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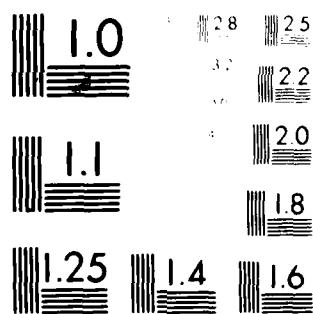
TENNESSEE STATE DEPT OF CONSERVATION NASHVILLE DIV 0--ETC F/8 13/13
NATIONAL PROGRAM OF INSPECTION OF NON-FEDERAL DAMS, TENNESSEE. --ETC(U)
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The dam is a linear earthen structure 325 feet long and 47.1 feet high with a crest width of 13 feet. The upstream and downstream slopes are 2.4H:1V and 2.7H:1V respectively. It is in the intermediate size and high hazard potential classifications. The lake area is 7 acres at normal pool, increasing to 23 acres at the top of the dam. The service spillway is a 2' x 6' (inside diameter) concrete riser with a 15" steel cylinder concrete pipe. The drawdown consists of a 16" diameter formed opening feeding into the riser controlled by a 24" slide headgate. The emergency spillway is an open channel.		

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SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

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excavated in rock at the right side of the embankment. It has a base width of 25 feet and is trapezoidal in shape. The dam is well grassed and free of undesirable vegetation. Its slopes are uniform and well defined and exhibit no signs of structural instability. Some minor erosion exists on the downstream slope in two areas where construction equipment and 4-wheel drive vehicles have destroyed the grass cover. No cracks, signs of seepage, sliding, or differential settlement were observed on the dam or in the area immediately downstream. The dam is given a safety classification of "significantly deficient" because of its spillway limitations. It is recommended that a qualified engineer be engaged to develop project modifications that will allow the dam to pass the PMF, and that the owner perform various maintenance operations.



DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1070
NASHVILLE, TENNESSEE 37202

IN REPLY REFER TO

9 JUN 1981

ORND-G

Honorable Lamar Alexander
Governor of Tennessee
Nashville, TN 37219

[illegible]

Dear Governor Alexander:

Furnished herewith is the Phase I Investigation Report on Jennings Creek Watershed Dam No. 16 near North Springs, Tennessee. The report was prepared under the authority and provisions of PL 92-367, the National Dam Inspection Act, dated 8 August 1972.

The report presents details of the field inspection, background information, technical analyses, findings, and recommendations for improving the condition of the dam.

Based upon the inspection and subsequent evaluation, Jennings Creek Watershed Dam No. 16 has insufficient storage and spillway capacity to pass the probable maximum flood and excessive growth of trees and brush on the embankment. Because of these deficiencies, this dam is classified as significantly deficient.

The recommendation concerning project modifications to allow safe passage of the design flood and others contained in this report should be undertaken in the near future.

Public release of the report and initiation of public statements fall within your prerogative. However, under provisions of the Freedom of Information Act, the Corps of Engineers is required to respond fully to inquiries on information contained in the report and to make it accessible for review on request.

Your assistance in keeping me informed of any further developments will be appreciated.

Sincerely,

LEE W. TUCKER
Colonel, Corps of Engineers
Commander

1 Incl
As stated

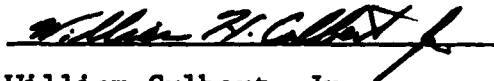
CF:
Mr. Robert A. Hunt, Director
Division of Water Resources
4721 Trousdale Drive
Nashville, TN 37220

PHASE I REPORT
NATIONAL DAM SAFETY PROGRAM
TENNESSEE

Name of Dam Jennings Creek Watershed Dam # 16
County Macon
Stream Trib. of Jennings Creek at Donoho Hollow
Date of Inspection ... January 8, 1981

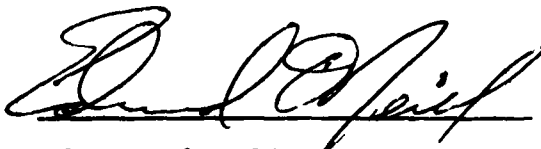
This investigation and evaluation was prepared by the
Tennessee Department of Conservation, Division of Water
Resources.

PREPARED BY:



William Culbert, Jr.
Water Resources Engineer

APPROVED BY:



Edmond O'Neill
Chief Engineer
Safe Dams Section

APPROVED BY:



Robert A. Hunt, P.E.
Director, Division of
Water Resources
Tennessee Department
of Conservation

TABLE OF CONTENTS

	<u>Page</u>
Aerial Photograph	
Abstract	
SECTION 1 - GENERAL	
1.1 Authority	1
1.2 Purpose and Scope	1
1.3 Past Inspections	1
1.4 Details of Inspection	1
1.5 Inspection Team Members	1
SECTION 2 - PROJECT DESCRIPTION	
2.1 Location	2
2.2 History of Project	2
2.3 Size and Hazard Classification	2
2.4 Description of Dam and Appurtenances	2
2.5 Downstream Channel	3
2.6 Reservoir and Drainage Area	3
SECTION 3 - FINDINGS	
3.1 Visual Inspection	5
3.2 Review of Data	6
3.3 Static and Seismic Stability Assessment	6
3.4 Hydraulic and Hydrologic Analysis	6
3.5 Conclusions and Recommendations	7
SECTION 4 - REVIEW BOARD FINDINGS	8

LIST OF APPENDICES

APPENDIX

- | | |
|---|---|
| A | DATA SUMMARY |
| B | SKETCHES AND LOCATION MAPS |
| C | PHOTOGRAPHIC RECORD |
| D | TECHNICAL CRITIQUE - CHECKLISTS FOR
VISUAL INSPECTION, ENGINEERING DATA,
SOIL TESTS |
| E | DESIGN DRAWINGS |
| F | HYDRAULIC AND HYDROLOGIC DATA |
| G | CORRESPONDENCE |

PREFACE

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

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

The analyses and recommendations included in this report are related to the hazard classification of the structure at the time of the report. Changes in conditions downstream of the dam may change the hazard classification of the structure. A change in hazard classification may in turn change the design flood on which the hydraulic and hydrologic analyses are based and may have a significant impact on the assessment of the safety of the structure.

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



Jennings Creek Dam No. 16

Macon County

April 2, 1981

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
TENNESSEE

Name of Dam Jennings Creek Watershed Dam No. 16
County Macon
Stream Trib. Jennings Creek at Donoho Hollow
Date of Inspection January 8, 1981

ABSTRACT

The dam is a linear earthen structure 325 feet long and 47.1 feet high with a crest width of 13 feet. The upstream and downstream slopes are 2.4H:1V and 2.7H:1V respectively. It is in the intermediate size and high hazard potential classifications. The lake area is 7 acres at normal pool, increasing to 23 acres at the top of the dam. The service spillway is a 2' x 6' (inside diameter) concrete riser with a 15" steel cylinder concrete pipe. The drawdown consists of a 16" diameter formed opening feeding into the riser controlled by a 24" slide headgate. The emergency spillway is an open channel excavated in rock at the right side of the embankment. It has a base width of 25 feet and is trapezoidal in shape.

The dam is well grassed and free of undesirable vegetation. Its slopes are uniform and well defined and exhibit no signs of structural instability. Some minor erosion exists on the downstream slope in two areas where construction equipment and 4-wheel drive vehicles have destroyed the grass cover. No cracks, signs of seepage, sliding, or differential settlement were observed on the dam or in the area immediately downstream.

The dam is given a safety classification of "significantly deficient" because of its spillway limitations.

It is recommended that a qualified engineer be engaged to develop project modifications that will allow the dam to pass the PMF, and that the owner perform various maintenance operations.

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
JENNINGS CREEK WATERSHED DAM NO. 16
MACON COUNTY, TENNESSEE

SECTION 1 - GENERAL

- 1.1 Authority - The Phase I inspection of this dam was conducted under the authority of the Tennessee Code Annotated, Section 70-2501 to 70-2530, "The Safe Dams Act of 1973", in cooperation with the U. S. Army Corps of Engineers under the authority of Public Law 92-367, "The National Dam Inspection Act".
- 1.2 Purpose and Scope - The purpose of a Phase I investigation is to develop an engineering assessment of the general condition of a dam with respect to safety and stability. This is accomplished by conducting a visual inspection; reviewing any available design and construction data; and performing appropriate hydraulic, hydrologic, and other analyses. A comprehensive description of the Phase I investigation program is given in Recommended Guidelines for Safety Inspection of Dams, by the Department of the Army, Chief of Engineers, Washington, D. C. 20314.
- 1.3 Past Inspections - The dam is inspected at least annually by the SCS to provide maintenance recommendations for the Watershed District Board.
- 1.4 Details of Inspection - The Phase I visual inspection of Jennings Creek Watershed Dam No. 16 was conducted under partly cloudy skies with a temperature of 25-30° F. The lake was frozen over and 1" of melting snow was on the ground. The inspection was not significantly hindered by the snow, however, because the direct exposure of the embankment to the sunlight kept it clearer than the adjacent ground.
- 1.5 Inspection Team Members - Field inspection was performed by the following State personnel:

Edmond O'Neill Robert Ramsey
William Culbert, Jr.

The team was accompanied by Al Dunn (Corps of Engineers) and Perry Fuqua (SCS).

SECTION 2 - PROJECT DESCRIPTION

- 2.1 Location - Jennings Creek Watershed Dam No. 16 is located in Macon County, Tennessee, approximately 800 feet north of State Highway 56 and 400 feet west of the Macon-Jackson County line. The dam is on the Donoho Hollow tributary of Jennings Creek. It is shown on the U. S. Geological Survey 7.5 minute Willette Quadrangle map at latitude 36°28'11" N and longitude 85°49'15" W. Location maps are provided in Appendix B of this report.
- 2.2 History of Project - The dam was completed in 1960 under the authority of the watershed protection and flood prevention act (Public Law 566). It is one of a series of dams sponsored by the Jennings Creek Watershed District, the Jackson County Soil Conservation District, the Macon County Soil Conservation District, and the Clay County Soil Conservation District, with design assistance from the Soil Conservation Service. The owner of the project is Glenn Donoho. Construction was by Farrar of McMinnville.
- 2.3 Size and Hazard Classification - The dam is in the intermediate size classification, with a measured height of 47.1 feet. Reservoir storage is calculated as 41 acre-feet at normal pool and 400 acre-feet at maximum pool (top of dam). The dam is classified as high hazard because of the presence of a house several hundred feet downstream of the dam (see photo no. 5).
- 2.4 Description of Dam and Appurtenances
- 2.4.1 Embankment - The embankment is an earthfill structure presumably constructed using residual clay derived from the in-situ weathering of the underlying bedrock.

The dam is 47.1 feet high and 325 feet long with a crest width of 13 feet. The crest varies in elevation from 726.1 feet to 727.6 feet. The downstream and exposed upstream slopes of the dam are 2.7H:1V and 2.4H:1V respectively. Below the 10 foot wave berm at normal pool, the upstream slope is 2.6H:1V.

The dam is underlain by Mississippian Age and Ordovician formations of high chert limestone. The bedding planes are mostly horizontal with appreciable cavernous solution zones.

- 2.4.2 Service Spillway - The principal spillway maintains normal pool at elevation 701.0. It consists of a 2' x 6' (inside diameter) reinforced concrete riser 20' tall feeding a 15" steel cylinder concrete pressure pipe 261 feet long (see photo nos. 7 and 8).
- 2.4.3 Emergency Spillway - The emergency spillway is an open channel excavated in rock, right of the embankment. Its cross-section is trapezoidal with left and right side slopes of 2.5H:1V and 2.2H:1V respectively and a base width of 25 feet. About 4.7 feet above the effective spillway crest elevation of 718.5, the right side slope changes to approximately vertical and extends upward 16 feet, well above the dam. The approach and exit channels are sloped at 5% and 2% respectively (see photo nos. 9 and 10).
- 2.4.4 Drawdown Facilities - The drawdown facilities consist of a 16" diameter inlet (invert elevation 683.0) controlled by a 24" sliding headgate. The gate is manually operated from the top of the riser (see photo no. 7).
- 2.5 Downstream Channel - The downstream channel lies on a 1.5% slope. It has a V-shaped cross-section with a top width of approximately 20 feet and a depth of 4 feet. Seven hundred feet downstream of the embankment the channel passed under a highway bridge. In this area, it widens and deepens as it extends out of the hollow and into the bottomland (see photo no. 5).
- 2.6 Reservoir and Drainage Area - At normal pool elevation 701.0, the reservoir has a calculated storage capacity of 41 acre-feet with a surface area of 7 acres. At the top of the dam the reservoir volume is approximately 400 acre-feet with a pool surface area of 23 acres. The drainage area for the lake is 736 acres (1.150 mi²). The average ground slope is 30%. About 2900 feet upstream of the dam, the

drainage area divides into two sub-basins. The watercourse of the northernmost branch is a few hundred feet longer than the other.

Major soil types in the area include Bodine, Mountview, Delrose, Dickson, and Mimosa. The basin is predominantly wooded.

SECTION 3 - FINDINGS

3.1 Visual Inspection

- 3.1.1 Embankment - The dam is well grassed and free of deleterious vegetation except for a few copse along the downstream toe and scattered other locations. The crest and side slopes are uniform and well defined, exhibiting no signs of instability. No cracks, indications of seepage, sliding, or differential settlement were observed on the dam or in the area immediately downstream. Erosion from surface runoff is insignificant (See photo no. 6).
- 3.1.2 Service Spillway - The riser appears to be in excellent condition with no noteworthy cracking or weathering. The drawdown gate and operating mechanism have been recently installed and appear to be operable (see photo no. 7). The spillway culvert is presumably in good condition also as evidenced by the appearance of the outfall (see photo no. 8).
- 3.1.3 Emergency Spillway - The emergency spillway is relatively uniform over its entire length with no major obstructions. No significant erosion was observed (see photo nos. 9, 10, and 11).
- 3.1.4 Downstream Channel - The channel is covered with perennial growth and seedlings. It is reasonably well defined and uniform for a natural channel and shows signs of only minor erosion.
- 3.1.5 Reservoir and Drainage Area - The lake floor is clear of trees and debris, and sediment is minimal because the drainage area is predominantly wooded. The reservoir was emptied in the summer of 1980 to allow installation of a 24" sliding headgate over the drawdown inlet. The valve was closed sometime after a field visit on November 5, 1980. At the time of the inspection, the water level had come within 2 feet of reaching normal pool elevation.

- 3.2 Review of Data - Information available for review includes the SCS as-built drawings and the Watershed Work Plan prepared by Jennings Creek Watershed District, the SCS, and Soil Conservation Districts of Jackson, Clay, and Macon Counties.

The bedrock within the Jennings Creek Watershed consists of formations of Ordovician and Mississippian Age. The rock strata has nearly horizontal bedding. The composition of the rock ranges from thin to massive bedded limestone, cherty limestone, shaly limestone, and shale. There are extensive outcrops of bedrock on the steeper slopes with intermittent areas of shallow residual soil overburden. The presence of cherty limestone formations had led to high chert content in the colluvial and alluvial soils and in many of the residual soils. Many solution zones are present in the limestone bedrock. These are in the form of caverns, solution planes, and small sink holes.

A cutoff trench was excavated into bedrock (approximate elevation 675) along the dam centerline. The "as built" drawings indicate that the channel was excavated at 1:1 side slopes to a 20 foot base.

- 3.3 Static and Seismic Stability - The actual margin of safety for static stability cannot be determined because the engineering data required for an analytical stability analysis are not available. However, an assessment of the embankment stability based on visual evidence and engineering judgment would indicate a stable structure due to moderate embankment slopes and the lack of leaks or seepage. The project is located in Seismic Zone 1 and, according to OCE guidelines, should not be expected to be threatened by seismic effects provided static conditions are satisfied.

- 3.4 Hydraulic and Hydrologic Analyses - According to OCE guidelines, the design flood for an intermediate size dam in a high hazard area is the probable maximum flood (PMF). Hydraulic analysis indicates that outflow resulting from the PMF (AMC II) will overtop the dam by a maximum depth of 3.0 feet for a duration of 2.3 hours. Additional

analysis indicates that outflow from the $\frac{1}{2}$ PMF will overtop the dam by a maximum of 0.6 feet for 30 minutes.

3.5 Conclusions and Recommendations

- 3.5.1 Conclusions - On the basis of visual evidence and engineering judgment, the dam is considered to be structurally stable. The embankment slopes are moderate and are considered adequate. No seepage problem appears to exist. The dam has the appearance that it is well constructed.

Hydraulic analysis indicates that the spillway will not pass the PMF as required by OCE guidelines for dams of intermediate size and high hazard potential.

The project is situated in Seismic Zone 1, indicating that risk of damage from seismic activity is minor.

The dam is considered to have a condition classification of "significantly deficient" solely because the spillway will not pass the specified design flood.

3.5.2 Recommendations

- a) All woody vegetation should be removed from the embankment.
- b) Engage the services of a qualified engineer to develop project modifications to allow safe passage of the PMF.
- c) An emergency action plan should be developed, including a warning system to alert downstream residents, in the event a serious condition develops with the project.

SECTION 4 REVIEW BOARD FINDINGS

The Interagency Review Board for the National Program of Inspection of Non-Federal Dams met in Nashville on 10 April 1981 to examine the technical data contained in the Phase I investigation report for Jennings Creek Watershed Dam No. 16. The Review Board considered the information and recommended that (1) the ownership of the dam be clarified and the owner be made aware of his responsibilities in relation to the operation and maintenance of the structure, (2) an emergency action plan be developed, including a warning system to alert downstream residents in the event that a serious condition develops with the project, and (3) the condition classification should be changed from "unsafe-nonemergency" to "significantly deficient." They agreed with other report conclusions and recommendations. A copy of the letter report presented by the Review Board is included in Appendix G.

APPENDIX A
DATA SUMMARY

APPENDIX A
DATA SUMMARY

A.1 Dam

- A.1.1 Type - The dam is a linear earthen structure with an open channel emergency spillway excavated in rock at the right abutment. The principal spillway is reinforced concrete with a steel cylinder concrete pressure pipe culvert.
- A.1.2 Dimensions and Elevations - Elevations are expressed in feet above mean sea level and are referenced to the invert of the principal spillway outlet, elevation 679.0, as given on the SCS design drawings.
- a. Crest length - 325'
 - b. Crest width - 13'
 - c. Height - 47.1
 - d. Crest elevation - 726.1
 - e. Emergency spillway crest elevation - 718.5
 - f. Principal spillway crest elevation - 701.0
 (normal pool)
 - g. Embankment slope, upstream - 2.4H:1V
 - h. Embankment slope, downstream - 2.7H:1V
 - i. Size classification - Intermediate
- A.1.3 Embankment Zoning - None
- A.1.4 Cut-off and Grout Curtains - A cut-off trench was excavated along the dam centerline to bedrock, approximate elevation 675. It was cut at 1:1 side slopes to a 20' base. A rock toe was also designed to intercept seepage. It is excavated to bedrock and extends as high as normal pool elevation along the abutment tie-ins.

Grouting was minimal. Approximately a dozen holes were grouted, most near the right side of the dam along the centerline and perpendicular to this line approximately 50' right of the left abutment.

A.1.5 Instrumentation - None

A.1.6 Operation and Maintenance - Section 70-1801 through 70-1849 of the Tennessee Code Annotated (Watershed District Act of 1955) provides for the establishment of the Watershed Districts and the Watershed District Boards. Easement rights for the construction of the Jennings Creek Dams were obtained by the Board from the local property owners. The extent of ownership retained by the individuals is being negotiated, with the stipulation (Section 70-1847) that the Board has full operation and maintenance authority.

In the case of Jennings Creek, the entire Board has been liquidated through death or retirement. A written petition signed by 5% of the land owners in the watershed is required for it to be reestablished (by TCA Section 70-1822). A petition has been drafted and signed and is awaiting action from the court.

According to Perry Fuqua, SCS District Conservationist, Jackson County, the Watershed District is to make periodic inspections of the dams as needed and at least annually to determine any remedial measures needed.

A record of the inspections and maintenance operations is to be kept on file and will be available for use by representatives of the SCS. Specific maintenance agreements are to be executed prior to the construction of structural works of improvements.

A.2 Reservoir and Drainage Area

A.2.1 Reservoir

a. Normal Pool

1. Elevation - 701.0
2. Surface area - 7 acres
3. Storage - 41 acre-feet
4. Length of reservoir - 1300'

b. At Emergency Spillway Crest

1. Elevation - 718.5
2. Surface area - 16 acres
3. Storage - 244 acre-feet

c. At Maximum Pool

1. Elevation - 726.1
2. Surface area - 23 acres
3. Storage - 400 acre-feet

A.2.2 Drainage Area

- a. Size - 736 acres (1.150 mi²)
- b. Soils - Bodine, Mountview, Delrose, Mimosa
- c. Average slope - 30%
- d. Land use - Predominantly wooded, some pasture and roads.
- e. Runoff from PMP (28.5" in 6 hours)
 1. AMC II - 24.5"
 2. AMC III - 26.8"
- f. Runoff from 100 year storm (4.8" in 6 hours)
 1. AMC II - 2.2"
 2. AMC III - 3.4"

A.3 Outlet Structures

A.3.1 Service Spillway and Drawdown

- a. Type - Single stage concrete riser and steel cylinder concrete pressure pipe.
- b. Size - Riser - 2' x 6' (inside diameter)
- c. Pipe gradient - 1.5%
- d. Drawdown - 16" diameter formed concrete opening covered by 24" slide headgate.

A.3.2 Emergency Spillway

- a. Type - Excavated in rock, left wall is fill material, right wall is natural bedrock.
- b. Size - 25' bottom width, 7.6' available head, 2.5H:1V and 2.2H:1V side slopes, 4.7' above the spillway crest the steeper slope becomes vertical and extends 16' upward.
- c. Capacity - 2508 cfs at top of dam.

A.4 Historical Data

A.4.1 Construction Date - 1960

A.4.2 Designer - Soil Conservation Service

A.4.3 Builder - Farrar Construction Company, McMinnville

A.4.4 Owner - Glenn Donoho

A.4.5 Previous Inspections - by SCS

A.4.6 Seismic Zone - 1

A.5 Downstream Hazard Data

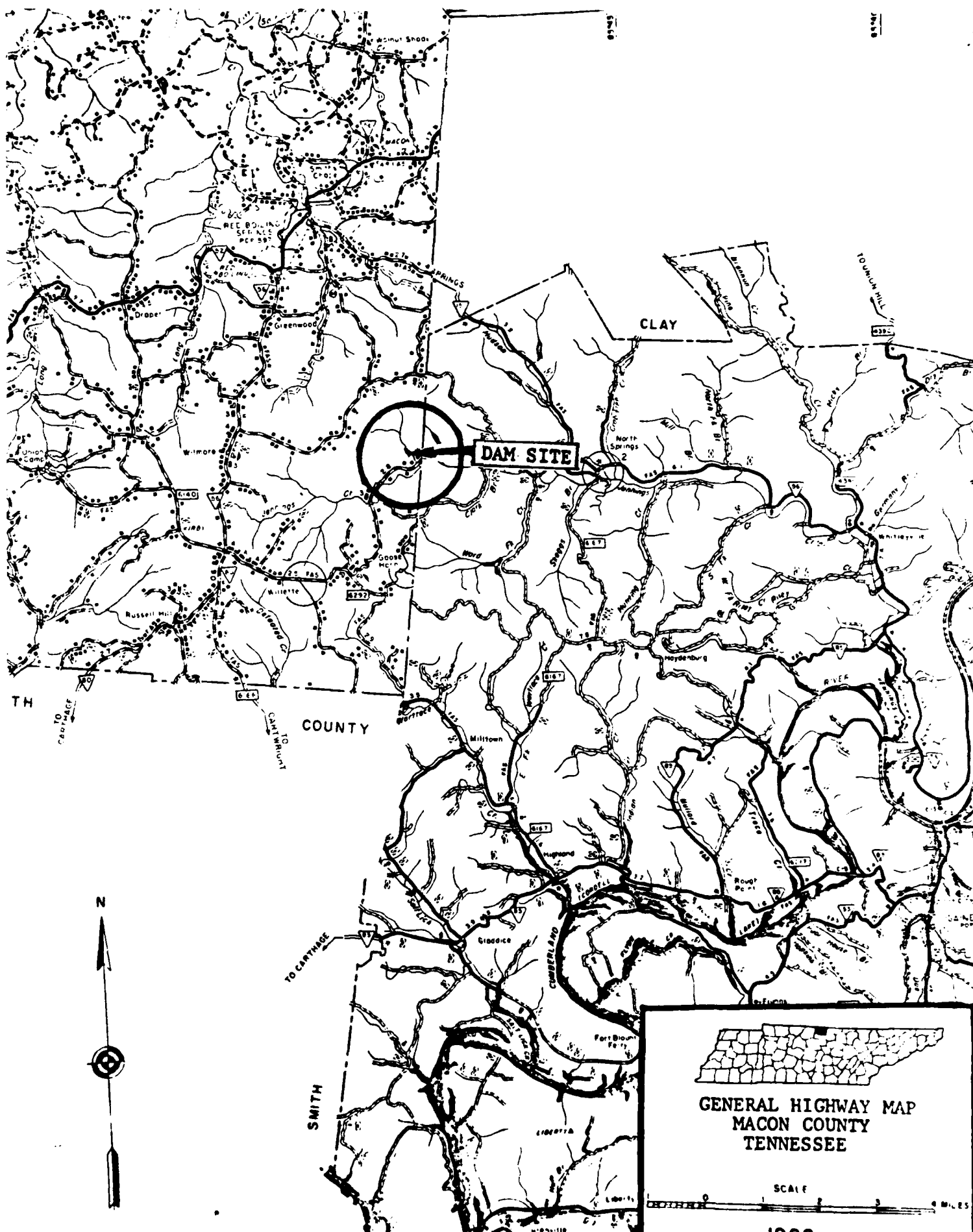
A.5.1 Downstream Hazard Potential Classification - High

A.5.2 Persons in Likely Flood Path - Approximately 8

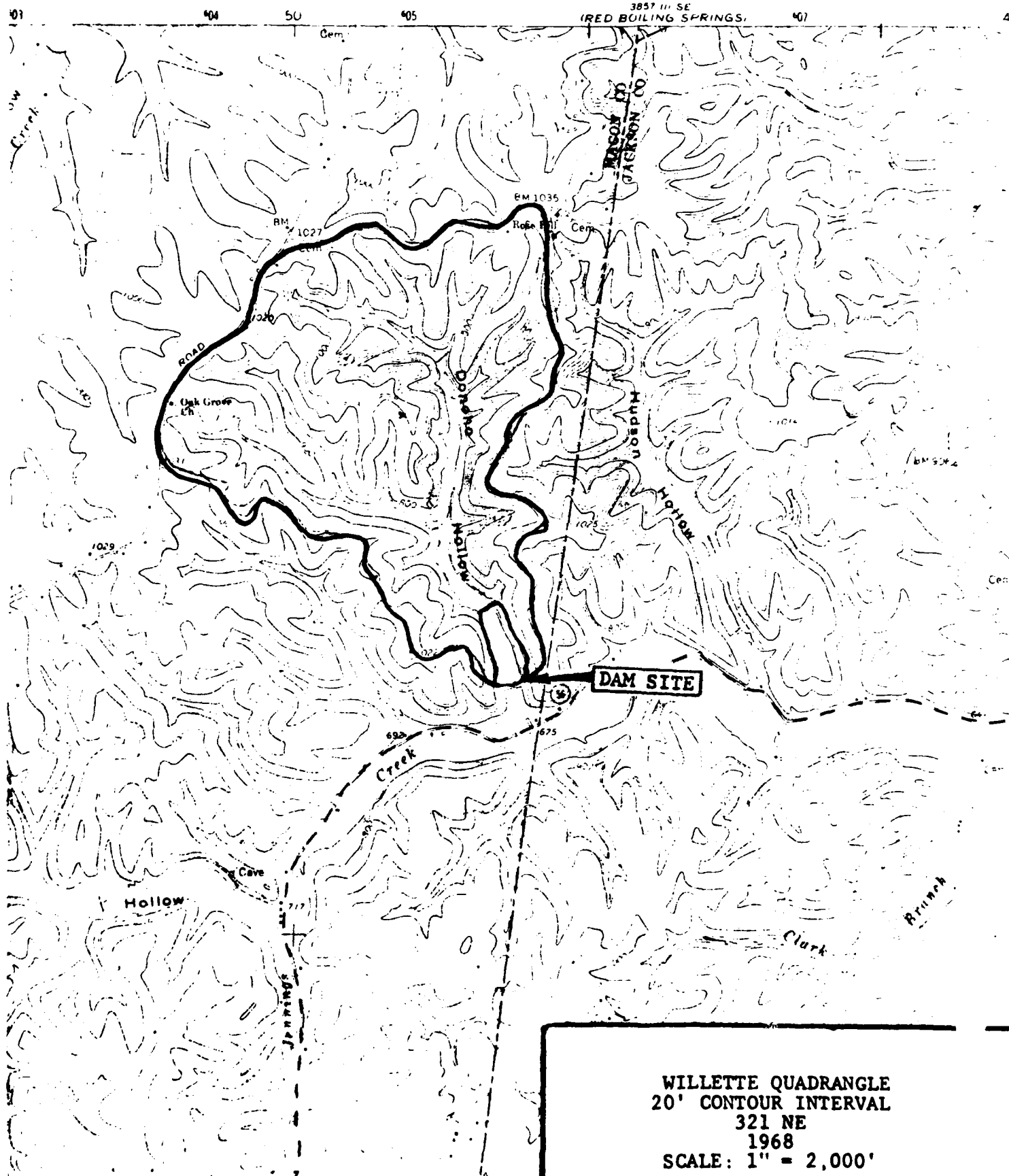
A.5.3 Downstream Property - 1 house several hundred feet downstream near channel elevation; State Route 56 crosses the channel approximately 800' downstream of the dam.

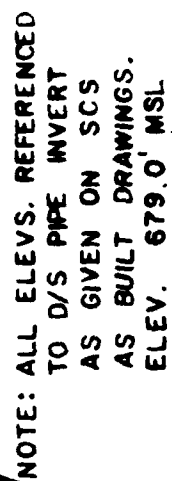
A.5.4 Warning Systems - None

APPENDIX B
SKETCHES AND LOCATION MAPS



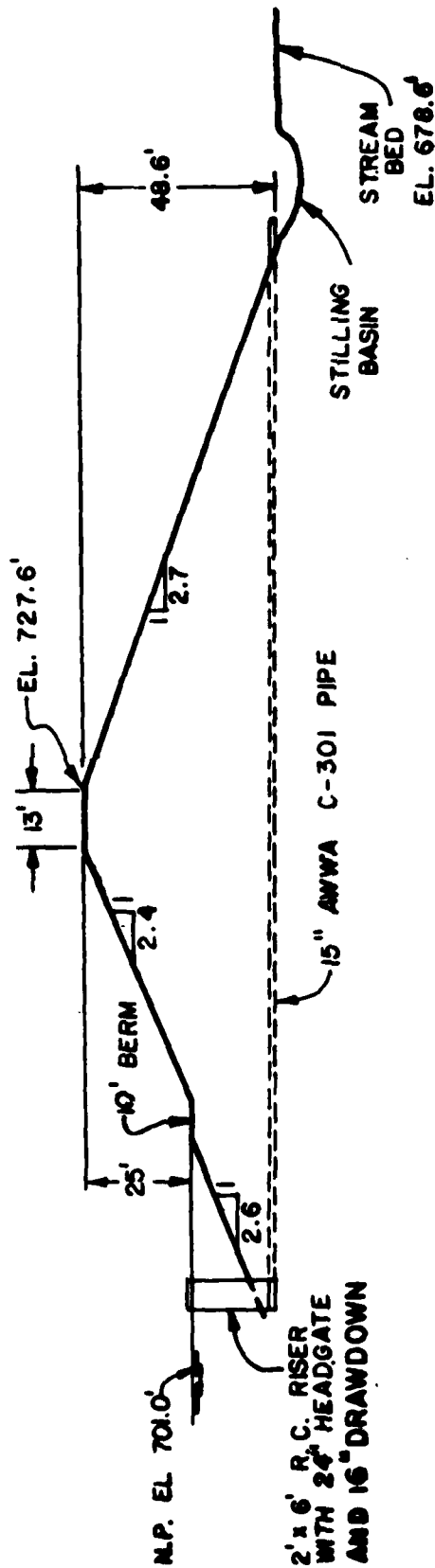
3857 111 SE
(RED BOILING SPRINGS)





**JENNINGS CREEK
DAM NO.**

DRAWN BY: M.J.F.
DATE: 22 NOV. 80
SHEET: 1 OF 4

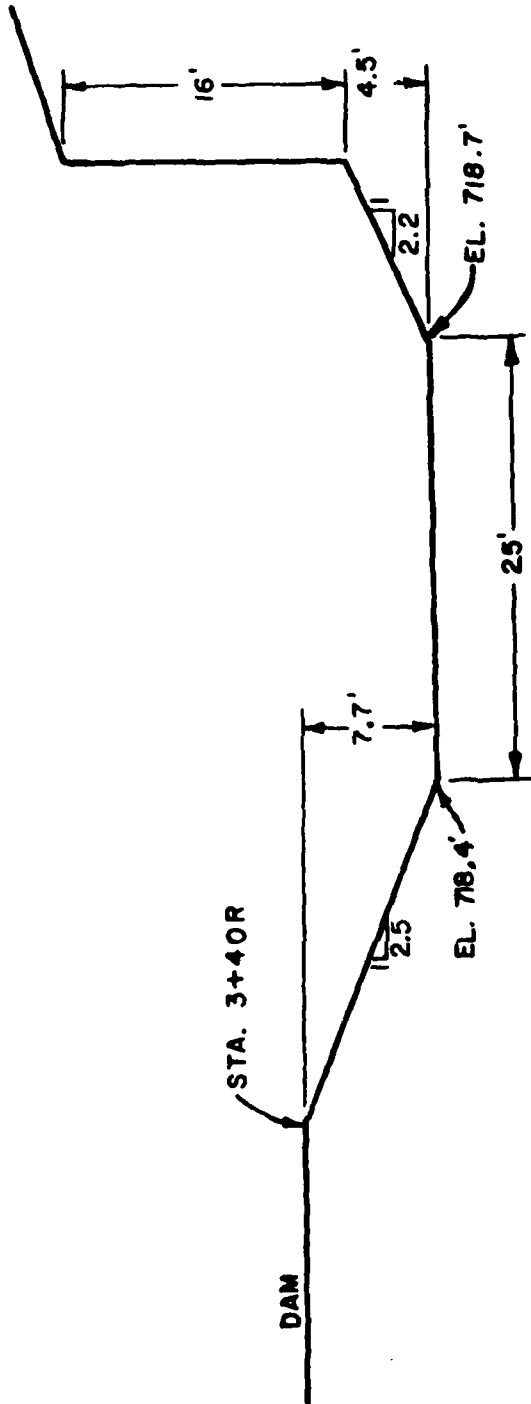


MAXIMUM SECTION
SCALE: 1" = 40'

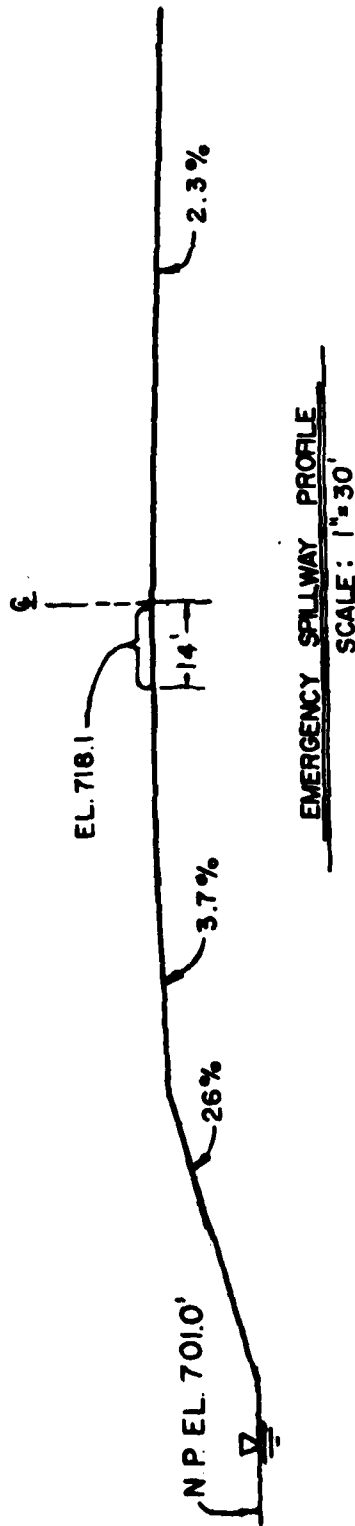
NOTE: RESERVOIR WAS EMPTY
ON DAY OF SURVEY

ALL ELEV. REFERENCED
TO D/S PIPE INVERT
AS GIVEN ON SCS
AS BUILT DRAWINGS.
ELEV. 679.0' MSL

JENNINGS CREEK	
DAM NO.	16
DRAWN BY: M.J.F.	
DATE: 22 NOV. 80	
SHEET: 2 OF 4	



SECT. A-A
EMERGENCY SPILLWAY CONTROL SECTION
SCALE: 1"=10'



EMERGENCY SPILLWAY PROFILE
SCALE: 1"=30'

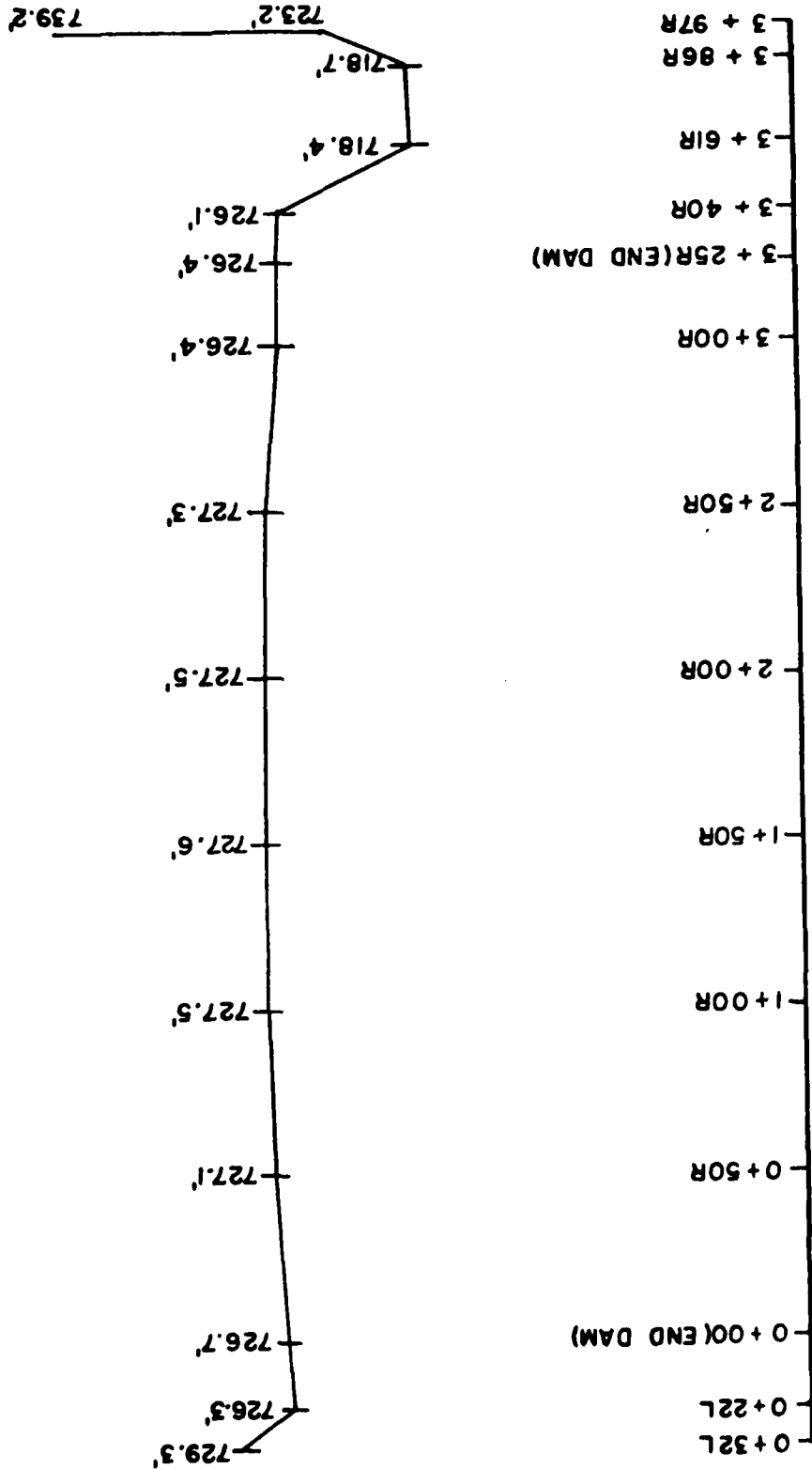
JENNINGS CREEK
DAM NO. 16

DRAWN BY: M.J.F.
DATE: 25 NOV. 80
SHEET: 3 OF 4

NOTE: EFFECTIVE EMER. SPIL. CREST EL. = 718.5'

JENNINGS CREEK	
DAM NO.	16
DRAWN BY: M. J. F.	
DATE: 25 NOV. 80	
SHEET 4 OF 4	

CREST ∇ PROFILE
 HORO. SCALE: 1"=50'
 VERT. SCALE: 1"=10'



APPENDIX C
PHOTOGRAPHIC RECORD

PHOTOGRAPHIC RECORD
JENNINGS CREEK DAM NO. 16

- Photo No. 1 - Reservoir.
- Photo No. 2 - Reservoir basin.
- Photo No. 3 - Downstream slope from end of emergency spillway exit channel.
- Photo No. 4 - Downstream slope from emergency spillway wingwall.
- Photo No. 5 - Area downstream of dam.
- Photo No. 6 - Dam from downstream.
- Photo No. 7 - Principal spillway riser showing drawdown gate valve and mechanism.
- Photo No. 8 - Principal spillway outlet.
- Photo No. 9 - Emergency spillway crest looking downstream.
- Photo No. 10 - Emergency spillway exit channel looking downstream.
- Photo No. 11 - Wingwall of emergency spillway from dam crest.
- Photo No. 12 - Monument plaque.

*The photographs containing snow were taken during the Phase I inspection. Others were taken on the previous survey in November 1980.



PHOTO NO. 1



PHOTO NO. 2



PHOTO NO. 3



PHOTO NO. 4



PHOTO NO. 5



PHOTO NO. 6



PHOTO NO. 7



PHOTO NO. 8



PHOTO NO. 9



PHOTO NO. 10



PHOTO NO. 11

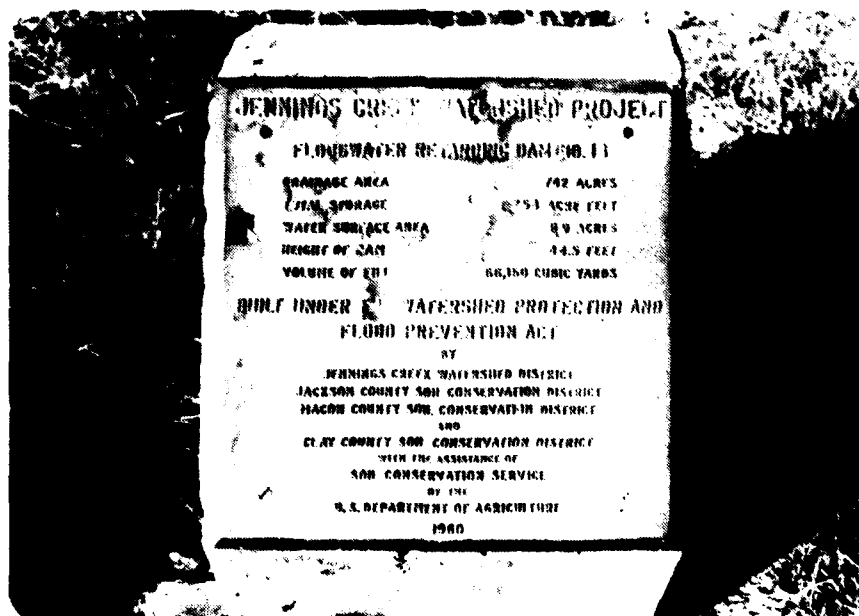


PHOTO NO. 12

APPENDIX D
TECHNICAL CRITIQUE -
CHECKLISTS FOR VISUAL INSPECTION,
ENGINEERING DATA, SOIL TESTS

Check List
Visual Inspection of Earth Dams
Department of Conservation
Division of Water Resources

Name of Dam Jennings Creek Watershed Dam # 16
County Macon Date of Inspection January 8, 1981
ID # - State 56-7001 Federal TN11101
Type of Dam Earth
Hazard Category-Federal High State 1
Weather Partly cloudy, scattered snow on gr Temperature 25° F
Pool at Time of Inspection Approx. 25' (distance from crest)
Tailwater at Time of Inspection <0.1' (distance from stream bed)
Design/As Built Drawings Available: Yes X No
Location: SCS - Nashville Office
Copy Obtained: Yes X No
Reviewed: Yes X No
Construction History Available: Yes X No
Location: Watershed District Board
Copy Obtained: Yes No X
Reviewed: Yes No
Other Records and Reports Available: Yes No X
Location:
Copy Obtained: Yes No
Reviewed: Yes No
Prior Incidents or Failures: Yes No X
Inspection Personnel and Affiliation:
Ed O'Neill - TDWR Al Dunn - Corps of Engineers
Bob Ramsey - TDWR Perry Fuqua - SCS
Bill Culbert - TDWR

I. Embankment

A. Crest

Description (1st inspection) Fescue and crown vetch
cover. About 20 one inch diameter (or less) heaven-
wood trees were observed at the right side of the
dam. No differential settlement or significant
nonuniformities in the surface were observed.

1. Longitudinal Alignment _____

Straight

2. Longitudinal Surface Cracks None

3. Transverse Surface Cracks None

4. General Condition of Surface Good, no significant
erosion.

5. Miscellaneous _____

B. Upstream Slope

1. Undesirable Growth or Debris A few 1" diameter
heavenwood trees and a few small evergreens.

2. Sloughing, Subsidence, or Depressions _____

Nothing significant

3. Slope Protection Uniform cover of fescue and crown vetch.

Wave berm at normal pool elevation.

a. Condition of Riprap N/A

b. Durability of Individual Stones N/A

c. Adequacy of Slope Protection Against Waves
and Runoff Good

d. Gradation of Slope Protection - Localized Areas
of Fine Material N/A

4. Surface Cracks None

C. Downstream Slope

1. Undesirable Growth or Debris Few dozen 1 & 2" dia-
meter heavenwood trees growing through rockfill
along toe. 1 cluster of about 20 small trees near
center toe.

2. Sloughing, Subsidence, or Depressions; Abnormal
Bulges or Non-Uniformity _____
None
3. Surface Cracks on Face of Slope _____
None
4. Surface Cracks or Evidence of Heaving at
Embankment Toe _____
None
5. Wet or Saturated Areas or Other Evidence of Seepage
on Face of Slope; Evidence of "Piping" or "Boils"
None
6. Drainage System Rock toe with filter. No
seepage was observed.
7. Fill Contact with Outlet Structure Good. No
significant erosion.
8. Condition of Grass Slope Protection Good. Two
bare areas: one created by construction equipment at
left side of dam. The other was apparently created
by 4-wheel drive vehicles near mid-section.

D. Abutments

1. Erosion of Contact of Embankment with Abutment from
Surface Water Runoff, Upstream or Downstream _____

Nothing significant

2. Springs or Indications of Seepage Along Contact of
Embankment with the Abutments _____

None

3. Springs or Indications of Seepage in Areas a Short
Distance Downstream of Embankment - Abutment Tie-in

None

11. Area Downstream of Embankment, Including Channel

A. Localized Subsidence, Depressions, Sinkholes, Etc. _____

None

B. Evidence of "Piping", "Boils", or "Seepage" _____

None

C. Unusual Presence of Lush Growth, such as Swamp
Grass, etc. _____ None

D. Unusual Muddy Water in Downstream Channel _____

No

E. Sloughing or Erosion _____ Insignificant

F. Surface Cracks or Evidence of Heaving Beyond
Embankment Toe _____ None

G. Stability of Channel Sideslopes _____ Adequate. Some
minor erosion.

H. Condition of Channel Slope Protection _____ Natural cover
only. Not heavily vegetated.

I. Adequacy of Slope Protection Against Waves, Currents,
and Surface Runoff Adequate

J. Miscellaneous

K. Condition of Relief Wells, Drains, and Other
Appurtenances N/A

L. Unusual Increase or Decrease in Discharge from
Relief Wells N/A

II. Instrumentation

A. Monumentation/Surveys Monument with bronze plaque
below toe of dam. Lists pertinent data (see photo)

B. Observation Wells N/A

C. Weirs N/A

D. Piezometers N/A

E. Other _____

V. Spillways

A. Service Spillway (Service/Emergency Combination Yes No X)

1. Intake Structure Condition Good. No observable
cracking or weathering.
2. Outlet Structure Condition Concrete pipe support
slab. Good condition.
3. Pipe Condition Outlet appears in good condition.
4. Evidence of Leakage or Piping Small, clear flow
through pipe. Probably leaking past gate. The
new gate is only designed to be watertight at
heads less than 5'.
5. General Remarks

B. Emergency Spillway

1. General Condition Good. Uniform and well defined
with little erosion of base. Scattered 1 and 2"
diameter heavenwood trees on side slope nearest
dam. Some loose rock lies along right side of base.
2. Entrance Channel Same
3. Control Section Same. Appears to be located
downstream of dam center line.

3. Exit Channel Fewer trees and more large rock on
left side slope. (The side slope is a rock and
earthfill wingwall).
4. Vegetative/Woody Cover Left side slope has same
cover as embankment. The base is bare earth and rock
and the right side slope is relatively shear rock
with scattered natural cover.
5. Other Observations

Emergency Drawdown Facilities (if part of service spillway
so state) Part of service spillway. Good condition. New

24" x 24" headgate covering 16" drawdown. Installed
summer of 80. The gate was examined 11/5/80, but
reservoir was filled at time of inspection (1/8/81).

Are Facilities Operable: Yes X No

Were Facilities Operated During Inspection: Yes No X

Date Facilities Were Last Used June 1980

VI. Reservoir

- A. Slopes 30% average basin slope

- B. Sedimentation Low. Observation during November
visit revealed that since it was last emptied
perennial growth has covered the lake floor. No trees.
- C. Turbidity Could not be ascertained because of ice
cover.

VII. Drainage Area

Description (for hydrologic analysis) _____
Predominantly wooded and mountainous.

- A. Changes in Land Use None expected. Rural area with
little new development.

III. Downstream Area (Stream)

- A. Condition (obstructions, debris, etc.) _____
_____ Channel passed under highway bridge several hundred
_____ feet downstream then into flat bottomland. No major
_____ obstructions.
- B. Slopes _____
_____ 1.5% channel slope

- C. Approximate No. Homes, Population, and Distance D/S
_____ 1 house several hundred feet downstream of dam.
_____ Approx. 8 persons live there.

- D. Other Hazards State Highway runs parallel to dam downstream
_____ of house. There is a barn in middle of flood path
_____ adjacent to the house.

***X. Miscellaneous**

Incidents/Failures Owner's grandson reports that flood
water has never reached the emergency spillway crest.

Observed Geology of Area Limestone of Fort Payne formation
observed in spillway cut.

X. Conclusions

The dam appears to be well constructed and in good condition.

XI. Recommendations

- 1) Keep the embankment clear of all woody vegetation.
- 2) Clear the loose rock from along the right of the spillway
base.
- 3) The bare areas on the downstream slope created by vehicular
traffic should be regrassed.
- 4) The watershed district board should be reestablished and the
inspection and maintenance schedule should be continued.

***NOTE:** Water level was approximately 2' below Normal Pool elevation.

William H. Albert
Regional Engineer

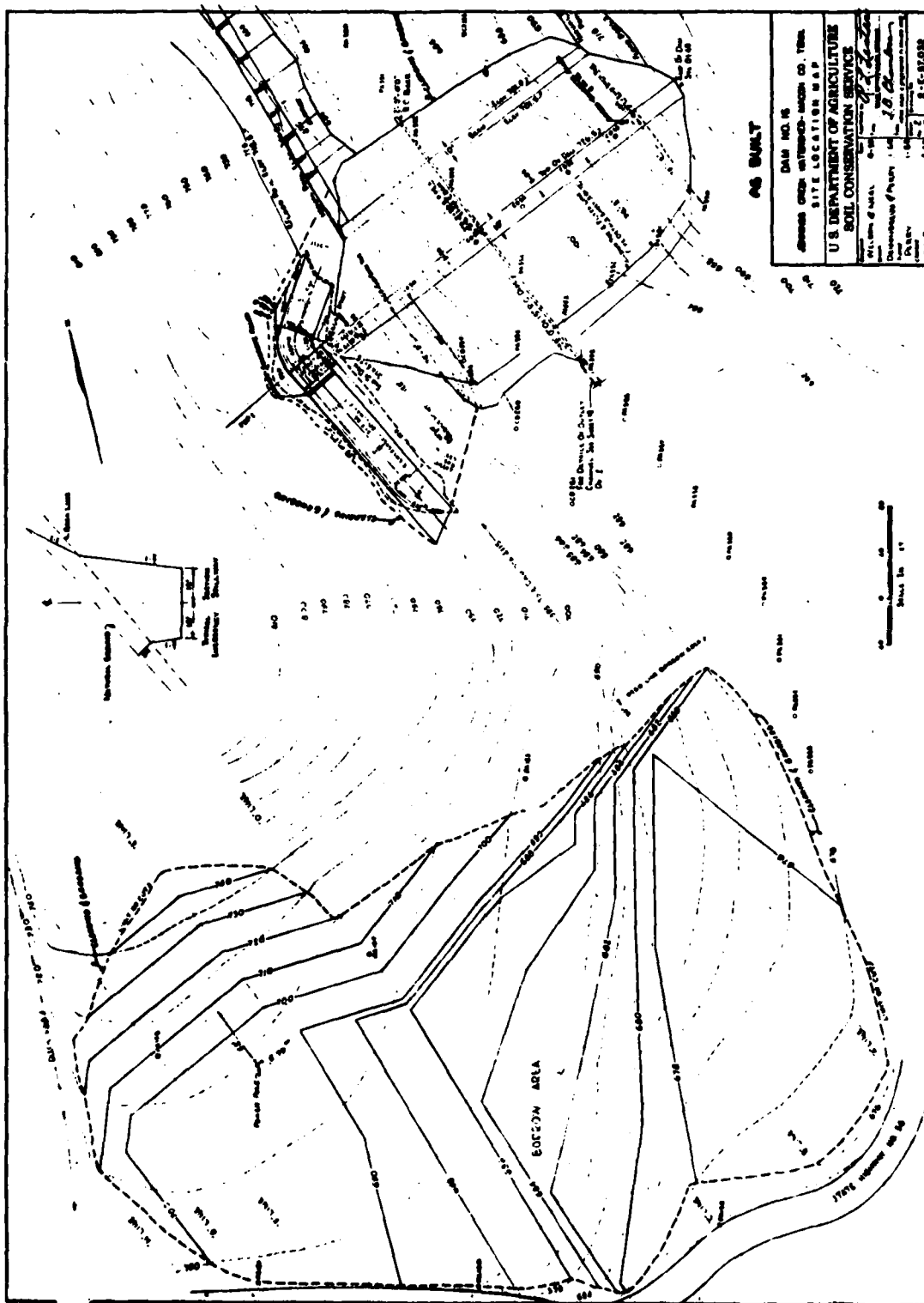
Edw. P. Heif
Chief Engineer

10 RIVER DIVISION, NASHVILLE DISTRICT SOIL TEST DATA SUMMARY

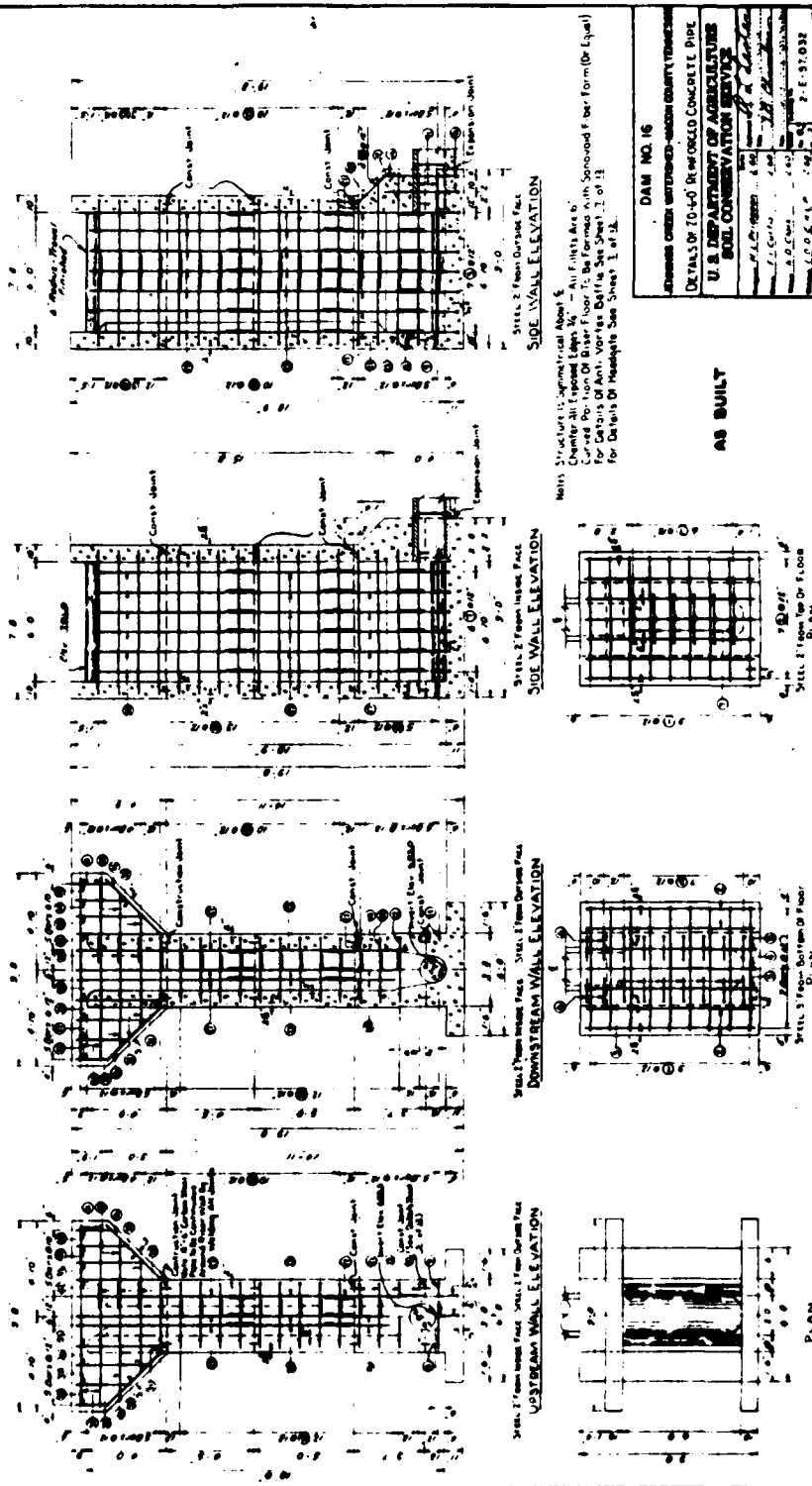
PROJECT Jennings no. 16 HOLE _____ ELEV. TOP _____ SHEET 1 OF 1 SHEETS

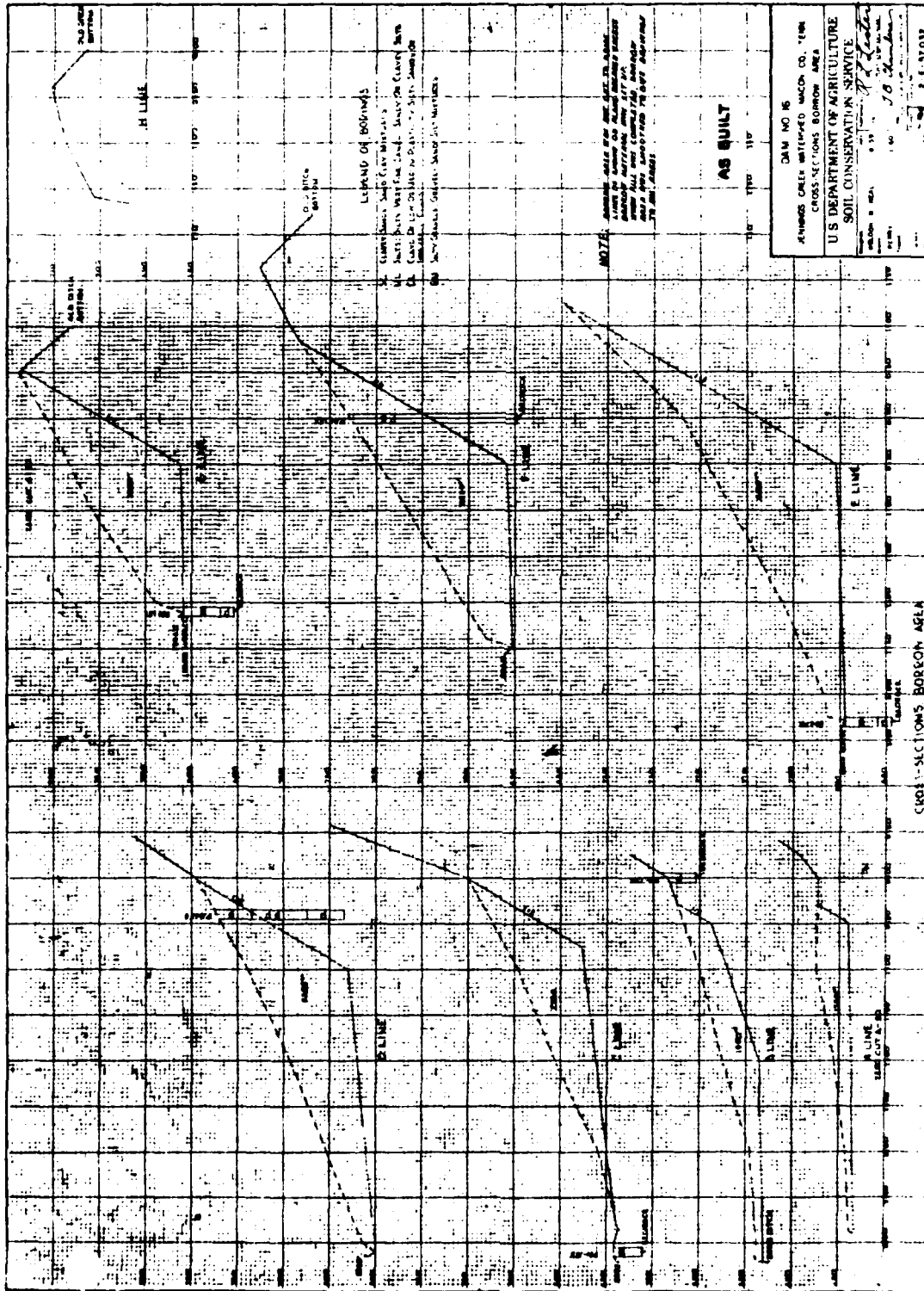
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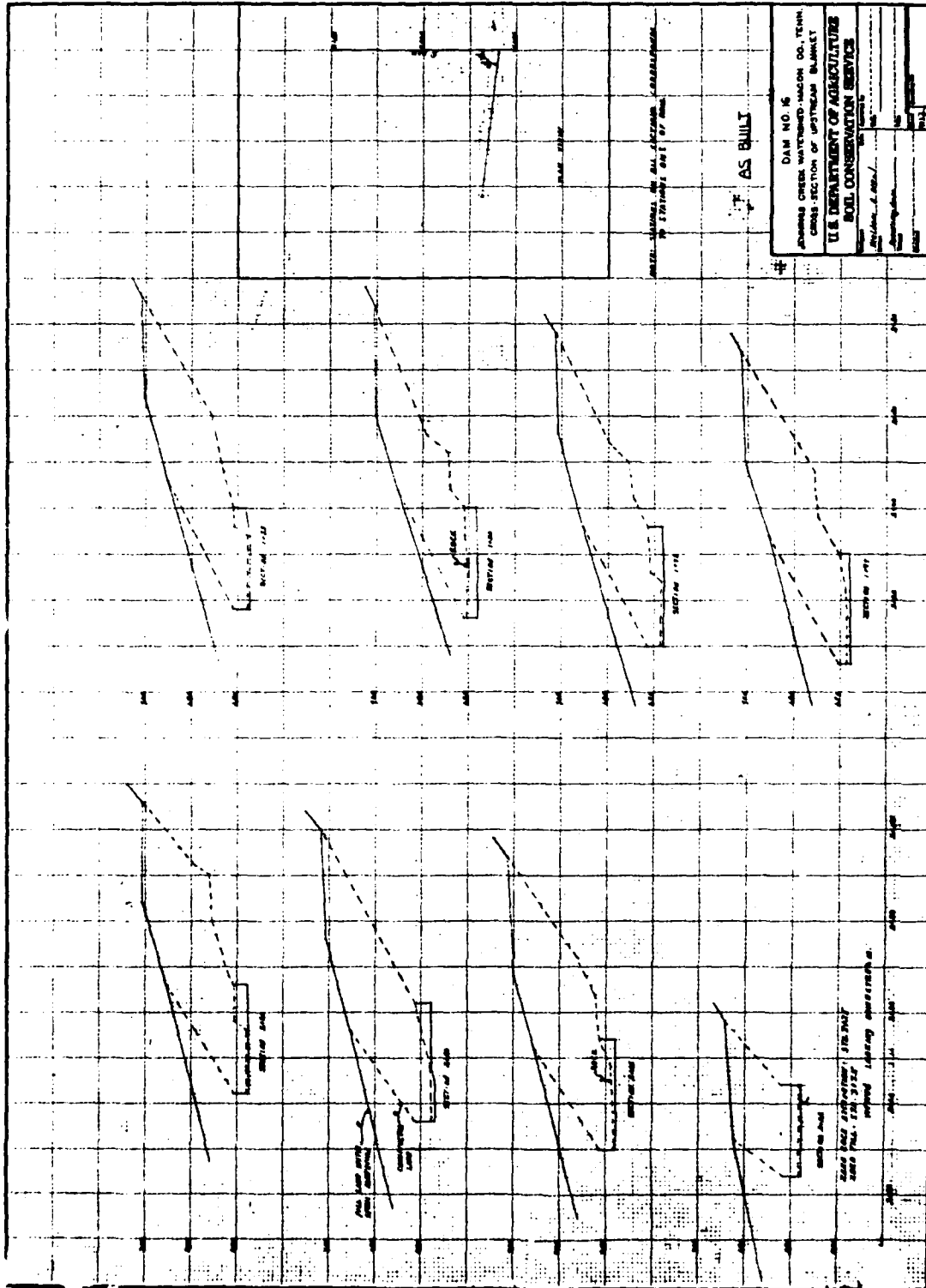
APPENDIX E
DESIGN DRAWINGS



[illegible]

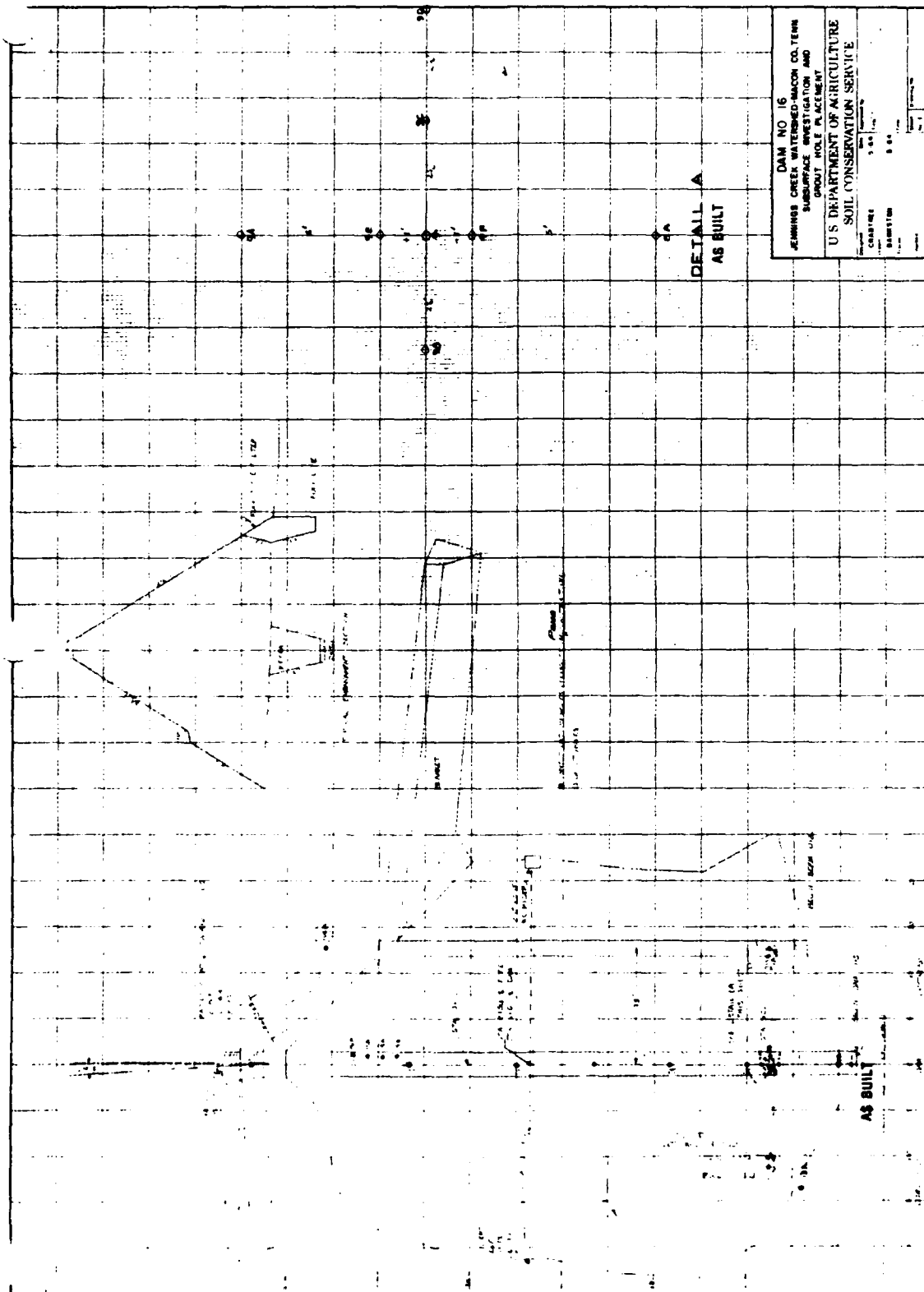






DAM NO. 16
 JENNINGS CREEK WATERSHED-MADON CO., TENN.
 CROSS SECTION OF UPSTREAM BLANKET
 U.S. DEPARTMENT OF AGRICULTURE
 SOIL CONSERVATION SERVICE

Date: 10/1/54
 By: [Signature]
 Checked: [Signature]
 Approved: [Signature]



Scale 1/4" = 10' - 0"

100'

100'

100'

100'

100'

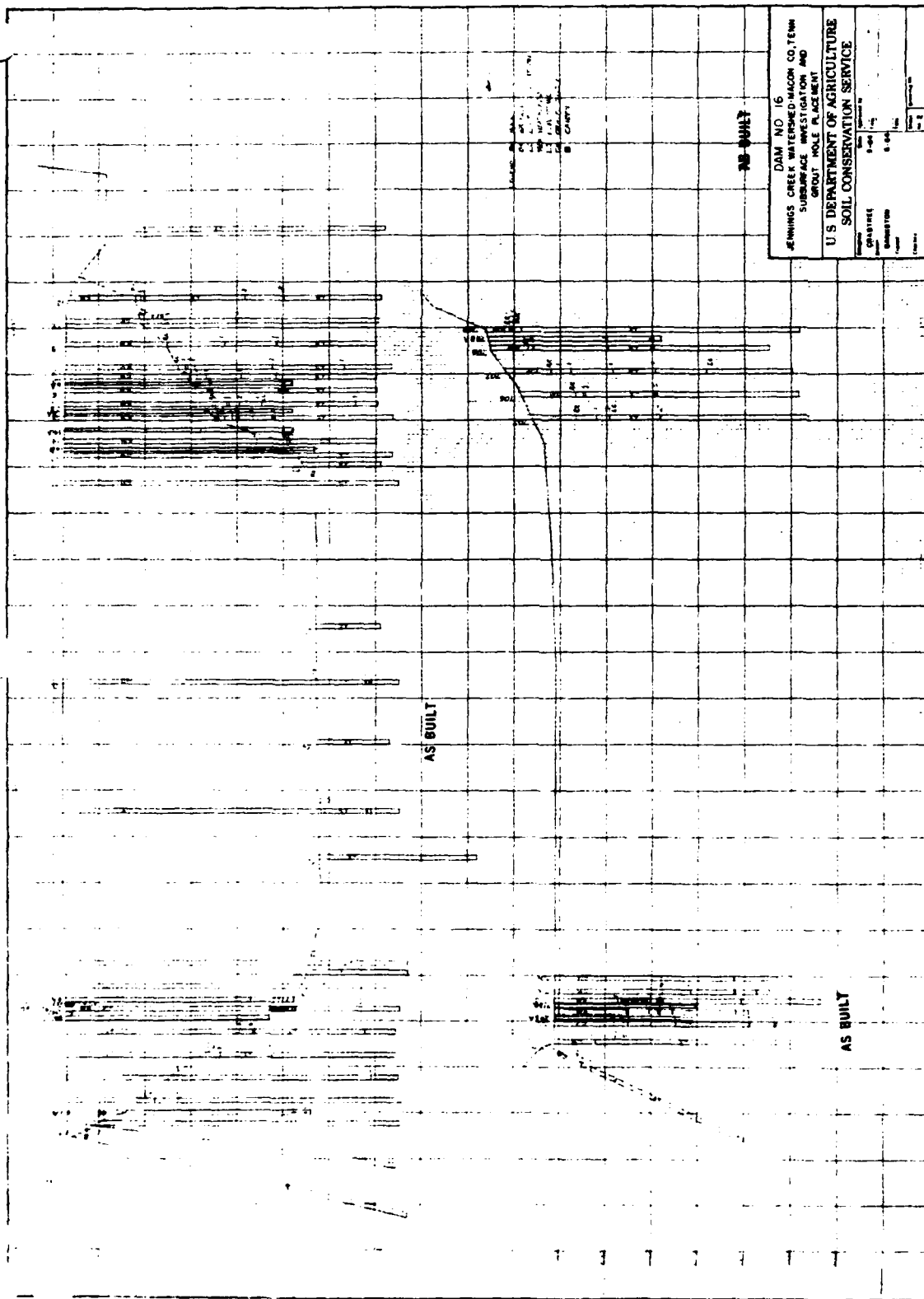
100'

100'

100'

100'

100'



Form A-2-375 (Revised 1955)

APPENDIX F
HYDRAULIC AND HYDROLOGIC DATA

HYDROLOGIC AND HYDRAULIC ANALYSIS

According to OCE guidelines, Jennings Creek Watershed Dam No. 16 must be able to safely pass the Probable Maximum Flood (PMF) of 28.5" of rain falling in 6 hours. Six hour rainfall depths for the Probable Maximum Precipitation (PMP) and the 100-year rainfall were obtained from the U. S. Weather Service's Technical Paper 40. Flood routings were performed using the HEC-1-DB program. The program used the dimensionless hydrograph technique described in Section 4 of the Soil Conservation Service National Engineering Handbook and the Modified Puls method of reservoir routing.

With the existing spillway and assuming a level dam crest, the dam overtops for 2.3 hours with a maximum outflow of 9894 cfs. With a spillway cleared of rock debris and an uneven dam crest, the dam overtops for 2.0 hours with a maximum outflow of 9643 cfs.

Data Sheet
Jennings Creek Watershed Dam No. 16

Basin Characteristics:

A. Watershed Size	736 acres (1.150 mi ²)
B. Average Channel Slope	1.5%
C. Average Land Slope	30%
D. Hydrologic Soil Group	Bodine, Mountview, Delrose, Dickson, Mimosa
E. Time of Concentration	0.6 hours
F. SCS Curve Number	73 (AMC II) 87 (AMC III)

Reservoir Characteristics:

A. Normal Pool Elevation	701.0' msl
B. Dam Crest Elevation	726.1' msl
C. Normal Pool Area	6.9 acres
D. Normal Pool Length	1600'
E. Normal Pool Storage	41 acre-feet
F. Surcharge Storage Volume (Normal Pool to Dam Crest)	359 acre-feet
G. Surface Area at Dam Crest	23.4 acres

Emergency Spillway:

A. Type	Saddle, trapezoidal, earth, rock
B. Crest Elevation	718.5 (effective)
C. Maximum Discharge at Dam Crest	2970 cfs (modified spillway and uneven crest)

JENNINGS CREEK DAM NO 16

Rainfall-Runoff Data:

Antecedent Moisture Condition II

Storm Event	PMP	0.56 PMP	100 yr.
Duration of Storm	6 hrs.	6 hrs.	6 hrs.
Precipitation Depth	28.5"	16.0"	4.8"
Runoff Depth	24.4"	12.2"	2.2"
Peak Inflow to Reservoir	10,409 cfs	5205 cfs	937 cfs

Antecedent Moisture Condition III

Sotrm Event	PMP	0.52 PMP	100 ur.
Duration of Storm	6 hrs.	6 hrs.	6 hrs.
Precipitation Depth	28.5"	15.0"	4.8"
Runoff Depth	26.8"	13.4"	3.4"
Peak Inflow to Reservoir	12,923 cfs	6461 cfs	1680 cfs

SUMMARY OF ROUTINGS

* Existing spillway and level dam crest.

EVENT	ANTECEDENT MOISTURE CONDITION	
	II	III
PMF	Overtopped for 2.3 hrs. 3.0' maximum depth	Overtopped for 2.8 hrs. 3.6' maximum depth
$\frac{1}{2}$ PMF	Overtopped for 0.5 hrs. 0.6' maximum depth	Overtopped for 0.7 hrs. 1.3' maximum depth
100 - YEAR	Passed with 12.9' of freeboard	Passed with 7.9' of freeboard

* Additional spillway capacity required to pass PMF:

7386 cfs (AMC II)
9417 cfs (AMC III)

SUMMARY OF ROUTINGS

* Modified spillway and uneven dam crest.

EVENT	ANTECEDENT MOISTURE CONDITION	
	II	III
PMF	Overtopped for 2.0 hrs. 3.6' maximum depth	Overtopped for 2.0 hrs. 4.3' maximum depth
$\frac{1}{2}$ PMF	Overtopped for 0.4 hrs. 0.3' maximum depth	Overtopped for 0.6 hrs. 1.2' maximum depth
100 - YEAR	Passed with 12.6' of freeboard	Passed with 7.4' of freeboard.

* Additional spillway capacity required to pass PMF:

6673 cfs (AMC II)
8789 cfs (AMC III)

JENNINGS CREEK WATERSHED DAM #16

CURVE NUMBER DETERMINATION:

CN FOR HYDROLOGIC SOIL GP.

LAND USE	% D.A.	B	C
WOODED	90	60	73
PASTURE	5	69	79
LOW DEN. POP. + Rds.	4	78	84
WATER	1	100	

SOIL TYPES:

	HYDROLOGIC SOIL TYPE	% D.A.
BODINE ME. VIEW DEEROSE	B	7
DICKSON MIMOSA	C	93

$$\text{COMPOSITE CN} = 0.90 [60(0.07) + 73(0.93)] + 0.05 [69(0.07) + 79(0.93)] + 0.04 [78(0.07) + 84(0.93)] + 0.01(100)$$

$$\begin{aligned} \text{CN} &= \textcircled{73} \text{ AMC II} \\ &= \textcircled{87} \text{ AMC III (CONVERSION FACTOR NCH-4)} \end{aligned}$$

LAG TIME DETERMINATION:

SCS CURVE NUMBER METHOD

$$S = \frac{1000}{\text{CN}} - 10$$

L = LONGEST WATER COURSE

Y = AVER BASIN SLOPE (%)

$$\begin{aligned} L &= \frac{L^{0.8} (S+1)^{0.7}}{1900 Y^{0.5}} \\ &= \frac{7860^{0.8} (3.7+1)^{0.7}}{1900 (30)^{0.5}} \\ &= \textcircled{0.36} \text{ hrs (AMC II)} \\ &= \textcircled{0.24} \text{ hrs (AMC III)} \end{aligned}$$

PRINCIPAL SPILLWAY RATING:

PIPE FLOW

$$D = 15''$$

$$L = 261'$$

$$K_e = 0.4$$

$$K_B = 0$$

$$n = 0.01$$

$$K_p = \frac{5087 n^2}{D^{4/3}}$$

$$= 0.0138$$

$$Q = A \sqrt{\frac{2gH}{1 + K_e + K_B + K_p L}}$$

$$= \pi (0.625)^2 \sqrt{\frac{2 (32.2) H}{1 + 0.4 + 0 + 0.0138 (261)}}$$

$$Q = 4.40 \sqrt{H}$$

LK EL	H	Q (cfs)
701.0	21.4	0
710.0	30.4	24
715.0	35.4	26
720.0	40.4	28
725.0	45.4	30
730.0	50.4	31

* HEAD IS MEASURED FROM MDL. OF
SPIL. OUTLET, EL. 679.6

WEIR FLOW

L = LENGTH OF WEIR

$$= 2 (6') = 12'$$

C = DISCHARGE COEFFICIENT

$$Q = C L H^{3/2}$$

H'	C	Q cfs
0	-	0
1	3.64	44
2	3.74	127

JENNINGS CREEK WTSHD. DAM #16

SPILE RATING:

USING THE FOLLOWING EXPRESSION FOR FLOW AT CRIT. DEPTH

$$\frac{Q^2}{J} = \frac{g^3}{T} \quad (\text{KING'S HD BOOK EQ. 8-19})$$

Q = EMERK. SPILE FLOW RATE

$Q_{p.s.}$ = PRIN SPILE FLOW RATE

T = TOP WIDTH OF SPILE @ WATER SURFACE.

J = CROSS-SECTIONAL FLOW AREA

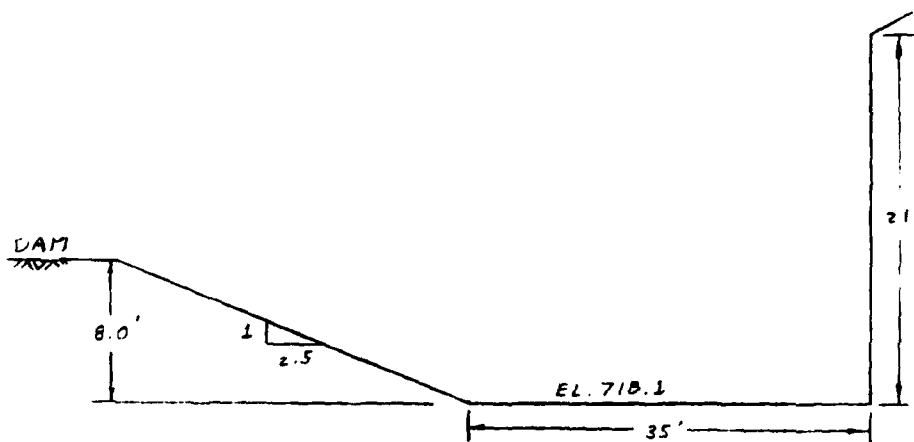
WTR. SURFACE EL. @ CONTROL SECT. (MSL)	A (ft ²)		T (ft)	Q (cfs)	Q p.s. (cfs)	$\frac{V^2}{2g}$ (ft)	LAKE EL. (MSL)	TOT Q. (cfs)
	ΔA	COMPOSITE						
718.5	0	0	0	0	27	0	718.5	27
719	20.1	20.1	27.4	98	28	0.37	719.4	126
720	29.4	49.5	32.3	248	28	0.77	720.3	376
721	34.2	83.7	36.9	715	29	1.13	722.1	744
722	39.2	122.9	39.3	1233	29	1.56	723.6	1262
723	43.5	166.4	46.3	1789	30	1.80	724.8	1819
724	47.7	214.1	43.1	2535	30	2.18	726.2	2505
725	52.0	266.1	51.7	3424	31	2.57	727.6	3455
726	53.2	319.3	54.4	4387	31	2.93	728.9	4418

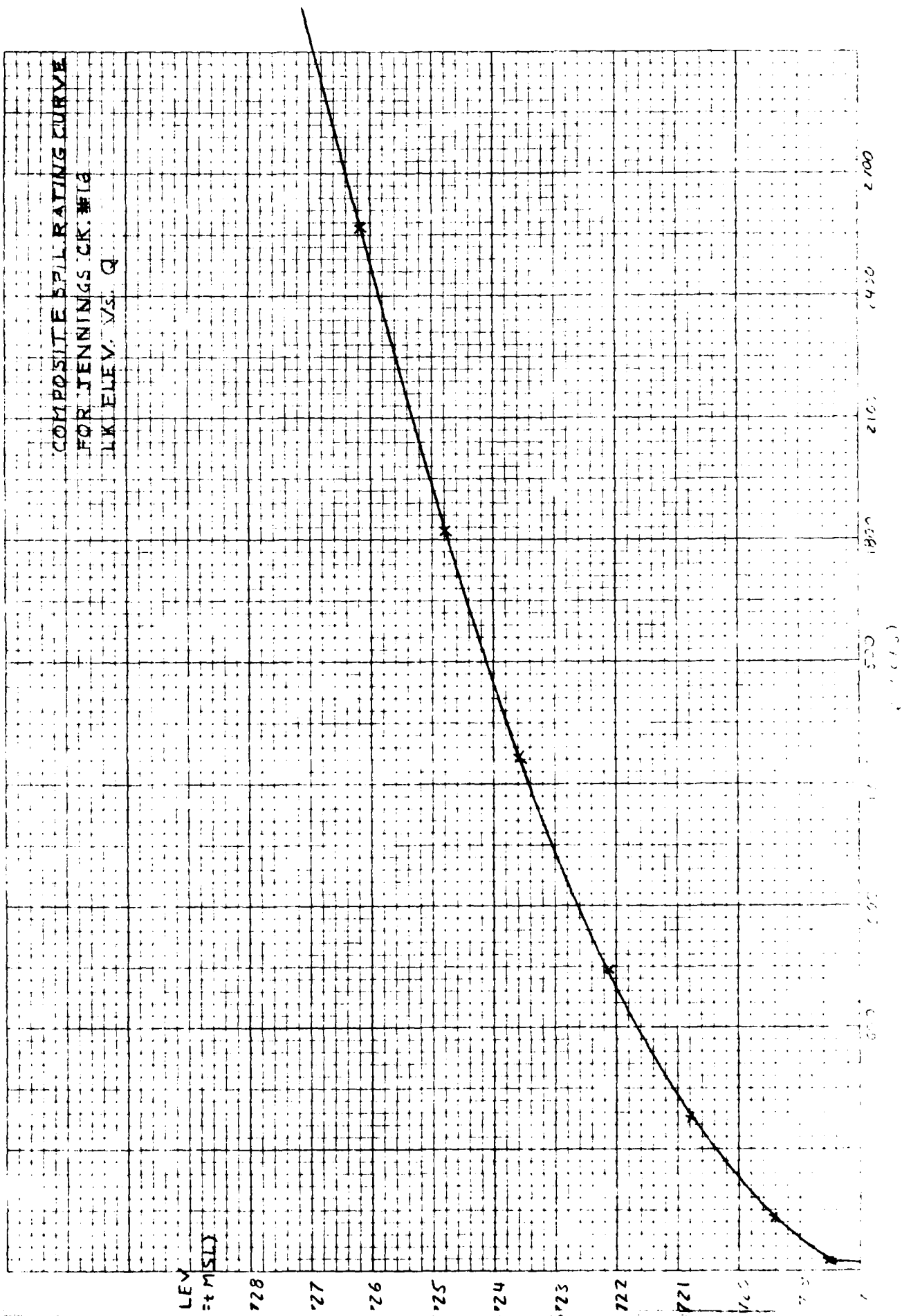
JENNINGS CK. #16

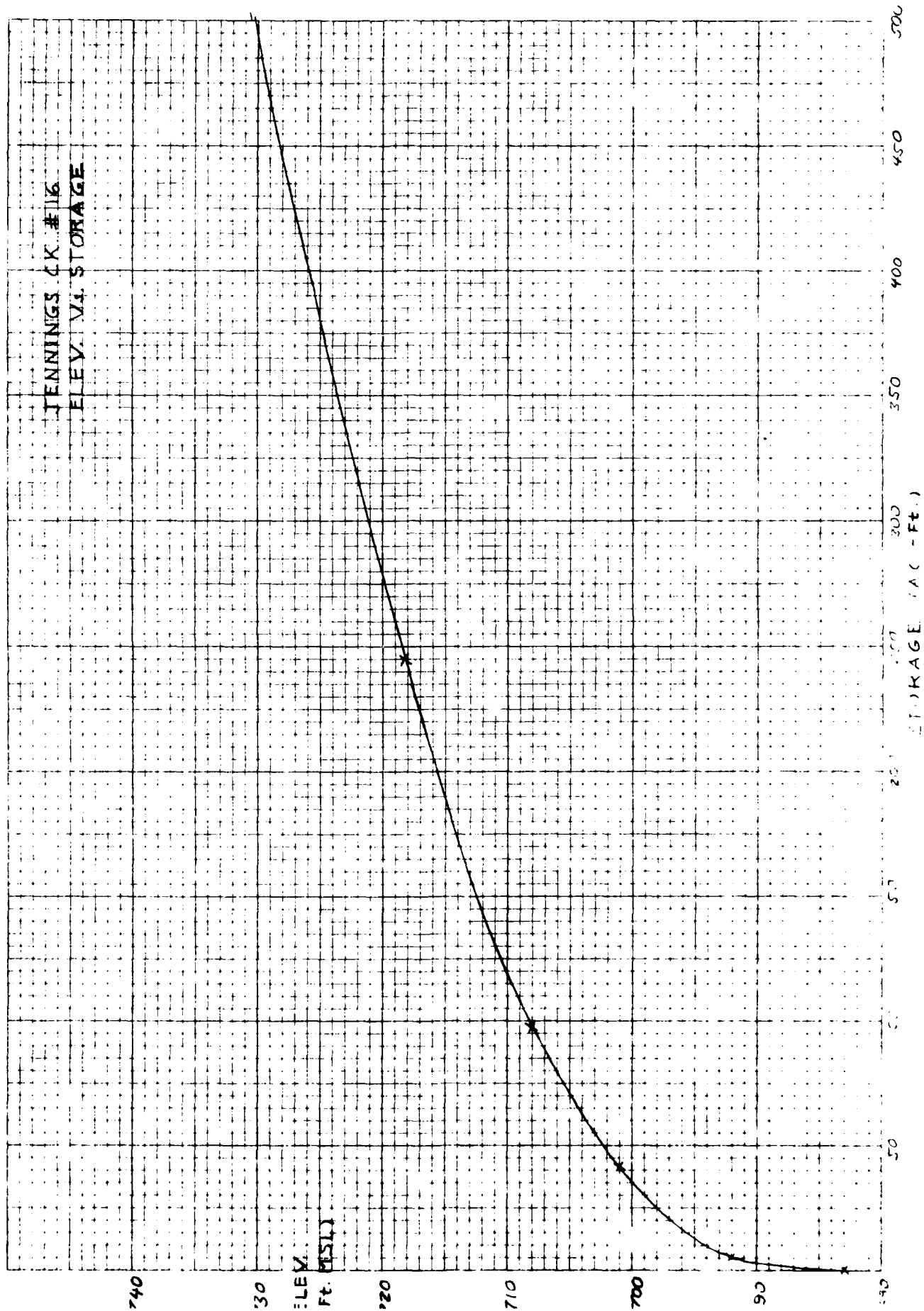
SPILLWAY RATING FOR CHANNEL THAT HAS BEEN LEVELED
+ CLEARED OF ROCK DEBRIS.

$$\frac{Q^2}{g} = \frac{a^3}{T}$$

WTR. SUR. EL.	A (ft ²)		T	Q	Q p.s.	V ² /2g	LK. EL.	TOT Q
Q CONT. SECT.	ΔA	CUM.	(ft)	(cfs)	(cfs)	(ft)	(MSL)	(cfs)
701.0	-	-	-	-	0	0	701.0	0
718.1	0	0	35'	0	27	0	718.1	27
719	32.5	32.5	37.2	172	28	0.4	719.4	200
720	38.5	71.0	39.8	538	28	0.9	720.9	566
721	41.0	112.0	42.2	1034	29	1.3	722.3	1063
722	43.5	155.5	44.8	1644	29	1.7	723.7	1673
723	46.0	201.5	47.2	2360	30	2.1	725.1	2390
724	48.5	250.0	49.8	3178	30	2.5	726.5	3206
725	51.0	301.0	52.2	4097	31	2.9	727.9	4128







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

	JENNINGS CREEK NO.10									
	MACON COUNTY									
	AMCII									
1	A1	0	0	0	0	0	0	0	0	0
2	A2	0	0	0	0	0	0	0	0	0
3	A3	0	0	0	0	0	0	0	0	0
4	A4	100	0	0	0	0	0	0	0	0
5	A5	5	0	0	0	0	0	0	0	0
6	J1	1	3	1	1	1	1	1	1	1
7	J1	0.00	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8	A1	1	1	1	1	1	1	1	1	1
9	A1	1	1	1	1	1	1	1	1	1
10	A1	1	2	1.150	1.150	1	1	1	1	1
11	A1	1	20.5	100	101	102	1	1	1	1
12	A1	1	0.30	100	100	102	1	1	1	1
13	A1	1	100	2	1	1	1	1	1	1
14	A1	1	100	2	1	1	1	1	1	1
15	A1	1	100	2	1	1	1	1	1	1
16	A1	1	100	2	1	1	1	1	1	1
17	A1	1	100	2	1	1	1	1	1	1
18	A1	1	100	2	1	1	1	1	1	1
19	A1	1	100	2	1	1	1	1	1	1
20	A1	1	100	2	1	1	1	1	1	1
21	A1	1	100	2	1	1	1	1	1	1
22	A1	1	100	2	1	1	1	1	1	1
23	A1	1	100	2	1	1	1	1	1	1
24	A1	1	100	2	1	1	1	1	1	1
25	A1	1	100	2	1	1	1	1	1	1
26	A1	1	100	2	1	1	1	1	1	1

HYDROGRAPH COMPUTATIONS

	JENNINGS CREEK NO.10									
	MACON COUNTY									
	AMCII									
1	A1	0	0	0	0	0	0	0	0	0
2	A2	0	0	0	0	0	0	0	0	0
3	A3	0	0	0	0	0	0	0	0	0
4	A4	100	0	0	0	0	0	0	0	0
5	A5	5	0	0	0	0	0	0	0	0
6	J1	1	3	1	1	1	1	1	1	1
7	J1	0.00	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0
8	A1	1	1	1	1	1	1	1	1	1
9	A1	1	1	1	1	1	1	1	1	1
10	A1	1	2	1.150	1.150	1	1	1	1	1
11	A1	1	20.5	100	101	102	1	1	1	1
12	A1	1	0.30	100	100	102	1	1	1	1
13	A1	1	100	2	1	1	1	1	1	1
14	A1	1	100	2	1	1	1	1	1	1
15	A1	1	100	2	1	1	1	1	1	1
16	A1	1	100	2	1	1	1	1	1	1
17	A1	1	100	2	1	1	1	1	1	1
18	A1	1	100	2	1	1	1	1	1	1
19	A1	1	100	2	1	1	1	1	1	1
20	A1	1	100	2	1	1	1	1	1	1
21	A1	1	100	2	1	1	1	1	1	1
22	A1	1	100	2	1	1	1	1	1	1
23	A1	1	100	2	1	1	1	1	1	1
24	A1	1	100	2	1	1	1	1	1	1
25	A1	1	100	2	1	1	1	1	1	1
26	A1	1	100	2	1	1	1	1	1	1

STATION , PLAN 1, RATIO 2
END-OF-PERIOD HYDROGRAPH ORDINATES

OUTFLOW

[illegible]

STORAGE

[illegible]

729.0	728.6	728.2	727.6	727.5	727.2	727.0	726.9	726.8	726.7
728.6	728.5	728.5	726.4	726.3	726.3	726.2	726.1	726.1	726.0
728.0	725.9	725.7	725.8	725.0	724.6	724.1	723.7	723.3	722.9
722.6	722.3	722.0	721.8	721.6	721.4	721.2	721.0	720.9	720.8
720.6	720.5	720.4	720.3	720.2	720.1	720.0	720.0	719.9	719.8
719.7	719.7	719.6	719.6	719.5	719.5	719.4	719.4	719.3	719.3
719.3	719.2	719.2	719.2	719.1	719.1	719.0	719.0	719.0	718.9
718.9	718.9	718.8	718.8	718.7	718.7	718.7	718.6	718.6	718.6

PEAK OUTFLOW IS 9894. AT TIME 16.00 HOURS

	PEAK	6-HOUR	24-HOUR	72-HOUR	TOTAL VOLUME
CFS	9894.	2602.	674.	674.	161657.
CMR	280.	74.	19.	19.	4578.
INCHES		21.05	21.79	21.79	21.79
MM		534.61	553.57	553.57	553.57
ACFT		1290.	1336.	1336.	1336.
THOUS CU M		1592.	1648.	1648.	1648.

PLAN :

PLAN 1							
	ELEVATION	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM			
	STORAGE	701.00	701.00	726.10			
	OUTFLOW	41.	41.	400.			
		0.	0.	2508.			
RATIO OF PMP	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
.09	713.21	0.00	170.	22.	0.00	18.80	0.00
.50	726.72	.62	415.	3300.	.50	16.20	0.00
1.00	729.13	3.03	473.	9894.	2.30	16.00	0.00

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

JENNINGS CREEK NO.16
 MACON COUNTY
 AHC III

1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0

HYDROGRAPH COMPUTATIONS

1	1.150	1	1	1	1	1	1
2	1.150	1	1	1	1	1	1
3	1.150	1	1	1	1	1	1
4	1.150	1	1	1	1	1	1
5	1.150	1	1	1	1	1	1
6	1.150	1	1	1	1	1	1
7	1.150	1	1	1	1	1	1
8	1.150	1	1	1	1	1	1
9	1.150	1	1	1	1	1	1
10	1.150	1	1	1	1	1	1
11	1.150	1	1	1	1	1	1
12	1.150	1	1	1	1	1	1
13	1.150	1	1	1	1	1	1
14	1.150	1	1	1	1	1	1
15	1.150	1	1	1	1	1	1
16	1.150	1	1	1	1	1	1
17	1.150	1	1	1	1	1	1
18	1.150	1	1	1	1	1	1
19	1.150	1	1	1	1	1	1
20	1.150	1	1	1	1	1	1
21	1.150	1	1	1	1	1	1
22	1.150	1	1	1	1	1	1
23	1.150	1	1	1	1	1	1
24	1.150	1	1	1	1	1	1
25	1.150	1	1	1	1	1	1
26	1.150	1	1	1	1	1	1

-1 -87

1	710	715	719.4	720.0	722.1	723.6	724.8	726.2
2	710	715	719.4	720.0	722.1	723.6	724.8	726.2
3	710	715	719.4	720.0	722.1	723.6	724.8	726.2
4	710	715	719.4	720.0	722.1	723.6	724.8	726.2
5	710	715	719.4	720.0	722.1	723.6	724.8	726.2
6	710	715	719.4	720.0	722.1	723.6	724.8	726.2
7	710	715	719.4	720.0	722.1	723.6	724.8	726.2
8	710	715	719.4	720.0	722.1	723.6	724.8	726.2
9	710	715	719.4	720.0	722.1	723.6	724.8	726.2
10	710	715	719.4	720.0	722.1	723.6	724.8	726.2
11	710	715	719.4	720.0	722.1	723.6	724.8	726.2
12	710	715	719.4	720.0	722.1	723.6	724.8	726.2
13	710	715	719.4	720.0	722.1	723.6	724.8	726.2
14	710	715	719.4	720.0	722.1	723.6	724.8	726.2
15	710	715	719.4	720.0	722.1	723.6	724.8	726.2
16	710	715	719.4	720.0	722.1	723.6	724.8	726.2
17	710	715	719.4	720.0	722.1	723.6	724.8	726.2
18	710	715	719.4	720.0	722.1	723.6	724.8	726.2
19	710	715	719.4	720.0	722.1	723.6	724.8	726.2
20	710	715	719.4	720.0	722.1	723.6	724.8	726.2
21	710	715	719.4	720.0	722.1	723.6	724.8	726.2
22	710	715	719.4	720.0	722.1	723.6	724.8	726.2
23	710	715	719.4	720.0	722.1	723.6	724.8	726.2
24	710	715	719.4	720.0	722.1	723.6	724.8	726.2
25	710	715	719.4	720.0	722.1	723.6	724.8	726.2
26	710	715	719.4	720.0	722.1	723.6	724.8	726.2

-701.0 -1

740 1250 1615 2561

21 23 122 372 740 1250 1615 2561

244 400 639

708 718.5 726.1 736

3.1 1.5 325

K 99

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1

ELEVATION
STORAGE
OUTFLOW

INITIAL VALUE
701.00
41.
0.

SPILLWAY CREST
701.00
41.
0.

TOP OF DAM
726.10
200.
250A.

RATIO OF PMS	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM STORAGE AC-FT	MAXIMUM DEPTH OVER DAM	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF	
						MAX OUTFLOW HOURS	FAILURE HOURS
.13	716.22	240.	0.00	95.	0.00	18.00	0.00
.50	727.36	430.	1.26	4729.	.70	16.00	0.00
1.00	729.71	487.	3.61	11925.	2.80	15.00	0.00

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	791.00	791.00	786.10
STORAGE	41.	41.	400.
OUTFLOW	0.	0.	2970.

	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	DEPTH	STORAGE	OVER TOP	MAX	MAX
	OVER DAM	AC-FT	OF TOP	OUTFLOW	OUTFLOW
			HOURS	HOURS	HOURS
RATIO	0.00	247.	0.00	18.40	0.00
OF	1.23	430.	.00	18.00	0.00
PMF	4.26	563.	2.00	15.50	0.00

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

 EOI.
 E.

MODIFIED OUTPUT FOR UNEVEN CREST (AMC III)

AD-A108 475

TENNESSEE STATE DEPT OF CONSERVATION NASHVILLE DIV 0--ETC F/G 13/13
NATIONAL PROGRAM OF INSPECTION OF NON-FEDERAL DAMS, TENNESSEE. --ETC(U)
JUN 81 W CULBERT DACW62-81-C-0056
NL

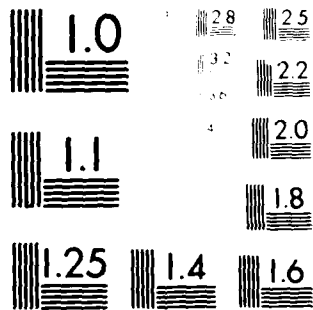
UNCLASSIFIED

2 OF 2

ALL INFORMATION CONTAINED
HEREIN IS UNCLASSIFIED



END
DATE
FILMED
01-82
DTIC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1

ELEVATION STORAGE OUTFLOW	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM	TIME OF MAX OUTFLOW HOURS	DURATION OVER TOP HOURS	MAXIMUM OUTFLOW CFS	MAXIMUM STORAGE AC-FT	MAXIMUM DEPTH OVER DAM	TIME OF FAILURE HOURS
	701.00	701.00	705.10						
	41.	41.	400.						
	0.	0.	2970.						

RATIO
OF
PMF

MAXIMUM
RESERVOIR
U.S. ELEV

.00
.50
1.00

713.46
726.42
729.71

=====

FLOOD HYDROGRAPH PACKAGE (HEC-1)

DAM SAFETY VERSION JULY 1978

LAST MODIFICATION 01 APR 80

=====

END

* MODIFIED OUTPUT FOR UNEVEN CREST (AMC II)

APPENDIX G
CORRESPONDENCE



TENNESSEE DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES
4721 TROUSDALE DRIVE, NASHVILLE 37220
615/741-6860

Certified

December 1, 1980

Jennings Creek Watershed District
Soil Conservation Service
Gainesboro, TN 38562

Dear Dam Owner:

As provided by the State Safe Dams Act, Tennessee Code Annotated, Sections 70-2501 to 70-2530, non-federal dams in Tennessee must be inspected and certified for safety by our agency. According to our records, you are identified as the owner of Jennings Ck Wtds #16 Dam, located in Macon County, Tennessee. Enclosed for your information and review is a copy of our inventory record on the structure along with a copy of the Act and adopted rules and regulations.

Tentative plans are to schedule a safety inspection of your dam within the next few months. A staff engineer will very shortly be in further communication with you to discuss the pending inspection and your responsibilities under the Safe Dams Act. Your immediate attention, however, is called to the matter of maintaining the earthen dam with a good grass cover and clear of all brush, undergrowth and tree growth. If these conditions do not presently exist, please make plans to remove the brush, undergrowth and all trees less than two inches in diameter as soon as possible. Larger trees may have to be removed at a later date but must be done so under the direction of an experienced engineer.

Please let me, or our Chief Engineer, Mr. Ed O'Neill, know of any assistance we might be.

Very truly yours,

Robert A. Hunt, F.E.
Director, Division of Water Resources

RAH:lt

Enclosures



DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1070
NASHVILLE, TENNESSEE 37202

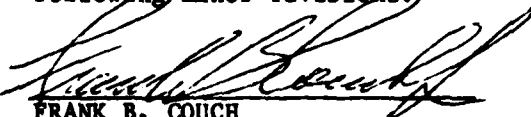
IN REPLY REFER TO

ORND-G

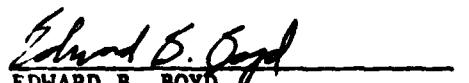
NON-FEDERAL DAM INSPECTION REVIEW BOARD
PO BOX 1070
NASHVILLE, TENNESSEE 37202

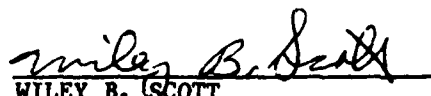
District Engineer, Nashville District
US Army, Corps of Engineers
PO Box 1070
Nashville, TN 37202

1. The Interagency Review Board, appointed by the District Engineer on 8 October 1980, presents the following recommendations after meeting on 10 April 1981 to consider the Phase I investigation report on Jennings Creek Watershed Dam No. 16 inspected by the Tennessee Department of Conservation.
2. It is unclear as to the ownership of the dam and who is responsible for the operation and maintenance of the structure. This should be clarified and the owner be made aware of his responsibilities.
3. An emergency action plan should be developed, including a warning system to alert downstream residents, in the event a serious condition develops with the project.
4. The condition classification should be changed from "unsafe-nonemergency" to "significantly deficient."
5. The board is in agreement with report conclusions and recommendations following minor revisions.

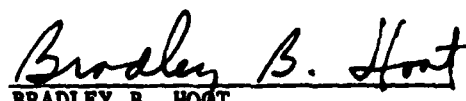

FRANK B. COUCH
Chief, Geotechnical Branch
Chairman


EDMOND B. O'NEILL
Alternate, Division of Water
Resources
State of Tennessee


EDWARD B. BOYD
Hydrologic Technician
Alternate, US Geological Survey


WILEY B. SCOTT
Assistant Design Engineer
Soil Conservation Service


H. F. PHILLIPS
Chief, Hydraulics Section
Alternate, Hydrology & Hydraulics Branch


BRADLEY B. HOOT
Chief, Structural Section
Alternate, Design Branch

