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BLACK AND VEATCH KANSAS CITY MO

NATIONAL DAM SAFETY PROGRAM. MOON VALLEY DAM (NO 11597); MISSOURI--ETC(U)

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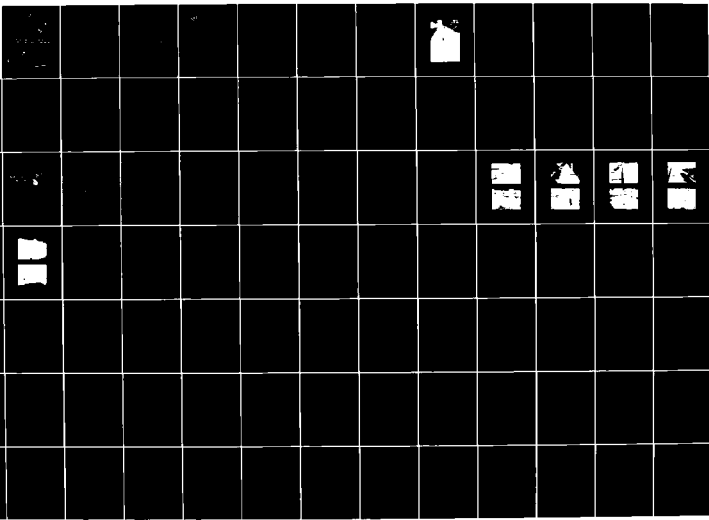
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**MOON VALLEY DAM
BOONE COUNTY, MISSOURI
MO 11597**

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**PHASE 1 INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM**

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MARCH 1981

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report was prepared under the National Program of Inspection of Non-Federal Dams. This report assesses the general condition of the dam with respect to safety, based on available data and on visual inspection, to determine if the dam poses hazards to human life or property.		

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MISSOURI-KANSAS CITY BASIN

**MOON VALLEY DAM
BOONE COUNTY, MISSOURI
MO 11597**

PHASE 1 INSPECTION REPORT NATIONAL DAM SAFETY PROGRAM



**United States Army
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St. Louis District

PREPARED BY: U.S. ARMY ENGINEER DISTRICT. ST. LOUIS

FOR: STATE OF MISSOURI

MARCH 1981



DEPARTMENT OF THE ARMY
ST. LOUIS DISTRICT, CORPS OF ENGINEERS
210 TUCKER BOULEVARD, NORTH
ST. LOUIS, MISSOURI 63101

REPLY TO
ATTENTION OF

LMSD-PD

SUBJECT: Moon Valley Dam, Mo. ID No. 11597
Phase I Inspection Report

This report presents the results of field inspection and evaluation of the Moon Valley Dam.

It was prepared under the National Program of Inspection of Non-Federal Dams.

This dam has been classified as unsafe, emergency by the St. Louis District as a result of the application of the following criteria:

- a. Spillway will not pass a 10-year frequency flood without overtopping of the dam. The spillway is, therefore, considered to be unusually small and seriously inadequate.
- b. Overtopping could result in dam failure.
- c. Dam failure significantly increases the hazard to life and property downstream.

Submitted By: SIGNED
Chief, Engineering Division

4 AUG 1981
Date

Approved By: SIGNED
Colonel, CE, Commanding

7 AUG 1981

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MOON VALLEY DAM
BOONE COUNTY, MISSOURI

MISSOURI INVENTORY NO. 11597

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM

PREPARED BY:

BLACK & VEATCH
CONSULTING ENGINEERS
KANSAS CITY, MISSOURI

UNDER DIRECTION OF
ST. LOUIS DISTRICT CORPS OF ENGINEERS
FOR
GOVERNOR OF MISSOURI

MARCH 1981

PHASE I REPORT
NATIONAL DAM SAFETY PROGRAM

Name of Dam	Moon Valley Dam
State Located	Missouri
County Located	Boone County
Stream	Hominy Branch
Date of Inspection	11 March 1981

Moon Valley Dam was inspected by a team of engineers from Black & Veatch, Consulting Engineers for the St. Louis District, Corps of Engineers. The purpose of the inspection was to make an assessment of the general condition of the dam with respect to safety, based upon available data and visual inspection, in order to determine if the dam poses hazards to human life or property.

The guidelines used in the assessment were furnished by the Department of the Army, Office of the Chief of Engineers and developed with the help of several Federal and state agencies, professional engineering organizations, and private engineers. Based on these guidelines, this dam is classified as a small size dam with a high downstream hazard potential. According to the St. Louis District, Corps of Engineers, failure would threaten lives and property. The estimated damage zone extends approximately one mile downstream of the dam. Within the estimated damage zone are three dwellings and Business Route 63. Contents of the estimated downstream damage zone were verified by the inspection team.

Our inspection and evaluation indicates the overflow section of the dam does not meet the criteria set forth in the guidelines for a dam having the above size and hazard potential. The overflow section will not pass the probable maximum flood without overtopping the dam but will pass three percent of the probable maximum flood. The probable maximum flood is defined as the flood discharge which may be expected from the most severe combination of critical meteorologic and hydrologic conditions which are reasonably possible in the region. The overflow section will not pass the flood which has a ten percent chance of occurrence in any given year (10-year flood). The spillway design flood recommended by the guidelines for a small, high hazard dam is 50 to 100 percent of the probable maximum flood. Considering the downstream hazard, the height of the dam, and the volume of water stored, the recommended spillway design flood is the probable maximum flood.

Based on visual observations, this dam appears to be in satisfactory condition. Deficiencies visually observed by the inspection team

were small trees on the embankment section of the dam, the accumulation of silt in the reservoir, erosion of material behind the abutment wing-walls, erosion of the upstream face of the earth embankment, and minor cracking and spalling of the concrete buttress section of the dam. Seepage, stability, and stress analyses required by the guidelines were not available, which is considered a deficiency that should be remedied.

The spillway capacity for Moon Valley dam is seriously inadequate and should be remedied immediately. Future corrective action and regular maintenance will be required to correct or control the other described deficiencies. In addition, detailed seepage and stability analyses of the existing dam, as required by the guidelines, should be performed. A detailed report discussing each of these deficiencies is attached.

Edwin R. Burton

Edwin R. Burton, PE
Missouri E-10137

Harry L. Callahan

Harry L. Callahan, Partner
Black & Veatch



OVERVIEW OF DAM

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
MOON VALLEY DAM

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SECTION 1 - PROJECT INFORMATION

1.1 GENERAL

a. Authority. The National Dam Inspection Act, Public Law 92-367, authorized the Secretary of the Army, through the Corps of Engineers, to initiate a program of safety inspection of dams throughout the United States. Pursuant to the above, the District Engineer of the St. Louis District, Corps of Engineers, directed that a safety inspection of the Moon Valley Dam be made.

b. Purpose of Inspection. The purpose of the inspection was to make an assessment of the general condition of the dam with respect to safety, based upon available data and visual inspection, in order to determine if the dam poses hazards to human life or property.

c. Evaluation Criteria. Criteria used to evaluate the dam were furnished by the Department of the Army, Office of the Chief of Engineers, in "Recommended Guidelines for Safety Inspection of Dams." These guidelines were developed with the help of several Federal agencies and many state agencies, professional engineering organizations, and private engineers.

1.2 DESCRIPTION OF PROJECT

a. Description of Dam and Appurtenances.

(1) The dam is a concrete buttress with an earth embankment extension at the right abutment. (Right and left as used herein give directional reference while looking downstream.) The concrete buttress section of the dam consists of a vertical concrete wall slab 10-inches thick at its crest. The slab is supported by 10-inch thick concrete, stepped, vertical pilasters at 9.4-feet center that are poured integrally with the wall slab. The concrete section of the dam is keyed into the natural abutment at each end by extending the wall slab beyond the abutment wing walls. The left abutment is a natural high bank that rises very steeply from the top dam to about 80 feet above the dam. The right abutment is a natural low bank that rises gradually from about the level of dam overflow section to a high point about 10 feet above the top of the dam. The embankment section of the dam is about 174-feet long and approximately 4-feet high. This section begins at the right abutment wingwall then curves to follow the stream bank upstream of and 90-degrees to the concrete section. The crest of the embankment is nonuniform in elevation and width with an average width of about 6-feet. The upstream slope of the embankment is very steep from the crest to the water line. The downstream slope varies from about 2 horizontal to 1 vertical near the abutment wingwall to about 4 to 6 horizontal to 1 vertical along the north-south leg, (see Plates 3, 4, 5, and 6).

The dam is located in the valley of Hominy Branch at a bend in the stream. Hominy Branch is a tributary to Hinkson Creek. The watershed is characterized by low hills with fairly rugged terrain. The watershed area is long and narrow consisting of about 40 percent grassland, 40 percent woodland, and 20 percent residential areas. Two dams, MO 10733 and MO 12102, are located across Hominy Branch upstream of Moon Valley Dam. Another dam, MO 11057, is located on a tributary to Hominy Branch upstream of Moon Valley Dam. Two major highways cross the valley of the watershed upstream of the dam, (see Plate 2).

(2) Normal discharge from the reservoir is governed by the geometry of the concrete buttress crest which is referred to in the remainder of the text as the overflow section. The overflow section is a rectangular section with a width of 100 feet. The crest varies in elevation by 0.4 foot, (see Plate 4). A 12-inch diameter cast iron pipe protrudes through the concrete slab section of the dam, (Photo 14). The outlet end is covered with a flange plate which has two 1-1/2 to 2-inch valves in the plate. Flow over the overflow section is to a 22 feet wide plunge pool/stilling basin, then to the natural stream channel of Hominy Creek downstream of the dam.

(3) Pertinent physical data are given in paragraph 1.3.

b. Location. The dam is located in the eastern part of the City of Columbia in central Boone County, Missouri, as indicated on Plate 1. The lake formed by the dam is shown on the United States Geological Survey 7.5 minute series quadrangle map for Columbia, Missouri in Sections 17 and 18 of T48N, R12W.

c. Size Classification. Criteria for determining the size classification of dams and impoundments are presented in the guidelines referenced in paragraph 1.1c above. Based on these criteria, Moon Valley Dam which is 14-feet high and has a normal storage capacity of 74 acre-feet, is in the small size category. A small size dam is classified as having a height less than 40 feet, but greater than or equal to 25 feet and/or a storage capacity less than 1,000 acre-feet, but greater than or equal to 50 acre-feet.

d. Hazard Classification. The hazard classification assigned by the Corps of Engineers for this dam is as follows: The Moon Valley Dam has a high hazard potential, meaning that the dam is located where failure may cause loss of life, and serious damage to homes, agricultural, industrial and commercial facilities, and to important public utilities, main highways, or railroads. For the Moon Valley Dam the estimated flood damage zone extends approximately one mile downstream of the dam. Within the estimated damage zone are three dwellings and Business Route 63. Contents of the estimated downstream damage zone were verified by the inspection team.

e. Ownership. The dam is owned by Mr. E.L. (Buck) Rogers, c/o Outdoors Incorporated, Outdoors Building, Columbia, Missouri 65201.

f. Purpose of Dam. The dam forms a 15.8 acre lake used for recreation.

g. Design and Construction History. Data relating to the design and construction were not available. According to the owner, the dam was designed by the City Engineer, Mr. Welch. The dam was constructed in 1964.

h. Normal Operating Procedure. Normal rainfall, runoff, transpiration, evaporation, and discharge over the overflow section all combine to maintain a relatively stable water surface elevation.

1.3 PERTINENT DATA

a. Drainage Area - 4,197 acres (including 2,551 acres above dam MO 12102).

b. Discharge at Damsite.

(1) Normal discharge at the damsite is over the overflow section of the concrete dam.

(2) Estimated experienced maximum flood at damsite - Unknown.

(3) Estimated ungated spillway capacity with pool at minimum top of dam (El. 651.8) 662 cfs

c. Elevation (Feet above m.s.l.). Approximate tie to USGS map.

(1) Top of dam - 651.8 (Embankment section 651.8) (see Plate 3)

(2) Overflow section crest - 650.0

(3) Bottom of stilling basin - 636.0 ±

(4) Stilling basin overflow crest - 639.0 ±

(5) Maximum tailwater - Unknown.

(6) Maximum pool, design surcharge - Not available.

d. Reservoir.

(1) Length of maximum pool - 4,400 feet ± (Probable maximum flood pool level)

(2) Length of normal pool - 2,600 feet $\pm$ (Overflow section crest)

e. Storage (Acre-feet).

(1) Top of dam - 104 (Embankment Section)

(2) Overflow section crest - 74

(3) Design surcharge - Not available.

f. Reservoir Surface (Acres).

(1) Top of dam - 18.6 (Embankment Section)

(2) Overflow section crest - 15.8

(3) Max pool

g. Dam.

(1) Type - Concrete buttress with earth embankment

(2) Length - 287 feet

(3) Height - Concrete section - 14 feet $\pm$; Earth embankment - 4 feet $\pm$

(4) Top width - Overflow section - 10 inches; earth embankment - approximately 10 feet.

(5) Side slopes - Earth embankment - upstream face approximately 1.0 V on 1.0 H, downstream face varies from approximately 1.0 V on 2.0 H to approximately 1.0 V on 6.0 H.

(6) Zoning - Unknown.

(7) Impervious core - Unknown.

(8) Cutoff - Unknown.

(9) Grout curtain - Unknown.

h. Diversion and Regulating Tunnel - None.

i. Overflow Section. (Spillway)

- (1) Type - Concrete buttress.
 - (2) Length of weir - 100 feet.
 - (3) Crest elevation - 650.0 feet m.s.l. minimum elevation (see Plates 3 & 5)
 - (4) Gates - None.
 - (5) Upstream channel - None
 - (6) Downstream channel - Discharges to a plunge pool/stilling basin and then to the natural stream below the dam.
- j. Emergency Spillway - None.
- k. Regulating Outlets - 12-inch cast iron pipe with bolted flange plate cover

SECTION 2 - ENGINEERING DATA

2.1 DESIGN

Design data were not available.

2.2 CONSTRUCTION

Construction records were unavailable.

2.3 OPERATION

Operational records and documentation of past floods were unavailable.

2.4 GEOLOGY

The site of the dam and reservoir is located across a broad, steep-sided valley. The dam impounds the drainage from Hominy Branch.

The soil in the dam and reservoir area consists of Union silt loam and silty clay loam. The Union series consists of moderately well-drained soils formed in loess over cherty residuum weathered from limestone. The upper eight inches of this series is classified for engineering purposes as clayey silt to silty clay. (Unified Classification CL-ML to CL). The remaining part of the soil profile is classified as silty clay (CL) with clayey sand (SC), clayey gravel (GC) and highly plastic clay (CH) present below a depth of forty inches. Bedrock of the area consists of Mississippian age cherty, crinoidal limestone of the Osagean Series. Depth to bedrock in the upland area is assumed to be greater than five feet based on Soil Conservation Service information.

2.5 EVALUATION

a. Availability. No engineering data were available.

b. Adequacy. No engineering data were available. Thus, an assessment of the design, construction, and operation could not be made. Seepage, stability, and stress analyses comparable to the requirements of the "Recommended Guidelines for Safety Inspection of Dams" were not available, which is considered a deficiency. These seepage, stability, and stress analyses should be performed for appropriate loading conditions (including earthquake loads) and made a matter of record.

c. Validity. The validity of the design, construction, and operation could not be determined due to the lack of engineering data.

SECTION 3 - VISUAL INSPECTION

3.1 FINDINGS

a. General. A visual inspection of Moon Valley Dam was made on 11 March 1981. The inspection team consisted of Edwin Burton, team leader and structural engineer; Shannon Casey, geologist; Gary Van Riessen, geotechnical engineer; and John Ruhl, hydrologic/hydraulic engineer. The dam appears to be in satisfactory condition. Specific observations are discussed below. No observations were made of the condition of the upstream face of the dam below the pool elevation at the time of the inspection.

b. Dam. The inspection team observed the following conditions at the dam. The upstream slope of the embankment section was steep. The downstream slope was moderately steep at the end of the concrete overflow section and gradually flattened. The embankment section appeared to be founded on the natural stream overbank which is at or near the elevation of the overflow crest of the concrete buttress dam. The maximum height of the embankment material above the overbank material is approximately four feet. Four trees approximately six inches in diameter were growing on the upstream face of the embankment section. Erosion of embankment material was evident on the upstream face and adjacent to the wingwalls of the concrete buttress section of the dam. No animal burrows were observed in the embankment section. No cracking, sliding, sloughing, sinkholes or other signs of settlement or instability were observed on the embankment section. The embankment section was covered with short grasses and broad-leaved plants which have been mowed periodically.

The concrete face slab and the first pilaster at the right end of the overflow section were misaligned, (Photos 3, 4 & 5). There was also a displacement of about 1 inch at a horizontal construction joint about 6-feet down from the top of the first slab section at the right end. There was no cracking, leaking, or visible sign of stress in this end section of the overflow section. Minor chipping and spalling have occurred on the wingwall and pilaster corners. Fine (less than 3/64 inch wide) to medium (3/64 inch to 5/64 inch wide) diagonal cracks were located on the downstream face of each wingwall. A medium (3/64 inch to 5/64 inch wide) vertical crack was observed in the dam face slab from the crest to the top of the cast iron pipe through the center section (Photo 14). Due to intermittent flow over the center section caused by small waves, determinations of leakage through the vertical crack could not be made. Pattern cracking was observed on the downstream face of the dam face slab with minor seepage (Photo 13). A spalled area at the left wingwall has exposed the steel reinforcing bars.

The erosion behind the wingwalls may have been caused by local runoff or by overtopping of the structure, (Photos 9 & 10). Concrete debris has been dumped downstream of the stilling basin, (Photo 4), which aids in deterring erosion. No other evidence was found to indicate that the embankment had ever been overtopped. The hydraulic analysis of this structure indicates that the potential for overtopping of the embankment section is extremely great under hydrologic conditions in excess of three percent of the probable maximum flood.

Minor seeps through the concrete section of the dam were observed as wetness at cracks in the concrete, (Photo 13). No other seepage was observed.

c. Appurtenant Structures. The crest of the concrete buttress section of the dam serves as an overflow section and is the primary means of discharge from this structure. A 12-inch cast iron pipe passes through the face slab at approximately 9 feet down from the crest and near the center of the overflow section. The pipe is capped by a bolted flange plate. Two valves about 1-1/2 inch in size, are located in the flange plate, (Photo 14). The inspection team made no attempt to open the valves but they appeared to be inoperable.

d. Geology. The soils surrounding the dam and reservoir consist of clayey silt to silty clay (CL-ML to CL) to a depth of eight inches, overlying silty clay (CL) with clayey sand (SC), clayey gravel (GC) and highly plastic clay (CH) present below a depth of forty inches.

Limestone blocks in the downstream valley indicate bedrock is near the surface at the abutments and foundation of the dam. Surface material of the right abutment consists of silty clay, and the left abutment is the same material but with a much steeper slope covered with stones and chert fragments.

e. Reservoir Area. No slumping or slides of the reservoir banks were observed. The upstream channel to the lake contains some minor debris and a few trees. Water in the lake was cloudy on the day of the inspection. Measurements along the upstream side of the face slab indicated a water depth of about 2.5 feet at the dam. It is believed by the inspection team that this was due to siltation.

f. Downstream Channel. The overflow section of the dam discharges to a plunge pool/stilling basin and then to the natural channel of Hominy Branch below the dam. A sanitary sewer located parallel to the downstream channel and a sanitary sewer crossing which is approximately 1/4 mile downstream could suffer damage during periods of high flow.

3.2 EVALUATION

The various deficiencies observed at the time of the inspection are not believed to represent an immediate safety hazard. They do, however, warrant monitoring and control.

The potential for sloughing, erosion, or sliding of embankment material is enhanced by the presence of the relatively steep upstream slope.

The growth of trees, if allowed to go unchecked, could cause deterioration of the embankment. The roots of trees can loosen the embankment material and also can leave voids through which water can pass.

The erosion gullies at the embankment/wingwall interfaces are believed to be the result of local runoff or may possibly be due to overtopping of the dam.

The absence of adequate slope protection on the upstream slope of the dam has resulted in wave action erosion. If not corrected wave action will continue to erode the embankment and could lead to slope stability problems.

The minor cracking and spalling of the concrete buttress section should be monitored. The accumulation of silt within the reservoir could increase the loadings on the dam thereby aggravating cracking problems.

The slab and pilaster misalignment and horizontal joint displacement at the right end of the overflow section are believed to be the results of concrete form slippage during construction, thus are not considered deficiencies.

SECTION 4 - OPERATIONAL PROCEDURES

4.1 PROCEDURES

The pool is primarily controlled by rainfall, runoff, evaporation, transpiration, and capacity of the overflow section of the dam.

4.2 MAINTENANCE OF DAM

There was evidence that a maintenance program was in effect which includes the mowing of the grass and weeds on the crest. Concrete debris has been dumped in the eroded areas behind the wingwalls. According to the SCS (Soil Conservation Service), the reservoir has probably been dredged to reduce the silt load. The date and extent of the dredging is unknown.

4.3 MAINTENANCE OF OPERATING FACILITIES

A 12-inch cast iron pipe projects from the downstream face of the concrete section of the dam. The pipe is capped with a bolted flange plate. Two valves about 1-1/2 inch in size are mounted through the flange plate. The pipe is located at an elevation about 9-feet below the crest of the overflow section which is also below the top of silt at the upstream face of the dam. The intended purpose and the operability of the pipe and valves was not determined by the inspection team.

4.4 DESCRIPTION OF ANY WARNING SYSTEM IN EFFECT

There is no existing warning system or planned scheme for alerting downstream residents for this dam.

4.5 EVALUATION

A maintenance program should continue to include mowing the grass cover on the embankment in order to discourage animal burrowing and removal of trees on the embankment. Additional measures to control erosion behind the wingwalls should be undertaken and should include repair of eroded embankment material.

SECTION 5 - HYDRAULIC/HYDROLOGIC

5.1 EVALUATION OF FEATURES

a. Design Data. No design data were available.

b. Experience Data. The drainage area and lake surface area are developed from USGS Columbia, Hallsville, and Millersburg Quadrangle Maps. The dam layout is from a survey made during the inspection. Watershed soil data was determined from the SCS Soil Survey of Boone County, Missouri.

c. Visual Observations.

(1) Discharge from the reservoir is through the overflow section of the concrete buttress portion of the dam. The lake elevation at the time of inspection (El. 650.0) was at the crest of the overflow section. The downstream channel has only minor obstructions and trees which are not considered to impede discharges through the overflow section.

(2) Flow through the overflow section of the dam is not believed to endanger the integrity of the dam.

d. Overtopping Potential. The overflow section will not pass the probable maximum flood without overtopping the dam. The probable maximum flood is defined as the flood discharge that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the region. The overflow section will pass three percent of the probable maximum flood without overtopping the dam. The spillway will not pass the ten percent chance flood estimated to have a peak outflow of 2,360 cfs developed for a 24-hour, ten percent chance rainfall. According to the recommended guidelines from the Department of the Army, Office of the Chief of Engineers, a high hazard dam of small size should pass 50 to 100 percent of the probable maximum flood. Considering the downstream hazard, the height of the dam, and the volume of water stored, the recommended spillway design flood is the standard project flood. The portion of the estimated peak discharge of 50 percent of the probable maximum flood overtopping the earth embankment would be 4,020 cfs of the total discharge from the reservoir of 9,230 cfs. The estimated duration of overtopping is 14.1 hours with a maximum height of 4.9 feet. The portion of the estimated peak discharge of the probable maximum flood overtopping the earth embankment would be 11,790 cfs of the total discharge from the reservoir of 20,570 cfs. The estimated duration of overtopping is 16.3 hours with a maximum height of 7.7 feet. The embankment section of the dam would be jeopardized should overtopping occur for these periods of time. No evaluation on the potential for failure due to overtopping of the concrete buttress section can be made without structural and foundation data relative to the stability of the dam.

According to the St. Louis District, Corps of Engineers, the effect from rupture of the dam could extend approximately one mile downstream of the dam. Three dwellings and Business Route 63 could be severely damaged and lives could be lost should failure of the dam occur. Contents of the estimated downstream damage zone were verified by the inspection team. The City of Columbia, Missouri is participating in the Flood Insurance Program which imposes controls on future flood plain development along Hominy Branch and Hinkson Creek downstream of Moon Valley Dam.

SECTION 6 - STRUCTURAL STABILITY

6.1 EVALUATION OF STRUCTURAL STABILITY

a. Visual Observations. Visual observations of conditions which affect the structural stability of this dam are discussed in Section 3, paragraph 3.1b. No signs of instability of the dam were observed; however, the steepness of slope and erosion of the upstream face of the embankment enhance the potential of slope instability. The accumulation of silt against the upstream face of the concrete buttress section increases structural loading on the dam.

b. Design and Construction Data. No design data relating to the structural stability of the dam were found. Seepage, stability, and stress analyses comparable to the requirements of the "Recommended Guidelines for Safety Inspection of Dams" were not available, which is considered a deficiency.

c. Operating Records. No operational records were available.

d. Postconstruction Changes. No evidence of postconstruction changes was observed.

e. Seismic Stability. The dam is located in Seismic Zone 1 which is a zone of minor seismic risk. A properly designed and constructed earth and concrete dam using sound engineering principles and conservatism should pose no serious stability problems during earthquakes in this zone. Adequate descriptions of embankment and concrete buttress design parameters, foundation and abutment conditions, or static stability analyses to assess the seismic stability of this structure were not available and therefore no inferences will be made regarding the seismic stability. An assessment of the seismic stability should be included as part of the stability analysis required by the guidelines.

SECTION 7 - ASSESSMENT/REMEDIAL MEASURES

7.1 DAM ASSESSMENT

a. Safety. Hydrologic and hydraulic analysis of Moon Valley Dam reveal that its spillway is seriously inadequate. Several conditions observed during the visual inspection by the inspection team should be repaired and/or monitored and controlled. These are erosion on the upstream slope of the embankment section and at both abutment wingwalls of the concrete buttress section; siltation of the reservoir; minor cracking and spalling of concrete; and the growth of trees on the embankment. Seepage, stability, and stress analyses comparable to the requirements of the "Recommended Guidelines for Safety Inspection of Dams" were not available, which is considered a deficiency.

b. Adequacy of Information. Due to the absence of engineering design data, the conclusions in this report were based only on performance history and visual conditions. The inspection team considers that these data are sufficient to support the conclusions herein. Seepage, stability, and stress analyses comparable to the requirements of the "Recommended Guidelines for Safety Inspection of Dams" were not available, which is considered a deficiency.

c. Urgency. It is the opinion of the inspection team that a program should be developed as soon as possible to implement remedial measures recommended in paragraph 7.2c. If the safety deficiencies listed in paragraph 7.1a are not corrected, they will continue to deteriorate and lead to a serious potential of failure. The item recommended in paragraph 7.2a and 7.2b should be pursued on a high priority basis.

d. Necessity for Phase II. The Phase I investigation does not identify any items which would require a Phase II investigation. However, additional studies may be necessary.

e. Seismic Stability. This dam is located in Seismic Zone 1. Adequate description of embankment and concrete buttress design parameters, foundation and abutment conditions, or static stability analyses to assess the seismic stability of this structure were not available and therefore no inferences will be made regarding the seismic stability. An assessment of the seismic stability should be included as part of the recommended stability analysis.

7.2 REMEDIAL MEASURES

a. Alternatives. One or more of the following mitigation measures should be undertaken to avoid severe consequences of hydraulic adequacy of the dam.

(1) Additional studies should be undertaken to determine the consequences of overtopping the dam. Studies should include hydraulic analysis to accurately define the downstream damage zone for failure of the earth embankment and for failure of the concrete buttress section. Structural, stability, and stress analysis should be performed to determine the capability of the concrete buttress section of the dam to withstand pressures developed during overtopping floods. The analysis should determine the effects of failure of the earth embankment on the stability of the concrete buttress section.

(2) Enhance the stability of the dam and fortify the embankment to resist erosion to permit overtopping.

(3) Provide a highly reliable flood warning system (generally does not prevent damage but avoids loss of life).

(4) Remove the dam.

b. Recommendations.

(1) The erosion gullies at the wingwall should be backfilled with suitable material and compacted. Slope protection may be required to control erosion in these areas.

(2) The accumulation of silt in the reservoir increases the stresses on the concrete buttress section of the dam. The depth of sediment accumulating against the upstream face of the dam should be monitored and evaluated to determine its significance to the overall stability of the concrete section.

c. Operation and Maintenance Procedures. The following operation and maintenance procedures are recommended and should be carried out under the direction of a professional engineer experienced in the design, construction, and maintenance of earth and concrete dams.

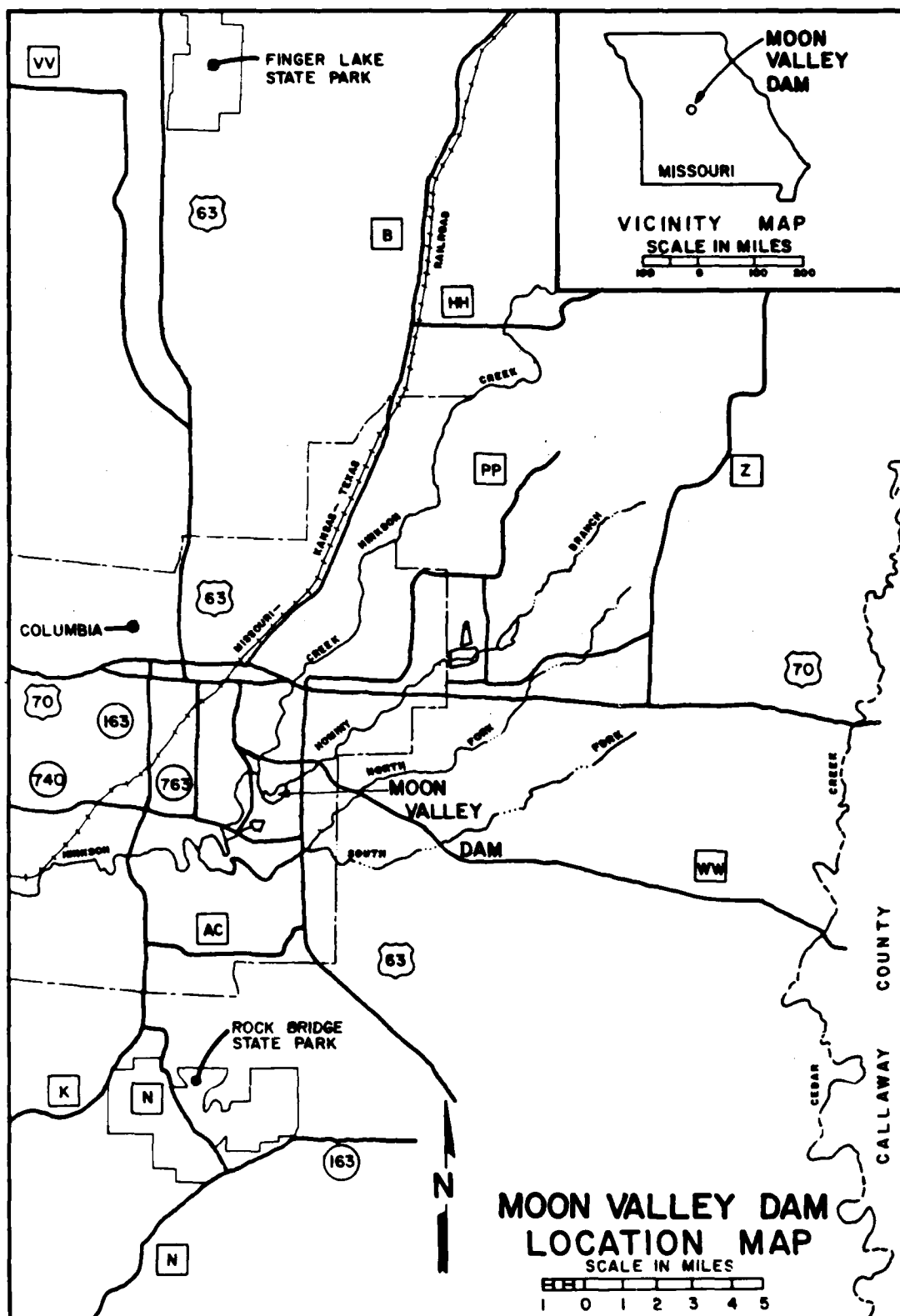
(1) Erosion protection should be placed on the upstream face of the embankment section of the dam at the normal lake level to prevent erosion of the embankment material.

(2) The cracking and spalling noted during the visual inspection of the concrete buttress section should be closely monitored (see section 3.1.b). Any significant changes should be evaluated.

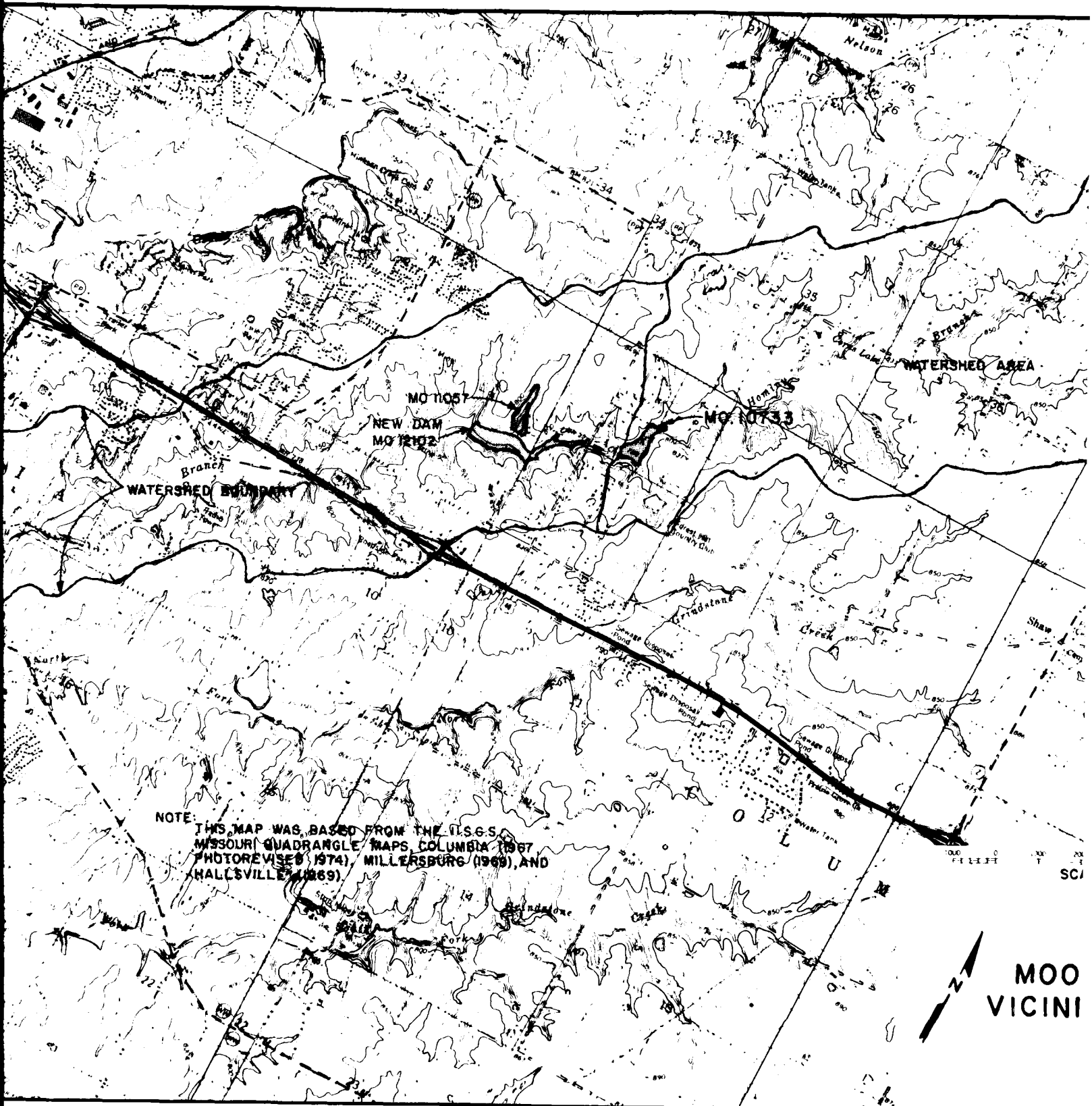
(3) An improved maintenance program to remove and control the growth of trees on the embankment section should be developed. Grass/weed cover on the embankment should continue to be cut periodically.

(4) Seepage and stability analyses should be performed.

(5) A detailed inspection of the dam should be made periodically. This inspection should include measurement of cracking and spalling of the concrete buttress section. More frequent inspections may be required if additional deficiencies are observed or the severity of the reported deficiencies increase. Results of the recommended inspection should be documented and made a matter of record.

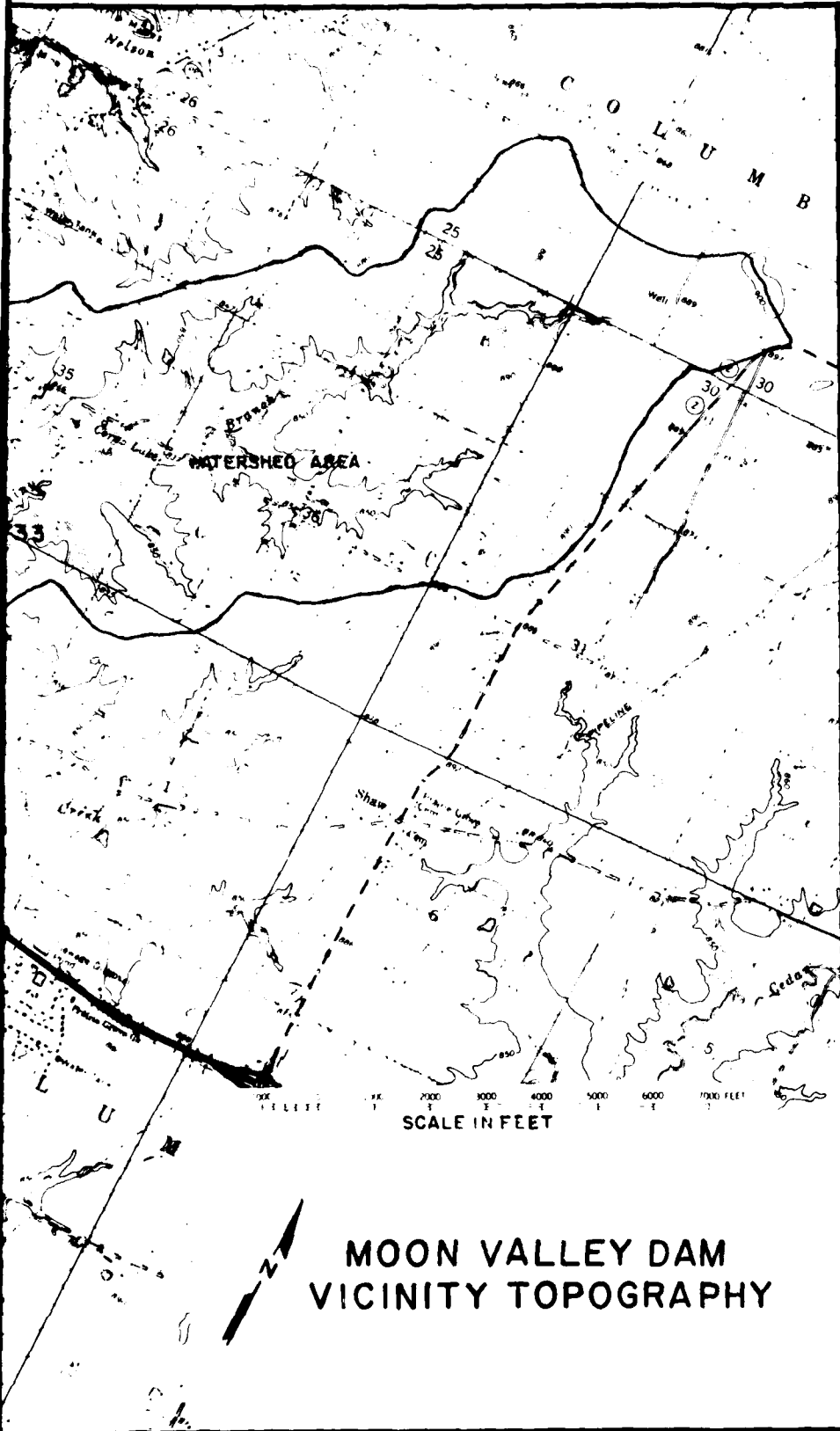




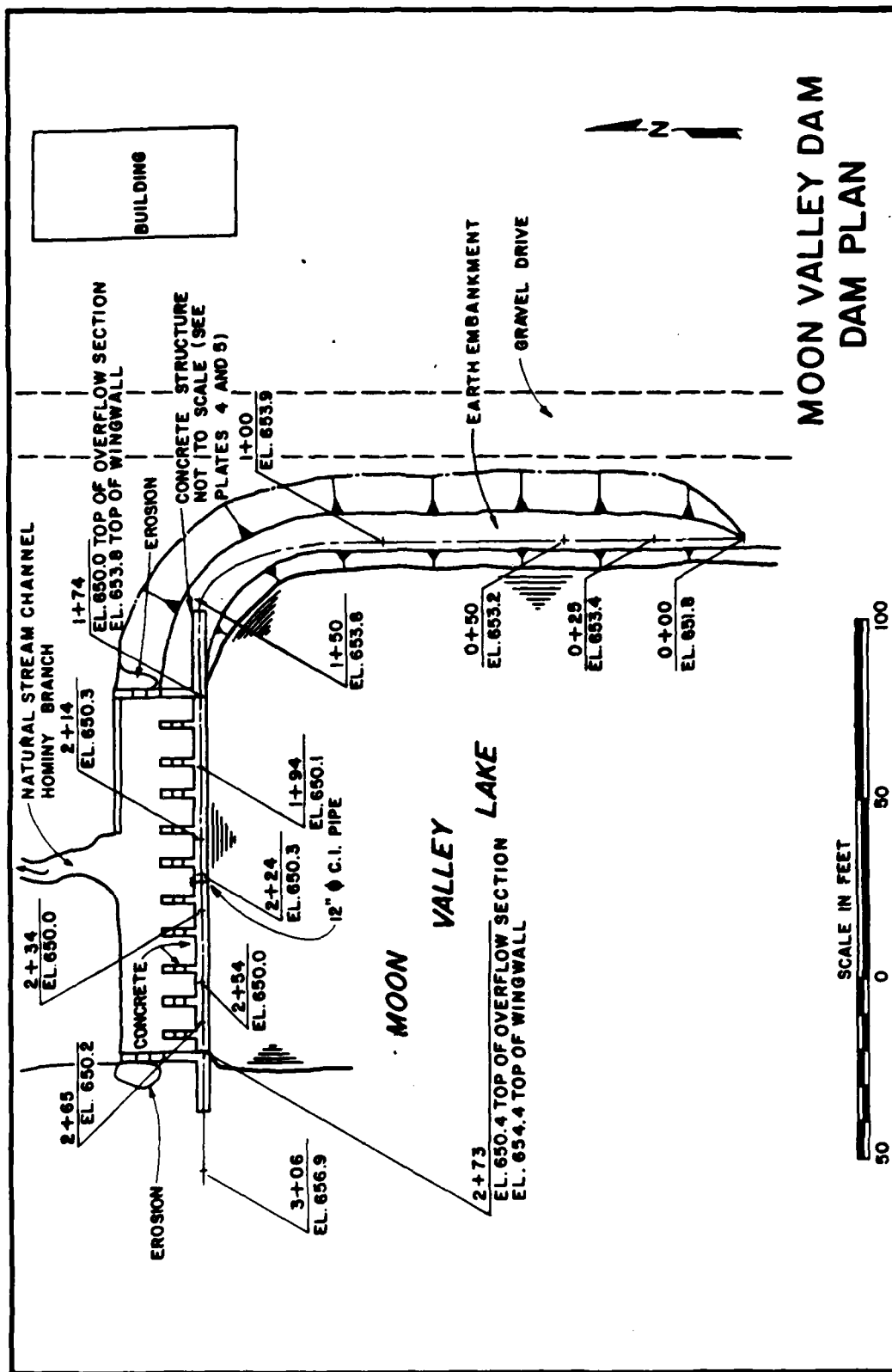


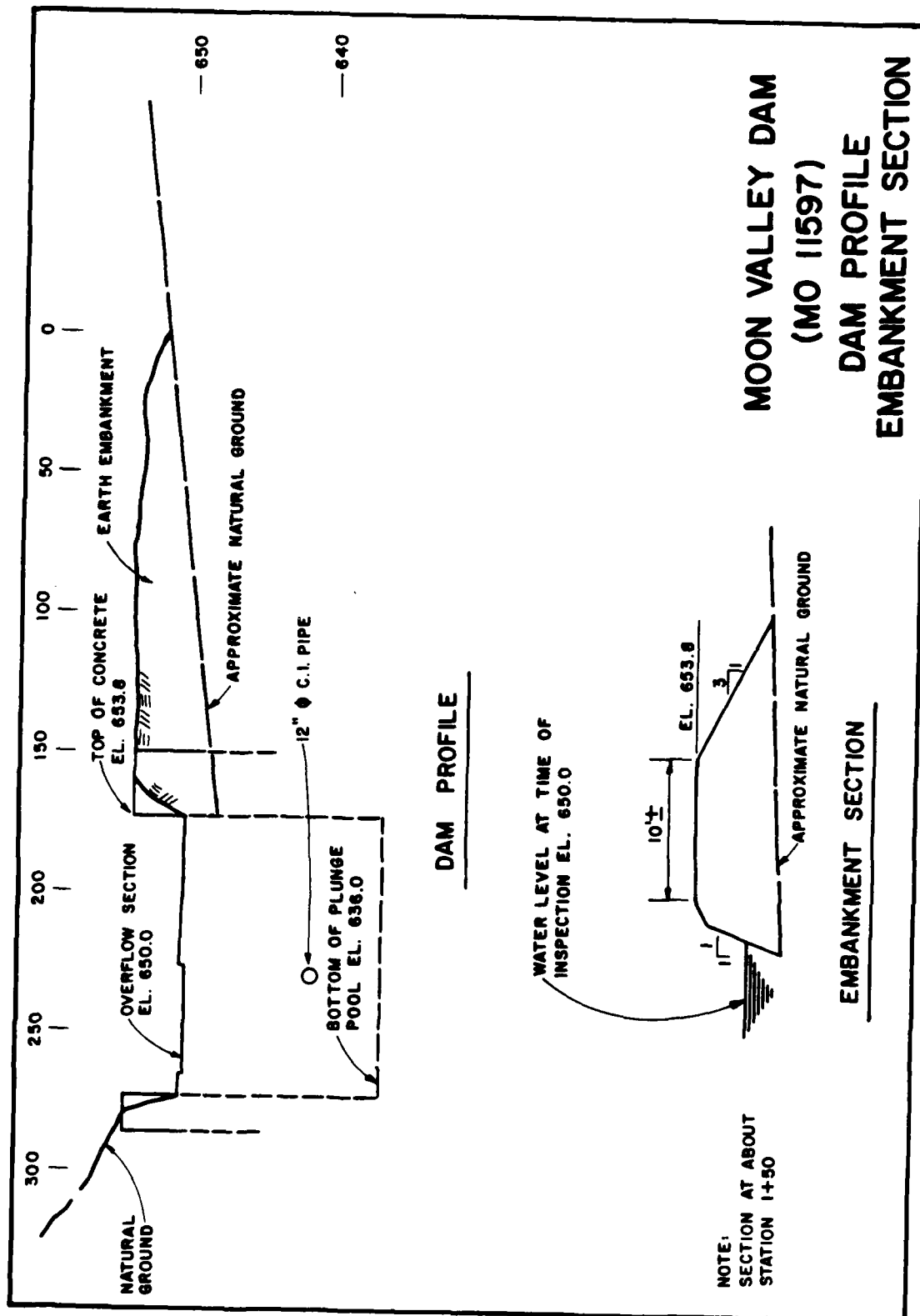
NOTE: THIS MAP WAS BASED FROM THE U.S.G.S. MISSOURI QUADRANGLE MAPS, COLUMBIA (1967), PHOTOREVISED (1974), MILLERSBURG (1969), AND HALLSVILLE (1969).

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MOON VALLEY DAM
VICINITY TOPOGRAPHY





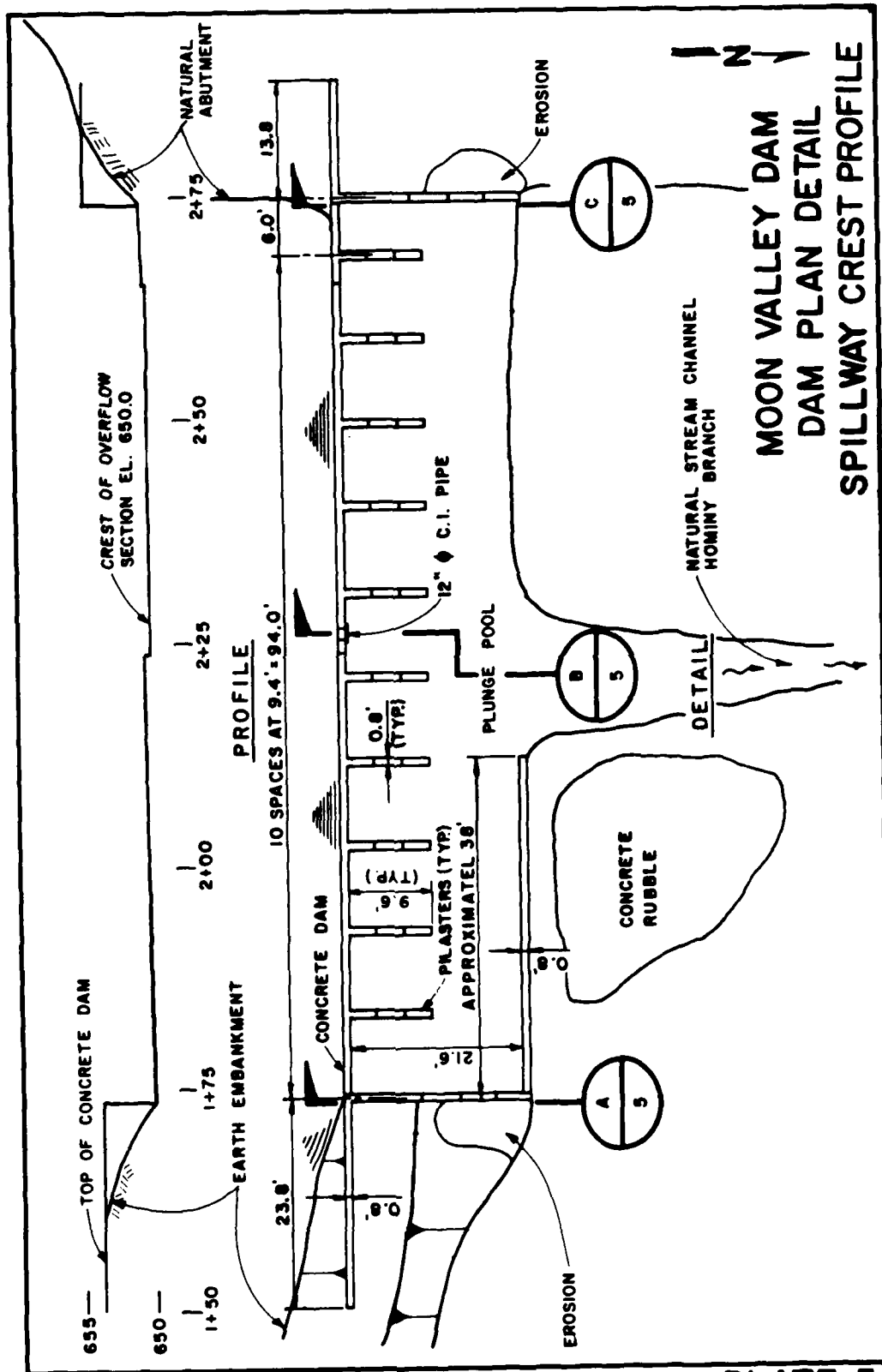
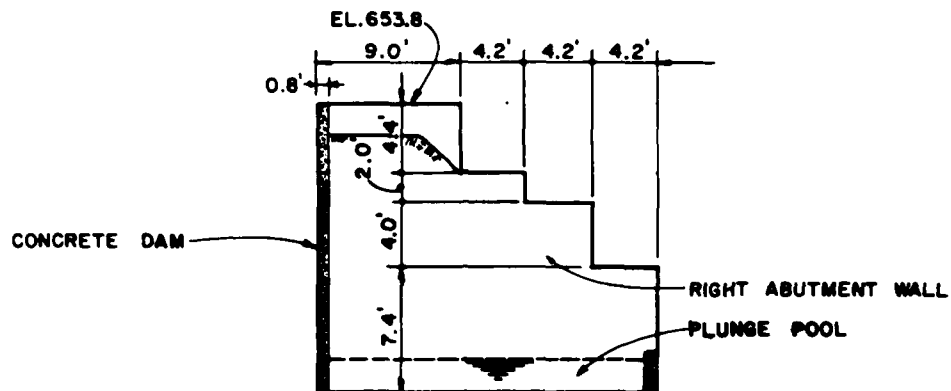
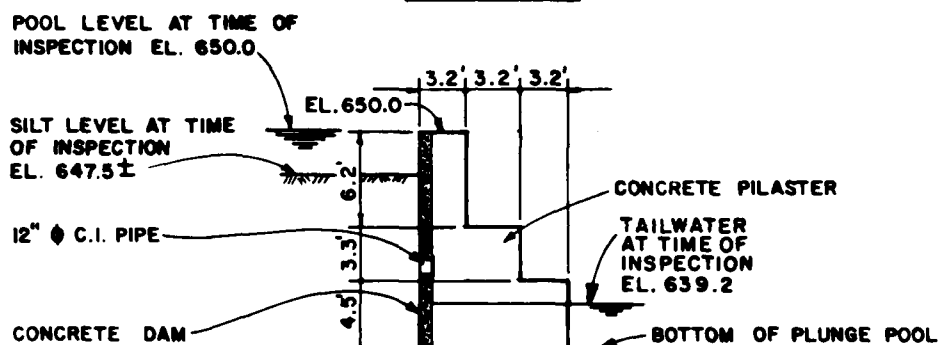


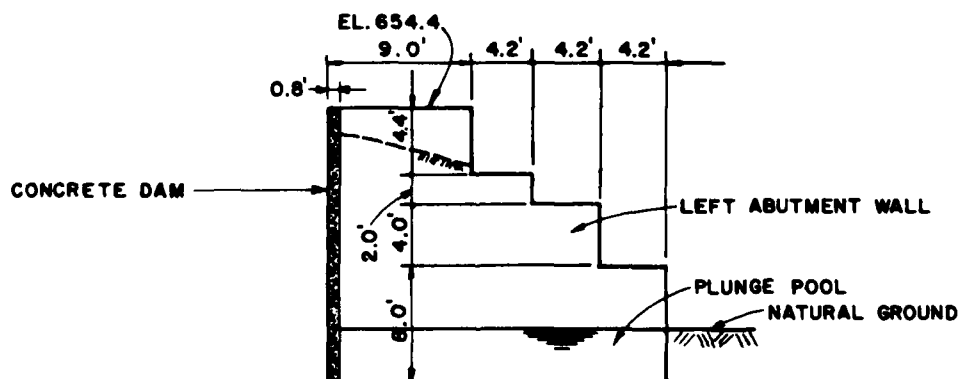
PLATE 5



SECTION A



SECTION B



SECTION C

MOON VALLEY DAM
CONCRETE SECTIONS
PLATE 6

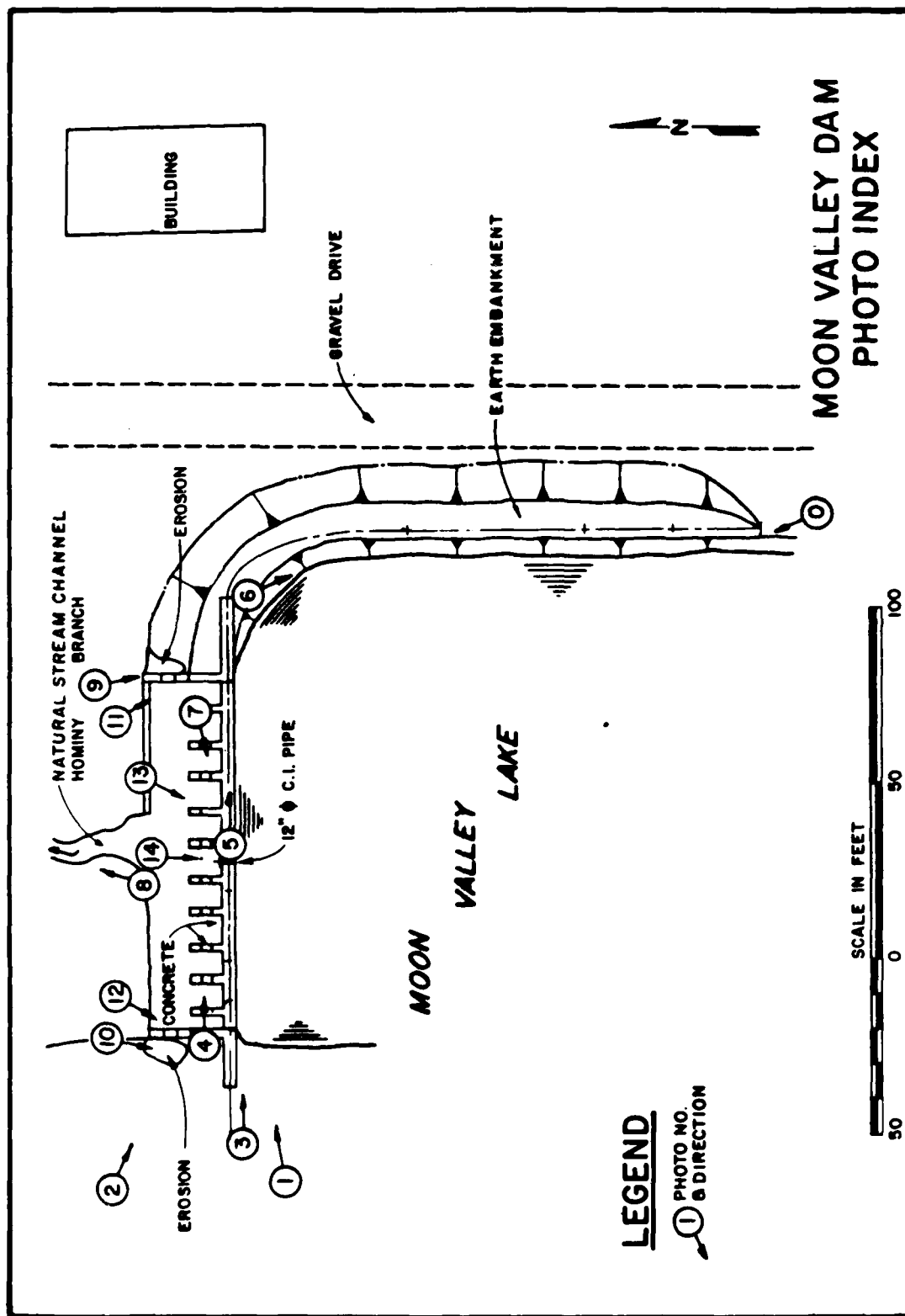


PLATE 7



PHOTO 1: TOP OF DAM LOOKING DOWNSTREAM



PHOTO 2: DOWNSTREAM FACE OF DAM



PHOTO 3: BUTTRESS ALIGNMENT



PHOTO 4: ALIGNMENT OF DAM LOOKING EAST



PHOTO 5: ALIGNMENT OF EAST END OF DAM



PHOTO 6: UPSTREAM FACE OF EMBANKMENT AND RIGHT ABUTMENT



PHOTO 7: PLUNGE POOL BELOW DAM



PHOTO 8: NATURAL CHANNEL DOWNSTREAM OF DAM



PHOTO 9: EROSION BEHIND EAST WINGWALL



PHOTO 10: EROSION AND DEBRIS BEHIND WEST WINGWALL



PHOTO 11: DIAGONAL CRACK IN EAST WINGWALL

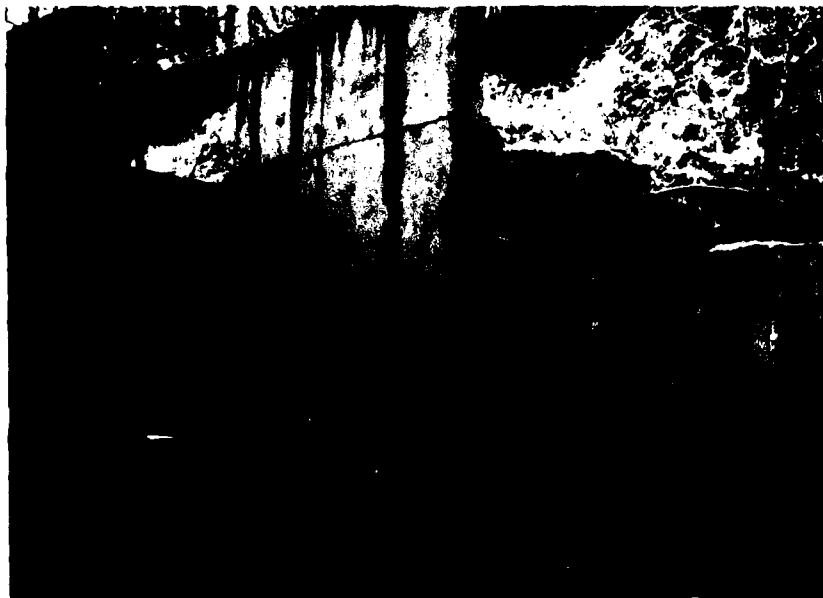


PHOTO 12: WEST WINGWALL



PHOTO 13: SEEPAGE FROM PATTERN CRACKING

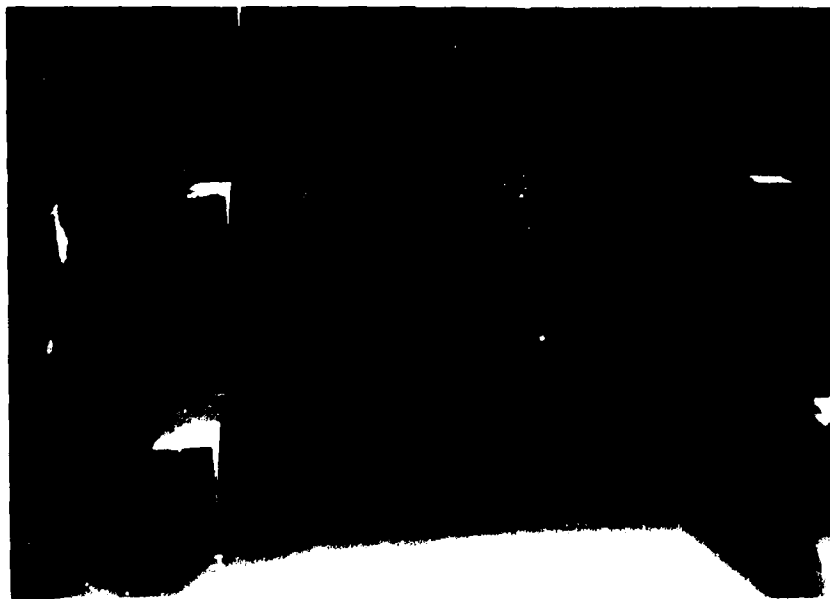


PHOTO 14: OUTLET PIPE

APPENDIX A
HYDROLOGIC AND HYDRAULIC ANALYSES

HYDROLOGIC AND HYDRAULIC ANALYSES

To determine the overtopping potential, flood routings were performed by applying the Probable Maximum Precipitation (PMP) to a synthetic unit hydrograph to develop the inflow hydrographs for Moon Valley Dam and the upstream dams. The inflow hydrographs were then routed through the reservoirs and the spillways or overflow section. The overtopping analysis was determined using the computer program HEC-1 (Dam Safety Version) (1).

The PMP was determined from regional charts prepared by the National Weather Service in "Hydrometeorological Report No. 33" (HMR-33) (2). Reduction factors were not applied. The rainfall distribution for the 24-hour PMP storm was determined according to the procedures outlined in HMR-33 and EM 1110-2-1411 (3). The Jefferson City, Missouri rainfall distribution (5 min. interval - 24 hours duration), as provided by the St. Louis District, Corp of Engineers, was used when the ten percent chance probability flood was routed through the reservoirs and the spillways or overflow section.

The synthetic unit hydrograph for the watershed was developed by the computer program using the Soil Conservation Service (SCS) method (1, 4). The parameters for the unit hydrograph are shown in Table 1. The time of concentration (T_c) was determined using the Linsley, Kohler, and Paulhus method (5) or the Kirpich method (6) and was verified by the Snyder and SCS methods.

The SCS curve number (CN) method was used in computing the infiltration losses for the rainfall-runoff relationship. The CN values used, and the result from the computer output, are shown in Table 2.

The reservoir routings were performed using the modified Puls method. The initial reservoir pool elevations for the routing of each storm were determined to be equivalent to the crest elevations of the principal spillway or overflow section in accordance with antecedent storm conditions AMC II and AMC III preceding the ten percent probability and probable maximum storms outlined by the U.S. Army Corps of Engineers, St. Louis District (7). The hydraulic capacity of the spillways and overflow section and the storage capacity of the reservoirs were defined by the elevation, surface area, storage, and discharge relationships shown in Table 3.

The rating curve for the spillways and overflow section are shown in Table 3. The flow over the crests of the dams was determined using the non-level dam crest option (\$L and \$V cards) of the HEC-1 program. The program assumes critical flow over a broad-crested weir.

Breach analyses were performed using HEC-1 for the reservoirs upstream of Moon Valley Dam. The breaching parameters are shown in Table 4.

The result of the routing analysis indicates that three percent of the Probable Maximum Flood (PMF) will not overtop Moon Valley Dam. The routing analysis also indicated that the ten percent probability flood will overtop the dam.

A summary of the routing analysis for different ratios of the PMF is shown in Table 5.

The computer input data and a summary of the output data are presented at the back of this appendix.

TABLE 1

SYNTHETIC UNIT HYDROGRAPH

Parameters:	Welch Lake Dam	U/S Hagan Lake Dam	Hagan Lake Dam	Waters Edge Estates Lake Dam	I-70 Hwy. Embankment	U.S. 63 Hwy. Embankment	Moon Valley Dam
Drainage Area (A) (acres) ¹	2.154	124	33	240	520	935	191
Hydraulic Length of Water- course (L) (miles)	3.90	0.62	0.13	-	1.38	2.46	0.98
Length of Watercourse to Centroid of Drainage Area (Lc) (miles)	1.70	-	-	-	0.58	1.21	0.36
Average Watershed Land Slope (s) (feet/feet)	0.0056	-	-	-	0.0174	0.0141	0.0345
Elevation Difference in Watershed (H) (feet)	-	60	46	-	-	-	-
Lag Time (Lg) (hours)	1.92	0.19	0.03	0.17	0.70	1.19	0.45
Time of Concentration (Tc) (hours)	3.20 ²	0.31 ³	0.06 ³	0.28 ³	1.16 ²	1.99 ²	0.75 ²
Duration (D) (minutes)	25	3.7	0.7	3.4	9	16	6

(Use 5 minutes in each case)

NOTES:

- 1 Incremental drainage areas. Total drainage area for Moon Valley Dam is 4,197 acres.
- 2 Calculated using the Linsley, Kohler, and Paulhus method.
- 3 Calculated using the Kirpich method.

TABLE 1
SYNTHETIC UNIT HYDROGRAPH

Unit Hydrograph Ordinates Discharge (cfs)*

<u>Time</u> (Min.)*	<u>Welch</u> <u>Lake Dam</u>	<u>U/S Hagan</u> <u>Lake Dam</u>	<u>Hagan</u> <u>Lake Dam</u>	<u>Waters Edge</u> <u>Estates</u> <u>Lake Dam</u>	<u>I-70 Hwy.</u> <u>Embankment</u>
0	0	0	0	0	0
5	11	110	293	260	21
10	21	349	82	787	66
15	41	404	16	809	127
20	65	292	3	507	211
25	92	152	0	254	318
30	124	85		136	420
35	156	47		72	492
40	197	26		38	529
45	240	14		20	532
50	290	8		11	518
55	346	4		6	479
60	405	3		2	434
65	472	1		0	377
70	539	0			308
75	597				246
80	653				204
85	700				169
90	739				142
95	775				120
100	796				100
105	817				82
110	824				69
115	828				57
120	828				48
125	824				39
130	819				33
135	798				27
140	777				22
.	.				.
.	.				.
220	289				0
.	.				.
585	0				

TABLE 1
SYNTHETIC UNIT HYDROGRAPH
(Continued)

Unit Hydrograph Ordinates Discharge (cfs)*

<u>Time</u> (Min.)*	<u>U.S. 63 Hwy.</u> <u>Embankment</u>	<u>Moon</u> <u>Valley Dam</u>
0	0	0
5	12	23
10	31	71
15	59	146
20	93	234
25	135	284
30	182	295
35	244	276
40	313	239
45	385	189
50	446	135
55	496	102
60	535	78
65	559	60
70	569	45
75	571	34
80	567	26
85	550	20
90	525	15
95	498	11
100	468	8
105	435	6
110	397	5
115	352	4
120	308	3
125	269	2
130	241	2
135	215	1
140	192	1
145	172	0
365	0	

* From HEC-1 computer output

FORMULAS USED:

$$L_g = 0.35 (L L_c / S^{0.5})^{0.38} \quad (5)$$

$$T_c = (11.9 \times L^3 / H)^{0.385} \quad (6)$$

$$T_c = L_g / 0.6$$

$$D = 0.133 T_c$$

TABLE 2

RAINFALL-RUNOFF VALUES

<u>Selected Flood Event</u>	<u>Storm Duration (Hours)</u>	<u>Rainfall (Inches)</u>	<u>Runoff (Inches)</u>	<u>Loss (Inches)</u>
PMF				
Welch Lake Dam	24	32.24	30.66	1.58
U/S Hagan Lake Dam	24	32.24	31.35	0.89
Hagan Lake Dam	24	32.24	31.35	0.89
Waters Edge Estates Lake Dam	24	32.24	31.35	0.89
I-70 Hwy. Embankment	24	32.24	30.37	1.87
U.S. 63 Hwy. Embankment	24	32.24	30.37	1.87
Moon Valley Dam	24	32.24	30.37	1.87
50% PMF				
Welch Lake Dam	24	16.86	15.33	1.53
U/S Hagan Lake Dam	24	16.54	15.67	0.87
Hagan Lake Dam	24	16.54	15.67	0.87
Waters Edge Estates Lake Dam	24	16.54	15.67	0.87
I-70 Hwy. Embankment	24	16.99	15.18	1.81
U.S. 63 Hwy. Embankment	24	16.99	15.18	1.81
Moon Valley Dam	24	16.99	15.18	1.81
10% Probability				
Welch Lake Dam	24	5.21	2.54	2.67
U/S Hagan Lake Dam	24	5.27	3.52	1.75
Hagan Lake Dam	24	5.27	3.52	1.75
Waters Edge Estates Lake Dam	24	5.27	3.52	1.75
I-70 Hwy. Embankment	24	5.27	2.32	2.95
U.S. 63 Hwy. Embankment	24	5.27	2.32	2.95
Moon Valley Dam	24	5.27	2.32	2.95

Additional Data:

- 1) The major soil associations in this watershed are Freeburg, Gosport, Hatton, Lindley, Mandeville, Mexico, and Sharon (8).
 70 percent of total drainage area in hydrologic soil group C.
 25 percent of total drainage area in hydrologic soil group B.
 5 percent of total drainage area in hydrologic soil group D.
 40 percent of the total land use was grassland.
 40 percent of the total land use was woods.
 20 percent of the total land use was residential.

2) Location	SCS Runoff Curve Number (CN)	
	AMC II ¹	AMC III ²
Welch Lake Dam	74	88
U/S Hagan Lake Dam	84	93
Hagan Lake Dam	84	93
Waters Edge Estates Lake Dam	84	93
I-70 Hwy. Embankment	71	86
U.S. 63 Hwy. Embankment	71	86
Moon Valley Dam	71	86

¹ Used for 10% Probability Storm.

² Used for PMP.

TABLE 3

ELEVATION, SURFACE AREA, STORAGE, AND DISCHARGE RELATIONSHIPS

<u>Elevation</u> <u>(feet-MSL)</u>	<u>Lake Surface</u> <u>Area (acres)</u>	<u>Lake Storage</u> <u>(acre-ft.)</u>	<u>Spillway or</u> <u>Overflow Section</u> <u>Discharge (cfs)</u>
Welch Lake Dam			
*786.6	7.7	49	0
**787.4	10.2	56	11
***790.4	19.6	99	452
U/S Hagan Lake Dam			
*799.5	5.5	29	0
**804.4	8.5	62	27
***805.0	8.5	67	77

TABLE 3

ELEVATION, SURFACE AREA, STORAGE, AND DISCHARGE RELATIONSHIPS
(Continued)

<u>Elevation</u> <u>(feet-MSL)</u>	<u>Lake Surface</u> <u>Area (acres)</u>	<u>Lake Storage</u> <u>(acre-ft.)</u>	<u>Spillway or</u> <u>Overflow Section</u> <u>Discharge (cfs)</u>
Hagan Lake Dam			
*784.4	6.5	66	0
***785.0	7.0	70	61
Waters Edge Estates Lake Dam			
*762.5	17.0	122	0
766.0	22.1	189	436
***770.0	28.0	289	1,419
I-70 Hwy. Embankment			
*723.0	0	0	0
730.0	7.5	27	850
***738.0	26.3	180	3,505
U.S. 63 Hwy. Embankment			
*657.0	0	0	0
670.0	8.7	56	2,093
***687.0	46.8	522	9,914
Moon Valley Dam			
*650.0	15.8	74	0
***651.8	18.6	104	662
653.8	21.6	143	2,150

*Principal spillway or overflow section crest elevation

**Emergency spillway crest elevation

***Top of dam elevation

The surface area relationships in Table 3 were developed from the Columbia and Millersburg, Missouri 7.5 minute quadrangle maps and the field measurements.

METHOD USED:

Overflow section releases for Moon Valley Dam were computed by HEC-1 from overflow section geometry data input on \$L and \$V cards. Discharge through the overflow section for the probable maximum flood and other percentages of the probable maximum flood was determined by the equations for flow over a non-level crest.

$$d_c = 2/3 (H_m + 1/4 \Delta Y)$$

$$A = 1/2 T (2d_c - \Delta Y)$$

$$Q = (A^3 g/T)^{0.5}$$

where:

d_c = critical depth (feet)

H_m = available specific energy which is taken to be the height of the water surface in the reservoir above the bottom of the section (feet)

ΔY = change in elevation across the section (feet)

A = flow area (sq. ft.)

T = top width (feet)

Q = flow (cfs)

$g = 32.2 \text{ ft/sec}^2$ = acceleration due to gravity.

TABLE 4

BREACHING PARAMETERS

	<u>Welch Lake Dam</u>	<u>U/S Hagan Lake Dam</u>	<u>Hagan Lake Dam</u>	<u>Waters Edge Estates Lake Dam</u>
Bottom Width of Breach (BRWID)	10.0 feet	10.0 feet	10.0 feet	10.0 feet
Side Slope of Breach(z) (In feet horizontal to 1.0 foot vertical)	0.5	0.5	0.5	0.5
Elevation of Breach Bottom at Maximum Size of Breach (ELBM)	772.0	794.7	770.0	746.0
Time for Breach to Develop to Maximum Size (TFAIL)	1.0 hour	1.0 hour	1.0 hour	1.0 hour
Elevation of Water Surface Which Will Cause Dam to Fail (FAILEL)	790.4	805.0	785.0	770.0

TABLE 5
RESULTS OF FLOOD ROUTINGS

Ratio of PMF	Peak Inflow (CFS)	Peak Lake Elevation (ft.-MSL)	Total Storage (AC.-ft)	Peak Outflow (CFS)	Depth (ft.) Over Top of Dam	Duration of Over- topping (hrs.)
-	0	*650.0	74	0	-	-
0.03	343	651.2	93	330	0	0
0.50	9,235	656.7	210	9,230	4.9	14.1
1.00	20,594	659.5	288	20,570	7.7	16.3

* Overflow section crest elevation

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- (1) U.S. Army Corps of Engineers, Hydrologic Engineering Center, Flood Hydrograph Package (HEC-1), Dam Safety Version, July 1978, April 1980 Modification, Davis, California.
- (2) U.S. Department of the Army, Corps of Engineers, Seasonal Variation of the Probable Maximum Precipitation East of the 105th Meridian for Areas from 10 to 1000 Square Miles and Durations of 6, 12, 24, and 48 Hours, Hydrometeorological Report No. 33, Reprinted October 1967, Washington, D.C.
- (3) U.S. Department of the Army, Corps of Engineers, Standard Project Flood Determinations, Civil Engineer Bulletin No. 52-8, EM 1110-2-1411, Revised 1965, Washington, D.C.
- (4) U.S. Department of Agriculture, Soil Conservation Service, National Engineering Handbook, Section 4, Hydrology, August 1972.
- (5) Linsley, Ray K., Jr., Kohler, Max A., Paulhus, Joseph, L.H., Hydrology for Engineers, Second Edition, McGraw-Hill, Inc., 1975.
- (6) U.S. Department of the Interior, Bureau of Reclamation, Design of Small Dams, 1974, Washington, D.C.
- (7) U.S. Army Corps of Engineers, St. Louis District, Hydrologic/Hydraulic Standards, Phase I Safety Inspection of Non-Federal Dams, 2 August 1980.
- (8) U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of Boone County, Missouri, 1962.

GOOD HYDROGRAPH PACKAGE - HEC-1

51	K1	RUNOFF CALCULATIONS FOR WAGAN LAKE (MO 11057)									
52	M	1	2	0.51	100	120	130	1.0			
53	P			24.80							
54	T								-1	-93	
55	W2			0.34							
56	K				1						
57	K	2	3								
58	K1	COMBINE HYDROGRAPHS-TOTAL INFLOW TO WAGAN LAKE (MO 11057)									
59	K	1	DAM	3							
60	K1	ROUTE HYDROGRAPH THROUGH WAGAN LAKE DAM (MO 11057)									
61	Y	1									
62	Y1	1							-786.4	-1	
63	Y4	784.4	784.68	784.95	785.22	785.47	785.73	786.	786.28	786.56	786.84
64	Y4787.14	787.74	788.04	788.34	788.64						
65	Y5	0.	12	47	121	232	395	645	1005	1480	2075.
66	Y5	2802	3606	4483	5427	6435	7503				
67	SA	0.	1	3	6.5	9.5	15.5				
68	SE	755	765	775	784.4	790	800				
69	SE	784.4.									
70	SD	785									
71	SB	10.	0.5	770.	1	784.4	785.0				
72	K	0	AREA	4			3	1			
73	K1	RUNOFF CALCULATIONS FOR WATERS EDGE ESTATE LAKE (MO 12102)									
74	M	1	2	0.375	100	120	130	1.0			
75	P			24.80							
76	T								-1	-93	
77	W2			0.17							
78	X				1						
79	K	3	4								
80	K1	COMBINE HYDROGRAPHS-TOTAL INFLOW TO MO.12102									
81	K	1	DAM	4							
82	K1	ROUTE THROUGH WATERS EDGE ESTATE LAKE DAM (MO 12102)									
83	Y	1									
84	Y1	1							-762.5	-1	
85	Y4762.5	763.33	764.59	765.82	769.40	770.14	770.6	771.45	772.12	773.75	
86	Y4775.36										
87	Y5	0.	50	200	400	1200	1470	2150	4020	5980	12000.
88	Y5	19520									
89	SA	0.	3	14	17	28	50				
90	SE	745	750	760	762.5	770	780				
91	SE	762.5									
92	SD	770									
93	SB	10.	0.5	746.	1	762.5	770.				
94	K	1	CHAN	5							
95	K1	CHANNEL ROUTING TO I-70 EMBANKMENT									
96	Y	1									
97	Y1	1									
98	Y6	0.070	0.050	0.070	740.	770.	4500.	0.0047			
99	Y7	0.	770.	80.	760.	120.	750.	280.	740.	320.	740.
100	Y7	460.	750.	520.	760.	580.	770.				

BLACK & VEATCH

PROJECT 9457:

DATE 17 JUL 81 PAGE 4

FLOOD HYDROGRAPH PACKAGE - HEC-1

PROGRAM M21/02-1V TIME 17:32:58 CASE PMF

101	K	0	AREA 5	3	1				
102	K1	INFLW TO I-70 EMBANKMENT							
103	M	1	2 0.813	1.0					
104	P	1	24.80	101	120	130			
105	T						-1	-86	
106	W2		0.694						
107	X			1					
108	K	2	5						
109	K1	COMBINE HYDROGRAPHS-TOTAL INFLOW TO I-70 (OUTFLOW FROM MO.12102 & AREA 5)							
110	K	1	DAM 5						
111	K1	ROUTING THROUGH I-70 EMBANKMENT							
112	Y	1							
113	Y1	1					-723.0	-1	
114	Y4	723.	725.	730.	735.	738.	750.		
115	Y5	0.	32.	101.	2270.	3504.	3505.		
116	Y5	0.0	26.3	219.	673.				
117	Y5	723.	750.	740.	750.				
118	Y5	723.							
119	Y5	738.							
120	Y5	30.	310.	1390.					
121	Y5	737.9	738.	740.	750.				
122	K	1	CHAN 6						
123	K1	CHANNEL ROUTING TO HIGHWAY 63 EMBANKMENT							
124	Y	1							
125	Y1	1							
126	Y6	0.070	0.050	0.070	700.	730.	10400.	0.0063	
127	Y7	0.	730.	40.	720.	100.	710.	280.	700.
128	Y7	560.	710.	760.	720.	920.	730.		
129	K	0	AREA 6						
130	K1	INFLW TO HIGHWAY 63 EMBANKMENT							
131	M	1	2 1.461						
132	P	1	24.80	101	120	130			
133	T						-1	-86	
134	W2		1.192						
135	X			1					
136	K	2	6						
137	K1	COMBINE HYDROGRAPHS-TOTAL INFLOW TO HWY 63 (OUTFLOW FROM HWY 63 & AREA 6)							
138	K	1	DAM 6						
139	K1	ROUTING THROUGH HIGHWAY 63 EMBANKMENT							
140	Y	1							
141	Y1	1					-657.0	-1	
142	Y4	657.	658.	660.	665.	670.	675.	680.	685.
143	Y5	0.	33.	190.	915.	2083.	3728.	5898.	687.
144	Y5	0.	2.6	54.6	234.	656.	1377.		700.
145	Y5	657.	660.	670.	680.	690.	700.		
146	Y5	657.							
147	Y5	687.							
148	Y5	0.	39.	340.	1180.				
149	Y5	686.9	687.	690.	770.				
150	K	0	AREA 7	3	1				

PREVIEW OF SEQUENCE OF STREAM NETWORK CALCULATIONS

RUNOFF HYDROGRAPH AT	AREA 1
ROUTE HYDROGRAPH TO	DAM 1
RUNOFF HYDROGRAPH AT	AREA 2
ROUTE HYDROGRAPH TO	DAM 2
RUNOFF HYDROGRAPH AT	AREA 3
COMBINE 2 HYDROGRAPHS AT	AREA 3
ROUTE HYDROGRAPH TO	DAM 3
RUNOFF HYDROGRAPH AT	AREA 4
COMBINE 3 HYDROGRAPHS AT	AREA 4
ROUTE HYDROGRAPH TO	DAM 4
ROUTE HYDROGRAPH TO	CHAN 5
RUNOFF HYDROGRAPH AT	AREA 5
COMBINE 2 HYDROGRAPHS AT	AREA 5
ROUTE HYDROGRAPH TO	DAM 5
ROUTE HYDROGRAPH TO	CHAN 6
RUNOFF HYDROGRAPH AT	AREA 6
COMBINE 2 HYDROGRAPHS AT	AREA 6
ROUTE HYDROGRAPH TO	DAM 6
RUNOFF HYDROGRAPH AT	AREA 7
COMBINE 2 HYDROGRAPHS AT	AREA 7
ROUTE HYDROGRAPH TO	DAM 7
END OF NETWORK	

FLOOD HYDROGRAPH PACKAGE (MEC-1)
DAM SAFETY VERSION JULY 1978
LAST MODIFICATION 01 APR 80

MISSOURI DAM INSPECTION PROGRAM M219457-MDI-MOONVALLEY
ST. LOUIS DISTRICT US ARMY CORPS OF ENGINEERS
POON VALLEY DAM & OTHER UPSTREAM RESERVOIRS

JOB SPECIFICATION									
NQ	NHR	MMIN	IDAY	IHR	IMIN	METC	IPLT	IPRT	MSIAN
300	0	5	0	0	0	0	0	0	0
JOPER NWT LROPT TRACE									
5 0 0 0									

MULTI-PLAN ANALYSES TO BE PERFORMED

RTIOS= .01 .02 .03 .04 .05 .50 1.00
PLAN= 1 RTIO= 7 LRTIO= 1

SUB-AREA RUNOFF COMPUTATION

INFLOW TO WELCH LAKE

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRI	INAME	ISTAGE	IAUTO
AREA 1	0	0	0	0	3	1	0	0

HYDROGRAPH DATA

IMYDG	IUNG	AREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	2	3.37	.00	3.37	1.00	.000	0	0	0

PRECIP DATA

SPFE	PWS	R6	R12	R24	R48	R72	R96
.00	24.00	101.00	120.00	130.00	.00	.00	.00

LOSS DATA

LROPT	STKR	DLTKR	RTIOL	ENAIN	STKRS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	.00	.00	1.00	.00	.00	1.00	-1.00	-88.00	.00	.00

CURVE NO = -88.00 WETNESS = -1.00 EFFECT CN = 88.00

UNIT HYDROGRAPH DATA

TC= .00 LAG= 1.92

RECESSION DATA

STRTQ= .00 GRCSN= .00 RTIOR= 1.00

UNIT HYDROGRAPH 17 END OF PERIOD ORIGINATES, TC= .00 HOURS, LAG= 1.92 VOL= 1.00

11.	21.	41.	65.	92.	124.	156.	197.	240.	290.
346.	405.	472.	539.	597.	653.	700.	739.	775.	796.
P17.	824.	828.	824.	819.	798.	777.	753.	728.	728.
702.	674.	645.	610.	575.	535.	493.	453.	417.	382.

FLOOD HYDROGRAPH PACKAGE - MEC-1

PROGRAM H21/02-1V TIME 17:32:58 CASE PNF

357.	333.	319.	289.	269.	251.	234.	220.	208.	195.
182.	162.	159.	148.	138.	127.	118.	111.	104.	97.
90.	85.	79.	74.	69.	64.	60.	56.	52.	48.
45.	42.	39.	37.	34.	32.	30.	28.	26.	24.
23.	21.	20.	18.	17.	16.	15.	14.	13.	12.
11.	10.	9.	9.	8.	8.	8.	8.	7.	7.
6.	5.	5.	5.	5.	4.	4.	3.	3.	3.
2.	2.	2.	1.	1.	1.	0.			

0													
END-OF-PERIOD FLOW													
MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP 0	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP 0
1.01	05	1	01	00	01	0	1.01	12.35	151	21	20	01	1633.
1.01	10	2	01	00	01	0	1.01	12.40	152	21	20	01	1664.
1.01	15	3	01	00	01	0	1.01	12.45	153	21	20	01	1702.
1.01	20	4	01	00	01	0	1.01	12.50	154	21	20	01	1746.
1.01	25	5	01	00	01	0	1.01	12.55	155	21	20	00	1798.
1.01	30	6	01	00	01	0	1.01	13.00	156	21	20	00	1858.
1.01	35	7	01	00	01	0	1.01	13.05	157	25	25	01	1927.
1.01	40	8	01	00	01	0	1.01	13.10	158	25	25	00	2007.
1.01	45	9	01	00	01	0	1.01	13.15	159	25	25	00	2095.
1.01	50	10	01	00	01	0	1.01	13.20	160	25	25	00	2192.
1.01	55	11	01	00	01	0	1.01	13.25	161	25	25	00	2296.
1.01	00	12	01	00	01	0	1.01	13.30	162	25	25	00	2408.
1.01	05	13	01	00	01	0	1.01	13.35	163	25	25	00	2525.
1.01	10	14	01	00	01	0	1.01	13.40	164	25	25	00	2647.
1.01	15	15	01	00	01	0	1.01	13.45	165	25	25	00	2774.
1.01	20	16	01	00	01	0	1.01	13.50	166	25	25	00	2905.
1.01	25	17	01	00	01	0	1.01	13.55	167	25	25	00	3038.
1.01	30	18	01	00	01	0	1.01	14.00	168	25	25	00	3173.
1.01	35	19	01	00	01	0	1.01	14.05	169	31	31	00	3312.
1.01	40	20	01	00	01	0	1.01	14.10	170	31	31	00	3453.
1.01	45	21	01	00	01	0	1.01	14.15	171	31	31	00	3595.
1.01	50	22	01	00	01	0	1.01	14.20	172	31	31	00	3738.
1.01	55	23	01	00	01	0	1.01	14.25	173	31	31	00	3881.
1.01	00	24	01	00	01	0	1.01	14.30	174	31	31	00	4024.
1.01	05	25	01	00	01	0	1.01	14.35	175	31	31	00	4168.
1.01	10	26	01	00	01	0	1.01	14.40	176	31	31	00	4310.
1.01	15	27	01	00	01	0	1.01	14.45	177	31	31	00	4453.
1.01	20	28	01	00	01	0	1.01	14.50	178	31	31	00	4594.
1.01	25	29	01	00	01	1	1.01	14.55	179	31	31	00	4733.
1.01	30	30	01	00	01	1	1.01	15.00	180	31	31	00	4871.
1.01	35	31	01	00	01	1	1.01	15.05	181	19	19	00	5006.
1.01	40	32	01	00	01	2	1.01	15.10	182	38	38	00	5139.
1.01	45	33	01	00	01	2	1.01	15.15	183	38	38	00	5271.
1.01	50	34	01	00	01	3	1.01	15.20	184	57	57	00	5402.
1.01	55	35	01	00	01	4	1.01	15.25	185	67	66	00	5536.
1.01	00	36	01	00	01	5	1.01	15.30	186	162	161	01	5685.
1.01	05	37	01	00	01	6	1.01	15.35	187	267	265	01	5861.
1.01	10	38	01	00	01	7	1.01	15.40	188	105	104	00	6055.
1.01	15	39	01	00	01	9	1.01	15.45	189	67	66	00	6280.
1.01	20	40	01	00	01	11	1.01	15.50	190	57	57	00	6527.
1.01	25	41	01	00	01	12	1.01	15.55	191	38	38	00	6792.
1.01	30	42	01	00	01	15	1.01	16.00	192	38	38	00	7076.
1.01	35	43	01	00	01	17	1.01	16.05	193	29	29	00	7376.
1.01	40	44	01	00	01	19	1.01	16.10	194	29	29	00	7705.

1.01	3.45	45	.01	.00	.01	22.	1.01	16.15	195	.29	.29	.00	8055.
1.01	3.50	46	.01	.01	.01	24.	1.01	16.20	196	.29	.29	.00	8433.
1.01	3.55	47	.01	.01	.01	27.	1.01	16.25	197	.29	.29	.00	8836.
1.01	4.00	48	.01	.01	.01	30.	1.01	16.30	198	.29	.29	.00	9256.
1.01	4.05	49	.01	.01	.01	33.	1.01	16.35	199	.29	.29	.00	9693.
1.01	4.10	50	.01	.01	.01	36.	1.01	16.40	200	.29	.29	.00	10121.
1.01	4.15	51	.01	.01	.01	40.	1.01	16.45	201	.29	.29	.00	10518.
1.01	4.20	52	.01	.01	.01	43.	1.01	16.50	202	.29	.29	.00	10888.
1.01	4.25	53	.01	.01	.01	46.	1.01	16.55	203	.29	.29	.00	11211.
1.01	4.30	54	.01	.01	.01	50.	1.01	17.00	204	.29	.29	.00	11490.
1.01	4.35	55	.01	.01	.01	54.	1.01	17.05	205	.23	.23	.00	11724.
1.01	4.40	56	.01	.01	.01	57.	1.01	17.10	206	.23	.23	.00	11903.
1.01	4.45	57	.01	.01	.01	61.	1.01	17.15	207	.23	.23	.00	12042.
1.01	4.50	58	.01	.01	.01	65.	1.01	17.20	208	.23	.23	.00	12126.
1.01	4.55	59	.01	.01	.01	69.	1.01	17.25	209	.23	.23	.00	12176.
1.01	5.00	60	.01	.01	.01	72.	1.01	17.30	210	.23	.23	.00	12194.
1.01	5.05	61	.01	.01	.01	76.	1.01	17.35	211	.23	.23	.00	12182.
1.01	5.10	62	.01	.01	.01	80.	1.01	17.40	212	.23	.23	.00	12133.
1.01	5.15	63	.01	.01	.01	84.	1.01	17.45	213	.23	.23	.00	12036.
1.01	5.20	64	.01	.01	.01	87.	1.01	17.50	214	.23	.23	.00	11917.
1.01	5.25	65	.01	.01	.01	91.	1.01	17.55	215	.23	.23	.00	11776.
1.01	5.30	66	.01	.01	.01	95.	1.01	18.00	216	.23	.23	.00	11620.
1.01	5.35	67	.01	.01	.01	99.	1.01	18.05	217	.02	.02	.00	11445.
1.01	5.40	68	.01	.01	.01	102.	1.01	18.10	218	.02	.02	.00	11251.
1.01	5.45	69	.01	.01	.01	106.	1.01	18.15	219	.02	.02	.00	11034.
1.01	5.50	70	.01	.01	.01	109.	1.01	18.20	220	.02	.02	.00	10788.
1.01	5.55	71	.01	.01	.01	113.	1.01	18.25	221	.02	.02	.00	10520.
1.01	6.00	72	.01	.01	.01	116.	1.01	18.30	222	.02	.02	.00	10228.
1.01	6.05	73	.07	.04	.03	120.	1.01	18.35	223	.02	.02	.00	9921.
1.01	6.10	74	.07	.04	.03	124.	1.01	18.40	224	.02	.02	.00	9614.
1.01	6.15	75	.07	.04	.02	129.	1.01	18.45	225	.02	.02	.00	9311.
1.01	6.20	76	.07	.04	.02	134.	1.01	18.50	226	.02	.02	.00	9013.
1.01	6.25	77	.07	.04	.02	141.	1.01	18.55	227	.02	.02	.00	8732.
1.01	6.30	78	.07	.05	.02	148.	1.01	19.00	228	.02	.02	.00	8450.
1.01	6.35	79	.07	.05	.02	156.	1.01	19.05	229	.02	.02	.00	8168.
1.01	6.40	80	.07	.05	.02	166.	1.01	19.10	230	.02	.02	.00	7882.
1.01	6.45	81	.07	.05	.02	177.	1.01	19.15	231	.02	.02	.00	7594.
1.01	6.50	82	.07	.05	.02	190.	1.01	19.20	232	.02	.02	.00	7307.
1.01	6.55	83	.07	.05	.02	205.	1.01	19.25	233	.02	.02	.00	7019.
1.01	7.00	84	.07	.05	.02	223.	1.01	19.30	234	.02	.02	.00	6737.
1.01	7.05	85	.07	.05	.01	242.	1.01	19.35	235	.02	.02	.00	6454.
1.01	7.10	86	.07	.05	.01	264.	1.01	19.40	236	.02	.02	.00	6172.
1.01	7.15	87	.07	.05	.01	289.	1.01	19.45	237	.02	.02	.00	5889.
1.01	7.20	88	.07	.05	.01	315.	1.01	19.50	238	.02	.02	.00	5610.
1.01	7.25	89	.07	.05	.01	344.	1.01	19.55	239	.02	.02	.00	5338.
1.01	7.30	90	.07	.05	.01	375.	1.01	20.00	240	.02	.02	.00	5071.
1.01	7.35	91	.07	.05	.01	407.	1.01	20.05	241	.02	.02	.00	4809.
1.01	7.40	92	.07	.05	.01	440.	1.01	20.10	242	.02	.02	.00	4554.
1.01	7.45	93	.07	.06	.01	475.	1.01	20.15	243	.02	.02	.00	4312.
1.01	7.50	94	.07	.06	.01	511.	1.01	20.20	244	.02	.02	.00	4082.
1.01	7.55	95	.07	.06	.01	547.	1.01	20.25	245	.02	.02	.00	3860.
1.01	8.00	96	.07	.06	.01	584.	1.01	20.30	246	.02	.02	.00	3646.
1.01	8.05	97	.07	.06	.01	621.	1.01	20.35	247	.02	.02	.00	3442.
1.01	8.10	98	.07	.06	.01	658.	1.01	20.40	248	.02	.02	.00	3249.
1.01	8.15	99	.07	.06	.01	696.	1.01	20.45	249	.02	.02	.00	3065.
1.01	8.20	100	.07	.06	.01	732.	1.01	20.50	250	.02	.02	.00	2891.

FLOOD HYDROGRAPH PACKAGE - MEC-1

PROGRAM M21702-1V TIME 17:12:58 CASE PMF

1.01	8.25	101	.07	.06	.01	769.	1.01	20.55	251	.02	.02	.00	2727.
1.01	8.30	102	.07	.06	.01	605.	1.01	21.00	252	.02	.02	.00	2574.
1.01	8.35	103	.07	.06	.01	840.	1.01	21.05	253	.02	.02	.00	2433.
1.01	8.40	104	.07	.06	.01	875.	1.01	21.10	254	.02	.02	.00	2303.
1.01	8.45	105	.07	.06	.01	908.	1.01	21.15	255	.02	.02	.00	2183.
1.01	8.50	106	.07	.06	.01	941.	1.01	21.20	256	.02	.02	.00	2071.
1.01	8.55	107	.07	.06	.01	973.	1.01	21.25	257	.02	.02	.00	1967.
1.01	9.00	108	.07	.06	.01	1003.	1.01	21.30	258	.02	.02	.00	1871.
1.01	9.05	109	.07	.06	.01	1032.	1.01	21.35	259	.02	.02	.00	1782.
1.01	9.10	110	.07	.06	.01	1059.	1.01	21.40	260	.02	.02	.00	1698.
1.01	9.15	111	.07	.06	.01	1086.	1.01	21.45	261	.02	.02	.00	1620.
1.01	9.20	112	.07	.06	.01	1113.	1.01	21.50	262	.02	.02	.00	1547.
1.01	9.25	113	.07	.06	.01	1134.	1.01	21.55	263	.02	.02	.00	1480.
1.01	9.30	114	.07	.06	.01	1157.	1.01	22.00	264	.02	.02	.00	1416.
1.01	9.35	115	.07	.06	.01	1179.	1.01	22.05	265	.02	.02	.00	1356.
1.01	9.40	116	.07	.06	.01	1200.	1.01	22.10	266	.02	.02	.00	1300.
1.01	9.45	117	.07	.06	.01	1220.	1.01	22.15	267	.02	.02	.00	1248.
1.01	9.50	118	.07	.06	.01	1239.	1.01	22.20	268	.02	.02	.00	1199.
1.01	9.55	119	.07	.06	.01	1257.	1.01	22.25	269	.02	.02	.00	1153.
1.01	10.00	120	.07	.06	.01	1273.	1.01	22.30	270	.02	.02	.00	1110.
1.01	10.05	121	.07	.06	.01	1291.	1.01	22.35	271	.02	.02	.00	1070.
1.01	10.10	122	.07	.06	.01	1307.	1.01	22.40	272	.02	.02	.00	1033.
1.01	10.15	123	.07	.06	.01	1321.	1.01	22.45	273	.02	.02	.00	998.
1.01	10.20	124	.07	.06	.01	1337.	1.01	22.50	274	.02	.02	.00	966.
1.01	10.25	125	.07	.06	.01	1351.	1.01	22.55	275	.02	.02	.00	935.
1.01	10.30	126	.07	.06	.01	1365.	1.01	23.00	276	.02	.02	.00	907.
1.01	10.35	127	.07	.06	.01	1378.	1.01	23.05	277	.02	.02	.00	881.
1.01	10.40	128	.07	.06	.01	1390.	1.01	23.10	278	.02	.02	.00	856.
1.01	10.45	129	.07	.06	.01	1402.	1.01	23.15	279	.02	.02	.00	833.
1.01	10.50	130	.07	.06	.01	1413.	1.01	23.20	280	.02	.02	.00	812.
1.01	10.55	131	.07	.06	.01	1423.	1.01	23.25	281	.02	.02	.00	793.
1.01	11.00	132	.07	.06	.01	1434.	1.01	23.30	282	.02	.02	.00	775.
1.01	11.05	133	.07	.06	.01	1443.	1.01	23.35	283	.02	.02	.00	758.
1.01	11.10	134	.07	.06	.01	1453.	1.01	23.40	284	.02	.02	.00	740.
1.01	11.15	135	.07	.06	.01	1462.	1.01	23.45	285	.02	.02	.00	723.
1.01	11.20	136	.07	.06	.01	1470.	1.01	23.50	286	.02	.02	.00	702.
1.01	11.25	137	.07	.06	.01	1478.	1.01	23.55	287	.02	.02	.00	675.
1.01	11.30	138	.07	.06	.01	1486.	1.02	.00	288	.02	.02	.00	659.
1.01	11.35	139	.07	.06	.01	1494.	1.02	.05	289	.00	.00	.00	647.
1.01	11.40	140	.07	.06	.01	1501.	1.02	.10	290	.00	.00	.00	636.
1.01	11.45	141	.07	.06	.01	1508.	1.02	.15	291	.00	.00	.00	627.
1.01	11.50	142	.07	.06	.01	1514.	1.02	.20	292	.00	.00	.00	617.
1.01	11.55	143	.07	.06	.01	1520.	1.02	.25	293	.00	.00	.00	608.
1.01	12.00	144	.07	.06	.01	1526.	1.02	.30	294	.00	.00	.00	599.
1.01	12.05	145	.21	.20	.01	1534.	1.02	.35	295	.00	.00	.00	590.
1.01	12.10	146	.21	.20	.01	1542.	1.02	.40	296	.00	.00	.00	580.
1.01	12.15	147	.21	.20	.01	1553.	1.02	.45	297	.00	.00	.00	570.
1.01	12.20	148	.21	.20	.01	1567.	1.02	.50	298	.00	.00	.00	559.
1.01	12.25	149	.21	.20	.01	1585.	1.02	.55	299	.00	.00	.00	547.
1.01	12.30	150	.21	.20	.01	1607.	1.02	1.00	300	.00	.00	.00	534.

SUM 32.24 30.66 1.58 788422.
(.819)(.779)(.40)(.22325.62)--- PEAK --- TOTAL VOLUME
788422. 788158.

CMS	345.	228.	77.	74.	22318.
INCHES		22.25	30.22	30.22	30.22
MM		565.15	767.50	767.50	767.50
AC-FT		3907.	5428.	5428.	5428.
THOUS CU M		4930.	6695.	6695.	6695.

HYDROGRAPH AT STAREA 1 FOR PLAN 1, RTIO 1

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	122.	61.	27.	26.	7882.
CMS	3.	2.	1.	1.	223.
INCHES		.22	.30	.30	.30
MM		5.65	7.67	7.67	7.67
AC-FT		40.	54.	54.	54.
THOUS CU M		49.	67.	67.	67.

HYDROGRAPH AT STAREA 1 FOR PLAN 1, RTIO 2

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	244.	161.	55.	53.	15763.
CMS	7.	5.	2.	1.	446.
INCHES		.45	.60	.60	.60
MM		11.30	15.35	15.35	15.35
AC-FT		80.	109.	109.	109.
THOUS CU M		99.	134.	134.	134.

HYDROGRAPH AT STAREA 1 FOR PLAN 1, RTIO 3

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	366.	242.	82.	79.	23645.
CMS	10.	7.	2.	2.	670.
INCHES		.67	.91	.91	.91
MM		16.95	23.02	23.02	23.02
AC-FT		120.	163.	163.	163.
THOUS CU M		148.	201.	201.	201.

HYDROGRAPH AT STAREA 1 FOR PLAN 1, RTIO 4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	458.	322.	109.	105.	31526.
CMS	14.	9.	3.	3.	892.
INCHES		.89	1.21	1.21	1.21
MM		22.61	30.70	30.70	30.70
AC-FT		160.	217.	217.	217.
THOUS CU M		197.	268.	268.	268.

HYDROGRAPH AT STAAREA 1 FOR PLAN 1, RTIO 5

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	610.	403.	137.	131.	39408.
CMS	17.	11.	4.	4.	1116.
INCHES	1.11	1.51	1.51	1.51	1.51
MM	28.26	38.37	38.37	38.37	38.37
AC-FT	203.	271.	271.	271.	271.
THOUS CU M	247.	335.	335.	335.	335.

HYDROGRAPH AT STAAREA 1 FOR PLAN 1, RTIO 6

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	6097.	4030.	1368.	1314.	394079.
CMS	173.	114.	39.	37.	11159.
INCHES	11.13	15.11	15.11	15.11	15.11
MM	282.58	383.75	383.75	383.75	383.75
AC-FT	1992.	2714.	2714.	2714.	2714.
THOUS CU M	2465.	3348.	3348.	3348.	3348.

HYDROGRAPH AT STAAREA 1 FOR PLAN 1, RTIO 7

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	12194.	8061.	2737.	2627.	788158.
CMS	345.	224.	77.	74.	22318.
INCHES	22.25	30.22	30.22	30.22	30.22
MM	565.15	767.50	767.50	767.50	767.50
AC-FT	3997.	5428.	5428.	5428.	5428.
THOUS CU M	4930.	6695.	6695.	6695.	6695.

HYDROGRAPH ROUTING

ROUTING THROUGH WELCH LAKE DAM

ISTAG	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
DAM 1	1	0	0	0	0	1	0	0
ROUTING DATA								
QLOSS	CLOSS	AVG	IRCS	ISAME	IOPT	IPMP	LSTR	
.0	.000	.00	1	1	0	0	0	
NSTPS NSTDL LAG AMSKK X TSK STORA ISPRAT								
1	0	0	.000	.000	.000	.000	-787.	-1
STAGE	786.60	787.00	787.40	787.50	788.00	788.50	789.00	790.00
	791.00	792.00	793.00	794.00	795.00	796.00	798.50	799.50

CASE PMF

PROGRAM H21/02-1V TIME

- MEC-1

786.1	788.2	788.2	788.3	788.3	788.4	788.4	788.5
786.5	788.5	788.6	788.7	788.7	788.8	788.8	788.9
788.9	789.0	789.1	789.1	789.2	789.3	789.4	789.4
789.5	789.6	789.7	789.8	789.8	789.9	790.0	790.0
790.0	790.1	790.1	790.1	790.1	790.1	790.1	790.1
790.1	790.1	790.1	790.1	790.1	790.1	790.0	790.0
790.0	790.0	789.9	789.9	789.9	789.9	789.8	789.8
792.8	793.8	789.7	789.7	789.6	789.6	789.6	789.5
789.5	789.5	789.4	789.4	789.3	789.3	789.3	789.2
789.2	789.2	789.1	789.0	789.0	788.9	788.9	788.9
788.8	788.8	788.8	788.7	788.7	788.6	788.6	788.6
786.5	788.5	788.5	788.4	788.4	788.4	788.3	788.3
786.3	788.3	788.2	788.2	788.1	788.1	788.1	788.1

PEAK OUTFLOW IS 329. AT TIME 18.25 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	329.	216.	75.	72.	21556.
CMS	9.	6.	2.	2.	610.
INCHES		.60	.83	.83	
MM	15.12	20.99	20.99	20.99	
AC-FT	107.	148.	148.	148.	
THOUS CU M	132.	183.	183.	183.	

STATION DAM 1. PLAN 1. RATIO 6

BEGIN DAM FAILURE AT 17.75 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.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
1.	1.	1.	2.	2.	2.	2.	2.	2.	2.
2.	3.	3.	3.	4.	4.	4.	4.	4.	5.
5.	5.	6.	6.	7.	7.	7.	7.	7.	8.
8.	8.	9.	9.	10.	10.	10.	11.	11.	12.
14.	16.	17.	19.	20.	21.	23.	24.	25.	26.
27.	28.	29.	30.	31.	32.	33.	34.	35.	35.
36.	37.	38.	39.	39.	40.	41.	41.	42.	43.
44.	44.	45.	46.	47.	48.	49.	50.	51.	52.
53.	55.	56.	58.	59.	61.	61.	65.	67.	69.
72.	74.	77.	80.	81.	86.	89.	92.	95.	98.
102.	105.	108.	112.	116.	119.	123.	127.	130.	135.
159.	166.	173.	174.	186.	186.	200.	215.	232.	250.
269.	289.	310.	350.	368.	368.	386.	402.	416.	428.
438.	466.	457.	461.	492.	557.	657.	795.	971.	1190.

STATION DAM 1, PLAN 1, RATIO 6

EGIN DAM FAILURE AT 9.58 HOURS

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

[illegible][illegible]

PEAK OUTFLOW IS 6077. AT TIME 17.67 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	6077.	4018.	1391.	1335.	40355.
CMS	172.	114.	39.	38.	11342.
INCHES		11.09	15.36	15.36	15.36
MM		281.77	390.05	390.05	390.05

STATION DAM 1, PLAN 1, RATIO 7

BEGIN DAM FAILURE AT 8.42 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.
1.	1.	1.	1.	2.	2.	2.	2.	3.	3.
4.	5.	5.	5.	6.	6.	7.	7.	8.	8.
10.	10.	10.	10.	15.	15.	18.	24.	27.	29.
32.	32.	38.	40.	43.	46.	49.	53.	56.	59.
67.	67.	71.	76.	81.	87.	94.	101.	109.	117.
126.	136.	150.	173.	202.	239.	282.	331.	383.	438.
492.	556.	643.	764.	915.	1092.	1293.	1534.	1804.	2116.
2477.	2832.	3088.	2587.	2193.	1904.	1698.	1553.	1460.	1399.
1362.	1342.	1336.	1336.	1336.	1343.	1352.	1362.	1373.	1384.
1393.	1403.	1416.	1428.	1436.	1445.	1454.	1463.	1471.	1479.
1487.	1495.	1502.	1508.	1515.	1522.	1530.	1539.	1551.	1564.
1581.	1602.	1627.	1656.	1691.	1732.	1780.	1836.	1899.	1970.
2049.	2134.	2230.	2330.	2435.	2546.	2661.	2782.	2901.	3018.
3145.	3268.	3391.	3513.	3636.	3758.	3880.	4004.	4139.	4285.
4443.	4606.	4773.	4957.	5153.	5346.	5540.	5740.	5955.	6191.
6442.	6723.	7019.	7332.	7670.	8031.	8416.	8828.	9258.	9696.
10122.	10522.	10989.	11212.	11490.	11716.	11897.	12030.	12116.	12165.
12181.	12164.	12105.	12015.	11896.	11756.	11598.	11422.	11226.	11005.
10760.	10492.	10204.	9903.	9605.	9306.	9017.	8736.	8457.	8179.
7899.	7618.	7338.	7061.	6786.	6516.	6246.	5983.	5727.	5479.
5241.	5018.	4817.	4639.	4464.	4291.	4127.	3968.	3813.	3645.
3462.	3285.	3100.	2916.	2743.	2576.	2423.	2283.	2156.	2036.
1926.	1825.	1733.	1647.	1567.	1493.	1425.	1362.	1303.	1248.
1196.	1149.	1105.	1064.	1026.	990.	957.	927.	898.	872.
848.	823.	804.	783.	764.	747.	725.	704.	684.	670.
655.	643.	632.	621.	611.	601.	591.	581.	571.	559.

STORAGE

49.	49.	49.	49.	49.	49.	49.	49.	49.	49.
49.	49.	49.	49.	49.	49.	49.	49.	49.	49.
49.	49.	49.	49.	49.	49.	49.	49.	49.	49.
49.	49.	49.	49.	49.	49.	49.	49.	49.	49.
51.	51.	51.	52.	52.	52.	53.	53.	53.	54.
54.	55.	55.	56.	56.	57.	57.	58.	58.	59.
59.	60.	61.	62.	62.	63.	64.	64.	65.	65.
66.	67.	68.	69.	71.	72.	73.	73.	74.	77.
78.	80.	83.	85.	87.	90.	92.	94.	96.	99.
100.	102.	104.	105.	105.	105.	105.	105.	96.	89.
41.	38.	34.	30.	28.	25.	23.	23.	22.	22.
21.	21.	21.	21.	21.	21.	21.	21.	21.	22.
22.	22.	22.	22.	23.	23.	23.	23.	23.	23.

25.	26.	27.	28.	29.	30.	31.	32.	33.
35.	36.	37.	38.	39.	40.	41.	42.	43.
59.	60.	61.	62.	63.	64.	65.	66.	67.
123.	124.	125.	126.	127.	128.	129.	130.	131.
151.	152.	153.	154.	155.	156.	157.	158.	159.
163.	164.	165.	166.	167.	168.	169.	170.	171.
183.	184.	185.	186.	187.	188.	189.	190.	191.
211.	212.	213.	214.	215.	216.	217.	218.	219.
248.	249.	250.	251.	252.	253.	254.	255.	256.
283.	284.	285.	286.	287.	288.	289.	290.	291.
311.	312.	313.	314.	315.	316.	317.	318.	319.
348.	349.	350.	351.	352.	353.	354.	355.	356.
383.	384.	385.	386.	387.	388.	389.	390.	391.
411.	412.	413.	414.	415.	416.	417.	418.	419.
448.	449.	450.	451.	452.	453.	454.	455.	456.
483.	484.	485.	486.	487.	488.	489.	490.	491.
511.	512.	513.	514.	515.	516.	517.	518.	519.
548.	549.	550.	551.	552.	553.	554.	555.	556.
583.	584.	585.	586.	587.	588.	589.	590.	591.
611.	612.	613.	614.	615.	616.	617.	618.	619.
648.	649.	650.	651.	652.	653.	654.	655.	656.
683.	684.	685.	686.	687.	688.	689.	690.	691.
711.	712.	713.	714.	715.	716.	717.	718.	719.
748.	749.	750.	751.	752.	753.	754.	755.	756.
783.	784.	785.	786.	787.	788.	789.	790.	791.
811.	812.	813.	814.	815.	816.	817.	818.	819.
848.	849.	850.	851.	852.	853.	854.	855.	856.
883.	884.	885.	886.	887.	888.	889.	890.	891.
911.	912.	913.	914.	915.	916.	917.	918.	919.
948.	949.	950.	951.	952.	953.	954.	955.	956.
983.	984.	985.	986.	987.	988.	989.	990.	991.
1011.	1012.	1013.	1014.	1015.	1016.	1017.	1018.	1019.
1048.	1049.	1050.	1051.	1052.	1053.	1054.	1055.	1056.
1083.	1084.	1085.	1086.	1087.	1088.	1089.	1090.	1091.
1111.	1112.	1113.	1114.	1115.	1116.	1117.	1118.	1119.
1148.	1149.	1150.	1151.	1152.	1153.	1154.	1155.	1156.
1183.	1184.	1185.	1186.	1187.	1188.	1189.	1190.	1191.
1211.	1212.	1213.	1214.	1215.	1216.	1217.	1218.	1219.
1248.	1249.	1250.	1251.	1252.	1253.	1254.	1255.	1256.
1283.	1284.	1285.	1286.	1287.	1288.	1289.	1290.	1291.
1311.	1312.	1313.	1314.	1315.	1316.	1317.	1318.	1319.
1348.	1349.	1350.	1351.	1352.	1353.	1354.	1355.	1356.
1383.	1384.	1385.	1386.	1387.	1388.	1389.	1390.	1391.
1411.	1412.	1413.	1414.	1415.	1416.	1417.	1418.	1419.
1448.	1449.	1450.	1451.	1452.	1453.	1454.	1455.	1456.
1483.	1484.	1485.	1486.	1487.	1488.	1489.	1490.	1491.
1511.	1512.	1513.	1514.	1515.	1516.	1517.	1518.	1519.
1548.	1549.	1550.	1551.	1552.	1553.	1554.	1555.	1556.
1583.	1584.	1585.	1586.	1587.	1588.	1589.	1590.	1591.
1611.	1612.	1613.	1614.	1615.	1616.	1617.	1618.	1619.
1648.	1649.	1650.	1651.	1652.	1653.	1654.	1655.	1656.
1683.	1684.	1685.	1686.	1687.	1688.	1689.	1690.	1691.
1711.	1712.	1713.	1714.	1715.	1716.	1717.	1718.	1719.
1748.	1749.	1750.	1751.	1752.	1753.	1754.	1755.	1756.
1783.	1784.	1785.	1786.	1787.	1788.	1789.	1790.	1791.
1811.	1812.	1813.	1814.	1815.	1816.	1817.	1818.	1819.
1848.	1849.	1850.	1851.	1852.	1853.	1854.	1855.	1856.
1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.
1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.	1919.
1948.	1949.	1950.	1951.	1952.	1953.	1954.	1955.	1956.
1983.	1984.	1985.	1986.	1987.	1988.	1989.	1990.	1991.
2011.	2012.	2013.	2014.	2015.	2016.	2017.	2018.	2019.
2048.	2049.	2050.	2051.	2052.	2053.	2054.	2055.	2056.
2083.	2084.	2085.	2086.	2087.	2088.	2089.	2090.	2091.
2111.	2112.	2113.	2114.	2115.	2116.	2117.	2118.	2119.
2148.	2149.	2150.	2151.	2152.	2153.	2154.	2155.	2156.
2183.	2184.	2185.	2186.	2187.	2188.	2189.	2190.	2191.
2211.	2212.	2213.	2214.	2215.	2216.	2217.	2218.	2219.
2248.	2249.	2250.	2251.	2252.	2253.	2254.	2255.	2256.
2283.	2284.	2285.	2286.	2287.	2288.	2289.	2290.	2291.
2311.	2312.	2313.	2314.	2315.	2316.	2317.	2318.	2319.
2348.	2349.	2350.	2351.	2352.	2353.	2354.	2355.	2356.
2383.	2384.	2385.	2386.	2387.	2388.	2389.	2390.	2391.
2411.	2412.	2413.	2414.	2415.	2416.	2417.	2418.	2419.
2448.	2449.	2450.	2451.	2452.	2453.	2454.	2455.	2456.
2483.	2484.	2485.	2486.	2487.	2488.	2489.	2490.	2491.
2511.	2512.	2513.	2514.	2515.	2516.	2517.	2518.	2519.
2548.	2549.	2550.	2551.	2552.	2553.	2554.	2555.	2556.
2583.	2584.	2585.	2586.	2587.	2588.	2589.	2590.	2591.
2611.	2612.	2613.	2614.	2615.	2616.	2617.	2618.	2619.
2648.	2649.	2650.	2651.	2652.	2653.	2654.	2655.	2656.
2683.	2684.	2685.	2686.	2687.	2688.	2689.	2690.	2691.
2711.	2712.	2713.	2714.	2715.	2716.	2717.	2718.	2719.
2748.	2749.	2750.	2751.	2752.	2753.	2754.	2755.	2756.
2783.	2784.	2785.	2786.	2787.	2788.	2789.	2790.	2791.
2811.	2812.	2813.	2814.	2815.	2816.	2817.	2818.	2819.
2848.	2849.	2850.	2851.	2852.	2853.	2854.	2855.	2856.
2883.	2884.	2885.	2886.	2887.	2888.	2889.	2890.	2891.
2911.	2912.	2913.	2914.	2915.	2916.	2917.	2918.	2919.
2948.	2949.	2950.	2951.	2952.	2953.	2954.	2955.	2956.
2983.	2984.	2985.	2986.	2987.	2988.	2989.	2990.	2991.
3011.	3012.	3013.	3014.	3015.	3016.	3017.	3018.	3019.
3048.	3049.	3050.	3051.	3052.	3053.	3054.	3055.	3056.
3083.	3084.	3085.	3086.	3087.	3088.	3089.	3090.	3091.
3111.	3112.	3113.	3114.	3115.	3116.	3117.	3118.	3119.
3148.	3149.	3150.	3151.	3152.	3153.	3154.	3155.	3156.
3183.	3184.	3185.	3186.	3187.	3188.	3189.	3190.	3191.
3211.	3212.	3213.	3214.	3215.	3216.	3217.	3218.	3219.
3248.	3249.	3250.	3251.	3252.	3253.	3254.	3255.	3256.
3283.	3284.	3285.	3286.	3287.	3288.	3289.	3290.	3291.
3311.	3312.	3313.	3314.	3315.	3316.	3317.	3318.	3319.
3348.	3349.	3350.	3351.	3352.	3353.	3354.	3355.	3356.
3383.	3384.	3385.	3386.	3387.	3388.	3389.	3390.	3391.
3411.	3412.	3413.	3414.	3415.	3416.	3417.	3418.	3419.
3448.	3449.	3450.	3451.	3452.	3453.	3454.	3455.	3456.
3483.	3484.	3485.	3486.	3487.	3488.	3489.	3490.	3491.
3511.	3512.	3513.	3514.	3515.	3516.	3517.	3518.	3519.
3548.	3549.	3550.	3551.	3552.	3553.	3554.	3555.	3556.
3583.	3584.	3585.	3586.	3587.	3588.	3589.	3590.	3591.
3611.	3612.	3613.	3614.	3615.	3616.	3617.	3618.	3619.
3648.	3649.	3650.	3651.	3652.	3653.	3654.	3655.	3656.
3683.	3684.	3685.	3686.	3687.	3688.	3689.	3690.	3691.
3711.	3712.	3713.	3714.	3715.	3716.	3717.	3718.	3719.
3748.	3749.	3750.	3751.	3752.	3753.	3754.	3755.	3756.
3783.	3784.	3785.	3786.	3787.	3788.	3789.	3790.	3791.
3811.	3812.	3813.	3814.	3815.	3816.	3817.	3818.	3819.
3848.	3849.	3850.	3851.	3852.	3853.	3854.	3855.	3856.
3883.	3884.	3885.	3886.	3887.	3888.	3889.	3890.	3891.
3911.	3912.	3913.	3914.	3915.	3916.	3917.	3918.	3919.
3948.	3949.	3950.	3951.	3952.	3953.	3954.	3955.	3956.
3983.	3984.	3985.	3986.	3987.	3988.	3989.	3990.	3991.
4011.	4012.	4013.	4014.	4015.	4016.	4017.	4018.	4019.
4048.	4049.	4050.	4051.	4052.	4053.	4054.	4055.	4056.
4083.	4084.	4085.	4086.	4087.	4088.	4089.	4090.	4091.
4111.	4112.	4113.	4114.	4115.	4116.	4117.	4118.	4119.
4148.	4149.	4150.	4151.	4152.	4153.	4154.	4155.	4156.
4183.	4184.	4185.	4186.	4187.	4188.	4189.	4190.	4191.
4211.	4212.	4213.	4214.	4215.	4216.	4217.	4218.	4219.
4248.	4249.	4250.	4251.	4252.	4253.	4254.	4255.	4256.
4283.	4284.	4285.	4286.	4287.	4288.	4289.	4290.	4291.
4311.	4312.	4313.	4314.	4315.	4316.	4317.	4318.	4319.
4348.	4349.	4350.	4351.	4352.	4353.	4354.	4355.	4356.
4383.	4384.	4385.	4386.	4387.	4388.	4389.	4390.	4391.
4411.	4412.	4413.	4414.	4415.	4416.	4417.	4418.	4419.
4448.	4449.	4450.	4451.	4452.	4453.	4454.	4455.	4456.
4483.	4484.	4485.	4486.	4487.	4488.	4489.	4490.	4491.
4511.	4512.	4513.	4514.	4515.	4516.	4517.	4518.	4519.
4548.	4549.	4550.	4551.	4552.	4553.	4554.	4555.	4556.
4583.	4584.	4585.	4586.	4587.	4588.	4589.	4590.	4591.
4611.	4612.	4613.	4614.	4615.	4616.	4617.	4618.	4619.
4648.	4649.	4650.	4651.	4652.	4653.	4654.	4655.	4656.
4683.	4684.	4685.	4686.	4687.	4688.	4689.	4690.	4691.
4711.	4712.	4713.	4714.	4715.	4716.	4717.	4718.	4719.
4748.	4749.	4750.	4751.	4752.	4753.	4754.	4755.	4756.
4783.	4784.	4785.	4786.	4787.	4788.	4789.	4790.	4791.
4811.	4812.	4813.	4814.	4815.	4816.	4817.	4818.	48

SUB-AREA RUNOFF COMPUTATION

RUNOFF CALCULATIONS FOR U/S WAGAN LAKE

ISTAG ICUPP JECON ITAPE JPLT JPRT INAME ISTAGE ISAUTO
AREA 2 0 0 0 0 3 1 0 0

HYDROGRAPH DATA

INTDGC IUNG TAREA SNAP TRSDA TRSPC RATIO ISNOW ISAME LOCAL
1 2 .19 .00 .19 1.00 .000 0 0 0

PRECIP DATA

SPFE PMS R6 R72 R24 R48 R72 R96
.00 24.80 100.00 120.00 130.00 .00 .00 .00

LOSS DATA

LROPT STRKR DLYKR RTIOL ERAIN STRKS RTIOK SYRTL CMSTL ALSMX RTIMP
0 .00 .00 1.00 .00 .00 1.00 -1.00 -93.00 .00 .00

CURVE NO = -93.00 WETNESS = -1.00 EFFECT CM = 93.00

UNIT HYDROGRAPH DATA

TC = .00 LAG = .19

RECESSION DATA

STRTO = .00 QRCNSN = .00 RTIOR = 1.00

UNIT HYDROGRAPH 13 END OF PERIOD ORIGINATES, TC = .00 HOURS, LAG = .19 VOL = 1.00
110. 349. 404. 292. 152. 85. 47. 26. 14. 8.

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.05	1	.01	.00	.01	0.	1.01	12.35	151	.21	.20	.00	298.
1.01	.10	2	.01	.00	.01	0.	1.01	12.40	152	.21	.20	.00	302.
1.01	.15	3	.01	.00	.01	0.	1.01	12.45	153	.21	.20	.00	304.
1.01	.20	4	.01	.00	.01	0.	1.01	12.50	154	.21	.21	.00	305.
1.01	.25	5	.01	.00	.01	0.	1.01	12.55	155	.21	.21	.00	306.
1.01	.30	6	.01	.00	.01	0.	1.01	13.00	156	.21	.21	.00	306.
1.01	.35	7	.01	.00	.01	0.	1.01	13.05	157	.25	.25	.00	311.
1.01	.40	8	.01	.00	.01	0.	1.01	13.10	158	.25	.25	.00	325.
1.01	.45	9	.01	.00	.01	0.	1.01	13.15	159	.25	.25	.00	342.
1.01	.50	10	.01	.00	.01	0.	1.01	13.20	160	.25	.25	.00	354.
1.01	.55	11	.01	.00	.01	0.	1.01	13.25	161	.25	.25	.00	360.
1.01	1.00	12	.01	.00	.01	0.	1.01	13.30	162	.25	.25	.00	364.
1.01	1.05	13	.01	.00	.01	0.	1.01	13.35	163	.25	.25	.00	366.
1.01	1.10	14	.01	.00	.01	1.	1.01	13.40	164	.25	.25	.00	367.
1.01	1.15	15	.01	.00	.01	1.	1.01	13.45	165	.25	.25	.00	368.
1.01	1.20	16	.01	.00	.01	2.	1.01	13.50	166	.25	.25	.00	368.

FLOOD HYDROGRAPH PACKAGE - NEC-1

PROGRAM M2102-1V TIME 17:32:58 CASE PPF

1.01	1.25	17	.01	.00	.01	.00	.01	2.	1.01	13.55	167	.25	.25	.00	369.
1.01	1.30	18	.01	.00	.01	.00	.01	3.	1.01	14.00	168	.25	.25	.00	369.
1.01	1.35	19	.01	.00	.01	.00	.01	3.	1.01	14.05	169	.31	.31	.00	376.
1.01	1.40	20	.01	.00	.01	.00	.01	4.	1.01	14.10	170	.31	.31	.00	397.
1.01	1.45	21	.01	.00	.01	.00	.01	4.	1.01	14.15	171	.31	.31	.00	422.
1.01	1.50	22	.01	.00	.01	.00	.01	5.	1.01	14.20	172	.31	.31	.00	440.
1.01	1.55	23	.01	.00	.01	.00	.01	5.	1.01	14.25	173	.31	.31	.00	450.
1.01	2.00	24	.01	.00	.01	.00	.01	6.	1.01	14.30	174	.31	.31	.00	455.
1.01	2.05	25	.01	.00	.01	.00	.01	6.	1.01	14.35	175	.31	.31	.00	458.
1.01	2.10	26	.01	.00	.01	.00	.01	7.	1.01	14.40	176	.31	.31	.00	460.
1.01	2.15	27	.01	.00	.01	.00	.01	7.	1.01	14.45	177	.31	.31	.00	461.
1.01	2.20	28	.01	.00	.01	.00	.01	8.	1.01	14.50	178	.31	.31	.00	461.
1.01	2.25	29	.01	.00	.01	.00	.01	8.	1.01	14.55	179	.31	.31	.00	462.
1.01	2.30	30	.01	.00	.01	.00	.01	8.	1.01	15.00	180	.31	.31	.00	462.
1.01	2.35	31	.01	.00	.01	.00	.01	9.	1.01	15.05	181	.19	.19	.00	449.
1.01	2.40	32	.01	.00	.01	.00	.01	9.	1.01	15.10	182	.38	.38	.00	427.
1.01	2.45	33	.01	.00	.01	.00	.01	9.	1.01	15.15	183	.38	.38	.00	444.
1.01	2.50	34	.01	.00	.01	.00	.01	10.	1.01	15.20	184	.57	.56	.00	505.
1.01	2.55	35	.01	.00	.01	.00	.01	10.	1.01	15.25	185	.66	.66	.00	617.
1.01	3.00	36	.01	.00	.01	.00	.01	10.	1.01	15.30	186	1.60	1.60	.00	848.
1.01	3.05	37	.01	.00	.01	.00	.01	10.	1.01	15.35	187	2.64	2.64	.00	1393.
1.01	3.10	38	.01	.00	.01	.00	.01	11.	1.01	15.40	188	1.04	1.04	.00	2021.
1.01	3.15	39	.01	.00	.01	.00	.01	11.	1.01	15.45	189	.66	.66	.00	2148.
1.01	3.20	40	.01	.00	.01	.00	.01	11.	1.01	15.50	190	.57	.56	.00	1824.
1.01	3.25	41	.01	.00	.01	.00	.01	11.	1.01	15.55	191	.38	.38	.00	1858.
1.01	3.30	42	.01	.00	.01	.00	.01	12.	1.01	16.00	192	.38	.38	.00	1080.
1.01	3.35	43	.01	.00	.01	.00	.01	12.	1.01	16.05	193	.29	.29	.00	649.
1.01	3.40	44	.01	.00	.01	.00	.01	12.	1.01	16.10	194	.29	.29	.00	684.
1.01	3.45	45	.01	.00	.01	.00	.01	12.	1.01	16.15	195	.29	.29	.00	577.
1.01	3.50	46	.01	.00	.01	.00	.01	12.	1.01	16.20	196	.29	.29	.00	511.
1.01	3.55	47	.01	.00	.01	.00	.01	13.	1.01	16.25	197	.29	.29	.00	476.
1.01	4.00	48	.01	.00	.01	.00	.01	13.	1.01	16.30	198	.29	.29	.00	456.
1.01	4.05	49	.01	.00	.01	.00	.01	13.	1.01	16.35	199	.29	.29	.00	443.
1.01	4.10	50	.01	.00	.01	.00	.01	13.	1.01	16.40	200	.29	.29	.00	437.
1.01	4.15	51	.01	.00	.01	.00	.01	13.	1.01	16.45	201	.29	.29	.00	434.
1.01	4.20	52	.01	.00	.01	.00	.01	13.	1.01	16.50	202	.29	.29	.00	433.
1.01	4.25	53	.01	.00	.01	.00	.01	14.	1.01	16.55	203	.29	.29	.00	432.
1.01	4.30	54	.01	.00	.01	.00	.01	14.	1.01	17.00	204	.29	.29	.00	432.
1.01	4.35	55	.01	.00	.01	.00	.01	14.	1.01	17.05	205	.23	.23	.00	425.
1.01	4.40	56	.01	.00	.01	.00	.01	14.	1.01	17.10	206	.23	.23	.00	403.
1.01	4.45	57	.01	.00	.01	.00	.01	14.	1.01	17.15	207	.23	.23	.00	378.
1.01	4.50	58	.01	.00	.01	.00	.01	14.	1.01	17.20	208	.23	.23	.00	360.
1.01	4.55	59	.01	.00	.01	.00	.01	14.	1.01	17.25	209	.23	.23	.00	351.
1.01	5.00	60	.01	.00	.01	.00	.01	15.	1.01	17.30	210	.23	.23	.00	346.
1.01	5.05	61	.01	.00	.01	.00	.01	15.	1.01	17.35	211	.23	.23	.00	343.
1.01	5.10	62	.01	.00	.01	.00	.01	15.	1.01	17.40	212	.23	.23	.00	341.
1.01	5.15	63	.01	.00	.01	.00	.01	15.	1.01	17.45	213	.23	.23	.00	340.
1.01	5.20	64	.01	.00	.01	.00	.01	15.	1.01	17.50	214	.23	.23	.00	340.
1.01	5.25	65	.01	.00	.01	.00	.01	15.	1.01	17.55	215	.23	.23	.00	340.
1.01	5.30	66	.01	.00	.01	.00	.01	15.	1.01	18.00	216	.23	.23	.00	339.
1.01	5.35	67	.01	.00	.01	.00	.01	15.	1.01	18.05	217	.02	.02	.00	317.
1.01	5.40	68	.01	.00	.01	.00	.01	15.	1.01	18.10	218	.02	.02	.00	245.
1.01	5.45	69	.01	.00	.01	.00	.01	15.	1.01	18.15	219	.02	.02	.00	161.
1.01	5.50	70	.01	.00	.01	.00	.01	16.	1.01	18.20	220	.02	.02	.00	101.
1.01	5.55	71	.01	.00	.01	.00	.01	16.	1.01	18.25	221	.02	.02	.00	70.
1.01	6.00	72	.01	.00	.01	.00	.01	16.	1.01	18.30	222	.02	.02	.00	70.

1.01	6.05	73	.07	.05	.01	21.	1.01	1P.35	223	.02	.72	.00	42.
1.01	6.10	74	.07	.06	.01	36.	1.01	1P.40	224	.02	.02	.00	37.
1.01	6.15	75	.07	.06	.01	54.	1.01	1P.45	225	.02	.02	.00	34.
1.01	6.20	76	.07	.06	.01	68.	1.01	1P.50	226	.02	.02	.00	32.
1.01	6.25	77	.07	.06	.01	76.	1.01	1P.55	227	.02	.02	.00	32.
1.01	6.30	78	.07	.06	.01	80.	1.01	1P.00	228	.02	.02	.00	31.
1.01	6.35	79	.07	.06	.01	84.	1.01	1P.05	229	.02	.02	.00	31.
1.01	6.40	80	.07	.06	.01	86.	1.01	1P.10	230	.02	.02	.00	31.
1.01	6.45	81	.07	.06	.01	88.	1.01	1P.15	231	.02	.02	.00	31.
1.01	6.50	82	.07	.06	.01	89.	1.01	1P.20	232	.02	.02	.00	31.
1.01	6.55	83	.07	.06	.01	90.	1.01	1P.25	233	.02	.02	.00	31.
1.01	7.00	84	.07	.06	.01	91.	1.01	1P.30	234	.02	.02	.00	31.
1.01	7.05	85	.07	.06	.01	92.	1.01	1P.35	235	.02	.02	.00	31.
1.01	7.10	86	.07	.06	.01	92.	1.01	1P.40	236	.02	.02	.00	31.
1.01	7.15	87	.07	.06	.01	93.	1.01	1P.45	237	.02	.02	.00	31.
1.01	7.20	88	.07	.06	.01	93.	1.01	1P.50	238	.02	.02	.00	31.
1.01	7.25	89	.07	.06	.01	94.	1.01	1P.55	239	.02	.02	.00	31.
1.01	7.30	90	.07	.06	.00	94.	1.01	20.00	240	.02	.02	.00	31.
1.01	7.35	91	.07	.06	.00	95.	1.01	20.05	241	.02	.02	.00	31.
1.01	7.40	92	.07	.06	.00	95.	1.01	20.10	242	.02	.02	.00	31.
1.01	7.45	93	.07	.06	.00	96.	1.01	20.15	243	.02	.02	.00	31.
1.01	7.50	94	.07	.06	.00	96.	1.01	20.20	244	.02	.02	.00	31.
1.01	7.55	95	.07	.06	.00	96.	1.01	20.25	245	.02	.02	.00	31.
1.01	8.00	96	.07	.07	.00	97.	1.01	20.30	246	.02	.02	.00	31.
1.01	8.05	97	.07	.07	.00	97.	1.01	20.35	247	.02	.02	.00	31.
1.01	8.10	98	.07	.07	.00	97.	1.01	20.40	248	.02	.02	.00	31.
1.01	8.15	99	.07	.07	.00	97.	1.01	20.45	249	.02	.02	.00	31.
1.01	8.20	100	.07	.07	.00	98.	1.01	20.50	250	.02	.02	.00	31.
1.01	8.25	101	.07	.07	.00	98.	1.01	20.55	251	.02	.02	.00	31.
1.01	8.30	102	.07	.07	.00	98.	1.01	21.00	252	.02	.02	.00	31.
1.01	8.35	103	.07	.07	.00	98.	1.01	21.05	253	.02	.02	.00	31.
1.01	8.40	104	.07	.07	.00	98.	1.01	21.10	254	.02	.02	.00	31.
1.01	8.45	105	.07	.07	.00	99.	1.01	21.15	255	.02	.02	.00	31.
1.01	8.50	106	.07	.07	.00	99.	1.01	21.20	256	.02	.02	.00	31.
1.01	8.55	107	.07	.07	.00	99.	1.01	21.25	257	.02	.02	.00	31.
1.01	9.00	108	.07	.07	.00	99.	1.01	21.30	258	.02	.02	.00	31.
1.01	9.05	109	.07	.07	.00	99.	1.01	21.35	259	.02	.02	.00	31.
1.01	9.10	110	.07	.07	.00	99.	1.01	21.40	260	.02	.02	.00	31.
1.01	9.15	111	.07	.07	.00	99.	1.01	21.45	261	.02	.02	.00	31.
1.01	9.20	112	.07	.07	.00	99.	1.01	21.50	262	.02	.02	.00	31.
1.01	9.25	113	.07	.07	.00	100.	1.01	21.55	263	.02	.02	.00	31.
1.01	9.30	114	.07	.07	.00	100.	1.01	22.00	264	.02	.02	.00	31.
1.01	9.35	115	.07	.07	.00	100.	1.01	22.05	265	.02	.02	.00	31.
1.01	9.40	116	.07	.07	.00	100.	1.01	22.10	266	.02	.02	.00	31.
1.01	9.45	117	.07	.07	.00	100.	1.01	22.15	267	.02	.02	.00	31.
1.01	9.50	118	.07	.07	.00	100.	1.01	22.20	268	.02	.02	.00	31.
1.01	9.55	119	.07	.07	.00	100.	1.01	22.25	269	.02	.02	.00	31.
1.01	10.00	120	.07	.07	.00	100.	1.01	22.30	270	.02	.02	.00	31.
1.01	10.05	121	.07	.07	.00	100.	1.01	22.35	271	.02	.02	.00	31.
1.01	10.10	122	.07	.07	.00	100.	1.01	22.40	272	.02	.02	.00	31.
1.01	10.15	123	.07	.07	.00	100.	1.01	22.45	273	.02	.02	.00	31.
1.01	10.20	124	.07	.07	.00	101.	1.01	22.50	274	.02	.02	.00	31.
1.01	10.25	125	.07	.07	.00	101.	1.01	22.55	275	.02	.02	.00	31.
1.01	10.30	126	.07	.07	.00	101.	1.01	23.00	276	.02	.02	.00	31.
1.01	10.35	127	.07	.07	.00	101.	1.01	23.05	277	.02	.02	.00	31.
1.01	10.40	128	.07	.07	.00	101.	1.01	23.10	278	.02	.02	.00	31.

1.01	10.45	129	.07	.07	.00	101.	1.01	23.15	279	.02	.02	.00	31.
1.01	10.50	130	.07	.07	.00	101.	1.01	23.20	280	.02	.02	.00	31.
1.01	10.55	131	.07	.07	.00	101.	1.01	23.25	281	.02	.02	.00	31.
1.01	11.00	132	.07	.07	.00	101.	1.01	23.30	282	.02	.02	.00	31.
1.01	11.05	133	.07	.07	.00	101.	1.01	23.35	283	.02	.02	.00	31.
1.01	11.10	134	.07	.07	.00	101.	1.01	23.40	284	.02	.02	.00	31.
1.01	11.15	135	.07	.07	.00	101.	1.01	23.45	285	.02	.02	.00	31.
1.01	11.20	136	.07	.07	.00	101.	1.01	23.50	286	.02	.02	.00	31.
1.01	11.25	137	.07	.07	.00	101.	1.01	23.55	287	.02	.02	.00	31.
1.01	11.30	138	.07	.07	.00	101.	1.02	.00	288	.02	.02	.00	31.
1.01	11.35	139	.07	.07	.00	101.	1.02	.05	289	.00	.00	.00	29.
1.01	11.40	140	.07	.07	.00	101.	1.02	.10	290	.00	.00	.00	21.
1.01	11.45	141	.07	.07	.00	101.	1.02	.15	291	.00	.00	.00	13.
1.01	11.50	142	.07	.07	.00	101.	1.02	.20	292	.00	.00	.00	7.
1.01	11.55	143	.07	.07	.00	101.	1.02	.25	293	.00	.00	.00	4.
1.01	12.00	144	.07	.07	.00	101.	1.02	.30	294	.00	.00	.00	2.
1.01	12.05	145	.21	.20	.00	116.	1.02	.35	295	.00	.00	.00	1.
1.01	12.10	146	.21	.20	.00	166.	1.02	.40	296	.00	.00	.00	1.
1.01	12.15	147	.21	.20	.00	219.	1.02	.45	297	.00	.00	.00	0.
1.01	12.20	148	.21	.20	.00	259.	1.02	.50	298	.00	.00	.00	0.
1.01	12.25	149	.21	.20	.00	280.	1.02	.55	299	.00	.00	.00	0.
1.01	12.30	150	.21	.20	.00	291.	1.02	1.00	300	.00	.00	.00	0.
SUM 32.24 31.35 .89 46848-													
(819.3) (796.3) (23.2) (1326.59)													

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2148.	508.	163.	156.	46837.
CHS	61.	14.	5.	4.	1326.
INCHES		24.50	31.35	31.35	31.35
MM		622.20	796.39	796.39	796.39
AC-FT		252.	323.	323.	323.
THOUS CU M		311.	398.	398.	398.

HYDROGRAPH AT STAAREA 2 FOR PLAN 1, RTIO 1

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	21.	5.	2.	2.	468.
CHS	1.	0.	0.	0.	13.
INCHES		.24	.31	.31	.31
MM		6.22	7.96	7.96	7.96
AC-FT		3.	3.	3.	3.
THOUS CU M		3.	4.	4.	4.

HYDROGRAPH AT STAAREA 2 FOR PLAN 1, RTIO 2

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	43.	10.	3.	3.	937.
CHS	1.	0.	0.	0.	27.
INCHES		.49	.63	.63	.63
MM		12.44	15.93	15.93	15.93
AC-FT		5.	6.	6.	6.

THOUS CU M	6.	8.	8.	8.
2.				
HYDROGRAPH AT STAAREA 2 FOR PLAN 1, RTIO 3				
PEAK	64.	15.	5.	1405.
CFS	2.	0.	0.	40.
INCHES	.73	.94	.94	.94
MM	18.67	23.89	23.89	23.89
AC-FT	8.	10.	10.	10.
THOUS CU M	9.	12.	12.	12.
HYDROGRAPH AT STAAREA 2 FOR PLAN 1, RTIO 4				
PEAK	86.	20.	7.	1873.
CFS	2.	1.	0.	53.
INCHES	.98	1.25	1.25	1.25
MM	24.89	31.86	31.86	31.86
AC-FT	10.	13.	13.	13.
THOUS CU M	12.	16.	16.	16.
HYDROGRAPH AT STAAREA 2 FOR PLAN 1, RTIO 5				
PEAK	107.	25.	8.	2342.
CFS	3.	1.	0.	66.
INCHES	1.22	1.57	1.57	1.57
MM	31.11	39.82	39.82	39.82
AC-FT	13.	16.	16.	16.
THOUS CU M	16.	20.	20.	20.
HYDROGRAPH AT STAAREA 2 FOR PLAN 1, RTIO 6				
PEAK	1074.	254.	81.	23419.
CFS	30.	7.	2.	663.
INCHES	12.25	15.68	15.68	15.68
MM	311.10	398.20	398.20	398.20
AC-FT	126.	161.	161.	161.
THOUS CU M	155.	199.	199.	199.
HYDROGRAPH AT STAAREA 2 FOR PLAN 1, RTIO 7				
PEAK	2148.	508.	163.	46837.
CFS				

CMS	61.	14.	5.	4.	1326.
INCHES	24.50	31.35	31.35	31.35	31.35
MM	622.20	796.39	796.39	796.39	796.39
AC-FT	252.	323.	323.	323.	323.
THOUS CU M	311.	398.	398.	398.	398.

HYDROGRAPH ROUTING

ROUTE HYDROGRAPH THROUGH U/S WAGAN LAKE DAM

ISTAG	ICOMP	IECON	ITAPE	IPLT	IPRI	INAME	ISTAGE	IAUTO
DAM 2	1	0	0	0	0	1	0	0

ROUTING DATA

QLOSS	CLOSS	AVE	IRCS	ISAME	IQPT	IPMP	LSIR
.0	.000	.00	1	1	0	0	0

NSIPS	NSIDL	LAS	AMSKK	X	TSK	STORA	ISPRAT
1	0	0	.000	.000	.000	-799.	-1

STAGE	799.50	800.60	800.90	804.69	804.97	805.10	805.24	805.53	805.81	806.38
	807.23	808.13	809.03							

FLOW	2.50	12.40	27.80	70.00	99.00	189.00	465.00	806.00	1678.00
	3317.00	5458.00	7929.00						

SURFACE AREA	0.	1.	3.	5.	8.	12.
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CAPACITY	0.	2.	11.	32.	67.	118.
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ELEVATION	785.	790.	795.	800.	805.	810.
-----------	------	------	------	------	------	------

CREL	SPWID	COBW	EXPW	ELEVL	COGL	CAREA	EXPL
799.5	.0	.0	.0	.0	.0	.0	.0

DAM DATA			
TOPEL	COOD	EXPD	DAMWID
805.0	.0	.0	0.

DAM BREACH DATA			
BRWID	Z	ELBW	TFAIL
10.	.50	794.70	1.00

WSEL	FAILEL
799.50	805.00

STATION DAM 2, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW			
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.

[illegible]

PEAK OUTFLOW IS 2. AT TIME 18.33 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2.	2.	1.	1.	273.
CMS	0.	0.	0.	0.	8.
INCHES		.10	.18	.18	.18
MM		2.55	4.64	4.64	4.64
AC-FT		1.	2.	2.	2.
THOUS CU YD		1.	2.	2.	2.

STATION DAM 2, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

WEC-1

LJÖB HYDROGRAPH PACKAGE

PROGRAM H21/02-1V TIME 17:32 ~~SECRET~~ CASE PMF

CASE PMF

[illegible]

[illegible]

PEAK OUTFLOW IS 9. AT TIME 18.08 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	9.	6.	2.	2.	574.
CMS	0.	0.	0.	0.	10.
INCHES					
		.27	.38	.38	
MM		6.90	9.76	9.76	9.76
AC-FT			4.	4.	4.
THOUS CU M		3.	5.	5.	5.

STATION DAM 2. PLAN 1. RATIO 4

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

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.
1.	1.	1.	1.	1.	1.	1.	1.	1.	1.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
6.	6.	6.	6.	6.	6.	6.	6.	6.	6.
13.	14.	14.	14.	14.	14.	14.	14.	14.	14.
15.	15.	15.	15.	15.	15.	15.	15.	15.	15.
16.	17.	17.	17.	17.	17.	17.	17.	17.	17.
18.	18.	18.	18.	18.	18.	18.	18.	18.	18.
19.	19.	19.	19.	19.	19.	19.	19.	19.	19.
22.	22.	22.	22.	22.	22.	22.	22.	22.	22.
27.	27.	29.	29.	29.	29.	29.	29.	29.	29.
274.	342.	423.	513.	635.	758.	871.	968.	1044.	1100.
639.	500.	426.	355.	286.	221.	160.	103.	51.	0.
699.	685.	650.	603.	545.	499.	456.	419.	387.	360.
337.	318.	302.	289.	277.	267.	256.	245.	235.	226.
218.	211.	205.	200.	195.	192.	188.	181.	169.	155.
139.	124.	111.	99.	89.	80.	72.	66.	60.	55.
50.	47.	43.	40.	38.	36.	34.	32.	30.	29.
28.	26.	25.	24.	23.	22.	22.	22.	21.	21.
20.	20.	20.	20.	19.	19.	18.	18.	18.	18.
18.	17.	17.	17.	17.	17.	17.	17.	17.	16.
16.	16.	16.	16.	16.	16.	16.	16.	16.	16.
16.	16.	16.	16.	16.	16.	16.	16.	16.	15.
15.	14.	13.	12.	12.	11.	10.	9.	9.	8.
STORAGE									
29.	29.	29.	29.	29.	29.	29.	29.	29.	29.
29.	29.	29.	29.	29.	29.	29.	29.	29.	29.
30.	30.	30.	30.	30.	30.	30.	30.	30.	30.
30.	30.	30.	30.	30.	30.	30.	30.	30.	30.
30.	30.	30.	30.	30.	30.	30.	30.	30.	30.
30.	31.	31.	31.	31.	31.	31.	31.	31.	31.
31.	31.	31.	31.	31.	31.	31.	31.	31.	31.
33.	34.	34.	34.	34.	35.	35.	35.	36.	36.
39.	39.	39.	39.	39.	40.	40.	40.	41.	41.
41.	41.	42.	42.	42.	42.	43.	43.	43.	43.
44.	44.	44.	44.	44.	45.	45.	45.	45.	46.
46.	46.	46.	46.	47.	47.	47.	47.	48.	48.
48.	48.	48.	49.	49.	49.	50.	50.	51.	52.
57.	54.	55.	56.	57.	57.	58.	59.	60.	61.
62.	63.	64.	65.	66.	67.	68.	68.	68.	68.
68.	67.	66.	64.	62.	59.	55.	50.	45.	42.
39.	36.	34.	32.	31.	31.	32.	34.	38.	40.
41.	40.	39.	37.	35.	34.	32.	31.	30.	28.

В Л А С К Б У Э А Т С Н

FLOOD HYDROGRAPH PACKAGE - HEC-1

[illegible][illegible]

PEAK OUTFLOW IS 968. AT TIME 14.83 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	968.	326.	90.	87.	26032.
CMS	27.	9.	3.	2.	737.
INCHES		15.74	17.43	17.43	
MM		399.67	442.63	442.63	
AC-FT		162.	179.	179.	
THOUS CU M		200.	221.	221.	

FLOOD HYDROGRAPH PACKAGE - NEC-1

STATION DAM 2, PLAN 1, RATIO 7

BEGIN DAM FAILURE AT 11.75 HOURS

END-OF-PERIOD HYDROGRAPH ORDINATES

NOTES

[illegible]

STORAGE

[illegible]

CASE PMF

PROGRAM H21/02-1V TIME

6-34

ИЗДАТЕЛЬСТВО «НАУКА» МОСКВА

[illegible]

STAGE

[illegible]

PEAK OUTFLOW IS 1291. AT TIME 15.92 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1201.	587.	171.	165.	49369.
CMS	37.	17.	5.	5.	1398.
INCHES		28.27	33.05	33.05	33.05
MM		718.10	839.44	839.44	839.44

***** SUB-AREA RUNOFF COMPUTATION *****

RUNOFF CALCULATIONS FOR MAGAM LAKE (MO 11057)

ISTAQ ICOPP IECON ITAPE JPLY JPRT INAME ISTAGE IAUTO
 AREA 3 0 0 0 0 3 1 0 0

HYDROGRAPH DATA

IMYD6 IUNG TAREA SNAP TRSDA TRSPC RATIO ISNOW ISAME LOCAL
 1 2 .05 .00 .05 1.00 .000 0 0 0

PRECIP DATA

SPFE PPS R6 R72 R24 R48 R72 R96
 .00 24.80 100.00 120.00 130.00 .00 .00 .00

LOSS DATA

LROFI STRKR DLTKR RTIOL ERAIN STRKS RTIOL STRTL CNSIL ALSMX RTIMP
 0 .00 .00 1.00 .00 .00 1.00 -1.00 -93.00 .00 .00

CURVE NO = -93.00 WETNESS = -1.00 EFFECT CN = 93.00

UNIT HYDROGRAPH DATA

IC= .00 LAG= .03

RECESSION DATA

STRTO= .00 ORCSN= .00 RTIOR= 1.00

TIME INCREMENT TOO LARGE--(NHQ IS GT LAG/2)

UNIT HYDROGRAPH 5 END OF PERIOD ORDINATES, TC= .00 HOURS, LAG= .03 VOL= 1.00
 293. 82. 16. 3. 0.

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.05	1	.01	.00	.01	0.	1.01	12.35	151	.21	.20	.00	81.
1.01	.10	2	.01	.00	.01	0.	1.01	12.40	152	.21	.20	.00	81.
1.01	.15	3	.01	.00	.01	0.	1.01	12.45	153	.21	.20	.00	81.
1.01	.20	4	.01	.00	.01	0.	1.01	12.50	154	.21	.21	.00	81.
1.01	.25	5	.01	.00	.01	0.	1.01	12.55	155	.21	.21	.00	81.
1.01	.30	6	.01	.00	.01	0.	1.01	13.00	156	.21	.21	.00	81.
1.01	.35	7	.01	.00	.01	0.	1.01	13.05	157	.25	.25	.00	93.
1.01	.40	8	.01	.00	.01	0.	1.01	13.10	158	.25	.25	.00	96.
1.01	.45	9	.01	.00	.01	0.	1.01	13.15	159	.25	.25	.00	97.
1.01	.50	10	.01	.00	.01	0.	1.01	13.20	160	.25	.25	.00	97.
1.01	.55	11	.01	.00	.01	0.	1.01	13.25	161	.25	.25	.00	97.
1.01	1.00	12	.01	.00	.01	0.	1.01	13.30	162	.25	.25	.00	97.
1.01	1.05	13	.01	.00	.01	0.	1.01	13.35	163	.25	.25	.00	97.
1.01	1.10	14	.01	.00	.01	0.	1.01	13.40	164	.25	.25	.00	97.
1.01	1.15	15	.01	.00	.01	1.	1.01	13.45	165	.25	.25	.00	97.

FLOOD HYDROGRAPH PACKAGE - HEC-1

PROGRAM M21702-1V TIME 17:32:58 CASE PMF

1.01	1.20	16	.01	.00	.01	1.	1.01	13.50	166	.25	.25	.00	97.
1.01	1.25	17	.01	.00	.01	1.	1.01	13.55	167	.25	.25	.00	97.
1.01	1.30	18	.01	.00	.01	1.	1.01	14.00	168	.25	.25	.00	97.
1.01	1.35	19	.01	.00	.01	1.	1.01	14.05	169	.31	.31	.00	116.
1.01	1.40	20	.01	.00	.01	1.	1.01	14.10	170	.31	.31	.00	121.
1.01	1.45	21	.01	.00	.01	1.	1.01	14.15	171	.31	.31	.00	122.
1.01	1.50	22	.01	.00	.01	2.	1.01	14.20	172	.31	.31	.00	122.
1.01	1.55	23	.01	.00	.01	2.	1.01	14.25	173	.31	.31	.00	122.
1.01	2.00	24	.01	.00	.01	2.	1.01	14.30	174	.31	.31	.00	122.
1.01	2.05	25	.01	.00	.01	2.	1.01	14.35	175	.31	.31	.00	122.
1.01	2.10	26	.01	.01	.01	2.	1.01	14.40	176	.31	.31	.00	122.
1.01	2.15	27	.01	.01	.01	2.	1.01	14.45	177	.31	.31	.00	122.
1.01	2.20	28	.01	.01	.01	2.	1.01	14.50	178	.31	.31	.00	122.
1.01	2.25	29	.01	.01	.01	2.	1.01	14.55	179	.31	.31	.00	122.
1.01	2.30	30	.01	.01	.01	2.	1.01	15.00	180	.31	.31	.00	122.
1.01	2.35	31	.01	.01	.01	2.	1.01	15.05	181	.19	.19	.00	87.
1.01	2.40	32	.01	.01	.01	3.	1.01	15.10	182	.38	.38	.00	132.
1.01	2.45	33	.01	.01	.01	3.	1.01	15.15	183	.38	.38	.00	145.
1.01	2.50	34	.01	.01	.01	3.	1.01	15.20	184	.57	.56	.00	203.
1.01	2.55	35	.01	.01	.01	3.	1.01	15.25	185	.66	.66	.00	247.
1.01	3.00	36	.01	.01	.01	3.	1.01	15.30	186	1.60	1.60	.00	533.
1.01	3.05	37	.01	.01	.01	3.	1.01	15.35	187	2.64	2.64	.00	917.
1.01	3.10	38	.01	.01	.01	3.	1.01	15.40	188	1.04	1.04	.00	548.
1.01	3.15	39	.01	.01	.01	3.	1.01	15.45	189	.66	.66	.00	326.
1.01	3.20	40	.01	.01	.01	3.	1.01	15.50	190	.57	.56	.00	245.
1.01	3.25	41	.01	.01	.01	3.	1.01	15.55	191	.38	.38	.00	171.
1.01	3.30	42	.01	.01	.01	3.	1.01	16.00	192	.38	.38	.00	153.
1.01	3.35	43	.01	.01	.01	3.	1.01	16.05	193	.29	.29	.00	124.
1.01	3.40	44	.01	.01	.01	3.	1.01	16.10	194	.29	.29	.00	116.
1.01	3.45	45	.01	.01	.01	3.	1.01	16.15	195	.29	.29	.00	114.
1.01	3.50	46	.01	.01	.01	3.	1.01	16.20	196	.29	.29	.00	114.
1.01	3.55	47	.01	.01	.01	3.	1.01	16.25	197	.29	.29	.00	114.
1.01	4.00	48	.01	.01	.01	3.	1.01	16.30	198	.29	.29	.00	114.
1.01	4.05	49	.01	.01	.01	4.	1.01	16.35	199	.29	.29	.00	114.
1.01	4.10	50	.01	.01	.01	4.	1.01	16.40	200	.29	.29	.00	114.
1.01	4.15	51	.01	.01	.01	4.	1.01	16.45	201	.29	.29	.00	114.
1.01	4.20	52	.01	.01	.01	4.	1.01	16.50	202	.29	.29	.00	114.
1.01	4.25	53	.01	.01	.01	4.	1.01	16.55	203	.29	.29	.00	114.
1.01	4.30	54	.01	.01	.01	4.	1.01	17.00	204	.29	.29	.00	114.
1.01	4.35	55	.01	.01	.01	4.	1.01	17.05	205	.23	.23	.00	96.
1.01	4.40	56	.01	.01	.01	4.	1.01	17.10	206	.23	.23	.00	91.
1.01	4.45	57	.01	.01	.01	4.	1.01	17.15	207	.23	.23	.00	90.
1.01	4.50	58	.01	.01	.01	4.	1.01	17.20	208	.23	.23	.00	90.
1.01	4.55	59	.01	.01	.01	4.	1.01	17.25	209	.23	.23	.00	90.
1.01	5.00	60	.01	.01	.01	4.	1.01	17.30	210	.23	.23	.00	90.
1.01	5.05	61	.01	.01	.01	4.	1.01	17.35	211	.23	.23	.00	90.
1.01	5.10	62	.01	.01	.01	4.	1.01	17.40	212	.23	.23	.00	90.
1.01	5.15	63	.01	.01	.01	4.	1.01	17.45	213	.23	.23	.00	90.
1.01	5.20	64	.01	.01	.01	4.	1.01	17.50	214	.23	.23	.00	90.
1.01	5.25	65	.01	.01	.01	4.	1.01	17.55	215	.23	.23	.00	90.
1.01	5.30	66	.01	.01	.01	4.	1.01	18.00	216	.23	.23	.00	90.
1.01	5.35	67	.01	.01	.01	4.	1.01	18.05	217	.02	.02	.00	29.
1.01	5.40	68	.01	.01	.01	4.	1.01	18.10	218	.02	.02	.00	12.
1.01	5.45	69	.01	.01	.01	4.	1.01	18.15	219	.02	.02	.00	9.
1.01	5.50	70	.01	.01	.01	4.	1.01	18.20	220	.02	.02	.00	8.
1.01	5.55	71	.01	.01	.01	4.	1.01	18.25	221	.02	.02	.00	8.

1.01	6.00	72	.07	.01	.00	4.	1.01	18.30	222	.02	.02	.00	8.
1.01	6.05	73	.07	.03	.01	17.	1.01	18.35	223	.02	.02	.00	8.
1.01	6.10	74	.07	.06	.01	21.	1.01	18.40	224	.02	.02	.00	8.
1.01	6.15	75	.07	.06	.01	22.	1.01	18.45	225	.02	.02	.00	8.
1.01	6.20	76	.07	.06	.01	23.	1.01	18.50	226	.02	.02	.00	8.
1.01	6.25	77	.07	.06	.01	23.	1.01	18.55	227	.02	.02	.00	8.
1.01	6.30	78	.07	.06	.01	23.	1.01	19.00	228	.02	.02	.00	8.
1.01	6.35	79	.07	.06	.01	23.	1.01	19.05	229	.02	.02	.00	8.
1.01	6.40	80	.07	.06	.01	24.	1.01	19.10	230	.02	.02	.00	8.
1.01	6.45	81	.07	.06	.01	24.	1.01	19.15	231	.02	.02	.00	8.
1.01	6.50	82	.07	.06	.01	24.	1.01	19.20	232	.02	.02	.00	8.
1.01	6.55	83	.07	.06	.01	24.	1.01	19.25	233	.02	.02	.00	8.
1.01	7.00	84	.07	.06	.01	24.	1.01	19.30	234	.02	.02	.00	8.
1.01	7.05	85	.07	.06	.01	25.	1.01	19.35	235	.02	.02	.00	8.
1.01	7.10	86	.07	.06	.01	25.	1.01	19.40	236	.02	.02	.00	8.
1.01	7.15	87	.07	.06	.01	25.	1.01	19.45	237	.02	.02	.00	8.
1.01	7.20	88	.07	.06	.01	25.	1.01	19.50	238	.02	.02	.00	8.
1.01	7.25	89	.07	.06	.01	25.	1.01	19.55	239	.02	.02	.00	8.
1.01	7.30	90	.07	.06	.00	25.	1.01	20.00	240	.02	.02	.00	8.
1.01	7.35	91	.07	.06	.00	25.	1.01	20.05	241	.02	.02	.00	8.
1.01	7.40	92	.07	.06	.00	25.	1.01	20.10	242	.02	.02	.00	8.
1.01	7.45	93	.07	.06	.00	25.	1.01	20.15	243	.02	.02	.00	8.
1.01	7.50	94	.07	.06	.00	26.	1.01	20.20	244	.02	.02	.00	8.
1.01	7.55	95	.07	.06	.00	26.	1.01	20.25	245	.02	.02	.00	8.
1.01	8.00	96	.07	.07	.00	26.	1.01	20.30	246	.02	.02	.00	8.
1.01	8.05	97	.07	.07	.00	26.	1.01	20.35	247	.02	.02	.00	8.
1.01	8.10	98	.07	.07	.00	26.	1.01	20.40	248	.02	.02	.00	8.
1.01	8.15	99	.07	.07	.00	26.	1.01	20.45	249	.02	.02	.00	8.
1.01	8.20	100	.07	.07	.00	26.	1.01	20.50	250	.02	.02	.00	8.
1.01	8.25	101	.07	.07	.00	26.	1.01	21.00	251	.02	.02	.00	8.
1.01	8.30	102	.07	.07	.00	26.	1.01	21.05	252	.02	.02	.00	8.
1.01	8.35	103	.07	.07	.00	26.	1.01	21.10	253	.02	.02	.00	8.
1.01	8.40	104	.07	.07	.00	26.	1.01	21.15	254	.02	.02	.00	8.
1.01	8.45	105	.07	.07	.00	26.	1.01	21.20	255	.02	.02	.00	8.
1.01	8.50	106	.07	.07	.00	26.	1.01	21.25	256	.02	.02	.00	8.
1.01	8.55	107	.07	.07	.00	26.	1.01	21.30	257	.02	.02	.00	8.
1.01	9.00	108	.07	.07	.00	26.	1.01	21.35	258	.02	.02	.00	8.
1.01	9.05	109	.07	.07	.00	26.	1.01	21.40	259	.02	.02	.00	8.
1.01	9.10	110	.07	.07	.00	26.	1.01	21.45	260	.02	.02	.00	8.
1.01	9.15	111	.07	.07	.00	26.	1.01	21.50	261	.02	.02	.00	8.
1.01	9.20	112	.07	.07	.00	26.	1.01	21.55	262	.02	.02	.00	8.
1.01	9.25	113	.07	.07	.00	26.	1.01	22.00	263	.02	.02	.00	8.
1.01	9.30	114	.07	.07	.00	26.	1.01	22.05	264	.02	.02	.00	8.
1.01	9.35	115	.07	.07	.00	26.	1.01	22.10	265	.02	.02	.00	8.
1.01	9.40	116	.07	.07	.00	26.	1.01	22.15	266	.02	.02	.00	8.
1.01	9.45	117	.07	.07	.00	26.	1.01	22.20	267	.02	.02	.00	8.
1.01	9.50	118	.07	.07	.00	26.	1.01	22.25	268	.02	.02	.00	8.
1.01	9.55	119	.07	.07	.00	27.	1.01	22.30	269	.02	.02	.00	8.
1.01	10.00	120	.07	.07	.00	27.	1.01	22.35	270	.02	.02	.00	8.
1.01	10.05	121	.07	.07	.00	27.	1.01	22.40	271	.02	.02	.00	8.
1.01	10.10	122	.07	.07	.00	27.	1.01	22.45	272	.02	.02	.00	8.
1.01	10.15	123	.07	.07	.00	27.	1.01	22.50	273	.02	.02	.00	8.
1.01	10.20	124	.07	.07	.00	27.	1.01	22.55	274	.02	.02	.00	8.
1.01	10.25	125	.07	.07	.00	27.	1.01	23.00	275	.02	.02	.00	8.
1.01	10.30	126	.07	.07	.00	27.	1.01	23.05	276	.02	.02	.00	8.
1.01	10.35	127	.07	.07	.00	27.	1.01	23.10	277	.02	.02	.00	8.

1.01	10.40	128	.07	.07	.00	27.	1.01	23.10	278	.02	.02	.00	8.
1.01	10.45	129	.07	.07	.00	27.	1.01	23.15	279	.02	.02	.00	8.
1.01	10.50	130	.07	.07	.00	27.	1.01	23.20	280	.02	.02	.00	8.
1.01	10.55	131	.07	.07	.00	27.	1.01	23.25	281	.02	.02	.00	8.
1.01	11.00	132	.07	.07	.00	27.	1.01	23.30	282	.02	.02	.00	8.
1.01	11.05	133	.07	.07	.00	27.	1.01	23.35	283	.02	.02	.00	8.
1.01	11.10	134	.07	.07	.00	27.	1.01	23.40	284	.02	.02	.00	8.
1.01	11.15	135	.07	.07	.00	27.	1.01	23.45	285	.02	.02	.00	8.
1.01	11.20	136	.07	.07	.00	27.	1.01	23.50	286	.02	.02	.00	8.
1.01	11.25	137	.07	.07	.00	27.	1.01	23.55	287	.02	.02	.00	8.
1.01	11.30	138	.07	.07	.00	27.	1.02	.00	288	.02	.02	.00	8.
1.01	11.35	139	.07	.07	.00	27.	1.02	.03	289	.00	.00	.00	2.
1.01	11.40	140	.07	.07	.00	27.	1.02	.10	290	.00	.00	.00	0.
1.01	11.45	141	.07	.07	.00	27.	1.02	.15	291	.00	.00	.00	0.
1.01	11.50	142	.07	.07	.00	27.	1.02	.20	292	.00	.00	.00	0.
1.01	11.55	143	.07	.07	.00	27.	1.02	.25	293	.00	.00	.00	0.
1.01	12.00	144	.07	.07	.00	27.	1.02	.30	294	.00	.00	.00	0.
1.01	12.05	145	.21	.20	.00	67.	1.02	.35	295	.00	.00	.00	0.
1.01	12.10	146	.21	.20	.00	78.	1.02	.40	296	.00	.00	.00	0.
1.01	12.15	147	.21	.20	.00	80.	1.02	.45	297	.00	.00	.00	0.
1.01	12.20	148	.21	.20	.00	81.	1.02	.50	298	.00	.00	.00	0.
1.01	12.25	149	.21	.20	.00	81.	1.02	.55	299	.00	.00	.00	0.
1.01	12.30	150	.21	.20	.00	81.	1.02	1.00	300	.00	.00	.00	0.

SUM 22.24 31.35 .89 12371.
 (819.2)(796.3)(23.3)(350.31)

CES	917.	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CMS	26.	135.	63.	41.	12377.
INCHES		4.	1.	1.	350.
MM		24.63	31.35	31.35	31.35
AC-FT		625.70	796.39	796.39	796.39
THOUS CU M		67.	85.	85.	85.
		83.	105.	105.	105.

HYDROGRAPH AT STAAREA 3 FOR PLAN 1. R110 1

CES	9.	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CMS	0.	1.	0.	0.	124.
INCHES		0.	0.	0.	4.
MM		.25	.31	.31	.31
AC-FT		6.26	7.96	7.96	7.96
THOUS CU M		1.	1.	1.	1.
		1.	1.	1.	1.

HYDROGRAPH AT STAAREA 3 FOR PLAN 1. R110 2

CES	18.	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CMS	1.	3.	1.	1.	248.
INCHES		0.	0.	0.	7.
MM		.49	.63	.63	.63
		12.51	15.93	15.93	15.93

AC-FT	1.	2.	2.	2.
THOUS CU M	2.	2.	2.	2.

HYDROGRAPH AT STAAREA 3 FOR PLAN 1, RTIO 3

PEAK	27.	4.	1.	1.	371.
CFS	1.	0.	0.	0.	11.
CMS	.74	.94	.94	.94	.94
INCHES	18.77	23.89	23.89	23.89	23.89
MM	2.	3.	3.	3.	3.
AC-FT	2.	3.	3.	3.	3.
THOUS CU M	2.	3.	3.	3.	3.

HYDROGRAPH AT STAAREA 3 FOR PLAN 1, RTIO 4

PEAK	37.	5.	2.	2.	495.
CFS	1.	0.	0.	0.	14.
CMS	.99	1.25	1.25	1.25	1.25
INCHES	25.03	31.86	31.86	31.86	31.86
MM	3.	3.	3.	3.	3.
AC-FT	3.	4.	4.	4.	4.
THOUS CU M	3.	4.	4.	4.	4.

HYDROGRAPH AT STAAREA 3 FOR PLAN 1, RTIO 5

PEAK	46.	7.	2.	2.	619.
CFS	1.	0.	0.	0.	18.
CMS	1.23	1.57	1.57	1.57	1.57
INCHES	31.29	39.82	39.82	39.82	39.82
MM	3.	4.	4.	4.	4.
AC-FT	4.	5.	5.	5.	5.
THOUS CU M	4.	5.	5.	5.	5.

HYDROGRAPH AT STAAREA 3 FOR PLAN 1, RTIO 6

PEAK	458.	62.	21.	21.	6188.
CFS	13.	2.	1.	1.	175.
CMS	12.32	15.68	15.68	15.68	15.68
INCHES	312.85	398.20	398.20	398.20	398.20
MM	33.	43.	43.	43.	43.
AC-FT	41.	53.	53.	53.	53.
THOUS CU M	41.	53.	53.	53.	53.

HYDROGRAPH AT STAAREA 3 FOR PLAN 1, RTIO 7

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
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[illegible][illegible]

AD-A106 460 BLACK AND VEATCH KANSAS CITY MO
NATIONAL DAN SAFETY PROGRAM, MOON
AUG 81 E R BURTON, H L CALLAHAN

BLACK AND VEATCH KANSAS CITY MO
NATIONAL DAM SAFETY PROGRAM, NOON
AUG 81 E R BURTON, H L CALLAHAN

VALLEY DAM (NO 11597), MISSOU--ETC(U)
DACW43-81-C-0037

F/G 13/13

UNCLASSIFIED

DACW43-81-C-0037

NL

2 of 3

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1-33H

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	1	0	0	-0.00	-0.00	-0.00	-784.	-1		
STAGE	784.40	784.68	784.95	785.22	785.47	785.73	786.00	786.28	786.56	786.84
	787.14	787.44	787.74	788.04	788.34	788.64				
FLOW	.00	12.00	47.00	121.00	232.00	395.00	645.00	1005.00	1480.00	2075.00
	2802.00	3606.00	4483.00	5427.00	6435.00	7503.00				
SURFACE AREA=	0.	1.	3.	6.	9.	15.				
CAPACITY=	0.	3.	22.	66.	111.	234.				
ELEVATION=	755.	765.	775.	784.	790.	800.				

CREL	SPUID	COOL	EXPW	ELEV	COOL	CAREA	EXPL
784.4	.0	.0	.0	.0	.0	.0	.0
DAW DATA							
TOPEL	COOL	EXPW	DAMUJD				
785.0	.0	.0	.0				

DAM BREACH DATA			
BRID	Z	EL9M	WSEL
10.	.50	770.00	784.40
			785.00

STATION DAM 3, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

[illegible]

PEAK OUTFLOW IS 5. AT TIME 16.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	5.	4.	2.	2.	473.
CMS	0.	0.	0.	0.	13.
INCHES		.14	.25	.25	
MM		3.57	6.36	6.36	6.36
AC-FT		2.	3.	3.	3.
THOUS CU M		2.	4.	4.	4.

STATION DAM 3, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

LOOD HYDROGRAPH PACK

[illegible]

[illegible]

PEAK OUTFLOW IS 19. AT TIME 17.08 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	19.	16.	7.	6.	1880.
CMS	1.	0.	0.	0.	53.
INCHES		.62	1.00	1.00	
M4		15.71	25.28	25.28	
AC-FT		8.	13.	13.	
THOUS CU M		10.	16.	16.	

STATION DAM 3, PLAN 1, RATIO 6

BEGIN DAM FAILURE AT 13.08 HOURS

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

[illegible]

STATION DAM 3, PLAN 1, RATIO 7

BEGIN DAM FAILURE AT 11.33 HOURS

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

[illegible]

PEAK OUTFLOW IS 1356. AT TIME 16.08 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1356.	790.	242.	232.	69630.
CMS	38.	22.	7.	7.	1971.
INCHES		30.12	36.86	36.86	36.86
MM		765.04	936.21	936.21	936.21

SUB-AREA RUNOFF COMPUTATION

RUNOFF CALCULATIONS FOR WATERS EDGE ESTATE LAKE (PO 12102)

AREA 4
 ISTATG ICOMP ILECON ITAPE JPLI JPRT INAME IJSTAGE IAU10
 0 0 0 0 0 3 1 0 0

HYDROGRAPH DATA

IHYDG IUNG TAREA SNAP TRSDA TRSPC RATIO ISNOW ISAME LOCAL
 1 2 .38 .00 .38 1.00 .000 0 0 0

PRECIP DATA

SPEE PMS R6 R12 R24 R48 R72 R96
 .00 24.80 100.00 120.00 130.00 .00 .00 .00

LOSS DATA

LROPT STRKR PLTKR RIALQ ERAIN STRKS RILQK SIRIL CNSTL ALSMX RTIMP
 0 .00 .00 1.00 .00 .00 1.00 -1.00 -93.00 .00 .00

CURVE NO = -93.00 WEINNESS = -1.00 EFFECT CN = 93.00

UNIT HYDROGRAPH DATA

TC = .00 LAG = .17

RECESSION DATA

SIRIQ = .00 QRCSN = .00 RTIOR = 1.00

UNIT HYDROGRAPH 12 END OF PERIOD ORDINATES, TC = .00 HOURS, LAG = .17 VOL = 1.00
 200. 787. 809. 507. 254. 136. 72. 38. 20. 11.

END-OF-PERIOD FLOW

PO-DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	PO-DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.05	1	.01	.00	.01	0.	1.01	12.35	151	.21	.20	.00	583.
1.01	.10	2	.01	.00	.01	0.	1.01	12.40	152	.21	.20	.00	589.
1.01	.15	3	.01	.00	.01	0.	1.01	12.45	153	.21	.20	.00	592.
1.01	.20	4	.01	.00	.01	0.	1.01	12.50	154	.21	.21	.00	593.
1.01	.25	5	.01	.00	.01	0.	1.01	12.55	155	.21	.21	.00	595.
1.01	.30	6	.01	.00	.01	0.	1.01	13.00	156	.21	.21	.00	595.
1.01	.35	7	.01	.00	.01	0.	1.01	13.05	157	.25	.25	.00	606.
1.01	.40	8	.01	.00	.01	0.	1.01	13.10	158	.25	.25	.00	639.
1.01	.45	9	.01	.00	.01	0.	1.01	13.15	159	.25	.25	.00	672.
1.01	.50	10	.01	.00	.01	0.	1.01	13.20	160	.25	.25	.00	693.
1.01	.55	11	.01	.00	.01	0.	1.01	13.25	161	.25	.25	.00	704.
1.01	1.00	12	.01	.00	.01	0.	1.01	13.30	162	.25	.25	.00	709.
1.01	1.05	13	.01	.00	.01	0.	1.01	13.35	163	.25	.25	.00	713.
1.01	1.10	14	.01	.00	.01	1.	1.01	13.40	164	.25	.25	.00	714.
1.01	1.15	15	.01	.00	.01	2.	1.01	13.45	165	.25	.25	.00	715.
1.01	1.20	16	.01	.00	.01	2.	1.01	13.50	166	.25	.25	.00	715.

1.01	1.25	17	.01	.00	.01	4.	1.01	13.55	167	.25	.25	.00	716.
1.01	1.50	18	.01	.00	.01	6.	1.01	14.00	168	.25	.25	.00	717.
1.01	1.75	19	.01	.00	.01	7.	1.01	14.05	169	.31	.31	.00	733.
1.01	1.40	20	.01	.00	.01	8.	1.01	14.10	170	.31	.31	.00	792.
1.01	1.45	21	.01	.00	.01	9.	1.01	14.15	171	.31	.31	.00	832.
1.01	1.50	22	.01	.00	.01	10.	1.01	14.20	172	.31	.31	.00	863.
1.01	1.55	23	.01	.00	.01	11.	1.01	14.25	173	.31	.31	.00	879.
1.01	2.00	24	.01	.00	.01	12.	1.01	14.30	174	.31	.31	.00	898.
1.01	2.05	25	.01	.00	.01	13.	1.01	14.35	175	.31	.31	.00	892.
1.01	2.10	26	.01	.01	.01	13.	1.01	14.40	176	.31	.31	.00	895.
1.01	2.15	27	.01	.01	.01	14.	1.01	14.45	177	.31	.31	.00	896.
1.01	2.20	28	.01	.01	.01	15.	1.01	14.50	178	.31	.31	.00	897.
1.01	2.25	29	.01	.01	.01	16.	1.01	14.55	179	.31	.31	.00	897.
1.01	2.30	30	.01	.01	.01	16.	1.01	15.00	180	.31	.31	.00	897.
1.01	2.35	31	.01	.01	.01	17.	1.01	15.05	181	.19	.19	.00	866.
1.01	2.40	32	.01	.01	.01	17.	1.01	15.10	182	.38	.38	.00	820.
1.01	2.45	33	.01	.01	.01	18.	1.01	15.15	183	.38	.38	.00	870.
1.01	2.50	34	.01	.01	.01	19.	1.01	15.20	184	.57	.56	.00	1009.
1.01	2.55	35	.01	.01	.01	19.	1.01	15.25	185	.66	.66	.00	1246.
1.01	3.00	36	.01	.01	.01	20.	1.01	15.30	186	1.60	1.60	.00	1749.
1.01	3.05	37	.01	.01	.01	20.	1.01	15.35	187	2.64	2.64	.00	2948.
1.01	3.10	38	.01	.01	.01	21.	1.01	15.40	188	1.04	1.04	.00	4213.
1.01	3.15	39	.01	.01	.01	21.	1.01	15.45	189	.66	.66	.00	4225.
1.01	3.20	40	.01	.01	.01	22.	1.01	15.50	190	.57	.56	.00	3403.
1.01	3.25	41	.01	.01	.01	22.	1.01	15.55	191	.38	.38	.00	2571.
1.01	3.30	42	.01	.01	.01	23.	1.01	16.00	192	.38	.38	.00	1965.
1.01	3.35	43	.01	.01	.01	23.	1.01	16.05	193	.29	.29	.00	1543.
1.01	3.40	44	.01	.01	.01	23.	1.01	16.10	194	.29	.29	.00	1249.
1.01	3.45	45	.01	.01	.01	24.	1.01	16.15	195	.29	.29	.00	1062.
1.01	3.50	46	.01	.01	.01	24.	1.01	16.20	196	.29	.29	.00	955.
1.01	3.55	47	.01	.01	.01	25.	1.01	16.25	197	.29	.29	.00	900.
1.01	4.00	48	.01	.01	.01	25.	1.01	16.30	198	.29	.29	.00	868.
1.01	4.05	49	.01	.01	.01	25.	1.01	16.35	199	.29	.29	.00	851.
1.01	4.10	50	.01	.01	.01	26.	1.01	16.40	200	.29	.29	.00	844.
1.01	4.15	51	.01	.01	.01	26.	1.01	16.45	201	.29	.29	.00	841.
1.01	4.20	52	.01	.01	.01	26.	1.01	16.50	202	.29	.29	.00	840.
1.01	4.25	53	.01	.01	.01	26.	1.01	16.55	203	.29	.29	.00	839.
1.01	4.30	54	.01	.01	.01	27.	1.01	17.00	204	.29	.29	.00	839.
1.01	4.35	55	.01	.01	.01	27.	1.01	17.05	205	.23	.23	.00	823.
1.01	4.40	56	.01	.01	.01	27.	1.01	17.10	206	.23	.23	.00	774.
1.01	4.45	57	.01	.01	.01	28.	1.01	17.15	207	.23	.23	.00	724.
1.01	4.50	58	.01	.01	.01	28.	1.01	17.20	208	.23	.23	.00	693.
1.01	4.55	59	.01	.01	.01	28.	1.01	17.25	209	.23	.23	.00	677.
1.01	5.00	60	.01	.01	.01	28.	1.01	17.30	210	.23	.23	.00	669.
1.01	5.05	61	.01	.01	.01	28.	1.01	17.35	211	.23	.23	.00	664.
1.01	5.10	62	.01	.01	.01	29.	1.01	17.40	212	.23	.23	.00	662.
1.01	5.15	63	.01	.01	.01	29.	1.01	17.45	213	.23	.23	.00	661.
1.01	5.20	64	.01	.01	.01	29.	1.01	17.50	214	.23	.23	.00	660.
1.01	5.25	65	.01	.01	.01	29.	1.01	17.55	215	.23	.23	.00	660.
1.01	5.30	66	.01	.01	.01	30.	1.01	18.00	216	.23	.23	.00	659.
1.01	5.35	67	.01	.01	.01	30.	1.01	18.05	217	.02	.02	.00	606.
1.01	5.40	68	.01	.01	.01	30.	1.01	18.10	218	.02	.02	.00	443.
1.01	5.45	69	.01	.01	.01	30.	1.01	18.15	219	.02	.02	.00	276.
1.01	5.50	70	.01	.01	.01	30.	1.01	18.20	220	.02	.02	.00	171.
1.01	5.55	71	.01	.01	.01	30.	1.01	18.25	221	.02	.02	.00	119.
1.01	6.00	72	.01	.01	.01	31.	1.01	18.30	222	.02	.02	.00	91.

1.01	6.05	73	.07	.05	.01	42.	1.01	18.35	223	.02	.02	.00	76.
1.01	6.10	74	.07	.06	.01	77.	1.01	18.40	224	.02	.02	.00	80.
1.01	6.15	75	.07	.06	.01	113.	1.01	18.45	225	.02	.02	.00	64.
1.01	6.20	76	.07	.06	.01	137.	1.01	18.50	226	.02	.02	.00	62.
1.01	6.25	77	.07	.06	.01	151.	1.01	18.55	227	.02	.02	.00	60.
1.01	6.30	78	.07	.06	.01	159.	1.01	19.00	228	.02	.02	.00	60.
1.01	6.35	79	.07	.06	.01	164.	1.01	19.05	229	.02	.02	.00	60.
1.01	6.40	80	.07	.06	.01	168.	1.01	19.10	230	.02	.02	.00	60.
1.01	6.45	81	.07	.06	.01	171.	1.01	19.15	231	.02	.02	.00	60.
1.01	6.50	82	.07	.06	.01	173.	1.01	19.20	232	.02	.02	.00	60.
1.01	6.55	83	.07	.06	.01	175.	1.01	19.25	233	.02	.02	.00	60.
1.01	7.00	84	.07	.06	.01	177.	1.01	19.30	234	.02	.02	.00	60.
1.01	7.05	85	.07	.06	.01	178.	1.01	19.35	235	.02	.02	.00	60.
1.01	7.10	86	.07	.06	.01	180.	1.01	19.40	236	.02	.02	.00	60.
1.01	7.15	87	.07	.06	.01	181.	1.01	19.45	237	.02	.02	.00	60.
1.01	7.20	88	.07	.06	.01	182.	1.01	19.50	238	.02	.02	.00	60.
1.01	7.25	89	.07	.06	.01	183.	1.01	19.55	239	.02	.02	.00	60.
1.01	7.30	90	.07	.06	.00	184.	1.01	20.00	240	.02	.02	.00	60.
1.01	7.35	91	.07	.06	.00	184.	1.01	20.05	241	.02	.02	.00	60.
1.01	7.40	92	.07	.06	.00	185.	1.01	20.10	242	.02	.02	.00	60.
1.01	7.45	93	.07	.06	.00	186.	1.01	20.15	243	.02	.02	.00	60.
1.01	7.50	94	.07	.06	.00	187.	1.01	20.20	244	.02	.02	.00	60.
1.01	7.55	95	.07	.06	.00	187.	1.01	20.25	245	.02	.02	.00	60.
1.01	8.00	96	.07	.07	.00	188.	1.01	20.30	246	.02	.02	.00	60.
1.01	8.05	97	.07	.07	.00	188.	1.01	20.35	247	.02	.02	.00	60.
1.01	8.10	98	.07	.07	.00	189.	1.01	20.40	248	.02	.02	.00	60.
1.01	8.15	99	.07	.07	.00	189.	1.01	20.45	249	.02	.02	.00	60.
1.01	8.20	100	.07	.07	.00	190.	1.01	20.50	250	.02	.02	.00	60.
1.01	8.25	101	.07	.07	.00	190.	1.01	20.55	251	.02	.02	.00	60.
1.01	8.30	102	.07	.07	.00	190.	1.01	21.00	252	.02	.02	.00	60.
1.01	8.35	103	.07	.07	.00	191.	1.01	21.05	253	.02	.02	.00	60.
1.01	8.40	104	.07	.07	.00	191.	1.01	21.10	254	.02	.02	.00	60.
1.01	8.45	105	.07	.07	.00	192.	1.01	21.15	255	.02	.02	.00	60.
1.01	8.50	106	.07	.07	.00	192.	1.01	21.20	256	.02	.02	.00	60.
1.01	8.55	107	.07	.07	.00	192.	1.01	21.25	257	.02	.02	.00	60.
1.01	9.00	108	.07	.07	.00	192.	1.01	21.30	258	.02	.02	.00	60.
1.01	9.05	109	.07	.07	.00	193.	1.01	21.35	259	.02	.02	.00	60.
1.01	9.10	110	.07	.07	.00	193.	1.01	21.40	260	.02	.02	.00	60.
1.01	9.15	111	.07	.07	.00	193.	1.01	21.45	261	.02	.02	.00	60.
1.01	9.20	112	.07	.07	.00	193.	1.01	21.50	262	.02	.02	.00	60.
1.01	9.25	113	.07	.07	.00	194.	1.01	21.55	263	.02	.02	.00	60.
1.01	9.30	114	.07	.07	.00	194.	1.01	22.00	264	.02	.02	.00	60.
1.01	9.35	115	.07	.07	.00	194.	1.01	22.05	265	.02	.02	.00	60.
1.01	9.40	116	.07	.07	.00	194.	1.01	22.10	266	.02	.02	.00	60.
1.01	9.45	117	.07	.07	.00	194.	1.01	22.15	267	.02	.02	.00	60.
1.01	9.50	118	.07	.07	.00	195.	1.01	22.20	268	.02	.02	.00	60.
1.01	9.55	119	.07	.07	.00	195.	1.01	22.25	269	.02	.02	.00	60.
1.01	10.00	120	.07	.07	.00	195.	1.01	22.30	270	.02	.02	.00	60.
1.01	10.05	121	.07	.07	.00	195.	1.01	22.35	271	.02	.02	.00	60.
1.01	10.10	122	.07	.07	.00	195.	1.01	22.40	272	.02	.02	.00	60.
1.01	10.15	123	.07	.07	.00	195.	1.01	22.45	273	.02	.02	.00	60.
1.01	10.20	124	.07	.07	.00	195.	1.01	22.50	274	.02	.02	.00	60.
1.01	10.25	125	.07	.07	.00	196.	1.01	22.55	275	.02	.02	.00	60.
1.01	10.30	126	.07	.07	.00	196.	1.01	23.00	276	.02	.02	.00	60.
1.01	10.35	127	.07	.07	.00	196.	1.01	23.05	277	.02	.02	.00	60.
1.01	10.40	128	.07	.07	.00	196.	1.01	23.10	278	.02	.02	.00	60.

THOUS CU M 12. 15. 15. 15.

HYDROGRAPH AT STAAREA 4 FOR PLAN 1, RTIO 3

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	127.	30.	9.	9.	2730.
CMS	4.	1.	0.	0.	77.
INCHES	.74	.94	.94	.94	.94
MM	18.68	23.80	23.89	23.89	23.89
AC-FT	15.	19.	19.	19.	19.
THOUS CU M	18.	23.	23.	23.	23.

HYDROGRAPH AT STAAREA 4 FOR PLAN 1, RTIO 4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	149.	40.	13.	12.	3650.
CMS	5.	1.	0.	0.	103.
INCHES	.98	1.25	1.25	1.25	1.25
MM	24.90	31.86	31.86	31.86	31.86
AC-FT	20.	25.	25.	25.	25.
THOUS CU M	24.	31.	31.	31.	31.

HYDROGRAPH AT STAAREA 4 FOR PLAN 1, RTIO 5

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	211.	49.	16.	15.	4550.
CMS	6.	1.	0.	0.	129.
INCHES	1.23	1.57	1.57	1.57	1.57
MM	31.13	39.82	39.82	39.82	39.82
AC-FT	24.	31.	31.	31.	31.
THOUS CU M	30.	39.	39.	39.	39.

HYDROGRAPH AT STAAREA 4 FOR PLAN 1, RTIO 6

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	213.	49.	15.	15.	4550.
CMS	60.	14.	4.	4.	1288.
INCHES	12.26	15.68	15.68	15.68	15.68
MM	311.31	398.20	398.20	398.20	398.20
AC-FT	245.	313.	313.	313.	313.
THOUS CU M	302.	387.	387.	387.	387.

HYDROGRAPH AT STAAREA 4 FOR PLAN 1, RTIO 7

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4225.	985.	316.	303.	91005.

MM	AC - FT	INMOU CU M
4.26	6.44	6.44
56	54	54
44	66	66
		66

[illegible]

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	191.	149.	57.	54.	16308.
CMS	5.	4.	2.	2.	462.
INCHES		.35	.53		.53
MM		8.84	13.42	13.42	13.42
AC-FT		74	112	112	112
THOUS CU M		91.	139.	139.	139.

[illegible]

FLOOD HYDROGRAPH PACK - MEC-1

PROGRAM M21/02-1V TIME 17:32 CASE PMF

[illegible]

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	353.	239.	87.	84.	25165.
CMS	10.	7.	2.	2.	713.
INCHES		.56	.82	.82	
MM		14.18	20.70	20.70	
AC-FT		119.	173.	173.	
THOUS CU M		146.	214.	214.	

[illegible]

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2575.	599.	183.	176.	52756.
CMS	73.	17.	5.	5.	1494.
INCHES		1.40	1.71	1.71	1.71
MM		35.51	43.40	43.40	43.40
AC-FT		297.	363.	363.	363.
THOUS CU M		367.	448.	448.	448.

SUM OF 3 HYDROGRAPHS AT										PLAN 1		RTIO 6	
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
5.	5.	6.	6.	6.	6.	7.	7.	7.	7.	8.	8.	9.	9.
9.	9.	10.	10.	10.	10.	11.	11.	11.	11.	12.	12.	13.	13.
12.	13.	13.	13.	14.	14.	14.	14.	14.	14.	15.	15.	16.	16.
16.	16.	17.	17.	18.	18.	18.	18.	19.	19.	20.	20.	20.	20.
21.	21.	23.	23.	23.	23.	24.	24.	24.	24.	25.	25.	26.	26.
26.	27.	31.	31.	31.	31.	35.	35.	35.	35.	40.	40.	41.	41.
115.	119.	123.	127.	131.	131.	135.	135.	139.	143.	148.	148.	153.	153.
159.	165.	170.	178.	185.	185.	193.	193.	202.	211.	221.	221.	230.	230.
240.	250.	263.	282.	304.	304.	330.	330.	358.	388.	420.	420.	451.	451.
482.	512.	541.	568.	593.	593.	620.	620.	670.	754.	872.	872.	1023.	1023.
1211.	1437.	1705.	2023.	2347.	2347.	2604.	2604.	2738.	2207.	1800.	1800.	1501.	1501.
1286.	1118.	1038.	973.	933.	933.	907.	907.	893.	885.	881.	881.	880.	880.
881.	823.	885.	888.	909.	909.	969.	969.	1031.	1073.	1098.	1098.	1117.	1117.
1136.	1151.	1169.	1187.	1208.	1208.	1231.	1231.	1264.	1317.	1392.	1392.	1484.	1484.
1603.	1713.	1921.	2126.	2334.	2334.	2532.	2532.	2707.	2853.	2976.	2976.	2812.	2812.
2739.	2723.	2751.	2714.	2907.	2907.	3029.	3029.	3169.	3320.	3442.	3442.	3513.	3513.
3535.	3535.	3579.	3671.	3821.	3821.	4133.	4133.	4848.	5605.	5708.	5708.	5396.	5396.
5087.	4894.	4785.	4734.	4734.	4734.	4777.	4777.	4850.	4941.	5058.	5058.	5208.	5208.
5397.	5594.	5827.	6081.	6298.	6298.	6449.	6449.	6553.	6626.	6673.	6673.	6699.	6699.
6707.	6697.	6609.	6424.	6565.	6565.	6496.	6496.	6388.	6212.	6025.	6025.	5859.	5859.
5709.	5541.	5413.	5266.	5123.	5123.	4987.	4987.	4860.	4737.	4612.	4612.	4488.	4488.
4365.	4244.	4125.	4007.	3884.	3884.	3752.	3752.	3613.	3468.	3317.	3317.	3161.	3161.
3006.	2853.	2698.	2552.	2413.	2413.	2280.	2280.	2153.	2032.	1916.	1916.	1807.	1807.
1703.	1605.	1513.	1427.	1347.	1347.	1273.	1273.	1205.	1141.	1083.	1083.	1029.	1029.
976.	932.	889.	850.	812.	812.	778.	778.	745.	715.	687.	687.	661.	661.
637.	614.	593.	573.	555.	555.	538.	538.	522.	507.	494.	494.	481.	481.
469.	459.	448.	439.	430.	430.	420.	420.	410.	399.	387.	387.	371.	371.
355.	343.	335.	328.	321.	321.	316.	316.	310.	304.	298.	298.	291.	291.

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	6707.	4781.	1628.	1621.	486203.
CMS	190.	135.	48.	46.	13768.
INCHES		11.15	15.75	15.75	
MM		283.22	399.99	399.99	
AC-FT		2371.	3349.	3349.	
THOUS CU M		2925.	4130.	4130.	

	SUM OF 3 HYDROGRAPHS AT		4 PLAN 1		RTIO 7	
0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.

	0.	1.	2.	3.	4.	5.	6.	7.	P.
9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
19.	20.	21.	22.	23.	24.	25.	26.	27.	28.
29.	30.	31.	32.	33.	34.	35.	36.	37.	38.
39.	40.	41.	42.	43.	44.	45.	46.	47.	48.
49.	50.	51.	52.	53.	54.	55.	56.	57.	58.
59.	60.	61.	62.	63.	64.	65.	66.	67.	68.
69.	70.	71.	72.	73.	74.	75.	76.	77.	78.
79.	80.	81.	82.	83.	84.	85.	86.	87.	88.
89.	90.	91.	92.	93.	94.	95.	96.	97.	98.
99.	100.	101.	102.	103.	104.	105.	106.	107.	108.
109.	110.	111.	112.	113.	114.	115.	116.	117.	118.
119.	120.	121.	122.	123.	124.	125.	126.	127.	128.
129.	130.	131.	132.	133.	134.	135.	136.	137.	138.
139.	140.	141.	142.	143.	144.	145.	146.	147.	148.
149.	150.	151.	152.	153.	154.	155.	156.	157.	158.
159.	160.	161.	162.	163.	164.	165.	166.	167.	168.
169.	170.	171.	172.	173.	174.	175.	176.	177.	178.
179.	180.	181.	182.	183.	184.	185.	186.	187.	188.
189.	190.	191.	192.	193.	194.	195.	196.	197.	198.
199.	200.	201.	202.	203.	204.	205.	206.	207.	208.
209.	210.	211.	212.	213.	214.	215.	216.	217.	218.
219.	220.	221.	222.	223.	224.	225.	226.	227.	228.
229.	230.	231.	232.	233.	234.	235.	236.	237.	238.
239.	240.	241.	242.	243.	244.	245.	246.	247.	248.
249.	250.	251.	252.	253.	254.	255.	256.	257.	258.
259.	260.	261.	262.	263.	264.	265.	266.	267.	268.
269.	270.	271.	272.	273.	274.	275.	276.	277.	278.
279.	280.	281.	282.	283.	284.	285.	286.	287.	288.
289.	290.	291.	292.	293.	294.	295.	296.	297.	298.
299.	300.	301.	302.	303.	304.	305.	306.	307.	308.
309.	310.	311.	312.	313.	314.	315.	316.	317.	318.
319.	320.	321.	322.	323.	324.	325.	326.	327.	328.
329.	330.	331.	332.	333.	334.	335.	336.	337.	338.
339.	340.	341.	342.	343.	344.	345.	346.	347.	348.
349.	350.	351.	352.	353.	354.	355.	356.	357.	358.
359.	360.	361.	362.	363.	364.	365.	366.	367.	368.
369.	370.	371.	372.	373.	374.	375.	376.	377.	378.
379.	380.	381.	382.	383.	384.	385.	386.	387.	388.
389.	390.	391.	392.	393.	394.	395.	396.	397.	398.
399.	400.	401.	402.	403.	404.	405.	406.	407.	408.
409.	410.	411.	412.	413.	414.	415.	416.	417.	418.
419.	420.	421.	422.	423.	424.	425.	426.	427.	428.
429.	430.	431.	432.	433.	434.	435.	436.	437.	438.
439.	440.	441.	442.	443.	444.	445.	446.	447.	448.
449.	450.	451.	452.	453.	454.	455.	456.	457.	458.
459.	460.	461.	462.	463.	464.	465.	466.	467.	468.
469.	470.	471.	472.	473.	474.	475.	476.	477.	478.
479.	480.	481.	482.	483.	484.	485.	486.	487.	488.
489.	490.	491.	492.	493.	494.	495.	496.	497.	498.
499.	500.	501.	502.	503.	504.	505.	506.	507.	508.
509.	510.	511.	512.	513.	514.	515.	516.	517.	518.
519.	520.	521.	522.	523.	524.	525.	526.	527.	528.
529.	530.	531.	532.	533.	534.	535.	536.	537.	538.
539.	540.	541.	542.	543.	544.	545.	546.	547.	548.
549.	550.	551.	552.	553.	554.	555.	556.	557.	558.
559.	560.	561.	562.	563.	564.	565.	566.	567.	568.
569.	570.	571.	572.	573.	574.	575.	576.	577.	578.
579.	580.	581.	582.	583.	584.	585.	586.	587.	588.
589.	590.	591.	592.	593.	594.	595.	596.	597.	598.
599.	600.	601.	602.	603.	604.	605.	606.	607.	608.
609.	610.	611.	612.	613.	614.	615.	616.	617.	618.
619.	620.	621.	622.	623.	624.	625.	626.	627.	628.
629.	630.	631.	632.	633.	634.	635.	636.	637.	638.
639.	640.	641.	642.	643.	644.	645.	646.	647.	648.
649.	650.	651.	652.	653.	654.	655.	656.	657.	658.
659.	660.	661.	662.	663.	664.	665.	666.	667.	668.
669.	670.	671.	672.	673.	674.	675.	676.	677.	678.
679.	680.	681.	682.	683.	684.	685.	686.	687.	688.
689.	690.	691.	692.	693.	694.	695.	696.	697.	698.
699.	700.	701.	702.	703.	704.	705.	706.	707.	708.
709.	710.	711.	712.	713.	714.	715.	716.	717.	718.
719.	720.	721.	722.	723.	724.	725.	726.	727.	728.
729.	730.	731.	732.	733.	734.	735.	736.	737.	738.
739.	740.	741.	742.	743.	744.	745.	746.	747.	748.
749.	750.	751.	752.	753.	754.	755.	756.	757.	758.
759.	760.	761.	762.	763.	764.	765.	766.	767.	768.
769.	770.	771.	772.	773.	774.	775.	776.	777.	778.
779.	780.	781.	782.	783.	784.	785.	786.	787.	788.
789.	790.	791.	792.	793.	794.	795.	796.	797.	798.
799.	800.	801.	802.	803.	804.	805.	806.	807.	808.
809.	810.	811.	812.	813.	814.	815.	816.	817.	818.
819.	820.	821.	822.	823.	824.	825.	826.	827.	828.
829.	830.	831.	832.	833.	834.	835.	836.	837.	838.
839.	840.	841.	842.	843.	844.	845.	846.	847.	848.
849.	850.	851.	852.	853.	854.	855.	856.	857.	858.
859.	860.	861.	862.	863.	864.	865.	866.	867.	868.
869.	870.	871.	872.	873.	874.	875.	876.	877.	878.
879.	880.	881.	882.	883.	884.	885.	886.	887.	888.
889.	890.	891.	892.	893.	894.	895.	896.	897.	898.
899.	900.	901.	902.	903.	904.	905.	906.	907.	908.
909.	910.	911.	912.	913.	914.	915.	916.	917.	918.
919.	920.	921.	922.	923.	924.	925.	926.	927.	928.
929.	930.	931.	932.	933.	934.	935.	936.	937.	938.
939.	940.	941.	942.	943.	944.	945.	946.	947.	948.
949.	950.	951.	952.	953.	954.	955.	956.	957.	958.
959.	960.	961.	962.	963.	964.	965.	966.	967.	968.
969.	970.	971.	972.	973.	974.	975.	976.	977.	978.
979.	980.	981.	982.	983.	984.	985.	986.	987.	988.
989.	990.	991.	992.	993.	994.	995.	996.	997.	998.
999.	1000.	1001.	1002.	1003.	1004.	1005.	1006.	1007.	1008.

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
13421.	9128.	3115.	3182.	954695.
CFS	380.	94.	90.	27034.
CM	21.75	30.92	30.92	30.92
INCHES	552.50	785.40	785.40	785.40
MM	4625.	6575.	6575.	6575.
AC-FT	5705.	8110.	8110.	8110.
THOUS CU M				

HYDROGRAPH ROUTING									
ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO	
DAN 4	1	0	0	0	0	1	0	0	
ROUTING DATA									
QLOSS	CLOSS	AVG	IRES	ISAPE	IOPT	IPMP	LSTR		
0	0.000	0.00	1	1	0	0			
NSTPS	NSTDCL	LAG	AMSKK	X	YSK	STORA	ISPRAT		
1	0	0	0.000	0.000	0.000	-762.	-1		

1-334-1

GRAPH PAC

[illegible]

PEAK OUTFLOW IS 153. AT TIME 20.08 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	153.	132.	47.	46.	13657.
CMS	4.	4.	1.	1.	387.
INCHES		.31	.44	.44	.44
MM		7.65	11.24	11.24	11.24
AC-FT		66.	94.	94.	94.
THOUS CU M		81.	116.	116.	116.

STATION DAM 4, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

PROGRAM H21/02-1V TIME 17:08 CASE PMF

[illegible]

PEAK OUTFLOW IS 1073. AT TIME 18.33 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1073.	554.	173.	166.	49699.
CMS	30.	16.	5.	5.	1407.
INCHES		1.29	1.61	1.61	1.61
MM		32.79	40.89	40.89	40.89
AC-FT		275.	342.	342.	342.
TMOUS CU M		339.	422.	422.	422.

STATION DAM 6, PLAN 1, RATIO 6

BEGIN DAM FAILURE AT 13.83 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.	1.	1.	1.	1.	1.	1.	1.	1.	1.	1.	2.
2.	2.	2.	3.	3.	3.	3.	3.	3.	3.	3.	3.
4.	4.	4.	5.	5.	5.	5.	5.	5.	5.	5.	6.
6.	6.	7.	7.	7.	7.	7.	7.	8.	8.	8.	8.
9.	9.	9.	10.	10.	10.	10.	10.	11.	11.	11.	11.
12.	12.	13.	14.	14.	16.	18.	20.	22.	22.	24.	24.
26.	28.	30.	32.	34.	37.	39.	41.	44.	44.	46.	46.
49.	52.	57.	63.	68.	73.	79.	84.	90.	90.	96.	96.
102.	108.	114.	121.	128.	136.	145.	155.	165.	165.	176.	176.
168.	201.	219.	237.	255.	274.	294.	316.	342.	342.	373.	373.
415.	477.	550.	636.	734.	842.	952.	1041.	1096.	1096.	1127.	1127.
1142.	1146.	1143.	1135.	1125.	1113.	1101.	1089.	1077.	1077.	1066.	1066.
1056.	1046.	1036.	1028.	1020.	1015.	1014.	1017.	1021.	1021.	1026.	1026.
1031.	1038.	1045.	1053.	1061.	1070.	1080.	1092.	1107.	1107.	1126.	1126.
1149.	1179.	1224.	1294.	1376.	1466.	1562.	1666.	1782.	1782.	1921.	1921.
3145.	3391.	3676.	4035.	4645.	5288.	5968.	6609.	5987.	5987.	5492.	5492.
5110.	4815.	4577.	4401.	4284.	4229.	4276.	4446.	4673.	4673.	4839.	4839.
4915.	4929.	4912.	4884.	4855.	4837.	4835.	4844.	4873.	4873.	4922.	4922.

FLOOD HYDROGRAPH PACKAGE - HEC-1

PROGRAM H21/02-1V TIME 17:32:58 CASE PMF

4993.	5086.	5202.	5349.	5516.	5686.	5847.	5992.	6120.	6230.
6322.	6395.	6450.	6488.	6502.	6511.	6499.	6461.	6395.	6308.
6206.	6095.	5977.	5952.	5723.	5591.	5458.	5326.	5200.	5079.
4957.	4835.	4712.	4590.	4468.	4352.	4232.	4107.	3977.	3842.
3712.	3582.	3447.	3322.	3198.	3072.	2944.	2817.	2690.	2565.
2443.	2322.	2203.	2088.	1976.	1868.	1765.	1666.	1572.	1484.
1430.	1322.	1245.	1180.	1116.	1056.	1001.	949.	901.	857.
816.	778.	743.	711.	681.	653.	628.	604.	582.	562.
544.	527.	511.	496.	483.	470.	458.	446.	434.	422.
409.	395.	383.	371.	360.	351.	342.	334.	326.	319.

STORAGE

[illegible]

STAGE

[illegible]

765.9	766.2	766.5	766.9	767.3	767.8	768.3	768.7	768.9	769.1
769.1	769.2	769.1	769.1	769.1	769.0	769.0	768.9	768.9	768.8
768.8	768.7	768.7	768.6	768.6	768.6	768.6	768.6	768.6	768.6
768.6	768.7	768.7	768.7	768.8	768.8	768.9	768.9	769.0	769.1
769.2	769.3	769.5	769.7	769.9	770.1	770.4	770.6	770.7	770.7
770.6	770.5	770.3	770.1	769.7	769.2	768.5	767.7	766.9	766.2
765.6	765.1	764.7	764.4	764.2	764.1	764.2	764.5	764.9	765.2
765.3	765.3	765.3	765.2	765.2	765.2	765.2	765.2	765.2	765.3
765.4	765.6	765.7	766.0	766.2	766.4	766.7	766.9	767.0	767.2
767.3	767.4	767.5	767.5	767.6	767.6	767.6	767.5	767.4	767.3
767.4	767.0	766.8	766.7	766.5	766.3	766.1	765.9	765.7	765.5
765.4	765.2	765.0	764.8	764.6	764.3	764.1	763.9	763.7	763.4
763.1	762.9	762.6	762.3	761.9	761.6	761.3	760.9	760.5	760.2
759.8	759.4	759.1	758.7	758.3	757.9	757.6	757.2	756.8	756.5
756.2	755.8	755.5	755.2	754.9	754.7	754.4	754.2	753.9	753.7
753.5	753.3	753.1	752.9	752.7	752.6	752.4	752.3	752.1	752.0
751.9	751.8	751.7	751.6	751.5	751.4	751.3	751.2	751.2	751.1
751.0	750.9	750.8	750.7	750.6	750.5	750.5	750.4	750.3	750.3

PEAK OUTFLOW IS 6609. AT TIME 14.83 HOURS

CFS	6609.	5155.	1747.	1677.	503100.
CMS	187.	146.	49.	47.	14246.
INCHES		12.02	16.29	16.29	16.29
MM		305.37	413.89	413.89	413.89
AC-FT		2556.	3465.	3465.	3465.
THOUS CU M		3153.	4274.	4274.	4274.

THE DAM BREACH HYDROGRAPH WAS DEVELOPED USING A TIME INTERVAL OF .021 HOURS DURING BREACH FORMATION.
 DOWNSTREAM CALCULATIONS WILL USE A TIME INTERVAL OF .083 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)
13.833	.000	1466.	1466.	0.	0.	0.
13.854	.021	1556.	1550.	6.	6.	0.
13.875	.042	1645.	1643.	2.	8.	0.
13.896	.063	1735.	1734.	1.	9.	0.
13.917	.083	1824.	1824.	0.	9.	0.
13.937	.104	1914.	1914.	0.	9.	0.
13.958	.125	2003.	2003.	0.	9.	0.
13.979	.146	2093.	2093.	0.	9.	0.
14.000	.167	2182.	2182.	0.	9.	0.
14.021	.187	2285.	2272.	13.	22.	0.
14.042	.208	2388.	2378.	9.	31.	0.
14.063	.229	2491.	2488.	3.	33.	0.
14.083	.250	2593.	2593.	0.	33.	0.

STATION DAM 4, PLAN 1, RATIO 7

BEGIN DAM FAILURE AT 9.07 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.
1.	1.	1.	2.	2.	2.	2.	3.	3.	3.
4.	4.	4.	5.	5.	5.	6.	6.	7.	7.
7.	8.	9.	10.	10.	10.	10.	11.	11.	11.
12.	13.	13.	14.	14.	15.	15.	16.	16.	16.
17.	18.	19.	19.	20.	21.	22.	23.	23.	23.
24.	25.	27.	28.	31.	34.	38.	42.	46.	51.
60.	66.	76.	85.	97.	101.	109.	118.	126.	135.
133.	152.	160.	169.	179.	190.	203.	221.	241.	262.
285.	310.	337.	368.	406.	463.	527.	601.	685.	780.
887.	1006.	1132.	1264.	1383.	1462.	1630.	1886.	2021.	
2248.	2594.	2987.	3467.	3951.	4450.	4916.	5316.	4621.	4075.
3645.	3724.	3078.	2168.	2691.	2341.	2416.	2313.	2232.	2173.
2138.	2126.	2140.	2178.	2238.	2323.	2432.	2555.	2659.	2728.
2778.	2822.	2866.	2913.	2959.	2999.	3034.	3068.	3103.	3140.
3179.	3220.	3265.	3314.	3367.	3428.	3501.	3579.	3664.	3759.
3873.	4000.	4131.	4262.	4392.	4525.	4663.	4798.	4933.	5069.
5204.	5344.	5493.	5668.	5886.	6180.	6640.	7306.	8034.	8721.
9453.	9782.	9877.	9898.	9897.	10032.	10196.	10420.	10694.	11006.
11367.	11686.	12034.	12402.	12703.	12937.	13106.	13228.	13314.	13369.
13396.	13594.	13902.	13297.	13201.	13079.	12919.	12681.	12363.	12014.
11174.	11409.	11091.	10764.	10424.	10103.	9777.	9462.	9155.	
8673.	8496.	8322.	8123.	7907.	7705.	7489.	7260.	7023.	6781.
6535.	6290.	6048.	5814.	5589.	5372.	5169.	4982.	4799.	4618.
4460.	4269.	4095.	3917.	3743.	3581.	3418.	3276.	3135.	2996.
2860.	2728.	2600.	2478.	2361.	2248.	2141.	2038.	1941.	1849.
1763.	1681.	1605.	1533.	1466.	1404.	1346.	1292.	1241.	1195.
1152.	1112.	1076.	1042.	1010.	981.	953.	927.	900.	874.
846.	817.	790.	765.	742.	721.	702.	684.	667.	651.

STORAGE									
122.	122.	122.	122.	122.	122.	122.	122.	122.	122.
122.	122.	122.	122.	122.	122.	122.	122.	122.	122.
122.	122.	122.	122.	122.	122.	122.	122.	122.	122.
123.	123.	123.	123.	123.	123.	124.	124.	124.	124.
124.	124.	124.	124.	124.	124.	125.	125.	125.	125.
125.	125.	126.	126.	126.	126.	126.	126.	126.	127.
127.	127.	127.	127.	127.	128.	128.	128.	128.	129.
129.	129.	130.	130.	131.	131.	132.	133.	134.	135.
138.	139.	141.	142.	143.	144.	146.	147.	148.	150.
151.	152.	154.	155.	157.	159.	161.	163.	165.	168.
171.	174.	182.	186.	188.	192.	198.	206.	214.	225.
236.	250.	264.	277.	286.	292.	296.	297.	296.	294.
291.	285.	277.	266.	251.	233.	212.	188.	165.	146.
131.	119.	107.	99.	91.	85.	79.	75.	72.	69.
AR.	AR.	AR.	70.	74.	78.	80.	85.	90.	94.

95.	97.	98.	100.	102.	104.	106.	107.	109.	110.
112.	114.	116.	118.	120.	122.	125.	127.	131.	135.
139.	143.	148.	152.	157.	162.	166.	171.	175.	180.
184.	189.	193.	199.	206.	215.	230.	252.	276.	294.
305.	308.	309.	310.	310.	311.	313.	315.	318.	321.
325.	329.	332.	335.	338.	340.	342.	343.	343.	344.
344.	344.	344.	343.	342.	341.	340.	338.	335.	332.
329.	326.	322.	319.	315.	312.	308.	305.	301.	298.
294.	289.	284.	278.	272.	265.	258.	250.	242.	234.
226.	219.	211.	203.	196.	190.	183.	177.	171.	165.
159.	153.	147.	141.	134.	129.	122.	116.	110.	104.
98.	93.	87.	82.	77.	72.	68.	64.	60.	57.
53.	50.	47.	45.	42.	40.	38.	36.	34.	33.
31.	30.	29.	27.	26.	25.	25.	24.	23.	22.
21.	20.	19.	19.	18.	17.	17.	16.	16.	15.

STAGE									
762.5	762.5	762.5	762.5	762.5	762.5	762.5	762.5	762.5	762.5
762.5	762.5	762.5	762.5	762.5	762.5	762.5	762.5	762.5	762.5
762.5	762.5	762.5	762.5	762.5	762.5	762.5	762.5	762.5	762.5
762.6	762.6	762.6	762.6	762.6	762.6	762.6	762.6	762.6	762.6
762.6	762.6	762.6	762.6	762.6	762.6	762.6	762.6	762.6	762.6
762.7	762.7	762.7	762.7	762.7	762.7	762.7	762.7	762.7	762.7
762.7	762.7	762.7	762.7	762.7	762.7	762.7	762.7	762.7	762.7
762.8	762.8	762.8	762.8	762.8	762.8	762.8	762.8	762.8	762.8
762.9	762.9	762.9	762.9	762.9	762.9	762.9	762.9	762.9	762.9
763.4	763.5	763.6	763.7	763.8	763.9	764.0	764.0	764.0	764.0
764.1	764.2	764.3	764.4	764.5	764.6	764.7	764.8	764.8	765.0
765.1	765.3	765.4	765.6	765.8	766.1	766.4	767.1	767.5	767.5
766.0	768.5	769.1	769.6	769.9	770.2	770.3	770.3	770.2	770.2
770.1	769.9	769.6	769.2	768.6	767.9	767.0	765.9	764.8	763.8
763.0	762.3	761.6	761.0	760.5	760.1	759.7	759.4	759.1	759.0
753.8	758.8	756.6	759.0	759.2	759.4	759.8	760.1	760.4	760.6
760.6	760.9	761.0	761.2	761.3	761.4	761.5	761.6	761.7	761.8
761.9	762.0	762.1	762.2	762.4	762.5	762.7	762.9	763.0	763.2
763.5	763.7	763.9	764.2	764.4	764.7	764.9	765.1	765.3	765.5
765.7	766.0	766.2	766.4	766.7	767.1	767.7	768.6	769.5	770.2
770.5	770.7	770.7	770.7	770.7	770.8	770.8	770.9	771.0	771.1
771.2	771.4	771.5	771.6	771.7	771.7	771.8	771.8	771.8	771.8
771.9	771.9	771.8	771.8	771.8	771.7	771.7	771.6	771.5	771.5
771.4	771.3	771.1	771.0	770.9	770.8	770.7	770.6	770.4	770.3
770.2	770.0	769.8	769.6	769.4	769.1	768.9	768.6	768.2	767.9
767.6	767.3	766.9	766.6	766.3	766.0	765.7	765.4	765.1	764.8
764.5	764.2	763.9	763.6	763.2	762.9	762.5	762.1	761.8	761.4
761.0	760.6	760.3	759.9	759.6	759.2	758.8	758.5	758.2	757.9
757.6	757.3	757.0	756.7	756.4	756.2	755.9	755.7	755.5	755.3
755.1	754.9	754.6	754.6	754.5	754.3	754.2	754.0	753.9	753.8
753.6	753.5	753.3	753.2	753.1	753.0	752.8	752.7	752.6	752.6

PEAK OUTFLOW IS 13396. AT TIME 17:58 HOURS

CFS				PEAK				TOTAL VOLUME			
13396.	379.	21.62	549.27	9273.	3369.	3234.	970229.	970229.	27474.	31.42	798.18
INCHES				MM							

SUB-AREA RUNOFF COMPUTATION

INFLOW TO I-70 EMBANKMENT

ISTAT ICOMP IECON ITAPE JPLT JPRT INAME ISTAGE IAUTO
 AREA 5 0 0 0 0 3 1 0 0

INYDG IUNG TAREA SNAP TRSDA TRSPC RATIO ISNOW ISAME LOCAL
 1 2 .81 .00 .81 1.00 .000 0 0 0

SPEE PMS R6 R12 R24 R48 R72 R96
 .00 24.80 101.00 120.00 130.00 .00 .00 .00

LPROPT STRKR DLTKR RTIOL ERAIN STRKS RTIOL CNSTL ALSMX RTIMP
 0 .00 .00 1.00 .00 .00 1.00 -1.00 -86.00 .00 .00

CURVE NO = -86.00 WEIKNSS = -1.00 EFFECT CN = 86.00

TC = .00 LAG = .69
 UNIT HYDROGRAPH DATA

STRTQ = .00 ORCSN = .00 RTIOL = 1.00
 RECESION DATA

UNIT HYDROGRAPH 44 END OF PERIOD ORIGINATES, TC = .00 HOURS, LAG = .69 VOL = 1.00
 21. 66. 127. 211. 318. 420. 492. 529. 532. 518.
 479. 434. 377. 308. 246. 204. 169. 142. 120. 100.
 82. 69. 57. 48. 39. 31. 27. 22. 19. 16.
 13. 11. 9. 7. 6. 5. 5. 4. 3. 3.
 2. 1. 0.

MO-DA		HR-MN	PERIOD	RAIN	EXCS	LOSS	END-OF-PERIOD FLOW		MO-DA	HR-MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.05	1	.01	.01	.00	.01	0.	0.	1.01	12.35	151	.21	.20	.01	614.
1.01	.10	2	.01	.00	.00	.01	0.	0.	1.01	12.40	152	.21	.20	.01	687.
1.01	.15	3	.01	.00	.00	.01	0.	0.	1.01	12.45	153	.21	.20	.01	761.
1.01	.20	4	.01	.00	.00	.01	0.	0.	1.01	12.50	154	.21	.20	.01	833.
1.01	.25	5	.01	.00	.00	.01	0.	0.	1.01	12.55	155	.21	.20	.01	900.
1.01	.30	6	.01	.00	.00	.01	0.	0.	1.01	13.00	156	.21	.20	.01	960.
1.01	.35	7	.01	.00	.00	.01	0.	0.	1.01	13.05	157	.25	.24	.01	1015.
1.01	.40	8	.01	.00	.00	.01	0.	0.	1.01	13.10	158	.25	.24	.01	1061.
1.01	.45	9	.01	.00	.00	.01	0.	0.	1.01	13.15	159	.25	.24	.01	1102.
1.01	.50	10	.01	.00	.00	.01	0.	0.	1.01	13.20	160	.25	.24	.01	1140.
1.01	.55	11	.01	.00	.00	.01	0.	0.	1.01	13.25	161	.25	.24	.01	1178.
1.01	1.00	12	.01	.00	.00	.01	0.	0.	1.01	13.30	162	.25	.24	.01	1217.
1.01	1.05	13	.01	.00	.00	.01	0.	0.	1.01	13.35	163	.25	.25	.01	1255.
1.01	1.10	14	.01	.00	.00	.01	0.	0.	1.01	13.40	164	.25	.25	.01	1292.
1.01	1.15	15	.01	.00	.00	.01	0.	0.	1.01	13.45	165	.25	.25	.00	1327.
1.01	1.20	16	.01	.00	.00	.01	0.	0.	1.01	13.50	166	.25	.25	.00	1359.
1.01	1.25	17	.01	.00	.00	.01	0.	0.	1.01	13.55	167	.25	.25	.00	1388.
1.01	1.30	18	.01	.00	.00	.01	0.	0.	1.01	14.00	168	.25	.25	.00	1414.

1.01	1.35	19	.01	.00	.01	0.	1.01	14.05	169	.31	.31	.01	1438.
1.01	1.40	20	.01	.00	.01	0.	1.01	14.10	170	.31	.31	.00	1461.
1.01	1.45	21	.01	.00	.01	0.	1.01	14.15	171	.31	.31	.00	1484.
1.01	1.50	22	.01	.00	.01	0.	1.01	14.20	172	.31	.31	.00	1510.
1.01	1.55	23	.01	.00	.01	0.	1.01	14.25	173	.31	.31	.00	1541.
1.01	2.00	24	.01	.00	.01	0.	1.01	14.30	174	.31	.31	.00	1576.
1.01	2.05	25	.01	.00	.01	0.	1.01	14.35	175	.31	.31	.00	1614.
1.01	2.10	26	.01	.00	.01	0.	1.01	14.40	176	.31	.31	.00	1654.
1.01	2.15	27	.01	.00	.01	0.	1.01	14.45	177	.31	.31	.00	1693.
1.01	2.20	28	.01	.00	.01	0.	1.01	14.50	178	.31	.31	.00	1730.
1.01	2.25	29	.01	.00	.01	0.	1.01	14.55	179	.31	.31	.00	1764.
1.01	2.30	30	.01	.00	.01	1.	1.01	15.00	180	.31	.31	.00	1794.
1.01	2.35	31	.01	.00	.01	1.	1.01	15.05	181	.19	.19	.00	1819.
1.01	2.40	32	.01	.00	.01	1.	1.01	15.10	182	.38	.38	.00	1877.
1.01	2.45	33	.01	.00	.01	2.	1.01	15.15	183	.38	.38	.00	1852.
1.01	2.50	34	.01	.00	.01	3.	1.01	15.20	184	.57	.57	.00	1869.
1.01	2.55	35	.01	.00	.01	3.	1.01	15.25	185	.67	.66	.01	1897.
1.01	3.00	36	.01	.00	.01	4.	1.01	15.30	186	1.62	1.61	.01	1966.
1.01	3.05	37	.01	.00	.01	5.	1.01	15.35	187	2.67	2.65	.02	2121.
1.01	3.10	38	.01	.00	.01	6.	1.01	15.40	188	1.05	1.04	.01	2402.
1.01	3.15	39	.01	.00	.01	7.	1.01	15.45	189	.67	.66	.00	2770.
1.01	3.20	40	.01	.00	.01	8.	1.01	15.50	190	.57	.57	.00	3235.
1.01	3.25	41	.01	.00	.01	9.	1.01	15.55	191	.38	.38	.00	3757.
1.01	3.30	42	.01	.00	.01	10.	1.01	16.00	192	.38	.38	.00	4237.
1.01	3.35	43	.01	.00	.01	11.	1.01	16.05	193	.29	.29	.00	4596.
1.01	3.40	44	.01	.00	.01	12.	1.01	16.10	194	.29	.29	.00	4800.
1.01	3.45	45	.01	.00	.01	14.	1.01	16.15	195	.29	.29	.00	4856.
1.01	3.50	46	.01	.00	.01	15.	1.01	16.20	196	.29	.29	.00	4783.
1.01	3.55	47	.01	.00	.01	16.	1.01	16.25	197	.29	.29	.00	4601.
1.01	4.00	48	.01	.00	.01	17.	1.01	16.30	198	.29	.29	.00	4348.
1.01	4.05	49	.01	.00	.01	18.	1.01	16.35	199	.29	.29	.00	4036.
1.01	4.10	50	.01	.00	.01	19.	1.01	16.40	200	.29	.29	.00	3692.
1.01	4.15	51	.01	.00	.01	20.	1.01	16.45	201	.29	.29	.00	3377.
1.01	4.20	52	.01	.00	.01	21.	1.01	16.50	202	.29	.29	.00	3118.
1.01	4.25	53	.01	.00	.01	22.	1.01	16.55	203	.29	.29	.00	2902.
1.01	4.30	54	.01	.00	.01	22.	1.01	17.00	204	.29	.29	.00	2724.
1.01	4.35	55	.01	.01	.01	23.	1.01	17.05	205	.23	.23	.00	2576.
1.01	4.40	56	.01	.01	.01	24.	1.01	17.10	206	.23	.23	.00	2447.
1.01	4.45	57	.01	.01	.01	25.	1.01	17.15	207	.23	.23	.00	2333.
1.01	4.50	58	.01	.01	.01	26.	1.01	17.20	208	.23	.23	.00	2234.
1.01	4.55	59	.01	.01	.01	27.	1.01	17.25	209	.23	.23	.00	2142.
1.01	5.00	60	.01	.01	.01	28.	1.01	17.30	210	.23	.23	.00	2057.
1.01	5.05	61	.01	.01	.01	29.	1.01	17.35	211	.23	.23	.00	1975.
1.01	5.10	62	.01	.01	.01	29.	1.01	17.40	212	.23	.23	.00	1901.
1.01	5.15	63	.01	.01	.01	30.	1.01	17.45	213	.23	.23	.00	1833.
1.01	5.20	64	.01	.01	.01	31.	1.01	17.50	214	.23	.23	.00	1772.
1.01	5.25	65	.01	.01	.01	32.	1.01	17.55	215	.23	.23	.00	1719.
1.01	5.30	66	.01	.01	.01	32.	1.01	18.00	216	.23	.23	.00	1672.
1.01	5.35	67	.01	.01	.01	33.	1.01	18.05	217	.02	.02	.00	1628.
1.01	5.40	68	.01	.01	.01	34.	1.01	18.10	218	.02	.02	.00	1581.
1.01	5.45	69	.01	.01	.01	34.	1.01	18.15	219	.02	.02	.00	1528.
1.01	5.50	70	.01	.01	.01	35.	1.01	18.20	220	.02	.02	.00	1462.
1.01	5.55	71	.01	.01	.01	36.	1.01	18.25	221	.02	.02	.00	1378.
1.01	6.00	72	.01	.01	.01	36.	1.01	18.30	222	.02	.02	.00	1276.
1.01	6.05	73	.07	.03	.03	38.	1.01	18.35	223	.02	.02	.00	1161.
1.01	6.10	74	.67	.04	.03	40.	1.01	18.40	224	.02	.02	.00	1040.

1.01	6.15	75	.07	.04	.03	44.	1.01	18.45	225	.02	.02	.00	919.
1.01	6.20	76	.07	.04	.03	51.	1.01	18.50	226	.02	.02	.00	903.
1.01	6.25	77	.07	.04	.03	60.	1.01	18.55	227	.02	.02	.00	896.
1.01	6.30	78	.07	.04	.02	73.	1.01	19.00	228	.02	.02	.00	599.
1.01	6.35	79	.07	.04	.02	89.	1.01	19.05	229	.02	.02	.00	515.
1.01	6.40	80	.07	.04	.02	106.	1.01	19.10	230	.02	.02	.00	446.
1.01	6.45	81	.07	.04	.02	123.	1.01	19.15	231	.02	.02	.00	392.
1.01	6.50	82	.07	.05	.02	141.	1.01	19.20	232	.02	.02	.00	347.
1.01	6.55	83	.07	.05	.02	159.	1.01	19.25	233	.02	.02	.00	311.
1.01	7.00	84	.07	.05	.02	176.	1.01	19.30	234	.02	.02	.00	280.
1.01	7.05	85	.07	.05	.02	191.	1.01	19.35	235	.02	.02	.00	254.
1.01	7.10	86	.07	.05	.02	205.	1.01	19.40	236	.02	.02	.00	233.
1.01	7.15	87	.07	.05	.02	218.	1.01	19.45	237	.02	.02	.00	215.
1.01	7.20	88	.07	.05	.02	229.	1.01	19.50	238	.02	.02	.00	200.
1.01	7.25	89	.07	.05	.02	239.	1.01	19.55	239	.02	.02	.00	188.
1.01	7.30	90	.07	.05	.01	249.	1.01	20.00	240	.02	.02	.00	178.
1.01	7.35	91	.07	.05	.01	258.	1.01	20.05	241	.02	.02	.00	169.
1.01	7.40	92	.07	.05	.01	266.	1.01	20.10	242	.02	.02	.00	162.
1.01	7.45	93	.07	.05	.01	273.	1.01	20.15	243	.02	.02	.00	157.
1.01	7.50	94	.07	.05	.01	280.	1.01	20.20	244	.02	.02	.00	152.
1.01	7.55	95	.07	.05	.01	286.	1.01	20.25	245	.02	.02	.00	148.
1.01	8.00	96	.07	.05	.01	292.	1.01	20.30	246	.02	.02	.00	144.
1.01	8.05	97	.07	.05	.01	297.	1.01	20.35	247	.02	.02	.00	142.
1.01	8.10	98	.07	.05	.01	303.	1.01	20.40	248	.02	.02	.00	139.
1.01	8.15	99	.07	.05	.01	307.	1.01	20.45	249	.02	.02	.00	137.
1.01	8.20	100	.07	.06	.01	312.	1.01	20.50	250	.02	.02	.00	136.
1.01	8.25	101	.07	.06	.01	316.	1.01	20.55	251	.02	.02	.00	135.
1.01	8.30	102	.07	.06	.01	320.	1.01	21.00	252	.02	.02	.00	134.
1.01	8.35	103	.07	.06	.01	323.	1.01	21.05	253	.02	.02	.00	133.
1.01	8.40	104	.07	.06	.01	327.	1.01	21.10	254	.02	.02	.00	132.
1.01	8.45	105	.07	.06	.01	330.	1.01	21.15	255	.02	.02	.00	131.
1.01	8.50	106	.07	.06	.01	333.	1.01	21.20	256	.02	.02	.00	131.
1.01	8.55	107	.07	.06	.01	336.	1.01	21.25	257	.02	.02	.00	130.
1.01	9.00	108	.07	.06	.01	338.	1.01	21.30	258	.02	.02	.00	130.
1.01	9.05	109	.07	.06	.01	341.	1.01	21.35	259	.02	.02	.00	130.
1.01	9.10	110	.07	.06	.01	343.	1.01	21.40	260	.02	.02	.00	130.
1.01	9.15	111	.07	.06	.01	346.	1.01	21.45	261	.02	.02	.00	130.
1.01	9.20	112	.07	.06	.01	348.	1.01	21.50	262	.02	.02	.00	130.
1.01	9.25	113	.07	.06	.01	350.	1.01	21.55	263	.02	.02	.00	130.
1.01	9.30	114	.07	.06	.01	352.	1.01	22.00	264	.02	.02	.00	130.
1.01	9.35	115	.07	.06	.01	354.	1.01	22.05	265	.02	.02	.00	130.
1.01	9.40	116	.07	.06	.01	355.	1.01	22.10	266	.02	.02	.00	130.
1.01	9.45	117	.07	.06	.01	357.	1.01	22.15	267	.02	.02	.00	130.
1.01	9.50	118	.07	.06	.01	359.	1.01	22.20	268	.02	.02	.00	130.
1.01	9.55	119	.07	.06	.01	360.	1.01	22.25	269	.02	.02	.00	130.
1.01	10.00	120	.07	.06	.01	362.	1.01	22.30	270	.02	.02	.00	130.
1.01	10.05	121	.07	.06	.01	363.	1.01	22.35	271	.02	.02	.00	130.
1.01	10.10	122	.07	.06	.01	364.	1.01	22.40	272	.02	.02	.00	130.
1.01	10.15	123	.07	.06	.01	366.	1.01	22.45	273	.02	.02	.00	130.
1.01	10.20	124	.07	.06	.01	367.	1.01	22.50	274	.02	.02	.00	130.
1.01	10.25	125	.07	.06	.01	368.	1.01	22.55	275	.02	.02	.00	130.
1.01	10.30	126	.07	.06	.01	369.	1.01	23.00	276	.02	.02	.00	130.
1.01	10.35	127	.07	.06	.01	370.	1.01	23.05	277	.02	.02	.00	130.
1.01	10.40	128	.07	.06	.00	371.	1.01	23.10	278	.02	.02	.00	130.
1.01	10.45	129	.07	.06	.00	372.	1.01	23.15	279	.02	.02	.00	130.
1.01	10.50	130	.07	.06	.00	373.	1.01	23.20	280	.02	.02	.00	130.

HYDROGRAPH AT STAAREA 5 FOR PLAN 1, RTIO 3

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	146.	63.	20.	19.	5725.
CMS	4.	2.	1.	1.	162.
INCHES		72.	91.	91.	23.11
MM	18.28	23.11	23.11	39.	39.
AC-FT	31.	39.	49.	49.	49.
THOUS CU M					

HYDROGRAPH AT STAAREA 5 FOR PLAN 1, RTIO 4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	194.	84.	27.	25.	7634.
CMS	5.	2.	1.	1.	216.
INCHES		96.	121.	121.	30.81
MM	24.37	30.81	30.81	53.	53.
AC-FT	42.	53.	65.	65.	65.
THOUS CU M					

HYDROGRAPH AT STAAREA 5 FOR PLAN 1, RTIO 5

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	243.	105.	33.	32.	9542.
CMS	7.	3.	1.	1.	270.
INCHES		120.	152.	152.	38.52
MM	30.46	38.52	38.52	66.	66.
AC-FT	52.	66.	81.	81.	81.
THOUS CU M					

HYDROGRAPH AT STAAREA 5 FOR PLAN 1, RTIO 6

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2428.	1048.	331.	318.	95422.
CMS	69.	30.	9.	9.	2702.
INCHES		11.99	15.16	15.16	385.17
MM	304.60	385.17	385.17	657.	657.
AC-FT	520.	657.	811.	811.	811.
THOUS CU M					

HYDROGRAPH AT STAAREA 5 FOR PLAN 1, RTIO 7

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	4856.	2096.	663.	636.	190845.
CMS	137.	59.	19.	18.	5404.
INCHES		23.98	30.33	30.33	30.33

FLOOD HYDROGRAPH PACK 3 - HEC-1

CFS	30.	17.	6.	6.	1656.
INCHES	1.17	1.57	1.57	1.57	1.57
MM	29.72	39.97	39.97	39.97	39.97
AC-FT	300.	403.	403.	403.	403.
THOUS CU M	369.	497.	497.	497.	497.

SUM OF 2 HYDROGRAPHS AT									
5 PLAN 1 RTIO 6									
0.	0.	0.	0.	0.	0.	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.	2.	3.	4.	4.	5.	6.	6.	6.	6.
7.	8.	9.	10.	11.	11.	12.	13.	14.	14.
14.	15.	16.	17.	18.	19.	20.	20.	20.	20.
21.	22.	23.	24.	24.	25.	26.	26.	27.	27.
28.	28.	31.	33.	37.	43.	50.	59.	68.	68.
78.	89.	109.	119.	127.	135.	143.	150.	157.	157.
163.	170.	176.	182.	195.	201.	208.	214.	221.	221.
228.	235.	241.	255.	263.	270.	278.	287.	295.	295.
305.	314.	325.	337.	350.	363.	378.	413.	442.	442.
474.	510.	553.	605.	666.	737.	817.	901.	1056.	1056.
1123.	1184.	1227.	1256.	1275.	1285.	1289.	1284.	1278.	1278.
1271.	1271.	1254.	1246.	1239.	1236.	1238.	1248.	1297.	1297.
1332.	1371.	1412.	1453.	1492.	1529.	1564.	1626.	1657.	1657.
1691.	1728.	1771.	1823.	1886.	1960.	2080.	2272.	2522.	2809.
3127.	3438.	3741.	4057.	4438.	4910.	5507.	6144.	6548.	6591.
6454.	6242.	6011.	5793.	5611.	5491.	5476.	5593.	5841.	6188.
6565.	6895.	7129.	7257.	7289.	7247.	7148.	7018.	6868.	6714.
6550.	6517.	6477.	6483.	6527.	6600.	6692.	6792.	6891.	6983.
7065.	7134.	7191.	7235.	7265.	7281.	7282.	7263.	7220.	7147.
7044.	6916.	6766.	6602.	6430.	6253.	6075.	5899.	5729.	5568.
5417.	5271.	5130.	4992.	4856.	4724.	4595.	4467.	4337.	4210.
4090.	3965.	3837.	3708.	3580.	3453.	3326.	3198.	3070.	2943.
2917.	2692.	2569.	2448.	2329.	2218.	2120.	2022.	1924.	1828.
1735.	1646.	1560.	1479.	1402.	1329.	1261.	1197.	1137.	1081.
1029.	981.	943.	909.	875.	842.	810.	781.	752.	726.
761.	678.	656.	636.	617.	600.	584.	568.	553.	539.
524.	508.	491.	474.	456.	438.	422.	405.	390.	376.

SUM OF 2 HYDROGRAPHS AT									
5 PLAN 1 RTIO 7									
0.	0.	0.	0.	0.	0.	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.	2.	3.	4.	4.	5.	6.	6.	6.	6.
7.	8.	9.	10.	11.	11.	12.	13.	14.	14.
14.	15.	16.	17.	18.	19.	20.	20.	20.	20.
21.	22.	23.	24.	24.	25.	26.	26.	27.	27.
28.	28.	31.	33.	37.	43.	50.	59.	68.	68.
78.	89.	109.	119.	127.	135.	143.	150.	157.	157.
163.	170.	176.	182.	195.	201.	208.	214.	221.	221.
228.	235.	241.	255.	263.	270.	278.	287.	295.	295.
305.	314.	325.	337.	350.	363.	378.	413.	442.	442.
474.	510.	553.	605.	666.	737.	817.	901.	1056.	1056.
1123.	1184.	1227.	1256.	1275.	1285.	1289.	1284.	1278.	1278.
1271.	1271.	1254.	1246.	1239.	1236.	1238.	1248.	1297.	1297.
1332.	1371.	1412.	1453.	1492.	1529.	1564.	1626.	1657.	1657.
1691.	1728.	1771.	1823.	1886.	1960.	2080.	2272.	2522.	2809.
3127.	3438.	3741.	4057.	4438.	4910.	5507.	6144.	6548.	6591.
6454.	6242.	6011.	5793.	5611.	5491.	5476.	5593.	5841.	6188.
6565.	6895.	7129.	7257.	7289.	7247.	7148.	7018.	6868.	6714.
6550.	6517.	6477.	6483.	6527.	6600.	6692.	6792.	6891.	6983.
7065.	7134.	7191.	7235.	7265.	7281.	7282.	7263.	7220.	7147.
7044.	6916.	6766.	6602.	6430.	6253.	6075.	5899.	5729.	5568.
5417.	5271.	5130.	4992.	4856.	4724.	4595.	4467.	4337.	4210.
4090.	3965.	3837.	3708.	3580.	3453.	3326.	3198.	3070.	2943.
2917.	2692.	2569.	2448.	2329.	2218.	2120.	2022.	1924.	1828.
1735.	1646.	1560.	1479.	1402.	1329.	1261.	1197.	1137.	1081.
1029.	981.	943.	909.	875.	842.	810.	781.	752.	726.
761.	678.	656.	636.	617.	600.	584.	568.	553.	539.
524.	508.	491.	474.	456.	438.	422.	405.	390.	376.

SUM OF 2 HYDROGRAPHS AT									
5 PLAN 1 RTIO 7									
0.	0.	0.	0.	0.	0.	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.	2.	3.	4.	4.	5.	6.	6.	6.	6.
7.	8.	9.	10.	11.	11.	12.	13.	14.	14.
14.	15.	16.	17.	18.	19.	20.	20.	20.	20.
21.	22.	23.	24.	24.	25.	26.	26.	27.	27.
28.	28.	31.	33.	37.	43.	50.	59.	68.	68.
78.	89.	109.	119.	127.	135.	143.	150.	157.	157.
163.	170.	176.	182.	195.	201.	208.	214.	221.	221.
228.	235.	241.	255.	263.	270.	278.	287.	295.	295.
305.	314.	325.	337.	350.	363.	378.	413.	442.	442.
474.	510.	553.	605.	666.	737.	817.	901.	1056.	1056.
1123.	1184.	1227.	1256.	1275.	1285.	1289.	1284.	1278.	1278.
1271.	1271.	1254.	1246.	1239.	1236.	1238.	1248.	1297.	1297.
1332.	1371.	1412.	1453.	1492.	1529.	1564.	1626.	1657.	1657.
1691.	1728.	1771.	1823.	1886.	1960.	2080.	2272.	2522.	2809.
3127.	3438.	3741.	4057.	4438.	4910.	5507.	6144.	6548.	6591.
6454.	6242.	6011.	5793.	5611.	5491.	5476.	5593.	5841.	6188.
6565.	6895.	7129.	7257.	7289.	7247.	7148.	7018.	6868.	6714.
6550.	6517.	6477.	6483.	6527.	6600.	6692.	6792.	6891.	6983.
7065.	7134.	7191.	7235.	7265.	7281.	7282.	7263.	7220.	7147.
7044.	6916.	6766.	6602.	6430.	6253.	6075.	5899.	5729.	5568.
5417.	5271.	5130.	4992.	4856.	4724.	4595.	4467.	4337.	4210.
4090.	3965.	3837.	3708.	3580.	3453.	3326.	3198.	3070.	2943.
2917.	2692.	2569.	2448.	2329.	2218.	2120.	2022.	1924.	1828.
1735.	1646.	1560.	1479.	1402.	1329.	1261.	1197.	1137.	1081.
1029.	981.	943.	909.	875.	842.	810.	781.	752.	726.
761.	678.	656.	636.	617.	600.	584.	568.	553.	539.
524.	508.	491.	474.	456.	438.	422.	405.	390.	376.

SUM OF 2 HYDROGRAPHS AT									
5 PLAN 1 RTIO 7									
0.	0.	0.	0.	0.	0.	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.	2.	3.	4.	4.	5.	6.	6.	6.	6.
7.	8.	9.	10.	11.	11.	12.	13.	14.	14.
14.	15.	16.	17.	18.	19.	20.	20.	20.	20.
21.	22.	23.	24.	24.	25.	26.	26.	27.	27.
28.	28.	31.	33.	37.	43.	50.	59.	68.	68.
78.	89.	109.	119.	127.	135.	143.	150.	157.	157.
163.	170.	176.	182.	195.	201.	208.	214.	221.	221.
228.	235.	241.	255.	263.	270.	278.	287.	295.	295.
305.	314.	325.	337.	350.	363.	378.	413.	442.	442.
474.	510.	553.	605.	666.	737.	817.	901.	1056.	1056.
1123.	1184.	1227.	1256.	1275.	1285.	1289.	1284.	1278.	1278.
1271.	1271.	1254.	1246.	1239.	1236.	1238.	1248.	1297.	1297.
1332.	1371.	1412.	1453.	1492.	1529.	1564.	1626.	1657.	1657.
1691.	1728.	1771.	1823.	1886.	1960.	2080.	2272.	2522.	2809.
3127.	3438.	3741.	4057.	4438.	4910.	5507.	6144.	6548.	6591.
6454.	6242.	6011.	5793.	5611.	5491.	5476.	5593.	5841.	6188.
6565.	6895.	7129.	7257.	7289.	7247.	7148.	7018.	6868.	6714.
6550.	6517.	6477.	6483.	6527.	6600.	6692.	6792.	6891.	6983.
7065.	7134.	7191.	7235.	7265.	7281.	7282.	7263.	7220.	7147.
7044.	6916.	6766.	6602.	6430.	6253.	6075.	5899.	5729.	5568.
5417.	5271.	5130.	4992.	4856.	4724.	4595.	4467.	4337.	4210.
4090.	3965.	3837.	3708.	3580.	3453.	3326.	3198.	3070.	2943.
2917.	2692.	2569.	2448.	2329.	2218.	2120.	2022.	1924.	1828.
1735.	1646.	1560.	1479.	1402.	1329.	1261.	1197.	1137.	1081.
1029.	981.	943.	909.	875.	842.	810.	781.	752.	726.
761.	678.	656.	636.	617.	600.	584.	568.	553.	539.
524.	508.	491.	474.	456.	438.	422.	405.	390.	376.

7.	4.	5.	6.	8.	9.	10.	12.	12.
14.	16.	17.	19.	20.	21.	24.	26.	27.
29.	30.	31.	33.	34.	35.	38.	39.	41.
42.	43.	45.	46.	47.	49.	51.	53.	54.
55.	57.	59.	62.	67.	75.	101.	119.	139.
159.	181.	203.	225.	246.	266.	285.	320.	336.
352.	367.	382.	397.	411.	425.	440.	470.	487.
505.	524.	544.	575.	610.	648.	692.	800.	865.
930.	1023.	1115.	1216.	1340.	1468.	1595.	1823.	1995.
2141.	2329.	2573.	2916.	3306.	3734.	4181.	4903.	4835.
4607.	4987.	5389.	5899.	6529.	7302.	8259.	9522.	1088.
217.	269.	284.	290.	296.	296.	296.	296.	3070.
3215.	356.	389.	4315.	479.	544.	631.	741.	868.
4264.	4741.	5266.	5945.	6806.	7972.	9406.	1124.	1372.
5132.	5888.	7042.	8408.	10116.	12176.	14733.	17970.	21994.
11907.	13804.	16292.	19525.	23746.	29016.	35595.	43831.	53244.
14185.	16288.	18602.	21202.	25016.	29889.	36133.	44259.	54212.
15287.	17555.	20120.	23016.	27246.	32889.	40133.	49259.	59915.
13310.	15125.	17203.	19625.	23406.	28436.	34836.	42924.	52700.
9392.	9901.	8933.	8559.	8229.	8103.	7874.	7400.	7000.
7156.	6930.	6660.	6266.	5955.	5772.	5559.	5356.	5160.
4971.	4787.	4528.	4254.	4088.	3939.	3783.	3631.	3484.
3440.	3199.	2929.	2601.	2277.	2058.	1843.	1634.	1431.
2152.	2065.	1981.	1821.	1747.	1677.	1611.	1549.	1491.
1436.	1386.	1339.	1295.	1255.	1217.	1183.	1150.	1088.
1056.	1024.	995.	962.	929.	894.	861.	828.	798.

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	15294.	11025.	4020.	3659.
CMS	433.	312.	114.	109.
INCHES	21.36	31.15	31.15	31.15
MM	542.47	791.12	791.12	791.12
AC-FT	5467.	7973.	7973.	7973.
INCHES CU M	6743.	9834.	9834.	9834.

HYDROGRAPH ROUTING

ROUTING THROUGH 1-70 EMBANKMENT

ISIAQ	ICOMP	IECON	ITAPE	JPLT	JPRI	INAME	ISTAGE	IAUTO
DAM 5	1	0	0	0	0	1	0	0
ROUTING DATA								
GROSS	CROSS	AVG	IRCS	ISAME	LOPT	IPMP	LSTR	
.0	.000	.00	1	1	0	0	0	
NSIPS	NSIDL	LAS	AMSKK	X	TSK	STORA	ISPRAT	
1	0	0	.000	.000	.000	.000	.000	
STAGE	723.00	724.00	725.00	730.00	735.00	740.00	745.00	

[illegible]

STATION DAM 5, PLAN 1, RATIO 1

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

'FLOOD HYDROGRAPH PACK'

725.3
725.3
725.3
725.3
725.2
725.0

PEAK OUTFLOW IS 15

0.
0.
0.
0.
0.
0.
1.
2.
4.
6.
10.
13.
15.
18.
22.
34.
50.
79.
122.
206.
190.
217.
250.
269.
255.
226.
190.
173.
147.

1000 HYDROGRAPH PACKAG. HEC-1 PROGRAM W21/02-1V TIME 17:32: CASE PH

PROGRAM H21/02-1V TIME 17:32: CASE PMF

1000 MICROGRAPH PACKAG.	REL-1	PROGRAM	NETJ02-TV	TIME	17J52E	CASE FMI
727.0	727.1	727.3	727.4	727.7	728.0	728.7
729.8	730.0	730.1	730.2	730.2	730.3	730.3
730.3	730.3	730.3	730.3	730.3	730.2	730.1
730.0	729.7	729.5	729.3	729.1	728.9	728.6
728.1	728.0	727.8	727.7	727.6	727.5	727.4
727.0	726.9	726.8	726.7	726.6	726.5	726.4
726.2	726.1	726.1	726.0	726.0	725.9	725.8
725.7	725.7	725.7	725.6	725.6	725.6	725.5
725.4	725.4	725.4	725.3	725.3	725.3	725.2

PEAK OUTFLOW IS 939. AT TIME 19.17 HOURS

STATION DAM 5, PLAN 1, RATIO 6

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.
2.	2.	3.	3.	3.	4.	4.	4.	5.	5.	5.	6.
6.	7.	8.	8.	8.	9.	9.	9.	10.	10.	10.	11.
11.	12.	13.	13.	13.	14.	14.	15.	15.	16.	16.	17.
17.	18.	19.	19.	20.	21.	21.	22.	23.	23.	25.	27.
30.	34.	41.	48.	56.	64.	64.	72.	80.	88.	88.	96.
106.	120.	131.	144.	154.	167.	167.	171.	175.	187.	187.	194.
201.	209.	216.	223.	230.	237.	244.	244.	259.	259.	266.	266.
274.	283.	292.	301.	311.	322.	334.	334.	346.	360.	376.	376.
395.	418.	445.	477.	515.	560.	560.	611.	671.	735.	803.	803.
853.	983.	914.	946.	977.	1006.	1034.	1052.	1052.	1060.	1100.	1100.
1117.	1331.	1144.	1154.	1163.	1170.	1174.	1183.	1190.	1190.	1199.	1199.
1210.	1244.	1240.	1259.	1280.	1302.	1326.	1351.	1376.	1376.	1402.	1402.
1478.	1456.	1484.	1515.	1548.	1584.	1626.	1660.	1749.	1749.	1838.	1838.
1948.	2078.	2225.	2436.	2684.	2956.	3265.	3529.	3903.	3903.	4706.	4706.
5073.	5368.	5559.	5662.	5633.	5633.	5594.	5579.	5614.	5720.	5720.	5720.
5898.	6132.	6169.	6633.	6834.	6973.	7046.	7051.	7021.	6946.	6946.	6946.
6852.	6757.	6675.	6614.	6581.	6576.	6597.	6642.	6704.	6777.	6777.	6777.
6856.	6934.	7008.	7075.	7132.	7179.	7213.	7233.	7236.	7218.	7218.	7218.
7178.	7112.	7023.	6914.	6787.	6647.	6499.	6345.	6190.	6035.	6035.	6035.
5884.	5738.	5596.	5459.	5327.	5201.	5079.	4962.	4848.	4737.	4737.	4737.
4508.	4779.	4227.	4097.	3980.	3874.	3778.	3692.	3619.	3561.	3561.	3561.
3521.	3486.	3369.	3251.	3133.	3015.	2899.	2786.	2675.	2595.	2595.	2595.
2454.	2553.	2254.	2184.	2112.	2039.	1967.	1895.	1825.	1775.	1775.	1775.
1627.	1621.	1557.	1495.	1437.	1381.	1327.	1275.	1226.	1176.	1176.	1176.

[illegible]

2914.	2804.	2697.	2593.	2493.	2396.	2302.	2229.	2166.	2103.
2041.	1980.	1920.	1861.	1804.	1749.	1696.	1644.	1595.	1547.
1501.	1456.	1413.	1370.	1329.	1289.	1249.	1209.	1171.	1133.
STORAGE									
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	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.	2.	2.	2.	2.	2.	2.	2.	2.	3.
3.	3.	3.	3.	3.	3.	3.	4.	4.	4.
4.	4.	4.	4.	5.	5.	5.	5.	6.	6.
6.	7.	8.	8.	9.	10.	10.	11.	11.	12.
12.	13.	13.	13.	14.	14.	15.	15.	15.	16.
16.	17.	17.	18.	18.	19.	20.	20.	21.	23.
24.	25.	27.	29.	32.	35.	38.	43.	47.	52.
58.	64.	71.	79.	89.	100.	113.	128.	144.	157.
168.	176.	181.	185.	186.	186.	184.	182.	178.	175.
171.	167.	163.	159.	156.	154.	152.	151.	151.	152.
153.	156.	159.	162.	166.	169.	173.	177.	182.	186.
191.	195.	200.	204.	208.	211.	214.	216.	218.	220.
223.	225.	228.	231.	234.	238.	242.	246.	250.	253.
257.	261.	264.	267.	271.	274.	279.	285.	293.	304.
316.	320.	342.	352.	359.	362.	365.	365.	365.	364.
364.	363.	364.	365.	366.	368.	370.	371.	372.	373.
373.	373.	373.	372.	372.	371.	370.	368.	366.	364.
361.	358.	354.	350.	345.	341.	337.	332.	328.	324.
319.	315.	311.	308.	304.	301.	298.	294.	291.	288.
284.	280.	277.	273.	269.	265.	261.	256.	252.	248.
244.	240.	235.	231.	226.	222.	217.	213.	210.	206.
203.	199.	195.	191.	186.	181.	175.	169.	164.	158.
153.	148.	143.	138.	133.	129.	124.	120.	116.	111.
107.	103.	99.	95.	91.	88.	84.	80.	77.	74.
71.	68.	65.	62.	59.	56.	54.	51.	49.	46.

STAGE									
723.0	723.0	723.0	723.0	723.0	723.0	723.0	723.0	723.0	723.0
723.0	723.0	723.0	723.0	723.0	723.0	723.0	723.0	723.0	723.0
723.0	723.0	723.0	723.0	723.0	723.0	723.0	723.0	723.0	723.0
723.1	723.1	723.2	723.2	723.2	723.2	723.3	723.3	723.3	723.3
723.4	723.4	723.4	723.5	723.5	723.5	723.6	723.6	723.6	723.7
723.7	723.7	723.8	723.8	723.9	723.9	724.0	724.0	724.0	724.0
724.1	724.1	724.1	724.2	724.2	724.2	724.3	724.4	724.5	724.6
724.7	724.9	725.0	725.2	725.4	725.7	725.8	726.0	726.1	726.1
726.2	726.4	726.5	726.6	726.7	726.8	726.9	727.0	727.1	727.2
727.3	727.4	727.6	727.7	727.8	728.0	728.2	728.4	728.7	729.0
729.3	729.7	730.0	730.1	730.3	730.6	730.8	731.1	731.4	731.4
731.6	732.0	732.3	732.7	733.2	733.8	734.5	735.3	736.1	736.8
737.4	737.6	738.1	738.2	738.3	738.5	738.6	738.7	738.9	739.7
737.5	737.3	737.1	736.9	736.8	736.5	736.5	736.5	736.5	736.5
736.6	736.7	736.8	737.0	737.2	737.4	737.6	737.8	738.1	738.3
738.5	738.8	739.0	739.2	739.4	739.6	739.7	739.9	740.0	740.0
740.1	740.1	740.2	740.3	740.3	740.4	740.5	740.6	740.7	740.8
740.8	740.9	741.0	741.1	741.1	741.2	741.3	741.4	741.6	741.9

742.1	742.4	742.7	742.9	743.1	743.2	743.2	743.2	743.2	743.2
743.2	743.2	743.2	743.2	743.2	743.3	743.3	743.3	743.4	743.4
743.4	743.4	743.4	743.4	743.4	743.3	743.3	743.3	743.2	743.2
743.1	743.1	743.0	742.9	742.6	742.7	742.6	742.5	742.4	742.3
742.2	742.1	742.0	742.0	741.9	741.8	741.7	741.7	741.6	741.5
741.4	741.3	741.3	741.2	741.1	741.0	740.9	740.8	740.7	740.6
740.5	740.5	740.4	740.3	740.2	740.1	739.9	739.7	739.5	739.3
739.2	739.0	738.8	738.5	738.3	738.0	737.7	737.4	737.1	736.8
736.6	736.3	736.0	735.8	735.5	735.3	735.1	734.9	734.6	734.4
734.2	734.0	733.8	733.6	733.4	733.2	733.0	732.8	732.6	732.5
732.3	732.2	732.0	731.9	731.7	731.6	731.4	731.3	731.2	731.0

EAK OUTFLOW IS 15266. AT TIME 17.67 HOURS

CFS	15266.	10999.	3996.	3837.	1150965.
CMS	432.	311.	113.	109.	32592.
INCMES	21.31	20.97	30.97	30.97	786.56
MM	541.19	786.56	786.56	786.56	7927.
AC-FT	5454.	7927.	7927.	7927.	9778.
THOUS CU M	6727.	9778.	9778.	9778.	

HYDROGRAPH ROUTING

CHANNEL ROUTING TO HIGHWAY 63 EMBANKMENT

ISTAG	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
CHAN 6	1	0	0	0	0	1	0	0
ROUTING DATA								
GLOSS	CLOSS	AVG	IRES	ISAME	IOPT	IPMP	LSTR	
.0	.000	.00	1	1	0	0	0	
NSTPS	NSTOL	LAG	AMSKK	X	TSK	STORA	ISPRAT	
1	0	0	.000	.000	.000	0	0	

ORMAL DEPTH CHANNEL ROUTING

QN(1)	QN(2)	QN(3)	ELNVT	ELMAX	RLNTH	SEL
.0700	.0500	.0700	700.0	730.0	10400.	.00630

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

.00	730.00	40.00	720.00	100.00	710.00	280.00	700.00	360.00	700.00
560.00	710.00	760.00	720.00	920.00	730.00				

705.0	704.9	704.9	704.8	704.8	704.8	704.7	704.6	704.6	704.5	704.4
704.4	704.3	704.2	704.1	704.1	704.1	704.0	703.9	703.8	703.8	703.7
703.7	703.6	703.5	703.5	703.5	703.4	703.4	703.3	703.3	703.3	703.2
703.2	703.1	703.0	703.0	703.0	702.9	702.9	702.8	702.8	702.8	702.7
PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME CFS 15110. 10948. 3952. 3794. 1136134. CMS 428. 310. 112. 107. 32228. INCHES 21.21 30.62 30.62 30.62 MM 536.69 777.79 777.79 777.79 AC-FT 5429. 7838. 7838. 7838. THOUS CU M 6696. 9669. 9669. 9669.										

MAXIMUM STORAGE = 507.

MAXIMUM STAGE IS 708.6

SUB-AREA RUNOFF COMPUTATION

INFLOW TO HIGHWAY 63 EMBANKMENT

ISTAG	ICOMP	IECON	ITAPE	JPLT	JPRY	JNAME	ISTAGE	IAUTO
AREA 6	0	0	0	0	3	1	0	0

HYDROGRAPH DATA

INVDG	IUNG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	2	1.46	.00	1.46	1.00	.000	0	0	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
.00	24.80	101.00	120.00	130.00	.00	.00	.00

LOSS DATA

LROPT	SIRKR	RIIOL	ERAIN	STIKS	RIIOK	STRIL	ENSTL	ALSMX	RIIMP
0	.00	1.00	.00	.00	1.00	-1.00	-86.00	.00	.00

CURVE NO = -86.00 VEINNESS = -1.00 EFFECT CN = 86.00

UNIT HYDROGRAPH DATA

IC = .00 LAG = 1.19

RECESSION DATA

SIRI9 = .00 QRCSN = .00 RIIOK = 1.00

UNIT HYDROGRAPH 74 END OF PERIOD ORDINATES, TC = .00 HOURS, LAG = 1.19 VOL = 1.00										
12.	31.	59.	91.	135.	182.	244.	313.	385.	466.	466.
496.	535.	559.	569.	571.	567.	550.	525.	498.	468.	468.
435.	397.	352.	308.	269.	241.	215.	192.	172.	155.	155.
140.	126.	113.	102.	90.	80.	72.	65.	58.	52.	52.

NO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	NO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	0.5	1	.01	.00	.01	0.	1.01	12.35	151	.21	.20	.01	791.
1.01	1.0	2	.01	.00	.01	0.	1.01	12.40	152	.21	.20	.01	835.
1.01	1.5	3	.01	.00	.01	0.	1.01	12.45	153	.21	.20	.01	879.
1.01	2.0	4	.01	.00	.01	0.	1.01	12.50	154	.21	.20	.01	923.
1.01	2.5	5	.01	.00	.01	0.	1.01	12.55	155	.21	.20	.01	1020.
1.01	3.0	6	.01	.00	.01	0.	1.01	13.00	156	.21	.20	.01	1095.
1.01	3.5	7	.01	.00	.01	0.	1.01	13.05	157	.25	.24	.01	1174.
1.01	4.0	8	.01	.00	.01	0.	1.01	13.10	158	.25	.24	.01	1255.
1.01	4.5	9	.01	.00	.01	0.	1.01	13.15	159	.25	.24	.01	1337.
1.01	5.0	10	.01	.00	.01	0.	1.01	13.20	160	.25	.24	.01	1421.
1.01	5.5	11	.01	.00	.01	0.	1.01	13.25	161	.25	.24	.01	1504.
1.01	6.0	12	.01	.00	.01	0.	1.01	13.30	162	.25	.24	.01	1585.
1.01	6.5	13	.01	.00	.01	0.	1.01	13.35	163	.25	.25	.01	1666.
1.01	7.0	14	.01	.00	.01	0.	1.01	13.40	164	.25	.25	.01	1746.
1.01	7.5	15	.01	.00	.01	0.	1.01	13.45	165	.25	.25	.00	1824.
1.01	8.0	16	.01	.00	.01	0.	1.01	13.50	166	.25	.25	.00	1899.
1.01	8.5	17	.01	.00	.01	0.	1.01	13.55	167	.25	.25	.00	1970.
1.01	9.0	18	.01	.00	.01	0.	1.01	14.00	168	.25	.25	.00	2037.
1.01	9.5	19	.01	.00	.01	0.	1.01	14.05	169	.31	.31	.01	2101.
1.01	10.0	20	.01	.00	.01	0.	1.01	14.10	170	.31	.31	.00	2162.
1.01	10.5	21	.01	.00	.01	0.	1.01	14.15	171	.31	.31	.00	2221.
1.01	11.0	22	.01	.00	.01	0.	1.01	14.20	172	.31	.31	.00	2279.
1.01	11.5	23	.01	.00	.01	0.	1.01	14.25	173	.31	.31	.00	2336.
1.01	12.0	24	.01	.00	.01	0.	1.01	14.30	174	.31	.31	.00	2393.
1.01	12.5	25	.01	.00	.01	0.	1.01	14.35	175	.31	.31	.00	2450.
1.01	13.0	26	.01	.00	.01	0.	1.01	14.40	176	.31	.31	.00	2509.
1.01	13.5	27	.01	.00	.01	0.	1.01	14.45	177	.31	.31	.00	2569.
1.01	14.0	28	.01	.00	.01	0.	1.01	14.50	178	.31	.31	.00	2629.
1.01	14.5	29	.01	.00	.01	0.	1.01	14.55	179	.31	.31	.00	2689.
1.01	15.0	30	.01	.00	.01	0.	1.01	15.00	180	.31	.31	.00	2748.
1.01	15.5	31	.01	.00	.01	0.	1.01	15.05	181	.19	.19	.00	2805.
1.01	16.0	32	.01	.00	.01	1.	1.01	15.10	182	.38	.38	.00	2859.
1.01	16.5	33	.01	.00	.01	1.	1.01	15.15	183	.38	.38	.00	2913.
1.01	17.0	34	.01	.00	.01	1.	1.01	15.20	184	.57	.57	.00	2967.
1.01	17.5	35	.01	.00	.01	2.	1.01	15.25	185	.67	.66	.01	3025.
1.01	18.0	36	.01	.00	.01	2.	1.01	15.30	186	1.02	1.01	.01	3100.
1.01	18.5	37	.01	.00	.01	3.	1.01	15.35	187	2.67	2.65	.02	3213.
1.01	19.0	38	.01	.00	.01	4.	1.01	15.40	188	1.05	1.04	.01	3365.
1.01	19.5	39	.01	.00	.01	5.	1.01	15.45	189	.07	.66	.00	3557.
1.01	20.0	40	.01	.00	.01	6.	1.01	15.50	190	.57	.57	.00	3790.
1.01	20.5	41	.01	.00	.01	7.	1.01	15.55	191	.38	.38	.00	4062.
1.01	21.0	42	.01	.00	.01	8.	1.01	16.00	192	.38	.38	.00	4377.
1.01	21.5	43	.01	.00	.01	10.	1.01	16.05	193	.29	.29	.00	4741.
1.01	22.0	44	.01	.00	.01	11.	1.01	16.10	194	.29	.29	.00	5130.
1.01	22.5	45	.01	.00	.01	13.	1.01	16.15	195	.29	.29	.00	5516.
1.01	23.0	46	.01	.00	.01	14.	1.01	16.20	196	.29	.29	.00	5860.
1.01	23.5	47	.01	.00	.01	16.	1.01	16.25	197	.29	.29	.00	6148.
1.01	24.0	48	.01	.00	.01	17.	1.01	16.30	198	.29	.29	.00	6372.

1.01	4.05	49	.01	.00	.01	.01	.00	.01	19.	1.01	16.35	199	.29	.29	.00	6520.
1.01	4.10	50	.01	.00	.01	.01	.00	.01	21.	1.01	16.40	200	.29	.29	.00	6599.
1.01	4.15	51	.01	.00	.01	.01	.00	.01	22.	1.01	16.45	201	.29	.29	.00	6624.
1.01	4.20	52	.01	.00	.01	.01	.00	.01	24.	1.01	16.50	202	.29	.29	.00	6595.
1.01	4.25	53	.01	.00	.01	.01	.00	.01	26.	1.01	16.55	203	.29	.29	.00	6509.
1.01	4.30	54	.01	.00	.01	.01	.00	.01	27.	1.01	17.00	204	.29	.29	.00	6384.
1.01	4.35	55	.01	.01	.01	.01	.01	.01	29.	1.01	17.05	205	.23	.23	.00	6231.
1.01	4.40	56	.01	.01	.01	.01	.01	.01	31.	1.01	17.10	206	.23	.23	.00	6051.
1.01	4.45	57	.01	.01	.01	.01	.01	.01	33.	1.01	17.15	207	.23	.23	.00	5847.
1.01	4.50	58	.01	.01	.01	.01	.01	.01	34.	1.01	17.20	208	.23	.23	.00	5616.
1.01	4.55	59	.01	.01	.01	.01	.01	.01	36.	1.01	17.25	209	.23	.23	.00	5367.
1.01	5.00	60	.01	.01	.01	.01	.01	.01	37.	1.01	17.30	210	.23	.23	.00	5120.
1.01	5.05	61	.01	.01	.01	.01	.01	.01	39.	1.01	17.35	211	.23	.23	.00	4893.
1.01	5.10	62	.01	.01	.01	.01	.01	.01	41.	1.01	17.40	212	.23	.23	.00	4693.
1.01	5.15	63	.01	.01	.01	.01	.01	.01	42.	1.01	17.45	213	.23	.23	.00	4509.
1.01	5.20	64	.01	.01	.01	.01	.01	.01	44.	1.01	17.50	214	.23	.23	.00	4341.
1.01	5.25	65	.01	.01	.01	.01	.01	.01	45.	1.01	17.55	215	.23	.23	.00	4189.
1.01	5.30	66	.01	.01	.01	.01	.01	.01	47.	1.01	18.00	216	.23	.23	.00	4050.
1.01	5.35	67	.01	.01	.01	.01	.01	.01	48.	1.01	18.05	217	.02	.02	.00	3921.
1.01	5.40	68	.01	.01	.01	.01	.01	.01	50.	1.01	18.10	218	.02	.02	.00	3794.
1.01	5.45	69	.01	.01	.01	.01	.01	.01	51.	1.01	18.15	219	.02	.02	.00	3668.
1.01	5.50	70	.01	.01	.01	.01	.01	.01	52.	1.01	18.20	220	.02	.02	.00	3543.
1.01	5.55	71	.01	.01	.01	.01	.01	.01	54.	1.01	18.25	221	.02	.02	.00	3415.
1.01	6.00	72	.01	.01	.01	.01	.01	.01	55.	1.01	18.30	222	.02	.02	.00	3287.
1.01	6.05	73	.07	.03	.03	.03	.03	.03	57.	1.01	18.35	223	.02	.02	.00	3155.
1.01	6.10	74	.07	.04	.04	.04	.04	.04	59.	1.01	18.40	224	.02	.02	.00	3015.
1.01	6.15	75	.07	.04	.04	.04	.04	.04	62.	1.01	18.45	225	.02	.02	.00	2867.
1.01	6.20	76	.07	.04	.04	.04	.04	.04	66.	1.01	18.50	226	.02	.02	.00	2712.
1.01	6.25	77	.07	.04	.04	.04	.04	.04	71.	1.01	18.55	227	.02	.02	.00	2553.
1.01	6.30	78	.07	.04	.04	.04	.04	.04	77.	1.01	19.00	228	.02	.02	.00	2393.
1.01	6.35	79	.07	.04	.04	.04	.04	.04	86.	1.01	19.05	229	.02	.02	.00	2233.
1.01	6.40	80	.07	.04	.04	.04	.04	.04	96.	1.01	19.10	230	.02	.02	.00	2075.
1.01	6.45	81	.07	.04	.04	.04	.04	.04	109.	1.01	19.15	231	.02	.02	.00	1922.
1.01	6.50	82	.07	.05	.05	.05	.05	.05	124.	1.01	19.20	232	.02	.02	.00	1773.
1.01	6.55	83	.07	.05	.05	.05	.05	.05	141.	1.01	19.25	233	.02	.02	.00	1631.
1.01	7.00	84	.07	.05	.05	.05	.05	.05	160.	1.01	19.30	234	.02	.02	.00	1497.
1.01	7.05	85	.07	.05	.05	.05	.05	.05	179.	1.01	19.35	235	.02	.02	.00	1371.
1.01	7.10	86	.07	.05	.05	.05	.05	.05	200.	1.01	19.40	236	.02	.02	.00	1253.
1.01	7.15	87	.07	.05	.05	.05	.05	.05	221.	1.01	19.45	237	.02	.02	.00	1145.
1.01	7.20	88	.07	.05	.05	.05	.05	.05	243.	1.01	19.50	238	.02	.02	.00	1046.
1.01	7.25	89	.07	.05	.05	.05	.05	.05	265.	1.01	19.55	239	.02	.02	.00	958.
1.01	7.30	90	.07	.05	.05	.05	.05	.05	286.	1.01	20.00	240	.02	.02	.00	881.
1.01	7.35	91	.07	.05	.05	.05	.05	.05	307.	1.01	20.05	241	.02	.02	.00	813.
1.01	7.40	92	.07	.05	.05	.05	.05	.05	328.	1.01	20.10	242	.02	.02	.00	753.
1.01	7.45	93	.07	.05	.05	.05	.05	.05	348.	1.01	20.15	243	.02	.02	.00	699.
1.01	7.50	94	.07	.05	.05	.05	.05	.05	367.	1.01	20.20	244	.02	.02	.00	650.
1.01	7.55	95	.07	.05	.05	.05	.05	.05	385.	1.01	20.25	245	.02	.02	.00	607.
1.01	8.00	96	.07	.05	.05	.05	.05	.05	402.	1.01	20.30	246	.02	.02	.00	569.
1.01	8.05	97	.07	.05	.05	.05	.05	.05	418.	1.01	20.35	247	.02	.02	.00	534.
1.01	8.10	98	.07	.05	.05	.05	.05	.05	432.	1.01	20.40	248	.02	.02	.00	503.
1.01	8.15	99	.07	.05	.05	.05	.05	.05	446.	1.01	20.45	249	.02	.02	.00	475.
1.01	8.20	100	.07	.06	.06	.06	.06	.06	460.	1.01	20.50	250	.02	.02	.00	449.
1.01	8.25	101	.07	.06	.06	.06	.06	.06	472.	1.01	20.55	251	.02	.02	.00	426.
1.01	8.30	102	.07	.06	.06	.06	.06	.06	484.	1.01	21.00	252	.02	.02	.00	405.
1.01	8.35	103	.07	.06	.06	.06	.06	.06	495.	1.01	21.05	253	.02	.02	.00	386.
1.01	8.40	104	.07	.06	.06	.06	.06	.06	506.	1.01	21.10	254	.02	.02	.00	369.

1.01	8.45	105	.07	.06	.01	516.	1.01	21.15	255	.02	.02	.00	354.
1.01	8.50	106	.07	.06	.01	525.	1.01	21.20	256	.02	.02	.00	340.
1.01	8.55	107	.07	.06	.01	534.	1.01	21.25	257	.02	.02	.00	327.
1.01	9.00	108	.07	.06	.01	543.	1.01	21.30	258	.02	.02	.00	315.
1.01	9.05	109	.07	.06	.01	551.	1.01	21.35	259	.02	.02	.00	305.
1.01	9.10	110	.07	.06	.01	558.	1.01	21.40	260	.02	.02	.00	296.
1.01	9.15	111	.07	.06	.01	566.	1.01	21.45	261	.02	.02	.00	288.
1.01	9.20	112	.07	.06	.01	572.	1.01	21.50	262	.02	.02	.00	282.
1.01	9.25	113	.07	.06	.01	579.	1.01	21.55	263	.02	.02	.00	276.
1.01	9.30	114	.07	.06	.01	585.	1.01	22.00	264	.02	.02	.00	271.
1.01	9.35	115	.07	.06	.01	591.	1.01	22.05	265	.02	.02	.00	265.
1.01	9.40	116	.07	.06	.01	596.	1.01	22.10	266	.02	.02	.00	263.
1.01	9.45	117	.07	.06	.01	601.	1.01	22.15	267	.02	.02	.00	260.
1.01	9.50	118	.07	.06	.01	606.	1.01	22.20	268	.02	.02	.00	256.
1.01	9.55	119	.07	.06	.01	611.	1.01	22.25	269	.02	.02	.00	254.
1.01	10.00	120	.07	.06	.01	615.	1.01	22.30	270	.02	.02	.00	251.
1.01	10.05	121	.07	.06	.01	620.	1.01	22.35	271	.02	.02	.00	249.
1.01	10.10	122	.07	.06	.01	624.	1.01	22.40	272	.02	.02	.00	247.
1.01	10.15	123	.07	.06	.01	628.	1.01	22.45	273	.02	.02	.00	245.
1.01	10.20	124	.07	.06	.01	631.	1.01	22.50	274	.02	.02	.00	244.
1.01	10.25	125	.07	.06	.01	635.	1.01	22.55	275	.02	.02	.00	242.
1.01	10.30	126	.07	.06	.01	638.	1.01	23.00	276	.02	.02	.00	241.
1.01	10.35	127	.07	.06	.01	641.	1.01	23.05	277	.02	.02	.00	240.
1.01	10.40	128	.07	.06	.00	644.	1.01	23.10	278	.02	.02	.00	239.
1.01	10.45	129	.07	.06	.00	647.	1.01	23.15	279	.02	.02	.00	238.
1.01	10.50	130	.07	.06	.00	650.	1.01	23.20	280	.02	.02	.00	237.
1.01	10.55	131	.07	.06	.00	653.	1.01	23.25	281	.02	.02	.00	236.
1.01	11.00	132	.07	.06	.00	655.	1.01	23.30	282	.02	.02	.00	235.
1.01	11.05	133	.07	.06	.00	657.	1.01	23.35	283	.02	.02	.00	235.
1.01	11.10	134	.07	.06	.00	660.	1.01	23.40	284	.02	.02	.00	234.
1.01	11.15	135	.07	.06	.00	662.	1.01	23.45	285	.02	.02	.00	234.
1.01	11.20	136	.07	.06	.00	664.	1.01	23.50	286	.02	.02	.00	234.
1.01	11.25	137	.07	.06	.00	666.	1.01	23.55	287	.02	.02	.00	233.
1.01	11.30	138	.07	.06	.00	668.	1.02	.00	288	.02	.02	.00	233.
1.01	11.35	139	.07	.06	.00	670.	1.02	.05	289	.00	.00	.00	233.
1.01	11.40	140	.07	.06	.00	672.	1.02	.10	290	.00	.00	.00	232.
1.01	11.45	141	.07	.06	.00	674.	1.02	.15	291	.00	.00	.00	231.
1.01	11.50	142	.07	.06	.00	675.	1.02	.20	292	.00	.00	.00	229.
1.01	11.55	143	.07	.06	.00	677.	1.02	.25	293	.00	.00	.00	226.
1.01	12.00	144	.07	.06	.00	678.	1.02	.30	294	.00	.00	.00	223.
1.01	12.05	145	.21	.20	.01	681.	1.02	.35	295	.00	.00	.00	218.
1.01	12.10	146	.21	.20	.01	687.	1.02	.40	296	.00	.00	.00	211.
1.01	12.15	147	.21	.20	.01	696.	1.02	.45	297	.00	.00	.00	203.
1.01	12.20	148	.21	.20	.01	710.	1.02	.50	298	.00	.00	.00	194.
1.01	12.25	149	.21	.20	.01	730.	1.02	.55	299	.00	.00	.00	184.
1.01	12.30	150	.21	.20	.01	756.	1.02	1.00	300	.00	.00	.00	173.

SUM 32.24 30.37 1.87 341706.
(819.) (771.) (48.) (9676.04)

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
6624.	3602.	1186.	1139.	341620.
188.	104.	34.	32.	9674.
CFS				
CM5				
INCHES	23.32	30.21	30.21	30.21
MM	592.23	767.34	767.34	767.34
AC-FT	1816.	2353.	2353.	2353.

THOUS CU M 2240. 2902. 2902. 2902.

HYDROGRAPH AT STAAREA 6 FOR PLAN 1, RTIO 1

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	66.	37.	12.	11.	3416.
CMS	2.	1.	0.	0.	97.
INCHES		.23	.30	.30	.30
MM		5.92	7.67	7.67	7.67
AC-FT		18.	24.	24.	24.
THOUS CU M		22.	29.	29.	29.

HYDROGRAPH AT STAAREA 6 FOR PLAN 1, RTIO 2

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	132.	73.	24.	23.	6632.
CMS	4.	2.	1.	1.	193.
INCHES		.47	.60	.60	.60
MM		11.84	15.35	15.35	15.35
AC-FT		36.	47.	47.	47.
THOUS CU M		45.	58.	58.	58.

HYDROGRAPH AT STAAREA 6 FOR PLAN 1, RTIO 3

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	199.	110.	36.	34.	10249.
CMS	6.	3.	1.	1.	290.
INCHES		.70	.91	.91	.91
MM		17.77	23.02	23.02	23.02
AC-FT		54.	71.	71.	71.
THOUS CU M		67.	87.	87.	87.

HYDROGRAPH AT STAAREA 6 FOR PLAN 1, RTIO 4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	265.	146.	47.	46.	13665.
CMS	8.	4.	1.	1.	387.
INCHES		.93	1.21	1.21	1.21
MM		23.69	30.69	30.69	30.69
AC-FT		73.	94.	94.	94.
THOUS CU M		90.	116.	116.	116.

HYDROGRAPH AT STAAREA 6 FOR PLAN 1, RTIO 5

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	331.	183.	59.	57.	17041.

CMS	9.	5.	2.	2.	484.
INCHES	1.17	1.51	1.51	1.51	1.51
MM	29.61	38.37	38.37	38.37	38.37
AC-FT	91.	118.	118.	118.	118.
THOUS CU M	112.	145.	145.	145.	145.

HYDROGRAPH AT STAAREA 6 FOR PLAN 1, RTIO 6

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
3312.	1231.	593.	569.	170810.
CFS	94.	52.	16.	4837.
INCHES	11.66	15.11	15.11	15.11
MM	296.12	383.67	383.67	383.67
AC-FT	908.	1176.	1176.	1176.
THOUS CU M	1120.	1451.	1451.	1451.

HYDROGRAPH AT STAAREA 6 FOR PLAN 1, RTIO 7

PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
6624.	3662.	1186.	1139.	341620.
CFS	186.	104.	34.	9674.
INCHES	23.32	30.21	30.21	30.21
MM	592.23	767.34	767.34	767.34
AC-FT	1816.	2353.	2353.	2353.
THOUS CU M	2240.	2902.	2902.	2902.

***** COBINE HYDROGRAPHS *****

COBINE HYDROGRAPHS-TOTAL INFLOW TO HWY 63(OUTFLOW FROM HWY 63 & AREA 6)

ISTAG	ICOMP	IECON	ITAPE	JPLT	JPRY	INAME	ISTAGE	IAUTO
6	2	0	0	0	0	1	0	0

SUM OF 2 HYDROGRAPHS AT 6 PLAN 1 RTIO 1

0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	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.	2.	2.	2.	2.	2.	3.	3.	4.
4.	4.	5.	5.	5.	5.	6.	6.	6.
6.	6.	7.	7.	7.	7.	8.	8.	8.

149.	148.	149.	149.	149.	150.	150.	150.
151.	152.	152.	152.	152.	153.	153.	153.
153.	153.	153.	153.	152.	152.	151.	151.
150.	149.	149.	148.	146.	145.	143.	143.
142.	140.	139.	138.	136.	135.	133.	131.
130.	128.	125.	124.	122.	121.	119.	116.
PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME							
CFS	214.	170.	74.	71.	21263.		
CMS	6.	5.	2.	2.	602.		
INCHES		.25	.44	.44	.44		
MM		6.43	11.14	11.14	11.14		
AC-FT		84.	146.	146.	146.		
THOUS CU M		104.	181.	181.	181.		

SUM OF 2 HYDROGRAPHS AT 6 PLAN 1 RTIO 3									
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	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.
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.
2.	2.	3.	3.	3.	3.	3.	3.	3.	4.
4.	5.	6.	7.	8.	9.	10.	10.	11.	11.
11.	12.	13.	14.	15.	16.	17.	17.	18.	18.
19.	20.	20.	21.	21.	22.	22.	23.	23.	23.
24.	25.	25.	26.	26.	27.	27.	27.	28.	28.
28.	29.	29.	30.	30.	30.	31.	31.	31.	31.
32.	32.	33.	33.	32.	34.	34.	34.	35.	35.
35.	35.	36.	36.	37.	36.	37.	38.	40.	40.
41.	43.	45.	47.	50.	52.	55.	58.	62.	65.
68.	72.	75.	79.	82.	86.	90.	93.	97.	100.
104.	107.	111.	114.	117.	121.	125.	128.	132.	135.
139.	143.	146.	150.	153.	157.	163.	169.	177.	187.
198.	211.	227.	244.	262.	279.	295.	308.	319.	328.
335.	339.	341.	341.	340.	338.	335.	330.	325.	319.
314.	310.	306.	303.	300.	298.	296.	294.	292.	291.
289.	286.	286.	285.	283.	281.	279.	277.	275.	273.
271.	270.	268.	267.	266.	266.	265.	265.	265.	265.
265.	266.	266.	266.	266.	267.	267.	267.	266.	266.
266.	265.	264.	263.	262.	261.	260.	258.	257.	255.
254.	252.	248.	246.	244.	242.	240.	238.	236.	233.
234.	231.	229.	227.	226.	222.	220.	217.	215.	213.
210.	208.	205.	203.	200.	198.	195.	193.	190.	188.
185.	183.	180.	178.	175.	172.	170.	167.	164.	161.

PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME							
CFS	341.	283.	118.	113.	33998.		
CMS	10.	8.	3.	3.	963.		
INCHES		.42	.70	.70	.70		
MM		10.68	17.81	17.81	17.81		
AC-FT		140.	234.	234.	234.		

FLOOD HYDROGRAPH PACKAGE - HEC-1

	10015.	10020.	9976.	9899.	9801.	9690.	9573.	9452.	9333.	9227.
	5142.	9061.	9035.	9002.	8979.	8962.	8948.	8930.	8906.	8873.
	8828.	8769.	8692.	8593.	8473.	8334.	8176.	8003.	7618.	7625.
	7427.	7225.	7024.	6825.	6629.	6438.	6254.	6076.	5906.	5744.
	5584.	5417.	5247.	5080.	4919.	4766.	4622.	4486.	4359.	4247.
	4156.	4072.	3990.	3901.	3804.	3707.	3605.	3500.	3394.	3286.
	3179.	3072.	2965.	2862.	2764.	2671.	2580.	2493.	2408.	2325.
	2245.	2167.	2091.	2017.	1945.	1880.	1826.	1773.	1720.	1667.
	1615.	1565.	1515.	1467.	1420.	1374.	1330.	1288.	1246.	1204.
	1158.	1111.	1064.	1018.	972.	928.	885.	843.	803.	764.

SUM OF 2 HYDROGRAPHS AT 6 PLAN 1 JUL 7

SUR OF 2 HYDROGRAPHS AT										PLAN 1		PLAN 2		PLAN 3		PLAN 4		PLAN 5		PLAN 6		PLAN 7		PLAN 8		PLAN 9		PLAN 10		PLAN 11		PLAN 12		PLAN 13		PLAN 14		PLAN 15		PLAN 16		PLAN 17		PLAN 18		PLAN 19		PLAN 20		PLAN 21		PLAN 22		PLAN 23		PLAN 24		PLAN 25		PLAN 26		PLAN 27		PLAN 28		PLAN 29		PLAN 30		PLAN 31		PLAN 32		PLAN 33		PLAN 34		PLAN 35		PLAN 36		PLAN 37		PLAN 38		PLAN 39		PLAN 40		PLAN 41		PLAN 42		PLAN 43		PLAN 44		PLAN 45		PLAN 46		PLAN 47		PLAN 48		PLAN 49		PLAN 50		PLAN 51		PLAN 52		PLAN 53		PLAN 54		PLAN 55		PLAN 56		PLAN 57		PLAN 58		PLAN 59		PLAN 60		PLAN 61		PLAN 62		PLAN 63		PLAN 64		PLAN 65		PLAN 66		PLAN 67		PLAN 68		PLAN 69		PLAN 70		PLAN 71		PLAN 72		PLAN 73		PLAN 74		PLAN 75		PLAN 76		PLAN 77		PLAN 78		PLAN 79		PLAN 80		PLAN 81		PLAN 82		PLAN 83		PLAN 84		PLAN 85		PLAN 86		PLAN 87		PLAN 88		PLAN 89		PLAN 90		PLAN 91		PLAN 92		PLAN 93		PLAN 94		PLAN 95		PLAN 96		PLAN 97		PLAN 98		PLAN 99		PLAN 100		PLAN 101		PLAN 102		PLAN 103		PLAN 104		PLAN 105		PLAN 106		PLAN 107		PLAN 108		PLAN 109		PLAN 110		PLAN 111		PLAN 112		PLAN 113		PLAN 114		PLAN 115		PLAN 116		PLAN 117		PLAN 118		PLAN 119		PLAN 120		PLAN 121		PLAN 122		PLAN 123		PLAN 124		PLAN 125		PLAN 126		PLAN 127		PLAN 128		PLAN 129		PLAN 130		PLAN 131		PLAN 132		PLAN 133		PLAN 134		PLAN 135		PLAN 136		PLAN 137		PLAN 138		PLAN 139		PLAN 140		PLAN 141		PLAN 142		PLAN 143		PLAN 144		PLAN 145		PLAN 146		PLAN 147		PLAN 148		PLAN 149		PLAN 150		PLAN 151		PLAN 152		PLAN 153		PLAN 154		PLAN 155		PLAN 156		PLAN 157		PLAN 158		PLAN 159		PLAN 160		PLAN 161		PLAN 162		PLAN 163		PLAN 164		PLAN 165		PLAN 166		PLAN 167		PLAN 168		PLAN 169		PLAN 170		PLAN 171		PLAN 172		PLAN 173		PLAN 174		PLAN 175		PLAN 176		PLAN 177		PLAN 178		PLAN 179		PLAN 180		PLAN 181		PLAN 182		PLAN 183		PLAN 184		PLAN 185		PLAN 186		PLAN 187		PLAN 188		PLAN 189		PLAN 190		PLAN 191		PLAN 192		PLAN 193		PLAN 194		PLAN 195		PLAN 196		PLAN 197		PLAN 198		PLAN 199		PLAN 200		PLAN 201		PLAN 202		PLAN 203		PLAN 204		PLAN 205		PLAN 206		PLAN 207		PLAN 208		PLAN 209		PLAN 210		PLAN 211		PLAN 212		PLAN 213		PLAN 214		PLAN 215		PLAN 216		PLAN 217		PLAN 218		PLAN 219		PLAN 220		PLAN 221		PLAN 222		PLAN 223		PLAN 224		PLAN 225		PLAN 226		PLAN 227		PLAN 228		PLAN 229		PLAN 230		PLAN 231		PLAN 232		PLAN 233		PLAN 234		PLAN 235		PLAN 236		PLAN 237		PLAN 238		PLAN 239		PLAN 240		PLAN 241		PLAN 242		PLAN 243		PLAN 244		PLAN 245		PLAN 246		PLAN 247		PLAN 248		PLAN 249		PLAN 250		PLAN 251		PLAN 252		PLAN 253		PLAN 254		PLAN 255		PLAN 256		PLAN 257		PLAN 258		PLAN 259		PLAN 260		PLAN 261		PLAN 262		PLAN 263		PLAN 264		PLAN 265		PLAN 266		PLAN 267		PLAN 268		PLAN 269		PLAN 270		PLAN 271		PLAN 272		PLAN 273		PLAN 274		PLAN 275		PLAN 276		PLAN 277		PLAN 278		PLAN 279		PLAN 280		PLAN 281		PLAN 282		PLAN 283		PLAN 284		PLAN 285		PLAN 286		PLAN 287		PLAN 288		PLAN 289		PLAN 290		PLAN 291		PLAN 292		PLAN 293		PLAN 294		PLAN 295		PLAN 296		PLAN 297		PLAN 298		PLAN 299		PLAN 300		PLAN 301		PLAN 302		PLAN 303		PLAN 304		PLAN 305		PLAN 306		PLAN 307		PLAN 308		PLAN 309		PLAN 310		PLAN 311		PLAN 312		PLAN 313		PLAN 314		PLAN 315		PLAN 316		PLAN 317		PLAN 318		PLAN 319		PLAN 320		PLAN 321		PLAN 322		PLAN 323		PLAN 324		PLAN 325		PLAN 326		PLAN 327		PLAN 328		PLAN 329		PLAN 330		PLAN 331		PLAN 332		PLAN 333		PLAN 334		PLAN 335		PLAN 336		PLAN 337		PLAN 338		PLAN 339		PLAN 340		PLAN 341		PLAN 342		PLAN 343		PLAN 344		PLAN 345		PLAN 346		PLAN 347		PLAN 348		PLAN 349		PLAN 350		PLAN 351		PLAN 352		PLAN 353		PLAN 354		PLAN 355		PLAN 356		PLAN 357		PLAN 358		PLAN 359		PLAN 360		PLAN 361		PLAN 362		PLAN 363		PLAN 364		PLAN 365		PLAN 366		PLAN 367		PLAN 368		PLAN 369		PLAN 370		PLAN 371		PLAN 372		PLAN 373		PLAN 374		PLAN 375		PLAN 376		PLAN 377		PLAN 378		PLAN 379		PLAN 380		PLAN 381		PLAN 382		PLAN 383		PLAN 384		PLAN 385		PLAN 386		PLAN 387		PLAN 388		PLAN 389		PLAN 390		PLAN 391		PLAN 392		PLAN 393		PLAN 394		PLAN 395		PLAN 396		PLAN 397		PLAN 398		PLAN 399		PLAN 400		PLAN 401		PLAN 402		PLAN 403		PLAN 404		PLAN 405		PLAN 406		PLAN 407		PLAN 408		PLAN 409		PLAN 410		PLAN 411		PLAN 412		PLAN 413		PLAN 414		PLAN 415		PLAN 416		PLAN 417		PLAN 418		PLAN 419		PLAN 420		PLAN 421		PLAN 422		PLAN 423		PLAN 424		PLAN 425		PLAN 426		PLAN 427		PLAN 428		PLAN 429		PLAN 430		PLAN 431		PLAN 432		PLAN 433		PLAN 434		PLAN 435		PLAN 436		PLAN 437		PLAN 438		PLAN 439		PLAN 440		PLAN 441		PLAN 442		PLAN 443		PLAN 444		PLAN 445		PLAN 446		PLAN 447		PLAN 448		PLAN 449		PLAN 450		PLAN 451		PLAN 452		PLAN 453		PLAN 454		PLAN 455		PLAN 456		PLAN 457		PLAN 458		PLAN 459		PLAN 460		PLAN 461		PLAN 462		PLAN 463		PLAN 464		PLAN 465		PLAN 466		PLAN 467		PLAN 468		PLAN 469		PLAN 470		PLAN 471		PLAN 472		PLAN 473		PLAN 474		PLAN 475		PLAN 476		PLAN 477		PLAN 478		PLAN 479		PLAN 480		PLAN 481		PLAN 482		PLAN 483		PLAN 484		PLAN 485		PLAN 486		PLAN 487		PLAN 488		PLAN 489		PLAN 490		PLAN 491		PLAN 492		PLAN 493		PLAN 494		PLAN 495		PLAN 496		PLAN 497		PLAN 498		PLAN 499		PLAN 500		PLAN 501		PLAN 502		PLAN 503		PLAN 504		PLAN 505		PLAN 506		PLAN 507		PLAN 508		PLAN 509		PLAN 510		PLAN 511		PLAN 512		PLAN 513		PLAN 514		PLAN 515		PLAN 516		PLAN 517		PLAN 518		PLAN 519		PLAN 520		PLAN 521		PLAN 522		PLAN 523		PLAN 524		PLAN 525		PLAN 526		PLAN 527		PLAN 528		PLAN 529		PLAN 530		PLAN 531		PLAN 532		PLAN 533		PLAN 534		PLAN 535		PLAN 536		PLAN 537		PLAN 538		PLAN 539		PLAN 540		PLAN 541		PLAN 542		PLAN 543		PLAN 544		PLAN 545		PLAN 546		PLAN 547		PLAN 548		PLAN 549		PLAN 550		PLAN 551		PLAN 552		PLAN 553		PLAN 554		PLAN 555		PLAN 556		PLAN 557		PLAN 558		PLAN 559		PLAN 560		PLAN 561		PLAN 562		PLAN 563		PLAN 564		PLAN 565		PLAN 566		PLAN 567		PLAN 568		PLAN 569		PLAN 570		PLAN 571		PLAN 572		PLAN 573		PLAN 574		PLAN 575		PLAN 576		PLAN 577		PLAN 578		PLAN 579		PLAN 580		PLAN 581		PLAN 582		PLAN 583		PLAN 584		PLAN 585		PLAN 586		PLAN 587		PLAN 588		PLAN 589		PLAN 590		PLAN 591		PLAN 592		PLAN 593		PLAN 594		PLAN 595		PLAN 596		PLAN 597		PLAN 598		PLAN 599		PLAN 600		PLAN 601		PLAN 602		PLAN 603		PLAN 604		PLAN 605		PLAN 606		PLAN 607		PLAN 608		PLAN 609		PLAN 610		PLAN 611		PLAN 612		PLAN 613		PLAN 614		PLAN 615		PLAN 616		PLAN 617		PLAN 618		PLAN 619		PLAN 620		PLAN 621		PLAN 622		PLAN 623		PLAN 624		PLAN 625		PLAN 626		PLAN 627		PLAN 628		PLAN 629		PLAN 630		PLAN 631		PLAN 632		PLAN 633		PLAN 634		PLAN 635		PLAN 636		PLAN 637		PLAN 638		PLAN 639		PLAN 640		PLAN 641		PLAN 642		PLAN 643		PLAN 644		PLAN 645		PLAN 646		PLAN 647		PLAN 648		PLAN 649		PLAN 650		PLAN 651		PLAN 652		PLAN 653		PLAN 654		PLAN 655		PLAN 656		PLAN 657		PLAN 658		PLAN 659		PLAN 660		PLAN 661		PLAN 662		PLAN 663		PLAN 664		PLAN 665		PLAN 666		PLAN 667		PLAN 668		PLAN 669		PLAN 670		PLAN 671		PLAN 672		PLAN 673		PLAN 674		PLAN 675		PLAN 676		PLAN 677		PLAN 678		PLAN 679		PLAN 680		PLAN 681		PLAN 682		PLAN 683		PLAN 684		PLAN 685		PLAN 686		PLAN 687		PLAN 688		PLAN 689		PLAN 690		PLAN 691		PLAN 692		PLAN 693		PLAN 694		PLAN 695		PLAN 696		PLAN 697		PLAN 698		PLAN 699		PLAN 700		PLAN 701		PLAN 702		PLAN 703		PLAN 704		PLAN 705		PLAN 706		PLAN 707		PLAN 708		PLAN 709		PLAN 710		PLAN 711		PLAN 712		PLAN 713		PLAN 714		PLAN 715		PLAN 716		PLAN 717		PLAN 718		PLAN 719		PLAN 720		PLAN 721		PLAN 722		PLAN 723		PLAN 724		PLAN 725		PLAN 726		PLAN 727		PLAN 728		PLAN 729		PLAN 730		PLAN 731		PLAN 732		PLAN 733		PLAN 734		PLAN 735		PLAN 736		PLAN 737		PLAN 738		PLAN 739		PLAN 740		PLAN 741		PLAN 742		PLAN 743		PLAN 744		PLAN 745		PLAN 746		PLAN 747		PLAN 748		PLAN 749		PLAN 750		PLAN 751		PLAN 752		PLAN 753		PLAN 754		PLAN 755		PLAN 756		PLAN 757		PLAN 758		PLAN 759		PLAN 760		PLAN 761		PLAN 762		PLAN 763		PLAN 764		PLAN 765		PLAN 766		PLAN 767		PLAN 768		PLAN 769		PLAN 770		PLAN 771		PLAN 772		PLAN 773		PLAN 774		PLAN 775		PLAN 776		PLAN 777		PLAN 778		PLAN 779		PLAN 780		PLAN 781		PLAN 782		PLAN 783		PLAN 784		PLAN 785		PLAN 786		PLAN 787		PLAN 788		PLAN 789		PLAN 790		PLAN 791		PLAN 792		PLAN 793		PLAN 794		PLAN 795		PLAN 796		PLAN 797		PLAN 798		PLAN 799		PLAN 800		PLAN 801		PLAN 802		PLAN 803		PLAN 804		PLAN 805		PLAN 806		PLAN 807		PLAN 808		PLAN 809		PLAN 810		PLAN 811		PLAN 812		PLAN 813		PLAN 814		PLAN 815		PLAN 816		PLAN 817		PLAN 818		PLAN 819		PLAN 820		PLAN 821		PLAN 822		PLAN 823		PLAN 824		PLAN 825		PLAN 826		PLAN 827		PLAN 828		PLAN 829		PLAN 830		PLAN 831		PLAN 832		PLAN 833		PLAN 834		PLAN 835		PLAN 836		PLAN 837		PLAN 838		PLAN 839		PLAN 840		PLAN 841		PLAN 842		PLAN 843		PLAN 844		PLAN 845		PLAN 846		PLAN 847		PLAN 848		PLAN 849		PLAN 850		PLAN 851		PLAN 852		PLAN 853		PLAN 854		PLAN 855		PLAN 856		PLAN 857		PLAN 858		PLAN 859		PLAN 860		PLAN 861		PLAN 862		PLAN 863		PLAN 864		PLAN 865		PLAN 866		PLAN 867		PLAN 868		PLAN 869		PLAN 870		PLAN 871		PLAN 872		PLAN 873		PLAN 874		PLAN 875		PLAN 876		PLAN 877		PLAN 878		PLAN 879		PLAN 880		PLAN 881		PLAN 882		PLAN 883		PLAN 884		PLAN 885		PLAN 886		PLAN 887		PLAN 888		PLAN 889		PLAN 890		PLAN 891		PLAN 892		PLAN 893		PLAN 894		PLAN 895		PLAN 896		PLAN 897		PLAN 898		PLAN 899		PLAN 900		PLAN 901		PLAN 902		PLAN 903		PLAN 904		PLAN 905		PLAN 906		PLAN 907		PLAN 908		PLAN 909		PLAN 910		PLAN 911		PLAN 912		PLAN 913		PLAN 914		PLAN 915		PLAN 916		PLAN 917		PLAN 918		PLAN 919		PLAN 920		PLAN 921		PLAN 922		PLAN 923		PLAN 924		PLAN 925		PLAN 926		PLAN 927		PLAN 928		PLAN 929		PLAN 930		PLAN 931		PLAN 932		PLAN 933		PLAN 934		PLAN 935		PLAN 936		PLAN 937		PLAN 938		PLAN 939		PLAN 940		PLAN 941		PLAN 942		PLAN 943		PLAN 944		PLAN 945		PLAN 946		PLAN 947		PLAN 948		PLAN 949		PLAN 950		PLAN 951		PLAN 952		PLAN 953		PLAN 954		PLAN 955		PLAN 956		PLAN 957		PLAN 958		PLAN 959	
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FLOOD HYDROGRAPH PACK

HYDROGRAPH ROUTING

ROUTING THROUGH HIGHWAY 63 EMPANKMENT

[illegible]

STAGE

207. AT TIME 17.33 HOURS

	PEAK 207.	6-HOUR 170.	24-HOUR 73.	72-HOUR 70.	TOTAL VOLUME 20997.
CFS	6.	5.	2.	2.	595.
INCHES		.25	.43	.43	
MM		6.42	11.00	11.00	11.00
AC-FT		84.	145.	145.	145.
THOUS CU M		104.	178.	178.	178.

STATION DAM 6, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

NOTES

BLACK R V E A C H

FLOOD HYDROGRAPH PACKAGE - HEC-1

[illegible]

STORAGE

[illegible]

[illegible]

PEAK OUTFLOW IS 323. AT TIME 17.42 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CIS	323.	281.	117.	112.	33651.
CMS	9.	8.	3.	3.	953.
INCHES		.42	.69	.69	.69
HM		10.60	17.63	17.63	17.63
AC-FT		1.59.	2.12.	232.	232.
THOUS CU M		172.	286.	286.	286.

STATION DAM 6, PLAN 1, RATIO 6

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

FLOOD HYDROGRAPH PACK.
- MEC-1
PROGRAM H21/02-1V TIME 17:30 CASE PMF

CASE PMF

PROGRAM H21/02-1V TIME 17:31

[illegible]

PEAK OUTFLOW IS 8959. AT TIME 18.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2959.	7401.	2616.	2511.	75382.
CFS	254.	210.	74.	71.	21333.
INCHES		10.99	15.54	15.54	15.54
MM		279.21	394.75	394.75	394.75
AC-FT		3670.	5189.	5189.	5189.
THOUS CU M		4527.	6400.	6400.	6400.

STATION DAM 6, PLAN 1, RATIO 7

END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.

475.	460.	445.	429.	414.	399.	384.	369.	354.	339.
424.	310.	295.	281.	267.	253.	240.	228.	217.	207.
198.	186.	181.	174.	167.	161.	155.	149.	143.	138.
132.	127.	122.	117.	112.	107.	102.	98.	93.	89.
85.	81.	77.	73.	70.	66.	63.	60.	56.	53.

STAGE									
657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0
657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0
657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0
657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0	657.0
657.1	657.2	657.2	657.2	657.3	657.3	657.4	657.4	657.5	657.5
657.6	657.7	657.7	657.8	657.9	657.9	658.0	658.1	658.1	658.1
658.2	658.2	658.2	658.3	658.3	658.3	658.4	658.4	658.5	658.5
658.5	658.5	658.6	658.6	658.6	658.7	658.8	658.9	659.1	659.1
659.2	659.4	659.6	659.9	660.0	660.1	660.2	660.3	660.4	660.6
660.8	660.9	661.1	661.3	661.5	661.7	661.9	662.1	662.3	662.5
662.7	662.9	663.1	663.3	663.5	663.7	663.9	664.0	664.2	664.4
664.6	664.8	665.0	665.2	665.4	665.7	665.9	666.1	666.3	666.6
668.8	669.0	669.3	669.6	669.8	669.9	669.9	669.9	669.8	669.8
670.1	670.4	670.6	671.0	671.3	671.6	672.0	672.3	672.7	673.0
673.3	673.6	673.8	674.0	674.1	674.3	674.4	674.5	674.6	674.6
674.7	674.8	674.8	674.9	675.0	675.2	675.3	675.5	675.7	675.9
676.1	676.3	676.6	676.8	677.1	677.4	677.7	678.1	678.4	678.7
679.1	679.5	679.8	680.1	680.3	680.5	680.7	680.9	681.1	681.3
681.6	681.8	682.1	682.4	682.7	683.0	683.3	683.7	684.0	684.5
685.0	685.5	686.2	687.0	687.9	689.0	690.0	690.5	691.0	691.4
691.8	692.1	692.3	692.5	692.6	692.7	692.7	692.7	692.8	692.8
692.8	692.7	692.7	692.7	692.7	692.6	692.6	692.6	692.5	692.5
692.4	692.3	692.3	692.2	692.1	692.0	691.8	691.7	691.5	691.4
691.2	691.1	690.9	690.7	690.6	690.4	690.2	690.0	689.7	689.4
689.2	688.9	688.6	688.3	688.0	687.7	687.4	687.0	686.6	686.2
685.9	685.5	685.1	684.7	684.4	684.0	683.6	683.3	682.9	682.6
682.2	681.8	681.5	681.1	680.8	680.5	680.2	679.7	679.1	678.5
678.0	677.5	677.1	676.7	676.3	675.9	675.6	675.2	674.9	674.6
674.3	674.0	673.6	673.5	673.2	672.9	672.7	672.4	672.2	671.9
671.7	671.5	671.3	671.0	670.6	670.7	670.5	670.3	670.1	669.8

PEAK OUTFLOW IS 19950. AT TIME 17.50 HOURS

PEAK				TOTAL VOLUME			
CFS	19950.	13994.	5111.	4907.	1472008.		
CMS	565.	396.	145.	139.	41683.		
INCHES				30.37			
MM	527.94	771.29	771.29	771.29	771.29		
AC-FT	6979.	10138.	10138.	10138.	10138.		
THOUS CU M	8556.	12505.	12505.	12505.	12505.		

SUB-AREA RUNOFF COMPUTATION

INFLOW TO MOON VALLEY LAKE

ISTAG	ICOMP	ISECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
AREA 7	0	0	0	0	3	1	0	0

INVD6	JUNG	IAREA	SNAP	TRSDA	IRSPC	RATIO	ISNOW	ISAME	LOCAL
1	2	.30	.00	.30	1.00	.000	0	0	0

HYDROGRAPH DATA

SPFL	PWS	R6	R12	R24	R48	R72	R96
.00	24.60	101.00	120.00	130.00	.00	.00	.00

PRECIP DATA

LOSS DATA

LROPT	STRK	DLTKR	RTIOL	ERAIN	STRKS	RTIOK	STRTL	CNSTL	ALSMX	RTIMP
0	.00	.00	1.00	.00	.00	1.00	-1.00	-86.00	.00	.00

CURVE NO = -86.00 WETNESS = -1.00 EFFECT CM = 86.00

UNIT HYDROGRAPH DATA

TC = .00 LAG = .45

RECESSION DATA

STRTO = .00 GRCSN = .00 RTIOR = 1.00

UNIT HYDROGRAPH 29 END OF PERIOD ORDINATES, TC = .00 HOURS, LAG = .45 VOL = 1.00
 23. 71. 146. 234. 286. 295. 276. 239. 189. 135.
 102. 78. 60. 45. 34. 26. 20. 15. 11. 8.
 5. 5. 4. 3. 2. 2. 1. 1. 0.

END-OF-PERIOD FLOW

MO-DA	HR-MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO-DA	HR-MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
1.01	.05	1	.01	.00	.01	0.	1.01	12.35	151	.21	.20	.01	325.
1.01	.10	2	.01	.00	.01	0.	1.01	12.40	152	.21	.20	.01	358.
1.01	.15	3	.01	.00	.01	0.	1.01	12.45	153	.21	.20	.01	385.
1.01	.20	4	.01	.00	.01	0.	1.01	12.50	154	.21	.20	.01	404.
1.01	.25	5	.01	.00	.01	0.	1.01	12.55	155	.21	.20	.01	419.
1.01	.30	6	.01	.00	.01	0.	1.01	13.00	156	.21	.20	.01	430.
1.01	.35	7	.01	.00	.01	0.	1.01	13.05	157	.25	.24	.01	440.
1.01	.40	8	.01	.00	.01	0.	1.01	13.10	158	.25	.24	.01	450.
1.01	.45	9	.01	.00	.01	0.	1.01	13.15	159	.25	.24	.01	461.
1.01	.50	10	.01	.00	.01	0.	1.01	13.20	160	.25	.24	.01	475.
1.01	.55	11	.01	.00	.01	0.	1.01	13.25	161	.25	.24	.01	490.
1.01	1.00	12	.01	.00	.01	0.	1.01	13.30	162	.25	.24	.01	505.
1.01	1.05	13	.01	.00	.01	0.	1.01	13.35	163	.25	.25	.01	518.
1.01	1.10	14	.01	.00	.01	0.	1.01	13.40	164	.25	.25	.01	530.
1.01	1.15	15	.01	.00	.01	0.	1.01	13.45	165	.25	.25	.00	539.
1.01	1.20	16	.01	.00	.01	0.	1.01	13.50	166	.25	.25	.00	546.
1.01	1.25	17	.01	.00	.01	0.	1.01	13.55	167	.25	.25	.00	551.
1.01	1.30	18	.01	.00	.01	0.	1.01	14.00	168	.25	.25	.00	555.
1.01	1.35	19	.01	.00	.01	0.	1.01	14.05	169	.31	.31	.01	560.
1.01	1.40	20	.01	.00	.01	0.	1.01	14.10	170	.31	.31	.00	567.
1.01	1.45	21	.01	.00	.01	0.	1.01	14.15	171	.31	.31	.00	578.
1.01	1.50	22	.01	.00	.01	0.	1.01	14.20	172	.31	.31	.00	584.

1.01	1.55	23	.01	.00	.01	0.	1.01	14.25	173	.31	.31	.00	613.
1.01	2.00	24	.01	.00	.01	0.	1.01	14.30	174	.31	.31	.00	632.
1.01	2.05	25	.01	.00	.01	0.	1.01	14.35	175	.31	.31	.00	650.
1.01	2.10	26	.01	.00	.01	0.	1.01	14.40	176	.31	.31	.00	666.
1.01	2.15	27	.01	.00	.01	0.	1.01	14.45	177	.31	.31	.00	678.
1.01	2.20	28	.01	.00	.01	0.	1.01	14.50	178	.31	.31	.00	687.
1.01	2.25	29	.01	.00	.01	0.	1.01	14.55	179	.31	.31	.00	694.
1.01	2.30	30	.01	.00	.01	1.	1.01	15.00	180	.31	.31	.00	700.
1.01	2.35	31	.01	.00	.01	1.	1.01	15.05	181	.19	.19	.00	701.
1.01	2.40	32	.01	.00	.01	1.	1.01	15.10	182	.38	.38	.00	700.
1.01	2.45	33	.01	.00	.01	2.	1.01	15.15	183	.38	.38	.00	698.
1.01	2.50	34	.01	.00	.01	2.	1.01	15.20	184	.57	.57	.00	703.
1.01	2.55	35	.01	.00	.01	3.	1.01	15.25	185	.67	.67	.00	710.
1.01	3.00	36	.01	.00	.01	3.	1.01	15.30	186	1.62	1.61	.01	806.
1.01	3.05	37	.01	.00	.01	3.	1.01	15.35	187	2.67	2.65	.02	978.
1.01	3.10	38	.01	.00	.01	4.	1.01	15.40	188	1.05	1.04	.01	1251.
1.01	3.15	39	.01	.00	.01	4.	1.01	15.45	189	.67	.66	.00	1607.
1.01	3.20	40	.01	.00	.01	4.	1.01	15.50	190	.57	.57	.00	1957.
1.01	3.25	41	.01	.00	.01	5.	1.01	15.55	191	.38	.38	.00	2175.
1.01	3.30	42	.01	.00	.01	5.	1.01	16.00	192	.38	.38	.00	2239.
1.01	3.35	43	.01	.00	.01	6.	1.01	16.05	193	.29	.29	.00	2170.
1.01	3.40	44	.01	.00	.01	6.	1.01	16.10	194	.29	.29	.00	2003.
1.01	3.45	45	.01	.00	.01	6.	1.01	16.15	195	.29	.29	.00	1773.
1.01	3.50	46	.01	.00	.01	7.	1.01	16.20	196	.29	.29	.00	1535.
1.01	3.55	47	.01	.00	.01	7.	1.01	16.25	197	.29	.29	.00	1343.
1.01	4.00	48	.01	.00	.01	8.	1.01	16.30	198	.29	.29	.00	1189.
1.01	4.05	49	.01	.00	.01	8.	1.01	16.35	199	.29	.29	.00	1067.
1.01	4.10	50	.01	.00	.01	8.	1.01	16.40	200	.29	.29	.00	971.
1.01	4.15	51	.01	.00	.01	9.	1.01	16.45	201	.29	.29	.00	899.
1.01	4.20	52	.01	.00	.01	9.	1.01	16.50	202	.29	.29	.00	845.
1.01	4.25	53	.01	.00	.01	9.	1.01	16.55	203	.29	.29	.00	803.
1.01	4.30	54	.01	.00	.01	10.	1.01	17.00	204	.29	.29	.00	772.
1.01	4.35	55	.01	.01	.01	10.	1.01	17.05	205	.23	.23	.00	747.
1.01	4.40	56	.01	.01	.01	10.	1.01	17.10	206	.23	.23	.00	724.
1.01	4.45	57	.01	.01	.01	11.	1.01	17.15	207	.23	.23	.00	702.
1.01	4.50	58	.01	.01	.01	11.	1.01	17.20	208	.23	.23	.00	677.
1.01	4.55	59	.01	.01	.01	11.	1.01	17.25	209	.23	.23	.00	652.
1.01	5.00	60	.01	.01	.01	11.	1.01	17.30	210	.23	.23	.00	627.
1.01	5.05	61	.01	.01	.01	12.	1.01	17.35	211	.23	.23	.00	606.
1.01	5.10	62	.01	.01	.01	12.	1.01	17.40	212	.23	.23	.00	587.
1.01	5.15	63	.01	.01	.01	12.	1.01	17.45	213	.23	.23	.00	572.
1.01	5.20	64	.01	.01	.01	12.	1.01	17.50	214	.23	.23	.00	561.
1.01	5.25	65	.01	.01	.01	13.	1.01	17.55	215	.23	.23	.00	552.
1.01	5.30	66	.01	.01	.01	13.	1.01	18.00	216	.23	.23	.00	546.
1.01	5.35	67	.01	.01	.01	13.	1.01	18.05	217	.02	.02	.00	537.
1.01	5.40	68	.01	.01	.01	13.	1.01	18.10	218	.02	.02	.00	519.
1.01	5.45	69	.01	.01	.01	14.	1.01	18.15	219	.02	.02	.00	486.
1.01	5.50	70	.01	.01	.01	14.	1.01	18.20	220	.02	.02	.00	436.
1.01	5.55	71	.01	.01	.01	14.	1.01	18.25	221	.02	.02	.00	376.
1.01	6.00	72	.01	.01	.01	14.	1.01	18.30	222	.02	.02	.00	313.
1.01	6.05	73	.07	.03	.03	15.	1.01	18.35	223	.02	.02	.00	255.
1.01	6.10	74	.07	.04	.03	17.	1.01	18.40	224	.02	.02	.00	205.
1.01	6.15	75	.07	.04	.03	22.	1.01	18.45	225	.02	.02	.00	165.
1.01	6.20	76	.07	.04	.03	26.	1.01	18.50	226	.02	.02	.00	136.
1.01	6.25	77	.07	.04	.03	37.	1.01	18.55	227	.02	.02	.00	115.
1.01	6.30	78	.07	.04	.02	46.	1.01	19.00	228	.02	.02	.00	99.

1.01	6.35	79	.07	.04	.02	55.	1.01	19.05	229	.02	.02	.00	86.
1.01	6.40	80	.07	.04	.02	63.	1.01	19.10	230	.02	.02	.00	77.
1.01	6.45	81	.07	.04	.02	71.	1.01	19.15	231	.02	.02	.00	69.
1.01	6.50	82	.07	.05	.02	77.	1.01	19.20	232	.02	.02	.00	64.
1.01	6.55	83	.07	.05	.02	82.	1.01	19.25	233	.02	.02	.00	60.
1.01	7.00	84	.07	.05	.02	87.	1.01	19.30	234	.02	.02	.00	57.
1.01	7.05	85	.07	.05	.02	91.	1.01	19.35	235	.02	.02	.00	54.
1.01	7.10	86	.07	.05	.02	94.	1.01	19.40	236	.02	.02	.00	53.
1.01	7.15	87	.07	.05	.02	97.	1.01	19.45	237	.02	.02	.00	51.
1.01	7.20	88	.07	.05	.02	100.	1.01	19.50	238	.02	.02	.00	50.
1.01	7.25	89	.07	.05	.02	103.	1.01	19.55	239	.02	.02	.00	50.
1.01	7.30	90	.07	.05	.01	105.	1.01	20.00	240	.02	.02	.00	49.
1.01	7.35	91	.07	.05	.01	107.	1.01	20.05	241	.02	.02	.00	48.
1.01	7.40	92	.07	.05	.01	109.	1.01	20.10	242	.02	.02	.00	48.
1.01	7.45	93	.07	.05	.01	111.	1.01	20.15	243	.02	.02	.00	48.
1.01	7.50	94	.07	.05	.01	113.	1.01	20.20	244	.02	.02	.00	48.
1.01	7.55	95	.07	.05	.01	115.	1.01	20.25	245	.02	.02	.00	48.
1.01	8.00	96	.07	.05	.01	116.	1.01	20.30	246	.02	.02	.00	48.
1.01	8.05	97	.07	.05	.01	117.	1.01	20.35	247	.02	.02	.00	48.
1.01	8.10	98	.07	.05	.01	119.	1.01	20.40	248	.02	.02	.00	48.
1.01	8.15	99	.07	.05	.01	120.	1.01	20.45	249	.02	.02	.00	48.
1.01	8.20	100	.07	.06	.01	121.	1.01	20.50	250	.02	.02	.00	48.
1.01	8.25	101	.07	.06	.01	122.	1.01	20.55	251	.02	.02	.00	48.
1.01	8.30	102	.07	.06	.01	123.	1.01	21.00	252	.02	.02	.00	48.
1.01	8.35	103	.07	.06	.01	124.	1.01	21.05	253	.02	.02	.00	48.
1.01	8.40	104	.07	.06	.01	125.	1.01	21.10	254	.02	.02	.00	48.
1.01	8.45	105	.07	.06	.01	126.	1.01	21.15	255	.02	.02	.00	48.
1.01	8.50	106	.07	.06	.01	127.	1.01	21.20	256	.02	.02	.00	48.
1.01	8.55	107	.07	.06	.01	128.	1.01	21.25	257	.02	.02	.00	48.
1.01	9.00	108	.07	.06	.01	128.	1.01	21.30	258	.02	.02	.00	48.
1.01	9.05	109	.07	.06	.01	129.	1.01	21.35	259	.02	.02	.00	48.
1.01	9.10	110	.07	.06	.01	130.	1.01	21.40	260	.02	.02	.00	48.
1.01	9.15	111	.07	.06	.01	130.	1.01	21.45	261	.02	.02	.00	48.
1.01	9.20	112	.07	.06	.01	131.	1.01	21.50	262	.02	.02	.00	48.
1.01	9.25	113	.07	.06	.01	132.	1.01	21.55	263	.02	.02	.00	48.
1.01	9.30	114	.07	.06	.01	132.	1.01	22.00	264	.02	.02	.00	48.
1.01	9.35	115	.07	.06	.01	133.	1.01	22.05	265	.02	.02	.00	48.
1.01	9.40	116	.07	.06	.01	133.	1.01	22.10	266	.02	.02	.00	48.
1.01	9.45	117	.07	.06	.01	134.	1.01	22.15	267	.02	.02	.00	48.
1.01	9.50	118	.07	.06	.01	134.	1.01	22.20	268	.02	.02	.00	48.
1.01	9.55	119	.07	.06	.01	135.	1.01	22.25	269	.02	.02	.00	48.
1.01	10.00	120	.07	.06	.01	135.	1.01	22.30	270	.02	.02	.00	48.
1.01	10.05	121	.07	.06	.01	136.	1.01	22.35	271	.02	.02	.00	48.
1.01	10.10	122	.07	.06	.01	136.	1.01	22.40	272	.02	.02	.00	48.
1.01	10.15	123	.07	.06	.01	136.	1.01	22.45	273	.02	.02	.00	48.
1.01	10.20	124	.07	.06	.01	137.	1.01	22.50	274	.02	.02	.00	48.
1.01	10.25	125	.07	.06	.01	137.	1.01	22.55	275	.02	.02	.00	48.
1.01	10.30	126	.07	.06	.01	137.	1.01	23.00	276	.02	.02	.00	48.
1.01	10.35	127	.07	.06	.01	138.	1.01	23.05	277	.02	.02	.00	48.
1.01	10.40	128	.07	.06	.00	138.	1.01	23.10	278	.02	.02	.00	48.
1.01	10.45	129	.07	.06	.00	138.	1.01	23.15	279	.02	.02	.00	48.
1.01	10.50	130	.07	.06	.00	139.	1.01	23.20	280	.02	.02	.00	48.
1.01	10.55	131	.07	.06	.00	139.	1.01	23.25	281	.02	.02	.00	48.
1.01	11.00	132	.07	.06	.00	139.	1.01	23.30	282	.02	.02	.00	48.
1.01	11.05	133	.07	.06	.00	140.	1.01	23.35	283	.02	.02	.00	48.
1.01	11.10	134	.07	.06	.00	140.	1.01	23.40	284	.02	.02	.00	48.

1.01	11.15	135	.07	.06	.00	140.	1.01	23.45	285	.02	.02	.00	48.
1.01	11.20	136	.07	.06	.00	140.	1.01	23.50	286	.02	.02	.00	48.
1.01	11.25	137	.07	.06	.00	141.	1.01	23.55	287	.02	.02	.00	48.
1.01	11.30	138	.07	.06	.00	141.	1.02	.00	288	.02	.02	.00	48.
1.01	11.35	139	.07	.06	.00	141.	1.02	.05	289	.00	.00	.00	47.
1.01	11.40	140	.07	.06	.00	141.	1.02	.10	290	.00	.00	.00	46.
1.01	11.45	141	.07	.06	.00	141.	1.02	.15	291	.00	.00	.00	43.
1.01	11.50	142	.07	.06	.00	142.	1.02	.20	292	.00	.00	.00	38.
1.01	11.55	143	.07	.06	.00	142.	1.02	.25	293	.00	.00	.00	32.
1.01	12.00	144	.07	.06	.00	142.	1.02	.30	294	.00	.00	.00	26.
1.01	12.05	145	.21	.20	.01	145.	1.02	.35	295	.00	.00	.00	20.
1.01	12.10	146	.21	.20	.01	155.	1.02	.40	296	.00	.00	.00	15.
1.01	12.15	147	.21	.20	.01	175.	1.02	.45	297	.00	.00	.00	11.
1.01	12.20	148	.21	.20	.01	207.	1.02	.50	298	.00	.00	.00	9.
1.01	12.25	149	.21	.20	.01	246.	1.02	.55	299	.00	.00	.00	7.
1.01	12.30	150	.21	.20	.01	287.	1.02	1.00	300	.00	.00	.00	5.

SUM 32.24 30.37 1.87 70267.
 (839.3)(771.3)(48.3)(1989.74)

CFS	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
2239.	2239.	780.	244.	234.	70256.
INCHES	63.	22.	7.	7.	1969.
MM		24.25	30.36	30.36	30.36
AC-FT		616.02	771.09	771.09	771.09
THOUS CU M		387.	484.	484.	484.
		477.	597.	597.	597.

HYDROGRAPH AT STAAREA 7 FOR PLAN 1, RTIO 1

CFS	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
22.	22.	8.	2.	2.	703.
INCHES	1.	0.	0.	0.	20.
MM		.24	.30	.30	.30
AC-FT		6.16	7.71	7.71	7.71
THOUS CU M		5.	5.	5.	6.

HYDROGRAPH AT STAAREA 7 FOR PLAN 1, RTIO 2

CFS	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
45.	45.	16.	5.	5.	1405.
INCHES	1.	0.	0.	0.	40.
MM		.49	.61	.61	.61
AC-FT		12.32	15.42	15.42	15.42
THOUS CU M		8.	10.	10.	10.
		10.	12.	12.	12.

HYDROGRAPH AT STAAREA 7 FOR PLAN 1, RTIO 3

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	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	67.	23.	7.	7.	210.
CMS	2.	1.	0.	0.	60.
INCHES		.73	.91	.91	.91
MM		18.48	23.13	23.13	23.13
AC-FT		12.	15.	15.	15.
THOUS CU M		14.	18.	18.	18.

HYDROGRAPH AT STAAREA 7 FOR PLAN 1, RTIO 4

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	90.	31.	10.	9.	2810.
CMS	3.	1.	0.	0.	80.
INCHES		.97	1.21	1.21	1.21
MM		24.64	30.84	30.84	30.84
AC-FT		15.	19.	19.	19.
THOUS CU M		19.	24.	24.	24.

HYDROGRAPH AT STAAREA 7 FOR PLAN 1, RTIO 5

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	112.	39.	12.	12.	3512.
CMS	3.	1.	0.	0.	99.
INCHES		1.21	1.52	1.52	1.52
MM		30.80	38.55	38.55	38.55
AC-FT		19.	24.	24.	24.
THOUS CU M		24.	30.	30.	30.

HYDROGRAPH AT STAAREA 7 FOR PLAN 1, RTIO 6

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	1120.	350.	122.	117.	35128.
CMS	32.	11.	3.	3.	995.
INCHES		12.13	15.18	15.18	15.18
MM		308.01	385.55	385.55	385.55
AC-FT		193.	242.	242.	242.
THOUS CU M		238.	298.	298.	298.

HYDROGRAPH AT STAAREA 7 FOR PLAN 1, RTIO 7

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2239.	780.	244.	234.	70256.
CMS	63.	22.	7.	7.	1989.
INCHES		24.25	30.36	30.36	30.36
MM		616.02	771.09	771.09	771.09
AC-FT		387.	484.	484.	484.
THOUS CU M		477.	597.	597.	597.

SUM OF 2 HYDROGRAPHS AT																7		PLAN 1		RATIO 2	
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	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.		
2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.	2.		
4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.	4.		
8.	8.	9.	10.	10.	10.	10.	11.	11.	11.	11.	12.	12.	12.	12.	12.	12.	12.	12.	12.		
13.	14.	14.	15.	15.	15.	15.	16.	16.	16.	16.	16.	16.	16.	16.	16.	16.	16.	16.	16.		
17.	18.	18.	18.	19.	19.	19.	19.	19.	19.	19.	20.	20.	20.	20.	20.	20.	20.	20.	20.		
20.	21.	21.	21.	22.	22.	22.	22.	22.	22.	22.	22.	22.	22.	22.	22.	22.	22.	22.	22.		
23.	23.	24.	24.	24.	24.	24.	24.	24.	24.	24.	25.	25.	25.	25.	25.	25.	25.	25.	25.		
25.	25.	26.	26.	26.	26.	26.	27.	27.	27.	27.	27.	27.	27.	27.	27.	27.	27.	27.	27.		
32.	33.	34.	35.	35.	37.	37.	38.	38.	38.	40.	42.	42.	42.	42.	42.	42.	42.	42.	42.		
51.	54.	56.	59.	59.	61.	63.	65.	65.	65.	68.	70.	70.	70.	70.	70.	70.	70.	70.	70.		
74.	76.	79.	81.	81.	83.	83.	86.	86.	86.	88.	90.	90.	90.	90.	90.	90.	90.	90.	90.		
98.	100.	102.	105.	105.	108.	108.	112.	112.	112.	118.	127.	127.	127.	127.	127.	127.	127.	127.	127.		
161.	169.	175.	181.	181.	186.	186.	191.	191.	191.	197.	203.	203.	203.	203.	203.	203.	203.	203.	203.		
212.	214.	216.	218.	218.	219.	219.	220.	220.	220.	221.	220.	220.	220.	220.	220.	220.	220.	220.	220.		
216.	214.	212.	210.	210.	208.	208.	206.	206.	206.	204.	202.	202.	202.	202.	202.	202.	202.	202.	202.		
190.	187.	184.	181.	181.	178.	178.	176.	176.	176.	174.	172.	172.	172.	172.	172.	172.	172.	172.	172.		
165.	163.	161.	159.	159.	157.	157.	156.	156.	156.	154.	153.	153.	153.	153.	153.	153.	153.	153.	153.		
150.	150.	150.	150.	150.	150.	150.	150.	150.	150.	150.	150.	150.	150.	150.	150.	150.	150.	150.	150.		
151.	151.	152.	152.	152.	153.	153.	153.	153.	153.	153.	153.	153.	153.	153.	153.	153.	153.	153.	153.		
154.	154.	154.	154.	154.	154.	154.	154.	154.	154.	154.	153.	153.	153.	153.	153.	153.	153.	153.	153.		
152.	152.	151.	151.	151.	150.	150.	149.	149.	149.	148.	148.	148.	148.	148.	148.	148.	148.	148.	148.		
145.	145.	145.	144.	144.	143.	143.	139.	139.	139.	138.	137.	137.	137.	137.	137.	137.	137.	137.	137.		
133.	131.	130.	128.	128.	127.	127.	125.	125.	125.	123.	122.	122.	122.	122.	122.	122.	122.	122.	122.		

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL
CFS	221.	178.	78.	75.	22402.
CMS	6.	5.	2.	2.	634.
INCHES		.25	.44	.44	
MM		6.40	11.20	11.20	11.20
AC-FT		88.	154.	154.	154.
TM005 CU M		109.	190.	190.	190.

	SUM OF 2 HYDROGRAPHS AT	7 PLAN 1	R110 3
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.
0.	0.	0.	0.
1.	1.	1.	1.
2.	2.	2.	2.
2.	3.	3.	4.
5.	6.	8.	10.
12.	13.	15.	17.
20.	20.	22.	25.

FLOOD HYDROGRAPH PACKA

1-33H

PROGRAM W21/02-1V TIME 17:32

CASE PMF

26.	26.	27.	27.	28.	28.	29.	29.	30.	30.
31.	31.	32.	31.	32.	33.	32.	33.	34.	34.
34.	35.	35.	35.	36.	36.	36.	37.	37.	38.
38.	39.	39.	40.	41.	42.	43.	43.	45.	47.
49.	51.	54.	56.	59.	61.	64.	67.	71.	74.
79.	81.	85.	89.	93.	97.	100.	104.	108.	112.
115.	119.	123.	127.	131.	135.	139.	143.	147.	151.
154.	158.	161.	165.	169.	175.	184.	192.	214.	232.
247.	258.	261.	263.	265.	268.	274.	281.	289.	298.
307.	315.	323.	329.	335.	339.	341.	343.	345.	348.
349.	358.	365.	373.	380.	387.	394.	402.	410.	418.
411.	420.	428.	436.	444.	452.	460.	468.	476.	484.
483.	491.	499.	507.	515.	523.	531.	539.	547.	555.
553.	561.	569.	577.	585.	593.	601.	609.	617.	625.
623.	631.	639.	647.	655.	663.	671.	679.	687.	695.
693.	701.	709.	717.	725.	733.	741.	749.	757.	765.
763.	771.	779.	787.	795.	803.	811.	819.	827.	835.
833.	841.	849.	857.	865.	873.	881.	889.	897.	905.
903.	911.	919.	927.	935.	943.	951.	959.	967.	975.
973.	981.	989.	997.	1005.	1013.	1021.	1029.	1037.	1045.
1043.	1051.	1059.	1067.	1075.	1083.	1091.	1099.	1107.	1115.
1113.	1121.	1129.	1137.	1145.	1153.	1161.	1169.	1177.	1185.
1183.	1191.	1199.	1207.	1215.	1223.	1231.	1239.	1247.	1255.
1253.	1261.	1269.	1277.	1285.	1293.	1301.	1309.	1317.	1325.
1323.	1331.	1339.	1347.	1355.	1363.	1371.	1379.	1387.	1395.
1393.	1401.	1409.	1417.	1425.	1433.	1441.	1449.	1457.	1465.
1463.	1471.	1479.	1487.	1495.	1503.	1511.	1519.	1527.	1535.
1533.	1541.	1549.	1557.	1565.	1573.	1581.	1589.	1597.	1605.
1603.	1611.	1619.	1627.	1635.	1643.	1651.	1659.	1667.	1675.
1673.	1681.	1689.	1697.	1705.	1713.	1721.	1729.	1737.	1745.
1743.	1751.	1759.	1767.	1775.	1783.	1791.	1799.	1807.	1815.
1813.	1821.	1829.	1837.	1845.	1853.	1861.	1869.	1877.	1885.
1883.	1891.	1899.	1907.	1915.	1923.	1931.	1939.	1947.	1955.
1953.	1961.	1969.	1977.	1985.	1993.	2001.	2009.	2017.	2025.
2023.	2031.	2039.	2047.	2055.	2063.	2071.	2079.	2087.	2095.
2093.	2101.	2109.	2117.	2125.	2133.	2141.	2149.	2157.	2165.
2163.	2171.	2179.	2187.	2195.	2203.	2211.	2219.	2227.	2235.
2233.	2241.	2249.	2257.	2265.	2273.	2281.	2289.	2297.	2305.
2303.	2311.	2319.	2327.	2335.	2343.	2351.	2359.	2367.	2375.
2373.	2381.	2389.	2397.	2405.	2413.	2421.	2429.	2437.	2445.
2443.	2451.	2459.	2467.	2475.	2483.	2491.	2499.	2507.	2515.
2513.	2521.	2529.	2537.	2545.	2553.	2561.	2569.	2577.	2585.
2583.	2591.	2599.	2607.	2615.	2623.	2631.	2639.	2647.	2655.
2653.	2661.	2669.	2677.	2685.	2693.	2701.	2709.	2717.	2725.
2723.	2731.	2739.	2747.	2755.	2763.	2771.	2779.	2787.	2795.
2793.	2801.	2809.	2817.	2825.	2833.	2841.	2849.	2857.	2865.
2863.	2871.	2879.	2887.	2895.	2903.	2911.	2919.	2927.	2935.
2933.	2941.	2949.	2957.	2965.	2973.	2981.	2989.	2997.	3005.
3003.	3011.	3019.	3027.	3035.	3043.	3051.	3059.	3067.	3075.
3073.	3081.	3089.	3097.	3105.	3113.	3121.	3129.	3137.	3145.
3143.	3151.	3159.	3167.	3175.	3183.	3191.	3199.	3207.	3215.
3213.	3221.	3229.	3237.	3245.	3253.	3261.	3269.	3277.	3285.
3283.	3291.	3299.	3307.	3315.	3323.	3331.	3339.	3347.	3355.
3353.	3361.	3369.	3377.	3385.	3393.	3401.	3409.	3417.	3425.
3423.	3431.	3439.	3447.	3455.	3463.	3471.	3479.	3487.	3495.
3493.	3501.	3509.	3517.	3525.	3533.	3541.	3549.	3557.	3565.
3563.	3571.	3579.	3587.	3595.	3603.	3611.	3619.	3627.	3635.
3633.	3641.	3649.	3657.	3665.	3673.	3681.	3689.	3697.	3705.
3703.	3711.	3719.	3727.	3735.	3743.	3751.	3759.	3767.	3775.
3773.	3781.	3789.	3797.	3805.	3813.	3821.	3829.	3837.	3845.
3843.	3851.	3859.	3867.	3875.	3883.	3891.	3899.	3907.	3915.
3913.	3921.	3929.	3937.	3945.	3953.	3961.	3969.	3977.	3985.
3983.	3991.	3999.	4007.	4015.	4023.	4031.	4039.	4047.	4055.
4053.	4061.	4069.	4077.	4085.	4093.	4101.	4109.	4117.	4125.
4123.	4131.	4139.	4147.	4155.	4163.	4171.	4179.	4187.	4195.
4193.	4201.	4209.	4217.	4225.	4233.	4241.	4249.	4257.	4265.
4263.	4271.	4279.	4287.	4295.	4303.	4311.	4319.	4327.	4335.
4333.	4341.	4349.	4357.	4365.	4373.	4381.	4389.	4397.	4405.
4403.	4411.	4419.	4427.	4435.	4443.	4451.	4459.	4467.	4475.
4473.	4481.	4489.	4497.	4505.	4513.	4521.	4529.	4537.	4545.
4543.	4551.	4559.	4567.	4575.	4583.	4591.	4599.	4607.	4615.
4613.	4621.	4629.	4637.	4645.	4653.	4661.	4669.	4677.	4685.
4683.	4691.	4699.	4707.	4715.	4723.	4731.	4739.	4747.	4755.
4753.	4761.	4769.	4777.	4785.	4793.	4801.	4809.	4817.	4825.
4823.	4831.	4839.	4847.	4855.	4863.	4871.	4879.	4887.	4895.
4893.	4901.	4909.	4917.	4925.	4933.	4941.	4949.	4957.	4965.
4963.	4971.	4979.	4987.	4995.	5003.	5011.	5019.	5027.	5035.
5033.	5041.	5049.	5057.	5065.	5073.	5081.	5089.	5097.	5105.
5103.	5111.	5119.	5127.	5135.	5143.	5151.	5159.	5167.	5175.
5173.	5181.	5189.	5197.	5205.	5213.	5221.	5229.	5237.	5245.
5243.	5251.	5259.	5267.	5275.	5283.	5291.	5299.	5307.	5315.
5313.	5321.	5329.	5337.	5345.	5353.	5361.	5369.	5377.	5385.
5383.	5391.	5399.	5407.	5415.	5423.	5431.	5439.	5447.	5455.
5453.	5461.	5469.	5477.	5485.	5493.	5501.	5509.	5517.	5525.
5523.	5531.	5539.	5547.	5555.	5563.	5571.	5579.	5587.	5595.
5593.	5601.	5609.	5617.	5625.	5633.	5641.	5649.	5657.	5665.
5663.	5671.	5679.	5687.	5695.	5703.	5711.	5719.	5727.	5735.
5733.	5741.	5749.	5757.	5765.	5773.	5781.	5789.	5797.	5805.
5803.	5811.	5819.	5827.	5835.	5843.	5851.	5859.	5867.	5875.
5873.	5881.	5889.	5897.	5905.	5913.	5921.	5929.	5937.	5945.
5943.	5951.	5959.	5967.	5975.	5983.	5991.	5999.	6007.	6015.
6013.	6021.	6029.	6037.	6045.	6053.	6061.	6069.	6077.	6085.
6083.	6091.	6099.	6107.	6115.	6123.	6131.	6139.	6147.	6155.
6153.	6161.	6169.	6177.	6185.	6193.	6201.	6209.	6217.	6225.
6223.	6231.	6239.	6247.	6255.	6263.	6271.	6279.	6287.	6295.
6293.	6301.	6309.	6317.	6325.	6333.	6341.	6349.	6357.	6365.
6363.	6371.	6379.	6387.	6395.	6403.	6411.	6419.	6427.	6435.
6433.	6441.	6449.	6457.	6465.	6473.	6481.	6489.	6497.	6505.
6503.	6511.	6519.	6527.	6535.	6543.	6551.	6559.	6567.	6575.
6573.	6581.	6589.	6597.	6605.	6613.	6621.	6629.	6637.	6645.
6643.	6651.	6659.	6667.	6675.	6683.	6691.	6699.	6707.	6715.
6713.	6721.	6729.	6737.	6745.	6753.	6761.	6769.	6777.	6785.
6783.	6791.	6799.	6807.	6815.	6823.	6831.	6839.	6847.	6855.
6853.	6861.	6869.	6877.	6885.	6893.	6901.	6909.	6917.	6925.
6923.	6931.	6939.	6947.	6955.	6963.	6971.	6979.	6987.	6995.
6993.	7001.	7009.	7017.	7025.	7033.	7041.	7049.	7057.	7065.
7063.	7071.	7079.	7087.	7095.	7103.	7111.	7119.	7127.	7135.
7133.	7141.	7149.	7157.	7165.	7173.	7181.	7189.	7197.	7205.
7203.	7211.	7219.	7227.	7235.	7243.	7251.	7259.	7267.	7275.
7273.	7281.	7289.	7297.	7305.	7313.	7321.	7329.	7337.	7345.
7343.	7351.	7359.	7367.	7375.	7383.	7391.	7399.	7407.	7415.
7413.	7421.	7429.	7437.	7445.	7453.	7461.	7469.	7477.	7485.
7483.	7491.	7499.	7507.	7515.	7523.	7531.	7539.	7547.	7555.
7553.	7561.	7569.	7577.	7585.	7593.	7601.	7609.	7617.	7625.
7623.	7631.	7639.	7647.	7655.	7663.	7671.	7679.	7687.	7695.
7693.	7701.	7709.	7717.	7725.	7733.	7741.	7749.	7757.	7765.
7763.	7771.	7779.	7787.	7795.	7803.	7811.	7819.	7827.	7835.
7833.	7841.	7849.	7857.	7865.	7873.	7881.	7889.	7897.	7905.
7903.	7911.	7919.	7927.	7935.	7943.	7951.	7959.	7967.	7975.
7973.	7981.	7989.	7997.	8005.	8013.	8021.	8029.	8037.	8045.
8043.	8051.	8059.	8067.	8075.	8083.	8091.	8099.	8107.	8115.
8113.	8121.	8129.	8137.	8145.	8153.	8161.	8169.	8177.	8185.
8183.	8191.	8199.	8207.	8215.	8223.	8231.	8239.	8247.	8255.
8253.	8261.	8269.	8277.	8285.	8293.	8301.	8309.	8317.	8325.
8323.	8331.	8339.	8347.	8355.	8363.	8371.	8379.	8387.	8395.
8393.	8401.	8409.	8417.	8425.	8433.	8441.	8449.	8457.	8465.
8463.	8471.	8479.	8487.	8495.	8503.	8511.	8519.	8527.	8535.
8533.	8541.	8549.	8557.	8565.	8573.	8581.	8589.	8597.	8605.
8603.	8611.	8619.	8627.	8635.	8643.	8651.	8659.	8667.	8675.
8673.	8681.	8689.	8697.	8705.	8713.	8721.	8729.	8737.	8745.
8743.	8751.	8759.	8767.	8775.	8783.	8791.	8799.	8807.	8815.
8813.	8821.	8829.	8837.	8845.	8853.	8861.	8869.	8877.	8885.
8883.	8891.	8899.	8907.	8915.	8923.	8931.	8939.	8947.	8955.
8953.	8961.	8969.	8977.	8985.	8993.	9001.	9009.	9017.	9025.
9023.	9031.	9039.	9047.</						

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	343.	290.	124.	119.	35759.
CMS	10.	8.	4.	3.	1033.
INCHES		.41	.70	.70	
MM		10.45	17.88	17.88	
AC-FT		144.	246.	246.	
THOUS CU M		178.	304.	304.	

[illegible]

THOUS CU M											
424.				636.				636.			
SUM OF 2 HYDROGRAPHS AT											
7 PLAN 1 RTIO 6											
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
1.	1.	1.	1.	2.	2.	2.	3.	4.	4.	4.	4.
5.	6.	7.	8.	9.	10.	11.	12.	13.	13.	13.	13.
14.	15.	16.	17.	18.	19.	20.	22.	23.	24.	26.	26.
27.	28.	29.	31.	32.	33.	35.	36.	37.	39.	39.	39.
40.	42.	43.	48.	52.	57.	64.	71.	79.	88.	88.	88.
97.	107.	118.	129.	141.	155.	169.	183.	198.	214.	214.	214.
229.	245.	261.	280.	299.	320.	343.	368.	395.	424.	438.	458.
343.	369.	382.	398.	408.	421.	433.	446.	458.	468.	468.	468.
470.	482.	493.	505.	516.	528.	539.	550.	561.	572.	572.	572.
584.	595.	607.	620.	633.	646.	661.	675.	695.	715.	715.	715.
736.	760.	789.	821.	857.	895.	934.	973.	1027.	1084.	1084.	1084.
1135.	1181.	1223.	1262.	1299.	1337.	1377.	1423.	1471.	1519.	1519.	1519.
1567.	1614.	1660.	1706.	1752.	1800.	1851.	1903.	1963.	2024.	2024.	2024.
2088.	2156.	2220.	2286.	2351.	2383.	2417.	2454.	2496.	2541.	2541.	2541.
2593.	2651.	2716.	2787.	2866.	2955.	3056.	3169.	3296.	3440.	3440.	3440.
3604.	3790.	3995.	4259.	4568.	4900.	5274.	5689.	6134.	6569.	6569.	6569.
6933.	7135.	7260.	7352.	7430.	7519.	7642.	7789.	7952.	8121.	8121.	8121.
8292.	8455.	8607.	8743.	8867.	8981.	9087.	9187.	9277.	9366.	9366.	9366.
9218.	9228.	9235.	9236.	9235.	9235.	9227.	9216.	9196.	9164.	9164.	9164.
9125.	9079.	9031.	8979.	8925.	8866.	8801.	8727.	8649.	8566.	8566.	8566.
8475.	8374.	8265.	8149.	8025.	7896.	7762.	7623.	7482.	7338.	7338.	7338.
7193.	7047.	6908.	6748.	6597.	6445.	6293.	6143.	5994.	5792.	5792.	5792.
5551.	5334.	5137.	4957.	4791.	4636.	4489.	4349.	4214.	4083.	4083.	4083.
3950.	3632.	3270.	3627.	3533.	3439.	3345.	3252.	3160.	3068.	3068.	3068.
2978.	2889.	2803.	2716.	2631.	2549.	2469.	2392.	2318.	2247.	2247.	2247.
2178.	2111.	1969.	1847.	1745.	1658.	1583.	1516.	1455.	1399.	1399.	1399.
1345.	1292.	1240.	1188.	1137.	1087.	1039.	992.	947.	908.	908.	908.
PEAK											
6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME											
CFS 9235. 7674. 2738. 788510.											
CMS 261. 217. 74. 22328.											
INCHES 10.88 15.52 15.52 15.52											
PM 276.33 394.33 394.33 394.33											
AC-FT 3805. 5431. 5431. 5431.											
THOUS CU M 4694. 6698. 6698. 6698.											
SUM OF 2 HYDROGRAPHS AT											
7 PLAN 1 RTIO 7											
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
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.	2.	3.	3.	4.	5.	6.	7.	8.	8.	8.
10.	11.	13.	14.	16.	18.	20.	22.	24.	26.	26.	26.
29.	31.	33.	36.	38.	41.	46.	48.	51.	55.	55.	55.
54.	61.	64.	67.	70.	72.	75.	78.	80.	83.	83.	83.

86.	88.	92.	97.	104.	115.	129.	144.	161.	179.
199.	219.	241.	265.	285.	299.	316.	336.	358.	382.
40.	436.	465.	494.	525.	555.	586.	617.	647.	678.
767.	737.	766.	794.	822.	850.	877.	905.	932.	960.
968.	1016.	1047.	1099.	1150.	1202.	1254.	1306.	1359.	1433.
1468.	1525.	1585.	1648.	1716.	1789.	1869.	1957.	2058.	2173.
2261.	2338.	2431.	2537.	2650.	2764.	2882.	2997.	3107.	3211.
3307.	3393.	3469.	3535.	3594.	3649.	3706.	3768.	3832.	3893.
3951.	4005.	4056.	4104.	4157.	4224.	4299.	4383.	4477.	4562.
4695.	4813.	4934.	5060.	5189.	5323.	5463.	5608.	5759.	5919.
6087.	6264.	6445.	6585.	6700.	6818.	6940.	7064.	7194.	7328.
7466.	7607.	7754.	7914.	8102.	8344.	8693.	9156.	9721.	10305.
10793.	11220.	11583.	11917.	12225.	12409.	12650.	12859.	13034.	13174.
13213.	13330.	13486.	13687.	13934.	14209.	14504.	14819.	15154.	15509.
20520.	20558.	20773.	20777.	20772.	20057.	19927.	19775.	19591.	19370.
19114.	18828.	18515.	18176.	17814.	17430.	17023.	16596.	16155.	15708.
15241.	14818.	14321.	13952.	13541.	13153.	12787.	12444.	11945.	11515.
11160.	10661.	10008.	10396.	10225.	10093.	10005.	9962.	9721.	9478.
9237.	8998.	8762.	8550.	8348.	8146.	7946.	7747.	7548.	7348.
7150.	6953.	6759.	6569.	6383.	6204.	6032.	5867.	5537.	5292.
5069.	4865.	4675.	4497.	4331.	4174.	4025.	3883.	3755.	3655.
3556.	3459.	3365.	3272.	3182.	3094.	3008.	2925.	2844.	2764.
2684.	2605.	2528.	2454.	2383.	2314.	2248.	2185.	2123.	2032.

PEAK 6-HOUR 24-HOUR 72-HOUR TOTAL VOLUME

CFS	20594.	14537.	5355.	5141.	1542264.
CMS	583.	412.	152.	146.	43672.
INCHES	20.61	30.37	30.37	30.37	30.37
MM	523.44	771.29	771.29	771.29	771.29
AC-FT	7208.	10622.	10622.	10622.	10622.
THOUS CU M	8892.	13102.	13102.	13102.	13102.

HYDROGRAPH ROUTING

ROUTING THROUGH MOON VALLEY DAM

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
DAM 7	1	0	0	0	0	1	0	0
ROUTING DATA								
GLOSS	CLOSS	AVG	IRCS	ISAME	IOPT	IPMP	LSTR	
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	0.000	0.000	0

SURFACE AREA= 0. 16. 31.

CAPACITY= 0. 74. 304.

ELEVATION= 636. 650. 660.

LOOD HYDROGRAPH PACKA. HEC-1

Crest Length at or Below Elevation									
Crest Length at or Below Elevation	0.	61.	85.	99.	99.	99.	Elev.	Exp.	Expl.
650.0	650.1	650.3	650.4	651.8	651.8	653.2	653.8	654.4	656.0
650.0	650.1	650.3	650.4	651.8	651.8	653.2	653.8	654.4	656.0
STATION DAM 7, PLAN 1, RATIO 1									
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.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
0.	0.	0.	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

STATION DAM 7, PLAN 1, RATIO 3

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

BLACK & VEATCH
FLOOD HYDROGRAPH PACKAGE -

[illegible]

330. AT TIME 17.92 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	330.	288.	117.	113.	33751.
CMS	9.	8.	3.	3.	956.
INCHES		.41	.66	.66	
PM		10.38	16.88	16.88	
AC-FT		143.	232.	232.	
THOUS CU M		176.	287.	287.	

STATION DAM 7, PLAN 1, RATIO 4

END-OF-PERIOD HYDROGRAPH ORDINATES

[illegible]

BLACK & VEATCH
FLOOD HYDROGRAPH PACKAGE - HEC-1

[illegible][illegible]

FLOOD HYDROGRAPH PACKAGE - NEC-1

PROGRAM H211UC-IV JUNE 11/20/2020 10:41 PM

654.8	654.7	654.7	654.6	654.6	654.6	654.5	654.4	654.4	654.3
654.3	654.2	654.2	654.1	654.1	654.0	654.0	653.9	653.8	653.8
653.7	653.6	653.5	653.4	653.4	653.3	653.3	653.2	653.1	653.1
653.0	652.9	652.9	652.8	652.7	652.7	652.6	652.5	652.5	652.4

PEAK OUTFLOW IS 9233. AT TIME 16.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	9233.	7667.	2717.	2608.	782409.
CMS	261.	217.	77.	74.	22155.
INCHES		10.87	15.40	15.40	15.40
MM		276.08	391.28	391.28	391.28
AC-FT		3802.	5388.	5388.	5388.
THOUS. CU M		4690.	6667.	6667.	6667.

STATION DAM 7, PLAN 1, RATIO 7

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.
2.	3.	4.	5.	6.	7.	9.	10.	12.	15.	15.
17.	20.	22.	25.	28.	32.	35.	38.	42.	45.	45.
49.	53.	56.	60.	64.	69.	75.	82.	90.	100.	100.
111.	123.	137.	153.	170.	185.	205.	224.	243.	263.	263.
284.	307.	331.	357.	384.	412.	441.	470.	501.	532.	532.
563.	594.	625.	656.	687.	717.	748.	778.	808.	838.	838.
867.	897.	927.	960.	998.	1040.	1084.	1131.	1181.	1232.	1232.
1264.	1339.	1395.	1454.	1516.	1580.	1649.	1724.	1806.	1898.	1898.
1994.	2092.	2168.	2268.	2394.	2506.	2624.	2745.	2866.	2985.	2985.
3099.	3206.	3304.	3391.	3469.	3538.	3602.	3665.	3728.	3792.	3792.
3254.	3313.	3370.	3423.	3475.	3522.	3573.	3627.	3684.	3743.	3743.
340.	468.	4764.	4864.	5009.	5139.	5273.	5413.	5558.	5710.	5710.
5370.	6038.	6213.	6381.	6528.	6658.	6783.	6908.	7034.	7164.	7164.
7299.	7436.	7579.	7728.	7897.	8088.	8345.	8693.	9146.	9678.	9678.
10219.	10713.	11149.	11532.	11772.	12017.	12673.	13625.	14632.	15697.	15697.
16740.	17689.	18498.	19152.	19655.	20024.	20283.	20449.	20541.	20573.	20573.
20359.	20513.	20444.	20360.	20265.	20159.	20041.	19908.	19750.	19561.	19561.
19338.	19082.	18796.	18483.	18145.	17783.	17400.	16995.	16571.	16136.	16136.
15095.	15253.	14815.	14382.	13960.	13555.	13171.	12808.	12409.	11970.	11970.
11564.	11211.	10909.	10652.	10437.	10263.	10129.	10039.	9916.	9720.	9720.
9497.	9264.	9030.	8803.	8589.	8383.	8182.	7983.	7785.	7588.	7588.
7391.	7195.	7001.	6809.	6621.	6437.	6259.	6071.	5852.	5614.	5614.
5382.	5162.	4957.	4765.	4586.	4418.	4259.	4109.	3968.	3842.	3842.
3730.	3626.	3527.	3433.	3341.	3252.	3166.	3081.	2999.	2919.	2919.
2841.	2764.	2687.	2613.	2541.	2471.	2403.	2338.	2275.	2208.	2208.
74.	74.	74.	74.	74.	74.	74.	74.	74.	74.	74.

STORAGE

[illegible]

656.0	656.5	656.5	656.4	656.3	656.2	656.1
655.9	655.9	655.8	655.7	655.6	655.5	655.4
655.2	655.1	655.0	654.9	654.8	654.7	654.6
654.5	654.4	654.3	654.2	654.1	654.0	653.9
654.0	653.9	653.8	653.7	653.6	653.5	653.4

AT TIME 17:50 HOURS

CFS	20573.	14534.	5322.	5109.	1532677.
CHS	583.	412.	151.	145.	43401.
INCHES	20.60	30.18	30.18	30.18	30.18
HY	523.32	766.49	766.49	766.49	766.49
AC-FT	7207.	10556.	10556.	10556.	10556.
THOUS CU M	8889.	13020.	13020.	13020.	13020.

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)

PERATION	STATION	AREA	PLAN	RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6	RATIO 7
				.01	.02	.03	.04	.05	.50	1.00
HYDROGRAPH AT	AREA 1	3.37	1	122.	244.	366.	488.	610.	6097.	12194.
	(	8.73)	(	3.45)	6.91)	10.36)	13.81)	17.26)	172.65)	345.30)
ROUTED TO	DAM 1	3.37	1	84.	186.	329.	2266.	2523.	6077.	12181.
	(	8.73)	(	2.37)	5.26)	9.31)	64.16)	71.45)	172.07)	344.94)
HYDROGRAPH AT	AREA 2	.19	1	21.	43.	64.	86.	107.	1074.	2148.
	(	.50)	(	.61)	1.22)	1.82)	2.43)	3.04)	30.41)	60.82)
ROUTED TO	DAM 2	.19	1	1.	2.	9.	13.	15.	968.	1291.
	(	.50)	(	.03)	.06)	.25)	.37)	.41)	27.40)	36.57)
HYDROGRAPH AT	AREA 3	.05	1	9.	18.	27.	37.	46.	458.	917.
	(	.13)	(	.26)	.52)	.78)	1.04)	1.30)	12.98)	25.96)
2 COMBINED	3	.24	1	10.	20.	29.	39.	55.	1029.	1542.
	(	.63)	(	.28)	.55)	.83)	1.11)	1.56)	29.13)	43.66)
ROUTED TO	DAM 3	.24	1	2.	5.	9.	16.	19.	1126.	1356.
	(	.63)	(	.06)	.13)	.26)	.46)	.54)	31.89)	38.39)

HYDROGRAPH AT AREA 4	38	1	42	85	127	169	211	213	4225
(	.97)	(	1.20)	2.39)	3.59)	4.79)	5.98)	59.82)	119.65)
3 COMBINED	99	1	26	191	353	2283	2575	6707	13421
(	10.33)	(	2.44)	5.40)	10.00)	64.63)	72.92)	189.91)	380.05)
ROUTED IO	99	1	68	153	269	966	1073	6609	13396
(	10.33)	(	1.93)	4.35)	7.62)	27.36)	30.39)	167.13)	379.32)
ROUTED IO	99	1	67	151	265	878	1001	6473	13366
(	10.33)	(	1.89)	4.26)	7.51)	24.85)	28.35)	183.29)	378.50)
HYDROGRAPH AT AREA 5	81	1	49	97	146	194	243	2428	4856
(	2.11)	(	1.37)	2.75)	4.12)	5.50)	6.87)	68.75)	137.50)
2 COMBINED	90	1	68	153	271	891	1053	7289	15294
(	12.44)	(	1.93)	4.34)	7.68)	25.23)	29.82)	206.41)	433.07)
ROUTED IO	90	1	67	153	269	842	939	7236	15266
(	12.44)	(	1.89)	4.32)	7.61)	23.84)	26.60)	204.90)	432.28)
ROUTED IO	80	1	64	147	253	734	873	7125	15110
(	12.44)	(	1.82)	4.18)	7.16)	20.79)	24.71)	201.77)	427.87)
HYDROGRAPH AT AREA 6	46	1	66	132	199	265	331	3312	6624
(	3.78)	(	1.88)	3.75)	5.63)	7.50)	9.38)	93.78)	187.56)
2 COMBINED	26	1	99	214	341	760	927	10020	20377
(	16.22)	(	2.80)	6.05)	9.66)	21.53)	26.25)	283.74)	577.00)
ROUTED IO	26	1	98	207	323	725	902	8959	19950
(	16.22)	(	2.79)	5.86)	9.15)	20.54)	25.55)	253.69)	564.93)
HYDROGRAPH AT AREA 7	30	1	22	45	67	90	112	1120	2239
(	.77)	(	.63)	1.27)	1.90)	2.54)	3.17)	31.70)	63.40)
2 COMBINED	56	1	106	221	343	727	905	9235	20594
(	17.00)	(	3.00)	6.25)	9.71)	20.60)	25.61)	261.49)	583.16)
ROUTED IO	56	1	96	211	330	706	889	9233	20573
(	17.00)	(	2.73)	5.98)	9.35)	20.00)	25.18)	261.44)	582.56)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1							
ELEVATION		INITIAL VALUE	SPILLWAY CREST	TOP OF DAM			
STORAGE		786.60	786.60	790.40			
OUTFLOW		49.	49.	99.			
		0.	0.	452.			
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
.01	788.62	.00	70.	84.	.00	19.00	.00
.02	789.68	.00	86.	186.	.00	16.75	.00
.03	790.14	.00	94.	329.	.00	18.25	.00
.04	790.41	.01	99.	2266.	.29	18.75	17.75
.05	790.49	.09	101.	2523.	.48	18.00	17.00
.50	791.42	1.02	120.	6077.	2.75	17.67	9.58
1.00	793.20	2.80	164.	12181.	5.94	17.58	8.42

click on B--

(MO 12733)

ELK L-1.6
(MO 12733)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	ELEVATION	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM	
	STORAGE	799.50	799.50	805.00	
	OUTFLOW	29.	29.	67.	
		0.	0.	77.	

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
.01	799.99	.00	32.	1.	.00	18.33	.00
.02	800.46	.00	35.	2.	.00	18.33	.00
.03	800.79	.00	37.	9.	.00	18.08	.00
.04	801.06	.00	38.	13.	.00	18.08	.00
.05	801.44	.00	41.	15.	.00	18.08	.00
.50	805.16	.16	68.	968.	.00	14.83	13.83
1.00	805.03	.03	67.	1291.	.00	15.92	11.75

u/s H₂O₂ - *Label*

SUPMARY OF DAM SAFETY ANALYSIS

PLAN 1									
	ELEVATION	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM					
	STORAGE	784.40	784.40	785.00					
	OUTFLOW	66.	66.	70.					
		0.	0.	61.					
43" L. 0" (NO 11057)									
RATIO OF PRF	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		
.01	784.45	.00	66.	2.	.00	16.00	.00		
.02	784.51	.00	67.	5.	.00	16.00	.00		
.03	784.61	.00	67.	9.	.00	18.17	.00		
.04	784.71	.00	68.	16.	.00	18.00	.00		
.05	784.74	.00	68.	19.	.00	17.08	.00		
.50	785.01	.01	70.	1126.	.25	14.08	13.08		
1.00	785.03	.03	70.	1356.	.31	16.08	11.33		

SUPMARY OF DAM SAFETY ANALYSIS

PLAN 1									
ELEVATION		INITIAL VALUE		SPILLWAY CREST		TOP OF DAM			
STORAGE		762.50		762.50		770.00			
OUTFLOW		122.		122.		289.			
		0.		0.		1419.			
RATIO OF PMF	MAXIMUM RESERVOIR W.S.-ELFV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS		
.01	763.68	.00	139.	68.	.00	20.83	.00		
.02	764.20	.00	153.	153.	.00	20.08	.00		
.03	765.01	.00	169.	269.	.00	19.50	.00		
.04	765.35	.00	245.	566.	.00	19.00	.00		
.05	768.83	.00	257.	1073.	.00	18.33	.00		
.50	770.71	.71	309.	6609.	.75	14.83	13.83		
1.00	771.85	1.85	345.	13396.	4.10	17.58	9.67		

JAMES E. E. E. E. E. E.
 (MO 12/10/81)

PLAN 1 STATION CHAN 5

RATIO	MAXIMUM FLOW, CFS	MAXIMUM STAGE, FT	TIME HOURS		
.01	67.	740.5	21.42		
.02	151.	741.1	20.73		
.03	265.	741.7	19.83		
.04	878.	743.1	19.42		
.05	1001.	743.3	18.67		
.50	6473.	747.6	18.17		
1.00	13366.	750.2	17.75		

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 INITIAL VALUE SPILLWAY CREST TOP OF DAM

ELEVATION 723.00 723.00 738.00
STORAGE 0. 0. 180.
OUTFLOW 0. 0. 3505.

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	FAILURE HOURS
.01	724.30	.00	6.	67.	.00	22.08	.00
.02	725.35	.00	9.	153.	.00	21.00	.00
.03	726.13	.00	12.	269.	.00	20.08	.00
.04	730.00	.00	26.	942.	.00	19.67	.00
.05	730.34	.00	33.	939.	.00	19.17	.00
.50	741.27	3.27	276.	7236.	6.17	18.25	.00
1.00	743.39	5.39	373.	15266.	9.50	17.67	.00

PLAN 1 STATION CHAN 6

RATIO	MAXIMUM FLOW,CFS	MAXIMUM STAGE,FT	TIME	
			MAX OUTFLOW HOURS	FAILURE HOURS
.01	64.	700.2	23.00	
.02	167.	700.5	21.92	
.03	253.	700.8	21.00	
.04	734.	701.9	20.33	
.05	873.	702.1	19.92	
.50	7125.	706.2	18.50	
1.00	15110.	708.6	17.92	

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1									
ELEVATION		INITIAL VALUE		SPILLWAY CREST		TOP OF DAM			
STORAGE		657.00		657.00		687.00			
OUTFLOW		0.		0.		522.			
		0.		0.		9914.			
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		TIME OF	
						MAX OUTFLOW		FAILURE	
						HOURS		HOURS	
Hwy-63 Embankment	.01	658.63	.00	2.	98.	.00	17.08	.00	.00
	.02	660.12	.00	3.	207.	.00	17.33	.00	.00
	.03	660.92	.00	7.	323.	.00	17.42	.00	.00
	.04	663.69	.00	22.	725.	.00	20.75	.00	.00
	.05	664.91	.00	28.	902.	.00	20.17	.00	.00
	.50	685.50	.00	461.	8959.	.00	18.00	.00	.00
1.00	692.77	5.77	848.	19950.	4.50	.00	17.50	.00	.00

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1									
ELEVATION		INITIAL VALUE		SPILLWAY CREST		TOP OF DAM			
STORAGE		650.00		650.00		651.80			
OUTFLOW		74.		74.		104.			
		0.		0.		662.			
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		
.01	650.59	.00	83.	96.	.00	17.75	.00		
.02	650.91	.00	89.	211.	.00	17.75	.00		
.03	651.18	.00	93.	330.	.00	17.92	.00		
.04	651.87	.07	106.	706.	1.17	21.08	.00		
.05	652.16	.36	111.	889.	2.92	20.50	.00		
.50	656.68	4.88	210.	9233.	14.08	18.00	.00		
1.00	659.49	7.69	288.	20573.	16.33	17.50	.00		

Max. V. 11.165 ft
(11.165 ft)
W.S.

[illegible]

101	M	0	2	.375	1.0				
102	0	-288							
103	T					-1	-84		
104	W2		0.17						
105	X			1					
106	K	3	4						
107	K1	COMBINE HYDROGRAPHS-TOTAL INFLOW TO MO.12102							
108	K	1	DAM 4						
109	K1	ROUTE THROUGH WATERS EDGE ESTATE LAKE DAM (MO 12102)							
110	V			1					
111	Y1	1				-762.5	-1		
112	Y4	762.5	763.33	764.59	765.82	769.40	770.14	770.6	771.45
113	Y4	775.36							772.12
114	Y5	0.	50	200	400	1200	1470	2150	4020
115	Y5	19520							5980
116	SA	0.	3	14	17	28	50		
117	SE	745	750	760	762.5	770	780		
118	SS	762.5							
119	SD	770							
120	SB	10.	.5	746.	1	762.5	770.		
121	K	1	CHAN 5						
122	K1	CHANNEL ROUTING TO I-70 EMBANKMENT							
123	Y			1					
124	Y1	1							
125	Y6	0.070	0.050	0.070	740.	770.	4500.	0.0047	
126	Y7	0.	770.	60.	760.	120.	750.	280.	740.
127	Y7	400.	750.	520.	760.	580.	770.		
128	K	0	AREA 5						
129	K1	INFLOW TO I-70 EMBANKMENT							
130	M	0	2	0.813					
131	0	-288							
132	T							-1	-71
133	W2		0.694						
134	X			1					
135	K	2	5						
136	K1	COMBINE HYDROGRAPHS-TOTAL INFLOW TO I-70 (OUTFLOW FROM MO.12102 & AREA 5)							
137	K	1	DAM 5						
138	K1	ROUTING THROUGH I-70 EMBANKMENT							
139	Y			1					
140	Y1	1							
141	Y4	723.	724.	725.	730.	735.	738.	-723.0	-1
142	Y5	0.	32.	101.	841.	2270.	3504.	750.	
143	SS	0.0	26.3	219.	673.			3505.	
144	SE	723.	730.	740.	750.				
145	SD	723.							
146	SD	738.							
147	SL	0.	30.	310.	1390.				
148	SV	737.9	738.	740.	750.				
149	K	1	CHAN 6						
150	K1	CHANNEL ROUTING TO HIGHWAY 63 EMBANKMENT							

HEC-1

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AD-A106 460

BLACK AND VEATCH KANSAS CITY MO

NATIONAL DAM SAFETY PROGRAM, MOON VALLEY DAM (MO 11597), MISSOURI-ETC(U)

AUG 81 E R BURTON, H L CALLAMAN

F/G 13/13
DACW43-81-C-0037

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UNCLASSIFIED

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DATE
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12-81
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BLACK & VEATCH

FLOOD HYDROGRAPH PACKAGE - REC-1

1.01	23.45	285	23.75	268.	289.	92.	651.1
1.01	23.50	286	23.83	265.	285.	92.	651.1
1.01	23.55	287	23.92	263.	282.	91.	651.1
1.02	.00	288	24.00	260.	278.	91.	651.1

PEAK OUTFLOW IS 2361. AT TIME 17.42 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	2361.	1483.	481.	481.	138399.
CMS	67.	42.	14.	14.	3919.
INCHES		2.10	2.72	2.72	
MM		53.38	69.21	69.21	
AC-FT		735.	953.	953.	
THOUS CU M		907.	1176.	1176.	

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

	PEAK	6-HOUR	24-HOUR	72-HOUR	AREA
HYDROGRAPH AT AREA 1	1274.	710.	218.	218.	3.37
	(36.06)(	20.11)(	6.18)(	6.18)(	8.73)
ROUTED TO DAM 1	3301.	842.	242.	242.	3.37
	(93.49)(	23.84)(	6.85)(	6.85)(	8.73)
HYDROGRAPH AT AREA 2	393.	59.	18.	18.	.19
	(11.14)(	1.67)(	.51)(	.51)(	.50)
ROUTED TO DAM 2	22.	21.	10.	10.	.19
	(.62)(	.61)(	.29)(	.29)(	.50)
HYDROGRAPH AT AREA 3	164.	16.	5.	5.	.05
	(4.66)(	.44)(	.14)(	.14)(	.13)
2-COMBINED	3	34.	15.	15.	.24
	(4.97)(	.97)(	.42)(	.42)(	.63)
ROUTED TO DAM 3	56.	32.	14.	14.	.24
	(1.58)(	.91)(	.39)(	.39)(	.63)
HYDROGRAPH AT AREA 4	779.	114.	35.	35.	.38
	(22.06)(	3.24)(	1.00)(	1.00)(	.97)
3-COMBINED	4	928.	291.	291.	3.99
	(95.43)(	26.27)(	8.24)(	8.24)(	10.33)

ROUTED TO	DAM 4	4723.	1223.	352.	352.	3.99
	(	134.68)	(34.62)	(9.97)	(9.97)	(10.33)
ROUTED TO	CHAN 5	4054.	1219.	349.	349.	3.99
	(	114.79)	(34.53)	(9.87)	(9.87)	(10.33)
HYDROGRAPH AT AREA 5		537.	165.	50.	50.	.81
	(	15.20)	(4.69)	(1.41)	(1.41)	(2.11)
2-COMBINED	5	4114.	1330.	398.	398.	4.80
	(	116.50)	(37.66)	(11.26)	(11.26)	(12.44)
ROUTED TO	DAM 5	2876.	1316.	394.	394.	4.80
	(	81.43)	(37.27)	(11.15)	(11.15)	(12.44)
ROUTED TO	CHAN 6	2470.	1279.	385.	385.	4.80
	(	69.95)	(36.23)	(10.90)	(10.90)	(12.44)
HYDROGRAPH AT AREA 6		691.	293.	88.	88.	1.46
	(	19.57)	(8.29)	(2.50)	(2.50)	(3.78)
2-COMBINED	6	2586.	1434.	473.	473.	6.26
	(	73.23)	(42.03)	(13.41)	(13.41)	(16.22)
ROUTED TO	DAM 6	2368.	1469.	471.	471.	6.26
	(	67.06)	(41.60)	(13.34)	(13.34)	(16.22)
HYDROGRAPH AT AREA 7		256.	61.	18.	18.	.30
	(	7.25)	(1.73)	(.52)	(.52)	(.77)
2-COMBINED	7	2387.	1492.	489.	489.	6.56
	(	67.59)	(42.25)	(13.86)	(13.86)	(17.00)
ROUTED TO	DAM 7	2361.	1483.	481.	481.	6.56
	(	66.27)	(41.98)	(13.61)	(13.61)	(17.00)

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	ELEVATION	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM	TIME OF FAILURE	TIME OF	
						DURATION	MAX OUTFLOW
	STORAGE		OVER TOP		HOURS	HOURS	HOURS
	OUTFLOW		CFE				
		49.	49.	790.40			
		0.	0.	361.			

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	ELEVATION	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
	STORAGE	799.50	799.50	805.00
	OUTFLOW	29.	29.	87.
		0.	0.	77.

Slp Hydrograph

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
1.00	803.24	.00	53.	22.	.00	13.92	.00

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1						
ELEVATION		INITIAL VALUE		SPILLWAY CREST		TOP OF DAM
STORAGE		784.40		784.40		785.00
OUTFLOW		66.		66.		70.
		0.		0.		61.
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
						FAILURE
1.00	784.98	0.00	70.	56.	0.00	12.33
						0.00

Notes: 1. 1105-11

Higher Lake Dam
 (M=1105)

FLOOD HYDROGRAPH PACK - MEC-1

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	ELEVATION	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
	STORAGE	762.50	762.50	770.00
	OUTFLOW	122.	122.	289.
		0.	0.	1419.

95 Edge Elevation
(MO 12102)

RATIO OF PPF	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
1.00	770.23	.23	295.	4763.	.46	15.75	14.75

STATION CHAN 5

RATIO	MAXIMUM FLOW, CFS	MAXIMUM STAGE, FT	TIME HOURS
1.00	4054.	746.2	15.83

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1		ELEVATION	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
		STORAGE	723.00	723.00	738.00
		OUTFLOW	0.	0.	180.
			0.	0.	3505.

1-10
E-1

RATIO OF PMF	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
1.00	738.47	151.	2876.	.00	16.25	.00

STATION CHAN 6

RATIO	MAXIMUM FLOW-CFS	MAXIMUM STAGE-FT	TIME HOURS
1.00	2470.	703.6	16.75

SUMMARY OF DAM SAFETY ANALYSIS

[illegible]

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1					
ELEVATION STORAGE OUTFLOW	INITIAL VALUE 650.00 74. 0.	SPILLWAY CREST 650.00 74. 0.	TOP OF DAM 651.80 104. 662.		
MAXIMUM RESERVOIR W.S.-ELEV	MAXIMUM REPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW FAILURE HOURS
PHF 1.00	653.75	1.95	142.	2361.	7.00 17.42 .00

END

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