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BAKER (MICHAEL) JR INC BEAVER PA  
NATIONAL DAM SAFETY PROGRAM. SOUTH RIVER DAM, NUMBER 25 (VA 015--ETC(U)  
SEP 78 M BAKER

F/G 13/2

DACW65-78-D-0016

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1 OF 1  
AD  
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POTOMAC RIVER BASIN

Name Of Dam: SOUTH RIVER NO. 25

Location: AUGUSTA COUNTY, STATE OF VIRGINIA

Inventory Number: VA 01502

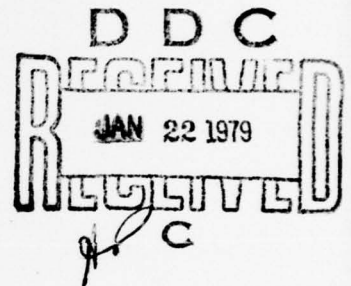
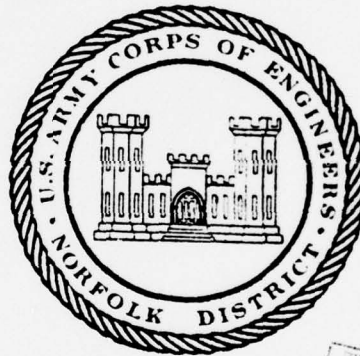
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# PHASE I INSPECTION REPORT

## NATIONAL DAM SAFETY PROGRAM

AD A063629

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**PREPARED FOR**  
**NORFOLK DISTRICT CORPS OF ENGINEERS**  
**803 FRONT STREET**  
**NORFOLK, VIRGINIA 23510**

SEPTEMBER 1978

**BY**  
**MICHAEL BAKER, JR., INC.**  
**BEAVER, PENNSYLVANIA 15009**


79 01 16 203

## 20. Abstract

Pursuant to Public Law 92-367, Phase I Inspection Reports are prepared under guidance contained in the recommended guidelines for safety inspection of dams, published by the Office of Chief of Engineers, Washington, D. C. 20314. The purpose of a Phase I investigation is to identify expeditiously those dams which may pose hazards to human life or property. The assessment of the general conditions 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.

Based upon the field conditions at the time of the field inspection and all available engineering data, the Phase I report addresses the hydraulic, hydrologic, geologic, geotechnic, and structural aspects of the dam. The engineering techniques employed give a reasonably accurate assessment of the conditions of the dam. It should be realized that certain engineering aspects cannot be fully analyzed during a Phase I inspection. Assessment and remedial measures in the report include the requirements of additional indepth study when necessary.

Phase I reports include project information of the dam and appurtenances, all existing engineering data, operational procedures, hydraulic/hydrologic data of the watershed, dam stability, visual inspection report and an assessment including required remedial measures.



REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER VA 01502	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Phase I Inspection Report National Dam Safety Program South River No. 25 Augusta County, State of Virginia		5. TYPE OF REPORT & PERIOD COVERED Final Report
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# PHASE I INSPECTION REPORT NATIONAL DAM SAFETY PROGRAM

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NAME OF DAM: SOUTH RIVER NO. 25

PHASE I INSPECTION REPORT  
NATIONAL DAM SAFETY PROGRAM

Name of Dam: South River No. 25  
State: Virginia  
County: Augusta  
Stream: Toms Branch Back Creek  
Date of Inspection: 12 July 1978

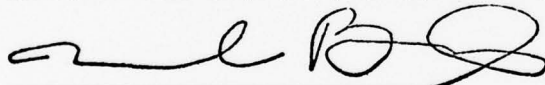
BRIEF ASSESSMENT OF DAM

South River Dam No. 25 is an earth dam approximately 62.5 feet high and 690 feet long, owned and operated by Falling Rocks, Inc. and designed by the U.S. Soil Conservation Service. The visual inspections and review of design drawings indicate no serious deficiencies requiring emergency attention.

The spillway will not pass the Probable Maximum Flood without overtopping the dam. A stability analysis was not available; however, no evidence of distress due to slope stability problems or seepage was observed.

Recommended remedial measures to be scheduled during the annual maintenance program are to: remove tree growth and debris from the embankment slopes, repair tire tracks and minor erosion gullies at the downstream toe, and repair deteriorated concrete of the principal spillway riser.

MICHAEL BAKER, JR., INC.



Michael Baker, III, P.E.  
Chairman of the Board and  
Chief Executive Officer

SUBMITTED:

James A. Walsh  
Chief, Design Branch

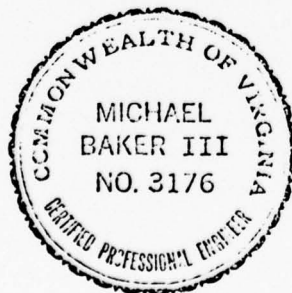
RECOMMENDED:

Zane M. Goodwin  
Chief, Engineering

APPROVED:

Douglas L. Haller  
Colonel, Corps of Engineers  
District Engineer

Date: \_\_\_\_\_



NAME OF DAM: SOUTH RIVER NO. 25

OVERALL VIEW OF DAM



OVERALL VIEW OF DAM

79 01 16 02

PHASE I INSPECTION REPORT  
NATIONAL DAM SAFETY PROGRAM  
NAME OF DAM: SOUTH RIVER NO. 25 ID# VA 01502

SECTION 1 - PROJECT INFORMATION

1.1 General

- 1.1.1 Authority: Public Law 92-367, 8 August 1972, authorized the Secretary of the Army, through the Corps of Engineers to initiate a national program of safety inspections of dams throughout the United States. The Norfolk District has been assigned the responsibility of supervising the inspection of dams in the Commonwealth of Virginia.
- 1.1.2 Purpose of Inspection: The purpose is to conduct a Phase I inspection according to the Recommended Guidelines for Safety Inspection of Dams. The main responsibility is to expeditiously identify those dams which may be a potential hazard to human life or property.

1.2 Description of Project

- 1.2.1 Description of Dam and Appurtenances: South River Dam No. 25 is an earthfill structure about 690 feet long and 62.5 feet high. The top of the dam is 18 feet wide and is at elevation 1589.5 feet Mean Sea Level (M.S.L.). Side slopes are two and one-half horizontal to one vertical (2.5:1).

The principal spillway consists of a 24 inch diameter reinforced concrete pipe, running through the dam at a low level. This pipe is served by a drop-inlet structure (riser) located upstream from the toe of the embankment. The crest of the riser is at elevation 1542.0. A riprapped stilling basin is provided at the downstream end of the principal spillway so that discharges will not erode the toe of the dam.

The emergency spillway is a vegetated, earth, side-channel spillway located off the southwest side of the dam. It has a bottom width of about 200 feet at an elevation of 1583.5 and side slopes of 2.5:1. Selected topsoil is placed on the side slopes and on the bottom of the spillway.

NAME OF DAM: SOUTH RIVER NO. 25



A 24 inch circular slide gate with invert at a low level (elevation 1528.5) is mounted on the upstream side of the riser. This permits withdrawal of water from the bottom of the reservoir.

- 1.2.2      Location: South River Dam No. 25 is located on Toms Branch Back Creek about 1.7 miles upstream from Sherando, Augusta County, Virginia.
- 1.2.3      Size Classification: Because of its maximum height of 68 feet, the dam is classified as an "intermediate" size structure as defined by the Recommended Guidelines for Safety Inspection of Dams.
- 1.2.4      Hazard Classification: Because of the close proximity to the Town of Sherando, Virginia, the dam must be given a "high" hazard classification in accordance with guidelines contained in Section 2.1.2 of the Recommended Guidelines for Safety Inspection of Dams. The hazard classification used to categorize dams is a function of location only and has nothing to do with its stability or probability of failure.
- 1.2.5      Ownership: South River Dam No. 25 is owned by Falling Rocks, Inc.
- 1.2.6      Purpose: The dam is used for flood control and recreation.
- 1.2.7      Design and Construction History: The dam was designed and constructed under the supervision of the U.S. Soil Conservation Service (S.C.S.). Construction was completed in 1957.
- 1.2.8      Normal Operational Procedures: Operation of the project is automatic. The principal spillway is ungated; therefore, water rising above the crest of the drop-inlet is automatically passed downstream. Similarly, water is automatically passed through the emergency spillway in the event of an extreme flood which fills the flood storage space. Water is also withdrawn from the conservation storage space for the benefit of a downstream farmer.

NAME OF DAM: SOUTH RIVER NO. 25

### 1.3 Pertinent Data

- 1.3.1 Drainage Areas: The dam controls a drainage area of 4.6 square miles.
- 1.3.2 Discharge at Dam Site: The maximum known flood at the dam site occurred during Hurricane Agnes in June 1972 and crested at approximately elevation 1585.7<sub>+</sub>.

Principal Spillway:

Pool level at emergency  
spillway crest. . . . . 68 c.f.s.  
Pool level at top of dam. . . . . 72 c.f.s.

Emergency Spillway:

Pool level at top of dam. . . . . 7770 c.f.s.

- 1.3.3 Dam and Reservoir Data: Pertinent data on the dam and reservoir are shown in the following table:

TABLE 1.1 DAM AND RESERVOIR DATA

Item	Elevation feet M.S.L.	Area acres	Reservoir		
			Capacity		Length feet
			Acre- feet	Watershed inches(a)	
Top of dam	1589.5	46.3	1281	5.2	2851 <sub>+</sub>
Maximum pool, design surcharge	-	-	-	-	-
Emergency spillway crest	1583.5	41.5	1011	4.1	2746
Principal spillway crest (b)	1542.0	8.7	61	0.3	634
Streambed at center- line of dam	1527 <sub>+</sub>	-	-	-	-

- (a) Based on 4.6 square miles of watershed.  
(b) Controls normal pool.

NAME OF DAM: SOUTH RIVER NO. 25

## SECTION 2 - ENGINEERING DATA

- 2.1 Design: The only design data available for South River Dam No. 25 was a set of plans furnished by John E. Kent, a representative of Falling Rocks, Inc. Copies of the plans have been filed with the Norfolk District for future reference. The dam was designed by the S.C.S. in 1956.
- 2.2 Construction: The construction of the dam was completed in 1957 by English Construction Company. No as-built drawings were available.
- 2.3 Operation: The dam is operated and maintained by the owners and the Headwaters Soil and Water Conservation District. The emergency spillway was activated in 1969 when the reservoir crested at elevation 1584.0 and again in 1972 when the stored flood waters reached elevation 1585.7. The slide gate is opened periodically to augment low flows downstream for livestock watering. After the 1972 flood, the owners drained the lake, and removed debris and sediment deposited as a result of the flood.
- 2.4 Evaluation
- 2.4.1 Design: The design drawings were generally adequate for design review. Although no slope stability analyses were available, the absence of slides and seepage indicates a stable slope condition at normal pool.
- 2.4.2 Construction: No information was available to determine changes from design conditions made during construction. External structures were in accordance with design relative to size, type and location.
- 2.4.3 Operation: The operation of this flood control facility is automatic. The owner opens the slide gate for low flow augmentation.

NAME OF DAM: SOUTH RIVER NO. 25

## SECTION 3 - VISUAL INSPECTION

### 3.1 Findings

- 3.1.1 General: The dam and its appurtenant structures were found to be in good overall condition at the time of the inspection. The problems noted do not require immediate remedial treatment but they should be corrected as a part of the maintenance program. Noteworthy deficiencies observed are described briefly in the following paragraphs. The complete visual inspection check list is given in Appendix III.
- 3.1.2 Dam: The embankment was in good condition with no noticeable seepage. The ground cover was very heavy except on the downstream face, right abutment where there is slight erosion, and at the left abutment where leaves and wood debris have prevented growth. Trees and large bushes are growing at various places on the upstream and downstream face of the dam. Surface runoff in front of the left toe of the dam is being drained by existing tire tracks; consequently, large gullies are present.
- 3.1.3 Appurtenant Structures: The riser's concrete is deteriorated just above the water level at the upstream face. The downstream end of the emergency spillway showed signs of a minor erosion. Erosion was not apparent in other areas of the spillway.
- 3.1.4 Reservoir Area: No serious shoreline erosion was found.
- 3.1.5 Downstream Channel: The downstream channel is composed of gravel, cobbles and small boulders, and is in good condition.

### 3.2 Evaluation

- 3.2.1 Dam: The embankment is in good condition except for the trees, bushes and debris which should be removed. The eroded and sparsely vegetated areas on the upstream face near the abutments should be seeded and mulched.

NAME OF DAM: SOUTH RIVER NO. 25



- 3.2.2     Appurtenant Structures: The deteriorated concrete on the exposed part of the riser should be repaired using an epoxy type of concrete. It is recommended that the eroded area at the downstream end of the emergency spillway be reseeded.
- 3.2.3     Reservoir Area: No work is required.
- 3.2.4     Downstream Channel: No work is required.

NAME OF DAM: SOUTH RIVER NO. 25



## SECTION 4 - OPERATIONAL PROCEDURES

- 4.1 Procedures: No formal operating procedures are used since this is a recreational and flood control structure. However, the slide gate for the emergency outlet is regulated during low flow periods so that the farm below the dam obtains water.
- 4.2 Maintenance of Dam: The Headwaters Soil and Water Conservation District conducts a yearly inspection program for the dam with the assistance of the District Conservationist, and deficiencies which are found are corrected in conjunction with this inspection. The maintenance responsibilities include liming, fertilizing, and mowing the embankment and spillways; seeding and mulching bare areas; painting the trash racks; and repairing gullies that occur in the dam and spillway areas.
- 4.3 Maintenance of Operating Facilities: The Headwaters Soil and Water Conservation District is responsible for the maintenance of the trash racks and the emergency outlet facilities.
- 4.4 Warning System: At the present time, there is no warning system or evacuation plan in operation. It is recommended that a formal emergency procedure be prepared, and prominently displayed and furnished to all operating personnel. This should include:
- 1) How to operate the dam during an emergency.
  - 2) Who to notify, including public officials, in case evacuation from the downstream area is necessary.
  - 3) Procedures for evaluating inflow during periods of emergency operation.
- 4.5 Evaluation: The maintenance of the operating facilities appears to be good, since the emergency outlet slide gate is operated regularly.

NAME OF DAM: SOUTH RIVER NO. 25

## SECTION 5 - HYDRAULIC/HYDROLOGIC DATA

- 5.1 Design: The S.C.S. hydrologic/hydraulic calculations for this project were not available for use in the completion of this report.
- 5.2 Hydrologic Records: None were available.
- 5.3 Flood Experience: Records obtained from the S.C.S. indicate the emergency spillway has been activated twice since construction. The stored flood waters reached elevation 1584.0 in June 1969 and elevation 1585.7 in June 1972. All other records indicate that flood flows were stored without the use of the emergency spillway.
- 5.4 Flood Potential: Performance of the reservoir was analyzed by routing the Probable Maximum Flood (P.M.F.) through the reservoir as required for a dam classified by the Recommended Guidelines for Safety Inspection of Dams as an "intermediate" size-"high" hazard dam. The 100 year flood and one-half Probable Maximum Flood (P.M.F.) were also routed.
- 5.5 Reservoir Regulation: Pertinent dam and reservoir data are shown in Table 1.1, paragraph 1.3.3.
- Regulation of the flow from the reservoir is automatic. Normal flows are controlled by the crest (elevation 1542.0) of the riser. Water entering the riser flows through the dam in a 24 inch concrete conduit. Water also flows past the dam through an ungated, vegetated, side-channel emergency spillway in the event water in the reservoir rises over the spillway crest.
- 5.6 Overtopping Potential: The probable rise in the reservoir and other pertinent information on the reservoir performance for the P.M.F., one-half P.M.F. and 100 year flood are shown in the following table:

NAME OF DAM: SOUTH RIVER NO. 25

TABLE 5.1 RESERVOIR PERFORMANCE

Item	Normal	Hydrographs		
		100 Year	1/2 P.M.F.	P.M.F.
Peak flow, c.f.s.				
Inflow	-	939	7280	14,559
Outflow	-	55	3955	13,888
Peak elev., ft. M.S.L.	1542.0	1562.3	1587.5	1590.5
Emergency spillway				
Depth of flow, ft. (a)	-	-	2.3	4.3
Avg. velocity, f.p.s.	-	-	8.5	11.5
Non-overflow section				
Depth of flow, ft.	-	-	-	0.7
Average velocity, f.p.s.	-	-	-	4.6

(a) Actual depth at control section not including velocity head.

5.7 Reservoir Emptying Potential: The time to draw the reservoir down from normal pool (crest of the riser) to the pond drain invert is approximately one day.

5.8 Evaluation: Hydrologic and hydraulic determinations of the project were computed as part of this report. The P.M.F., one-half P.M.F. and 100 year flood hydrographs were routed through the dam and reservoir starting with pool level at the crest of the principal spillway. The routed P.M.F. reached a maximum elevation, as shown in Table 5.1, of 1590.5 feet which is one foot above the minimum top of dam (elevation 1589.5). Therefore, the dam and spillway have inadequate storage-discharge capacities to pass a spillway design flood equal to the P.M.F. The spillway can pass only 70 percent of the P.M.F.

It should be indicated that conclusions pertain to present day conditions, and that the effect of future development on the hydrology has not been considered.

NAME OF DAM: SOUTH RIVER NO. 25

## SECTION 6 - DAM STABILITY

- 6.1 Foundation and Abutments: The foundation of the dam consists of alluvial silt and clay loam with gravel and cobbles at an average depth of seven feet, based on a profile showing borings along the centerline of the dam in the lowland of the valley. Both abutments are founded on residual silty sand and rock fragments of less than 10 feet in depth as observed in the field.

The core trench on the centerline of the dam was shown on the plans to be founded on bedrock in the valley which was indicated to be "rotten shale" (possibly weathered, fractured, shale) in the borings. Jointed hard sandstone and soft to medium hard shale were observed exposed near the right abutment and in the spillway cut. The dip of the bedding ranges from 40°-65°SE. with a strike of N.15°E.

### 6.2 Stability Analysis

- 6.2.1 Visual Observations: No tension cracks or other evidence of movement such as sloughing of the embankment slopes, or movement at or beyond the toe was observed. No seepage was observed on the face of the dam or in its vicinity.
- 6.2.2 Design Data: No stability analyses were available.
- 6.2.3 Operating Records: The yearly inspections indicate no deteriorating conditions except minor maintenance requirements.
- 6.2.4 Post-Construction Changes: No alterations of the dam were apparent since it was constructed.
- 6.2.5 Seismic Stability: South River Dam No. 25 is in Seismic Zone 2 and is considered to present no hazard from earthquakes according to the Recommended Guidelines for Safety Inspection of Dams.
- 6.3 Evaluation: Since no stability analyses were available, slope design could not be evaluated. It was determined by visual inspection that there are no seriously distressed external conditions to suggest instability of the structure.

NAME OF DAM: SOUTH RIVER NO. 25



## SECTION 7 - ASSESSMENT/REMEDIAL MEASURES

- 7.1 Dam Assessment: There were no findings as a result of this inspection that would indicate the structure of the dam is unsound. No seepage was found and the spillway is considered adequate to pass the Probable Maximum Flood. No evidence of embankment distress was observed. As-built plans; design hydrologic and hydraulic analyses; and design soils, foundation and stability reports were not available for review.

The dam is generally in good condition with the exception of normal maintenance items.

- 7.2 Recommended Remedial Measures: The inspection revealed certain preventative maintenance items which should be scheduled during the annual maintenance period. These are:

- 1) Cut and remove the tree growth on the faces of the dam to prevent further root growth.
- 2) Remove debris on the upstream dam face and mow both embankment slopes prior to annual inspections.
- 3) Fill and reseed tire tracks and minor erosional gullies.
- 4) Repair deteriorated concrete on the exposed part of the principal spillway riser.

A warning system should be devised that will alert downstream occupants to evacuate when the reservoir level approaches the top of the embankment. The downstream occupants should also be advised to evacuate during storms that coincide with the U.S. Weather Bureau's flash flood warning system.

NAME OF DAM: SOUTH RIVER NO. 25



APPENDIX I

PLATES

## CONTENTS

Location Plan

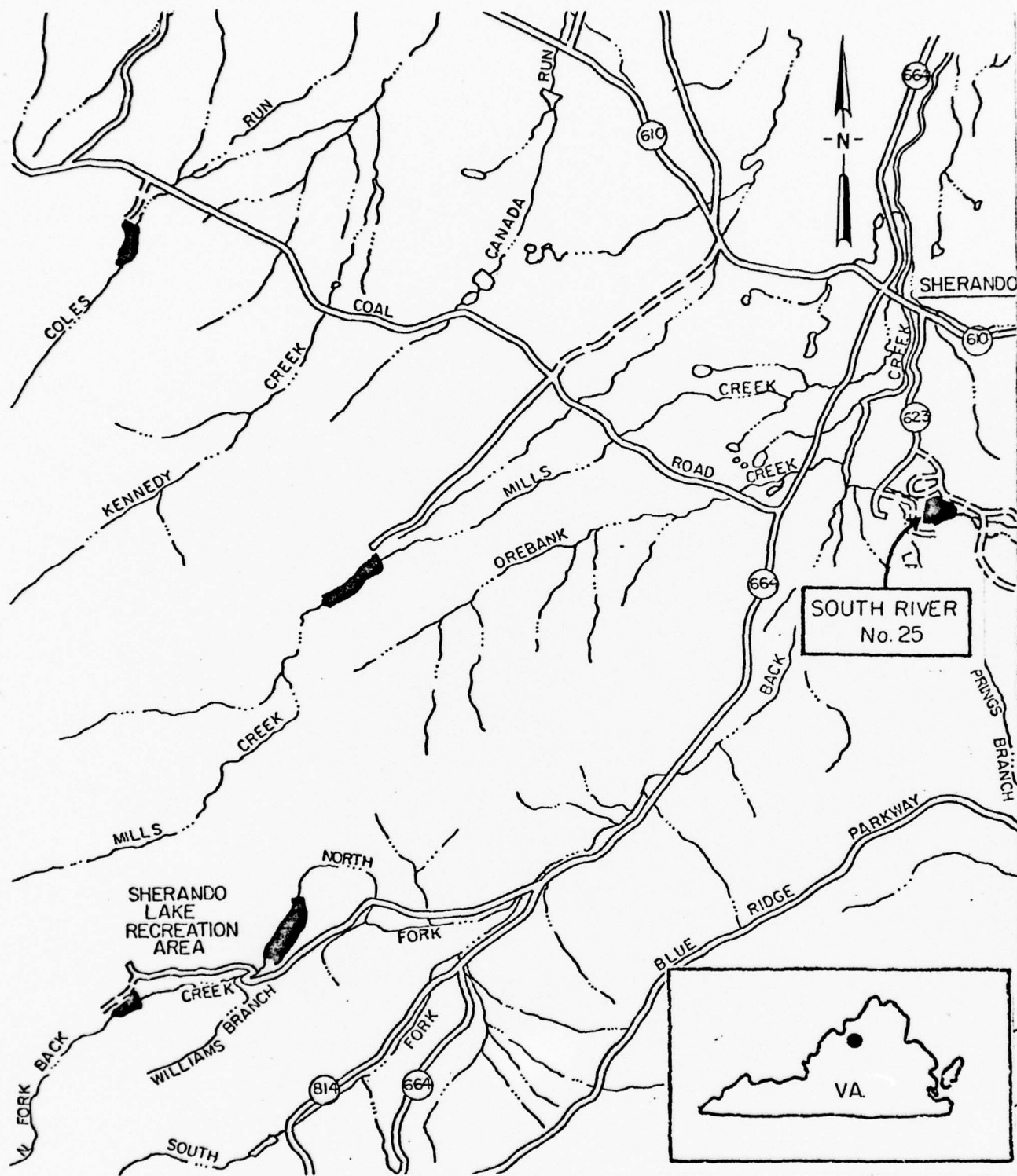
Plate 1: Plan of Dam

Plate 2: Site Location of Dam and Emergency Spillway

Plate 3: Typical Sections

Plate 4: Profile of Dam Showing Soil Borings

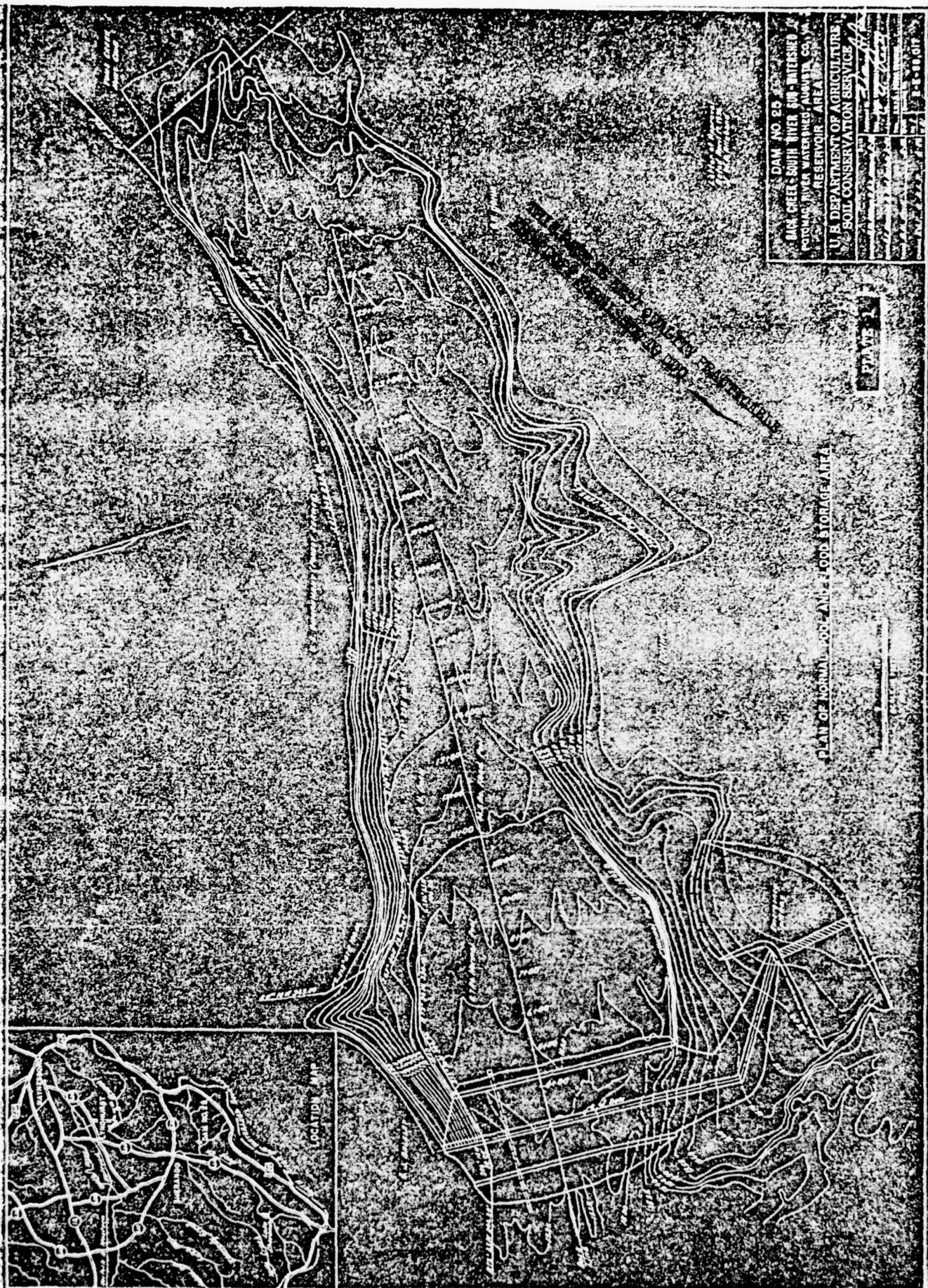
NAME OF DAM: SOUTH RIVER NO. 25



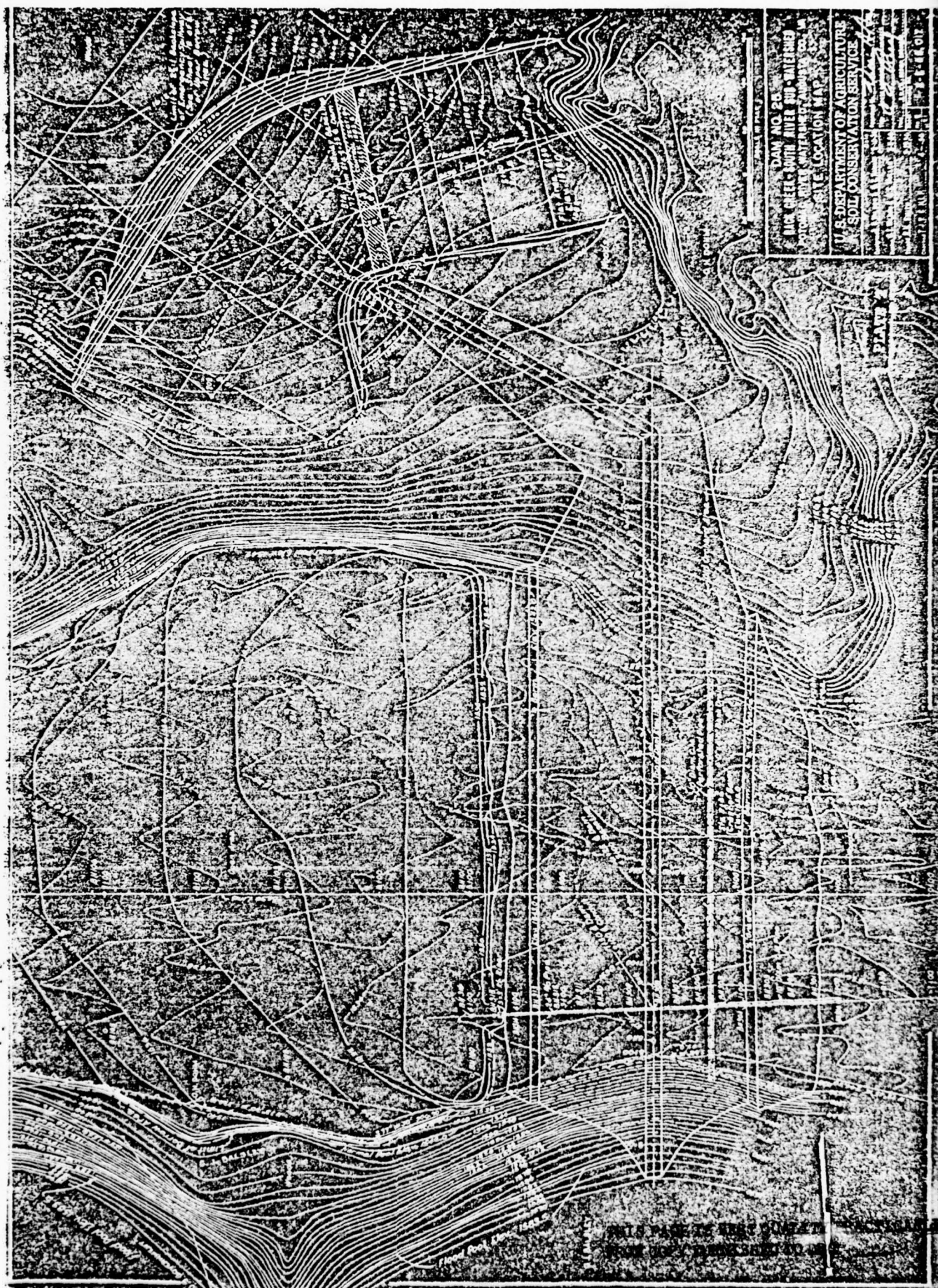
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LOCATION PLAN  
SOUTH RIVER No. 25

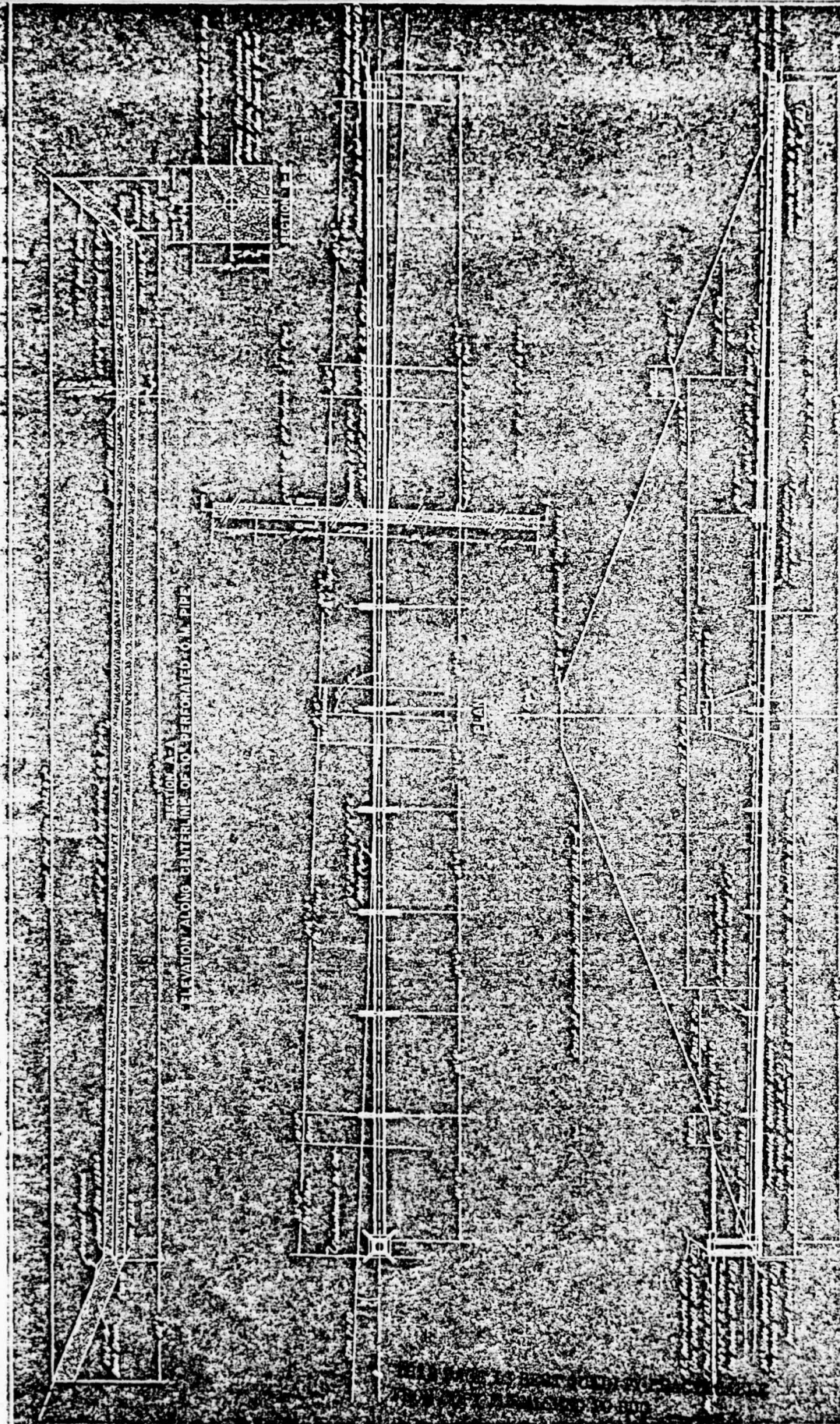












ELEVATION 100  
ELEVATION 110  
ELEVATION 120  
ELEVATION 130  
ELEVATION 140  
ELEVATION 150

SECTION A LONG CENTER LINE OF REINFORCED CONCRETE PIPE

SCALE

DAM NO. 85  
REINFORCED CONCRETE PIPE  
DESIGNED BY  
U.S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
1972

1972

1972



TABLE 1

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APPENDIX II

PHOTOGRAPHS

## CONTENTS

- Photo 1: Downstream Channel From Principal Spillway and Farm
- Photo 2. Stilling Basin at Downstream Outlet of Principal Spillway
- Photo 3: Curve of Dam on Left Side
- Photo 4: Debris on Upstream Slope Near Curve on Left Side
- Photo 5: Upstream Portion of Emergency Spillway
- Photo 6: Cut Slope in Rock and Soil on Left Side of Emergency Spillway With Borrow Area Beyond

Note: Photographs were taken 12 July 1978.



**SOUTH RIVER DAM NO. 25**



**PHOTO 1. Downstream Channel From Principal Spillway and Farm**



**PHOTO 2. Stilling Basin at Downstream Outlet of Principal Spillway**

**SOUTH RIVER DAM NO. 25**



**PHOTO 3. Curve of Dam on Left Side**



**PHOTO 4. Debris on Upstream Slope Near Curve on Left Side**

**SOUTH RIVER DAM NO. 25**



**PHOTO 5. Upstream Portion of Emergency Spillway**



**PHOTO 6. Cut Slope in Rock and Soil on Left Side of Emergency Spillway  
With Borrow Area Beyond**

APPENDIX III

CHECK LIST - VISUAL INSPECTION



Check List  
Visual Inspection  
Phase 1

Name Dam South River No. 25 County Augusta State Virginia Coordinates Lat. 3757.8  
Long. 7857.0

Date Inspection 12 July 1978 Weather Cloudy Temperature 75°F.

Pool Elevation at Time of Inspection 1542.0 M.S.L. Tailwater at Time of Inspection 1522.5 M.S.L.

HHI-1

Inspection Personnel:

MICHAEL BAKER, JR., INC.

D. J. Greenwood  
J. M. Thompson  
W. L. Sheaffer

D. J. Greenwood Recorder

EMBANKMENT

SOUTH RIVER NO. 25

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SURFACE CRACKS	No cracks were visible.	

UNUSUAL MOVEMENT OR  
CRACKING AT OR BEYOND  
THE TOE

None was visible.

HH-2

SLOUGHING OR EROSION OF  
EMBANKMENT AND ABUTMENT  
SLOPES

There is no sloughing. There is slight erosion in the vicinity of the abutment slope and drainage ditches.

Reseeding the eroded surfaces is recommended. Rubble gutters should be installed, if future inspections show increased erosion at the abutment.

VERTICAL AND HORIZONTAL  
ALIGNMENT OF THE CREST

No misalignment was observed.

RIPRAP FAILURES

The upstream bench was not rippedraped; however, there does not appear to be any adverse affect by wave action.

EMBANKMENT

SOUTH RIVER NO. 25

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
FOUNDATION	The dip of the bedding ranges from 40°-50° SE. in outcrops with a strike of N. 15°E. Sandstone was observed in most of the outcrops in the vicinity of the dam and spillway.	
JUNCTION OF EMBANKMENT AND ABUTMENT, SPILLWAY AND DAM HH-3	The junction of the embankment at both abutments appears to be firmly seated in silty sand and rock fragments overlying sandstone and shale. Slight erosion is present on the right upstream contact. The area below the left downstream toe is eroded from vehicle tracks. Small trees are growing on the embankment slopes.	Erosion on the right abutment should be repaired, if it increases. A rubble gutter may be necessary in the future.
ANY NOTICEABLE SEEPAGE	There is no noticeable seepage.	
STAFF GAGE AND RECORDER	There are no instruments.	
DRAINS	The S.C.S. plans call for a 10 inch perforated corrugated metal pipe in the core trench in the vicinity of the principal spillway outletting into a 10 inch corrugated metal pipe adjacent to the principal spillway outlet. The pipe adjacent to the principal spillway was actually measured to be two inches in diameter. No flow was observed since the pipe was submerged in the stilling basin.	

# OUTLET WORKS

SOUTH RIVER NO. 25

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CRACKING AND SPALLING OF CONCRETE SURFACES IN OUTLET CONDUIT	There is no concrete surface at the outlet conduit, but the outlet pipe is in good condition.	
INTAKE STRUCTURE	The intake structure is a standard three feet square reinforced concrete fixed crest four-way riser of S.C.S. design. The top pad has the pedestal for the lake drain. The hand wheel is missing from the riser. There is some deteriorated concrete above normal pool.	
OUTLET STRUCTURE H H H - 4	The outlet structure is a 24 inch reinforced concrete pipe on a 1.6 percent slope.	
OUTLET CHANNEL	The channel is approximately 20 feet wide with a streambed of gravel, cobbles and boulders. It has a fairly straight alignment and no obstructions. The banks and overbanks are grass covered.	
EMERGENCY GATE	The emergency gate is a 24 inch slide gate installed on the riser. The gate is operated by the owners during low flow periods to augment flow to a farmer directly downstream from the dam.	
STILLING BASIN	The basin is approximately 30' x 50' x 6' deep. The riprap is in good condition.	



# UNGATED SPILLWAY

SOUTH RIVER NO. 25

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
CONCRETE WEIR	There is none.	
APPROACH CHANNEL	The approach channel into the spillway is cut in residual soil overlying sandstone and shale with a dip of 40°-50° SE. away from the spillway and a strike N. 15° E. The channel is covered with soil and grass.	
DISCHARGE CHANNEL	The channel is cut into steeply dipping sandstone and shale with a cover of soil and grass. The downstream end of the channel shows signs of minor erosion caused by spillway flow. The small valley directly below the channel exit shows considerable signs of erosion.	
BRIDGE AND PIERS	There are none.	
CUT SLOPES	The cut depth averages six feet primarily in hard sandstone with softer shale at an uneven 0.5:1 slope with four feet of silty sand and gravel above. The rock dips at 40°-50° to the SE. away from the spillway with a strike of N. 15° E. Some vertical joints are perpendicular to the bedding and at other angles including in the direction of the spillway alignment with no predominant set of joints. There is no significant erosion on the cut slope. The beds are thin to medium thick.	The cut slope appears to be stable with minor talus accumulation.

# INSTRUMENTATION

SOUTH RIVER NO. 25

VISUAL EXAMINATION	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
MONUMENTATION/SURVEYS	There are none.	
OBSERVATION WELLS	There are none.	
WEIRS	There are none.	
III-6		
PIEZOMETERS	There are none.	
OTHER		

# RESERVOIR

SOUTH RIVER NO. 25

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
SLOPES	<p>The slopes on the right side are steep in residual soil overlying sandstone and shale. They are stable and wooded. The slopes on the left side are very steep in hard sandstone and shale. The area was a borrow area for the dam.</p>	
SEDIMENTATION	<p>No sedimentation studies were available; however, soundings indicate a depth of 12 feet.</p>	<p>Sedimentation apparently does not block the slide gate since the owner opens the gate frequently to allow flow to a downstream farm.</p>

# DOWNSTREAM CHANNEL

SOUTH RIVER NO. 25

VISUAL EXAMINATION OF	OBSERVATIONS	REMARKS OR RECOMMENDATIONS
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<p>CONDITION (OBSTRUCTIONS, DEBRIS, ETC.)</p>	<p>The channel is in good condition with a bottom of gravel, cobbles and small boulders. No obstructions or debris were observed.</p>	
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<p>SLOPES</p>	<p>The channel slopes at about one percent. The overbanks are flat and 1000 to 2000 feet wide, and they gradually rise to the mountain tops in several areas.</p>	
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HH-8

<p>APPROXIMATE NO. OF HOMES AND POPULATION</p>	<p>The nearest downstream population center is the Town of Sherando which is located about 1.7 miles downstream. Most of the town is situated very close to the streambank elevation. The approximate population is 150. The downstream channel is rather shallow and rectangular in shape near the homes. There is a farm immediately downstream (see Photo 1).</p>	
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APPENDIX IV

CHECK LIST - ENGINEERING DATA

CHECK LIST  
ENGINEERING DATA  
DESIGN, CONSTRUCTION, OPERATION

SOUTH RIVER NO. 25

ITEM	REMARKS
PLAN OF DAM	A complete set of design plans, furnished by the owner, are available at the Norfolk District of the Corps of Engineers. As-built plans are not available. A plan view of the dam is included in this report as Plate 1.
REGIONAL VICINITY MAP	A U.S.G.S. 7.5 minute quadrangle was used as the Location Plan.
CONSTRUCTION HISTORY	This information was not available at the time of this report.
TYPICAL SECTIONS OF DAM	A typical section of the dam is enclosed in this Phase I Inspection Report.
HYDROLOGIC/HYDRAULIC DATA	Hydrologic and hydraulic design data are not available for this dam.
OUTLETS - PLAN	DETAILS were furnished by the owner and are available at the Norfolk District Corps of Engineers.
and	
- CONSTRAINTS	
and	DISCHARGE RATINGS are not available.
DISCHARGE RATINGS	

RAINFALL/RESERVOIR RECORDS      No rainfall records are available for the site. Reservoir records are available from the S.C.S. in Staunton, for most major storms.

SOUTH RIVER NO. 25

ITEM	REMARKS
DESIGN REPORTS	None are available.
GEOLOGY REPORTS	No geology reports were available.
DESIGN COMPUTATIONS HYDROLOGY & HYDRAULICS DAM STABILITY SEEPAGE STUDIES	None are available.
MATERIALS INVESTIGATIONS BORING RECORDS LABORATORY FIELD	Shallow borings, primarily in soil with brief records, are shown with the plans for the dam and the borrow areas.
POST-CONSTRUCTION SURVEYS OF DAM	None are available.
BORROW SOURCES	Borrow was obtained from the reservoir area and the hill to the left of the emergency spillway.

SOUTH RIVER NO. 25

ITEM	REMARKS
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MONITORING SYSTEMS	None, except manual reading of gage boards by S.C.S. personnel during major storms.
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MODIFICATIONS	None were noted.
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HIGH POOL RECORDS	Records are available from the S.C.S. in Staunton, Virginia.
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POST-CONSTRUCTION ENGINEERING STUDIES AND REPORTS	None were made.
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IV-3

PRIOR ACCIDENTS OR FAILURE OF DAM DESCRIPTION REPORTS	None were noted.
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MAINTENANCE OPERATION RECORDS	Available from the S.C.S. office in Staunton, Virginia.
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SOUTH RIVER NO. 25

ITEM	REMARKS
SPILLWAY PLAN	Sections and details of the ungated spillway are enclosed.
SECTIONS DETAILS	The sections closely match dimensions measured in the field.

OPERATING EQUIPMENT  
PLANS & DETAILS

The 24 inch slide gate is used by the owner for draining the lake and for low flow augmentation. Plans and details, furnished by the owner, are available at the Norfolk District of the Army Corps of Engineers.

CHECK LIST  
HYDROLOGIC AND HYDRAULIC DATA  
ENGINEERING DATA

4.6 square miles of primarily  
wooded and undeveloped land

DRAINAGE AREA CHARACTERISTICS: \_\_\_\_\_

ELEVATION TOP NORMAL POOL (STORAGE CAPACITY): 1542.0 (61 acre-feet)

ELEVATION TOP OF DAM POOL (STORAGE CAPACITY): 1589.5 (1281 acre-feet)

ELEVATION MAXIMUM DESIGN POOL: Unknown

ELEVATION TOP DAM: 1589.5

CREST: Emergency Spillway

- a. Elevation 1583.5
- b. Type Earth side-channel
- c. Width 200 feet
- d. Length 620 feet
- e. Location Spillover Left side of reservoir through abutment
- f. Number and Type of Gates None

OUTLET WORKS: Principal Spillway

- a. Type Standard fixed crest four-way riser
- b. Location Right of center on dam
- c. Entrance inverts 1542.0 (fixed crest)
- d. Exit inverts 1522.0 (24 inch pipe invert)
- e. Emergency draindown facilities 24 inch slide gate, elevation 1528.0

HYDROMETEOROLOGICAL GAGES: None

- a. Type \_\_\_\_\_
- b. Location \_\_\_\_\_
- c. Records \_\_\_\_\_

MAXIMUM NON-DAMAGING DISCHARGE Unknown

NAME OF DAM: SOUTH RIVER NO. 25

APPENDIX V

ANNUAL MAINTENANCE INSPECTION REPORTS

*Lester Vance*  
USFS

ANNUAL MAINTENANCE INSPECTION OF STRUCTURAL WORKS OF IMPROVEMENT  
Shenandoah Valley Soil & Water Conservation District

April, 1970

Maintenance inspections were conducted on structural works of improvement in the Shenandoah Valley District. The following needs of repair and improvement were noted:

Site #27 - Sherando

Stillin basin needs cleaning out to lower water level 2 to 3 feet. Washed out section in crib section of emergency spillway needs to be backfilled and seeded. Washed out section approximately 1' deep, 40' long and 2' wide. (Forest Service indicated they would do this repair work.)

Site #25 - Tom's Branch

Cattle grazing needs to be controlled on dam and in emergency spillway. Fertilizer on the emergency spillway would revive the vegetation quickly now if the grazing could be controlled.

Site #11

Trees need to be cut on dam and in emergency spillway. When cut the stumps should be killed.

Site #7

Controlled grazing would improve the maintenance of this structure.

Site #23 Robinson Hollow

Locust trees on dam and in emergency spillway need to be cut and killed.

Site #26 Inch Branch

Locust trees on dam need to be cut and killed. Trash on river top needs to be removed.

Sites # 76 and 77 Elk Horn Lake  
*Heath Stone*

Locust trees on dam should be cut and killed.

APPROVED:

*David Walker*

David Walker, Chairman  
Shenandoah Valley S&WCD  
April 5, 1970  
May

*Wm. L. Blair, Jr.*  
Wm. L. Blair, Jr.  
Area Conservationist  
April 27, 1970

*Wm. L. Blair*  
U. S. Forest Service  
April 30, 1970

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OPERATION AND MAINTENANCE INSPECTION

of

South River Watershed Structures

An inspection team of Jackson Betts, Wayne Hypes, John Crist, Folger Taylor, and William E. Lucas, Jr. on April 5, 1978, visited the following dams of the South River Watershed of the Potomac River Watershed.

Site #3 - Greenville Correction Center - The dam is in good shape with good vegetative cover and has been mowed. Posts have been set to indicate firing stations in the emergency spillway and using the spillway bank as a pellet stop. When the firing training is completed the posts should be removed. This structure is being used rather wisely.

Site #4 - Kiwanis Lake - The spillway pipe and riser appear to be in good shape. All of the dam has been mowed. The Ky 31 is becoming thin on the front of the dam (wet side) and needs to be overseeded with Ky 31 and fertilized. The road on the top of the dam needs to be graveled on the steeper parts. The back part of the dam (dry side) has some woody growth that should be cut and deadened. There is about 1 Ac. that needs to be seeded to Ky 31. The entire dam and emergency spillway area should be limed and fertilized.

Site #6 - Sangers Lake - This structure is kept mowed. Some overseeding of Ky 31 would be helpful. Some Crownvetch has been started on it. The riser and spillway pipe appear to be in good shape. The berm is showing effects of wave erosion and would be improved by shaping with large stone.

Site #7 - Wilda - This dam has received much attention, such as brushhogging, Fall spraying for knapweed, Spring seeding of Ky 31, application of 10-10-10 fertilizer, and the owner will spot spray for weeds this growing season. The riser and pipe spillway appear to be in good shape, but the slide gate control rod and gate frame show much rust when the lake level is low.

Site #11 - Canada Run - County Dump - The woody growth was cut and sprayed last year. This dam should be mowed this year. The riser, pipe spillway and emergency spillway appear to be sound.

Site #24 - Happy Hollow Lake - This site has good vegetative cover and is kept mowed. The riser and pipe spillway appear sound. The emergency spillway is in good condition with good cover. The wooden trash rack is scheduled to be replaced.

Site #25 - Toms Branch - This dam has very little woody growth on it. The pipe spillway and emergency spillway are in good condition. Stone has been applied to the road on the dam and has improved the dam by eliminating the standing water on the top of the dam. This dam should be mowed in the next two years. The road banks above the dam (road going to Shirey camp) should be seeded to cut down the silt and erosion.

*Wayne H. Hypes*