

ABERDEEN LOCK AND DAM

TENNESSEE-TOMBIGBEE

WATERWAY

RESERVOIR REGULATION MANUAL

APPENDIX D

ABERDEEN RESERVOIR
TOMBIGBEE RIVER, MISSISSIPPI

TENNESSEE-TOMBIGBEE RIVER BASIN
RESERVOIR REGULATION MANUAL

APPENDIX D

ABERDEEN RESERVOIR

TOMBIGBEE RIVER, MISSISSIPPI

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PERTINENT DATA

GENERAL

Damsite, miles above mouth of Mobile River	407.98
Drainage area above damsite, square miles	2,045
Elevation of normal pool, feet above msl	190.00

STREAMFLOW

Period of record	1928-1980*
Mean discharge for period (39 years), cfs	3,289
Minimum discharge	
Daily (1-2 Sep 43), cfs	58
Monthly (Sep 54), cfs	82
Maximum discharge	
Highest of record (18 Mar 73), cfs	123,000
Monthly (Mar 73), cfs	20,940
Bankfull discharge (for downstream), cfs (approximately)	21,500

FLOODS OF RECORD (Project Conditions)

Flood of March 1955	
Maximum discharge, cfs	103,100
Maximum pool, ft. msl	195.10
Flood of March 1973	
Maximum discharge, cfs	130,800
Maximum pool, ft. msl	196.60

STANDARD PROJECT FLOOD

Natural peak discharge at damsite, cfs	166,100
Natural peak stage at damsite, ft. above msl	201.40
Peak inflow to full reservoir, cfs	197,600
Regulated peak outflow, cfs	169,100
Regulated peak headwater, ft. above msl	198.80
Regulated peak tailwater, ft. above msl	198.70

SPILLWAY DESIGN FLOOD

Total storm runoff, inches	23.9
Base flow, cfs	5,100
Natural peak discharge at damsite, cfs	347,900
Natural peak stage at damsite, ft. above msl	206.70
Peak inflow to full reservoir, cfs	390,400
Regulated peak outflow, cfs	349,400
Regulated peak tailwater, ft. above msl	205.90

* Discharge record Aug 1928 - Sep 58, Oct 58 - Sep 71 (Annual Maximum only) and Oct 71 - Sep 80

PERTINENT DATA (Cont'd)

RESERVOIR

Pool elevation, ft. msl	
Normal operating pool	190.00
Reservoir area, acres	
At normal pool (elev. 190.00)	4,121
At crest of gated spillway (elev. 165.00)	Natural river
Land acquired in fee simple, acres	5,956
Flowage easements acquired, acres	1,652
Length of shoreline (elev. 190.00), miles	200
Length of reservoir, river miles	22.6
Storage volume at normal pool (elev. 190.00) acre ft.	31,564
Dead storage below spillway crest (elev. 165.00) acre ft.	Natural river

LOCK

Nominal size of chamber, ft	110 by 600
Distance center to center of gate pintles, ft.	670
Maximum lift, ft.	27.0
Elevation of upper stoplog sill, ft. above msl	175.0
Elevation of upper miter sill, ft. above msl	175.0
Elevation of lower stoplog sill, ft. above msl	148.0
Elevation of lower miter sill, ft. above msl	148.0
Elevation of chamber floor, ft. above msl	143.0
Elevation of top of upper approach walls, ft. above msl	200.0
Elevation of top of upper gate blocks, ft. above msl	200.0
Elevation of top of chamber walls, ft. above msl	200.0
Elevation of top of lower approach walls, ft above msl	200.0
Freeboard on upper approach wall when lock becomes inoperative, ft.	1.0
Percent of time inoperative,	Negligible
Type of upper gate	horizontally framed miter
Height of upper gate, ft.	25.0
Type of lower gate	horizontally framed miter
Height of lower gate, ft.	52.0
Type of culvert valves	reverse tainter
Dimensions of culverts at valves, ft.	12.5 X 12.5
Elevation of culvert ceilings between valves, ft. above msl	153.5
Minimum submergence of culvert valves, ft.	9.5
Type of filling and emptying system	side ports
Type of unwatering dams	stoplogs
Elevation of top of upstream unwatering dam, ft. above msl	191.0
Elevation of top of downstream unwatering dam, ft. above msl	168.0
Type of operating machinery	hydraulic oil pressure

PERTINENT DATA (Cont'd)

GATED SPILLWAY

Total length, including end piers, ft.	416
Net length, ft.	360
Elevation of crest, ft. above msl	165.0
Number of piers, including end piers	7
Width of piers, ft.	8.0
Type of gates	tainter
Number of gates	6
Length of gates, ft.	60.0
Height of gates, ft.	26.0
Elevation of top of gates in closed position, ft. above msl	191.0
Elevation of trunnion, ft. above msl	194.0
Elevation of access bridge, ft. above msl	219.0
Elevation of stilling basin apron, ft. above msl	139.0
Length of stilling basin, ft.	115.0
Height of end sill, ft.	5.0

ABUTMENT WALL BETWEEN LOCK AND SPILLWAY

Length, ft.	112.0
Top elevation, ft. above msl	200.0
Top width, ft.	7.0

LEFT ABUTMENT WALL

Length, ft.	113.0
Top elevation, ft. above msl	200.0
Top width, ft.	7.0

MINIMUM FLOW STRUCTURE

Conduit	
Types	R.C. Box Culvert and R.C. flume
Width, ft.	6
Height, ft. (R.C. Box Culvert)	8
Height, ft. (R.C. flume)	10
Length, ft. (R.C. Box Culvert)	141
Length, ft. (R.C. flume)	88
Capacity, cfs	
Normal upper and lower pool (elev. 190 and 163 respectively)	200
Invert elevation, intake, ft. above msl	184.7
Invert elevation, outlet, ft. above msl	156
Sluice gate	
Type	Slide
Method of operation	Electric motor
Number	1
Size, ft.	6 x 8

PERTINENT DATA (Cont'd)

MINIMUM FLOW STRUCTURE (Cont'd)

Stilling basin	
Width, ft.	6
Length, ft.	25
Apron elevation, ft. above msl	156
Tailrace channel	
Length, ft.	385
Width, ft.	10.
Trash rack	
Type	Slide
Method of operation	Manual
Number	1
Size, ft.	6 X 8

RIGHT BANK NON-OVERFLOW DIKE

Top elevation, ft. above msl	212.0
Length, ft.	6,400
Top width, ft.	32
Maximum height, ft. above natural ground	37
Side slopes	1v on 3h

LEFT BANK OVERFLOW DIKE

Top elevation, ft. above msl	195.0
Length, ft.	4,200
Top width, ft.	32
Maximum height, ft. above natural ground	8
Side slopes	1v on 3h

CHAPTER I

INTRODUCTION

RESERVOIR REGULATION MANUAL

Authorization
Purpose and scope
Related manuals

DESCRIPTION OF PROJECT

Location
Purpose
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Reservoir
Gated spillway
Abutment walls
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Minimum flow structure
Lock
Control station
Land acquisition
Recreational development

HISTORY OF PROJECT

Authorization
Design and construction
Reservoir filling

RESERVOIR REGULATION MANUAL

1-1. Authorization. This reservoir regulation manual is prepared in accordance with ER 1110-2-240 and paragraphs 6-01 through 6-03 of EM 1110-2-3600, "Reservoir Regulation." Engineer Technical Letter 1110-2-251 was used as a guide for format of this manual.

1-2. Purpose and scope. The primary purpose of this manual is to document the reservoir regulation plan for the Aberdeen project. Included are descriptions of physical components of the lock and dam, operating procedures, historical facts and other pertinent data. Also presented are general characteristics of the area including: flood frequencies, meteorology, examples of reservoir regulation and a discussion on river forecasting. Details of the coordinated reservoir regulation plan for Aberdeen Lock and Dam within the multiple project system of the Tennessee-Tombigbee River basin are presented which insure optimum benefits consistent with the physical characteristics and purposes for which the system was authorized.

1-3. In addition, this manual should be used in conjunction with the master reservoir regulation manual for the entire Tennessee-Tombigbee Waterway to provide a reference source for higher authority and for the training of new personnel.

1-4. Related manuals. While the intent of this manual is to document reservoir regulation procedures and provide certain other pertinent information concerning Aberdeen Lock and Dam, other manuals are prepared to furnish guidance in the operation and maintenance of the project. The "Operation and Maintenance Manual" for the Aberdeen Lock and Dam was prepared for this purpose.

1-5. The "Tennessee-Tombigbee Waterway Reservoir Regulation Manual," of which this manual is an appendix, contains general information for the entire waterway. Appendices to the basin master manual are prepared for all reservoir projects within the basin for which one or more project functions are the responsibility of the US Army Corps of Engineers.

DESCRIPTION OF PROJECT

1-6. Location. Aberdeen Lock and Dam is located on the Tombigbee River in northeast Mississippi about 1 mile east of the town of Aberdeen. Structures for the project are located in Monroe County, Mississippi. The dam is located about 22.6 river miles above Columbus Lock and Dam. Location of the Aberdeen project is shown on charts 1 and 2.

1-7. Purpose. The Aberdeen project has the primary purposes of navigation and recreation. The reservoir provides a navigable depth of approximately 9 feet upstream to the beginning of the Canal Section of the Tennessee-Tombigbee Waterway. Other benefits include improved habitat for fish and wildlife.

1-8. General features. The Aberdeen project consists of a 110 by 600-foot lock located in a channel cutoff excavated across the left overbank, a gated spillway adjacent and to the left of the lock, a minimum flow structure in the right bank non-overflow dike and earth dikes connecting the structures to high ground. Principal features of the project are discussed in subsequent paragraphs and general plans of project features are shown on charts 1, 2, and 3. Typical plans, elevations and sections of major components are shown on charts 4, 5, 6, and 7.

1-9. Reservoir. The Aberdeen reservoir, at normal full pool elevation 190.0, extends 16.4 miles upriver to the junction of Town Creek, then an additional 1.5 miles up Town Creek and 1.5 miles up the Tombigbee River (East Fork) above the juncture. The reservoir is shown on chart 2. The Canal Section of the waterway departs from the river through the left or east bank of the Tombigbee River about 4 miles downstream from the juncture of Town Creek. The point where the Canal Section leaves the Aberdeen reservoir and typical sections of the navigation channel are shown on chart 7. At normal pool level (elevation 190) the reservoir has an area of 4,121 acres and a total volume of 31,564 acre feet. Depths in the reservoir vary from a minimum of nine feet to a maximum of over 40 feet at the lock and dam while the width of the lake varies from over 1,200 feet near the damsite to 200 feet in the upper reaches. Area and capacity information is shown on chart 11.

1-10. Gated spillway. The gated spillway at Aberdeen Lock and Dam consists of 6 gate bays and 7 piers having a total length of 416 feet. Flow over the broad-crested concrete weir is controlled by 6 tainter gates each 60 feet wide by 26 feet high. The gates are operated by individual electric hoists located on the top of the 8-foot piers. A pedestrian bridge at elevation 219 FMSL provides access to the electrical hoists. The spillway crest is at elevation 165 FMSL and the spillway apron is at elevation 139.0 FMSL. A spillway gate operating schedule and discharge values for partial gate openings are shown on charts 13, 14, and 15.

1-11. Abutment walls. Concrete abutment walls form connections for the gated spillway to the left bank public use area and dike, and to the lock. The tops of the walls at elevation 200.0 FMSL have a width of 7 feet with a clear walkway width of 6 feet 4 inches for pedestrian traffic.

1-12. Right bank non-overflow dike. A combination earth dike and public use area having a total length of 5,600 feet with a top at elevation 212.0 FMSL is located between the navigation lock and the high ground to the northwest. The wide portion adjacent to the lock is utilized as a public use area. The dike embodies a 265-foot long slurry cutoff at the lock and a 2,300-foot long slurry cutoff across the river. The dike is 32 feet wide across the top.

1-13. Left bank overflow dike. The left bank overflow dike including the public use area, extends 4,700 feet from the left abutment wall to high ground to the east. It embodies a 210-foot long slurry cutoff extending landward from the left abutment wall. The top of the dike adjacent to the spillway is at elevation 212.0 FMSL. It then slopes down to elevation 195.0 FMSL for a distance of about 3,100 feet then on to natural ground at elevation 194.0 in the area where normal pool level is impounded by natural topography. The top of the dike at elevation 195.0 FMSL will be overtopped by floods which can be expected to occur on an average once every 36 years.

1-14. Minimum flow structure. The minimum flow structure is located in the right bank non-overflow dike between the river and high ground to the northwest. The structure consists of an entrance headwall, apron and wingwalls and a discharge stilling basin connected by 141 feet of 6 x 8 feet reinforced concrete box culvert and four 22.0-foot sections of 6 x 10 feet reinforced concrete flume. A sluice gate is provided in the inlet structure for controlling flow to a maximum of 200 cfs at normal pool level. The purpose of the minimum flow structure is to provide sufficient flow to prevent stagnation of the existing river channel adjacent to the lock and spillway. Location of the minimum flow structure is shown on chart 3 and details and sections are shown on chart 6.

1-15. Lock. The lock chamber has a nominal dimension of 110 feet wide by 600 feet long with 670 feet between the centerline of the pintles. The maximum lift is 27 feet. The upper and lower guide walls have a usable length of 600 and 400 feet, respectively, with top of each at elevation 200.0 FMSL, the same as the lock chamber walls. With normal upper and lower pools, 190 FMSL and 163 FMSL, respectively, there will be 15 feet of water over the upper and lower miter sills. Filling and emptying of the lock is accomplished by a side port system with intake ports located in the culvert intake monoliths, a longitudinal culvert in each of the chamber walls, a system of filling and emptying side ports in the chamber monoliths, and discharge ports located on the chamber sides downstream of the lower miter gates. Flow in and out of the lock chamber through the culverts is controlled by reverse tainter valves. Location of the lock is shown on chart 3 and plans and sections are shown on chart 5.

1-16. Operation of the lock will have to be discontinued in the rare event that the headwater elevation exceeds elevation 199.0. A flood of the magnitude of the standard project flood would be required for the upper pool to approach this elevation.

1-17. For maximum lift, approximately 8 minutes are required for filling the lock and 8 minutes for emptying. To determine the volume of water, in day second feet, each time the lock is emptied the lift in feet is multiplied by 0.85.

1-18. Control station. The control station is located on the lock esplanade adjacent to monolith 8R, and has floor area of approximately 3,950 square feet. The building will house an emergency generator and other electrical, hydraulic, and mechanical equipment for the operation of the lock and spillway. Windows are provided in the second story for viewing the entire lock area and to permit operation of the lock and spillway gates from the console in the control room.

1-19. Land acquisition. The flat pool at elevation 190.0 FMSL created by the Aberdeen Dam extends up river for about 17 miles. The acquisition guideline contour is at elevation 192.0 FMSL allowing a 2-foot freeboard above normal project pool. The real estate required in fee for the construction area totaled nearly 900 acres. Reservoir area requirements comprise 3,969 acres in fee for channel rights-of-way, spoil areas and islands created by the channel and 1,652 acres in perpetual flowage easements to accommodate the pool.

1-20. In addition, 1,087 acres were acquired for public access areas at various locations along the reservoir. The total real estate requirements were 7,608 acres, of which 5,956 acres were acquired in fee simple.

1-21. Recreational development. As stated in paragraph 1-20, 1,015 acres of land have been acquired for recreational development around the Aberdeen Reservoir. The annual attendance is estimated to be approximately 357,600 visitors for general recreation and 119,200 fishermen. By the year 2035, visitation for general recreation is estimated to be 805,000 in addition to 262,000 fishermen.

1-22. Five areas are planned for recreational development, 3 initially and 2 later. The initial development will consist of facilities for boat launching, picnicking, hiking, bank fishing, viewing (overlooks), and camping, with associated parking areas. In addition, facilities will be provided on the east and west side of the lock and dam for viewing locking operations and for fishing. Ultimate development will include additional facilities for the above listed activities and an organized group camp and swimming beach. These areas are shown on chart 8.

1-23. The estimated cost of initial facility development is approximately \$6,400,000 which will be at full Federal cost. All future development, estimated at \$5,400,000, will be cost-shared with a non-Federal sponsor.

HISTORY OF PROJECT

1-24. Authorization. Authority for construction of Aberdeen Lock and Dam is contained in the River and Harbor Act approved 24 July 1946 (Public Law 525, 79th Congress, 2nd Session). Authority for the development and utilization of reservoir lands for public use and for the provision of other conservation measures in reservoir areas to yield maximum benefits are contained in Section 4 of the Flood Control Act of 1944, as amended, the Fish and Wildlife Coordination Act of 1959, and the Forest Cover Act of 1960. The authorized project purposes of the Aberdeen project are navigation and recreation.

1-25. The River and Harbor Act of 1946 authorized the construction of a waterway to connect the north flowing Tennessee River with the south flowing Tombigbee River to provide a continuous navigation route. The Act authorized a navigation depth of 9 feet suitable for modern barge traffic from the Tennessee, upper Mississippi and Ohio River Valleys to the port of Mobile, Alabama, on the Gulf of Mexico.

1-26. Design and construction. The design of the Aberdeen project is contained in published design memoranda. A list of design memoranda is as follows:

<u>Memorandum No.</u>	<u>Title</u>
1	Basic hydrology
2	Supplement to the Project Design Memorandum: GDM for Aberdeen Lock & Dam
3	Land Requirements Plan, Public Use
4	Geology and Earthwork
5	Reservoir Clearing
6	Source of Construction Materials
7	Lock and Spillway
8	Omitted
9	Real Estate, Construction Area
9A	Real Estate, Reservoir Area
10	TVA and Monroe County Electric
11	Relocation of Saint Louis - San Francisco (Frisco) Railroad Supplement No. 1 - Quency Water Assoc. Supplement No. 2 - Ranger Station Access Road
12	Mississippi Valley Gas Company
13	Instrumentation
14	Navigation Channel
15	Public Use Facilities
16	Buildings, Grounds, and Utilities
17	Sedimentation Program
18	Construction Procedure & Diversion Plan
19	Master Plan

1-27. Construction of the Aberdeen project began in October 1976, when Granite Construction Company was given notice to proceed with their contract for construction of the lock and spillway. Construction of the lock and spillway was completed in September 1981. The contract for relocation of railroad embankments for Burlington Northern Railroad (formerly St. Louis-San Francisco Railroad) was awarded to Folk Construction Company in February 1979, and the work was completed in October 1981. Phase II construction, which at this time has not been initiated, will include excavation of the upstream and downstream approaches, construction of both the overflow and non-overflow dikes and installation of the minimum flow structure. Estimated total cost of the project is in excess of \$139,800,000.

1-28. Reservoir filling. Filling of the Aberdeen Reservoir is planned for the Fall of 1984. Chart 12 shows filling times for maximum, average, and minimum inflow conditions.

CHAPTER II

HYDROMETEOROLOGY

DESCRIPTION OF RIVER BASIN

General characteristics
Other structures

CLIMATE AND RUNOFF

Temperature
Precipitation
Runoff characteristics

FLOODS

Spillway design flood
Standard project flood
Floods of record

FLOWS AND FREQUENCIES

Streamflow at Aberdeen damsite
Frequencies and durations

DESCRIPTION OF RIVER BASIN

2-1. General characteristics. The Tombigbee River forms in northeast Mississippi near the Mississippi-Tennessee state line. From there it flows in a southeastward direction to Demopolis, Alabama, where it converges with the Black Warrior River, forming what is locally known as the lower Tombigbee River. From Demopolis, the Tombigbee River flows southward to unite with the Alabama River and form the Mobile River which empties into Mobile Bay and thence into the Gulf of Mexico.

2-2. From its source to Columbus, Mississippi, the Tombigbee River flows through an area of hilly terrain. Tributary streams in this region have steep slopes and narrow flood plains which make them especially susceptible to flash flooding. The Tombigbee River has an average slope of about 0.75 feet per mile for this reach with a flood plain averaging about 1 mile in width. With heavy rainfall, the river may rise 25 feet just downstream of Aberdeen in a period of 24 hours with peaking occurring 36 hours after the rain occurs.

2-3. Below Columbus, the Tombigbee River winds about 145 river miles southeastward to Demopolis, Alabama. This section of river has an average slope of about 0.65 feet per mile and the flood plain varies from 1 to 3 miles in width.

2-4. Major tributaries to the Tombigbee River above Demopolis are the Buttahatchee, Tibbee, Sipsey and Noxubee Rivers and Luxapalila Creek. These streams have drainage areas ranging from 667 to 1,400 square miles and have slopes averaging from 1.3 to 4.0 feet per mile. At Demopolis, the Black Warrior River, which has a drainage area of 6,274 square miles, joins the Tombigbee River. The combined drainage area of the Tombigbee and the Black Warrior Rivers at Demopolis is 15,400 square miles.

2-5. Other structures. The Aberdeen project is part of an overall navigation system consisting of locks and dams which create slackwater pools extending the length of the Tombigbee River. The northern portion of the navigation system will be connected to the Tennessee River through a divide cut section. The Tenn-Tom project will provide for navigation from the port of Mobile to the Tennessee River. Each dam raises the water surface elevation sufficiently to provide navigable depths to the next project upstream. This step-like reservoir system is shown on chart 1 along with the geographical location of each project.

CLIMATE AND RUNOFF

2-6. Temperature. The average annual temperature for the Tombigbee River basin above Aberdeen Lock and Dam is about 63°F (17.2°C). This figure is based on records for four long-term stations located in or adjacent to the basin. Table 2-1 depicts the monthly variation in average temperatures along with the extremes in temperature recorded in the basin. The normal frost-free period lasts from April through October and extended periods of below freezing temperatures are unusual.

Table 2-1

Normal Monthly Temperatures within the Tombigbee
River Basin above Aberdeen

Month	Fahrenheit	Celsius	Month	Fahrenheit	Celsius
January	42.3	5.7	July	81.0	27.2
February	45.4	7.4	August	80.1	26.7
March	52.2	11.2	September	73.8	23.2
April	63.0	17.2	October	63.3	17.4
May	70.8	21.6	November	51.8	11.0
June	78.1	25.6	December	44.1	6.7
Annual 62.2°F			16.8°C		
Maximum	114°F	45.6°C	Recorded at Aberdeen, MS		
Minimum	-15°F	-26.0°C	Recorded at Aberdeen, MS		

Climatological normals for all stations based on period 1941-1970 as published in 1979 Climatological Data Annual Summary for Mississippi.

2-7. Precipitation. The Tombigbee River basin lies in a region of heavy annual rainfall and in which there is a potential for flood producing storms anytime of the year. Precipitation above Aberdeen Lock and Dam does vary on a seasonal basis with about 42 percent occurring during the 4-month wet period (December through March). Only 19 percent of the annual rainfall occurs during the 3-month dry period (September through November). Normal monthly and annual precipitation for the basin above Aberdeen is shown in table 2-2. Amounts shown are the arithmetic means of records for 5 selected stations in or adjacent to the basin. These stations are located at Aberdeen, Baldwin, Booneville, Fulton, and Tupelo, in Mississippi. Locations of these and other rainfall stations are shown on chart 28. Precipitation data for selected cities in the basin above Aberdeen is shown in table 2-3.

Table 2-2
Normal Monthly and Annual Precipitation above Aberdeen

Month	Inches	mm	% of Annual	Month	Inches	mm	% of Annual
January	5.38	137	10.1	July	4.44	113	8.4
February	5.45	138	10.3	August	3.20	81	6.0
March	6.13	156	11.5	September	3.18	81	6.0
April	5.39	137	10.1	October	2.55	65	4.8
May	4.22	107	7.9	November	4.43	113	8.3
June	3.47	88	6.5	December	5.29	134	10.0
ANNUAL 53.13 inches				1350 millimeters			

Climatological normals for all stations based on period 1941-1970
as published in 1979 Climatological Data Annual Summary for Mississippi

Table 2-3
Precipitation for Selected Cities above Aberdeen, MS

Station	Period of Record Years	Normal Annual		Maximum			Minimum		
		Inches	mm	Inches	mm	Year	Inches	mm	Year
Aberdeen, MS	97	53.20	1351	76.83	1951	1932	32.40	823	1943
Booneville, MS	86	52.34	1329	87.02	2210	1932	34.40	874	1943
Fulton, MS	71	54.06	1373	76.26	1937	1973	36.90	937	1952
Ponotoc, MS	87	55.19	1401	83.18	2113	1979	34.42	874	1928

Climatological normals, maximum and minimums for all stations
based on period 1941-1970 as published in 1979 Climatological
Data Annual Summary for Mississippi.

2-8. Runoff characteristics. Annual runoff from the upper Tombigbee River (above Demopolis) averages about 19 inches per year or about 37 percent of the average rainfall. The average runoff varies considerably with the seasons, being high during the winter and early spring and low during late summer and autumn. Ice and snow are not uncommon in the basin but have little effect on runoff.

2-9. Mean annual flows per square mile are slightly higher for the upper portion of the Tombigbee basin than for the lower portion. Above Aberdeen, the annual runoff values average 1.5 cfs per square mile while the lower portion of the basin yields about 1.4 cfs per square mile. Above Aberdeen, river stages tend to rise and fall rapidly but further downstream the fluctuations become more gradual and of longer durations.

FLOODS

2-10. Spillway design flood. The spillway design flood at Aberdeen would make a peak pool elevation of 206.0 feet msl and would have a maximum discharge of 349,400 cfs. This elevation is 0.1 feet below the bottom of the spillway gates in the fully open position; 11 feet above the overflow dike on the left bank at elevation 195 feet msl; and 6 feet above the top of the lower gate blocks, the chamber walls, and the approach walls at elevation 200 feet msl. Effects of the reservoir on the spillway design flood are depicted on chart 36.

2-11. Standard project flood. The standard project flood, when routed through the reservoir, would result in a peak pool elevation of 198.8 feet msl with a maximum discharge of 169,100 cfs. This elevation is 3.8 feet above the overflow dike on the left river bank at elevation 195 feet msl and 1.2 feet below the top of the lower gate blocks, the chamber walls, and the approach walls at elevation 200 feet msl. Effects of the reservoir on the standard project flood are depicted on chart 35.

2-12. Floods of record. Two of the more important floods of record, March 1955 and March 1973, were routed through the reservoir to determine their effect on the Aberdeen project. Hydrographs for these floods are shown on charts 33 and 34.

FLOWS AND FREQUENCIES

2-13. Streamflow at Aberdeen damsite. Streamflow records in the vicinity of Aberdeen have been taken since 1928. Records of US Geological Survey station number 00437500 located on the left bank at the downstream side of the bridge on US Highway 45 at Aberdeen from August 1928 to September 1958 and from October 1971 to September 1980 have been published by the US Geological Survey under the heading, "Tombigbee River at Aberdeen, Mississippi." Records collected since 1909 at a site 1.3 miles upstream are contained in reports of the National Weather Service. Hydrographs of average daily flows at the gage site are shown on charts 23, 24, and 25 and mean monthly and annual flows for the period of record are shown in table 2-4.

2-14. Frequencies and durations. Much hydraulic data is available for the Tombigbee River and natural frequency and duration curves have been computed for station 02437500 mentioned in paragraph 2-13. Monthly flow-duration curves are presented on charts 17, 18, and 19. An annual flow-duration curve is shown on chart 20. In order to develop the headwater and tailwater stage frequency curves on chart 27, discharge values corresponding to frequency values from the discharge frequency curve on chart 26 were applied to the headwater and tailwater rating curves on chart 16. Chart 16 reflects project design conditions and will be updated along with chart 27 as river conditions change.

2-15. In addition, charts showing the lowest and highest mean flow values for various numbers of consecutive days covering a 39-year period of record have been developed in order to show more clearly the flow characteristics of the Tombigbee River at Aberdeen, Mississippi. Similar charts showing the second lowest and highest mean flow values have also been established. The above can be seen on charts 21 and 22.

**TABLE 2-4
TOMBIGBEE RIVER AT ABERDEEN, MISS.-STATION 024375
MEAN MONTHLY AND ANNUAL FLOWS(CFS)**

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	DAILY		MONTHLY		ANNUAL
													MAX	MIN	MAX	MIN	
1929	247	346	525	2,060	2,660	13,030	3,394	3,298	870	642	530	765	30,400	162	13,030	247	2,363
1930	475	3,679	2,320	3,747	3,639	4,920	1,337	5,522	522	149	371	424	20,400	61	5,522	149	2,258
1931	451	1,179	1,757	2,596	2,873	4,083	2,506	2,744	464	1,376	979	160	9,460	95	4,083	160	1,764
1932	112	323	11,200	9,552	15,510	3,049	3,904	1,370	493	5,717	857	3,251	32,600	94	15,510	112	4,611
1933	10,630	3,734	12,480	6,450	9,928	7,421	7,670	3,181	649	1,490	521	569	27,400	229	12,480	521	5,393
1934	390	686	1,843	1,437	1,451	5,996	1,705	671	2,001	874	685	294	16,400	156	5,996	294	1,502
1935	394	1,686	2,214	5,734	4,955	9,795	3,985	3,401	1,976	471	230	187	20,700	105	9,795	187	2,919
1936	721	2,259	1,327	2,985	5,019	4,054	8,279	725	296	689	378	225	21,100	98	8,279	225	2,246
1937	375	553	1,677	11,340	4,402	3,263	1,972	4,990	425	521	381	527	20,700	111	11,340	375	2,535
1938	433	434	1,381	3,550	3,256	6,194	8,714	1,122	4,197	1,014	863	348	14,000	159	8,714	348	2,625
1939	153	515	522	3,060	11,860	5,253	7,638	5,125	10,740	1,691	591	211	22,200	128	11,860	153	3,546
1940	268	328	655	920	5,387	5,416	6,607	1,281	1,246	7,219	768	375	19,600	192	7,219	268	2,539
1941	233	3,544	5,007	3,469	2,274	3,508	2,229	534	325	1,418	572	263	10,500	141	5,007	233	1,948
1942	274	1,780	2,115	1,892	4,512	6,181	2,778	645	355	331	518	263	13,500	128	6,181	263	1,803
1943	160	357	2,032	2,034	1,893	5,913	1,851	764	261	184	154	604	18,300	58	5,913	154	1,350
1944	129	738	464	1,534	5,202	13,210	10,410	4,585	549	394	724	713	66,900	116	13,210	129	3,221
1945	305	386	2,097	7,945	9,037	10,590	3,667	1,851	846	726	1,149	340	28,400	179	10,590	305	3,244
1946	428	1,684	3,664	14,970	14,370	8,188	2,687	3,061	2,507	5,246	1,019	448	58,400	207	14,970	428	4,856
1947	370	3,817	2,577	13,330	2,991	5,584	8,323	1,852	1,639	761	527	416	28,500	181	13,330	370	3,515
1948	219	1,572	2,153	2,603	18,570	10,810	5,573	1,058	575	420	243	468	93,700	158	18,570	219	3,688
1949	276	6,862	7,260	20,060	8,737	6,927	5,536	2,727	1,811	1,063	831	790	74,900	220	20,060	276	5,240
1950	549	880	1,357	11,710	13,350	10,170	2,160	3,145	2,443	1,588	1,891	8,003	38,700	280	13,350	549	4,770
1951	785	2,620	4,916	9,309	15,470	10,540	9,816	1,510	753	1,460	315	298	61,400	186	15,470	298	4,816
1952	270	1,034	9,962	6,475	5,354	6,370	3,382	1,132	412	232	279	182	24,500	135	9,962	182	2,923
1953	181	429	714	2,951	11,160	8,098	4,406	8,084	483	1,223	235	162	26,500	122	11,160	162	3,177
1954	140	198	544	4,838	3,665	1,996	3,272	2,432	343	259	111	82	14,000	73	4,838	82	1,490
1955	109	197	862	1,821	5,132	14,440	8,696	3,360	1,669	1,528	568	183	94,400	80	14,440	109	3,213
1956	155	296	715	532	9,155	4,029	9,755	4,502	535	394	190	143	19,200	84	9,755	143	2,533
1957	136	231	2,702	4,447	13,110	4,161	4,878	1,040	3,165	2,594	301	693	46,500	105	13,110	136	3,121
1958	2,302	16,110	7,190	3,872	3,799	4,335	6,274	7,624	1,098	1,756	632	3,738	18,400	244	16,110	632	4,894
1972	368	521	3,770	9,752	2,019	3,982	3,136	2,908	912	837	455	467	32,300	177	9,752	368	2,427
1973	786	3,050	6,364	9,209	7,954	20,940	9,206	4,442	1,886	1,596	630	397	117,000	280	20,940	397	5,538
1974	678	3,674	7,073	16,940	9,528	4,121	5,730	6,345	4,722	1,050	787	1,407	31,500	336	16,940	678	5,171
1975	501	1,865	6,453	11,290	7,949	16,300	7,645	3,855	2,995	1,582	1,864	1,639	74,400	388	16,300	501	5,328
1976	3,679	2,716	3,225	5,897	6,323	8,007	4,180	2,243	1,743	743	473	932	16,500	202	8,007	473	3,346
1977	693	945	2,370	4,235	1,964	11,990	7,175	1,219	592	450	256	670	40,000	153	11,990	256	2,713
1978	1,958	5,303	5,730	5,630	2,068	5,901	1,251	10,090	2,866	384	240	211	46,000	159	10,090	211	3,469
1979	184	321	1,386	12,080	4,274	6,419	9,493	4,456	2,832	2,654	748	4,200	32,300	166	12,080	184	4,087
1980	893	7,320	5,581	5,340	3,913	19,680	11,230	2,979	986	651	400	606	39,500	211	19,680	400	4,964
1981	777	1,965	1,143										*	*	*	*	*
TOT	32,187	86,137	137,327	247,596	264,713	304,864	212,450	121,873	63,182	53,377	23,266	35,654					131,561
AVC	804	2,153	3,433	6,348	6,787	7,817	5,447	3,124	1,620	1,368	596	914					3,289
MAX	10,630	16,110	12,480	20,060	18,570	20,940	11,230	10,090	10,740	7,219	1,891	8,003					5,538
MIN	109	197	464	532	1,451	1,996	1,251	534	261	149	111	82					1,350

CHAPTER III
DATA COLLECTION AND COMMUNICATION

GENERAL

Role of regulation office

Role of lockmaster

DATA COLLECTION AND REPORTING

Hydrometeorological stations

River stage reporting network

Rainfall reporting network

Water quality monitors

Communication network

Sedimentation and retrogression surveys

GENERAL

3-1. Role of regulation office. It is the responsibility of the Water Management Section of the Mobile District Office to develop regulating procedures for both flood and nonflood conditions. Plans are developed to fully utilize the water resources potential of each project with particular emphasis on the authorized functions. The Water Management staff gathers information on current and anticipated river and weather conditions to provide the background necessary for best overall regulation.

3-2. A continuous program of hydrologic investigation is conducted to improve water control management. The preparation and updating of regulation manuals and reports are part of the routine operation of the section.

3-3. Arrangements are made by the Water Management Section for communication channels to the lockmaster and other necessary personnel. Instructions are issued to the lockmaster, and a plan for delivery of all important messages concerning emergency regulation is developed.

3-4. Role of lockmaster. The lockmaster should be completely familiar with the approved regulating plan for the project. Training sessions should be held, as needed, to insure that an adequate number of lock operating personnel are informed of proper operating procedures for reservoir regulation. The lockmaster is expected to maintain and furnish records requested from him by the Water Management Section. Unforeseen or emergency conditions at the project that require unscheduled manipulation of the reservoir should be reported to the Water Management Section as soon as practicable. When possible, all unusual water control operations will be coordinated in advance with the Water Management Section.

DATA COLLECTION AND REPORTING

3-5. Hydrometeorological stations. Within the Mobile District there is a comprehensive network of hydrometeorologic stations. In or adjacent to the upper Tombigbee River basin, as of the preparation of this manual, there are 32 river stage and 37 rainfall stations in operation or planned to be added as the Tennessee-Tombigbee Waterway is completed. Data from a portion of these stations are collected by the Water Management Section on a daily basis. The present system includes a number of temporary telephone-telemark river gages. Changes and additions to this system have been made on a routine basis to insure adequate hydrologic data for reservoir regulation during construction, filling, and early operation of the navigation system. Paragraphs 3-6 through 3-8 describe the existing hydrologic network.

3-6. River stage reporting network. The Water Management Section presently receives daily river stage reports from 16 stations in the Tombigbee River basin above Demopolis Lock and Dam, 10 of which are located above Aberdeen Lock and Dam. These stations along with pertinent data concerning them are listed in table 3-2 and their locations are shown on chart 29. Other river stage stations within the basin do not report daily but record data on a continuous basis. All active river stage stations within the basin are shown on chart 28. Stations listed in table 3-2 as being operated by the US Geological Survey or the Corps of Engineers are funded under the cooperative stream gaging program between these two agencies.

3-7. Normally the 7 a.m. river stage at each of the reporting stations is reported to the District Office each morning. Personnel of the Water Management Section receive these reports by telephoning individual telemarks or receiving them via teletype from the National Weather Service. Reports can also be received by having Operations Division personnel interrogate gages daily or more frequently as necessary.

3-8. Rainfall reporting network. The number of rainfall stations in the upper Tombigbee River basin will vary. However, as of the printing of this manual there are 23 active rainfall stations within the basin above Demopolis Lock and Dam included in the Mobile District rainfall reporting network. Eight of these 23 are located above the Aberdeen project. Reports from these stations are received by the Water Management Section and tabulated to give an overall picture of rainfall and runoff conditions. The portion of the rainfall tabulation form currently being used pertaining to the Tombigbee basin is shown on chart 31. Stations within the rainfall reporting network are listed in table 3-3 and their locations are shown on chart 29. These stations report in accordance with standard National Weather Service Reporting Instructions WB Form 612-20, shown on chart 32.

3-9. A permanent hydrologic reporting network and communications system will be installed for the operation of the Tennessee-Tombigbee waterway. This system, called the Tennessee-Tombigbee Hydromet System, will provide for the automatic reporting of data from 26 river stage stations and 29 rainfall stations located throughout the Tombigbee River. In addition the system will

provide data from each of the locks and dams on the waterway. A listing of the hydromet stations is given in table 3-1 and the locations of the stations are shown on chart 30. Data from the hydromet system will be gathered hourly by a microprocessor at the Columbus Area Office. Data will be available there to the Area Engineer's staff and to external users (e.g. Weather Service, USGS) via dial-in telephone connections. In addition, the data will be available in the Mobile District Office.

3-10. The rainfall values can be converted to runoff amounts by estimating the antecedent soil conditions along with the intensity and duration of the rainfall. The runoff can then be applied to unit hydrographs and used in forecasting flows. Since the runoff values used are based on estimates, actual flows may vary from those predicted, forcing recomputation of the forecasts at frequent intervals.

3-11. Water quality monitors. In conjunction with the Tennessee-Tombigbee Waterway, the Corps of Engineers is installing water quality monitors at various locations along the upper Tombigbee River. Monitors will be installed at the locks and at remote sites where needed. Parameters measured which could affect water quality include: temperature, D.O., pH, conductivity, and turbidity. When fully operational, water quality stations will be covered under contract by a private firm. The location of the water quality station at Aberdeen Lock and Dam has not been determined at this time.

3-12. Communication network. Communication between the Mobile District Office and Aberdeen Lock and Dam is currently done by telephone. For local communication there is a VHF radio installation at each of the locks and a varying number of mobile stations located in automobiles and boats.

3-13. Reports from the National Weather Service are transmitted to the Water Management Section by teletype or telephone. The Water Management Section maintains teletype receivers on two of the National Weather Service teletype circuits, NOAA Weatherwire and RAWARC, as well as a facsimile recorder for receiving graphic reports from the National Weather Service.

3-14. The hydromet system for the upper Tombigbee basin will report through VHF radio from the individual stations to strategically located towers. There the data will be transferred to a microwave carrier and then transmitted to the Columbus Area Office and the Mobile District Office.

3-15. Sedimentation and retrogression surveys. A network of 33 ranges has been established for the purpose of monitoring sedimentation changes in the Aberdeen Reservoir. Utilizing the range network for future surveys, the rate of deposition may be determined as well as changes in channel geometry and water-surface profiles. Knowledge of the rate of change in sediment-related parameters will allow projection of future changes to be made. The network will also serve as an index of bank sloughing due to stream velocities and river traffic. Eighteen ranges are located in the portion of the reservoir that extends from the dam to Lock A across the reservoir and navigation channel. Four ranges are located in the Town Creek reservoir arm and the remaining

eleven ranges are located on the Tombigbee River upstream from the beginning of the Lock A approach channel. The network is shown on charts 9 and 10, entitled Reservoir Map - Sedimentation Ranges.

3-16. Surveillance of channel changes below the Aberdeen Dam will be accomplished by using the reservoir sedimentation ranges for the Columbus Reservoir. This network is described in Appendix C, the Reservoir Regulation Manual for Columbus Lock and Dam.

3-17. Semiannual inspection of each range is planned until completion of the Tennessee-Tombigbee Waterway or until sediment related changes become insignificant. Thereafter, resurveys are planned at five-year intervals. This schedule will provide the necessary means to monitor the many varied sedimentation effects possible in the reservoir.

Table 3-1

HYDROMET RAINFALL AND RIVER STAGE STATIONS PROPOSED
AUTOMATIC RECORDING REPORTING NETWORK

RAINFALL STATIONS

Booneville
Bay Spring L&D
Belmont
Baldwyn
Moore's Mill
Lock E
Fairview
Lock D
Hodges
Cummings Creek
Fulton
Lock C
Tupelo
Hamilton
Zion
Lock B
Okolona
Lock A
Houston
Aberdeen L&D
Vernon
Dancy
Fayette
Tibbee
Columbus L&D
Ackerman
Aliceville L&D
Macon
Gainesville L&D

RIVER STAGE STATIONS

Bay Spring L&D
Belmont
Moore's Mill
Guntown
Lock E
Lock D
Fairview
Cummings Creek
Fulton
Lock C
Tremont (Bull Mt. Creek)
Tupelo
Lock B
Lock A
Bigbee
Nettleton
Aberdeen L&D
Aberdeen (Buttahatchee)
Tibbee
Columbus L&D
Columbus (Luxapalila)
Columbus (Tombigbee)
Elrod
Aliceville L&D
Macon
Gainesville L&D

TABLE 3-2
RIVER-STAGE REPORTING NETWORK
TOMBIGBEE RIVER BASIN
ABOVE GAINESVILLE LOCK & DAM

STREAM	STATION (1)		RIVER MILES ABOVE MOUTH	DRAINAGE AREA (Sq. Mi.)	GAGE ZERO ELEV. (Ft.-MSL)	FLOOD STAGE (Reporting Stations Feet)	TYPE GAGE	OPERATED BY	OWNED BY
Mackeys Creek	Dennis	MS	17.8	67	333.5	(2)	R	USGS	C of E
Little Brown Creek	New Site	MS	5.2	42	312.6	(2)	R	USGS	C of E
Tombigbee River	Marietta	MS	441.7	307	282.1	(2)	R	USGS	C of E
Twenty Mile Creek	Guntown	MS	11.5	130	279.8	(2)	R	USGS	C of E
Tombigbee River	Fulton	MS	421.8	612	242.9	16	R	USGS	USGS
Bull Mountain Creek	Tremont	MS	27.2	136	317.4	(2)	R	USGS	C of E
Town Creek	Tupelo	MS	22.7	230	230.0	23	R	USGS	C of E
Tombigbee River	Amory	MS	378.9	1924	178.3	20	R	USGS	C of E
Tombigbee River	Bigbee	MS	383.1	1226	190.0	(2)	R	USGS	C of E
Tombigbee River	Aberdeen	MS	360.2	2169	154.7	33	R	USGS	C of E
Tombigbee River	Columbus	MS	319.7	4490	128.9	29	R	USGS	USGS
Tombigbee River	Pickensville	AL	288.5	5765	88.4	(2)	R	USGS	C of E
Tombigbee River	Aliceville L & D	AL	287.4	5785	-	(2)	-	-	-
	Upper		-	-	(2)	-	R	C of E	C of E
	Lower		-	-	(2)	-	R	C of E	C of E
Noxubee River	Macon	MS	51.2	812	142.4	26	R	USGS	USGS
Tombigbee River	Gainesville L & D	AL	-	-	-	-	-	-	-
	Upper (Lock)		232.7	8687	65.0	(2)	S	C of E	C of E
	Lower (Lock)		232.7	8687	65.0	(2)	S	C of E	C of E
Tombigbee River	Gainesville	AL	234.4	8700	63.3	36			

(1) Stations currently received each morning by Reservoir Control & Meteorology Section
(2) Not available
(3) R - Recorder S - Staff
(4) C of E - Corps of Engineers
USGS - United States Geological Survey

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TABLE 3-3
 RAINFALL REPORTING NETWORK
 TOMBIGBEE RIVER BASIN
 Above Gainesville Lock and Dam

<u>DRAINAGE</u>	<u>STATION</u>		<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>ELEVATION (FT. MSL)</u>	<u>TYPE</u>	<u>OBSERVER</u>
Twentymile Creek	Booneville	MS	34°40'	88°34'	490	(1)	William Dallison
Twentymile Creek	Baldwyn	MS	34°31'	88°38'	395	N-R	Bernard H. Coggins
Tombigbee River	Fulton	MS	34°16'	88°27'	350	N-R	Lyle B. Senter
Town Creek	Tupelo	MS	34°16'	88°44'	250	(1)	Judith S. Clemons
Chiwapa Creek	Pontotoc	MS	34°16'	88°55'	440	N-R	William R. Butler
Tombigbee River	Amory	MS	33°59'	88°33'	230	N-R	John W. Davis
Tombigbee River	Aberdeen	MS	33°50'	88°33'	207	(1)	Will Ed Ridings
Buttahatchee River	Hodges	AL	34°20'	87°56'	840	N-R	Mary H. Avery
Buttahatchee River	Hamilton	AL	34°06'	87°59'	435	(1)	Eddie L. Pearce
Houlka Creek	Houston	MS	33°55'	88°58'	300	(1)	Raymond Simpson
Tibbee Creek	Dancy	MS	33°40'	89°03'	290	N-R	Gwendolyn Oswald
Tibbee Creek	Tibbee	MS	33°32'	88°39'	210	N-R	Bessie Oswalt
Luxapallia River	Winfield	AL	33°55'	87°50'	468	N-R	Auburn University
Luxapallia River	Vernon	AL	33°48'	88°07'	265	(1)	Joel Camp
Tombigbee River	Aliceville L&D	AL	33°14'	88°17'	165	N-R	Corps of Engineers
Blubber Creek	Aliceville	AL	33°08'	88°10'	135	N-R	W. Morris Taylor
Lubbub Creek	Reform	AL	33°23'	87°59'	271	N-R	Ralford C. McCool
Sipsey River	Fayette	AL	33°41'	87°49'	365	N-R	Gorman J. Black
Sipsey River	Elrod	AL	33°15'	87°48'	252	N-R	Helen E. Fair
Noxubee River	Ackerman	MS	33°18'	89°10'	528	N-R	Mrs. G. M. Sunn
Noxubee River	Louisville	MS	33°08'	89°04'	581	(1)	Southern National Gas
Noxubee River	Macon	MS	33°06'	88°34'	130	(1)	Jim Britt
Tombigbee River	Gainesville L&D	AL	32°50'	88°08'	125	N-R	Corps of Engineers

(1) Both recording and nonrecording gages
 N-R Nonrecording

CHAPTER IV

WATER CONTROL PLAN

REGULATION PLAN

General objectives

Reservoir regulation

Reservoir regulation during low flows

Reservoir regulation during high flows

Operation of spillway gates

Passing drift

Water quality control

Fish and wildlife

REGULATION PLAN

4-1. General objectives. The Aberdeen project was designed to provide navigation depths from Aberdeen Dam to the beginning of the Canal Section. The navigation requirement can be met by maintenance dredging and by holding the Aberdeen Reservoir at or near elevation 190 feet msl. Other interests served by the project include recreation and fish and wildlife enhancement.

4-2. Reservoir regulation. During periods of non-extreme flow, the Aberdeen Reservoir level should not vary more than about one-half foot from elevation 190 feet msl. Maintaining the reservoir within these limits will insure adequate navigation depths and will provide at least 0.5 feet of free-board on the spillway gates. In addition, if the lake level is maintained within this fluctuation range, any changes in the outflow will approximate natural occurrences within the river and there would not be large artificially caused fluctuations in tailwater levels. Operators at the project should observe the reservoir level frequently so that unnecessarily large gate adjustments can be avoided.

4-3. Reservoir regulation during low flows. During low flow periods and after barge traffic has developed sufficiently to utilize significant volumes of water through the lock, it may be necessary to completely close the spillway gates. If this were to happen there would be no continuous flow in the channel below the dam. However, the periodic emptying of the lock during these periods should provide a beneficial flushing action downstream.

4-4. Reservoir regulation during high flows. After heavy rainfall the inflow will rise quickly, forcing the operator at Aberdeen Lock and Dam to monitor the reservoir level frequently. In extreme cases, the operator will need to monitor the reservoir level nearly continuously. The spillway gates will be opened to maintain the reservoir near elevation 190 feet msl until the gates are free of the water surface. Once the gates are above the water surface the reservoir may continue to rise, uncontrolled, until the inflow recedes. As the pool level begins to fall the gates will be lowered to maintain the pool near elevation 190 feet msl and normal operation will resume.

4-5. Operation of spillway gates. The spillway gates at Aberdeen Lock and Dam will be operated in the order and increments on the "Spillway Gate Operating Schedule" shown on charts 13, 14, and 15. The order for lowering the gates will be the reverse for opening. Deviations from this gate schedule should not be made except during emergencies. When possible the lockmaster should notify the Water Management Section whenever deviations from the gate operating schedule are necessary. The telephone number is (205) 690-2737.

4-6. Passing drift. In order to pass drift through the gated spillway, it may be necessary to occasionally raise a gate higher than called for by the gate operation schedule. Extremely high velocities and serious scour of the channel below the spillway may occur under conditions of large gate openings with low tailwater levels. For this reason, the time to raise a gate to an opening large enough to pass the drift should be as short as the machinery and switches will permit. However, the passing of debris with a full open gate should not be attempted with the tailwater below elevation 183 FMSL. The gate

used for passing drift should be held open for the minimum length of time required to clear the drift, not to exceed 30 minutes.

4-7. Water quality control. No special reservoir operations are planned for water quality control at the Aberdeen Lock and Dam. However, 200 cfs will be released continuously from the minimum flow structure to provide fresh water downstream at all times.

4-8. Fish and wildlife. The 4,121-acre lake formed by the Aberdeen project provides a stable habitat for certain game and sport fish. The reservoir should provide good catches of all native fishes including bream, bass, catfish and crappie. The reservoir is located in an area abundant in wildlife. The project will not significantly reduce the habitat for terrestrial wildlife since winter floods normally flood an area greater than the Aberdeen Lake.

CHAPTER V

HYDROLOGIC FORECASTS

FORECASTING

Inflow forecasting by the Corps of Engineers
Responsibility for issuing stage forecasts to the public

FORECASTING

5-1. Inflow forecasting by the Corps of Engineers. The reservoir regulation plan for Aberdeen Dam does not require the lockmaster to have knowledge of future inflows. However, in order to keep abreast of expected river conditions and to respond to other intraoffice needs, Water Management personnel make forecasts of inflows when needed. The Corps will make river forecasts during extreme flow situations in which there is special in-house concern, such as possible flooding of project maintenance activities. Forecasts may also be made when Water Management personnel feel that Weather Service forecasts are unrealistic or when greater accuracy of stage or timing is required than is provided by Weather Service forecasts. However, forecasts prepared by the National Weather Service in Atlanta, Georgia, are normally used, particularly where the general public is involved.

5-2. Responsibility for issuing stage forecasts to the public. The issuing to the public of stage forecasts is the responsibility of the National Weather Service. For the Tennessee-Tombigbee Waterway, forecasts are prepared by the Weather Service's River Forecast Center in Atlanta, Georgia. The forecasts for points on the Tombigbee River in Mississippi are disseminated to the public from the Jackson, Mississippi, Weather Service Forecast Office. The Water Management Section maintains close liaison and exchanges information with the River Forecast Center and other Weather Services Offices, particularly during floods.

CHAPTER VI

WATER RESOURCE MANAGEMENT

GENERAL

Project owner
Operating and regulating offices
Interagency coordination
Framework for water management changes
Information bulletins
Coordination for dam safety

GENERAL

6-1. Project owner. The Aberdeen project is owned and operated by the US Corps of Engineers. It is part of the Tennessee-Tombigbee Waterway.

6-2. Operating and regulating offices. Within the Mobile District, reservoir operations are under the supervision of Operations Division, and operating instructions are normally issued through the Chief of the Division. The Water Management Section, of Engineering Division, monitors the projects for compliance with the approved reservoir regulation plan. For most routine operations and during emergencies, instructions can be issued directly from Water Management Section to the lockmaster at individual projects. The Aberdeen project is attended continuously by operators under direct supervision of the Area Engineer for Operations Division.

6-3. Interagency coordination. The Corps' cooperative gaging programs with the National Weather Service and the US Geological Survey are utilized within the basin to supplement the Corps' gaging activities. Coordination of river forecasts with the National Weather Service is explained in paragraph 5-1 and 5-2. Because of the relative simplicity of the water control plan, there is no extensive interagency coordination for reservoir control activities. Coordinating water management activities with local interest groups such as waterway development associations, river navigation groups, recreation interests and other is accomplished, as required, on an ad hoc basis. The Columbus Area Office or Project Operations Branch of Operations Division is often the contact point with the public and local agencies. The Water Management Section provides technical evaluation and explanation of the water management activities on the Tombigbee River.

6-4. Framework for water management changes. Oftentimes special interest groups request modifications of the water management plan. Aberdeen Lock and Dam was not built as a storage project and major changes in the regulation plan would dictate some modification, either of the project itself or of the purposes for which it was built. However, continued increases in the use of water resources demand constant monitoring and evaluation of reservoir operations and reservoir systems to insure their most efficient use. Studies for the Tombigbee River, including the Aberdeen project, are continually in progress for possible improvement in the regulation plan or operating techniques which would result in additional benefits without violating authorized project functions.

6-5. Information bulletins. The Water Management Section coordinates closely with Operations Division in preparing navigation bulletins during periods when navigation is restricted due to insufficient depth or closures of locks for maintenance. During flooding Water Management Section prepares daily flood bulletins in cooperation with the Emergency Management Division of the Mobile Office. The Section also works with the Public Affairs Office in the preparation of news releases.

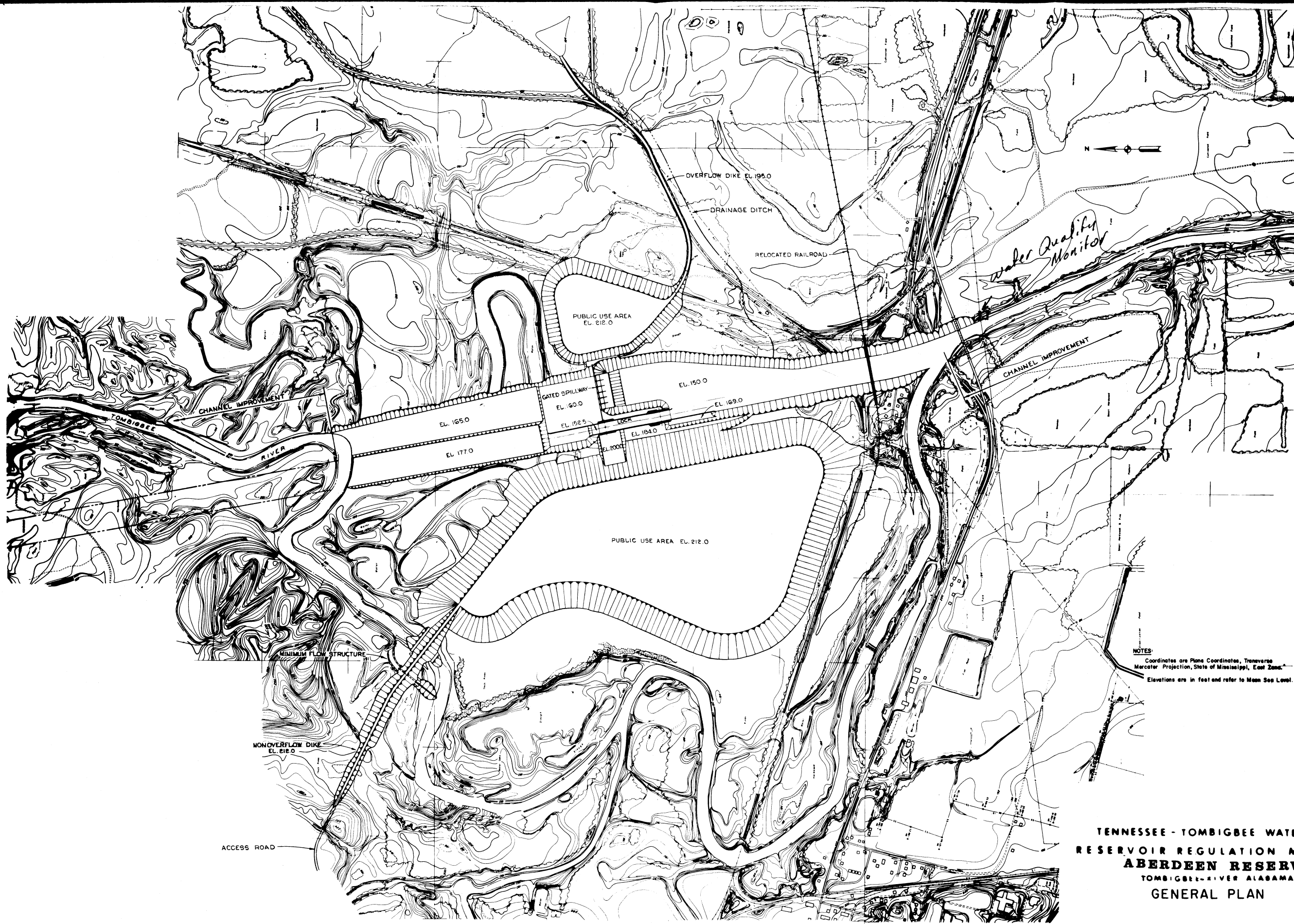
6-6. Coordination for dam safety. The Aberdeen Dam is a low head project with a maximum differential between headwater and tailwater of approximately 27 feet. A major portion of the reservoir is contained within natural river banks. Failure of the dam would tend to fill the stream channel at most. A failure during a major flood would have practically no effect on

downstream flooding and possibly could go undetected until the flood waters recede.

6-7. Whenever it has been determined that a real danger of failure exists at Aberdeen Dam or if a failure has begun, the operators at the project will notify:

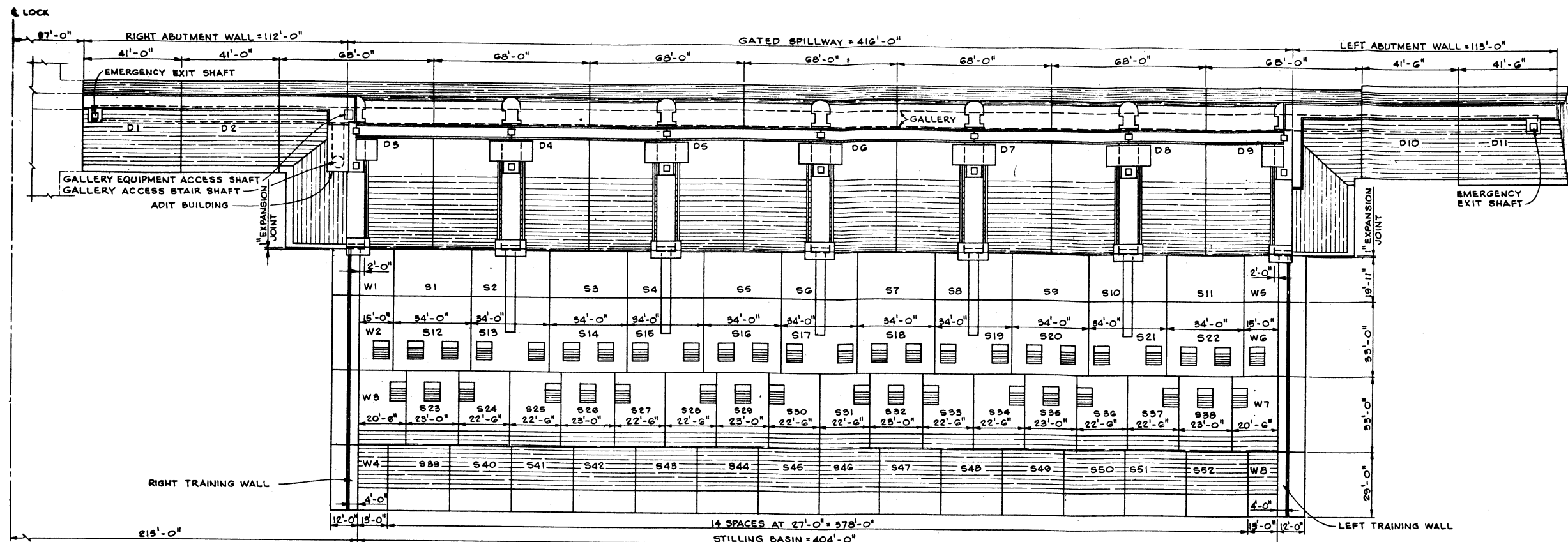
Water Management Section
Area Engineer for Operations Division
Local Law Enforcement Agencies
Local Civil Defense Agencies
Operators at Columbus Lock and Dam

The Area Engineer for Operations Division and personnel from Water Management Section will notify elements of the Mobile District Office and local Civil Defense Agencies. Notification of interested elements is a joint responsibility of the Area Engineer and Water Management Section. This should help prevent delays in communications. An emergency notification procedures document, which will further clarify the procedures mentioned above, will be developed and kept current by the Emergency Management Division.

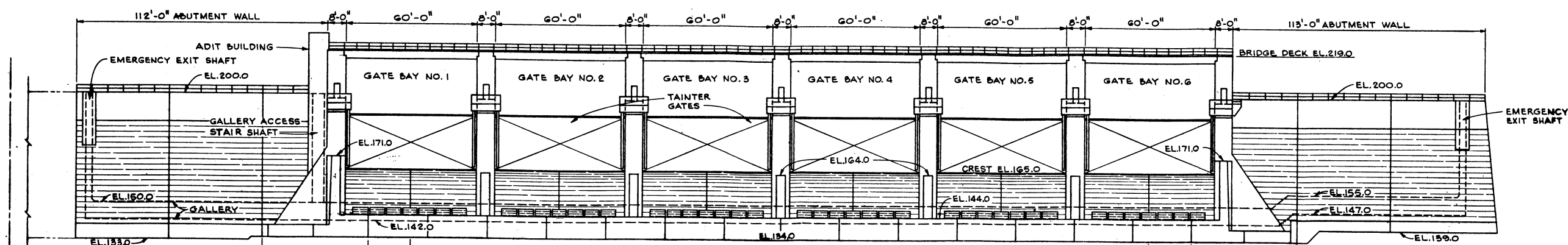


NOTES:
 Coordinates are Plane Coordinates, Transverse
 Mercator Projection, State of Mississippi, East Zone.
 Elevations are in feet and refer to Mean Sea Level.

TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
 TOMBIGBEE RIVER ALABAMA
 GENERAL PLAN



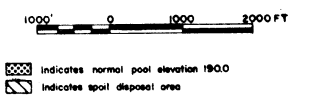
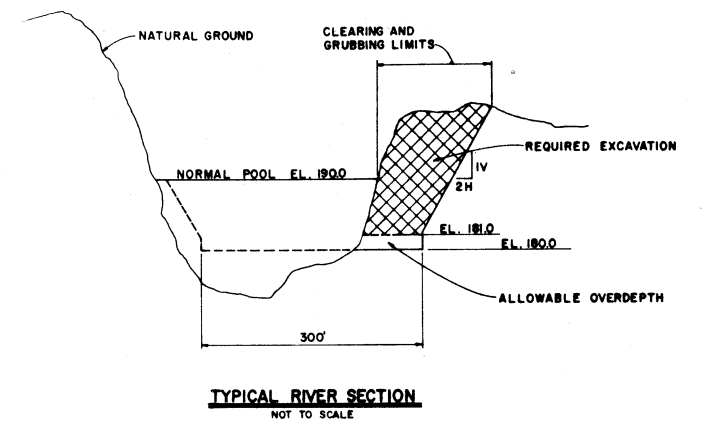
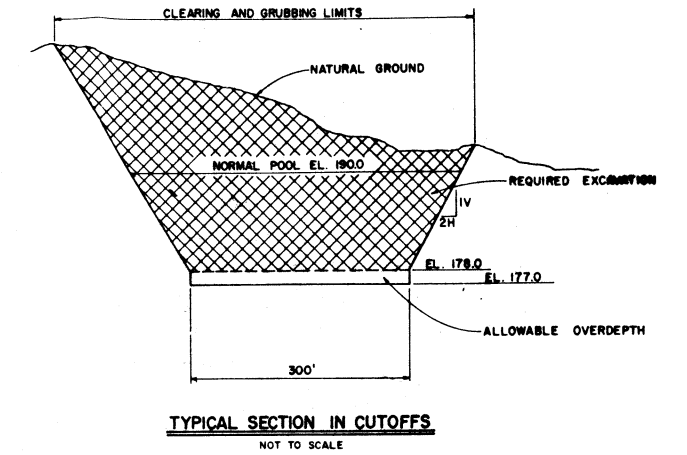
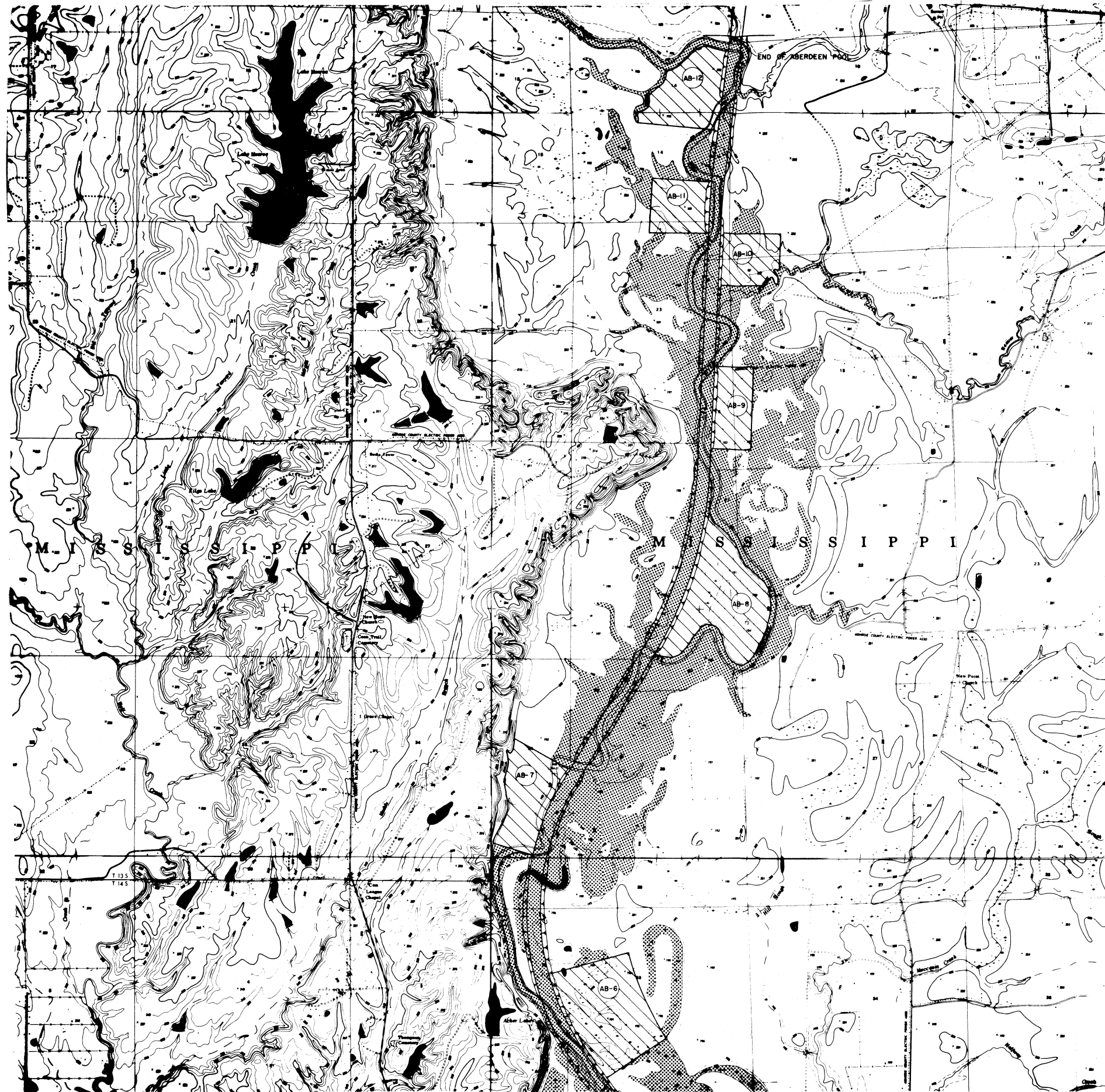
PLAN



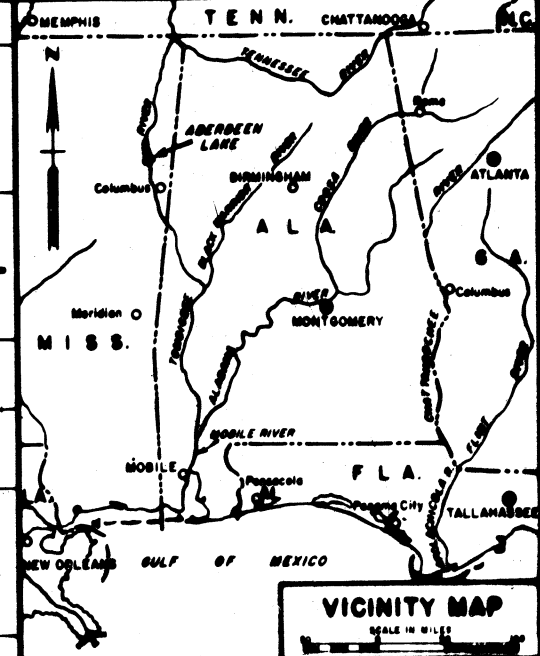
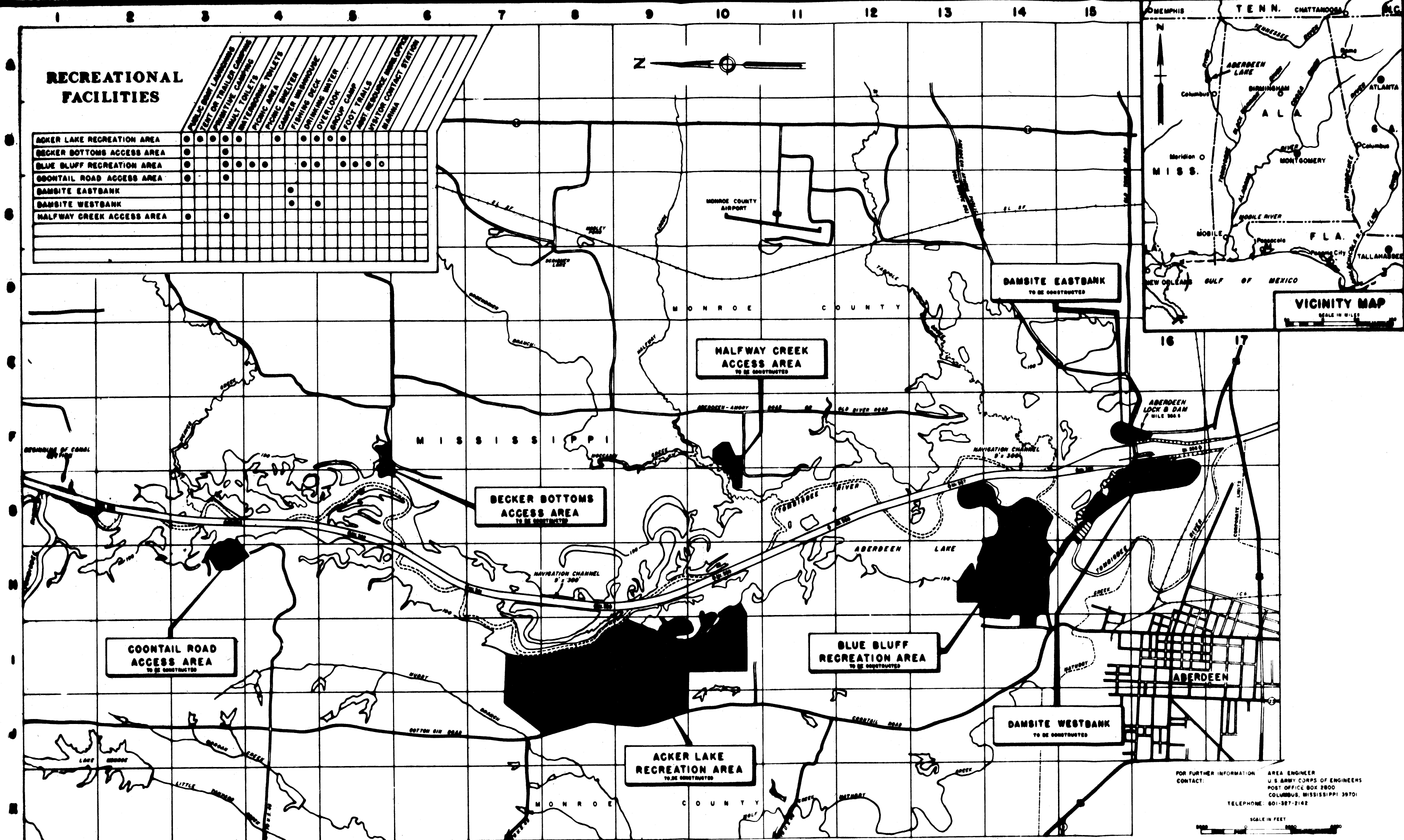
DOWNSTREAM ELEVATION



TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
 TOMBIGBEE RIVER ALABAMA
 PLAN & ELEVATION SPILLWAY



TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA
NAVIGATION CHANNEL & SECTIONS



RECREATIONAL FACILITIES

	PUBLIC BOAT LANDING	TRAILER CAMPING	WADING TOILETS	PICNIC AREA	CAMPERS WASHHOUSE	FISHING DECK	DRINKING WATER	SHOWER CAMP	FOOT TRAILS	AMBI RESOURCES	VISITOR CONTACT STATION	BARBARRA
ACKER LAKE RECREATION AREA	●	●	●	●	●	●	●	●	●	●	●	●
BECKER BOTTOMS ACCESS AREA	●	●	●	●	●	●	●	●	●	●	●	●
BLUE BLUFF RECREATION AREA	●	●	●	●	●	●	●	●	●	●	●	●
COONTAIL ROAD ACCESS AREA	●	●	●	●	●	●	●	●	●	●	●	●
DAM SITE EASTBANK	●	●	●	●	●	●	●	●	●	●	●	●
DAM SITE WESTBANK	●	●	●	●	●	●	●	●	●	●	●	●
HALFWAY CREEK ACCESS AREA	●	●	●	●	●	●	●	●	●	●	●	●

NORMAL POOL ELEVATION IS ELEVATION 100 NATIONAL GEODETIC DATUM.

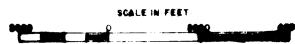
MILEAGE SHOWN IS NAVIGATION MILES FROM THE FOOT OF GOVERNMENT STREET, MOBILE, ALABAMA AND FOLLOWS THE ALIGNMENT OF THE NAVIGATION CHANNEL WHICH IS INCOMPLETE AT THIS TIME.

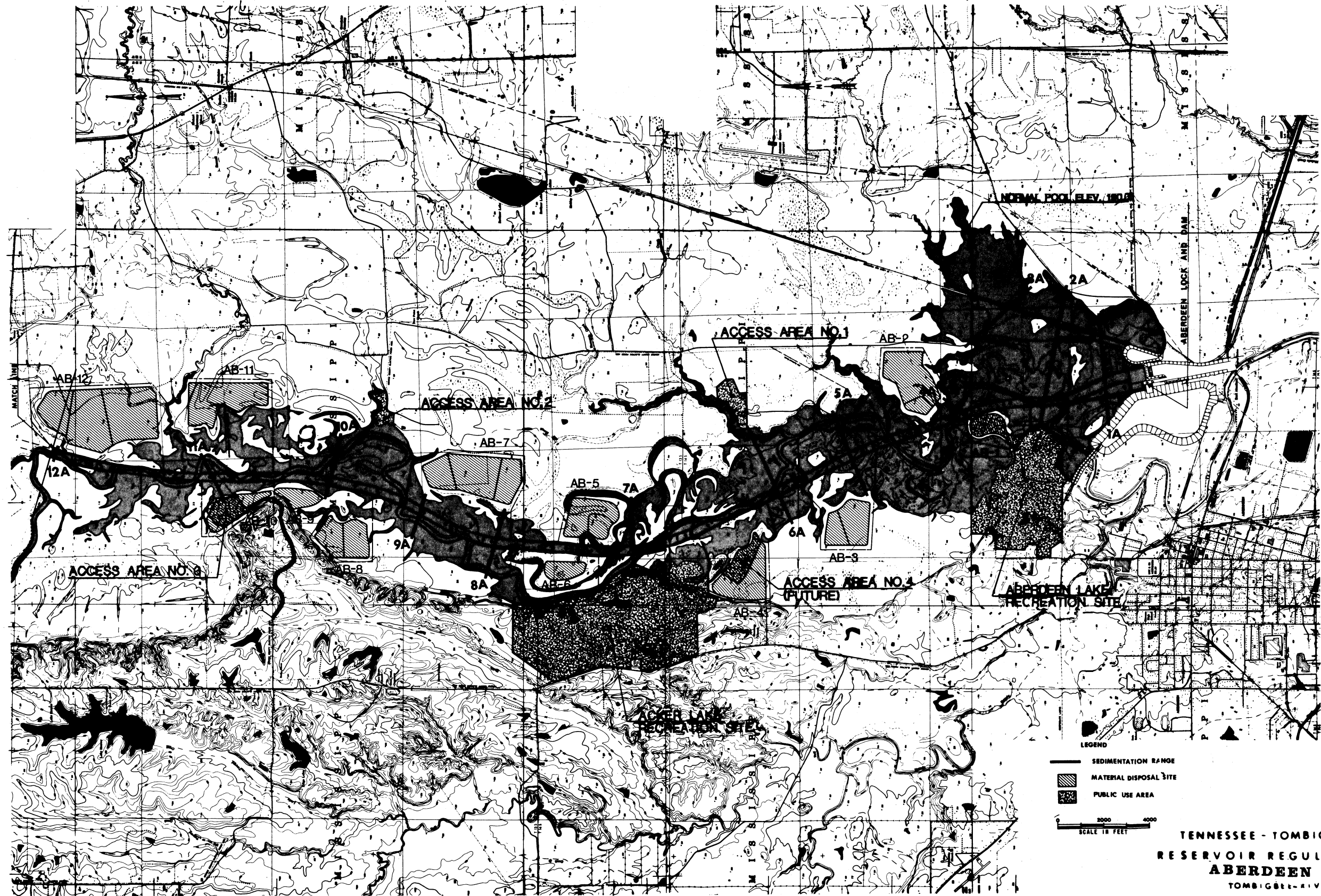
- LEGEND**
- PUBLIC ACCESS AREA
 - INITIAL DEVELOPMENT
 - FUTURE DEVELOPMENT
 - PAVED ROAD
 - - - GRAVEL OR STONE ROAD
 - U. S. HIGHWAY
 - STATE HIGHWAY

TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
 ABERDEEN RESERVOIR
 TOMBIGBEE RIVER ALABAMA

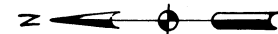
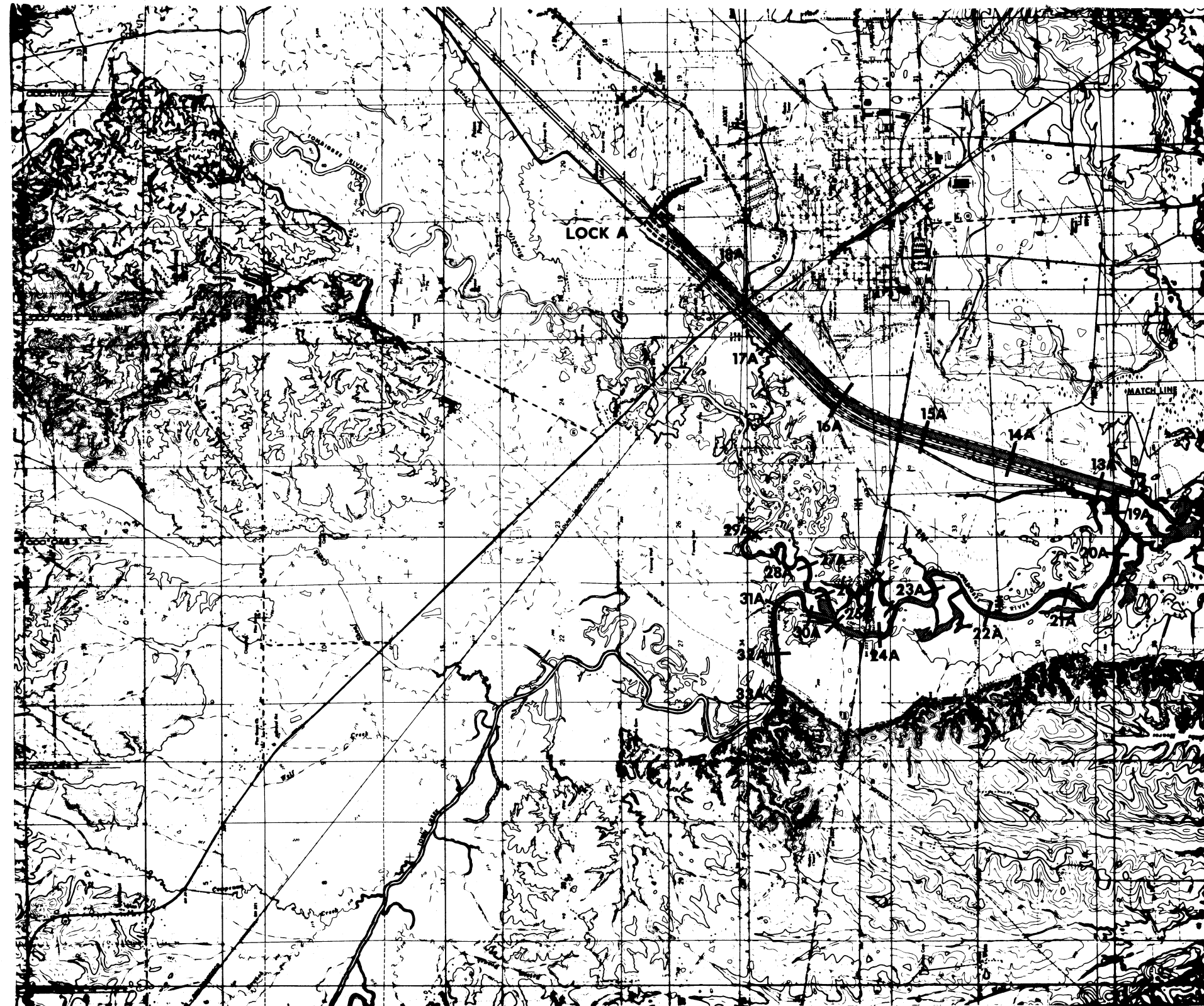
RECREATIONAL DEVELOPMENT

FOR FURTHER INFORMATION CONTACT:
 AREA ENGINEER
 U. S. ARMY CORPS OF ENGINEERS
 POST OFFICE BOX 2800
 COLUMBUS, MISSISSIPPI 39701
 TELEPHONE: 601-387-2142





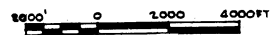
TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
 TOMBIGBEE RIVER ALABAMA
 RANGE LOCATION MAP

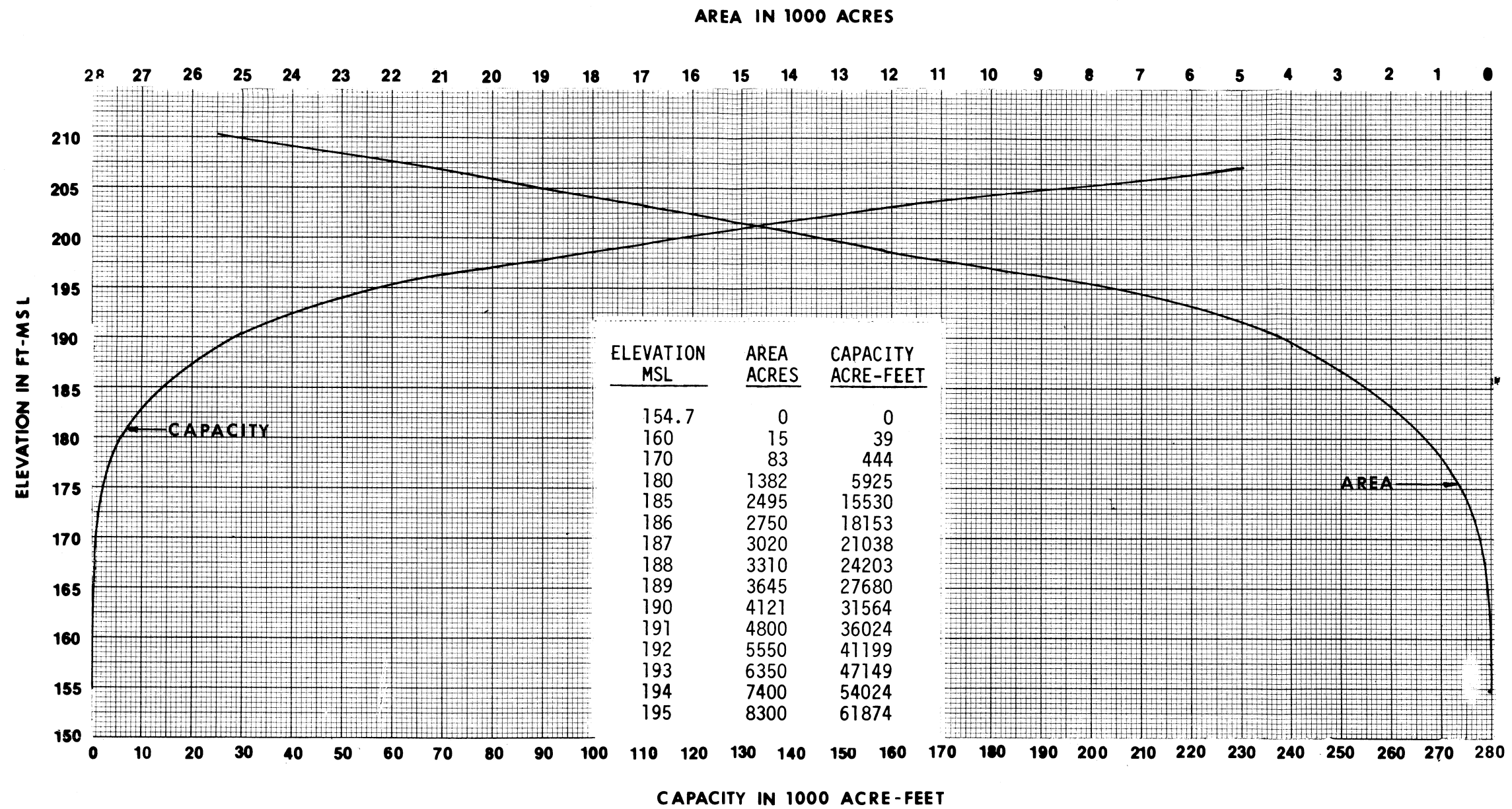


NOTE:
MATERIAL DISPOSAL SITES NOT SHOWN

LEGEND
— SEDIMENTATION RANGE

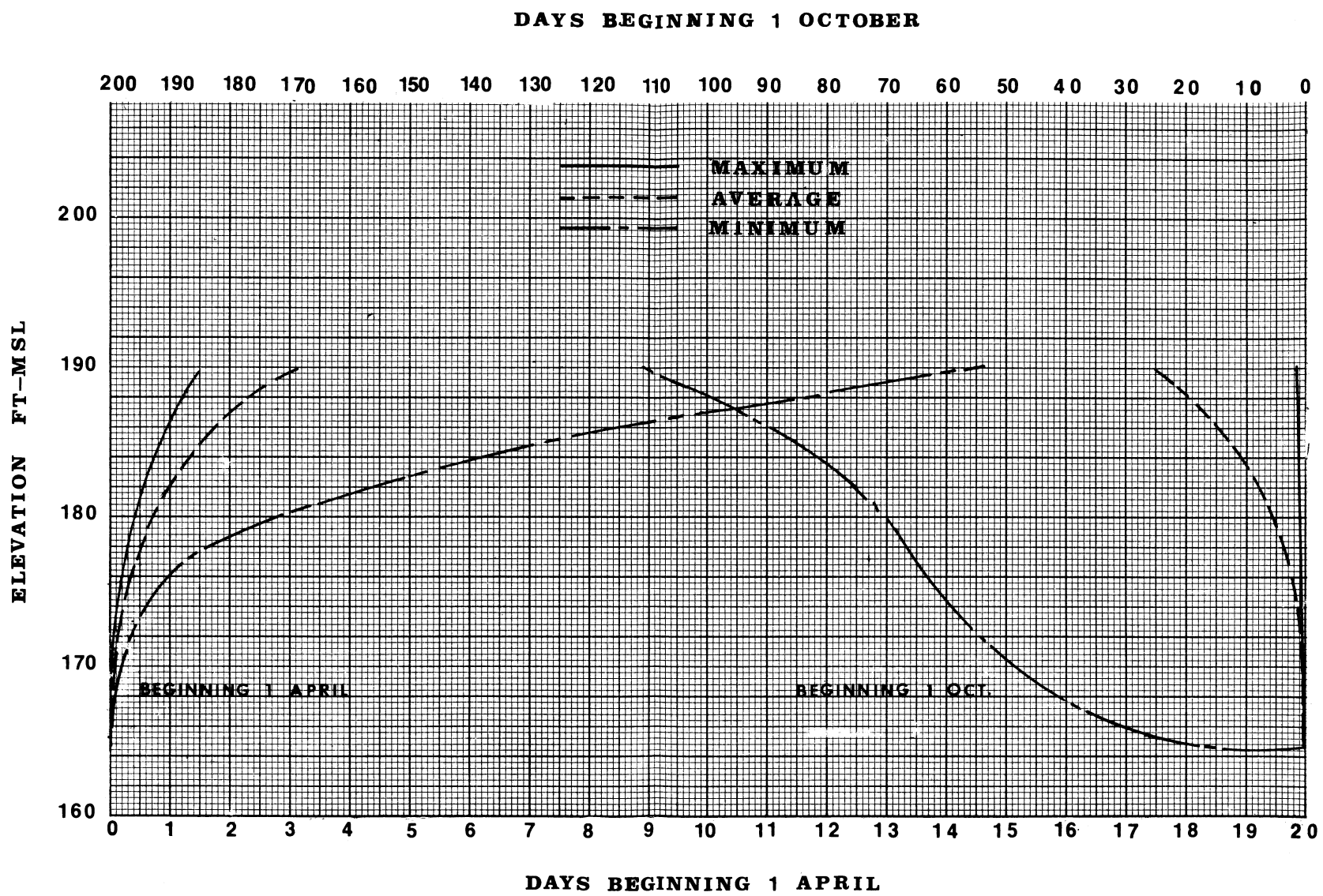
TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA
RANGE LOCATION



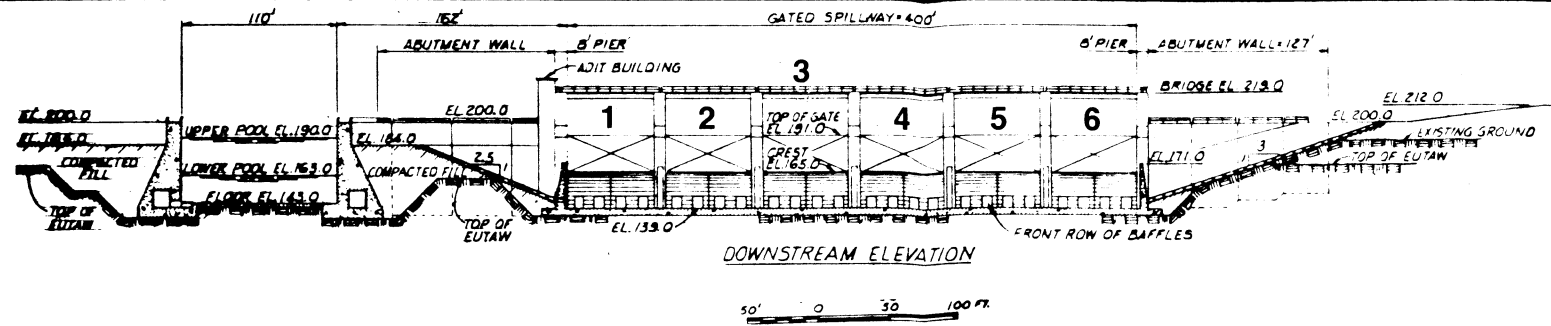


TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
 ABERDEEN RESERVOIR

AREA AND CAPACITY CURVES



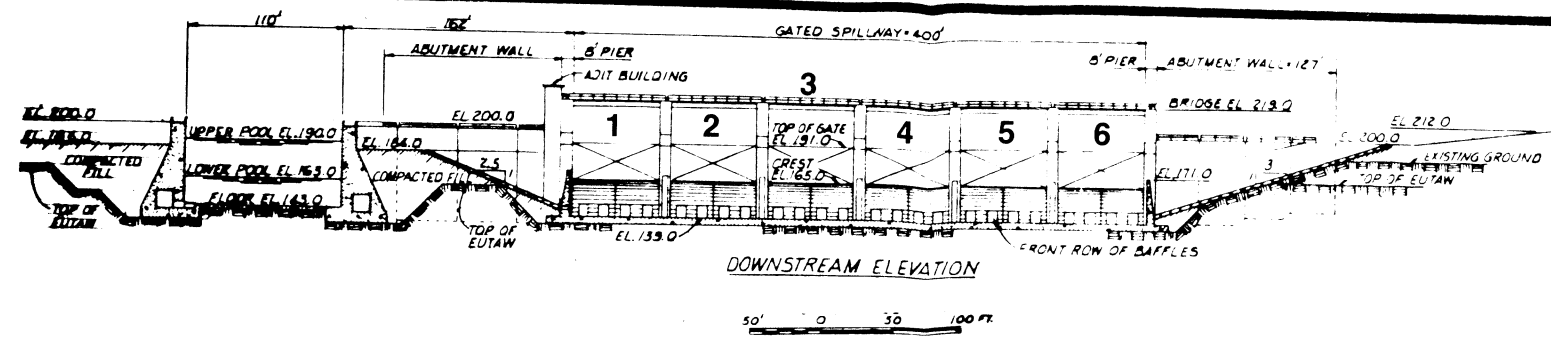
TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE-RIVER ALABAMA
FILLING CURVES



**ABERDEEN
GATE OPERATION SCHEDULE**

GATE STEP	GATE NUMBER						POOL ELEVATION		
	1	2	3	4	5	6	188.0	189.0	190.0
	GATE POSITIONS						DISCHARGE		
1	0.00	0.00	0.00	0.00	0.00	0.50	1,020	1,040	1,060
2	0.00	0.00	0.00	0.00	0.50	0.50	2,030	2,070	2,120
3	0.00	0.00	0.00	0.50	0.50	0.50	3,050	3,110	3,180
4	0.00	0.00	0.50	0.50	0.50	0.50	4,390	4,500	4,560
5	0.00	0.50	0.50	0.50	0.50	0.50	5,040	5,130	5,130
6	0.50	0.50	0.50	0.50	0.50	0.50	5,860	5,970	6,080
7	0.50	0.50	0.50	0.50	0.50	1.00	6,760	6,890	7,030
8	0.50	0.50	0.50	0.50	1.00	1.00	7,550	7,610	7,700
9	0.50	0.50	0.50	1.00	1.00	1.00	8,070	8,170	8,280
10	0.50	0.50	1.00	1.00	1.00	1.00	8,680	8,790	8,910
11	0.50	1.00	1.00	1.00	1.00	1.00	9,450	9,610	9,730
12	1.00	1.00	1.00	1.00	1.00	1.00	10,570	10,800	11,050
13	1.00	1.00	1.00	1.00	1.00	1.50	11,260	11,430	11,570
14	1.00	1.00	1.00	1.00	1.50	1.50	11,700	11,930	12,110
15	1.00	1.00	1.00	1.50	1.50	1.50	12,280	12,500	12,700
16	1.00	1.00	1.50	1.50	1.50	1.50	12,890	13,120	13,370
17	1.00	1.50	1.50	1.50	1.50	1.50	13,620	13,850	14,130
18	1.50	1.50	1.50	1.50	1.50	1.50	14,430	14,830	15,180
19	1.50	1.50	1.50	1.50	1.50	2.00	15,060	15,460	15,750
20	1.50	1.50	1.50	1.50	2.00	2.00	15,610	15,950	16,220
21	1.50	1.50	1.50	2.00	2.00	2.00	16,100	16,430	16,750
22	1.50	1.50	2.00	2.00	2.00	2.00	16,600	17,010	17,380
23	1.50	2.00	2.00	2.00	2.00	2.00	17,230	17,660	18,060
24	2.00	2.00	2.00	2.00	2.00	2.00	17,890	18,360	18,780
25	2.00	2.00	2.00	2.00	2.00	3.00	18,820	19,380	19,930
26	2.00	2.00	2.00	2.00	3.00	3.00	19,820	20,420	20,890
27	2.00	2.00	2.00	3.00	3.00	3.00	20,730	21,230	21,720
28	2.00	2.00	3.00	3.00	3.00	3.00	21,500	22,100	22,680
29	2.00	3.00	3.00	3.00	3.00	3.00	22,380	23,050	23,670
30	3.00	3.00	3.00	3.00	3.00	3.00	23,280	24,000	24,700
31	3.00	3.00	3.00	3.00	3.00	4.00	24,000	24,730	25,580
32	3.00	3.00	3.00	3.00	4.00	4.00	24,630	25,530	26,410
33	3.00	3.00	3.00	4.00	4.00	4.00	25,330	26,280	27,210
34	3.00	3.00	4.00	4.00	4.00	4.00	26,000	27,030	27,970
35	3.00	4.00	4.00	4.00	4.00	4.00	26,730	27,730	28,700
36	4.00	4.00	4.00	4.00	4.00	4.00	27,330	28,400	29,420

TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
GATE OPERATING SCHEDULE

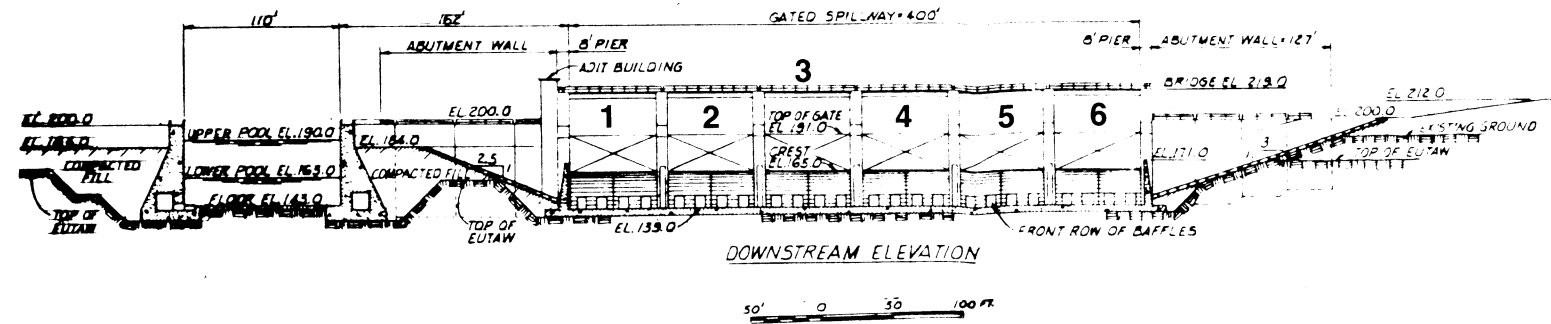


ABERDEEN
GATE OPERATION SCHEDULE

GATE STEP	GATE NUMBER						POOL ELEVATION		
	1	2	3	4	5	6	188.0	189.0	190.0
	GATE POSITIONS						DISCHARGE		
37	4.00	4.00	4.00	4.00	4.00	5.00	27,950	29,050	30,220
38	4.00	4.00	4.00	4.00	5.00	5.00	28,510	29,740	30,980
39	4.00	4.00	4.00	5.00	5.00	5.00	29,070	30,430	31,670
40	4.00	4.00	5.00	5.00	5.00	5.00	29,620	31,060	32,320
41	4.00	5.00	5.00	5.00	5.00	5.00	30,170	31,660	32,930
42	5.00	5.00	5.00	5.00	5.00	5.00	30,700	32,210	33,540
43	5.00	5.00	5.00	5.00	5.00	6.00	31,250	32,800	34,240
44	5.00	5.00	5.00	5.00	6.00	6.00	31,730	33,370	34,900
45	5.00	5.00	5.00	6.00	6.00	6.00	32,360	33,970	35,530
46	5.00	5.00	6.00	6.00	6.00	6.00	32,830	34,540	36,120
47	5.00	6.00	6.00	6.00	6.00	6.00	33,300	35,080	36,680
48	6.00	6.00	6.00	6.00	6.00	6.00	33,760	35,590	37,220
49	6.00	6.00	6.00	6.00	6.00	7.00	34,200	36,100	37,850
50	6.00	6.00	6.00	6.00	7.00	7.00	34,640	36,600	38,450
51	6.00	6.00	6.00	7.00	7.00	7.00	35,080	37,100	39,030
52	6.00	6.00	7.00	7.00	7.00	7.00	35,510	37,620	39,580
53	6.00	7.00	7.00	7.00	7.00	7.00	35,940	38,120	40,100
54	7.00	7.00	7.00	7.00	7.00	7.00	36,360	38,600	40,610
55	7.00	7.00	7.00	7.00	7.00	8.00	36,820	39,040	41,050
56	7.00	7.00	7.00	7.00	8.00	8.00	37,260	39,460	41,480
57	7.00	7.00	7.00	8.00	8.00	8.00	37,670	39,860	41,880
58	7.00	7.00	8.00	8.00	8.00	8.00	38,070	40,230	42,250
59	7.00	8.00	8.00	8.00	8.00	8.00	38,460	40,790	42,610
60	8.00	8.00	8.00	8.00	8.00	8.00	38,840	41,110	42,980
61	8.00	8.00	8.00	8.00	8.00	9.00	39,210	41,530	43,560
62	8.00	8.00	8.00	8.00	9.00	9.00	39,580	41,950	44,080
63	8.00	8.00	8.00	9.00	9.00	9.00	39,950	42,350	44,560
64	8.00	8.00	9.00	9.00	9.00	9.00	40,310	42,500	45,010
65	8.00	9.00	9.00	9.00	9.00	9.00	40,660	43,140	45,450
66	9.00	9.00	9.00	9.00	9.00	9.00	41,040	43,510	45,860
67	9.00	9.00	9.00	9.00	9.00	10.00	41,150	43,800	46,240
68	9.00	9.00	9.00	9.00	10.00	10.00	41,450	44,090	46,610
69	9.00	9.00	9.00	10.00	10.00	10.00	41,730	44,410	46,960
70	9.00	9.00	10.00	10.00	10.00	10.00	41,990	44,710	47,300
71	9.00	10.00	10.00	10.00	10.00	10.00	42,240	44,990	47,640
72	10.00	10.00	10.00	10.00	10.00	10.00	42,490	45,260	48,010

TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR

GATE OPERATING SCHEDULE

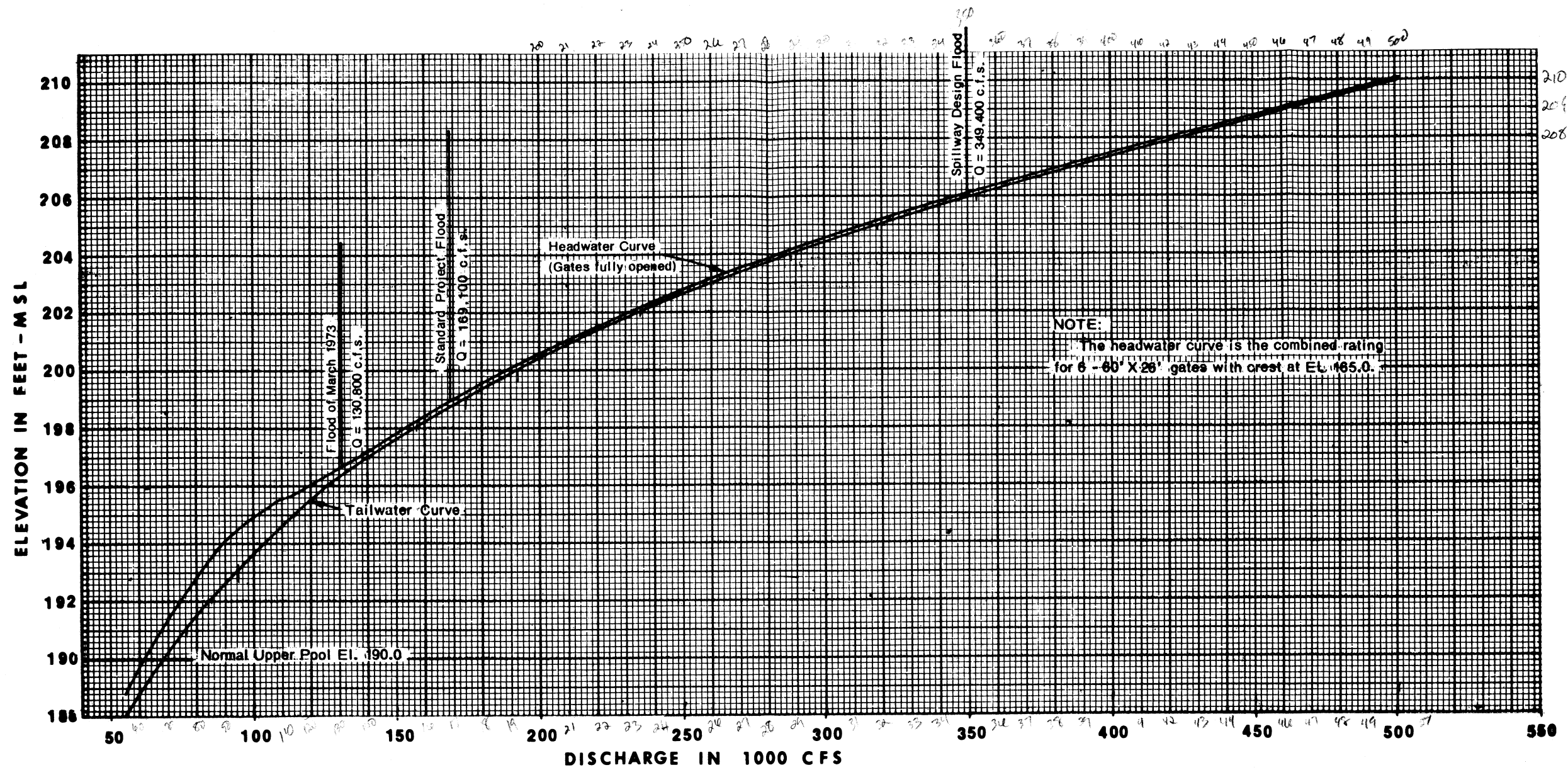


ABERDEEN
GATE OPERATION SCHEDULE

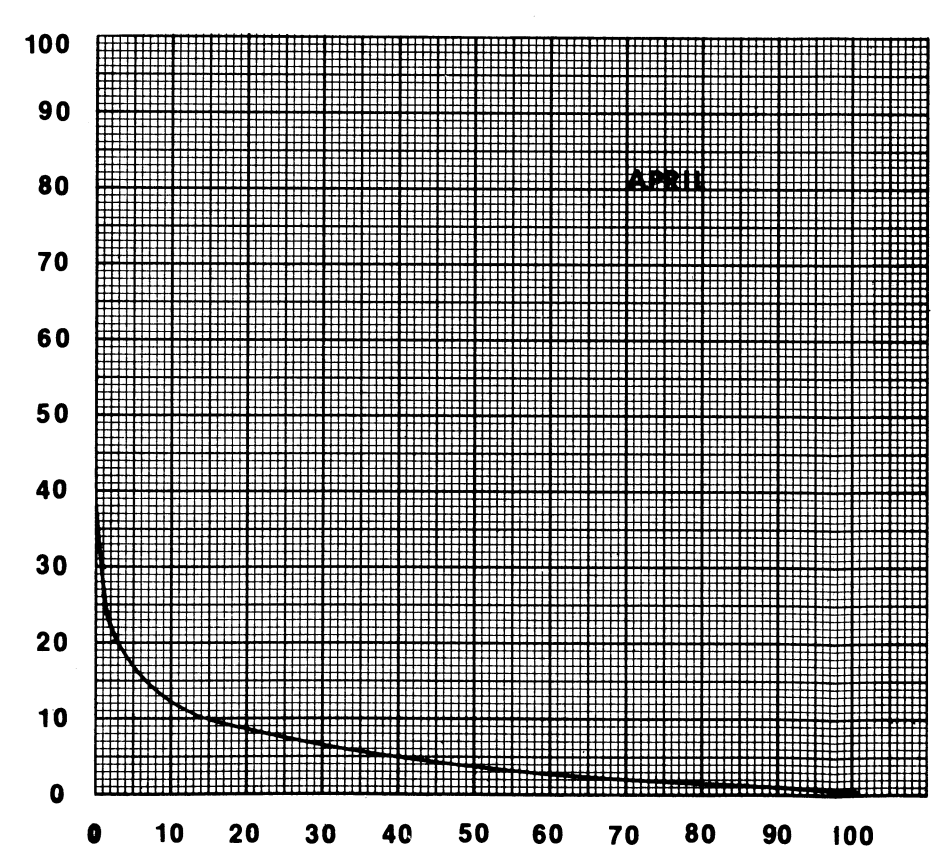
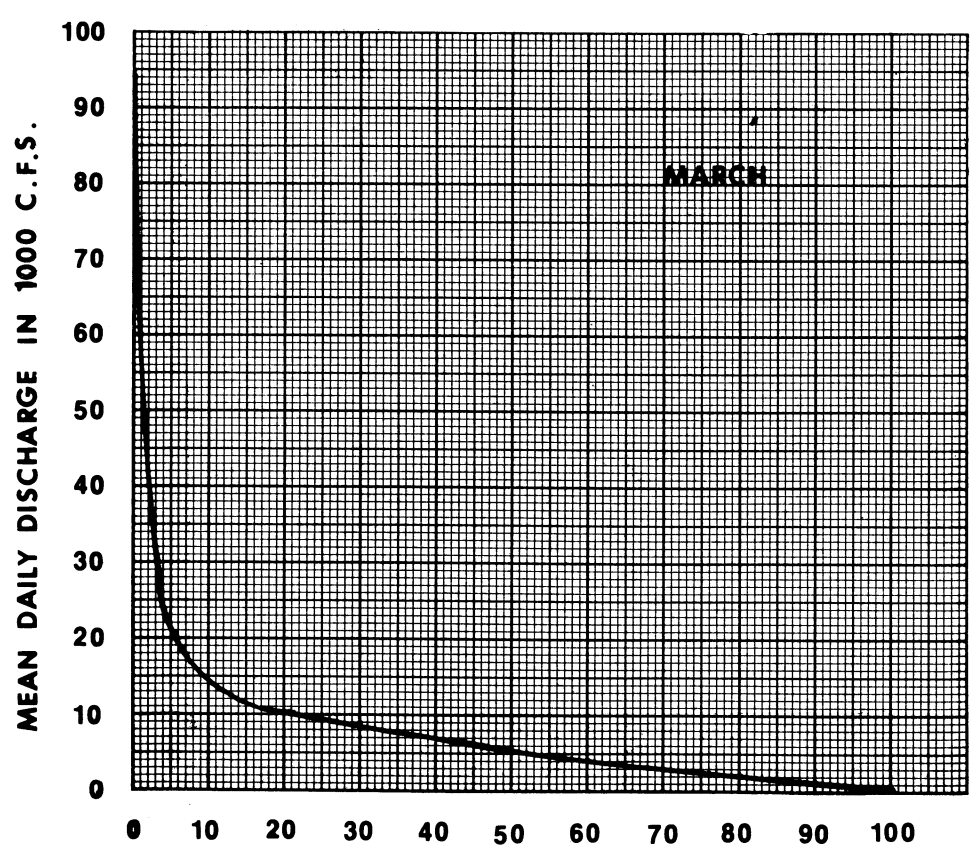
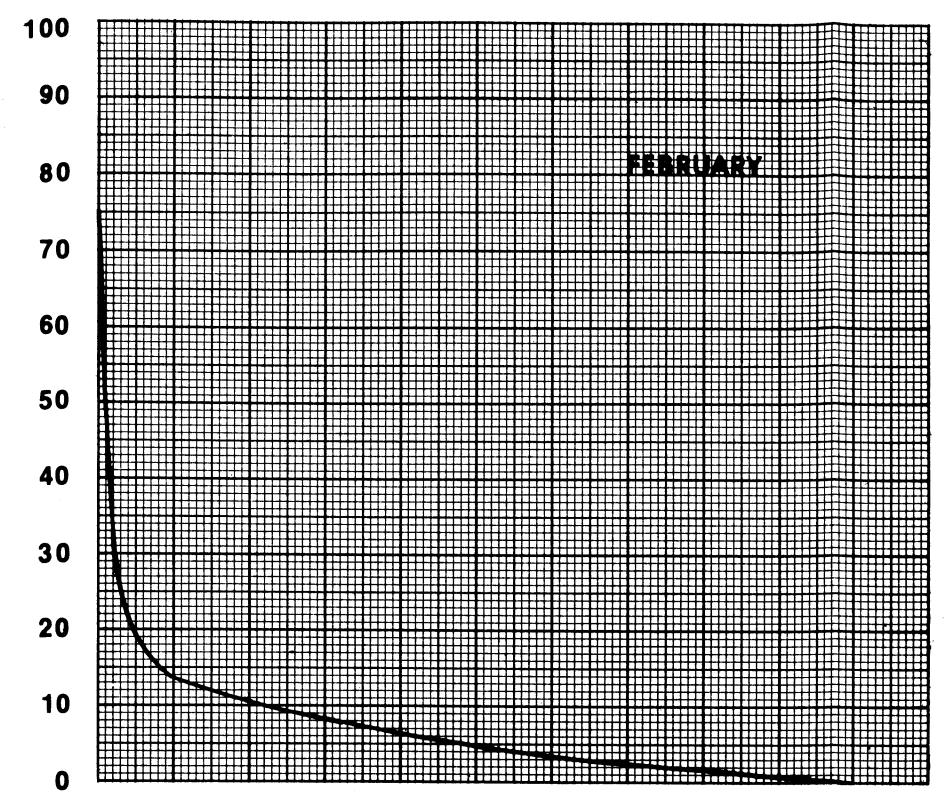
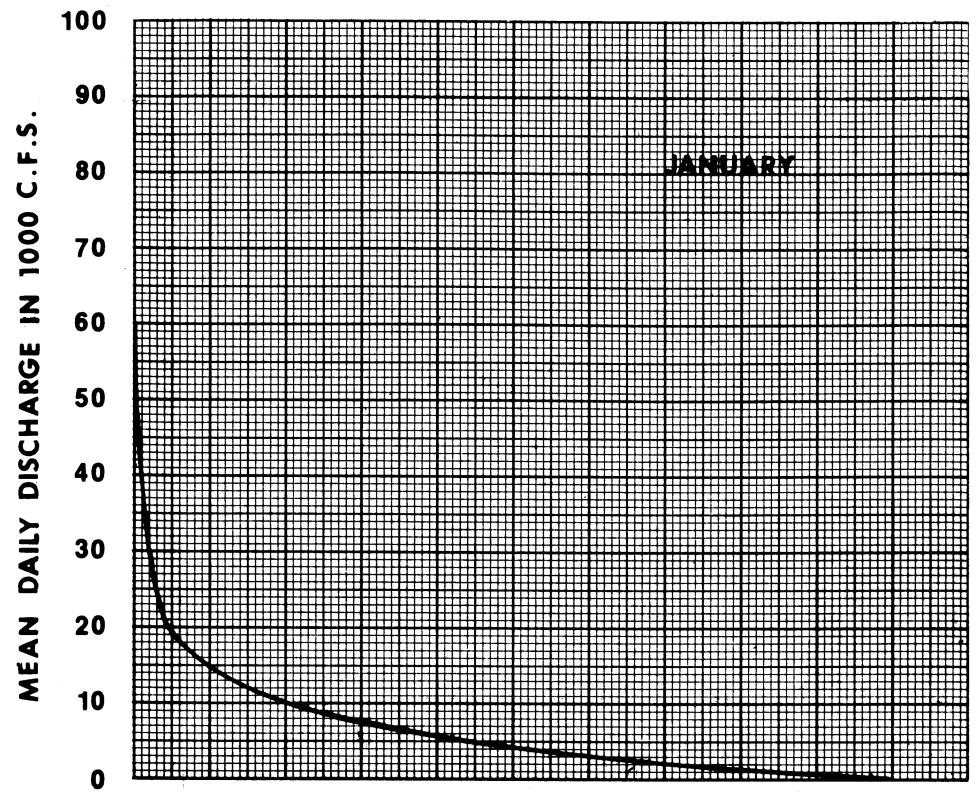
GATE STEP	GATE NUMBER						188.0	POOL ELEVATION	
	1	2	3	4	5	6		189.0	190.0
	GATE POSITIONS						DISCHARGE		
73	10.00	10.00	10.00	10.00	10.00	11.00	42,750	45,600	48,490
74	10.00	10.00	10.00	10.00	11.00	11.00	43,000	45,930	49,220
75	10.00	10.00	10.00	11.00	11.00	11.00	43,240	46,250	49,580
76	10.00	10.00	11.00	11.00	11.00	11.00	43,470	46,560	49,910
77	10.00	11.00	11.00	11.00	11.00	11.00	43,700	46,850	50,200
78	11.00	11.00	11.00	11.00	11.00	11.00	43,910	47,080	50,440
79	11.00	11.00	11.00	11.00	11.00	12.00	44,150	47,580	50,640
80	11.00	11.00	11.00	11.00	12.00	12.00	44,400	47,830	51,030
81	11.00	11.00	11.00	12.00	12.00	12.00	44,660	48,090	51,410
82	11.00	11.00	12.00	12.00	12.00	12.00	44,910	48,340	51,800
83	11.00	12.00	12.00	12.00	12.00	12.00	45,170	48,600	52,180
84	12.00	12.00	12.00	12.00	12.00	12.00	45,420	48,850	52,570
85	12.00	12.00	12.00	12.00	12.00	14.00	46,020	49,480	53,120
86	12.00	12.00	12.00	12.00	14.00	14.00	46,520	50,120	53,680
87	12.00	12.00	12.00	14.00	14.00	14.00	47,020	50,750	54,240
88	12.00	12.00	14.00	14.00	14.00	14.00	47,520	51,380	54,790
89	12.00	14.00	14.00	14.00	14.00	14.00	48,020	52,020	55,350
90	14.00	14.00	14.00	14.00	14.00	14.00	48,530	52,650	55,910
91	14.00	14.00	14.00	14.00	14.00	16.00	49,010	53,140	56,430
92	14.00	14.00	14.00	14.00	16.00	16.00	49,500	53,630	56,950
93	14.00	14.00	14.00	16.00	16.00	16.00	49,990	54,130	57,480
94	14.00	14.00	16.00	16.00	16.00	16.00	50,480	54,620	58,000
95	14.00	16.00	16.00	16.00	16.00	16.00	50,960	55,110	58,520
96	16.00	16.00	16.00	16.00	16.00	16.00	51,450	55,600	59,040
97	16.00	16.00	16.00	16.00	16.00	18.00	51,780	55,960	59,420
98	16.00	16.00	16.00	16.00	18.00	18.00	52,120	56,320	59,800
99	16.00	16.00	16.00	18.00	18.00	18.00	52,450	56,680	60,180
100	16.00	16.00	18.00	18.00	18.00	18.00	52,780	57,030	60,570
101	16.00	18.00	18.00	18.00	18.00	18.00	53,120	57,390	60,950
102	18.00	18.00	18.00	18.00	18.00	18.00	53,450	57,750	61,330
103	18.00	18.00	18.00	18.00	18.00	FULL	53,840	58,170	62,200
104	18.00	18.00	18.00	18.00	FULL	FULL	54,220	58,590	62,800
105	18.00	18.00	18.00	FULL	FULL	FULL	54,610	59,010	63,300
106	18.00	18.00	FULL	FULL	FULL	FULL	55,000	59,430	63,650
107	18.00	FULL	FULL	FULL	FULL	FULL	55,380	59,850	63,850
108	FULL	FULL	FULL	FULL	FULL	FULL	55,770	60,270	64,000

TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR

GATE OPERATING SCHEDULE



TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA
HEADWATER-TAILWATER
CURVES AT DAMSITE

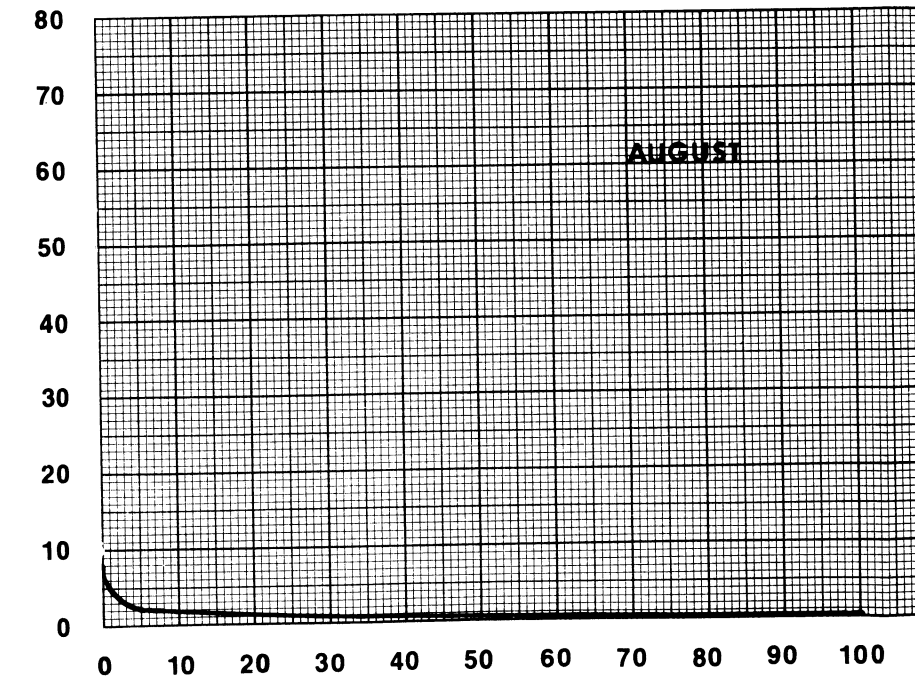
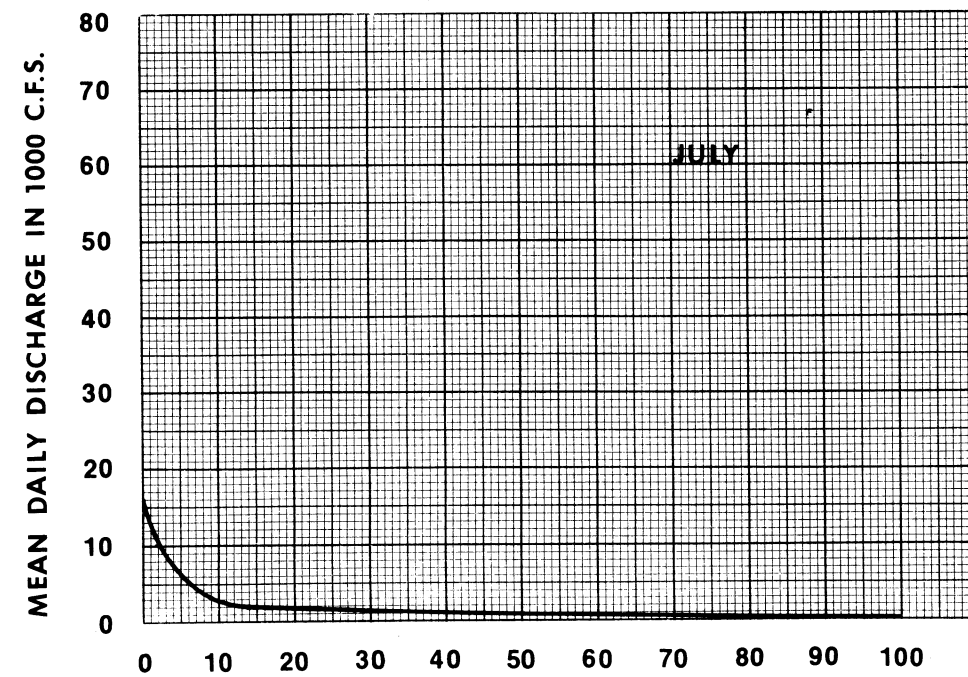
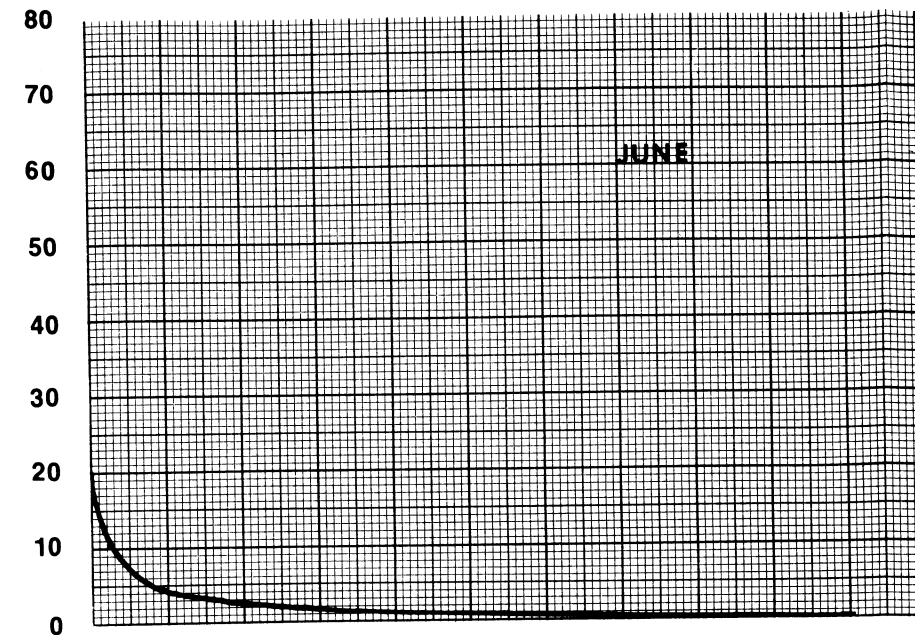
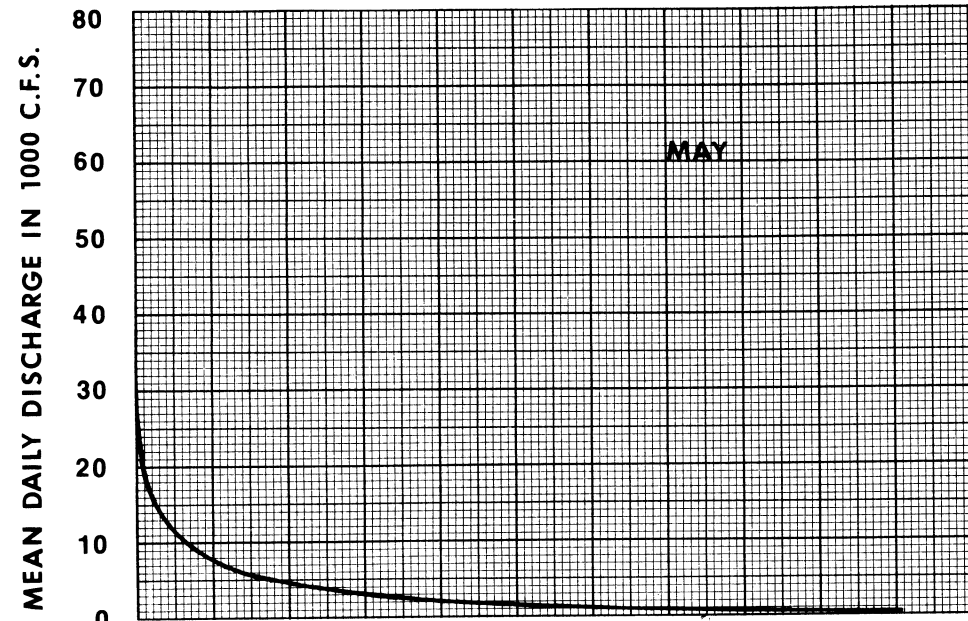


PERCENT OF TIME EQUALED OR EXCEEDED

PERCENT OF TIME EQUALED OR EXCEEDED

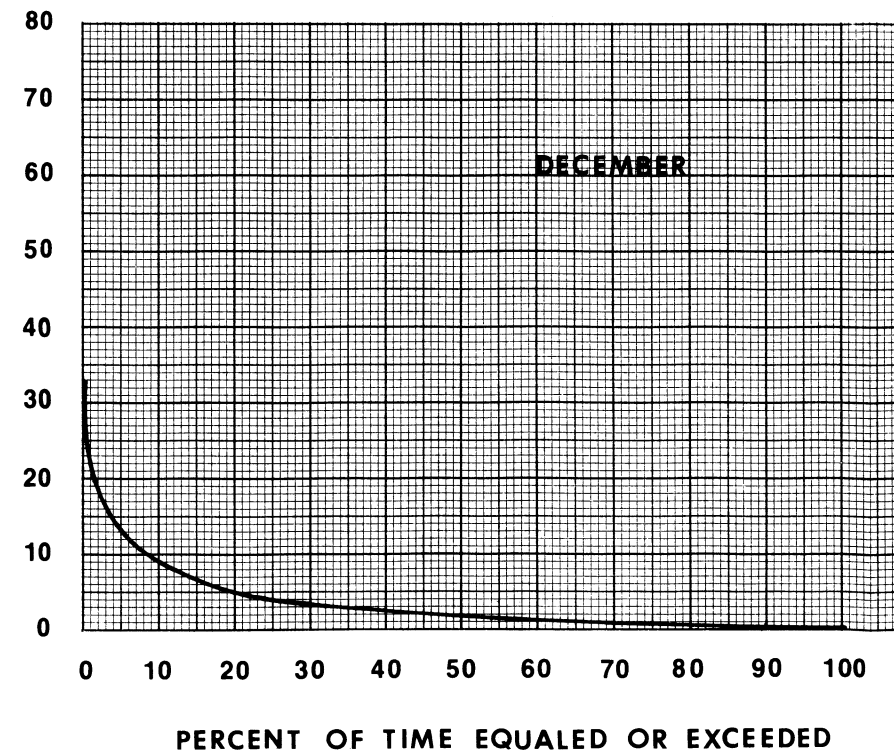
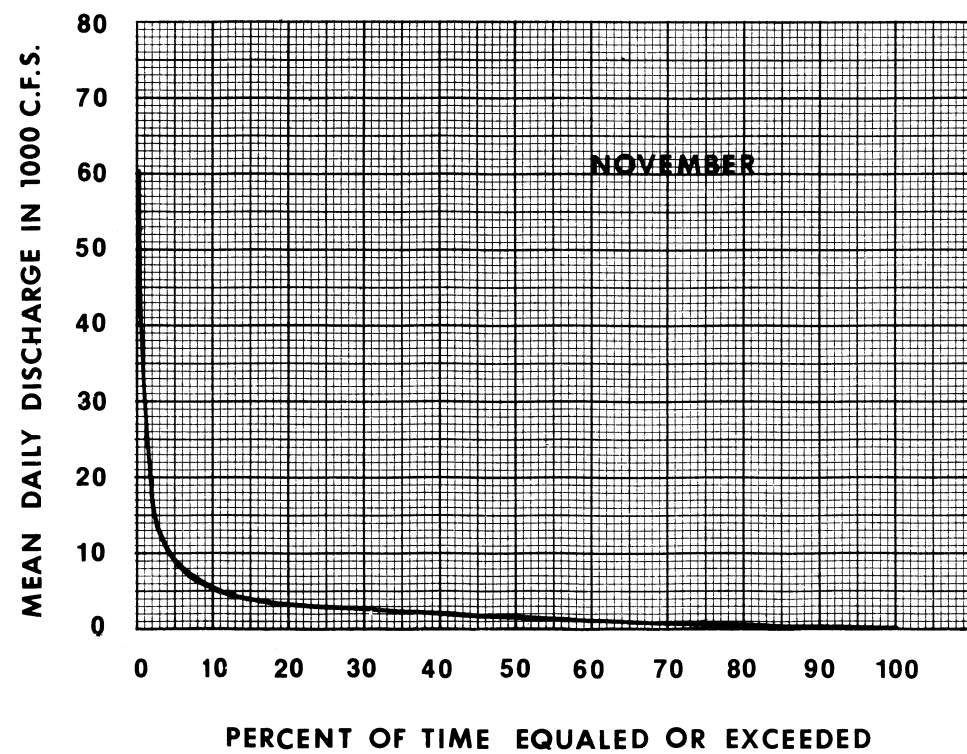
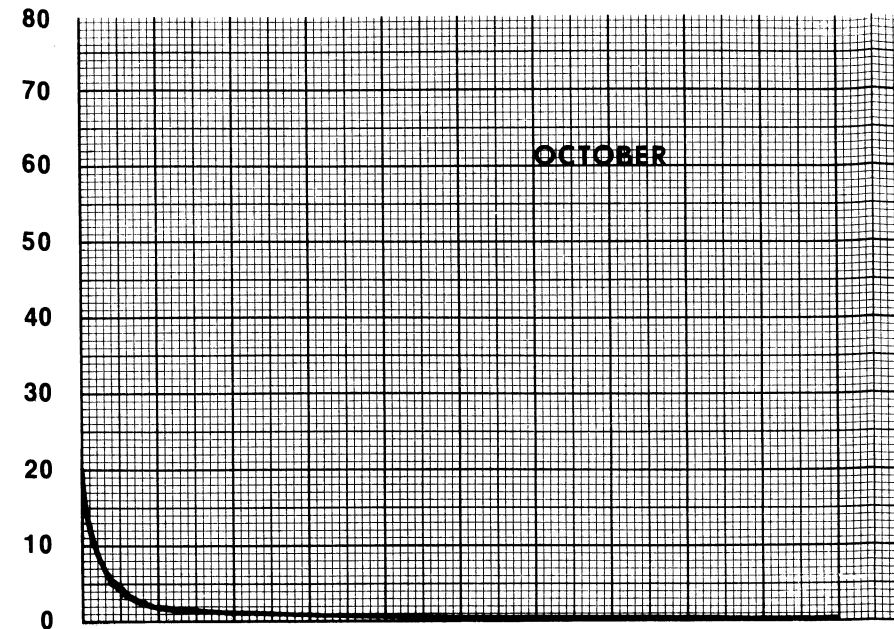
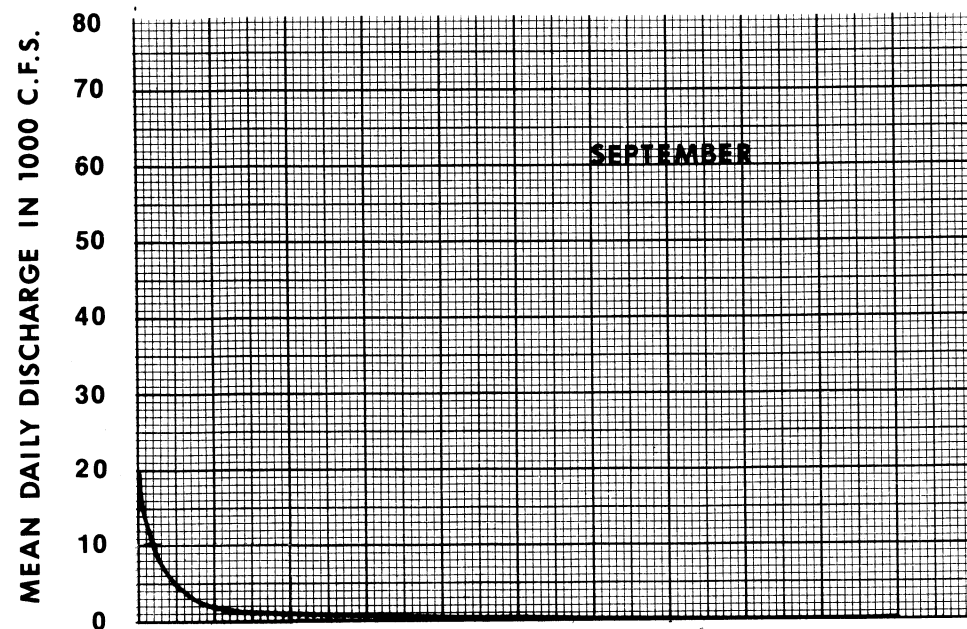
TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA

MONTHLY FLOW-DURATION CURVES

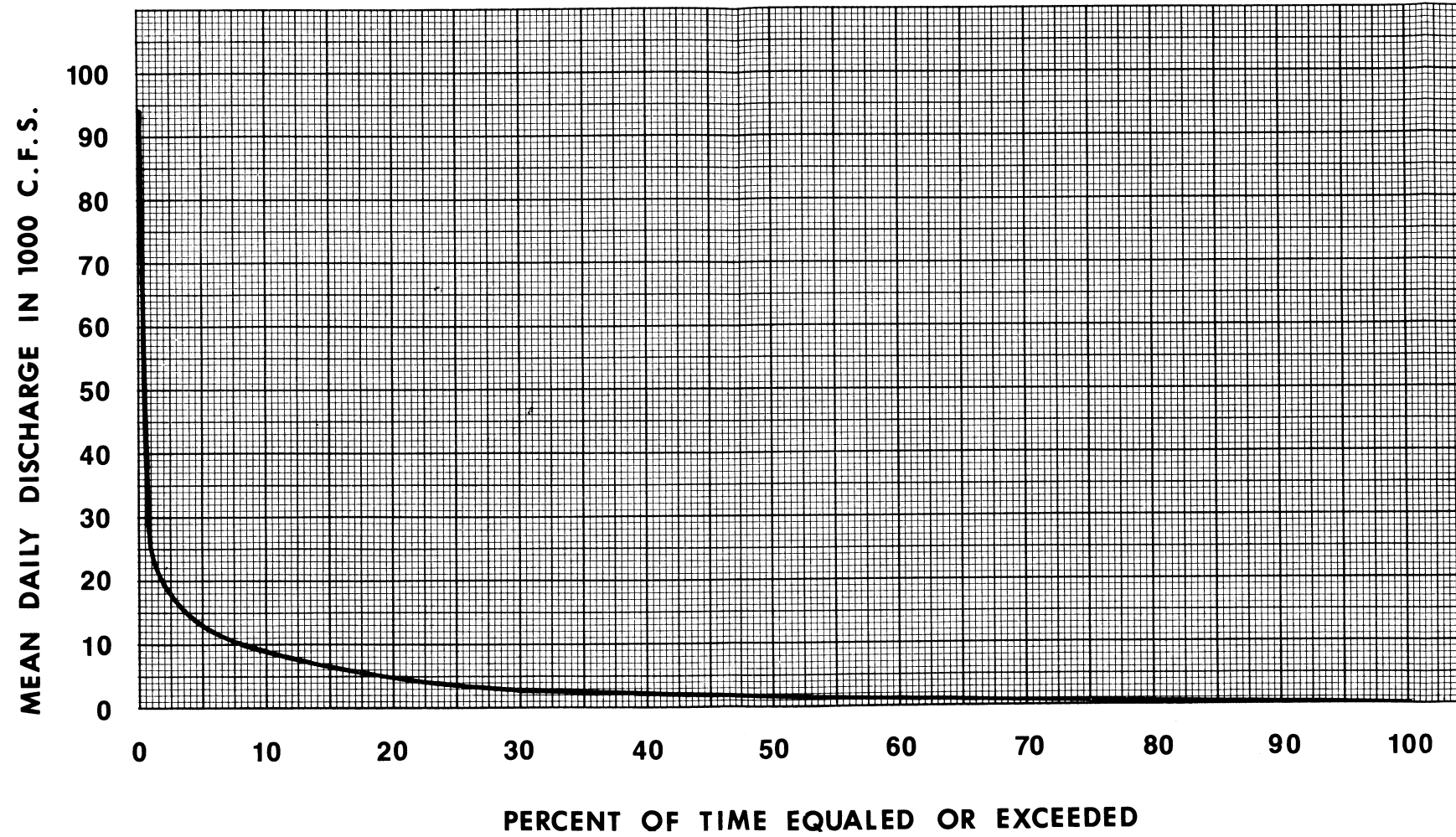


TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA

MONTHLY FLOW-DURATION CURVES

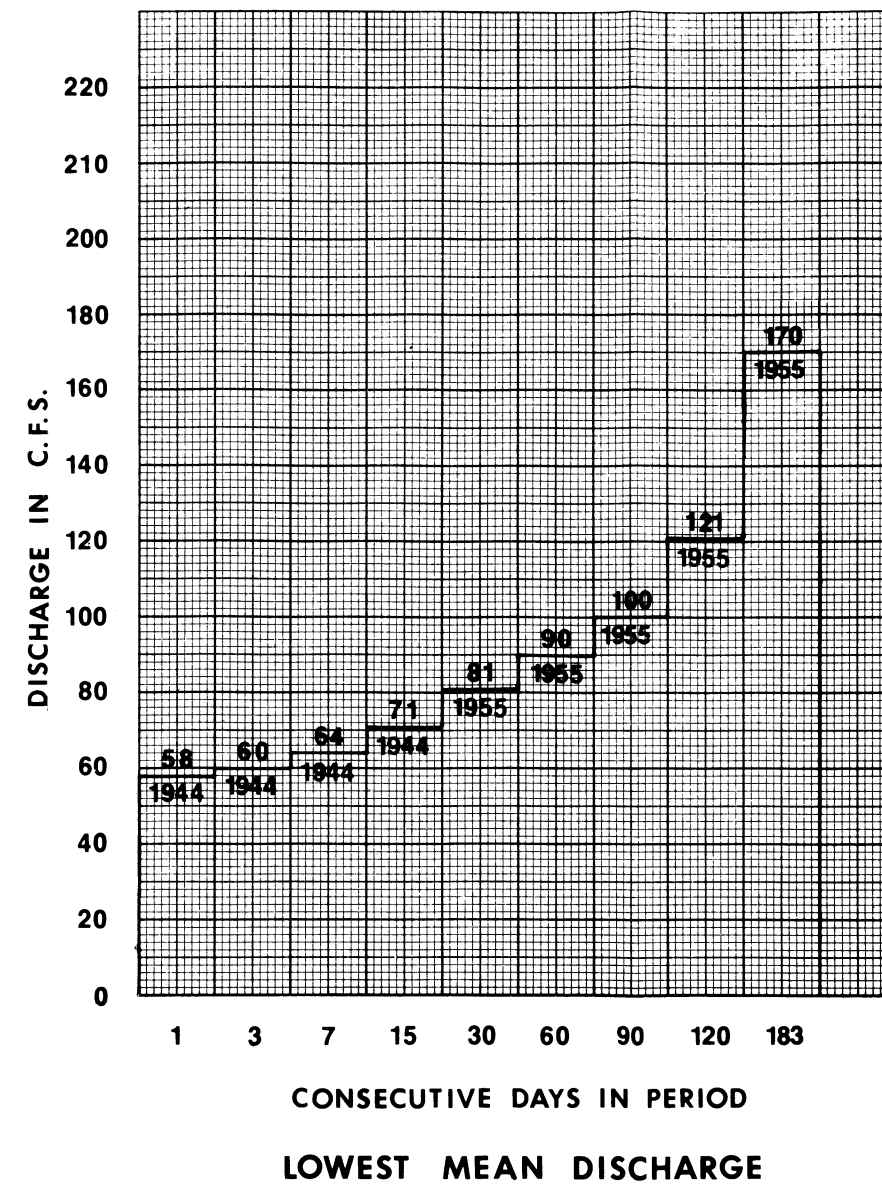
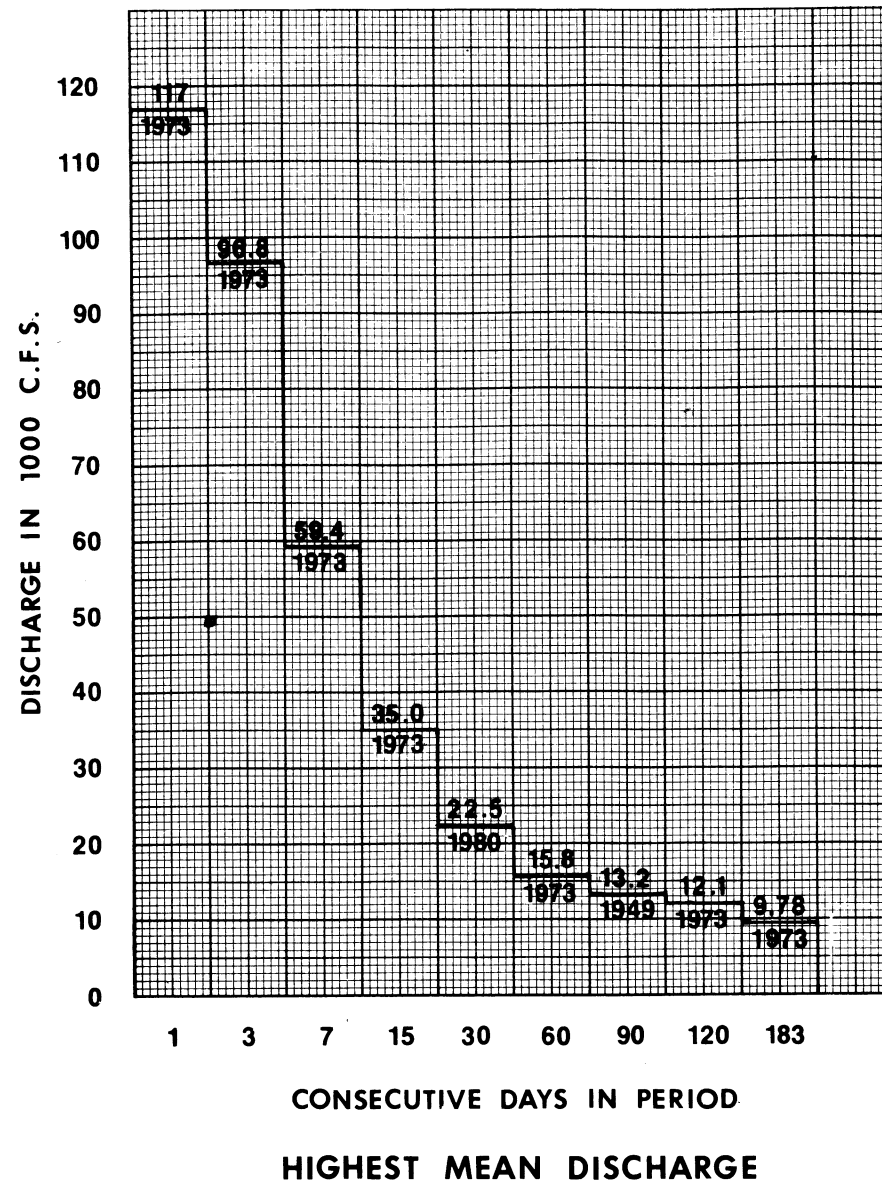


TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA
MONTHLY FLOW-DURATION CURVES



TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA

ANNUAL FLOW-DURATION CURVE



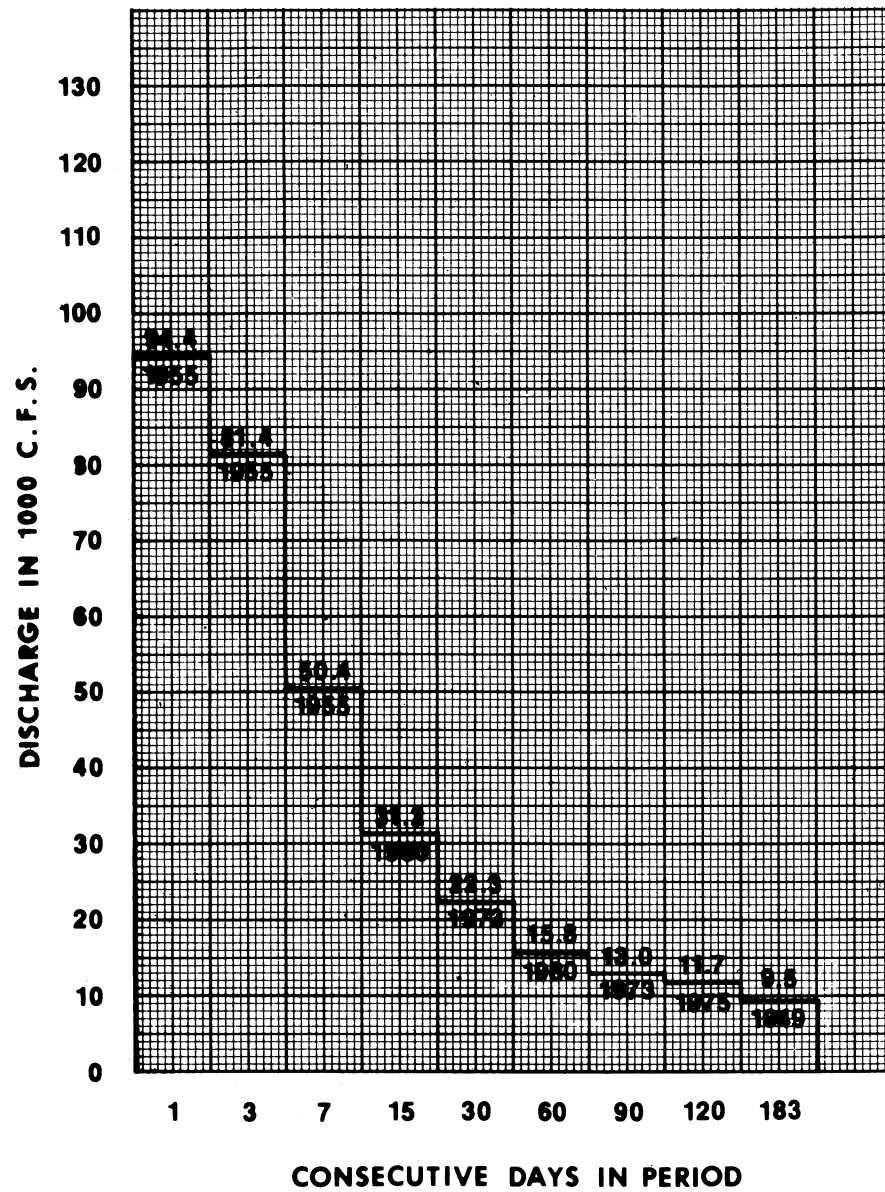
NOTE: For highest mean flows for given period of consecutive days values are based on water year (Oct-Sep) for the periods 1929 through 1958 and 1972 through 1980.

For lowest mean flows, values are based on April through March water year for periods 1930-1958 and 1973-1980.

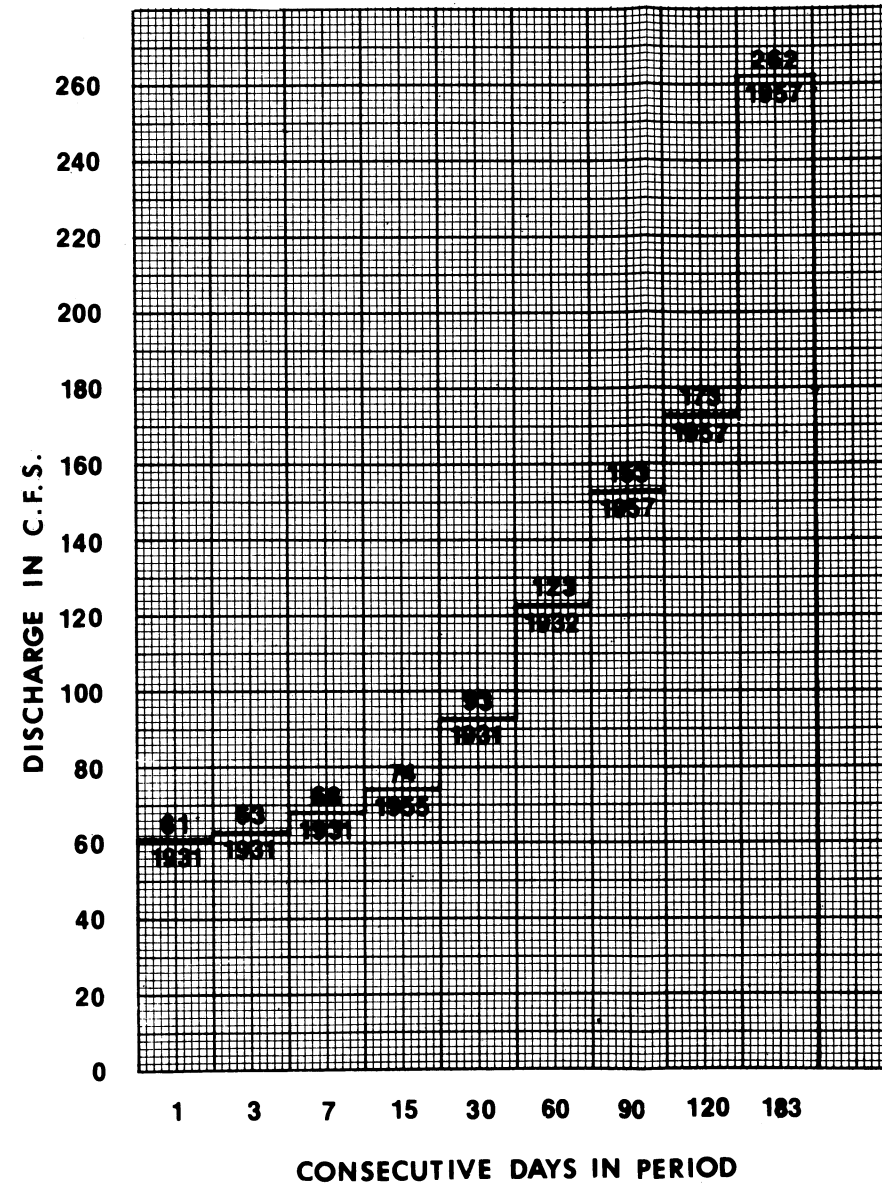
Flows obtained from Station No. 02437500 - Tombigbee River at Aberdeen, MS.

TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR

HIGHEST AND LOWEST MEAN FLOWS



SECOND HIGHEST MEAN DISCHARGE



SECOND LOWEST MEAN DISCHARGE

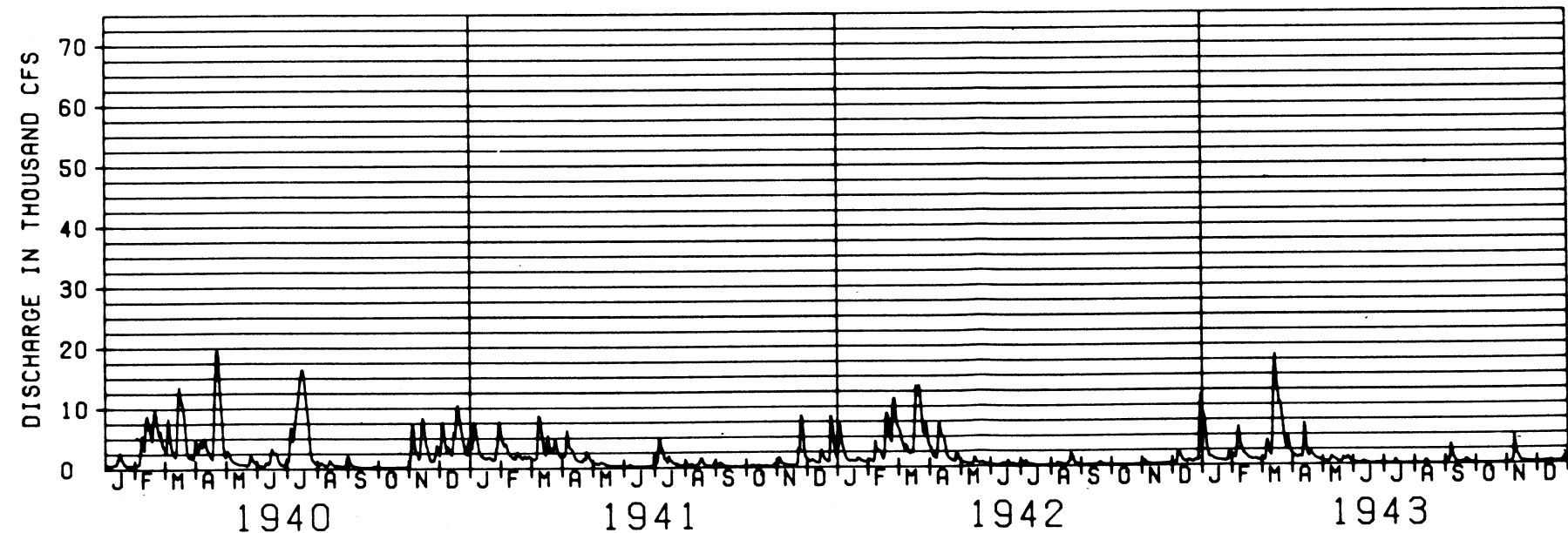
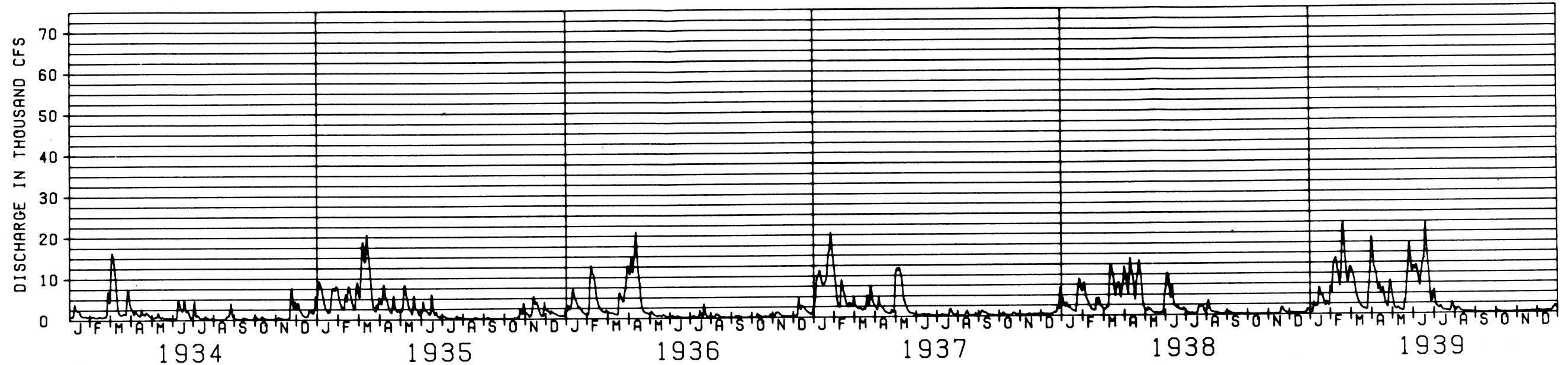
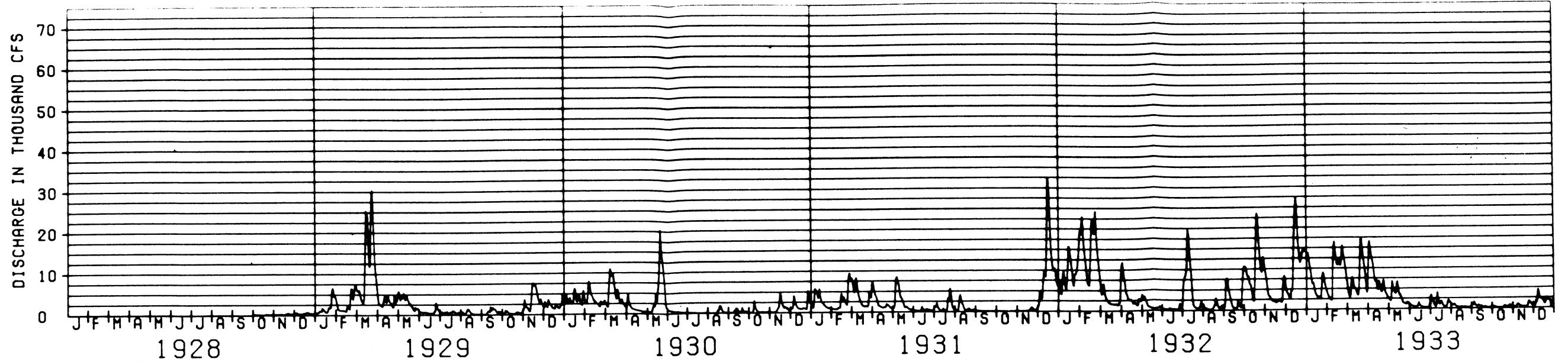
NOTE: For highest mean flows for given period of consecutive days values are based on water year (Oct-Sep) for the periods 1929 through 1958 and 1972 through 1980.

For lowest mean flows, values are based on April through March water year for periods 1930-1958 and 1973-1980.

Flows obtained from Station No. 02437500 - Tombigbee River at Aberdeen, MS.

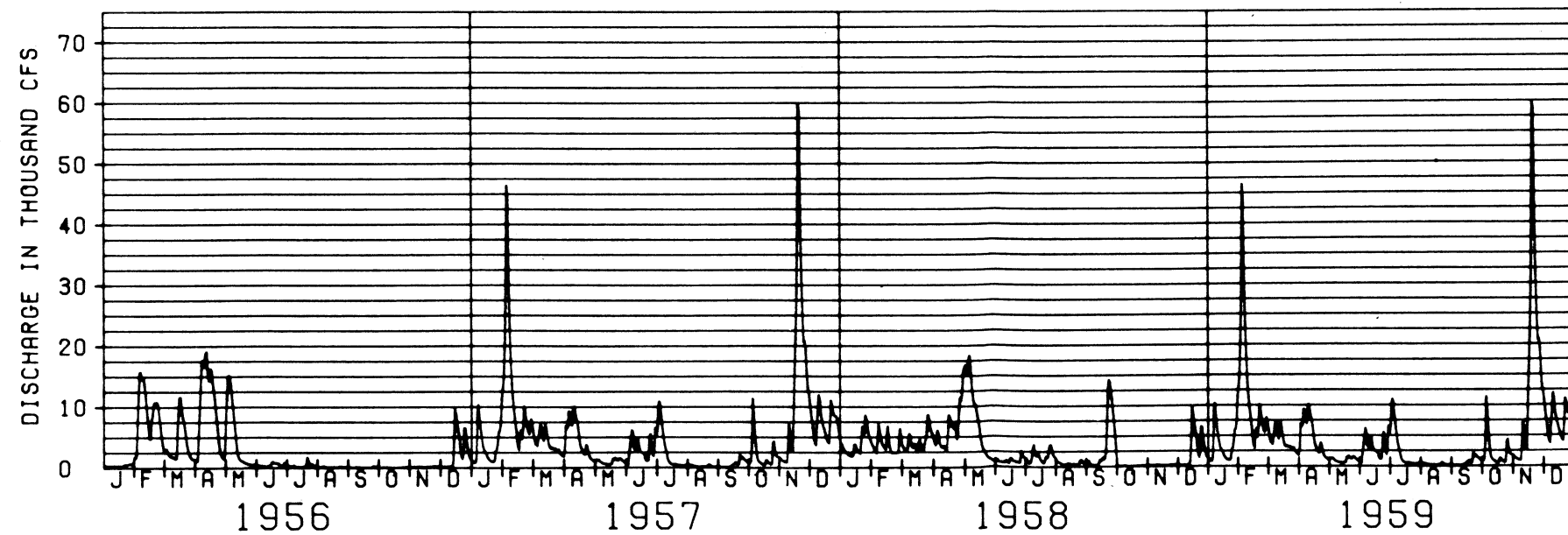
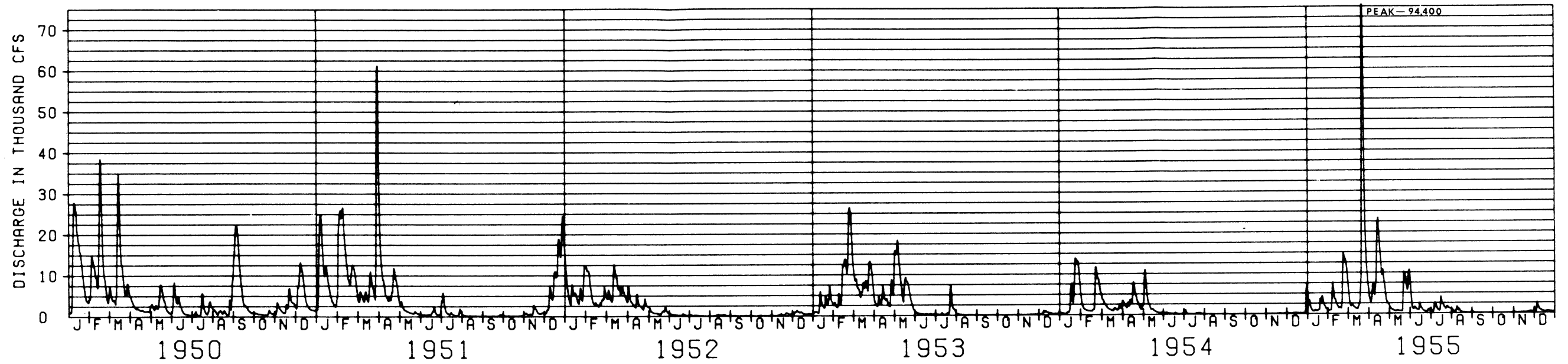
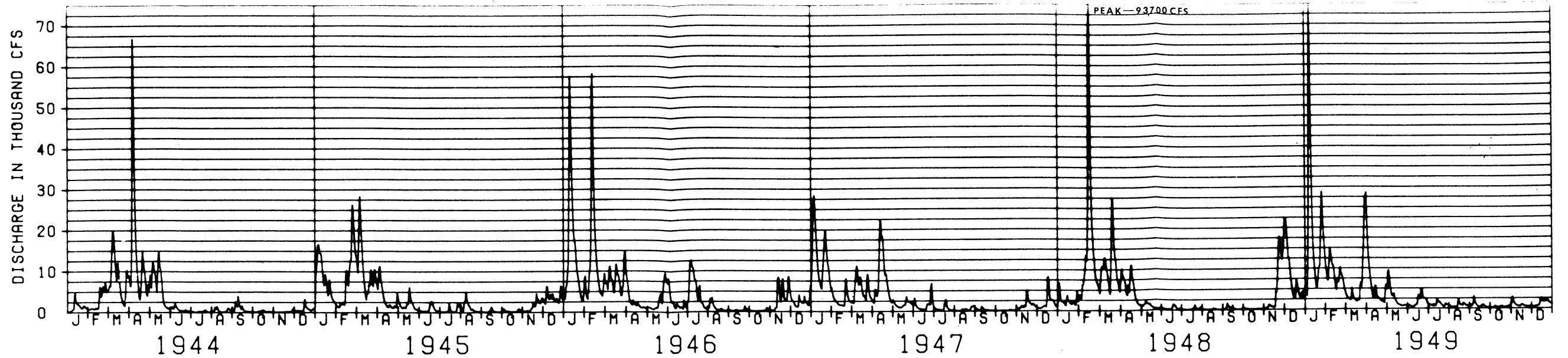
TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR

SECOND HIGHEST AND LOWEST
MEAN FLOWS



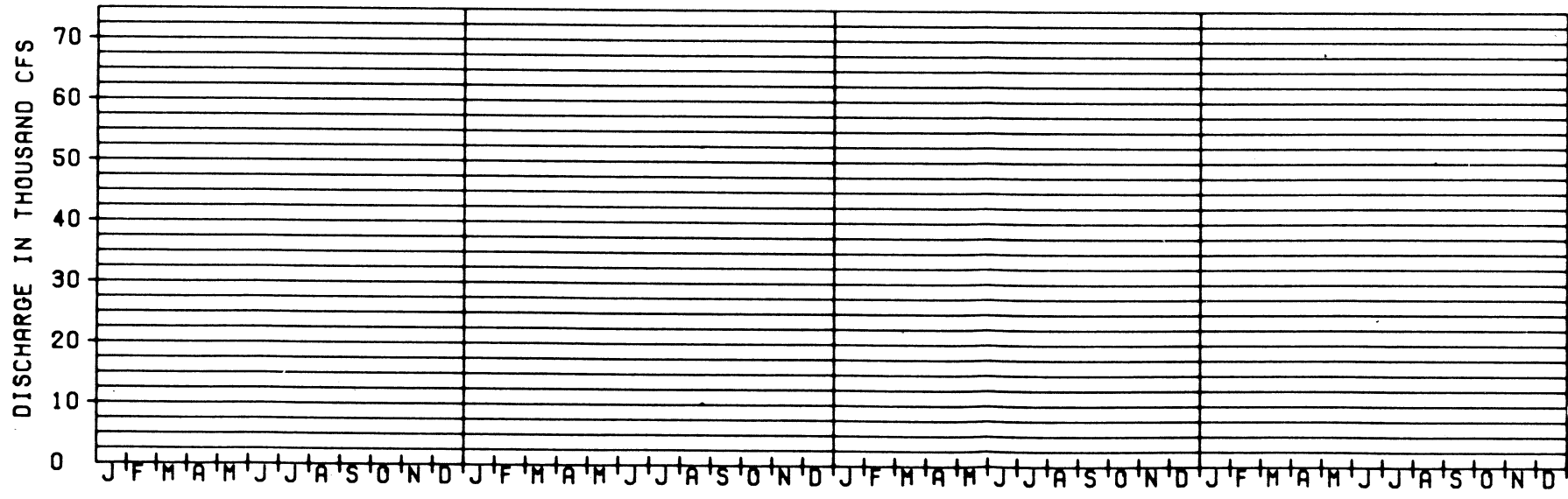
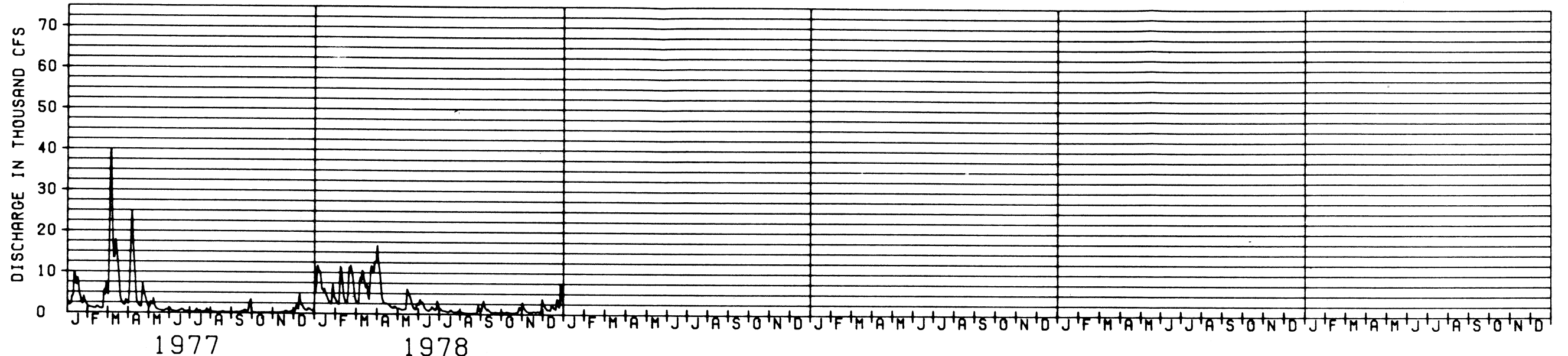
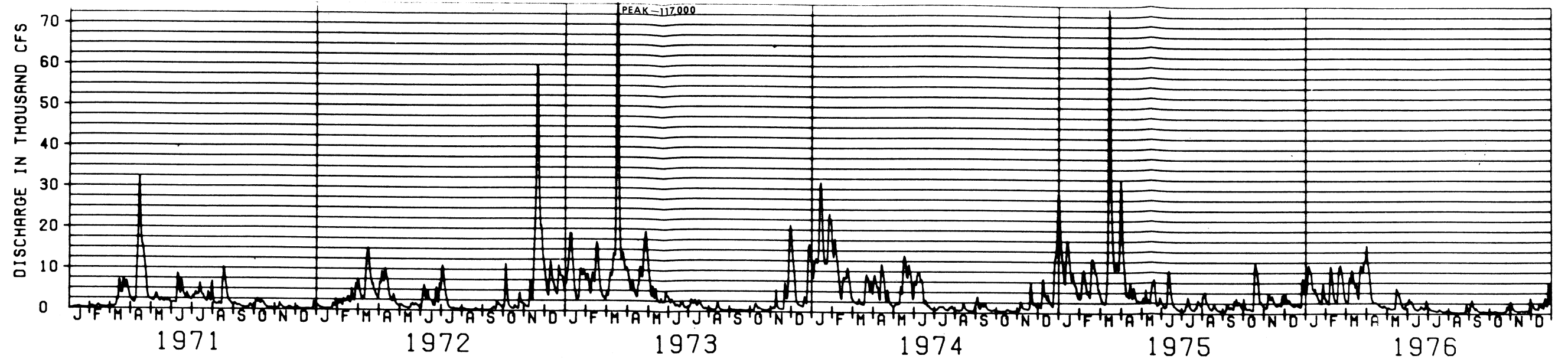
TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA

HYDROGRAPHS
AVERAGE DAILY DISCHARGE AT
DAM SITE



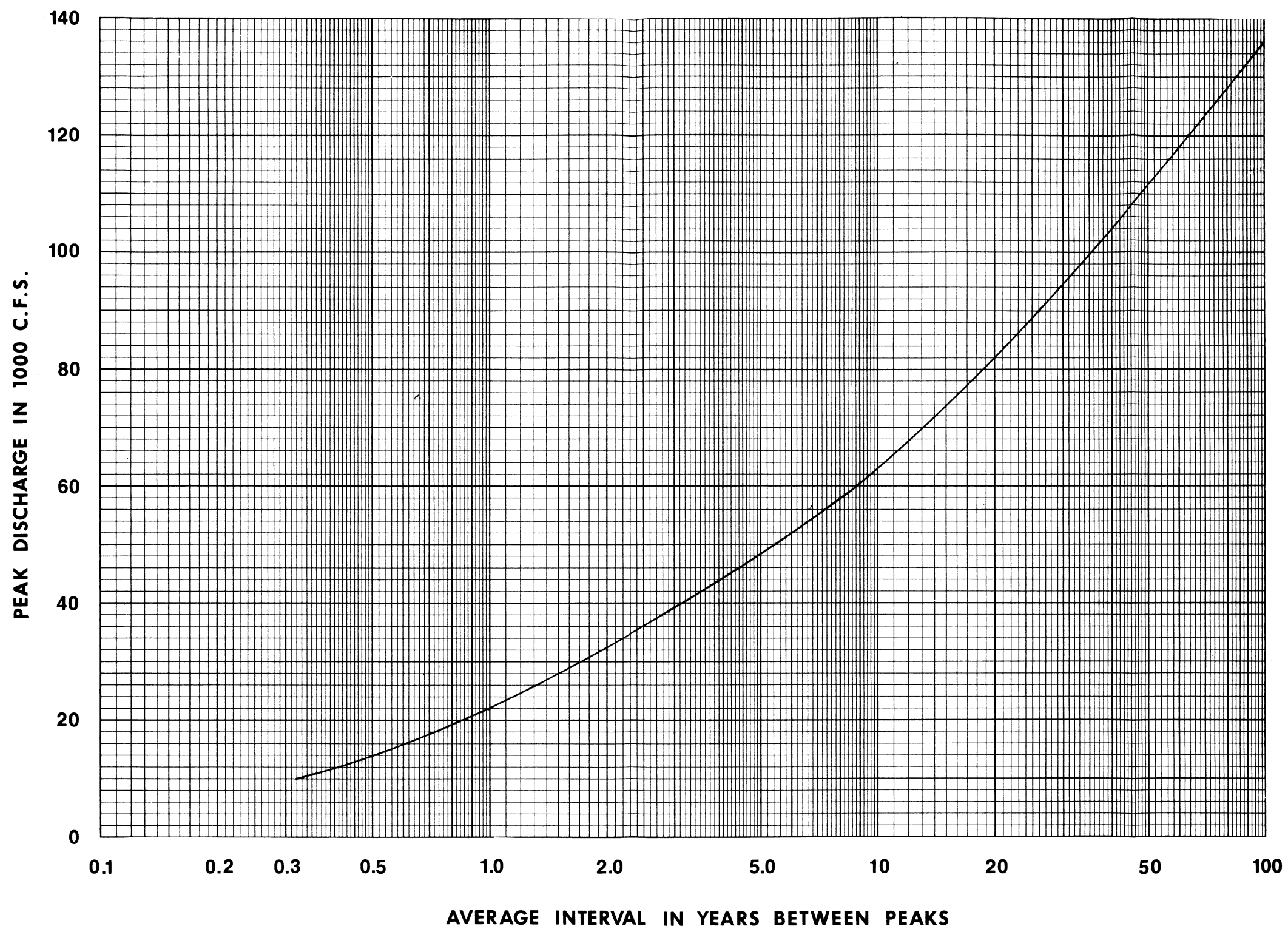
TENNESSEE-TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA

HYDROGRAPHS
AVERAGE DAILY DISCHARGE AT
DAM SITE



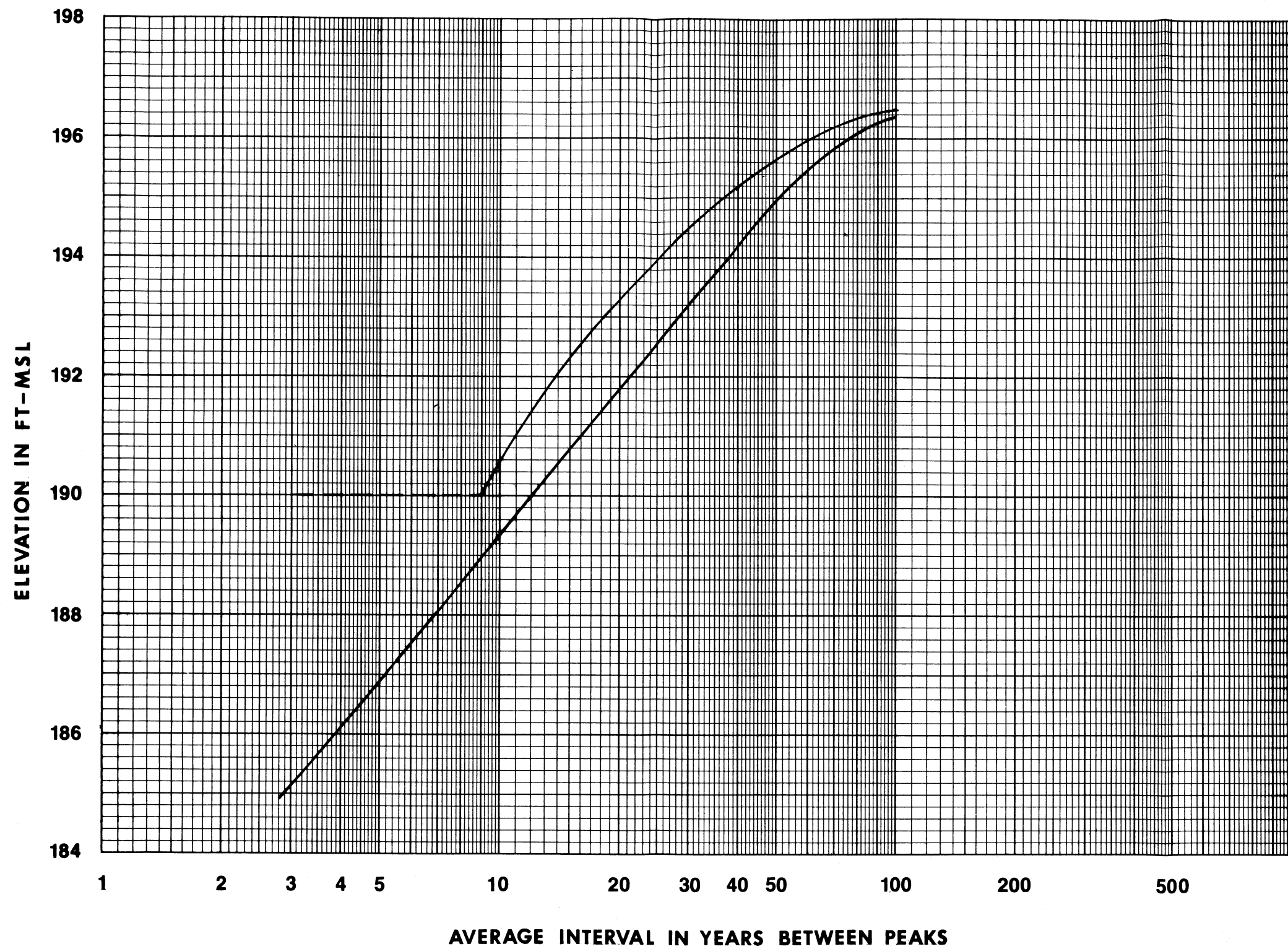
TENNESSEE - TOBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOBIGBEE RIVER ALABAMA

HYDROGRAPHS
AVERAGE DAILY DISCHARGE AT
DAMSITE



TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA

DISCHARGE FREQUENCY CURVE



TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA

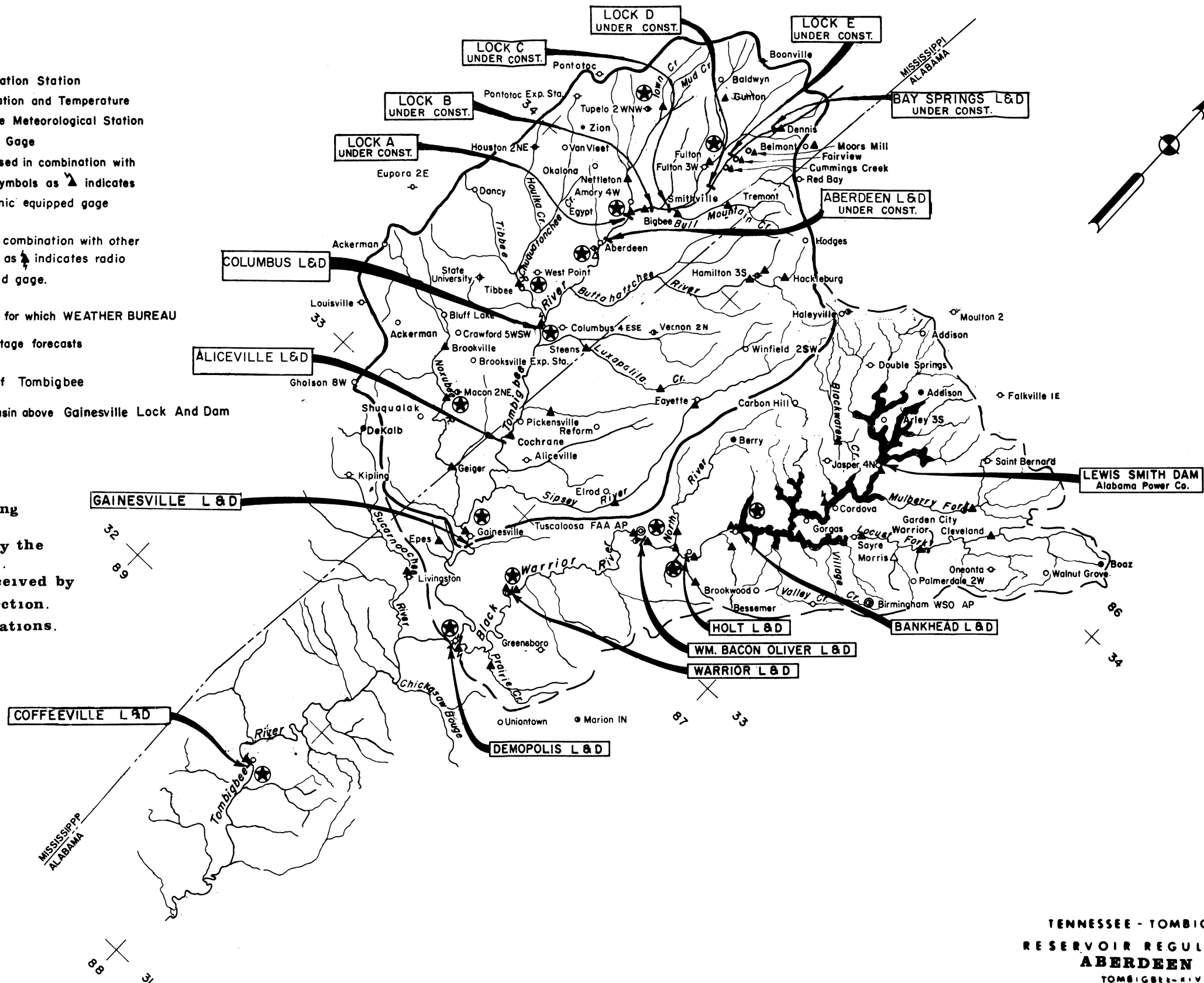
HEADWATER AND TAILWATER
FREQUENCY CURVE

LEGEND

- | | | |
|-----------|---------------|---|
| RECORDING | NON-RECORDING | |
| ● | ○ | Precipitation Station |
| ◐ | ◑ | Precipitation and Temperature |
| ⊙ | ⊙ | Complete Meteorological Station |
| ▲ | △ | Stream Gage |
| ~ | | When used in combination with other symbols as ▲ indicates telephonic equipped gage |
| ~ | | Used in combination with other symbols as ▲ indicates radio equipped gage. |
| ⊙ | | Stations for which WEATHER BUREAU issues stage forecasts |
| ~ | | Limits of Tombigbee |
| ~ | | River basin above Gainesville Lock And Dam |

NOTE:

- The chart contains the following stations.
- 1.) Those currently received by the Reservoir Control Section.
 - 2.) Those existing but not received by the Reservoir Control Section.
 - 3.) The proposed Hydromet stations.



TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
 TOMBIGBEE RIVER ALABAMA
GENERAL HYDROLOGIC MAP

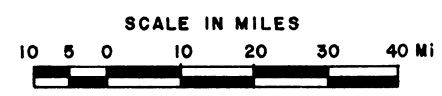
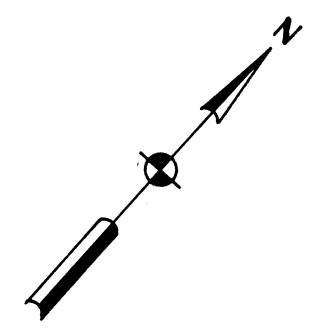
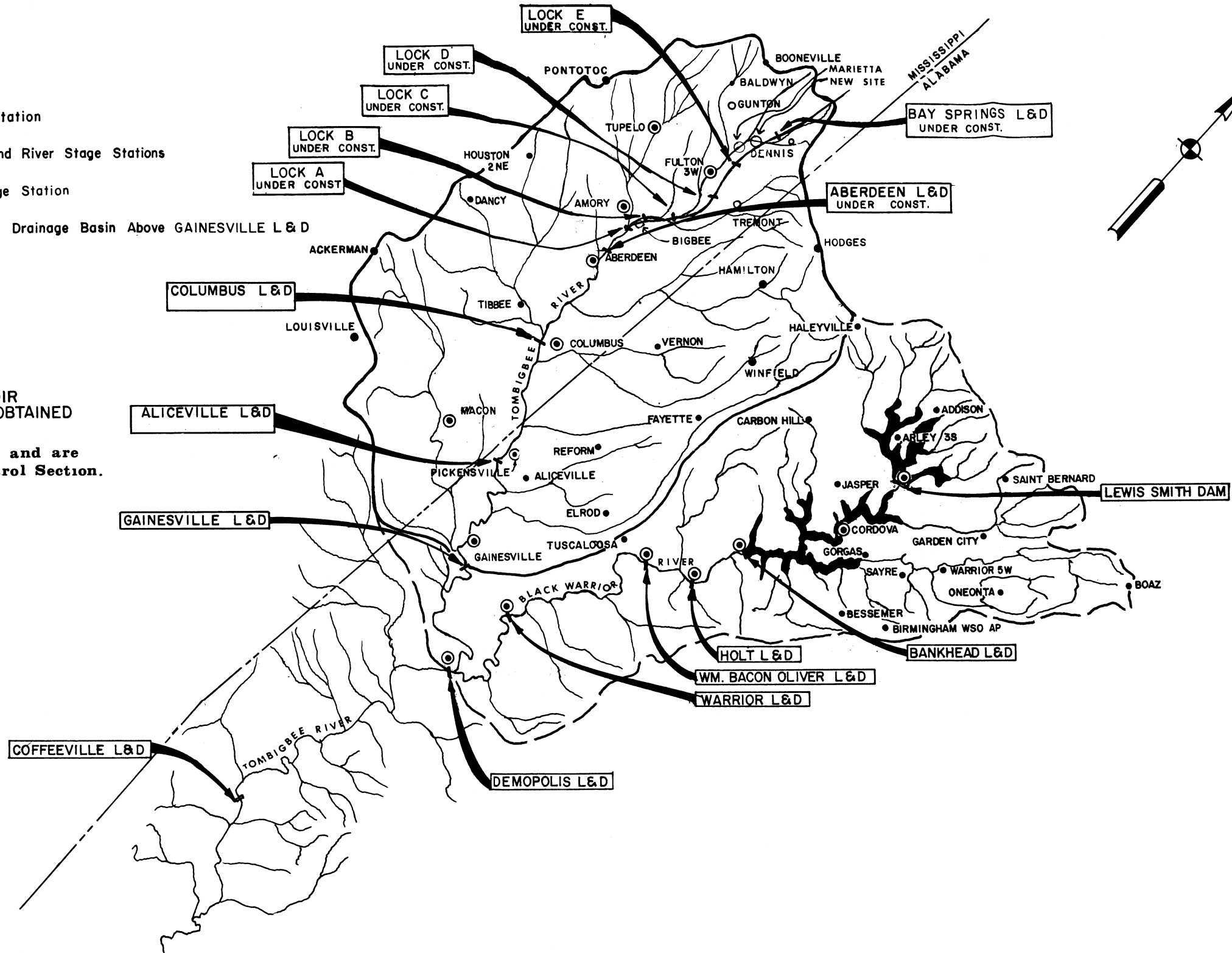
LEGEND

- Rainfall Station
- ⊙ Rainfall and River Stage Stations
- River Stage Station
- ~ Limits of Drainage Basin Above GAINESVILLE L & D

NOTE:

UPPER AND LOWER RESERVOIR ELEVATION AND RAINFALL ARE OBTAINED AT ALL LOCKS AND DAMS.

All stations currently exist and are received by the Reservoir Control Section.

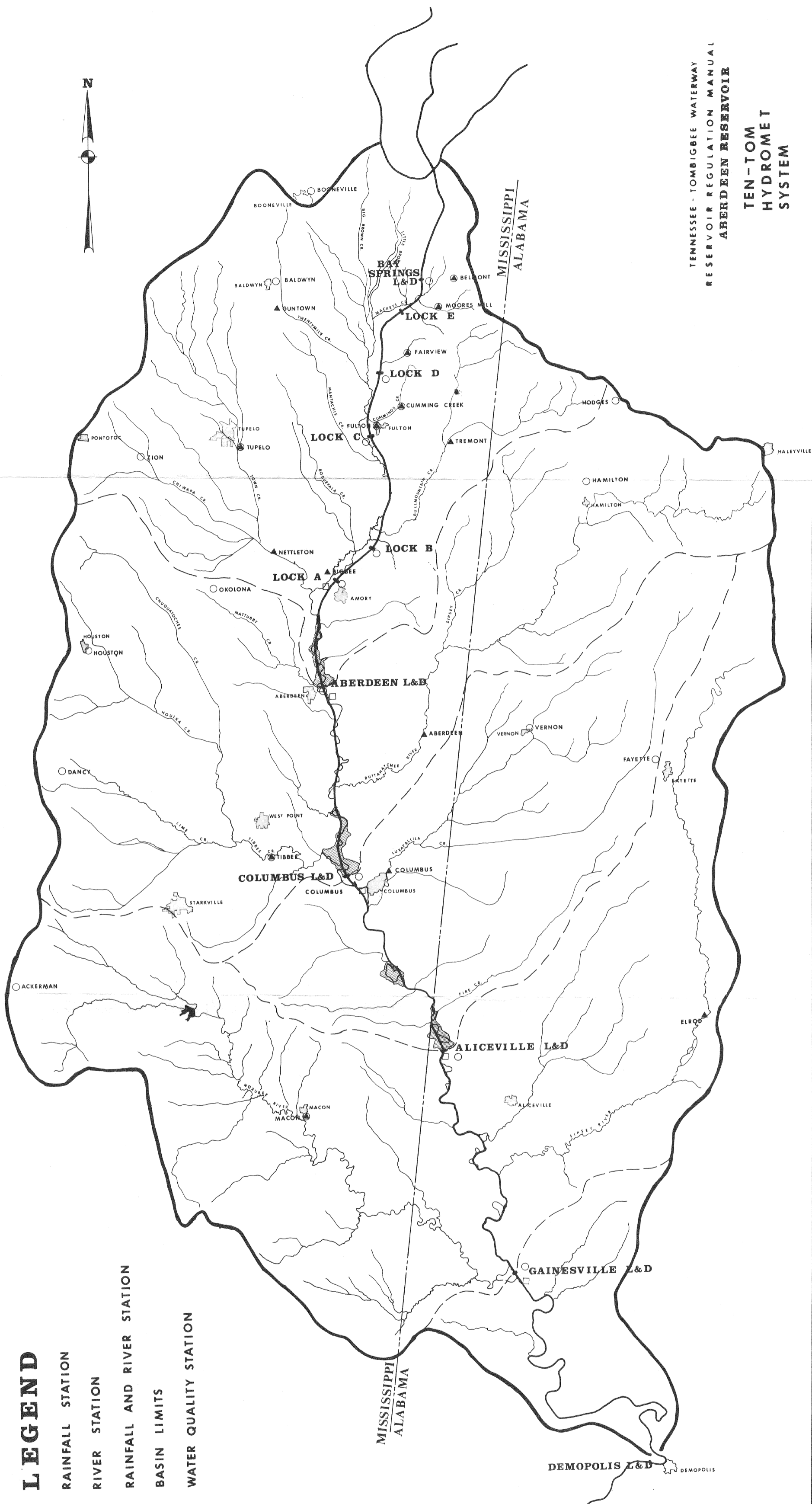


TENNESSEE - TOMBIGBEE WATERWAY
RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
TOMBIGBEE RIVER ALABAMA

RAINFALL AND RIVER STAGE
REPORTING NETWORK

LEGEND

- RAINFALL STATION
- ▲ RIVER STATION
- ◐ RAINFALL AND RIVER STATION
- BASIN LIMITS
- WATER QUALITY STATION



TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
 ABERDEEN RESERVOIR
 TEN-TOM
 HYDROMET
 SYSTEM

24 HOUR RAINFALL ENDING APPROXIMATELY 7:30 A.M.

1 of 5

DRAINAGE	NO.	CODE	STATION	SAT	SUN	MON	TUE	WED	THU	FRI
BLACK WARRIOR RIVER	1	FLKA1	FALKVILLE	AL						
	2	ARLA1	ARLEY	AL						
	3	HLYA1	HALEYVILLE	AL						
	4		SMITH DAM	AL						
	5		JASPER	AL						
	6	STBA1	CULLMAN (ST. BERNARD)	AL						
	7	GRNA1	GARDEN CITY	AL						
	8	CORA1	CORDOVA	AL						
	9		CORDOVA (AL03)	AL						
	10	GORA1	GORGAS	AL						
	11	CRHA1	CARBON HILL	AL						
	12	BOZA1	BOAZ	AL						
	13	ONEA1	ONEONTA	AL						
	14	WARA1	WARRIOR	AL						
	15	SAYA1	SAYRE	AL						
	16	BHM	BIRMINGHAM WSO	AL						
	17	BSSA1	BESSEMER	AL						
	18	BLDA1	BANKHEAD L&D	AL						
	19		BANKHEAD L&D (APC)	AL						
	20	TCLA1	HOLT L&D	AL						
	21		HOLT L&D (APC)	AL						
	22	TODA1	OLIVER L&D	AL						
	23	TCL	TUSCALOOSA	AL						
	24	WLDA1	WARRIOR L&D	AL						
	25									
BLACK WARRIOR - TOMBIGBEE RIVER BASIN	26									
	27		BAY SPRINGS L&D	MS						
	28		BELMONT	MS						
	29		MOORES MILL	MS						
	30		LOCK E	MS						
	31	BOOM6	BOONEVILLE	MS						
	32		BALDWIN	MS						
	33		LOCK D	MS						
	34		FAIRVIEW	MS						
	35		CUMMINGS CREEK	MS						
	36		LOCK C	MS						
	37	FULM6	FULTON	MS						
	38		LOCK B	MS						
	39		LOCK A	MS						
	40	TPLM6	TUPELO	MS						
	41	PTCM6	PONTOTOC	MS						
	42		ZION	MS						
	43	AMYM6	AMORY	MS						
	44		OKOLONA	MS						
	45		ABERDEEN L&D	MS						
	46	ABRM6	ABERDEEN	MS						
	47	HGDA1	HODGES	MS						
	48		HAMILTON	AL						
	49	HOUN6	HOUSTON	AL						
	50	DANM6	DANCY	MS						
	51									
	52	TBM6	TIBBEE	MS						
	53		COLUMBUS L&D	MS						
	54	CBSM6	COLUMBUS	MS						
	55	WINA1	WINFIELD	AL						
	56	VRNA1	VERNON	AL						
	57	PKNA1	PICKENSVILLE	AL						
	58		ALICEVILLE L&D	AL						
	59	ALCA1	ALICEVILLE	AL						
	60	RFMA1	REFORM	AL						
	61	FYTA1	FAYETTE	AL						
	62	ELRA1	ELROD	AL						
	63	ACKM6	ACKERMAN	MS						
64	LOUM6	LOUISVILLE	MS							
65	MCNM6	MACON	MS							
66		GAINESVILLE L&D	AL							
67	GANA1	GAINESVILLE	AL							
68	DLDA1	DEMOPOLIS L&D	AL							
69	MVNA1	MELVIN	AL							
70	UNTA1	UNIONTOWN (245)	AL							
71	CLDA1	COFFEEVILLE L&D	AL							
72	TOMA1	THOMASVILLE (250)	AL							
73	WHTA1	WHATLEY	AL							

MOB Form 53A

RAINFALL REPORTING FORM
 TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
 ABERDEEN RESERVOIR
 TOMBIGBEE RIVER ALABAMA

U. S. Department of Commerce—Weather Bureau

REPORTING INSTRUCTIONS RAINFALL STATION

TIMES OF OBSERVATION

1. Your regular daily observation of precipitation should be taken at 7 a. m. each day. (EMPTY NON-RECORDING RAIN GAGE AFTER EACH 7 A. M. OBSERVATION.)

2. Special observations when made should be taken at 1 p. m., and 7 p. m. These special observations should be taken ONLY when a report is required in accordance with instructions (see below).

WHEN TO REPORT

1. Make an initial report at 7 a. m., 1 p. m., or 7 p. m., whenever 0.50 or more of precipitation has accumulated in the rain gage.
2. After the first report has been made CONTINUE REPORTING at each observation time (1 p. m., 7 p. m., 7 a. m.) as long as any additional precipitation has

occurred since your previous report.
3. If you have made a final report, but it begins to rain again in less than 24 hours start reporting again, just as though you had not stopped. That is, you should not consider the storm to be over until there has been no precipitation for 24 hours.

WHAT TO REPORT

Your report should include the following information in the order listed (Numbers refer to WB Form 1089):

- (1) Time of observation (hour).
- (2) Amount of precipitation in gage at time of observation, in figures (inches and hundredths).
- (3) Character of precipitation as it fell (rain, snow, sleet, etc.).
- (4) Amount of precipitation measured at PREVIOUS 7 A. M. OBSERVATION, in figures (inches and hundredths). This information should be sent ONLY in your first report of a series of reports. The amount, when sent, should always be preceded by "Previous 7 a. m." In subsequent reports omit this section entirely.

(5) Weather at time of observation (clear, cloudy, raining, snowing, etc.).

(6) Depth of snow or ice on ground, in figures (nearest inch). The figure showing depth should always be followed by the word "Inch" or "Inches." If there is no snow on the ground omit this section entirely.

(12) Remarks. Any general comments which you feel would be of real value to the forecaster, such as: If snow is melting state whether slowly or rapidly. If thunderstorm or unusually heavy shower occurred within short period of time, give time of beginning and ending, etc. If instructed, include temperature readings.

(13) Last name of observer.

PREPARATION OF REPORT

1. The special River Rainfall Report card (WB Form 1089) furnished will assist you in arranging your report in the proper order. This form has numbered blocks for each of the items to be reported by river and rainfall observers.
2. You should enter the designated information in blocks 1 through 6, 12, and 13. Each report must be complete. Your report will then be ready for transmission in message form as follows (Indicate on card whether report has been telephoned or telegraphed).

Sample messages:
(First of a series)—"7 A. M. 0.75 SNOW PREVIOUS 7 A. M. 0.25 CLOUDY 6 INCHES MELTING RAPIDLY JONES"

(Subsequent reports)
"1 P. M. 0.30 RAIN CLOUDY 4 INCHES MELTING RAPIDLY JONES"
"7 P. M. 1.20 SHOWERS CLEAR THUNDERSTORM 4 P. M. JONES"

SENDING THE REPORT

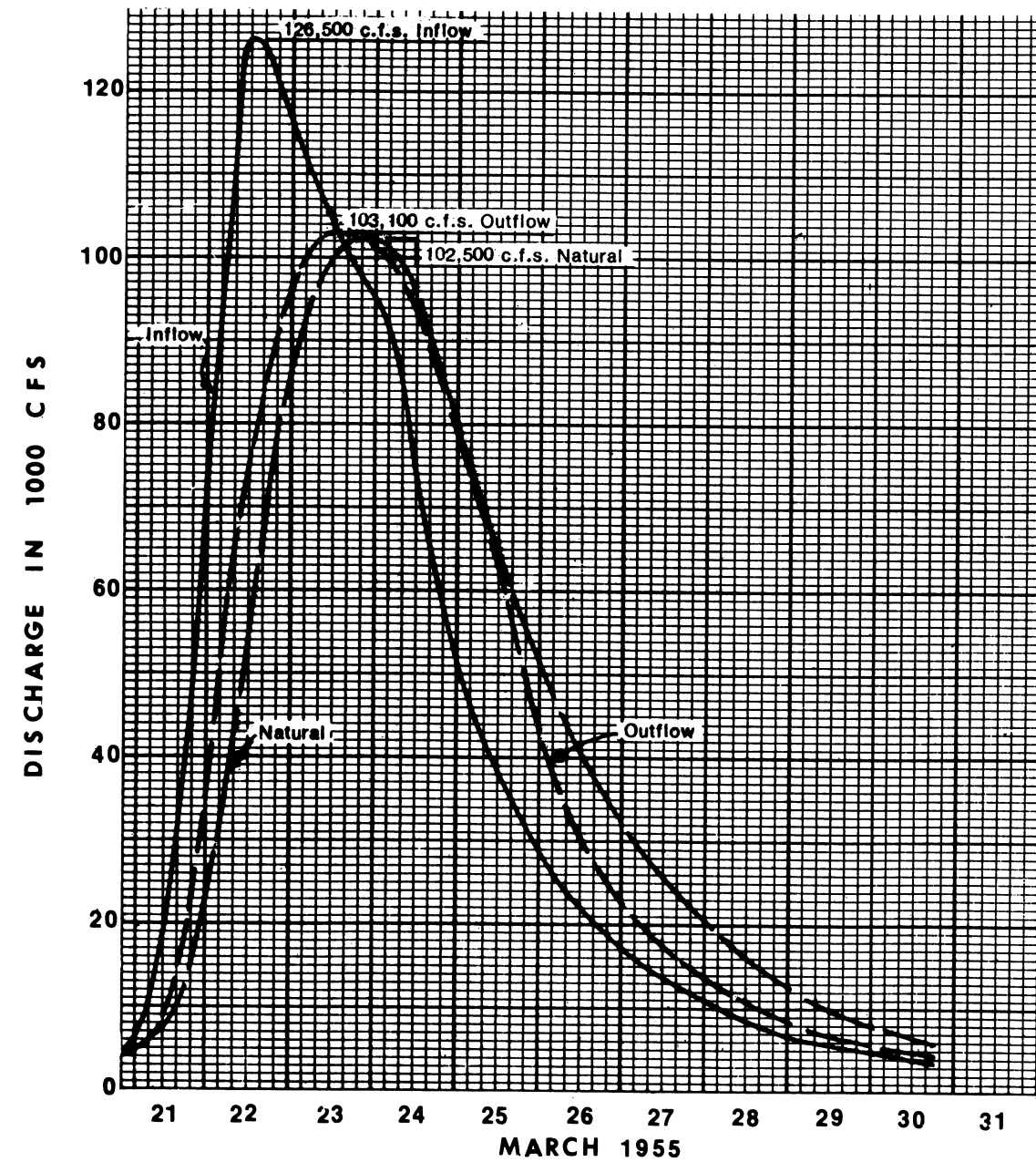
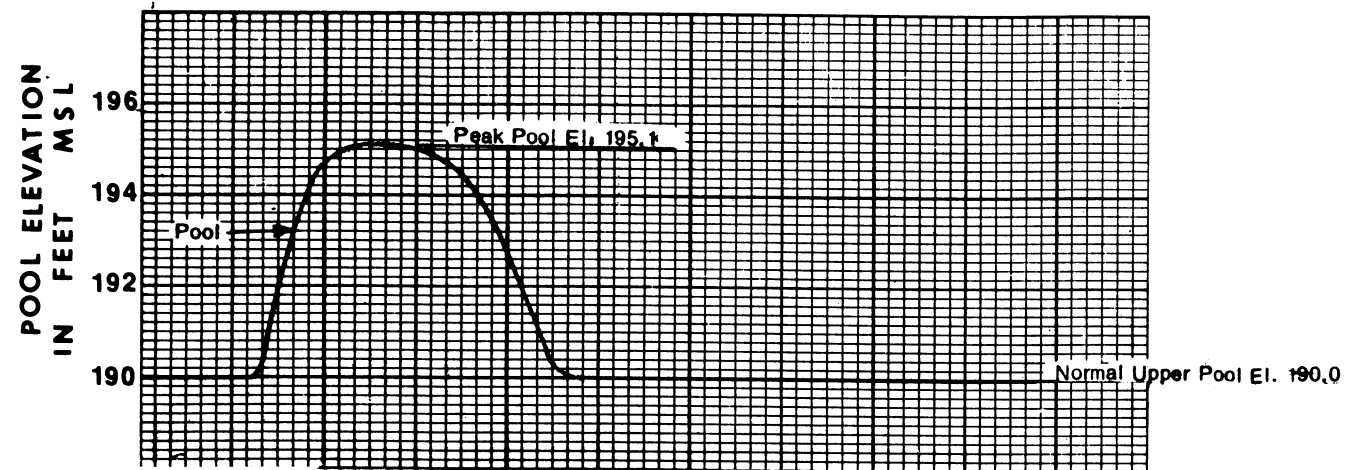
1. If you report by telegram, address message to
2. If you report by telephone, call
3. All messages should be sent COLLECT.
4. If you customarily report by telegram, use telephone

when telegraph office is closed.
5. If you customarily report by telephone and the lines are out of order, report by telegram, if possible.
6. In an emergency, when all land lines of communication are out, contact your local or state police who may be able to transmit your report by police radio.

NOTES

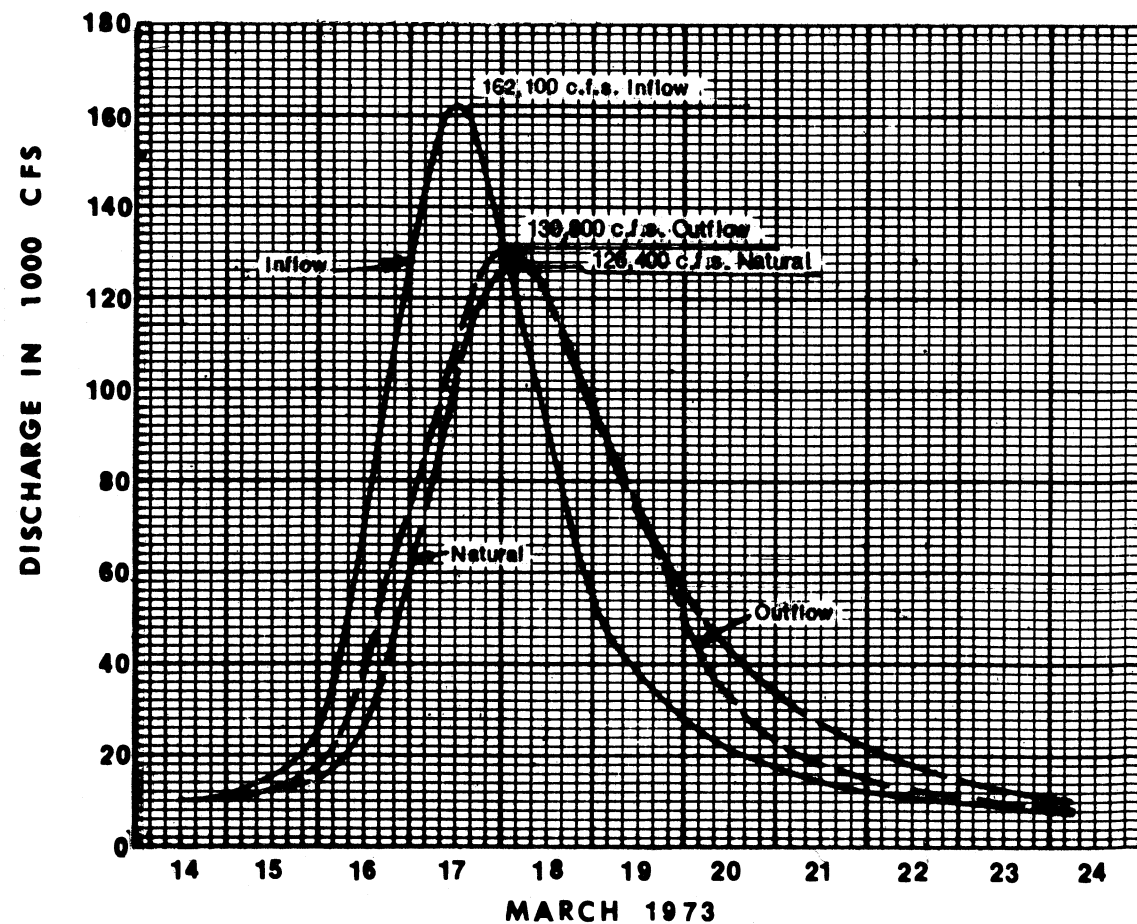
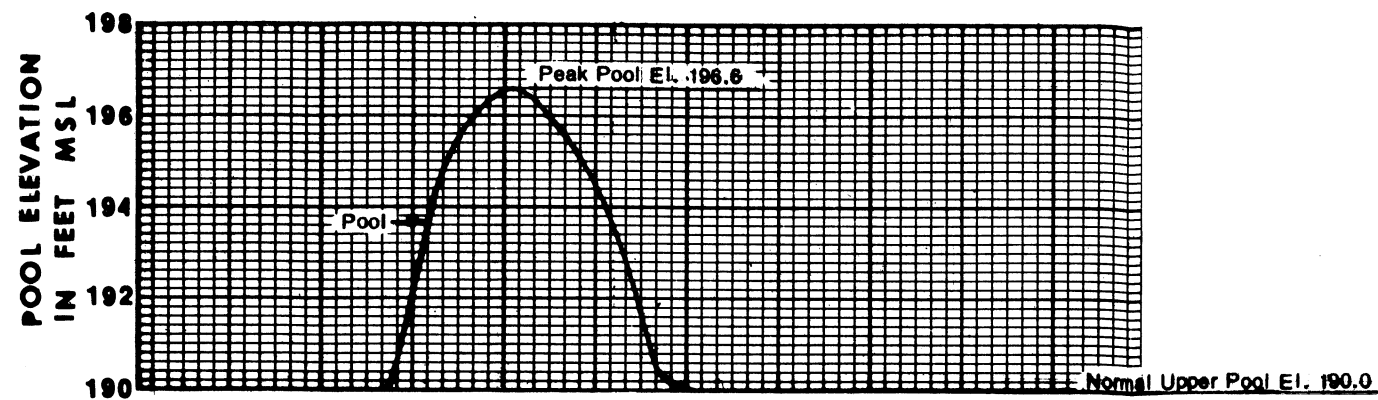
1. Promptly after each observation, mail the River Rainfall Report card which you have filled out, to
3. SPECIAL INSTRUCTIONS:

2. When additional supplies are needed, notify



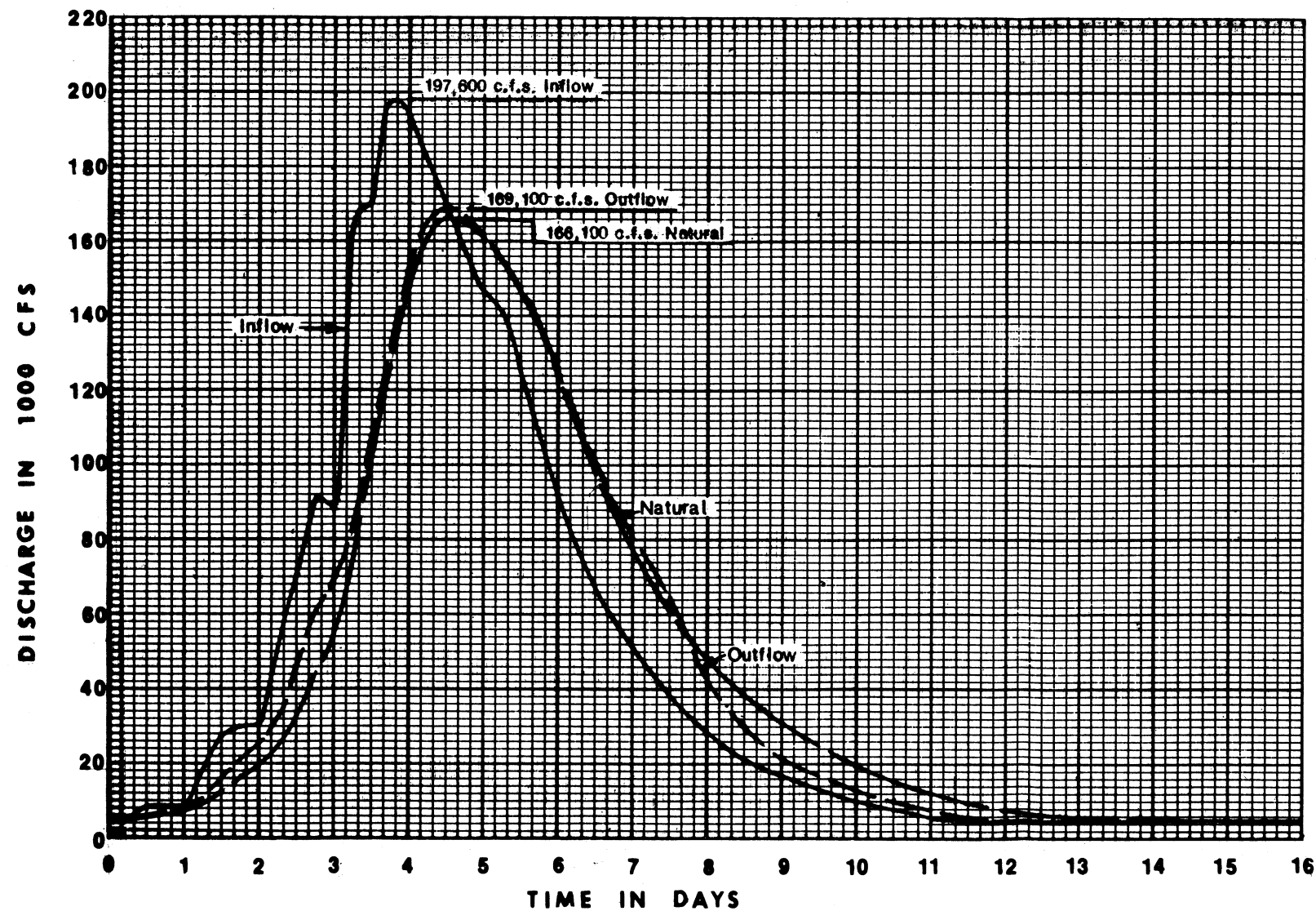
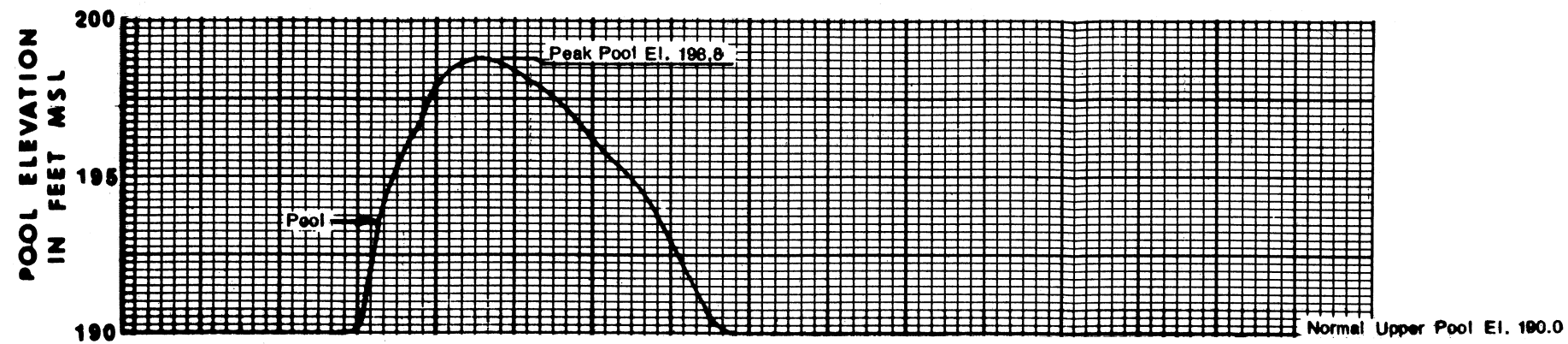
TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
 TOMBIGBEE RIVER ALABAMA

INFLOW - OUTFLOW - POOL
 STAGE RELATIONSHIPS FOR
 FLOOD OF MARCH 1955



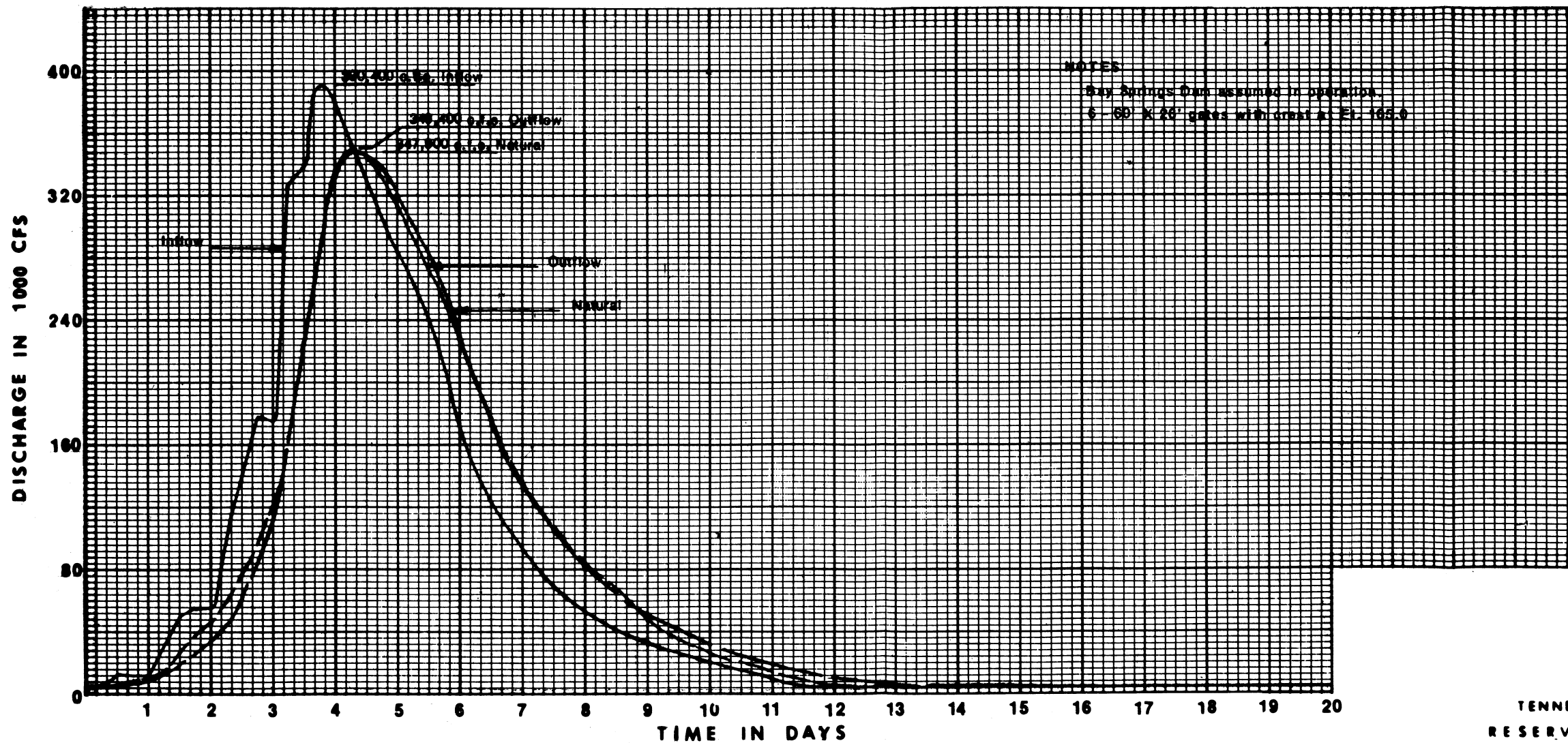
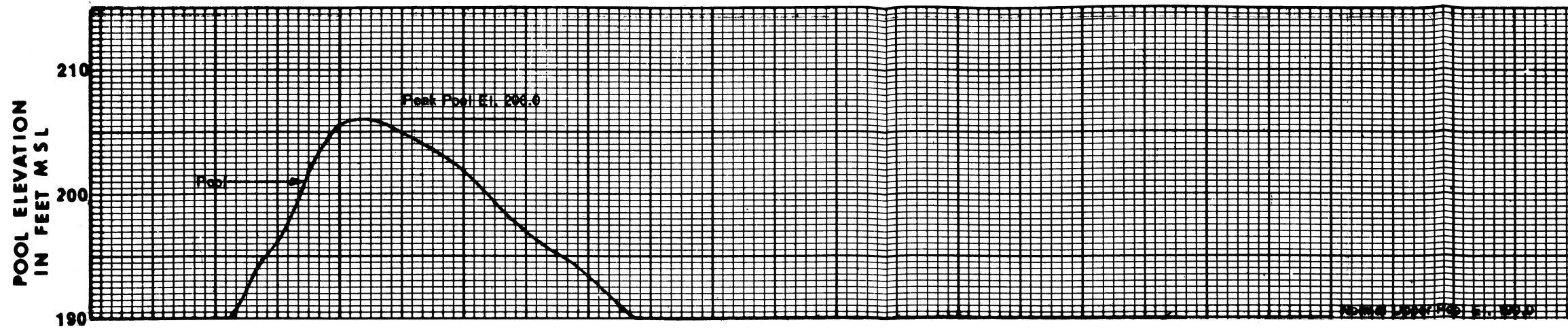
TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
 TOMBIGBEE RIVER ALABAMA

**INFLOW-OUTFLOW-POOL
 STAGE RELATIONSHIPS FOR
 FLOOD OF MARCH 1973**



TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
 TOMBIGBEE RIVER ALABAMA

INFLOW-OUTFLOW-POOL
 STAGE RELATIONSHIPS FOR
 STANDARD PROJECT FLOOD



TENNESSEE - TOMBIGBEE WATERWAY
 RESERVOIR REGULATION MANUAL
ABERDEEN RESERVOIR
 TOMBIGBEE RIVER ALABAMA
 INFLOW-OUTFLOW-POOL
 STAGE RELATIONSHIPS FOR
 SPILLWAY DESIGN FLOOD