38.	38.	0.
51.220	0.020	903.	834.	69.	107.	0.
51.230	0.030	958.	865.	94.	200.	0.
51.240	0.040	1014.	900.	113.	313.	0.
51.250	0.050	1069.	940.	129.	442.	0.
51.260	0.060	1124.	965.	140.	582.	0.
51.270	0.070	1180.	1032.	147.	729.	1.
51.280	0.080	1235.	1084.	152.	881.	1.
51.290	0.090	1291.	1138.	153.	1034.	1.
51.300	0.100	1346.	1195.	151.	1185.	1.
51.310	0.110	1402.	1254.	147.	1332.	1.
51.320	0.120	1457.	1317.	140.	1473.	1.
51.330	0.130	1512.	1381.	131.	1604.	1.
51.340	0.14	1568.	1449.	119.	1723.	1.
51.350	0.150	1623.	1519.	104.	1827.	2.
51.360	0.160	1679.	1591.	88.	1915.	2.
51.370	0.170	1734.	1665.	69.	1983.	2.
51.380	0.180	1789.	1742.	47.	2031.	2.
51.390	0.190	1845.	1820.	25.	2055.	2.
51.400	0.200	1900.	1900.	-0.	2055.	2.
51.410	0.210	1998.	1982.	16.	2071.	2.
51.420	0.220	2096.	2067.	30.	2101.	2.
51.430	0.230	2194.	2153.	41.	2142.	2.
51.440	0.240	2292.	2241.	51.	2194.	2.
51.450	0.250	2390.	2330.	60.	2254.	2.
51.460	0.260	2488.	2421.	67.	2321.	2.
51.470	0.270	2586.	2513.	73.	2394.	2.
51.480	0.280	2684.	2608.	76.	2470.	2.
51.490	0.290	2782.	2704.	78.	2548.	2.
51.500	0.300	2880.	2802.	78.	2626.	2.
51.510	0.310	2978.	2902.	76.	2702.	2.
51.520	0.320	3076.	3002.	74.	2776.	2.
51.530	0.330	3174.	3104.	70.	2846.	2.
51.540	0.340	3272.	3208.	64.	2910.	2.
51.550	.350	3371.	3313.	57.	2966.	2.
51.560	.360	3469.	3421.	48.	3014.	2.
51.570	.370	3566.	3528.	38.	3052.	3.
51.580	0.380	3664.	3637.	27.	3079.	3.
51.590	0.390	3762.	3748.	14.	3093.	3.

STATION

TIME (HRS) (O) INTERPOLATED BREACH HYDROGRAPH (B) COMPUTED BREACH HYDROGRAPH (*) POINTS AT NORMAL TIME INTERVAL



```
*OVN*

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

                                      HYDROGRAPH ROUTING

          ROUTE THRU RTE. 374 BRIDGE
                  ISTAQ   ICOMP   IECON   ITAPE    JPLT    JPRT   INAME  ISTAGE   IAUTO
                   880      1       0       0       0       2       1       0       0

                                      ALL PLANS HAVE SAME
                                         ROUTING DATA
          QLOSS   CLOSS     AVG    IRES   ISAME    IOPT    IPMP            LSTR
            0.0   0.000    1.00      1       1       0       0               0

                  NSTPS   NSTDL     LAG   AMSKK       X     TSK   STORA  ISPRAT
                      1       0       0   0.000   0.000   0.000     -1.       0

STORAGE       1.00        ?.1

OUTFLOW        .00     5000.0?

 STAGE     1532.00    1533.00    1534.00    1535.00    1536.00    1537.00    1538.00    1539.00    1540.00
           1542.00    1543.00    1544.00    1545.00    1546.00

  FLOW        ?.?       35.00     180.??      34?.??     510.??     69?.00     915.??    1095.??    1255.00
           59??.00   11795.00   20455.00   32275.00   47600.00

                                 STATION     800, PLAN 1, RTIO 1

                                            OUTFLOW
         0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
         0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
         0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
         0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
         0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
         0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
         0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
         0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
         0.       0.       0.       0.       0.       0.       0.       0.       0.       0.
         0.       0.       0.       0.       1.       1.       1.       1.       1.       1.
         1.       1.       1.       1.       1.       1.       1.       1.       1.       1.
         1.       1.       1.       1.       1.       1.       1.       1.       1.       1.
         1.       1.       1.       1.       1.       1.       1.       1.       1.       1.
         1.       1.       1.       1.       1.       1.       1.       1.       1.       1.
         1.       1.       1.       1.       1.       1.       1.       1.       1.       1.
         1.       1.       1.       1.       1.       1.       1.       1.       1.       1.
```

2.	[illegible]	[illegible]	2.	[illegible]	2.	2.	2.	[illegible]	3.
3.	3.	3.	4.	4.	4.	4.	4.	5.	5.
5.	5.	6.	6.	7.	7.	8.	9.	[illegible]	12.
13.	15.	16.	18.	22.	26.	33.	34.	[illegible]	45.
52.	59.	68.	76.	89.	102.	117.	132.	[illegible]	168.
186.	208.	230.	253.	275.	297.	318.	341.	362.	383.
402.	421.	439.	457.	473.	488.	502.	515.	[illegible]	540.
552.	563.	572.	581.	[illegible]	597.	605.	611.	617.	623.
628.	632.	637.	640.	644.	649.	663.	[illegible]	658.	715.
731.	746.	759.	771.	782.	792.	5047.	4982.	4952.	4929.
4900.	4877.	4848.	4825.	4795.	4772.	4742.	4719.	4689.	4666.
4636.	4613.	4584.	4562.	4533.	4511.	4483.	4461.	4432.	4410.
4382.	4360.	4332.	4310.	4282.	4261.	4233.	4213.	4185.	4165.
4136.	4118.	4091.	4071.	4045.	4025.	3999.	3979.	3953.	3934.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0

1532.	1532.	1532.	1532.	1532.	1532.	1532.	1532.	1532.	1532.
1532.0	1532.	1532.0	1532.	1532.	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1
1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1
1532.1	1532.2	1532.2	1532.2	1532.2	1532.2	1532.2	1532.3	1532.3	1532.3
1532.4	1532.4	1532.5	1532.5	1532.6	1532.7	1532.8	1533.0	1533.0	1533.1
1533.1	1533.2	1533.2	1533.3	1533.4	1533.5	1533.6	1533.7	1533.8	1533.9
1534.0	1534.2	1534.3	1534.5	1534.6	1534.7	1534.9	1535.0	1535.1	1535.3
1535.4	1535.5	1535.6	1535.7	1535.8	1535.9	1536.0	1536.0	1536.1	1536.2
1536.2	1536.3	1536.3	1536.4	1536.4	1536.5	1536.5	1536.6	1536.6	1536.6
1536.7	1536.7	1536.7	1536.7	1536.7	1536.8	1536.9	1536.9	1537.0	1537.1
1537.2	1537.3	1537.3	1537.4	1537.4	1537.5	1541.7	1541.7	1541.7	1541.7
1541.7	1541.7	1541.7	1541.7	1541.7	1541.6	1541.6	1541.6	1541.6	1541.6
1541.6	1541.6	1541.6	1541.6	1541.6	1541.6	1541.6	1541.6	1541.5	1541.5
1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5
1541.5	1541.5	1541.4	1541.4	1541.4	1541.4	1541.4	1541.4	1541.4	1541.4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5?47.	4616.	1654.	734.	220255.
CMS	143.	131.	52.	21.	6237.
INCHES		1.90	3.02	3.32	3.02
MM		48.28	76.75	76.79	76.79
AC-FT		2289.	3638.	3641.	3641.
THOUS CU M		2824.	4488.	4491.	4491.

MAXIMUM STORAGE = 0.

MAXIMUM STAGE IS 1541.7

STATION 0, PLAN 2, RTIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	2.	2.	2.	3.	3.
3.	3.	3.	4.	4.	4.	4.	4.	5.	5.
5.	5.	6.	6.	7.	7.	8.	9.	10.	12.
13.	15.	16.	18.	22.	26.	30.	34.	40.	45.
52.	59.	62.	78.	89.	102.	117.	132.	150.	168.
189.	208.	[illegible]	253.	275.	297.	318.	341.	362.	383.
432.	421.	439.	457.	473.	488.	502.	515.	528.	540.
552.	563.	572.	551.	590.	597.	605.	611.	617.	623.
629.	632.	637.	643.	644.	649.	663.	689.	698.	715.
731.	746.	759.	771.	782.	792.	3149.	5031.	4973.	4948.
4921.	4895.	4869.	4843.	4816.	4789.	4763.	4736.	4709.	4683.
4656.	4630.	4603.	4576.	4552.	4527.	4501.	4476.	4450.	4425.
4401.	4375.	4349.	4325.	4299.	4275.	4250.	4226.	4202.	4179.
4155.	4131.	4108.	4085.	4061.	4038.	4015.	3992.	3969.	3947.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1
1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1
1532.1	1532.2	1532.2	1532.2	1532.2	1532.2	1532.2	1532.3	1532.3	1532.3
1532.4	1532.4	1532.5	1532.5	1532.6	1532.7	1532.8	1533.	1533.[illegible]	1533.1
1533.1	1533.2	1533.2	1533.3	1533.4	1533.5	1533.6	1533.7	1533.6	1533.9
1534.0	1534.2	1534.3	1534.5	1534.6	1534.7	1534.9	1535.0	1535.1	1535.3
1535.4	1535.5	1535.6	1535.7	1535.8	1535.9	1536.0	1536.0	1536.1	1536.2
1536.2	1536.3	1536.3	1536.4	1536.4	1536.5	1536.5	1536.6	1536.6	1536.6
1536.7	1536.7	1536.7	1536.7	1536.7	1536.8	1536.9	1536.9	1537.0	1537.1
1537.2	1537.3	1537.3	1537.4	1537.4	1537.5	1541.2	1541.7	1541.7	1541.7
1541.7	1541.7	1541.7	1541.7	1541.7	1541.6	1541.6	1541.6	1541.6	1541.6
1541.6	1541.6	1541.6	1541.6	1541.6	1541.6	1541.6	1541.5	1541.5	1541.5
1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5
1541.5	1541.5	1541.4	1541.4	1541.4	1541.4	1541.4	1541.4	1541.4	1541.4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5131.	4608.	1825.	730.	219110.
CMS	142.	130.	52.	21.	6204.
INCHES		1.90	3.01	3.01	3.01
MM		4[illegible].2[illegible]	76.35	76.39	76.39
AC-FT		2285.	3620.	3622.	3622.
THOUS CU M		2819.	4465.	4467.	4467.

MAXIMUM STORAGE = [illegible]

MAXIMUM STAGE IS 1541.7

STATION [illegible], PLAN 5, RTIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	2.	2.	2.	3.	3.
3.	3.	3.	4.	4.	4.	4.	4.	5.	5.
5.	5.	6.	6.	7.	7.	8.	9.	10.	12.
13.	15.	16.	18.	22.	26.	30.	34.	40.	45.
52.	59.	68.	76.	69.	102.	117.	132.	150.	168.
186.	208.	230.	253.	275.	297.	318.	341.	362.	383.
[illegible]	421.	439.	457.	473.	488.	502.	515.	528.	540.
552.	563.	572.	[illegible]	[illegible]	597.	[illegible]	611.	617.	623.
[illegible]	632.	637.	640.	644.	649.	663.	680.	698.	715.
731.	746.	759.	771.	782.	792.	1900.	3859.	5009.	4966.
4939.	4913.	4887.	4860.	4834.	4807.	4780.	4754.	4727.	4700.
4673.	4647.	4620.	4594.	4568.	4542.	4516.	4491.	4466.	4440.
4415.	4390.	4364.	4339.	4314.	4290.	4264.	4240.	4216.	4192.
4168.	4145.	4121.	4098.	4074.	4051.	4028.	4005.	3982.	3959.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.

STAGE

1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0	1532.0
1532.0	1532.0	1532.0	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1
1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1	1532.1
1532.1	1532.2	1532.2	1532.2	1532.2	1532.2	1532.2	1532.3	1532.3	1532.3
1532.4	1532.4	1532.5	1532.5	1532.6	1532.7	1532.8	1533.0	1533.[illegible]	1533.1
1533.1	1533.2	1533.2	1533.3	1533.4	1533.5	1533.6	1533.7	1533.8	1533.9
1534.0	1534.2	1534.3	1534.5	1534.6	1534.7	1534.9	1535.0	1535.1	1535.3
1535.4	1535.5	1535.6	1535.7	1535.8	1535.9	1536.0	1536.0	1536.1	1536.2
1536.2	1536.3	1536.3	1536.4	1536.4	1536.5	1536.5	1536.6	1536.6	1536.6
1536.7	1536.7	1536.7	1536.7	1536.7	1536.8	1536.9	1536.9	1537.0	1537.1
1537.2	1537.3	1537.3	1537.4	1537.4	1537.5	1540.5	1541.4	1541.7	1541.7
1541.7	1541.7	1541.7	1541.7	1541.7	1541.7	1541.6	1541.6	1541.6	1541.6
1541.6	1541.6	1541.6	1541.6	1541.6	1541.6	1541.6	1541.6	1541.6	1541.5
1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5	1541.5
1541.5	1541.5	1541.5	1541.4	1541.4	1541.4	1541.4	1541.4	1541.4	1541.4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5009.	4605.	1 1[illegible].	724.	217349.
CMS	142.	13[illegible].	31.	21.	6155.
INCHES		1.9[illegible]	2.96	2.98	2.98
MM		4[illegible].17	75.73	75.7[illegible]	75.78

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	2617.	[illegible]	4451.	4451.

MAXIMUM STORAGE = [illegible].

MAXIMUM STAGE IS 1541.7

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HYDROGRAPH ROUTING

CHANNEL ROUTE DOWNSTREAM TO STATION 8800

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
8800	1	0	0	0	2	1	0	0

ALL PLANS HAVE SAME
ROUTING DATA

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

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-1.	0

NORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELNVT	ELMAX	RLNTH	SEL
0.0350	0.0350	0.0350	1487.0	1520.0	5000.	0.00830

CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
199.00 1520.00 590.00 1500.00 6[illegible].00 1490.00 606.00 1487.00 674.00 1487.00
650.00 1490.00 74[illegible].0 1500.00 88[illegible].00 1520.00

STORAGE	0.00	3.66	9.91	25.70	53.69	93.56	146.22	210.77	287.88
	486.31	607.96	744.57	896.14	1062.67	1244.15	1440.60	1652.00	1878.36
OUTFLOW	0.00	88.70	355.25	1048.67	2483.73	4930.34	8621.10	13766.94	20416.00
	39534.90	52614.37	68321.06	86855.71	108412.30	133178.72	161337.44	193066.09	228537.97
STAGE	1487.00	1488.74	1490.47	1492.21	1493.95	1495.68	1497.42	1499.16	1500.89
	1504.37	1506.1	1507.84	1509.58	1511.32	1513.05	1514.79	1516.53	1518.26
FLOW	0.0	88.7	355.25	1048.67	2483.73	4930.34	8621.10	13766.94	20416.00
	39534.9	52614.37	68321.0	86855.7	108412.30	133178.72	161337.44	193066.09	228537.97

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	2.	2.	2.	2.	2.	2.	2.	2.
2.	3.	3.	3.	3.	3.	4.	4.	4.	4.
5.	5.	5.	5.	6.	6.	7.	7.	8.	9.
10.	11.	13.	14.	16.	19.	22.	25.	29.	34.
39.	44.	51.	58.	67.	76.	87.	106.	124.	142.
161.	18[illegible].	2[illegible].	222.	244.	266.	288.	309.	331.	353.
374.	394.	413.	432.	449.	466.	482.	496.	51[illegible].	523.
535.	547.	558.	568.	577.	586.	594.	601.	608.	614.
62[illegible].	625.	633.	635.	639.	643.	650.	662.	676.	692.
7[illegible].	724.	739.	753.	766.	777.	2020.	3907.	4657.	4840.
4893.	4869.	4871.	[illegible]846.	4822.	4796.	4770.	4744.	4717.	4691.
4004.	4038.	4612.	4586.	4560.	4535.	4509.	4484.	4459.	4434.
4408.	4383.	4356.	4333.	4308.	4283.	4259.	4235.	4211.	4187.
4163.	4140.	4116.	4093.	4070.	4046.	4023.	4000.	3977.	3955.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	0.	.	0.
.	0.	.	0.	0.	0.	0.	0.	0.	0.
1.	0.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	3.	3.	4.	4.	4.	5.
5.	6.	5.	7.	7.	6.	8.	9.	9.	10.
10.	11.	11.	12.	12.	12.	13.	13.	13.	14.
14.	14.	15.	15.	15.	15.	15.	16.	16.	16.
16.	16.	15.	16.	16.	16.	17.	17.	17.	18.
18.	18.	19.	19.	19.	20.	45.	78.	89.	92.
93.	93.	93.	93.	92.	92.	91.	91.	90.	90.
89.	89.	89.	88.	88.	87.	87.	87.	86.	86.
85.	85.	84.	84.	84.	83.	83.	82.	82.	82.
81.	81.	80.	80.	80.	79.	79.	79.	78.	78.

STAGE

1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.	1487.	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1
1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.2	1487.2
1487.2	1487.2	1487.2	1487.3	1487.3	1487.4	1487.4	1487.5	1487.6	1487.7
1487.6	1487.9	1488.0	1488.1	1488.3	1488.5	1488.7	1488.8	1489.0	1489.1
1489.2	1489.3	1489.5	1489.6	1489.7	1489.9	1490.0	1490.2	1490.3	1490.5
1490.5	1490.6	1490.6	1490.7	1490.7	1490.8	1490.8	1490.8	1490.9	1490.9
1490.9	1491.0	1491.0	1491.0	1491.0	1491.1	1491.1	1491.1	1491.1	1491.1
1491.1	1491.2	1491.2	1491.2	1491.2	1491.2	1491.2	1491.2	1491.3	1491.3
1491.4	1491.4	1491.4	1491.5	1491.5	1491.5	1495.4	1495.5	1495.5	1495.6
1495.7	1495.7	1495.6	1495.6	1495.6	1495.6	1495.6	1495.6	1495.5	1495.5
1495.5	1495.5	1495.5	1495.4	1495.4	1495.4	1495.4	1495.4	1495.3	1495.3
1495.3	1495.3	1495.3	1495.3	1495.2	1495.2	1495.2	1495.2	1495.2	1495.2
1495.1	1495.1	1495.1	1495.1	1495.1	1495.1	1495.0	1495.0	1495.1	1495.0

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4690.	4551.	1795.	716.	215545.
CMS	133.	129.	51.	20.	6104.
INCHES		[illegible]	2.96	2.96	2.96

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	5961.	3563.	3563.	
[illegible]	[illegible]	4342.	4395.	4395.	

MAXIMUM STORAGE = [illegible].

MAXIMUM STAGE IS [illegible]

STATION [illegible] PLAN 2, RTIO 1

OUTFLOW

[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	2.	2.	2.	2.	2.	2.	2.	2.
2.	3.	3.	3.	3.	3.	4.	4.	4.	4.
5.	5.	5.	5.	6.	6.	7.	7.	8.	9.
11.	11.	13.	14.	16.	19.	22.	25.	29.	34.
39.	44.	51.	58.	67.	76.	87.	106.	124.	142.
161.	181.	200.	222.	244.	266.	288.	309.	331.	353.
374.	394.	413.	432.	449.	466.	482.	496.	510.	523.
535.	547.	558.	568.	577.	586.	594.	602.	608.	614.
620.	625.	630.	635.	639.	643.	650.	662.	676.	692.
730.	724.	739.	753.	756.	777.	1455.	3091.	4371.	4766.
4879.	4899.	4917.	4906.	4841.	4815.	4789.	4765.	4736.	4709.
4683.	4656.	4630.	4614.	4578.	4552.	4527.	4501.	4476.	4450.
4425.	4401.	4375.	4349.	4324.	4301.	4275.	4250.	4226.	4202.
4179.	4155.	4131.	4108.	4084.	4061.	4038.	4015.	3992.	3969.

STOR

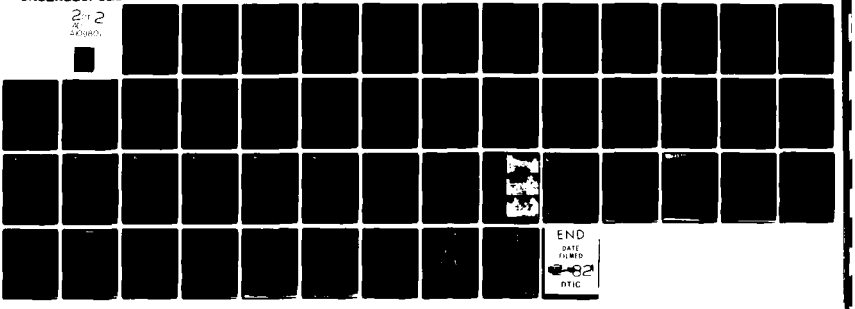
[illegible]	0.	[illegible]	[illegible]	[illegible]	0.	0.	0.	0.	0.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.	0.	0.	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.	[illegible]	[illegible]	[illegible]	0.	0.	0.	0.	0.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

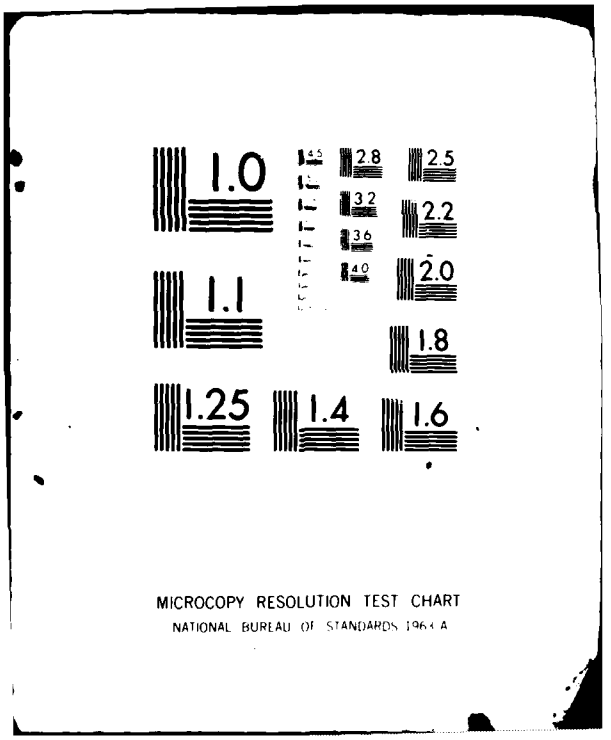
.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	.	.	.	.
0.	.	.	.	.	.	.	.	.	0.
0.	0.	0.	0.	.	.	0.	1.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	.	.	.	.	.	0.	0.	0.	0.
.	.	.	.	.	.	0.	0.	0.	0.
.	.	.	.	.	.	.	0.	.	0.
.	0.	.	0.	0.	0.	0.	0.	.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	3.	3.	4.	4.	4.	5.
5.	6.	6.	7.	7.	[illegible]	[illegible]	9.	9.	10.
10.	11.	11.	12.	12.	12.	13.	13.	13.	14.
14.	14.	15.	15.	15.	15.	15.	16.	16.	16.
16.	16.	16.	16.	16.	16.	17.	17.	17.	18.
18.	18.	19.	19.	19.	20.	34.	64.	85.	91.
93.	93.	93.	93.	92.	92.	92.	91.	91.	90.
93.	89.	89.	88.	88.	86.	87.	87.	86.	86.
86.	85.	85.	84.	84.	84.	83.	83.	82.	82.
82.	81.	81.	80.	80.	80.	79.	79.	78.	78.

STAGE

1487.	1487.	1487.	1487.	1487.	1487.	1487.	1487.0	1487.0	1487.0
1487.	1487.	1487.0	1487.	1487.0	1487.	1487.	1487.	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.	1487.0	1487.0	1487.0	1487.	1487.0	1487.0	1487.0	1487.0
1487.	1487.	1487.0	1487.0	1487.0	1487.	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.	1487.0	1487.	1487.0	1487.	1487.0	1487.0	1487.0	1487.0
1487.0	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1
1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.2	1487.2
1487.2	1487.2	1487.2	1487.3	1487.3	1487.4	1487.4	1487.5	1487.6	1487.7
1487.8	1487.9	1488.0	1488.1	1488.3	1488.5	1488.7	1488.3	1489.0	1489.1
1489.2	1489.3	1489.5	1489.6	1489.7	1489.9	1490.1	1490.2	1490.3	1490.5
1490.5	1490.6	1490.6	1490.7	1490.7	[illegible]	1490.8	1490.8	1490.9	1490.9
1490.9	1491.	1491.0	1491.0	1491.0	1491.1	1491.1	1491.1	1491.1	1491.1
1491.1	1491.2	1491.2	1491.2	1491.2	1491.2	1491.2	1491.2	491.3	1491.3
1491.4	1491.4	1491.4	1491.5	1491.5	1491.5	1492.7	1494.4	495.3	1495.6

AD-A109 801 STETSON-DALE UTICA NY F/G 13/2
NATIONAL DAM SAFETY PROGRAM. CHAZY LAKE DAM (INVENTORY NUMBER N--ETC(U)
AUG 81 J B STETSON DACW51-81-C-0009
UNCLASSIFIED NL




1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963 A

[illegible]	[illegible]	[illegible]	[illegible]	1495.6	1495.6	[illegible]	1495.6	[illegible]	[illegible]
1495.5	1495.5	1495.5	1495.5	1495.4	1495.4	1495.4	1495.4	1495.4	1495.3
1495.3	1495.3	1495.3	1495.3	1495.3	1495.2	1495.2	1495.2	1495.2	1495.2
1495.2	1495.1	1495.1	1495.1	1495.1	1495.1	1495.1	1495.0	1495.0	1495.0

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4899.	4537.	1786.	715.	214366.
CMS	139.	130.	51.	20.	6071.
INCHES		1.89	2.94	2.94	2.94
MM		47.97	74.73	74.75	74.75
AC-FT		2274.	3542.	3544.	3544.
THOUS CU M		2805.	4369.	4371.	4371.

MAXIMUM STORAGE = 93.

MAXIMUM STAGE IS 1495.7

STATION [illegible], PLAN 3, RTIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	2.	2.	2.	2.	2.	2.	2.	2.
2.	3.	3.	3.	3.	3.	4.	4.	4.	4.
5.	5.	5.	5.	6.	6.	7.	7.	8.	9.
10.	11.	13.	14.	16.	19.	22.	25.	29.	34.
[illegible]	44.	51.	59.	67.	76.	87.	136.	124.	142.
161.	180.	201.	222.	244.	266.	288.	309.	331.	353.
374.	394.	413.	432.	449.	466.	482.	496.	510.	523.
535.	547.	558.	568.	577.	586.	594.	601.	608.	614.
621.	625.	631.	635.	639.	643.	650.	662.	676.	692.
719.	724.	737.	753.	[illegible]	777.	1184.	2153.	3639.	4542.
4517.	4690.	4697.	4681.	4656.	4633.	4607.	4760.	4753.	4727.
[illegible]	4673.	4646.	4620.	4594.	4566.	4542.	4517.	4491.	4466.
[illegible]	4415.	[illegible]	4364.	4339.	4314.	4289.	4265.	4240.	4216.
4192.	4168.	4145.	4121.	4098.	4074.	4051.	4026.	4005.	3982.

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
4.	0.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	3.	3.	4.	4.	4.	5.
5.	6.	6.	7.	7.	8.	8.	9.	9.	10.
10.	11.	11.	12.	12.	12.	13.	13.	13.	14.
14.	14.	15.	15.	15.	15.	15.	16.	16.	16.
16.	16.	16.	16.	16.	16.	17.	17.	17.	18.
18.	18.	19.	19.	19.	20.	26.	47.	73.	87.
92.	93.	93.	93.	93.	92.	92.	91.	91.	91.
90.	90.	89.	89.	86.	86.	87.	87.	87.	86.
86.	85.	85.	85.	84.	84.	83.	83.	83.	82.
82.	81.	81.	81.	83.	80.	79.	79.	79.	78.

STAGE

1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.	1487.	1487.0	1487.0	1487.	1487.0	1487.0	1487.0	1487.0
1487.0	1487.	1487.	1487.	1487.0	1487.	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.	1487.	1487.	1487.	1487.	1487.	1487.0	1487.0	1487.	1487.
1487.0	1487.	1487.	1487.	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.
1487.0	1487.	1487.0	1487.0	1487.0	1487.	1487.0	1487.0	1487.0	1487.
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.0	1487.	1487.0	1487.	1487.0	1487.	1487.0	1487.0	1487.0	1487.
1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0	1487.0
1487.	1487.	1487.	1487.	1487.0	1487.	1487.0	1487.	1487.	1487.0
1487.	1487.	1487.	1487.	1487.	1487.	1487.0	1487.	1487.0	1487.
1487.	1487.	1487.0	1487.	1487.	1487.	1487.0	1487.	1487.0	1487.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.1	1487.2	1487.2
1487.2	1487.2	1487.2	1487.3	1487.3	1487.4	1487.4	1487.5	1487.6	1487.7
1487.8	1487.9	1488.0	1488.1	1488.3	1488.5	1488.7	1488.8	1489.0	1489.1
1489.2	1489.3	1489.5	1489.6	1489.7	1489.9	1490.0	1490.2	1490.3	1490.5
1490.5	1490.6	1490.6	1490.7	1490.7	1490.8	1490.8	1490.9	1490.9	1490.9
1490.9	1491.0	1491.0	1491.0	1491.0	1491.1	1491.1	1491.1	1491.1	1491.1
1491.1	1491.2	1491.2	1491.2	1491.2	1491.2	1491.2	1491.2	1491.3	1491.3
1491.4	1491.4	1491.4	1491.5	1491.5	1491.5	1492.3	1493.5	1494.8	1495.4
1495.6	1495.7	1495.7	1495.6	1495.6	1495.6	1495.6	1495.6	1495.6	1495.5
1495.5	1495.5	1495.5	1495.5	1495.4	1495.4	1495.4	1495.4	1495.4	1495.4
1495.3	1495.3	1495.3	1495.3	1495.3	1495.2	1495.2	1495.2	1495.2	1495.2
1495.2	1495.1	1495.1	1495.1	1495.1	1495.1	1495.1	1495.0	1495.0	1495.0

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4897.	4583.	1771.	719.	212612.
CMS	139.	130.	50.	20.	6021.
INCHES		1.69	2.92	2.92	2.92
MM		42.94	74.09	74.13	74.13
AC-FT		2273.	3512.	3514.	3514.
THOUS CU M		2803.	4332.	4335.	4335.

MAXIMUM STORAGE = 93.

MAXIMUM STAGE IS 1495.7

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

HYDROGRAPH ROUTING

CHANNEL ROUTE DOWNSTREAM TO PLANK BOUNDARY ROAD BRIDGE

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

ALL PLANS HAVE SAME ROUTING DATA

GLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR
.00	.000	.200	1	1	0	0	0

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	0.000	0.000	0.000	-1.	0

NORMAL DEPTH CHANNEL ROUTING

QA(1)	QA(2)	QA(3)	ELMVT	ELMAX	ELTP	SEL

CROSS SECTION COORDINATES--STA,ELEV,STA,ELEV--ETC
1[illegible] 15[illegible] 54[illegible] 14[illegible] 126[illegible] 1465.00 1266.00 1462.00 1274.00 1462.00
1286.00 1465.[illegible] 25[illegible] 14[illegible] 302[illegible] 1500.00

STAGE	[illegible]	[illegible].75	14.65	[illegible]1.27	2[illegible].52	3[illegible].6	6[illegible].52	9[illegible].24	13[illegible].23
	2250.00	2735.29	3274.11	3813.13	4372.38	4951.79	5531.42	6171.26	6811.29
OUTFLOW	0.[illegible]	70.58	392.55	2524.79	8398.06	19500.23	37121.34	62431.55	96516.64
	232651.38	274644.69	356827.19	446553.94	549944.25	661095.13	782040.00	912856.88	1053640.00
STAGE	1462.00	1464.0[illegible]	1466.[illegible]	1468.[illegible]	1470.[illegible]	1472.00	1474.00	1476.[illegible]	1478.00
	1482.[illegible]	1484.[illegible]	1486.[illegible]	1488.[illegible]	1490.[illegible]	1492.[illegible]	1494.00	1496.00	1498.00
FLOW	0.00	70.58	392.55	2524.79	8398.06	19500.23	37121.34	62431.55	96516.64
	232651.38	274644.69	356827.19	446553.94	549944.25	661095.13	782040.[illegible]	912856.88	1053640.00

STATION 13[illegible], PLAN 1, RTIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	0.	[illegible]	0.	[illegible]	[illegible]	0.	0.	0.	0.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0.	0.	0.	0.
[illegible]	0.	[illegible]	0.	[illegible]	[illegible]	0.	0.	0.	0.
0.	0.	[illegible]	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	[illegible]	0.	0.	0.	0.	0.	[illegible]	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	2.	2.	2.	2.	2.	2.
2.	2.	2.	3.	3.	5.	3.	3.	4.	4.
4.	4.	4.	5.	5.	5.	6.	6.	7.	7.
[illegible]	9.	1[illegible].	11.	13.	14.	16.	19.	22.	25.
29.	33.	38.	44.	5[illegible].	58.	66.	77.	91.	106.
122.	14[illegible].	15[illegible].	177.	197.	218.	239.	261.	282.	304.
325.	346.	367.	387.	4[illegible].	429.	448.	465.	481.	496.
51[illegible].	523.	535.	547.	55[illegible].	566.	577.	586.	594.	601.
6[illegible].	614.	62[illegible].	625.	63[illegible].	635.	640.	646.	656.	668.
681.	696.	711.	726.	74[illegible].	753.	1324.	1850.	2958.	3949.
4452.	4692.	4795.	4831.	4[illegible].	4[illegible].	4[illegible].	4776.	4751.	4725.
4[illegible].	4675.	46[illegible].	46[illegible].	4[illegible].	4569.	4545.	4513.	4492.	4467.
444[illegible].	441[illegible].	43[illegible].	4386.	4341.	4310.	4292.	4267.	4243.	4219.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5985.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
1.	1.	1.	2.	2.	2.	3.	3.	4.	4.
5.	5.	6.	7.	8.	8.	9.	10.	11.	12.
12.	13.	14.	15.	15.	16.	17.	17.	18.	18.
18.	19.	19.	20.	20.	20.	21.	21.	21.	21.
22.	22.	22.	22.	22.	22.	23.	23.	23.	23.
24.	24.	25.	25.	26.	26.	35.	60.	91.	112.
123.	129.	131.	132.	132.	131.	131.	130.	130.	129.
129.	128.	128.	127.	126.	126.	125.	125.	124.	124.
123.	123.	122.	121.	121.	120.	120.	119.	119.	118.
118.	117.	117.	116.	116.	115.	115.	114.	114.	113.
				STAGE					
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0

1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1
1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1
1462.1	1462.1	1462.1	1462.1	1462.1	1462.2	1462.2	1462.2	1462.2	1462.2
1462.2	1462.3	1462.3	1462.3	1462.4	1462.4	1462.5	1462.5	1462.6	1462.7
1462.8	1462.9	1463.1	1463.2	1463.4	1463.6	1463.9	1464.0	1464.1	1464.2
1464.3	1464.4	1464.5	1464.7	1464.8	1464.9	1465.0	1465.2	1465.3	1465.4
1465.6	1465.7	1465.8	1466.0	1466.0	1466.0	1466.1	1466.1	1466.1	1466.1
1466.1	1466.1	1466.1	1466.1	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2
1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.3
1466.3	1466.3	1466.3	1466.3	1466.3	1466.3	1466.5	1467.4	1468.2	1468.5
1468.7	1468.7	1468.8	1468.8	1468.8	1468.8	1468.8	1468.8	1468.8	1468.7
1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7
1468.7	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6
1468.6	1468.6	1468.6	1468.5	1468.5	1468.5	1468.5	1468.5	1468.5	1468.5

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4833.	4549.	1738.	696.	208700.
CMS	137.	129.	49.	20.	5910.
INCHES		1.87	2.86	2.86	2.86
MM		47.58	72.73	72.76	72.76
AC-FT		2256.	3446.	3450.	3450.
THOUS CU M		2782.	4253.	4255.	4255.

MAXIMUM STORAGE = 132.

MAXIMUM STAGE IS 1468.8

STATION 13.0, PLAN 2, RTIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	2.	2.	2.	2.	2.	2.
2.	2.	2.	3.	3.	3.	3.	3.	4.	4.
4.	4.	4.	5.	5.	5.	6.	6.	7.	7.
[illegible]	9.	[illegible]	11.	13.	14.	16.	19.	22.	25.

[illegible]	33.	[illegible]	44.	[illegible]	[illegible]	[illegible]	77.	[illegible]	[illegible]
122.	140.	15[illegible].	177.	197.	218.	239.	261.	282.	304.
325.	346.	367.	387.	408.	429.	448.	465.	481.	496.
51[illegible].	525.	535.	547.	558.	568.	577.	586.	594.	601.
[illegible]	614.	62[illegible].	625.	639.	635.	647.	646.	656.	666.
[illegible]	696.	711.	726.	740.	753.	9[illegible]5.	1479.	2423.	3570.
4258.	4694.	4763.	4825.	4841.	4834.	4817.	4794.	4779.	4744.
4715.	4691.	4665.	4638.	4612.	4586.	4561.	4535.	4519.	4484.
4458.	4433.	44[illegible].	4383.	4358.	4333.	43[illegible].	4283.	4258.	4234.
4210.	4186.	4163.	4139.	4115.	4092.	4069.	4045.	4022.	3999.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	[illegible]	[illegible]	0.	0.	[illegible]	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
1.	1.	1.	2.	2.	2.	3.	3.	4.	4.
5.	5.	6.	7.	8.	8.	9.	10.	11.	12.
12.	13.	14.	15.	15.	16.	17.	17.	18.	18.
1[illegible].	19.	19.	20.	20.	20.	21.	21.	21.	21.
22.	22.	22.	22.	22.	22.	23.	23.	23.	23.
24.	24.	25.	25.	26.	26.	31.	49.	78.	104.
119.	127.	130.	132.	132.	132.	131.	131.	130.	130.
129.	129.	128.	127.	127.	126.	126.	125.	125.	124.
123.	123.	122.	122.	121.	121.	120.	120.	119.	119.
11[illegible].	118.	117.	117.	116.	115.	115.	114.	114.	113.

STAGE

1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.	1462.0	1462.0	1462.0	1462.	1462.0	1462.0	1462.0	1462.0

1462.	1462.	1462.	1462.	1462.	1462.	1462.	1462.0	1462.	1462.
1462.	1462.	1462.0	1462.	1462.	1462.	1462.	1462.	1462.0	1462.
1462.	1462.	1462.	1462.	1462.	1462.	1462.	1462.	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.	1462.0	1462.0	1462.0	1462.	1462.	1462.0	1462.0	1462.
1462.0	1462.0	1462.0	1462.0	1462.0	1462.	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.1	1462.1	1462.1
1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1
1462.1	1462.1	1462.1	1462.1	1462.1	1462.2	1462.2	1462.2	1462.2	1462.2
1462.2	1462.3	1462.3	1462.3	1462.4	1462.4	1462.5	1462.5	1462.6	1462.7
1462.8	1462.9	1463.1	1463.2	1463.4	1463.6	1463.9	1464.0	1464.1	1464.2
1464.3	1464.4	1464.5	1464.7	1464.8	1464.9	1465.0	1465.2	1465.3	1465.4
1465.6	1465.7	1465.8	1466.0	1466.0	1466.0	1466.1	1466.1	1466.1	1466.1
1466.1	1466.1	1466.1	1466.1	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2
1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.3
1466.3	1466.3	1466.3	1466.3	1466.3	1466.3	1466.5	1467.0	1467.9	1468.4
1466.6	1468.7	1468.6	1468.8	1468.5	1468.8	1468.5	1468.8	1468.8	1468.8
1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7
1468.7	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6
1468.6	1468.6	1468.6	1468.5	1468.5	1468.5	1468.5	1468.5	1468.5	1468.5

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4841.	4556.	1725.	942.	277521.
CMS	137.	129.	49.	26.	5876.
INCHES		1.88	2.85	2.85	2.85
MM		47.65	72.31	72.35	72.35
AC-FT		2259.	3426.	3430.	3430.
THOUS CU M		2787.	4229.	4231.	4231.

MAXIMUM STORAGE = 132.

MAXIMUM STAGE IS 1468.6

STATION 130.0, PLAN 3, RTIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	0.	0.	0.	0.	0.	0.	0.	0.	0.
[illegible]	[illegible]	0.	0.	[illegible]	[illegible]	0.	0.	0.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.

1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	2.	2.	2.	2.	2.	2.
2.	2.	2.	3.	3.	3.	3.	3.	4.	4.
4.	4.	4.	5.	5.	5.	6.	6.	7.	7.
8.	9.	10.	11.	13.	14.	16.	19.	22.	25.
29.	33.	38.	44.	50.	58.	66.	77.	91.	106.
122.	140.	156.	177.	197.	216.	239.	261.	282.	304.
325.	346.	367.	387.	408.	429.	448.	465.	481.	496.
510.	523.	535.	547.	558.	568.	577.	586.	594.	601.
608.	614.	620.	625.	630.	635.	640.	646.	656.	668.
681.	696.	711.	726.	740.	753.	827.	1159.	1867.	2900.
3877.	4413.	4677.	4794.	4835.	4841.	4829.	4810.	4786.	4761.
4735.	4708.	4682.	4655.	4629.	4602.	4576.	4551.	4525.	4499.
4474.	4448.	4423.	4398.	4372.	4347.	4322.	4297.	4273.	4248.
4224.	4200.	4176.	4152.	4129.	4105.	4082.	4059.	4035.	4012.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	1.	1.	1.	1.	1.
1.	1.	1.	2.	2.	2.	3.	3.	4.	4.
5.	5.	6.	7.	8.	8.	9.	10.	11.	12.
12.	13.	14.	15.	15.	16.	17.	17.	18.	18.
18.	19.	19.	20.	20.	20.	21.	21.	21.	21.
22.	22.	22.	22.	22.	22.	23.	23.	23.	23.
24.	24.	25.	25.	26.	26.	28.	39.	61.	89.
111.	123.	126.	131.	132.	132.	132.	131.	131.	130.
150.	129.	123.	128.	127.	127.	126.	126.	125.	124.
124.	123.	123.	122.	122.	121.	121.	120.	119.	119.
113.	118.	117.	117.	116.	116.	115.	115.	114.	114.

STA

1462.0	1462.0	1462.0	1462.	1462.0	1462.0	1462.0	1462.0	1462.	1462.0
1462.0	1462.0	1462.0	1462.	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.	1462.0	1462.0	1462.0	1462.0	1462.	1462.0
1462.0	1462.0	1462.0	1462.	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0
1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.0	1462.1	1462.1
1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1	1462.1
1462.1	1462.1	1462.1	1462.1	1462.1	1462.2	1462.2	1462.2	1462.2	1462.2
1462.2	1462.3	1462.3	1462.3	1462.4	1462.4	1462.5	1462.5	1462.6	1462.7
1462.8	1462.9	1463.1	1463.2	1463.4	1463.6	1463.9	1464.0	1464.1	1464.2
1464.3	1464.4	1464.5	1464.7	1464.8	1464.9	1465.0	1465.2	1465.3	1465.4
1465.6	1465.7	1465.8	1466.0	1466.0	1466.0	1466.1	1466.1	1466.1	1466.1
1466.1	1466.1	1466.1	1466.1	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2
1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.2	1466.3
1466.3	1466.3	1466.3	1466.3	1466.3	1466.3	1466.4	1466.7	1467.4	1468.1
1468.5	1468.6	1468.7	1468.8	1468.8	1468.8	1468.8	1468.8	1468.8	1468.8
1468.8	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7	1468.7
1468.7	1468.7	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6	1468.6
1468.6	1468.6	1468.6	1468.6	1468.5	1468.5	1468.5	1468.5	1468.5	1468.5

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4641.	4554.	1714.	686.	205730.
CMS	137.	129.	49.	19.	5826.
INCHES		1.88	2.82	2.82	2.82
MM		47.64	71.67	71.73	71.73
AC-FT		2258.	3399.	3400.	3400.
THOUS CU M		2786.	4192.	4194.	4194.

MAXIMUM STORAGE = 132.

MAXIMUM STAGE IS 1468.8

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

HYDROGRAPH ROUTING

[illegible] THRU [illegible] READ [illegible]

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
13[illegible]	1	0	0	0	2	1	[illegible]	

ALL PLANS HAVE SAME
ROUTING DATA

QLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP		LSTR
0.0	[illegible]	[illegible]	1	1	0	[illegible]		[illegible]

NSTPS	NSTDL	LAG	AMSKK	X	TSK	STORA	ISPRAT
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-1.	[illegible]

STORAGE	[illegible]	14.7[illegible]	21[illegible]0.00						
OUTFLOW	[illegible]	[illegible]65.0[illegible]	37725.0[illegible]						
STAGE	145[illegible]	1457.0[illegible]	145[illegible]	1459.00	14[illegible]	1461.00	1462.00	146[illegible]	1464.[illegible]
	1466.[illegible]	1467.00	146[illegible]	1469.00	147[illegible].00	1471.[illegible]			
FLOW	[illegible]	75.0[illegible]	230.00	425.00	665.00	925.01	125[illegible]	16[illegible]	196[illegible]
	2625.00	3430.00	[illegible]425.00	12650.00	22875.00	37725.00			

STATION 13[illegible]1, PLAN 1, RTIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	2.	2.	2.	2.	2.
2.	2.	2.	2.	3.	3.	3.	3.	3.	4.
4.	4.	4.	4.	5.	5.	5.	6.	6.	7.
7.	8.	9.	[illegible]	11.	12.	14.	16.	[illegible]	21.
24.	[illegible]	32.	37.	43.	49.	56.	64.	75.	88.
[illegible]	118.	135.	153.	171.	191.	212.	232.	254.	275.
297.	318.	339.	360.	[illegible]	401.	422.	441.	456.	475.
49[illegible]	504.	516.	53[illegible]	542.	553.	564.	573.	582.	590.
[illegible]	605.	612.	[illegible]	625.	62[illegible]	633.	638.	645.	654.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	951.	1512.	[illegible]
2443.	[illegible]	3444.	[illegible]	4043.	4259.	4416.	4499.	4547.	4611.
4637.	4649.	4652.	4647.	4637.	4623.	4606.	4586.	4566.	4544.
4521.	4497.	4473.	4449.	4425.	4400.	4375.	4351.	4326.	4302.
4277.	4253.	4229.	4205.	4181.	4158.	4134.	4111.	4087.	4064.

STOR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	2.	2.
2.	3.	3.	3.	4.	4.	5.	5.	6.	6.
7.	7.	7.	5.	6.	9.	9.	10.	10.	10.
11.	11.	11.	12.	12.	12.	12.	13.	13.	13.
13.	13.	14.	14.	14.	14.	14.	14.	14.	14.
15.	15.	16.	16.	17.	17.	20.	31.	51.	82.
116.	146.	171.	191.	206.	217.	225.	230.	234.	237.
233.	239.	239.	239.	238.	237.	236.	235.	234.	233.
232.	230.	229.	226.	226.	225.	223.	222.	221.	219.
218.	217.	215.	214.	213.	211.	210.	209.	207.	206.

STAGE

1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.	1456.	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
[illegible]	[illegible]	[illegible]	1456.	1456.0	1456.	1456.0	1456.0	1456.	1456.0

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1456.	[illegible]	1456.	145 .	1455.
1456.	1456.	1456.	1456.	1456.	1456.	1456.0	1456.	1456.0	1456.
1456.	1456.	1456.	1456.	1456.	1456.	1456.0	1456.1	1456.0	1456.
1456.	1456.	1456.	1456.	1456.	1456.0	1456.0	1456.1	1456.0	1456.
1456.	1456.	1456.	1456.	1456.0	1456.0	1456.0	1456.	1456.	1456.0
1456.	1456.	1456.	1456.	1456.1	1456.	1456.0	1456.	1456.	1456.
1456.1	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1
1456.1	1456.1	1456.1	1456.1	1456.1	1456.2	1456.2	1456.2	1456.2	1456.3
1456.3	1456.4	1456.4	1456.5	1456.6	1456.7	1456.7	1456.9	1457.	1457.1
1457.2	1457.3	1457.4	1457.5	1457.6	1457.7	1457.9	1458.	1458.1	1458.2
1458.3	1458.3	1458.0	1458.7	1458.8	1458.9	1459.0	1459.1	1459.1	1459.2
1459.3	1459.3	1459.4	1459.4	1459.5	1459.5	1459.6	1459.6	1459.7	1459.7
1459.7	1459.6	1459.6	1459.8	1459.8	1459.8	1459.9	1459.9	1459.9	1460.0
1460.0	1460.0	1460.1	1460.1	1460.1	1460.2	1460.4	1461.	1462.2	1463.7
1465.5	1466.5	1467.0	1467.1	1467.2	1467.3	1467.3	1467.4	1467.4	1467.4
1467.4	1467.4	1467.4	1467.4	1467.4	1467.4	1467.6	1467.4	1467.4	1467.4
1467.4	1467.4	1467.3	1467.3	1467.3	1467.3	1467.3	1467.3	1467.3	1467.3
1457.3	1467.3	1467.3	1467.3	1467.3	1467.2	1467.2	1467.2	1467.2	1467.2

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4652.	4457.	1634.	654.	196240.
CMS	132.	126.	46.	19.	5557.
INCHES		1.84	2.69	2.69	2.69
MM		46.61	68.38	68.42	68.42
AC-FT		2210.	3242.	3244.	3244.
THOUS CU M		2726.	3999.	4001.	4001.

MAXIMUM STORAGE = 239.

MAXIMUM STAGE IS 1467.4

STATION 13801, PLAN 2, RTIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.

1.	[illegible]	[illegible]	1.	[illegible]	[illegible]	[illegible]	2.	[illegible]	2.
[illegible]	[illegible]	2.	2.	3.	3.	3.	3.	3.	4.
4.	4.	4.	4.	5.	5.	5.	6.	6.	7.
7.	8.	7.	10.	11.	12.	14.	15.	18.	21.
24.	23.	32.	37.	43.	49.	56.	64.	75.	88.
[illegible]	[illegible]	135.	153.	171.	191.	212.	232.	254.	275.
297.	318.	339.	360.	[illegible]	401.	422.	441.	458.	475.
[illegible]	[illegible]	[illegible]	530.	542.	553.	564.	573.	582.	590.
[illegible]	[illegible]	612.	618.	623.	626.	633.	638.	645.	654.
665.	671.	[illegible]	689.	[illegible]	712.	742.	857.	1138.	1614.
2203.	2774.	3263.	3655.	3957.	4162.	4347.	4464.	4546.	4600.
4633.	4651.	4656.	4657.	4648.	4636.	4620.	4601.	4581.	4559.
4537.	4514.	4490.	4466.	4441.	4417.	4392.	4367.	4342.	4318.
4293.	4269.	4245.	4221.	4197.	4173.	4149.	4126.	4102.	4079.

STUR

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	1.	1.	1.	1.	2.	2.
2.	3.	3.	3.	4.	4.	5.	5.	6.	6.
7.	7.	7.	8.	8.	9.	9.	10.	10.	10.
11.	11.	11.	12.	12.	12.	12.	13.	13.	13.
13.	13.	14.	14.	14.	14.	14.	14.	14.	14.
15.	15.	16.	16.	17.	17.	19.	26.	41.	68.
[illegible]	133.	161.	183.	[illegible]	213.	222.	228.	233.	236.
236.	239.	239.	239.	239.	238.	237.	236.	235.	234.
233.	231.	230.	229.	227.	226.	224.	223.	222.	220.
217.	217.	216.	215.	213.	212.	211.	209.	208.	207.

STAGE

1456.0	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.	1456.	1456.0	1456.	1456.	1456.	1456.	1456.	1456.0	1456.

1456.	1456.	1456.	1456.	1456.	1456.	1456.0	1456.	1456.0	1456.
1456.	1456.0	1456.	1456.	1456.0	1456.	1456.0	1456.	1456.0	1456.
1456.0	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1
1456.1	1456.1	1456.1	1456.1	1456.1	1456.2	1456.2	1456.2	1456.2	1456.3
1456.3	1456.4	1456.4	1456.5	1456.6	1456.7	1456.7	1456.9	1457.0	1457.1
1457.2	1457.3	1457.4	1457.5	1457.6	1457.7	1457.9	1458.0	1458.1	1458.2
1458.3	1458.5	1458.6	1458.7	1458.8	1458.9	1459.0	1459.1	1459.1	1459.2
1459.3	1459.3	1459.4	1459.4	1459.5	1459.5	1459.6	1459.5	1459.7	1459.7
1459.7	1459.8	1459.8	1459.8	1459.8	1459.8	1459.9	1459.9	1459.9	1460.0
1460.0	1460.0	1460.1	1460.1	1460.1	1460.2	1460.3	1460.7	1461.7	1463.0
1464.7	1466.2	1466.8	1467.1	1467.2	1467.3	1467.3	1467.3	1467.4	1467.4
1467.4	1467.4	1467.4	1467.4	1467.4	1467.4	1467.4	1467.4	1467.4	1467.4
1467.4	1467.4	1467.4	1467.3	1467.3	1467.3	1467.3	1467.3	1467.3	1467.3
1467.3	1467.3	1467.3	1467.3	1467.3	1467.2	1467.2	1467.2	1467.2	1467.2

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4658.	4463.	1624.	650.	195011.
CMS	132.	126.	46.	18.	5522.
INCHES		1.84	2.68	2.68	2.68
MM		46.66	67.95	67.99	67.99
AC-FT		2213.	3222.	3223.	3223.
THOUS CU M		2730.	3974.	3976.	3976.

MAXIMUM STORAGE = 239.

MAXIMUM STAGE IS 1467.4

STATION 15[illegible]1, PLAN 3, RTIO 1

OUTFLOW

0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.	0.	0.	0.	.	0.	0.	0.	0.	0.
.	0.	0.	0.	.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.	0.	0.	0.	0.	0.	0.	0.	0.	0.
.	0.	0.	0.	0.	0.	0.	0.	0.	0.

.	.	.	.	.	.	.	.	.	.
.	.	.	.	.	.	0.	0.	.	.
.	.	.	.	.	.	.	.	.	.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	1.	1.	2.	2.	2.	2.	2.
2.	2.	2.	2.	3.	3.	3.	3.	3.	4.
4.	4.	4.	4.	5.	5.	5.	6.	6.	7.
7.	8.	9.	10.	11.	12.	14.	16.	18.	21.
24.	28.	32.	37.	43.	49.	56.	64.	75.	88.
112.	118.	135.	153.	171.	191.	212.	232.	254.	275.
297.	318.	339.	366.	380.	401.	422.	441.	458.	475.
490.	504.	518.	533.	542.	553.	564.	573.	582.	590.
598.	605.	612.	618.	623.	628.	633.	638.	645.	654.
665.	671.	680.	689.	701.	712.	732.	799.	965.	1345.
1869.	2452.	2988.	3436.	3789.	4058.	4257.	4401.	4573.	4572.
4617.	4644.	4657.	4660.	4655.	4645.	4631.	4614.	4594.	4573.
4551.	4528.	4504.	4480.	4456.	4431.	4407.	4382.	4357.	4332.
4306.	4283.	4259.	4235.	4211.	4187.	4163.	4139.	4115.	4092.

STOP

.	.	0.	.	.	.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	.	0.	0.	0.	0.	0.
0.	0.	0.	0.	.	0.	0.	0.	1.	5.
1.	1.	1.	1.	1.	1.	1.	1.	2.	2.
2.	3.	3.	3.	4.	4.	5.	5.	6.	6.
7.	7.	7.	8.	[illegible]	9.	9.	10.	10.	10.
11.	11.	11.	12.	12.	12.	12.	13.	13.	13.
13.	13.	14.	14.	14.	14.	14.	14.	14.	14.
15.	15.	[illegible]	16.	17.	17.	18.	22.	33.	53.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	235.	[illegible]	235.
[illegible]	[illegible]	[illegible]	[illegible]	239.	239.	[illegible]	237.	[illegible]	235.
[illegible]	[illegible]	[illegible]	22[illegible]	22[illegible]	227.	225.	224.	222.	221.
[illegible]	[illegible]	[illegible]	216.	214.	215.	212.	210.	209.	20[illegible]

STA[illegible]

1456.	1456.	1456.	1456.	1456.	1456.0	1456.0	1456.0	1456.	1456.
1456.	1456.	1456.	1456.	1456.	1456.	1456.	1456.	1456.	1456.
1456.	1456.	1456.	1456.	1456.	1456.	1456.0	1456.0	1456.0	1456.
1456.	1456.	1456.	1456.	1456.	1456.0	1456.0	1456.0	1456.0	1456.
1456.	1456.	1456.	1456.	1456.	1456.	1456.	1456.	1456.	1456.
1456.	1456.	1456.0	1456.	1456.	1456.0	1456.0	1456.	1456.0	1456.
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.	1456.	1456.0	1456.0	1456.	1456.0	1456.0	1456.0	1456.0
1456.0	1456.	1456.	1456.0	1456.	1456.	1456.0	1456.	1456.	1456.0
1456.0	1456.	1456.0	1456.0	1456.	1456.	1456.0	1456.	1456.0	1456.
1456.0	1456.	1456.0	1456.	1456.	1456.	1456.0	1456.	1456.	1456.
1456.	1456.	1456.	1456.	1456.0	1456.	1456.0	1456.	1456.0	1456.
1456.0	1456.	1456.	1456.	1456.0	1456.0	1456.0	1456.	1456.0	1456.0
1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.
1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0	1456.0
1456.0	1456.	1456.	1456.	1456.0	1456.	1456.0	1456.	1456.	1456.0
1456.0	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1	1456.1
1456.1	1456.1	1456.1	1456.1	1456.1	1456.2	1456.2	1456.2	1456.2	1456.3
1456.3	1456.4	1456.4	1456.5	1456.6	1456.7	1456.7	1456.9	1457.0	1457.1
1457.2	1457.3	1457.4	1457.5	1457.6	1457.7	1457.9	1458.0	1458.1	1458.2
1458.3	1458.5	1458.6	1458.7	1458.8	1458.9	1459.0	1459.1	1459.1	1459.2
1459.3	1459.3	1459.4	1459.4	1459.5	1459.5	1459.6	1459.6	1459.7	1459.7
1459.7	1459.8	1459.8	1459.8	1459.8	1459.8	1459.9	1459.9	1459.9	1460.0
1460.0	1460.0	1460.1	1460.1	1460.1	1460.2	1460.3	1460.5	1461.2	1462.3
1463.7	1465.5	1466.5	1467.0	1467.1	1467.2	1467.3	1467.3	1467.4	1467.4
1467.4	1467.4	1467.4	1467.4	1467.4	1467.4	1467.4	1467.4	1467.4	1467.4
1467.4	1467.4	1467.4	1467.4	1467.3	1467.3	1467.3	1467.3	1467.3	1467.3
1467.3	1467.3	1467.3	1467.3	1467.3	1467.3	1467.2	1467.2	1467.2	1467.2

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4663.	4463.	1609.	644.	193174.
CMS	132.	126.	46.	18.	5470.
INCHES		1.64	2.65	2.65	2.65
MM		41.[illegible]	67.31	67.35	67.35
AC-FT		2213.	3191.	3195.	3195.
THOUS CU M		2733.	3936.	3938.	3938.

MAXIMUM STORAGE = 239.

MAXIMUM STAGE IS 1467.4

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)

OPERATION	STATION	AREA	PLAN	RATIO 1 0.50	RATIOS APPLIED TO FLOWS
HYDROGRAPH AT	1	22.59 (58.51)	1	14732. (417.17)	
			2	14732. (417.17)	
			3	14732. (417.17)	
ROUTED TO	2[illegible]	22.59 (58.51)	1	5049. (142.96)	
			2	5031. (142.45)	
			3	5[illegible]. (141.[illegible]5)	
ROUTED TO	6[illegible]	22.59 (58.51)	1	5047. (142.91)	
			2	5031. (142.46)	
			3	5[illegible]9. (141.85)	
ROUTED TO	68[illegible]	22.59 (58.51)	1	4690. (132.47)	
			2	4[illegible]99. (132.71)	
			3	4697. (133.06)	
ROUTED TO	13[illegible]	22.59 (58.51)	1	4733. (134.06)	
			2	4641. (131.46)	
			3	4641. (131.[illegible])	
ROUTED TO	13[illegible]	22.59 (58.51)	1	4[illegible]2. (131.73)	

[illegible]
(1[illegible]1.[illegible]1) [illegible]
4[illegible].
(131.[illegible]) (

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1541.[illegible]	1541.00	1545.[illegible]
STORAGE	62515.	62515.	69975.
OUTFLOW	[illegible].	[illegible].	646.

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
.5[illegible]	1545.[illegible]7	[illegible]	[illegible]11.	5122.	2.[illegible]	51.30	51.2[illegible]

PLAN 2 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1541.[illegible]	1541.[illegible]	1545.[illegible]
STORAGE	62515.	62515.	69975.
OUTFLOW	0.	0.	646.

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
.5[illegible]	1545.[illegible]	[illegible]	[illegible]11[illegible].	5[illegible]5.	2.[illegible]	51.50	51.20

PLAN 3 ....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	1541.00	1541.00	1545.00
STORAGE	62515.	62515.	69975.
OUTFLOW	[illegible].	[illegible].	646.

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
.[illegible]	1[illegible]5.[illegible]7	.[illegible]7	[illegible]11[illegible].	5[illegible]51.	2.[illegible]	51.7[illegible]	51.20

PLAN 1 STATION [illegible]

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
.5	5[illegible]47.	1541.7	51.4[illegible]

PLAN 2 STATION [illegible]

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS

[illegible]	[illegible]	[illegible]	[illegible]
.5[illegible]	5[illegible]9.	1541.7	51.[illegible]

PLAN 1 STATION [illegible]

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
[illegible].50	4[illegible].	1495.7	52.20

PLAN 2 STATION 8800

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
.50	4[illegible]9.	1495.7	52.40

PLAN 3 STATION [illegible]

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
.5[illegible]	4[illegible]7.	1495.7	52.60

PLAN 1 STATION 13800

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
[illegible].5[illegible]	4[illegible]35.	1468.8	53.00

PLAN 2 STATION 13800

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
[illegible].50	4841.	1468.8	53.00

PLAN 3 STATION 13800

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
[illegible].5[illegible]	4[illegible]41.	1468.8	53.20

PLAN 1 STATION 15.01

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
.5	4652.	1467.4	54.6

PLAN 2 STATION 15.01

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
.5	4652.	1467.4	54.6

PLAN 3 STATION 15.01

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME HOURS
.50	4652.	1467.4	54.6

APPENDIX D

REFERENCES

APPENDIX D

REFERENCES

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APPENDIX E

STABILITY ANALYSIS

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DESIGN BRIEF

PROJECT NAME CHAZY LAKE DAM-SPILLWAY DATE 6/30/[illegible]

SUBJECT SPILLWAY STABILITY ANAYSIS PROJECT NO.

DRAWN BY [illegible]

Assumed Spillway Section

El. 102± — PMF

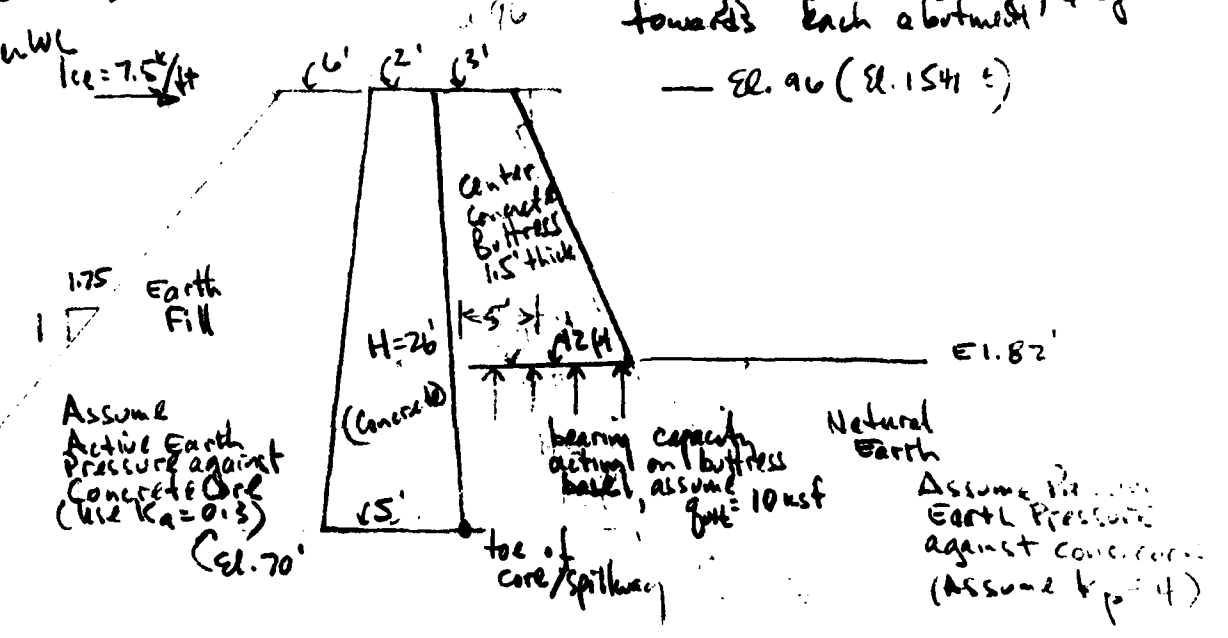
El. 100± — ½ PMF

Normal Summer WL

Reservoir

Ice = 7.5 k/ft

Spillway width is 30 ft, with center buttress and conc. abutment wall. Analyze for center half, ¼ of width towards each abutment.



Wt of concrete spillway and buttress =

$= (26'\times\frac{2+5'}{2})(.150\ kcf)(15'\text{ wide}) + (14')(\frac{3+12}{2})(.150\ kcf)(1.5'\text{ wide})$

$= 205^{k} + 84^{k} = 289^{k}$

$\Sigma M_{\text{to spillway}}$ due to wt. of conc. wall, bearing capacity on buttress base (15 ft. section)

$\cong (205^{k})(2.5\ ft) + (12.5\ ft \times 1.5\ ft \times 10\ ksf)(5\ ft) =$

$\cong 513^{ft\text{-}k} + 900^{ft\text{-}k} = 1413\ ft\text{-}kip$

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DESIGN BRIEF

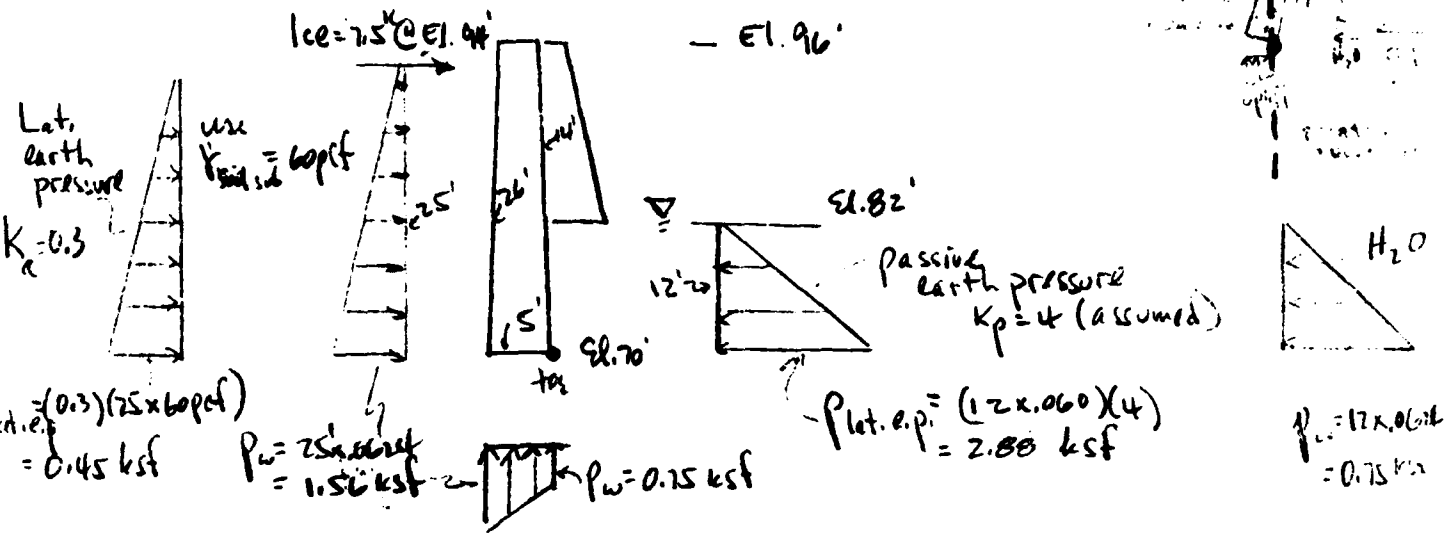
PROJECT NAME CHAZY DATE

UBJECT PROJECT NO.

DRAWN BY

I. WL @ Spillway Crest, plus winter ice and uplift

OVERTURNING



ΣM_{toe} causing overturning = lat. H_2O press + lat. soil pressure + ice + uplift

$= \left(1.56^{ksf} \times \frac{25'}{2} \times \frac{25'}{3}\right) + \left(0.45^{ksf} \times \frac{25'}{2} \times \frac{25'}{3}\right) + (7.5^{k} \times 24') + \left[(0.15 \times 5 \times \frac{5}{2}) + (1.56 - 0.15)(\frac{5}{2})(\frac{2}{3}\ldots)\right]$

$= 162.5 + 46.9 + 180 + 9.4 + 6.8 = 405.6^{k}$ for 1 ft. width

for 15 ft wide, $\Sigma M_{toe} = (405.6^{k})(15') = 6084^{k}$

ΣM_{toe} resisting overturning = wt. core + bearing cap. on buttress base + passive earth pressure + downstream H_2O pressure

$= 1413^{k} + (2.88^{ksf} \times \frac{12}{2} \times \frac{12}{3})(15' \text{ wide}) + (0.75^{ksf} \times \frac{12}{2} \times \frac{12}{3})(15' \text{ wide})$

$= 1413 + 1057 + 270 = 2720^{k}$

FS against overturning = $\frac{2720}{6084} = 0.45$ (unrealistic ...)

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DESIGN BRIEF

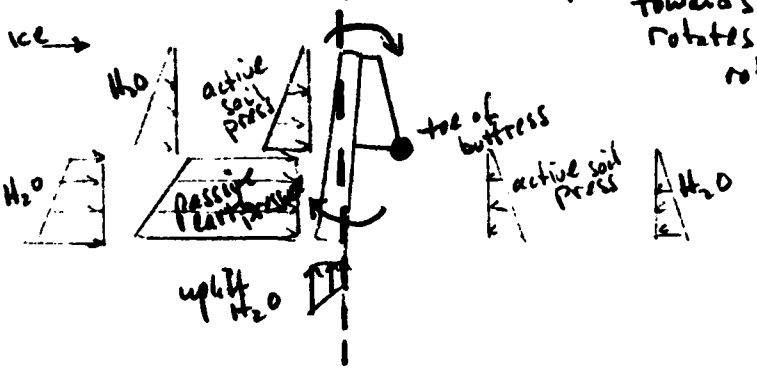
PROJECT NAME CHAZY DATE

JBJECT PROJECT NO.

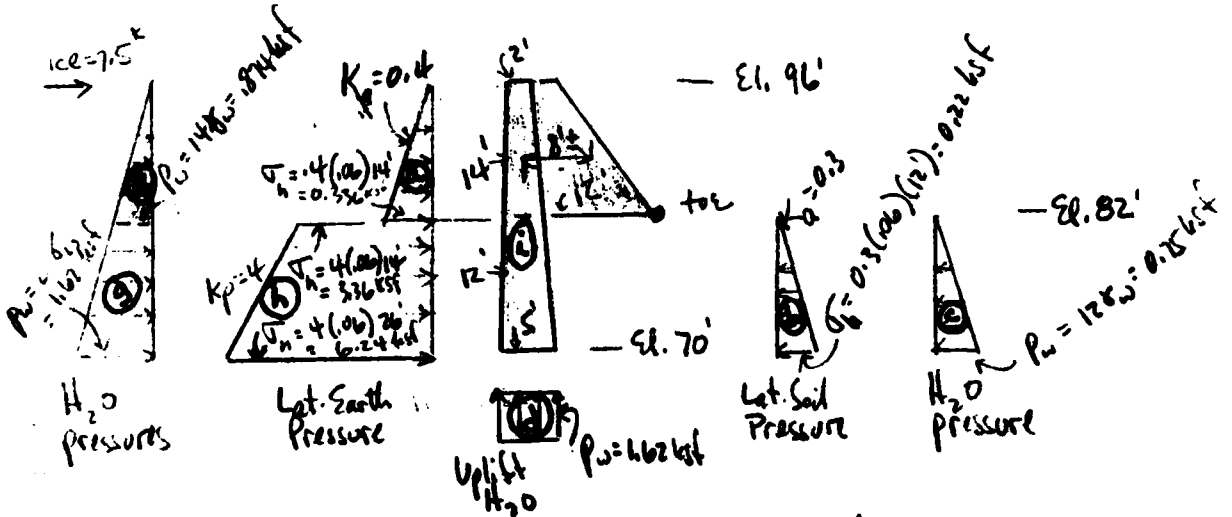
DRAWN BY

Alternate possibility for stability – mode of failure (upper section rotates towards ds, lower section rotates toward upstream rotation about toe)

use $K_a = 0.3$
$K_p = 4.0$
$\gamma_{soil\ sol} = .06$ kcf



Forces/Pressures acting on structure for above mode of failure —



$\sum M_{toe}$ causing overturning due to moment of pressure diagrams ⓐ + ⓑ + ⓒ + ⓓ + ⓔ

$= \left(\frac{1}{2} \times 14' \times 0.336\ ksf\right)\left(\frac{14'}{3}\right) + \left(\frac{1}{2} \times 12' \times 0.22\ ksf\right)\left(\frac{2}{3} \times 12'\right) + \left(\frac{1}{2} \times 12' \times 0.75\ ksf\right)\left(\frac{1}{2} \times 12'\right) +$

$+ \left(5' \times 1.62\ ksf\right)(8') + \left(\frac{1}{2} \times 14' \times .874\ ksf\right)\left(\frac{14}{3}'\right) = 11 + 10.6 + 36 + 64.8 + 28.6 + 151$

$\sum M_{ice}$ causing ovt due to ice loading $= 7.5^{k} \times 13' = 97.5^{ik}$

Total $\sum M_{toe}$ causing ovt $= 151^{ik} + 97.5^{ik} = 249^{ik}$ ±

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PROJECT NAME CHAZY DATE

SUBJECT PROJECT NO.

DRAWN BY

ΣM_{toe} resisting overturning due to passive soil pressure and H_2O pressure against upstream lower section + weight dam (neglect wt. buttress, use core only).

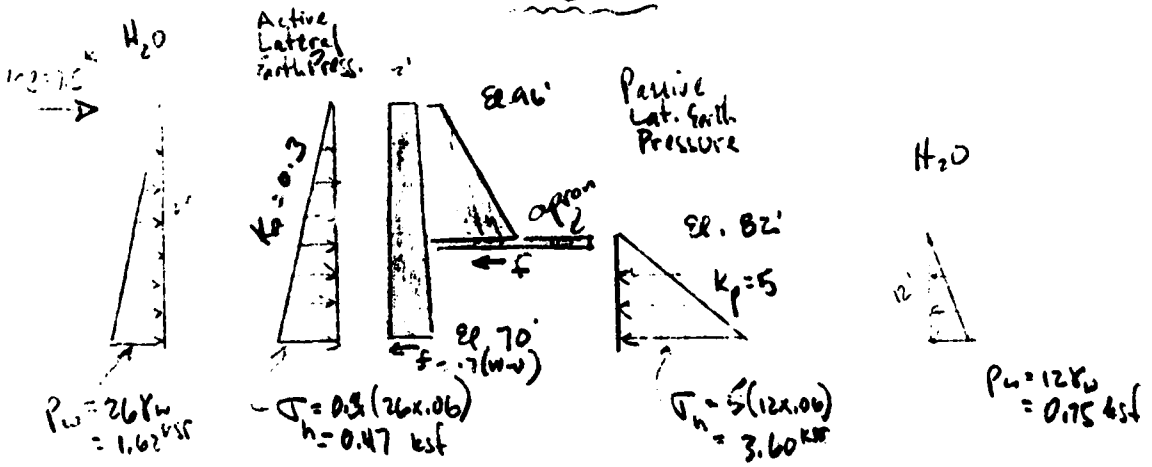
$= (3.36\ ksf \times 12' \times \frac{12'}{2}) + (6.24 - 3.36\ ksf)(\frac{12'}{2})(\frac{2}{3} \times 12') + (.874\ ksf \times 12 \times \frac{12}{2}) +$

$+ (1.62 - .874\ ksf)(\frac{12}{2})(\frac{2}{3} \times 12') + (5' + 2')(26')(.150\ kcf)(13.5') = 242 + 138 + 63 + 56 + 184$

$= 663^{k}$

FS against overturning about toe of buttress $= \frac{663^{k}}{249^{k}} = 2.66$

SLIDING



Forces causing sliding = active earth press + H_2O press + ice

$= (0.47\ ksf \times \frac{26'}{2}) + (1.62 \times \frac{26'}{2}) + 7.5^{k} = 6.1 + 21 + 7.5 = 34.7^{k}$

Forces resisting sliding = passive earth press + H_2O + friction at base

$= (3.60\ ksf \times \frac{12'}{2}) + (0.75\ ksf \times \frac{12'}{2}) + [(\frac{2' + 5'}{2})(26)(.15) - \text{uplift}](.7)$

$= 21.6 + 4.5 + (13.65 - 8.1)(.7) = 30.1^{k}$

FS against sliding, no ice effects $= \frac{30.1}{27.2} = 1.11$

FS against sliding, with ice effects $= \frac{30.1}{34.7} \doteq 0.9$

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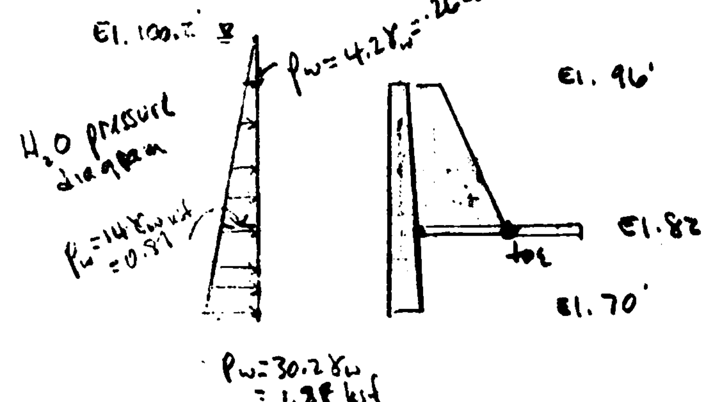
III: WL @ $\frac{1}{2}$ PMF Elevation – assume lateral earth pressure and downstream water pressures as for normal operations; upstream WL and pressure changes, assume uplift as for normal operations;



SLIDING

Forces causing sliding = active earth press + H_2O pressure
$= (6.1^k) + \left(\frac{.26+1.88}{2}\right)(26') = 6.1^k + 27.8^k = 33.9^k$

Forces resisting sliding = passive earth pressure + ds H_2O + friction
$= 30.1^k$ + friction on apron + restraint provided by effect of buttress and abutments

∴ FS against sliding estimated as close to unity numerically, for one foot length, FS ≈ 0.9 ±

OVERTURNING

ΣM_{toe} resisting overturning as for normal operations case = $663^{'k}$ (conservative, since resistance is extra upst and dst H_2O)

ΣM_{toe} causing overturning $= 11^k + 10.6^k + 36^k + 64.8 +)$
$+ \left(.26^{ksf} \times 14' \times \frac{14'}{2}\right) + (0.87 - 0.26)\left(\frac{14'}{2} \times \frac{14'}{3}\right) =$
25.5 (new upstream H_2O normal) 19.9

$= 11 + 10.6 + 36 + 64.8 + 25.5 + 19.9 = 168^{'k}$

FS against OVT $= \frac{663^{'k}}{168^{'k}} = 3.95$

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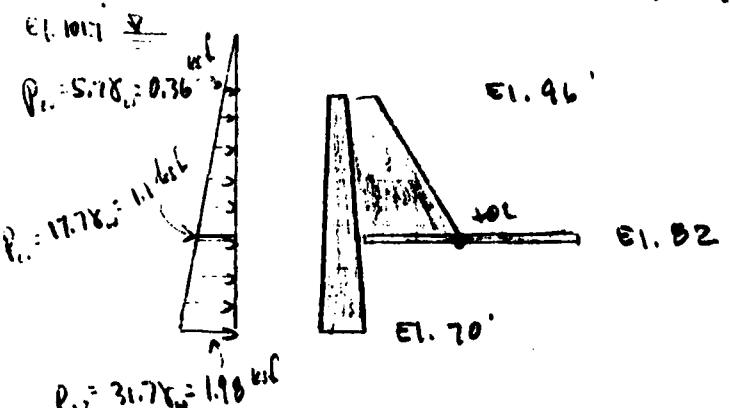
DESIGN BRIEF

PROJECT NAME CHAZY DATE

SUBJECT PROJECT NO.

DRAWN BY

III. WL @ PMF Elevation – assume lateral earth pressures and downstream water pressures as for normal operations, assume uplift as for normal operations



SLIDING

Forces causing sliding = upstream soil and water pressures

$= 6.1^k + \left(\frac{0.36+1.98}{2}\right)(26') = 6.1 + 30.4 = 36.5^k$

Forces resisting sliding as for previous cases = 30.1^k + effect of buttress

$$FS \text{ against sliding} = \frac{30.1^k}{36.5^k} = 0.83$$

OVERTURNING

ΣM_{toe} resisting overturning taken as for normal operations case = $663^{ft\text{-}k}$

ΣM_{toe} causing overturning $= \left[11 + 10.6 + 36 + 64.8\right] + \left(0.36 \times 14 \times \frac{14}{2}\right) + \left(1.1 - 0.36\right)\left(\frac{14 \times 14}{2}\right) =$

$= \left[11 + 10.6 + 36 + 64.8\right] + 35.3 + 24.2 = 182^{ft\text{-}k}$

$$FS \text{ against OVT} = \frac{663^{ft\text{-}k}}{182^{ft\text{-}k}} = 3.64$$

APPENDIX F

PREVIOUS INSPECTION REPORTS/AVAILABLE DOCUMENTS

COPY FOR CHAZY OFFICE

Chicago, January 6, 1926.

Mr. C. E. Hamilton, Manager,
Heart's Delight Farm,
Chazy, Clinton County, New York.

Dear Mr. Hamilton:-

We are ready to send to the New York State Engineer the data for the Chazy Lake Dam as soon as we receive information from you on the following subjects:

The 60" discharge pipe mentioned in the blank form as filled out by you: What is its location, length, concrete enclosure, etc.? A sketch would be helpful.

What is the width of the 12-foot trash rack?

What is the elevation of spillway apron?

Is the reenforcing all of 3/4" rods, 2 feet center each way, as noted on Bundy drawings, or is it different in aprons, waste chamber, and gate-house construction and in concrete facing of old dyke?

For your information we enclose a print from our drawing as of January 4th; also Mr. Bundy's drawings and our yellow memorandums indicating the points on which information was required in order to make up the drawings.

Sincerely yours,

FBT-MW
Enclosures

DRAWING NO. CZ-960 Jan 4, 1926
Drawing by Frederick B. Townsend 1925

Chazy Lake Dam June 8,192

Chazy Lake Dam. The pictu[illegible]s the spill way
destroyed by decay and ic[illegible]
This lake is the soutce o[illegible]
The Big Chazy River.
May 1922

McGregory sawmill
beetween the 1st. and
loth. of June

04	10	25	000282	08051	002	1
RB	CTY	NR AP RECORST-	DAM NO.	INS. DATE	USE	TYPE

YS HEAT INSPECTION

1	Location of Sp'way and outlet	1	Elevations
1	Size of Sp'way and Outlet	1	Geometry of Non-overflow section

1 GENERAL CONDITION OF NON-OVERFLOW SECTION

1	Settlement	1	Cracks	1	Deflections
1	Joints	2	Surface of Concrete	1	Leakage
1	Undermining	1	Settlement of Embankment	1	Crest of Dam
1	Downstream Slope	1	Upstream Slope	1	Toe of Slope

1 GENERAL COND. OF SP'WAY AND OUTLET WORKS

2	Auxiliary Spillway	2	Service or Concrete Sp'way	1	Stilling Basin
2	Joints	2	Surface of Concrete	1	Spillway Toe
2	Mechanical Equipment	1	Plunge Pool	1	Drain

1	Maintenance	B	Hazard Class
3	Evaluation	34	Inspector

COMMENTS:

EVIDANCE OF WAVE ACTION OVER CONC. RETAINING WALL NON-OVERFLOW.

282 ~~~

9-23-24-3000 (6-1206)

Chazy Lake Dam

STATE OF NEW YORK

DEPARTMENT OF

State Engineer and Surveyor

ALBANY

Report of a Structure Impounding Water

To assist in carrying out the provisions of Section 22 of the Conservation Law, being Chapter LXV of the Consolidated Laws of New York State, relating to safeguarding life and property and the erection, reconstruction, or maintenance of structures for impounding water, owners of such structures are requested to fill out as completely as possible this report form for each such dam or reservoir owned within the State of New York for which no plans or reports relative thereto are on file in this Department, and to return this report form, together with prints or photographs explanatory thereof to this department.

1. The structure is on The Big Chazy River flowing into Lake Champlain in the Town of Dannemora County of Clinton and 6 miles West of Dannemora N.Y.
(Give exact distance and direction from a well-known bridge, dam, village main cross-roads or mouth of a stream)

2. Is any part of the structure built upon or does its pond flood any State lands? Built on land of W.H. Miner

3. The name and address of the owner is W. H. Miner, Chazy N.Y.

4. The structure is used for a Reservoir for Hydro-Electric Power Plants

5. The material of the right bank, in the direction with the current, is earth with Concrete Core; at the spillway crest elevation this material has a top slope of 7 inches vertical to a foot horizontal on the center line of the structure, a vertical thickness at this elevation of .... feet, and the top surface extends for a vertical height of 4 feet above the spillway crest.

6. The material of the left bank is Concrete; has a top slope of 7 inches to a foot horizontal, ~~a thickness of~~ ---- ~~feet and a height of~~ ---- ~~feet~~.

7. The natural material of the bed on which the structure rests is (clay, sand, gravel, boulders, granite, shale, slate, limestone, etc.) Clay

8. State the character of the bed and the banks in respect to the hardness, perviousness, water bearing, effect of exposure to air and to water, uniformity, etc. The bed & banks are Clay and impervious to water.

[illegible] are the layers horizontal or inclined? .... If inclined what is the direction of the horizontal outcropping relative to the axis of the main structure and the inclination and direction of the layers in a plane perpendicular to the horizontal outcropping? ....

10. What is the thickness of the layers? ....

11. Are there any porous seams or fissures? ....

12. The watershed at the above structure and draining into the pond formed thereby is 221 square miles. 22.1 as

13. The pond area at the spillway crest elevation is 2000 acres and the pond impounds M.E.C. [illegible] of June [illegible] cubic feet of water.

14. The maximum known flow of the stream at the structure was 1038 cubic feet per second on April 25 1899 (Date)

15. Has the spillway capacity ever been exceeded by a high flow? No

Can any possible flood flow from the pond otherwise than through the wastes noted under 17 and 18 of this report? No If so, give the location, the length and the elevation relative to the spillway crest and the character and slopes of the ground of such possible wastes ....

16. State if any damage to life or to any buildings, roads or other property could be caused by any possible failure of the above structure. Describe the location, the character and the use of buildings below the structure which might be damaged by any failure of the structure; of roads adjacent to or crossing the stream below the structure, giving the lowest elevation of the roadway above the stream bed and giving the shape, the height and the width of stream openings; and of any embankments or steep slopes that any flood could pass over. Also indicate the character and use made of the ground below the structure. No

17. Wastes. The spillway of the above structure is 30 feet long in the clear; the waters are held at the right end by a Concrete Wall the top of which is 4 feet above the spillway crest, and has a top width of 2 feet; and at the left end by a Concrete Wall the top of which is 4 feet above the spillway crest, and has a top width of 2 feet.

18. There is also for flood discharge a pipe 9 ft x 6 ft ~~inches~~ inside diameter and the bottom is 15 feet below the spillway crest; and 3 (sluice, gate outlet) 3 feet wide in the clear by 3 feet high, and the bottom same 15 feet below the spillway crest.

19. APRON. Below the spillway there is an apron built of Concrete (Material), 30 feet wide and 1½ feet thick. The downstream side of the apron has a thickness of 1½ feet for a width of 32 feet.

20. Has the structure any weaknesses which are liable to cause its failure in high flows? No

21. SKETCHES. On the back of this report make a sketch to scale for each different cross-section of the above structure at the greatest depth; giving the height and the depth from the surface of the foundation, the bottom width, the top width (for a concrete or masonry spillway at two feet below the crest), the elevation of the top in reference to the spillway crest, the length of the section, and the material of which the section is constructed; on the spillway section show a cross section of the apron, giving its width, thickness and material, and show the abutment or wash wall at the end of the spillway, giving its heights and thickness. Mark each section with a capital letter. Also sketch a plan; show the above sections by their top lines, giving the mark and the length of each; the openings by their horizontal dimensions; the abutments by their top width and top lengths from the upstream face of the spillway section; and outline the apron. Also sketch an elevation of each end of the structure with a cross section of the banks, giving the depth and width excavated into the banks.

22. WATER SUPPLY. The waters impounded by the above structure have (not) been used for a public water supply since ..... by Never used for a Public Water Supply

The above information is correct to the best of my knowledge and belief.

(Address of signer)	(Signature)
(Date)	(A person signing for owner should indicate his title or authority)

Form IW81. 11-6-14-1000 (16-1028) Acc. 282

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

STATE OF NEW YORK

CONSERVATION COMMISSION

ALBANY

Sheet 199

282 Cham

DAM REPORT

Sept 2, 191...
(Date)

CONSERVATION COMMISSION,

DIVISION OF INLAND WATERS.

GENTLEMEN:

I have the honor to make the following report in relation to the structure known as the Chazy Lake Dam.

This dam is situated upon the Great Chazy River (Give name of stream)

in the Town of Dannemora, Clinton County,

about 10 miles (State distance) from the Village ~~or City~~ of Ellenburg Depot

The distance down (Up or down) stream from the dam, to the Lyon Mt. - Ellenburg road bridge (Give name of nearest important stream or of a bridge)

is about 200' (State distance)

The dam is now owned by -- Whiteside, Champlain, N.Y., leased to F. Fourniei, Ledger Corners. (Give name and address in full)

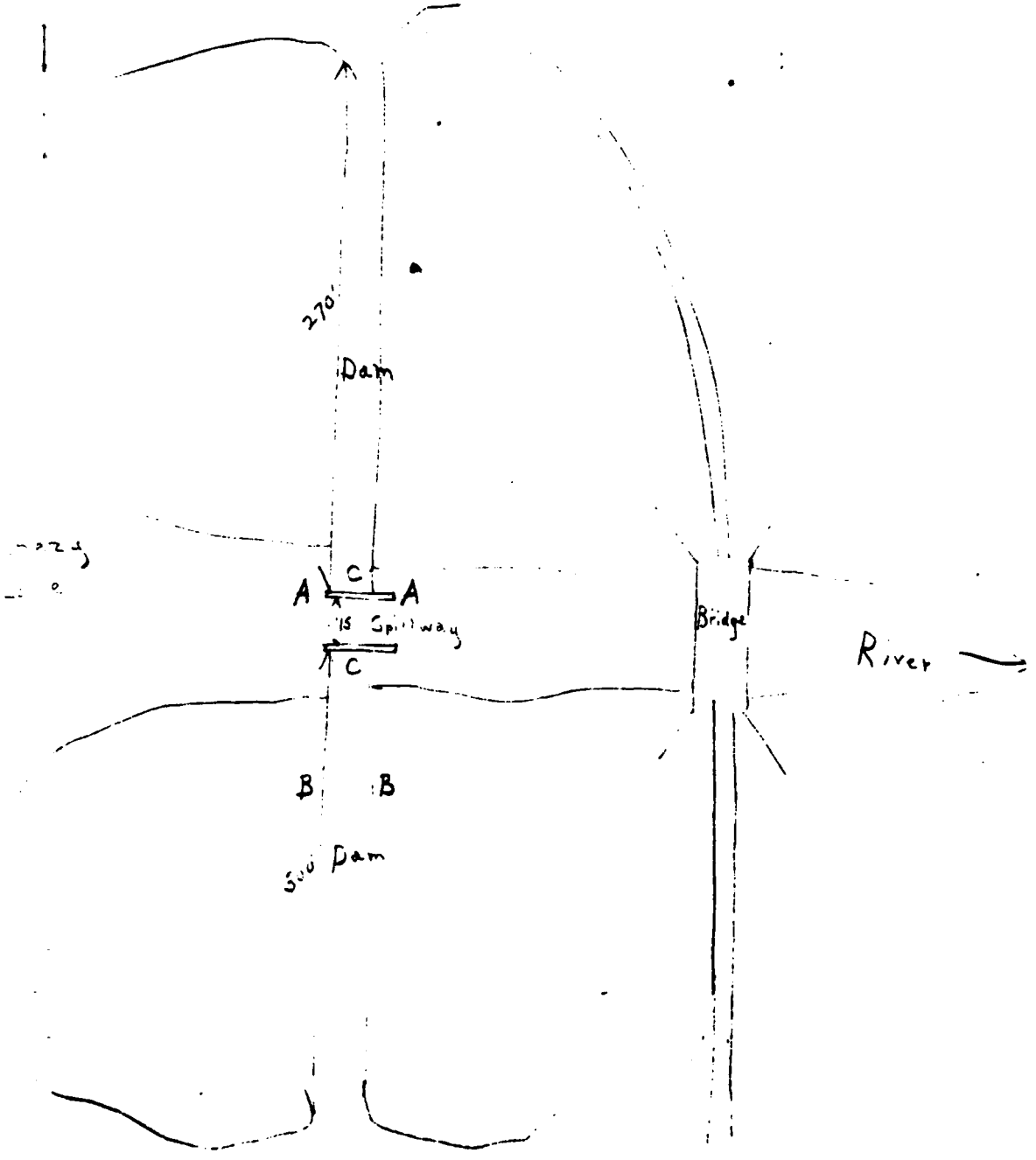
and was built in or about the year ——, and was extensively repaired or reconstructed during the year — and was used to hold back Chazy Lake

As it now stands, the spillway portion of this dam is built of timber (State whether of masonry, concrete or timber)

and the other portions are built of earth bank; stone + timber lined (State whether of masonry, concrete, earth or timber with or without rock fill)

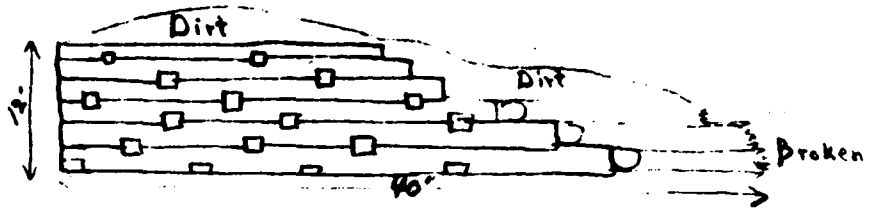
As nearly as I can learn, the character of the foundation bed under the spillway portion of the dam is gravel and under the remaining portions such foundation bed is "

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

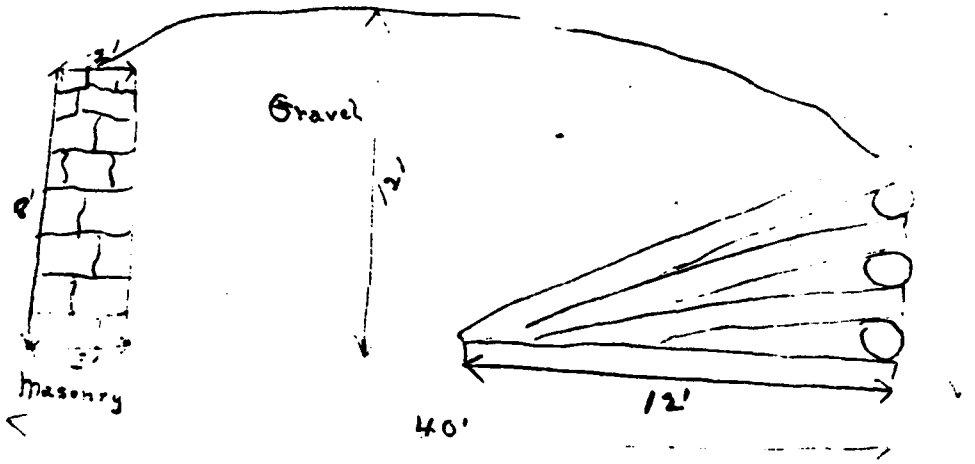


(In the space below, make one sketch showing the form and dimensions of a cross section through the spillway or waste-weir of this dam, and a second sketch showing the same information for a cross section through the other portion of the dam. Show particularly the greatest height of the dam above the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

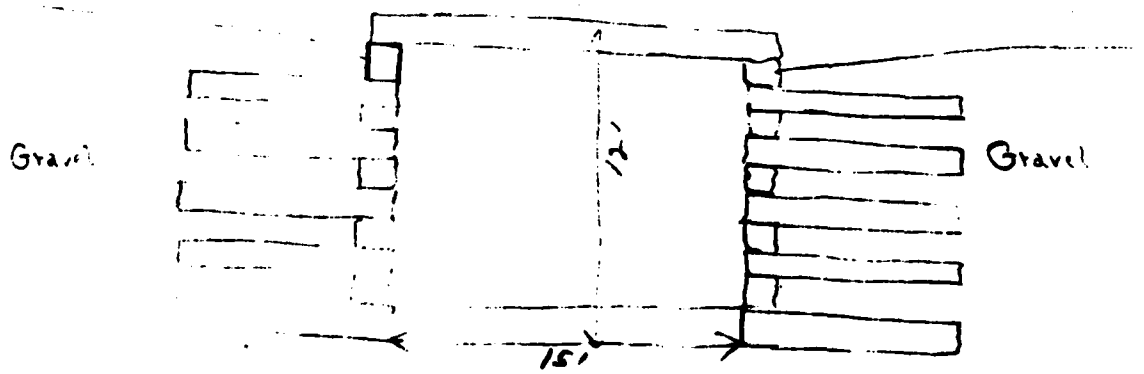
Section A A



Section B B



Section C C



The total length of this dam is 595 feet. The spillway or waste-weir portion, is about 15 feet long, and the crest of the spillway is about 2 feet below the top of the dam.

The number, size and location of discharge pipes, waste pipes or gates which may be used for drawing off the water from behind the dam, are as follows: Concrete spillway opening broken open

At the time of this inspection the water level above the dam was 9 ft. in. below ~~above~~ the crest of the spillway.

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

Earth bank apparently solid. Masonry and timber bulkheads broken down in places. Spillway sides broken and fallen in. Water flows through opening unimpeded.

July 15, 1920,

Report same as given above. Earth ends.

Richmond L. Meyer,
Tuxedo, N. Y.

Reported by Charles A. Friedhon
(Signature)

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

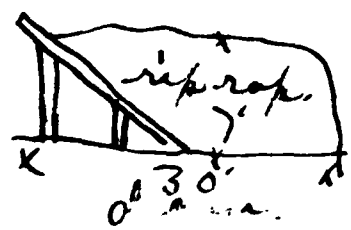
Syracuse N. Y.
(Name of place)

L 200 Champlain 382

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 State of New York.
2. Date of construction 1860
3. Uses of impounded water
4. Character of foundation bed hardpan
5. Material of waste spill logs
6. Length of waste and depth below dam 12' 7' below dam
7. Total length of dam including waste 500'
8. Material of dam log & riprap
9. Discharges, size and location

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.

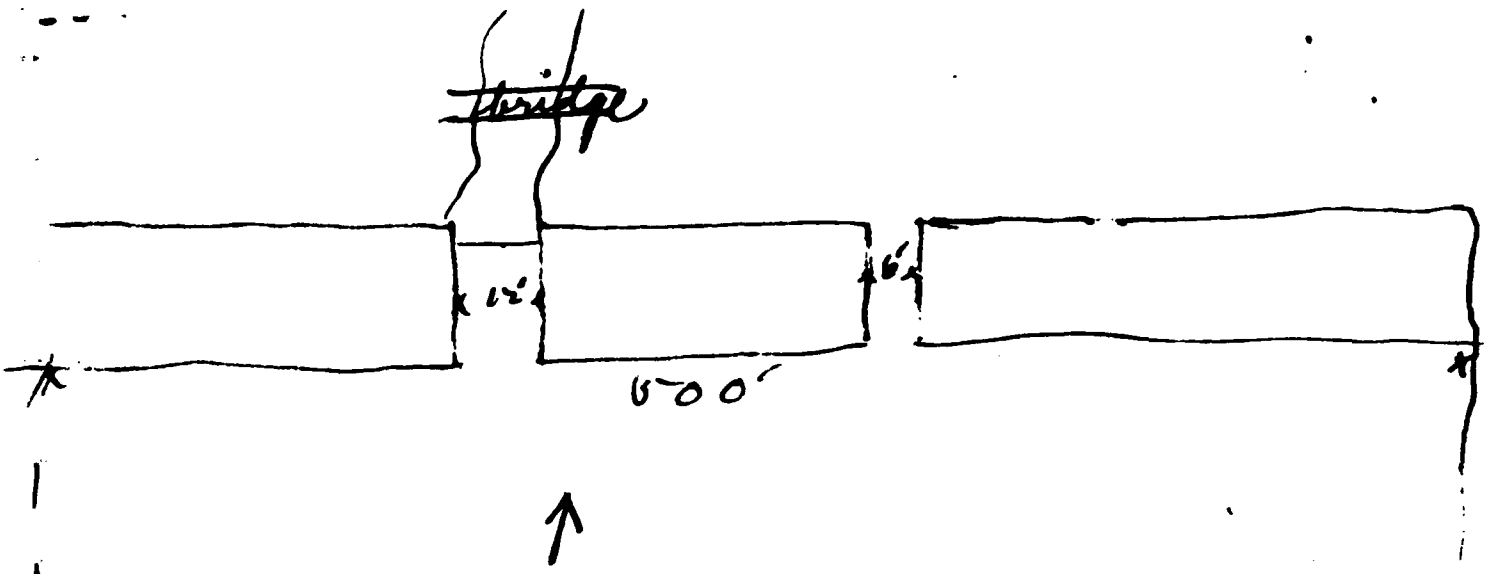


spill all washed out.
new dam needed.

Nearest town Chazy Lake

August 8, 1912.

(Signature, address and date.)


bridge
12'
6'
600'

APPENDIX G

DRAWINGS

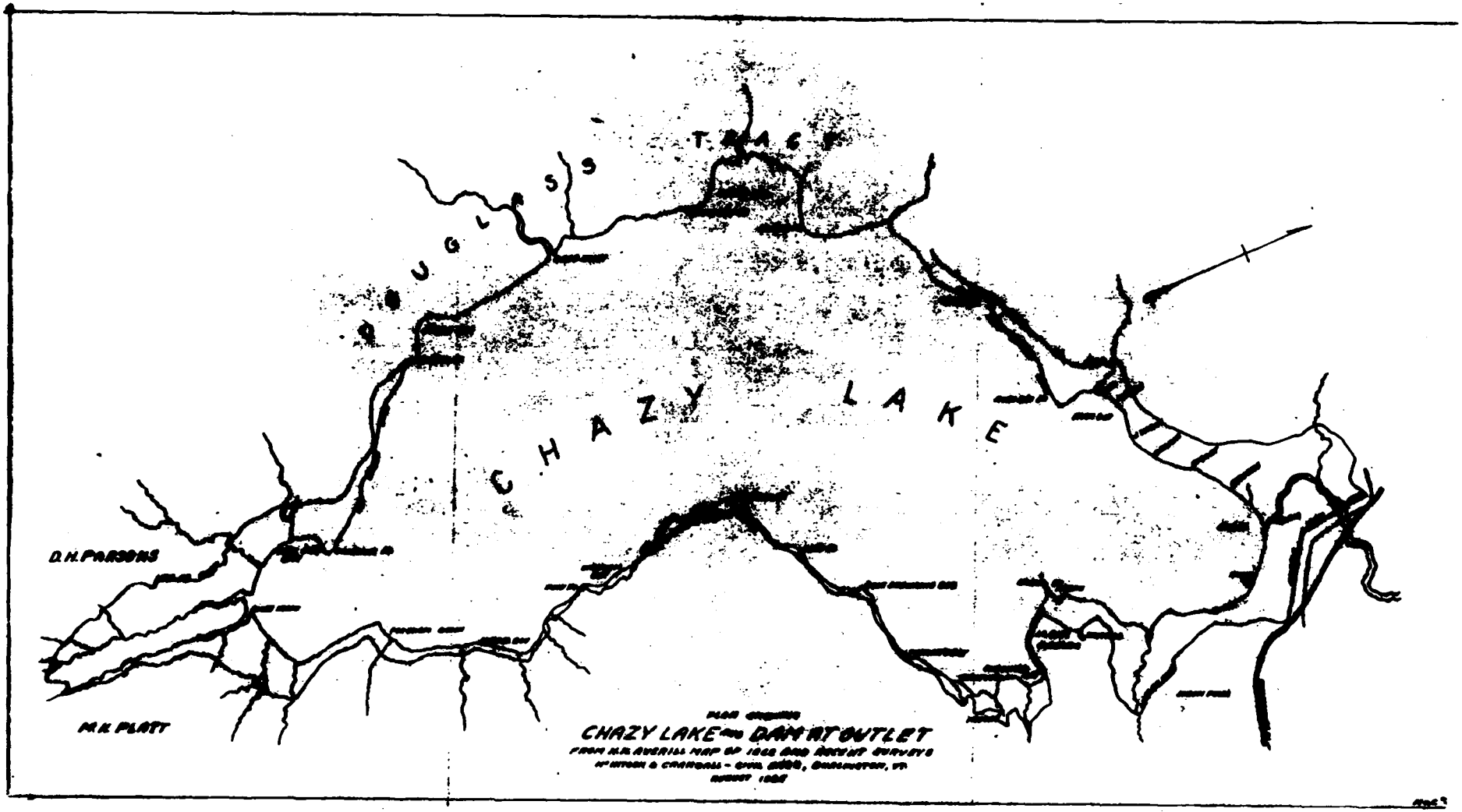
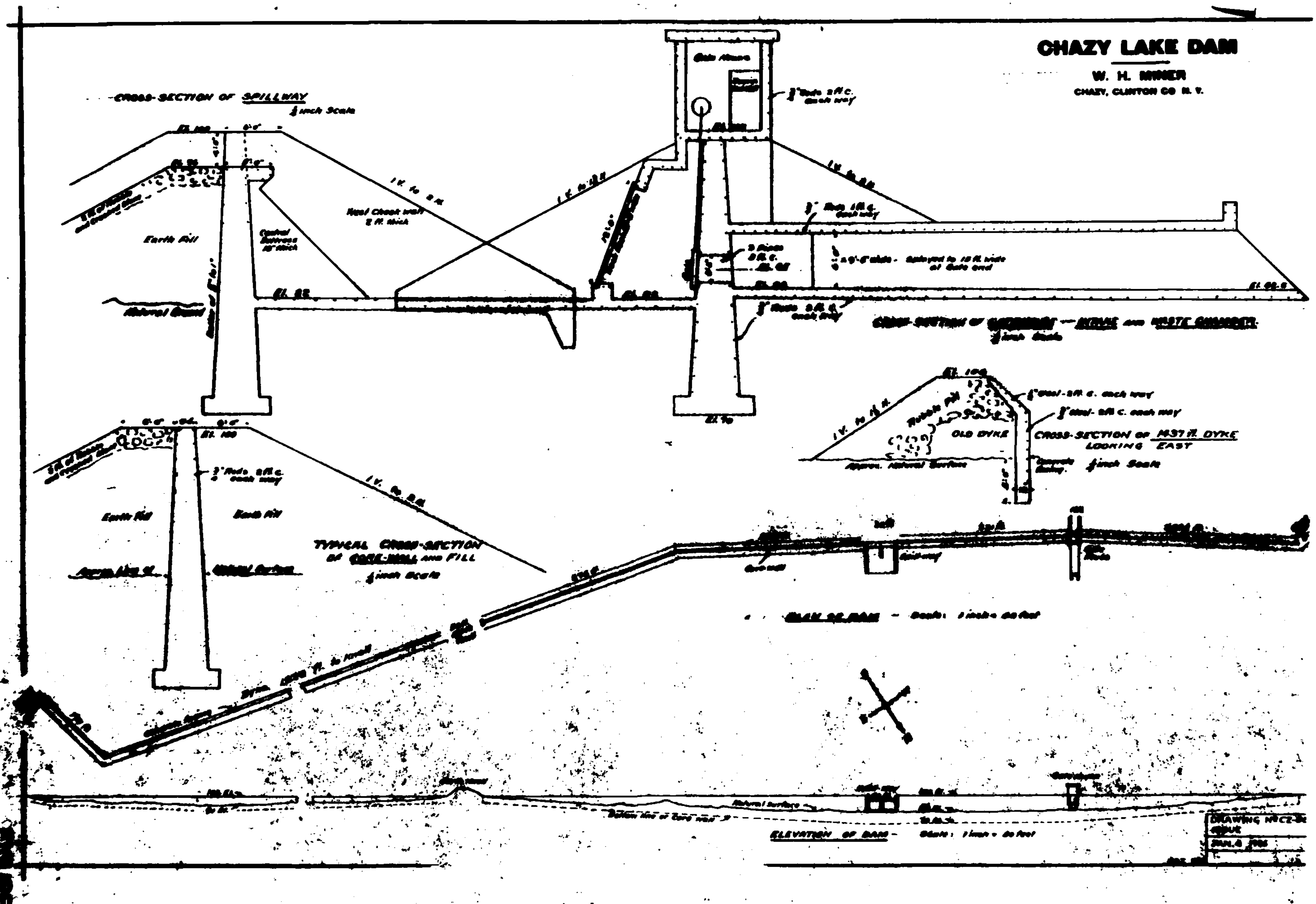
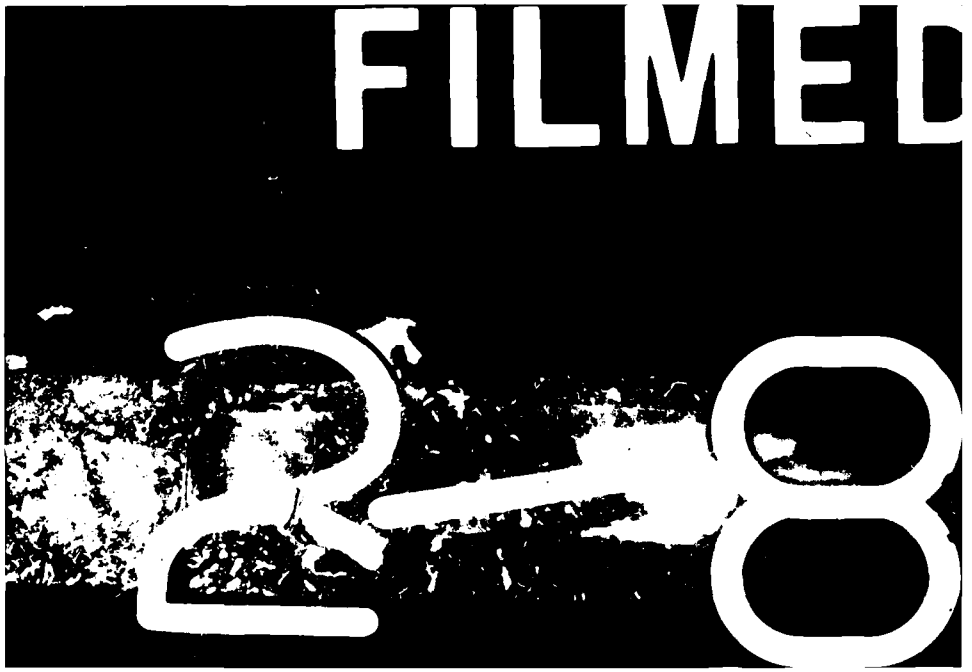


FIGURE 2


CHAZY LAKE DAM
W. H. MINER
CHAZY, CLINTON CO. N. Y.
CROSS-SECTION OF SPILLWAY
¼ inch Scale
Earth Fill
Natural Ground
1 V. to 2 H.
1 V. to 4 H.
El. 92
El. 100
Gate House
Earth Fill
OLD DYKE
CROSS-SECTION OF 1437 ft. DYKE
LOOKING EAST
¼ inch Scale
Approx. Natural Surface
1 V. to 2 H.
TYPICAL CROSS-SECTION
OF CORE-WALL AND FILL
¼ inch Scale
PLAN OF DAM
ELEVATION OF DAM
Natural Surface
FIGURE


FILMED
R-8