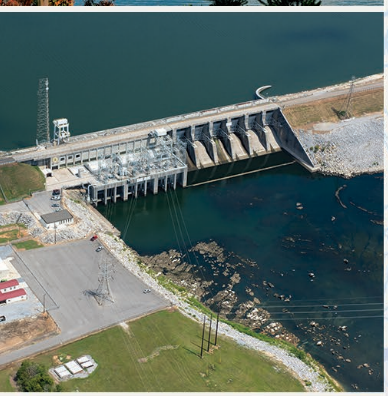
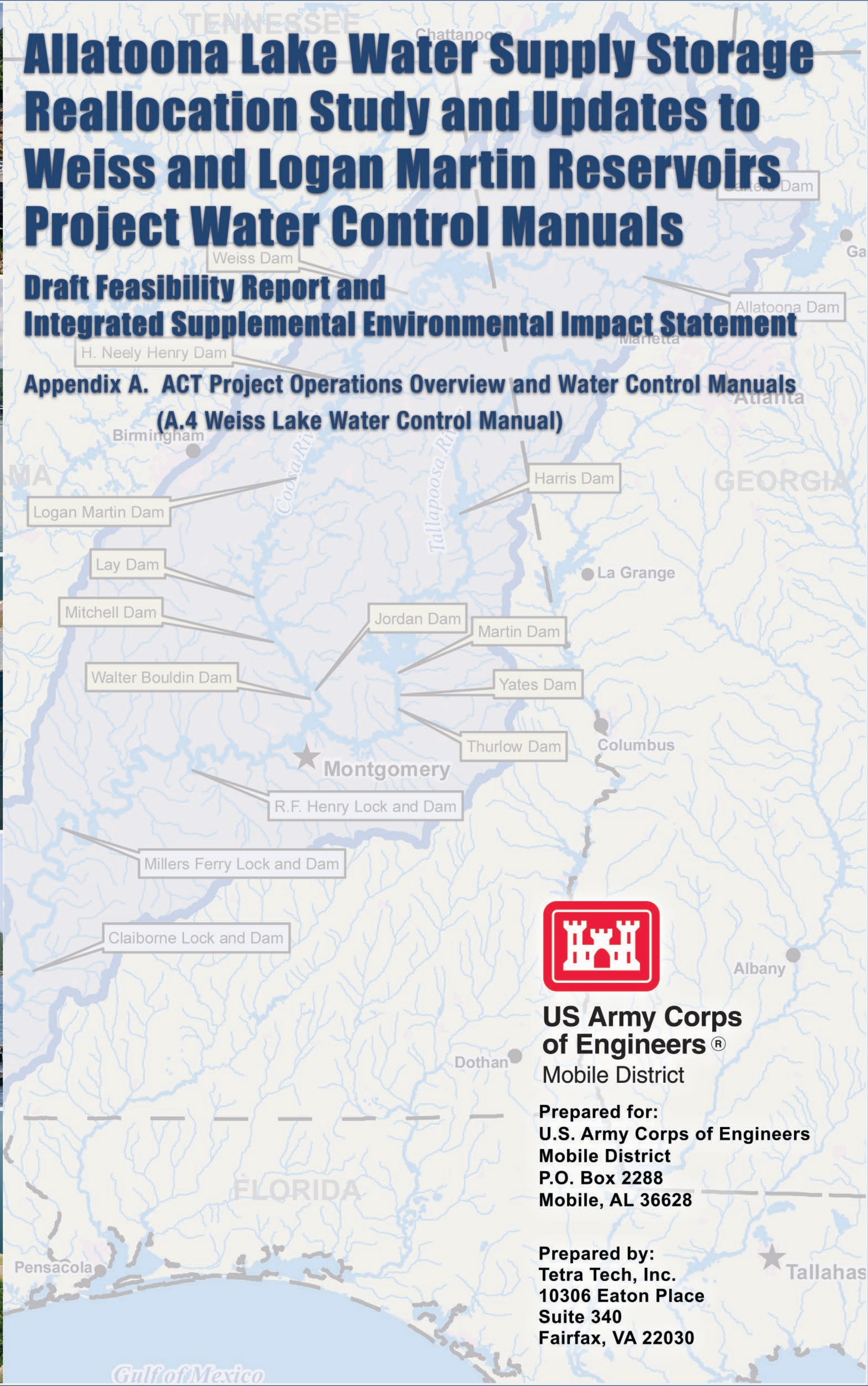
November 2019



Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoirs Project Water Control Manuals

Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement

Appendix A. ACT Project Operations Overview and Water Control Manuals (A.4 Weiss Lake Water Control Manual)



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Mobile District

ALABAMA-COOSA-TALLAPOOSA
RIVER BASIN
WATER CONTROL MANUAL

Final

APPENDIX B

WEISS RESERVOIR

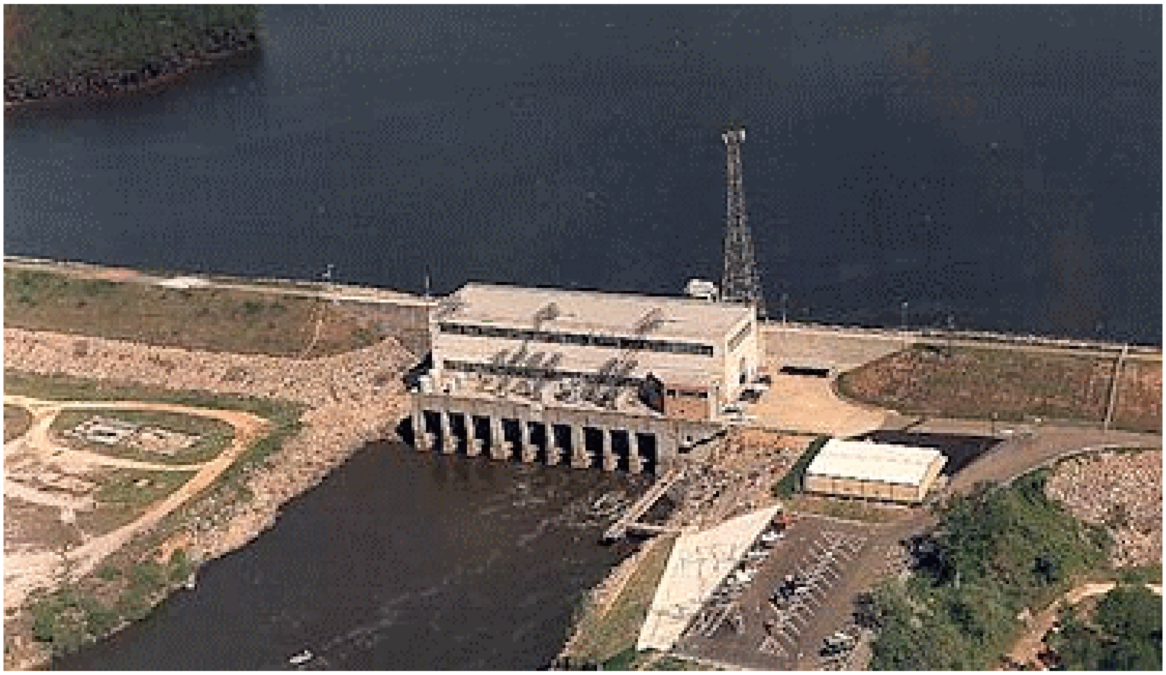
(Alabama Power Company)

COOSA RIVER ALABAMA

OCTOBER 1964

ADMINISTRATIVE UPDATE 2004

REVISED 2021



NOTICE TO USERS OF THIS MANUAL

Regulations specify that this Water Control Manual be published in a hard copy binder with loose-leaf form, and only those sections, or parts thereof; requiring changes will be revised and printed. Therefore, this copy should be preserved in good condition so that inserts can be made to keep the manual current. Changes to individual pages must carry the date of revision, which is the South Atlantic Division's approval date.

REGULATION ASSISTANCE PROCEDURES

If unusual conditions arise, contact can be made with the Water Management Section, Mobile District Office by phoning (251) 690-2737 during regular duty hours and (251) 509-5368 during non-duty hours. The Alabama Power Company Alabama Control Center Hydro Desk can be reached at (205) 257-4010 during regular duty hours.

METRIC CONVERSION

Although values presented in the text are shown in English units only, a conversion table is listed in Exhibit B for your convenience.

MEMORANDUM OF UNDERSTANDING

The Weiss Dam and Lake Project will be operated during floods and in support of navigation downstream in accordance with regulations prescribed by the Secretary of the Army and published in the Code of Federal Regulations, Title 33, Chapter II, Part 208, Section 208. A Memorandum of Understanding (MOU) concerning the design, construction, and operation of the Weiss development for flood control (now termed flood risk management) was adopted by the Alabama Power Company (APC) and the U.S. Army Corps of Engineers (herein referred to as the Corps of Engineers or Corps) on 27 September 1972 and later revised on 11 October 1990. This MOU is also intended to memorialize the functions and procedures for both the Corps and APC for implementing these plans and meeting their responsibilities with regard to the orderly exchange of hydrologic data. A copy of the MOU is included in this manual as Exhibit C.

WEISS DAM AND LAKE

WATER CONTROL MANUAL

APPENDIX B

COOSA RIVER, ALABAMA

U.S. Army Corps of Engineers, Mobile District, South Atlantic Division

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PERTINENT DATA

DRAINAGE AREA ABOVE THE DAM SITEe

Drainage area below Carters Dam - square miles	374
Drainage area above Allatoona Dam - square miles	1,110
Drainage area below Allatoona Dam - square miles	4,160
Drainage area below Carters and Allatoona Dam – square miles	
Total drainage area above Weiss Dam - square miles	5,270

STREAM FLOW

Average for period of record – cfs	8,161
(June 1937 to September 1958)	1,130
Maximum daily of record (1941) – cfs	72,500
Minimum annual of record (1941) – cfs	4,460
Maximum annual of record (1946) – cfs	12,970
Spillway design flood peak discharge – cfs	344,000
(13.61 inches of surface run—off)	
Bankfull capacity below dam – cfs	24,300
Bankfull capacity below powerhouse – cfs	23,000
Prime flow	3,300

PERTINENT DATA

DAM

Total length including dikes, feet	23,300
Length of non-overflow section, feet	22,250
Maximum height, roadway to foundation, feet	90
Elevation, top of dam, feet, msl	590
Spillway at dam site, net length, feet	216
Crest elevation, feet, msl	
200 feet at	532
16 feet at	550
Spillway at powerhouse	
Net length, feet	16
Crest elevation, feet, msl	550
5 gates, 40 feet wide by 38 feet high	
1 gate, 16 feet wide by 22 feet high	
Elevation, top of tainter gates, closed, feet,	
40 foot by 38 foot gates	570
16 foot by 22 foot gate	572
Tainter gate at powerhouse	
1 gate, 16 feet wide by 22 feet high	572
Elevation, top of gate, closed, feet, msl	
Discharge capacity, (pool elev. 585.5), cfs Spillway at dam site	
Spillway at dam site	284,000
Spillway at powerhouse	12,800
Total	297,500

PERTINENT DATA

RESERVOIR

Pool elevation, feet, msl	
Maximum pool, spillway design flood (initial pool 564)	585.50
Full flood risk management (surcharge) pool	572.00
Top of conservation pool (summer)	564.00
Top of conservation pool (winter)	561.00
Storage volumes (including forebay pondage), acre-feet	
Total storage, elevation 585.5	1,433,300
Flood risk management (surcharge) storage (summer), elev. 572 to 564 (1.42 inches of run-off)	301,959
Flood risk management (surcharge) storage (winter), elev. 572 to 561 (0.52 inches of run-off)	382,200
Seasonal storage, elev. 564 to 561	82,014
Storage below top of conservation pool (summer), elev. 564	306,655
Storage below top of conservation pool (winter), elev. 561	224,641
Available conservation storage (summer), elev 564 to 549	263,417
Inactive storage, below elev. 549	43,238
Reservoir area, (including forebay pondage), acres	
Full flood risk management pool, elev. 572	45,749
Top of conservation pool (summer), elev. 564	30,027
Top of conservation pool (winter), elev. 561	24,692

Note: The following change in terminology for Full Power pool, Minimum Power pool, Power storage and Dead storage has been made from previous versions of Water Control Manual.

a. Full Power pool - Top of Conservation (Summer)
b. Minimum Power pool - Top of Conservation (Winter)
c. Power storage – Seasonal Storage
d. Dead storage – Inactive storage

PERTINENT DATA

TAILWATER ELEVATIONS

Tailwater elevations below dam - feet, msl	
Bankfull capacity, (24,300 cfs)	534.60
Maximum spillway design flood (297,500 cfs)	572.30
Controlled discharge for flood risk management (16,000 cfs)	533.00
(with flow of 40,000 second-feet in river below power house)	
Tailwater elevations below power plant - feet, msl	
Bankfull capacity (23,000 cfs)	518.80
Full-gate turbine discharge (I007 LF)	
1 unit operating, (8,820 cfs)	510.80
2 units operating, (17,030 cfs)	515.30
3 units operating, (24,650 cfs)	519.70
Minimum (plant shutdown)	505.00
Controlled discharge for flood risk management (40,000 cfs)	530.00
Maximum spillway design flood discharge (297,500 cfs)	562.50

POWER PLANT AND DATA

Installation

3 units, each consisting of a 32,500-kva generator driven by a fixed-blade vertical turbine, rated 39,100 hp at design head of 49 feet.

Operating data	53.0 – 56.0
Gross static head—feet	
Minimum head (full gate discharge of 3 units, including forebay	
drawdown for 1007. LF and canal loss) - feet	36.50
Average head (3 units operating at full gate at I3.67 LF	
including canal loss) - feet	46.00

1 - INTRODUCTION

1-01. Authorization for Manual. Public Law 436-83 provides for the private development of the Coosa River, Alabama and Georgia, and directs the Secretary of the Army to prescribe rules and regulations for project operation in the interest of flood control (now termed flood risk management) and navigation. Therefore, this water control manual has been prepared as directed in the Corps' Water Management Regulations, specifically Engineering Regulation (ER) 1110-2-240, Water Control Management (date enacted 30 May 2016). That regulation prescribes the policies and procedures to be followed in carrying out water management activities, including establishment and updating of water control plans for Corps and non-Corps projects, as required by Federal laws and directives. This manual is also prepared in accordance with pertinent sections of the Corps' Engineering Manual (EM) 1110-2-3600, Management of Water Control Systems (date enacted 10 October 2017); under the format and recommendations described in ER 1110-2-8156, Preparation of Water Control Manuals (date enacted 30 September 2018); and ER 1110-2-1941, Drought Contingency Plans (date enacted 02 February 2018). Revisions to this manual are to be processed in accordance with ER 1110-2-240.

1-02. Purpose and Scope. Weiss is a multiple—purpose project which constitutes one unit in the proposed total development of the power potential and other water resources of the Coosa River below Rome, Georgia. It was built by the Alabama Power Company principally for the production of hydro-electric power and to provide flood risk management benefits as required by Public Law 436-83. It was designed and constructed for the future installation of locks and appurtenances to facilitate development of the river for navigation when such development becomes economically feasible. The reservoir is a source of water supply for domestic, agricultural, municipal and industrial uses. The lake creates a large recreational area providing opportunities for fishing, boating and other water sports.

1-03. Related Manuals and Reports. Other manuals related to the Weiss Project water control regulation activities include the Operation and Maintenance manual for the project, and the ACT Master Water Control Manual for the entire basin.

One master water control manual and nine individual project manuals, which are incorporated as appendices, compose the complete set of water control manuals for the ACT Basin:

Appendix A - Allatoona Dam and Lake

Appendix B - Weiss Dam and Lake (Alabama Power Company)

Appendix C - Logan Martin Dam and Lake (Alabama Power Company)

Appendix D - H. Neely Henry Dam and Lake (Alabama Power Company)

Appendix E - Millers Ferry Lock and Dam and William "Bill" Dannelly Lake

Appendix F - Claiborne Lock and Dam and Lake

Appendix G - Robert F. Henry Lock and Dam and R. E. "Bob" Woodruff Lake

Appendix H - Carters Dam and Lake and Carters Reregulation Dam

Appendix I - Harris Dam and Lake (Alabama Power Company)

Other pertinent information regarding the ACT River Basin development is in operation and maintenance manuals and emergency action plans for each project. Historical, definite project reports and design memoranda also have useful information.

1-04. Project Owner. The Weiss project was built and is owned by the Alabama Power company, under provisions of licensing through the Federal Energy Regulatory Commission (FERC).

1-05. Operating Agency. The Weiss Dam and Lake project is operated for flood risk management and navigation support in accordance with regulations prescribed by the Secretary of the Army which are published in the Code of Federal Regulations, Title 33, Chapter II, Part 208, Section 208.65. Day-to-day operation of the facility is assigned to the APC's Alabama Control Center Hydro Desk in Birmingham, Alabama, which is part of the Transmission Department under the direction of the Reservoir Operations Coordinator. Long-range water planning and flood risk management operation is assigned to the APC Reservoir Management in Birmingham, Alabama, which is part of Southern Company Hydro Services, under the direction of the Reservoir Management Supervisor. Operation of the project is in accordance with the FERC license and this water control manual.

1-06. Regulating Agency. Regulating authority is shared between the Corps of Engineers, the Federal Energy Regulatory Commission and the Alabama Power Company. A Memorandum of Understanding (MOU) has been adopted by the APC and the Corps concerning the operation of the project. The purpose of the MOU was to clarify the responsibilities of the Corps and the APC with regard to the operation of the project for flood risk management and other purposes and to provide direction for the orderly exchange of hydrologic data. Those modifications agreed upon by both parties are contained in the regulation plan as presented in this manual. The MOU and this manual will be used to provide direction to implement the prescribed flood risk management operations at the project. A copy of the MOU is included in this manual as Exhibit C.

1-07. Vertical Datum. All vertical data presented in this manual are referenced to the project's historical vertical datum, National Geodetic Vertical Datum of 1929 (NGVD29). It is the U.S. Army Corps of Engineers (herein referred to as USACE or Corps) policy that the designed, constructed, and maintained elevation grades of projects be reliably and accurately referenced to a consistent nationwide framework, or vertical datum - i.e., the National Spatial Reference System (NSRS) or the National Water Level Observation Network (NWLON) maintained by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration. The current orthometric vertical reference datum within the NSRS in the continental United States is the North American Vertical Datum of 1988 (NAVD88). The current NWLON National Tidal Datum Epoch is 1983 - 2001. The relationships among existing, constructed, or maintained project grades that are referenced to local or superseded datums (e.g., NGVD29, MSL), the current NSRS, and/or hydraulic/tidal datums, have been established per the requirements of Engineering Regulation 1110-2-8160 and in accordance with the standards and procedures as outlined in Engineering Manual 1110-2-6056.

2 - DESCRIPTION OF PROJECT

2-01. Location. The Weiss Dam is located on the Coosa River at mile 226, about 50 miles upstream from Gadsden, Alabama, and about 1 mile southeast of the town of Leesburg, Alabama. The reservoir, extending from the dam about 52 miles upstream to Mayo's Bar, Georgia, is located in Cherokee County, Alabama, and Floyd County, Georgia. The power plant, situated on the right bank of the river, is about 3 miles from the dam below a forebay lake and diversion canal constructed across a twenty-mile bend of the river. The dam is shown in Figure 2-1. The location of the project is shown on the maps on Plates 2-1 and 2-2 and on the profile of the Coosa River on Plate 2-3.

Figure 2-1 Weiss Dam and Lake

2-02. Purpose. Weiss is a multiple purpose project which constitutes one unit in the proposed total development of the power potential and other water resources of the Coosa River below Rome, Georgia. It was built by the Alabama Power Company principally for the production of hydroelectric power and to provide flood risk management benefits as required by Public Law 436. It was designed and constructed for the future installation of locks and appurtenances to facilitate development of the river for navigation when such development becomes economically feasible. The reservoir is a source of water supply for domestic, agricultural, municipal and industrial uses. The lake creates a large recreational area providing opportunities for fishing, boating and other water sports.

2-03. Physical Components. The Weiss development consists of a dam having a concrete gated spillway section with compacted earth abutment dikes; a reservoir including forebay lake, with full summer level power pool at elevation 564 feet msl having a surface area of approximately 30,200 acres, extending about 52 miles upstream to Mayo's Bar Lock and Dam; a diversion canal from the reservoir to a forebay created by dikes; an 87,750-KW power plant located at the lower end of the forebay; a substation; and appurtenant electrical and mechanical facilities. The principal features of the project are described in detail in subsequent paragraphs. Sections and plan of the dam, powerhouse and appurtenant works are shown on Plate 2-4.

a. Dam. The main dam crossing the Coosa River valley consists of a concrete spillway section about 275 feet long situated in the main river channel with earth-fill non-overflow sections on either side of the spillway. The earth-fill sections have a maximum height of about 90 feet and a top elevation of 590.0 feet msl. The left bank section is about 7,000 feet long; the right bank section is about 5,250 feet long paralleling the river side of the power intake canal. There are about 18,000 feet of earth dike across the lower portion of the powerhouse forebay. These dikes also have a top elevation of 590.0 feet msl.

b. Spillway. The spillway section of the dam has a total length of about 275 feet and a net length of 216 feet. It is equipped with 5 tainter gates 38 feet high by 40 feet long with overflow crest at elevation 532.0, and 1 tainter gate 22 feet high by 16 feet long with overflow crest at elevation 550.0. Top of the 16 foot gate in closed position is at elevation 572.0; top of the 5 large gates in closed position is elevation 570.0. A gate control house is located on the right bank at the end of the concrete abutment section. The spillway, shown in Figure 2-2, has a discharge capacity of 182,000 cfs at elevation 572, the upper limit of induced surcharge storage. The bottom elevation of the gates in the full open position is 532.0. The spillway plan, elevation, and section are shown on Plate 2-5. The gate operating schedule for the spillway is presented on Plates 2-6 and 2-7. The spillway rating is shown on Plates 2-9 through 2-14. Plate 2-15 shows the rating for the smaller trash gate adjacent to the powerhouse. Plate 2-16 shows the rating for the trash gate adjacent to the spillway. Figure 2-3 shows the spillway tailrace looking downstream.

Figure 2-2 Weiss Spillway

Figure 2-3 Weiss Tailrace looking downstream

c. Reservoir. The total storage capacity of the reservoir at elevation 572, the upper limit of the induced surcharge storage is 608,641 acre-feet including 59,500 acre-feet in the powerhouse forebay. The total reservoir area at this level is 45,749 acres of which 3,300 acres are forebay area. The combined storage capacity of the reservoir and forebay pondage at full summer level power pool, elevation 564.0, amounts to 306,655 acre-feet; at winter level power pool, elevation 561.0, the total capacity is 224,641 acre-feet. Surface areas at full summer-level power pool and winter-level power pool are 30,027 acres and 24,692 acres, respectively. Area capacity curves and values for the reservoir are shown on Plate 2-17.

d. Power and navigation canal. A canal approximately 7,000 feet long carries water from the main reservoir to the powerhouse forebay. It is designed to function with a nominal loss of head during normal peak-load operations. The canal will also designed to accommodate barge traffic if navigation had ever been developed on the Coosa River.

e. Powerhouse. The powerhouse, shown in Figure 2-4, is situated below the forebay lake about 3 miles from the dam and main reservoir, and is about 1300 feet from the right bank of the Coosa River. It contains three 32,500 kva generators connected to vertical fixed-blade turbines rated at 39,100 horsepower at a 49-foot head. Adjoining the right end of the powerhouse is an overflow section, with crest at elevation 550.0, equipped with a 16-foot wide by 22-foot high tainter gate. This serves as a trash gate and also supplements the turbine discharge during floods. Performance curves for the turbines are shown on Plate 2-18.

Figure 2-4 Weiss Powerhouse

2-04. Related Control Facilities. The power plant at Weiss Dam is operated by remote control from the Alabama Control Center located in Birmingham, Alabama. Personnel are available but not always on duty at the plant. Direct communication between these two points is provided by APC's SoLinc network telephone and email. The operation of Weiss is closely coordinated with the operation of the other developments in the Coosa Basin, including the Allatoona and Carters projects upstream and the H. Neely Henry, Logan Martin, Lay, Mitchell, Jordan, and Bouldin projects downstream.

2-05. Real Estate Acquisition. Part of APC's operational requirements on their reservoir projects include purchasing flowage easements to ensure that they have all necessary rights in case land areas are inundated during high flow events or surcharge operations. The upper limit of the reservoir easement is at elevation 572 ft NGVD29.

2-06. Public Facilities. Development for purely recreational purposes is not included among the project features. However, many recreational advantages are inherent in an impoundment of this nature, and special attention has been given to the encouragement of recreational aspects where they do not conflict with major purposes. It is a Company policy to allow the public free access, to a reasonable extent, to project lands and waters for navigation and recreational purposes, including fishing and hunting. Provision for free access is also included in the project license in article 7 of Form L-6. Special consideration has been given to recreational possibilities through coordination with various State and Federal agencies.

3 - GENERAL HISTORY OF PROJECT

3-01. Authorization for Project. In 1934, the Corps of Engineers, under the provisions of House Document No. 308, 69th Congress, first session, developed a general plan for the overall development of the Alabama-Coosa River system. That plan which was submitted to Congress and published as House Document No. 66, 74th Congress, first session, included a dam on the Coosa River near Leesburg, Alabama, with a cutoff navigation canal 4.1 miles in length containing 2 navigation locks, and provisions for future power development by construction of a powerhouse at the dam. This was apparently the earliest record of Federal interest in a navigation dam at the site of the present Weiss project high enough to warrant installation of a power plant. Although there is no information available concerning possible consideration of the site by private power interests, it is not likely that any serious consideration existed since the Corps of Engineers' report indicated that the power market at the time did not justify the construction of any additional hydroelectric plants in the area.

Further studies were directed by Congress in resolutions adopted by the Committee on Rivers and Harbors, House of Representatives, on 1 April 1936 and 28 April 1936, and by the Committee on Commerce, United States Senate, on 18 January 1939. In response to those resolutions, an interim report was submitted to Congress in October 1941. That report, published as House Document No. 414, 77th Congress, first session, recommended development of the Alabama-Coosa River and tributaries for navigation, flood risk management, power development and other purposes in accordance with plans being proposed by the Chief of Engineers. The improvement outlined in House Document No. 414 which included the Leesburg development was authorized by Congress in Section 2 of the River and Harbor Act of 2 March 1945, Public Law 14, 79th Congress, first session.

On 28 June 1954, the 83rd Congress, second session, enacted Public Law 436 which suspended the authorization under the River and Harbor Act of 2 March 1945 insofar as it concerned Federal development of the Coosa River for the development of electric power, to permit development by private interests under a license to be issued by the Federal Power Commission. The law stipulates that the license shall require the provision of flood risk management storage and further states that the projects shall be operated for flood risk management and navigation in accordance with reasonable rules and regulations of the Secretary of the Army. The complete text of Public Law 436 is contained in Exhibit D.

3-02. Planning and Design.

On 2 December 1955, the Alabama Power Company submitted an application to the Federal Power Commission for a license for development of the Coosa River in accordance with the provisions of Public Law 436. The development proposed by the Alabama Power Company, designated in the application as FPC Project No. 2146, included the Leesburg Dam (later named Weiss Dam) with a 4-mile long cutoff canal and a powerhouse at the lower end of the canal. Except for the location of the powerhouse this plan was about the same as had been originally proposed by the Corps of Engineers.

3-03. Construction. The Federal Power Commission issued a license to the Alabama Power Company on 4 September 1957 for the construction, operation and maintenance of Project No. 2146. The license directed that construction of the Weiss development commence within 1 year from 1 August 1957 and be completed within 5 years from that date. Portions of the license pertinent to flood risk management, navigation, and water use and reservoir regulation are contained in Exhibit E.

Construction started on 31 July 1958 and the spillway section was completed in late September 1960. Filling of the reservoir to operating level commenced late in March 1961. The pool reached elevation 563.3 on 23 April 1961 and was then lowered to elevation 562 by 1 May 1961. Because of construction activities in the reservoir area it was held at about that level, approximately 2 feet below full power pool, until the normal fall drawdown period.

Two generating units were placed in commercial operation on 5 June 1961. The third unit was placed in commercial operation on 5 July 1962.

3-04. Related Projects. Weiss Dam and Lake is one of 11 privately owned dams are located in Alabama on the Coosa and Tallapoosa Rivers and operate mainly for the production of hydropower. USACE has flood risk management authority over 4 of these 11 privately owned dams; Weiss, H. Neely Henry, and Logan Martin Dams on the Coosa River (which are a part of the APC Coosa Project FERC license), and R.L. Harris Dam on the Tallapoosa River. The other seven are: Lay, Mitchell, Jordan, Martin, Yates, Thurlow and Bouldin dams. USACE operates five reservoir projects in the basin: Allatoona Lake and Dam on the Etowah River; Carters Dam and Lake (with Reregulation Dam) on the Coosawattee River; and Robert F. Henry (formerly known as Jones Bluff), Millers Ferry and Claiborne Lock and Dam Projects are located on the Alabama River downstream. The Corps reservoirs are operated as a system to accomplish the authorized purposes of the projects.

3-05. Dam Safety History/Issues. Dam safety oversight of APC projects is covered under the FERC license.

3-06. Principal Regulation Issues. There have been no significant regulation problems, such as erosion, boils, severe leakage, etc., at the Weiss project.

3-07. Modifications to Regulations. Prior to the update of Water Control Manuals (WCMs) in 2015, APC proposed to increase the project guide curve level during the winter months (December–February) at Weiss Dam and Lake from elevation 558 ft to elevation 561 ft and to reduce the maximum surcharge elevation (top of flood pool) from elevation 574 ft to elevation 572 ft. In addition, APC proposed to extend the summer guide curve elevation of 564 ft from September 1 to October 1. The request was to bring the maximum surcharge elevation, which was to 2 ft higher than the APC flowage easement elevation of 572 ft for Weiss Lake, in line with the flowage easement elevation. USACE did not include updates to the WCMs for the APC Weiss and Logan Martin reservoir projects in the 2015 ACT River Basin Master Manual update effort because changes to flood operations proposed by APC required further detailed study of flood risk at both projects. In conjunction with these elevation changes, APC proposed to modify the current Flood Regulation Schedule for Weiss Dam in order to operate with no appreciable increase in flood risk.

In addition to the action mentioned above, USACE also deferred consideration of a pending request from the State of Georgia to reallocate multipurpose reservoir storage in Allatoona Lake to water supply to meet future demands in the region, which involved USACE modifying its reservoir storage accounting procedures. As a result of U.S. District Court ruling on the Allatoona issue in 2018 that directed the Corps to evaluate Georgia's request, the Corps commenced preparing a Feasibility Report and Integrated Supplemental Environmental Impact Statement (FR/SEIS) to address those two deferred actions. The actions were fully evaluated and approved and the FR/EIS was published in March 2021. A Record of Decision (ROD) for the action was signed in March 2021.

The changes at Weiss resulted in a 30-percent reduction in flood storage during the winter months and a 24 percent reduction in flood storage in the summer months. The maximum surcharge elevation is now the same elevation as the APC flowage easement elevation of 572 ft NGVD29 for Weiss Lake. The modified Flood Regulation Schedule for Weiss Dam is discussed in detail in the Sections 7-04 and 7.05.

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4 - WATERSHED CHARACTERISTICS

4-01. General Characteristics.

a. ACT River Basin. The ACT River Basin, made up of the Coosa, Tallapoosa, and Alabama Rivers and their tributaries, drains northeastern and east-central Alabama, northwestern Georgia, and a small portion of Tennessee. The drainage basin has a maximum length of about 330 miles, an average width of approximately 70 miles, and a maximum width of about 125 miles. The ACT Basin drains an area totaling approximately 22,739 square miles: 17,254 square miles in Alabama; 5,385 square miles in Georgia; and 100 square miles in Tennessee..The head of the Coosa River is at Rome, Georgia at the confluence of the Etowah and Oostanaula Rivers. It flows west to the Alabama State line, then in a southwesterly then southerly direction for about 286 miles to join the Tallapoosa River near Wetumpka, Alabama. The Alabama River flows in a southwesterly direction about 310 miles where it joins the Tombigbee River to form the Mobile River. The Mobile River flows southerly about 45 miles where it empties into Mobile Bay at Mobile, Alabama, an estuary of the Gulf of Mexico. The entire ACT Basin with the Coosa River Basin highlighted, and some of the other ACT projects are shown on Plate 2-2. The river mile and size of the drainage area above selected sites in the ACT Basin are shown on Table 4-1.

Table 4-1 River Mile and Drainage Area for Selected Sites in ACT Basin

River Mile and Drainage Area for Important Sites in the ACT Basin				
River Mile above mouth of ACT system	**River**	**Location**	**Drainage Area (sq mi)**	**Owner**
693	Etowah	Allatoona Dam	1,122	CORPS
645.2	Etowah	Mouth	1,861	
672	Coosawattee	Carters Dam	374	CORPS
645.2	Oostanaula	Mouth	2,150	
638.1	Coosa	Mayos Bar	4,040	
585.1	Coosa	Weiss Dam	5,270	APC
506.2	Coosa	H Neely Henry Dam	6,596	APC
457.4	Coosa	Logan Martin Dam	7,743	APC
410.2	Coosa	Lay Dam	9,053	APC
396.2	Coosa	Mitchell Dam	9,778	APC
378.3	Coosa	Jordan Dam	10,102	APC
497.4	Tallapoosa	R. L. Harris Dam	1,454	APC
420	Tallapoosa	Martin Dam	2,984	APC
412.1	Tallapoosa	Yates Dam	3,293	APC
409.1	Tallapoosa	Thurlow Dam	3,308	APC
281.2	Alabama	Robert F Henry Dam*	16,233	CORPS
178	Alabama	Millers Ferry Dam*	20,637	CORPS
117.5	Alabama	Claiborne Dam*	21,473	CORPS

* Navigation Lock at Project
CORPS - Corps of Engineers; APC - Alabama Power Company

<u>b. Coosa Basin.</u> The Coosa Basin drains a total of 10,156 square miles of which 2,986 square miles are in Georgia and 7,170 square miles are in Alabama. The main river width varies from about 250 to over 1,000 feet with banks generally about 20 feet above the river bed. The total fall of the river is 450 feet in 286 miles, giving an average fall of about 1.6 feet per mile.

<u>c. Coosa Basin above Weiss Dam.</u> The basin above Weiss drains approximately 5,270 square miles. The Coosa River area extends 60 miles upstream to Rome, Georgia, and contains 2,590 square miles. The 4,160 square miles of drainage area above Weiss Dam not controlled by Allatoona Dam are divided as follows: remainder in Etowah basin, 750 square miles; Oostanaula basin, 2,150 square miles; and Coosa River basin below Rome, 1,260 square miles. The Etowah River has a drainage area of 1,861 square miles of which 1,122 square miles is above the Allatoona Dam and Lake Allatoona Project, located 48 miles upstream from Rome, Georgia. The Oostanaula River total drainage area is 2,150 square miles. The Carters Dam and Lake Project on the Coosawattee River, a main tributary of the Oostanaula River, has a drainage area of 374 square miles.

4-02. Topography. The Weiss Project is located in the Alabama Valley and Ridge physiographic province of the southern Appalachian Mountains (see Figure 4-1). It occurs as a roughly northeast-trending rectangular area in central and east-central Alabama and continues northeast into Georgia and Tennessee. This region is comprised of sandstone ridges and fertile limestone valleys. The Valley and Ridge borders the Cumberland Plateau section to the north and west, the Piedmont Upland section to the southeast, and the East Gulf Coastal Plain section to the southwest. The landscape developed on tightly folded and thrust-faulted rock layers and thus consists of numerous uniquely zigzagging ridges separated by deep steep-sided valleys.

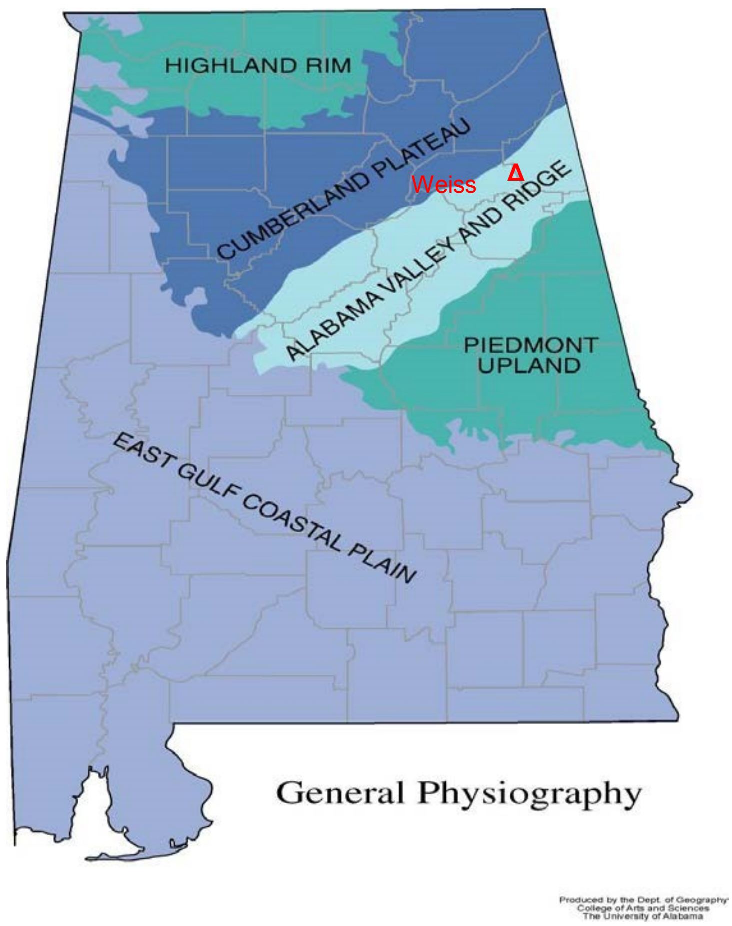

Figure 4-1 Topographic Regions in Alabama

4-03. Geology and Soils. Valley and Ridge soils are typically shallow and well drained, and water moves rapidly toward streams during precipitation events. The Weiss Project area soils are dominantly Ultisols. This soil order, which covers the majority of the State of Alabama, has developed in forested, humid/high rainfall, subtropical conditions on old landscapes (e.g., not glaciated or recently flooded). These soils are characterized by a surface soil that is often acidic and low in plant nutrients. The surface has a low base status (a measure of fertility) due to high rainfall weathering that has occurred over long time periods and parent materials low in base forming minerals. Although Ultisols are not as fertile as many other soil orders they do support abundant forest growth and respond well to management for agriculture.

4-04. Sediment. Significant sources of sediment within the basin are agricultural land erosion, dredging and mining activities, unpaved roads, silviculture, and variation in land uses that result in conversion of forests to lawns or pastures. In general, the quantity and size of sediment transported by rivers is influenced by the presence of dams. Impoundments behind dams serve as sediment traps where particles settle in the lake headwaters because of slower flows. Large impoundments typically trap coarser particles plus some of the silt and clay. Often releases from dams scour or erode the streambed downstream. Ultisols dominate the Valley and Ridge ecoregion. They generally lack the original topsoil because of erosion during intensive cotton farming beginning in the 18th century.

4-05. Climate. Chief factors that control the climate of the ACT Basin are its geographical position in the southern end of the temperate zone and its proximity to the Gulf of Mexico and South Atlantic Ocean. Another factor is the range in altitude from almost sea level at the southern end to higher than 3,000 feet in the Blue Ridge Mountains to the north. Frontal systems influence conditions throughout the year. During the warmer months, thunderstorms are a major producer of rainfall. Tropical disturbances and hurricanes also affect the region.

a. Temperature. The average annual temperature in the vicinity of Weiss Reservoir is about 61°F. This figure is based on normal annual temperatures at four stations: Rome, Georgia, with 78 years of record; Albertville, Alabama, 36 years; Gadsden Gas Plant, Alabama, 78 years; and Valley Head, Alabama, 77 years. Extreme temperatures recorded at these stations are a maximum of 108° at Gadsden Gas Plant, Alabama, and a minimum of 18° at Valley Head, Alabama. The summer average is about 78° and the winter average about 44°. Table 4-2 provides average, maximum, and minimum monthly normal temperature data for several locations in or around the project. An interactive map showing the location of these stations and others is shown at: https://sercc.com/coopsummaries.

Table 4-2 Average Monthly Temperature (°F) for the Northern ACT Basin (max. and min.)

AVERAGE MONTHLY TEMPERATURE FOR NORTHERN ACT BASIN (MAX & MIN)														
		Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
BALL GROUND, GA 090603 (3/1947 – 12/2010)	MAX	50.0	50.8	62.4	70.1	75.9	82.1	84.8	85.5	78.9	70.1	62.1	50.4	68.6
	MIN	29.5	29.7	38.5	45.8	54.7	61.4	66.1	66.5	60.3	48.5	39.4	30.9	47.6
ALLATOONA DAM 2, GA 090181 (5/1952–12/2010)	MAX	50.8	54.4	62.7	73.2	79.3	85.8	88.8	88.3	82.1	72.2	62.6	52.3	71.0
	MIN	29.7	32.0	38.6	47.7	56.3	64.2	67.8	67.4	61.6	49.0	39.5	31.7	48.8
ROME, GA 097600 (1/1893-8/2010)	MAX	52.5	56.3	65.2	74.1	81.5	87.7	90.1	89.5	84.7	75.2	63.3	54.0	72.8
	MIN	31.7	33.3	40.2	47.7	56.2	64.2	67.9	67.2	61.1	48.7	38.9	33.1	49.2
GADSDEN STEAM PLANT, AL 013154 (3/1953-12/2010	MAX	51.0	55.9	65.0	74.5	81.4	87.5	90.4	90.1	84.6	74.5	63.7	54.7	72.8
	MIN	30.6	33.6	40.6	49.0	57.4	65.2	69.1	68.2	62.1	49.6	40.0	33.4	49.9
SCOTTSBORO, AL 017304 (10/1891-12/2010)	MAX	51.8	54.9	63.9	72.7	80.8	87.6	90.0	89.6	84.8	74.4	63.0	54.0	72.3

AVERAGE MONTHLY TEMPERATURE FOR NORTHERN ACT BASIN (MAX & MIN)														
		Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Annual**
	MIN	30.3	32.4	39.4	46.9	55.4	63.4	67.0	66.0	59.9	47.3	37.4	31.9	48.1
VALLEY HEAD, AL 018469 (1/1893-12/2010)	MAX	50.3	53.5	62.2	71.4	79.3	86.0	88.6	88.4	83.8	73.8	62.2	52.5	71.0
	MIN	28.6	30.0	37.0	44.6	53.3	61.6	65.2	64.4	58.7	46.1	36.1	30.0	46.3
NORTHERN BASIN AVG	MAX	51.1	54.3	63.6	72.7	79.7	86.1	88.8	88.6	83.2	73.4	62.8	53.0	71.4
NORTHERN BASIN AVG	MIN	30.1	31.8	39.1	47.0	55.6	63.3	67.2	66.6	60.6	48.2	38.6	31.8	48.3

b. Precipitation. The normal monthly and annual precipitation over the basin above Weiss Dam is shown on Table 4-3. This is based on the arithmetical mean of the normals at 33 stations. The maximum, minimum, and normal annual precipitation at 4 of these stations for their period of record is shown in Table 4-4. About 41 percent of the normal annual precipitation occurs from December through March, while only about 18 percent occurs during the dry period September through November. The average annual snowfall is 3 to 4 inches (unmelted), with the greatest amount occurring in January and February. Snowfall is a relatively unimportant factor in producing floods.

The Coosa River basin lies in a region which is subject to intense local storms, as well as general storms of heavy rainfall extending over several days. The latter, which may occur at any time during the year but are more numerous and severe between the late fall and early spring, have been responsible for the major floods in the basin.

Table 4-3 Normal Monthly and Annual Precipitation

	Coosa River Above Weiss Dam				
	Basin				
	Etowah River				
Period	**Above Allatoona Dam**	**Allatoona Dam to mouth**	**Oostanaula River**	**Coosa River Rome to Weiss Dam**	**Entire basin above Weiss Dam**
No of Stations	6	2	23	4	33
January	5.03	4.78	5.72	5.54	5.52
February	5.12	4.95	5.85	5.60	5.66
March	6.64	6.24	6.13	6.39	6.25
April	4.52	4.83	4.72	4.69	4.70
May	3.60	3.47	4.02	3.79	3.90
June	3.87	3.91	4.22	4.35	4.16
July	5.19	4.82	5.27	5.15	5.24
August	4.31	4.30	4.22	4.32	4.26
September	3.19	3.16	3.49	3.32	3.42
October	2.62	2.58	2.83	2.89	2.78
November	3.52	3.20	4.02	3.67	3.87
December	4.96	4.70	5.30	5.46	5.21
Annual	52.57	50.94	55.78	55.17	54.97

Table 4-4 Maximum, Minimum and Normal Annual Precipitation for Selected Stations in Upper Coosa River Basin

Station	Period of Record (years)	Normal Annual Precipitation (inches)	Maximum Annual Precipitation		Minimum Annual Precipitation	
			Inches	Years	Inches	Years
Cartersville, Ga.	23	48.50	59.68	1948	33.18	1954
Gadsden, Ala.	78	54.95	77.22	1948	38.10	1896
Resaca, Ga.	70	53.94	79.19	1920	36.15	1894
Rome, Ga.	102	53.39	77.65	1932	38.34	1941

4-06. Storms and Floods. Flood producing storms may occur over the Coosa Basin at any time but are more frequent during the winter and spring. Major storms in the winter are usually of the frontal type, which persist for several days and cover large areas. Summer storms are usually tropical in origin and are normally short and intense, and usually cover small areas. Gage records at U.S. Geological Survey (USGS) gage 02400500 at Gadsden, Alabama, 26 miles upstream of the dam, are available from October 1926 to the present. The largest storms recorded at Gadsden, Alabama, prior to dam construction were the floods of 1886 (115,000 cfs), April 1936 (76,900 cfs), February 1961 (74,100 cfs) and January 1933 (72,500). Inflow and discharge records from January 1967 to December 2012 are shown on Plates 4-2 to 4-3.

The largest storms recorded at Gadsden, Alabama, prior to dam construction were the floods of 1886 (115,000 cfs), April 1936 (76,900 cfs), February 1961 (74,100 cfs) and January 1933 (72,500). The largest post-construction discharges recorded at H. Neely Henry, 27 miles downstream of the Gadsden gage, were the floods of November 2004 (89,130 cfs), April 1979 (88,620 cfs) and April 1977 (84,350 cfs).

4-07. Runoff Characteristics. In the ACT Basin, rainfall occurs throughout the year but is less abundant from August through November. Only a portion of rainfall actually runs into local streams to form the major rivers. Factors that determine the percent of rainfall that runs into the streams include the intensity of the rain, antecedent conditions, ground cover and time of year (plants growing or dormant). Intense storms will have high runoff potential regardless of other conditions while a slow rain can produce little measurable runoff. The rating curve for the Coosa River at Rome, Georgia is shown on Plate 4-4. Rating curves for the Etowah River at Allatoona Dam, at GA 1 Loop near Rome, Georgia, and at Kingston, Georgia, are shown on Plates 4-5 thru 4-7 respectively. The Oostanaula River at US 27, at Rome, Georgia gage provides the relation of stage on the Oostanaula River at US 27 Bridge in Rome, Georgia to the flow at the confluence of the Oostanaula and Etowah Rivers.

4-08. Water Quality. Alabama Department of Environmental Management (ADEM) has designated various portions of the Weiss Lake with ‘use classifications’ of public water supply, swimming, and fish and wildlife. The Coosa River below Weiss Dam has designated ‘use classifications’ as swimming and fish and wildlife, in accordance with Alabama Water Quality Control laws. The state of Alabama has promulgated water quality criteria related to the use classifications.

A total maximum daily load (TMDL) was finalized for Weiss Lake in 2008 and identified the lake as impaired for nutrients, and priority organics (PCBs) in 2004. The impaired criteria are discussed below.

a. Nutrients. Weiss Lake is classified as eutrophic, which indicates having waters rich in mineral and organic nutrients that promote a proliferation of plant life, especially algae, which can reduce the dissolved oxygen content throughout the lake. ADEM's decision to list Weiss Lake as being impaired for nutrients was authorized under ADEM's Water Quality Standards Program, which employs both numeric and narrative criteria to ensure adequate protection of designated uses for surface waters of the State. Numeric criteria typically have quantifiable endpoints for a given parameter such as pH, dissolved oxygen, or a toxic pollutant, whereas narrative criteria are qualitative statements that establish a set of desired conditions for all State waters. These narrative criteria are more commonly referred to as "free from" criteria that enable States a regulatory avenue to address pollutants or problems that may be causing or contributing to a use impairment that otherwise cannot be evaluated against any numeric criteria. Typical pollutants that fall under this category are nutrients and sediment. ADEM's narrative criteria are shown in ADEM's Administrative Code 335-6-10-.06 are as follows:

The following minimum conditions are applicable to all State waters, at all places and at all times, regardless of their uses:

(1) *State waters shall be free from substances attributable to sewage, industrial wastes or other wastes that settle in forming bottom deposits which are unsightly, putrescent or interfere directly or indirectly with any classified water use.*

(2) State waters shall be free from floating debris, oil, scum, and other floating materials attributable to sewage, industrial wastes or other wastes in amounts sufficient to be unsightly, or which interfere directly or indirectly with any classified water use.

(3) State waters shall be free from substances attributable to sewage, industrial wastes or other wastes in concentrations or combinations, which are toxic or harmful to human, animal, or aquatic life to the extent commensurate with the designated usage of such waters.

c. PCBs. In order for Weiss Lake to meet the water quality standard for PCBs, the concentration of total PCBs in water column should be below 0.000097 ug/l. Therefore, the TMDL expressed as an annual average load is computed as the product of the annual average flow and the water quality standard. The 10-year average flow, obtained using 1991-2000 daily flow measured on the Coosa River at the Alabama-Georgia state line, is 232 m3/sec. Therefore,

TMDL = 232 m3 /sec x 0.000097 ug/l x1000 l/m3 x 86400 sec/day x 365 days/year x 10-9 kg/ug = 0.71 kg/year.

The total PCB loading into Weiss Lake must be limited to 0.71 kg/year. In other words, the State of Georgia TMDL for PCBs should allow an average of 0.71 kg/year or less to enter Weiss Lake at the Alabama-Georgia state line for the Lake to achieve and maintain its designated uses in Alabama. Since the sources are "out-of-state" in Georgia, this TMDL allocates an aggregate allowable PCB load of 0.71 kg/year, which includes both point and nonpoint source contributions from Georgia.

4-09. Channel and Floodway Characteristics. The areas which may be appreciably affected by flood risk management operations include the 50-mile reach of the Coosa River flood plain between the dam and Gadsden and the City of Gadsden itself. The operation of Weiss Dam will also afford some reduction in flood heights below Gadsden. However, a large portion of the flood plain below Gadsden which may be affected by flood risk management operations at Weiss Dam is within the reservoir areas of H. Neely Henry and Logan Martin Dams.

4-10. Upstream Structures. The Corps' Allatoona Dam and Lake Allatoona Project and the Carters Dam and Lake and Reregulation Dam are located on the Etowah and Coosawattee Rivers, respectively, in Georgia. Other dams upstream from Weiss include Hickory Log Creek above Allatoona Dam and Richland Creek Dam located on a tributary below Allatoona Dam.

4-11. Downstream Structures. The APC projects downstream of the Weiss Dam Project on the Coosa River Project include H. Neely Henry, Logan Martin, Lay, Mitchell, Bouldin and Jordan. Corps projects downstream of the Weiss Project include Robert F. Henry, Millers Ferry, and Claiborne Locks and Dams. The Alabama River is navigable to Montgomery, Alabama, near river mile 342.0. Locations of these projects are shown on Plates 2-1 and 2-2. The existing upstream and downstream federal and APC projects and the drainage areas above them are shown on Table 4-1.

4-12. Economic Data.

a. Population.

b. Agriculture.

c. Industry.

d. Flood Damages.

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5 - DATA COLLECTION AND COMMUNICATION NETWORKS

5-01. Hydrometeorologic Stations. Management of water resources requires continuous, real-time knowledge of hydrologic conditions. Both the APC and the Corps collect and maintain records of hydrologic data and other information in connection with the operation of projects in the Coosa River Basin. Since the data collected by the APC are needed by the Corps in carrying out its responsibility of monitoring the flood risk management operations of the Weiss Project, and the data collected by the Corps supplements that being collected by the APC and is of value to them in planning their project operations. It is important that each agency furnish the other with such of its hydrologic and operating data as may be needed or found beneficial in its operation. This requires that communications facilities be available between the Mobile District Office of the Corps of Engineers and APC Reservoir Management. The USGS and National Weather Service (NWS), in cooperation with the APC, the Corps, and other federal and state agencies, maintain a network of real-time gaging stations throughout the ACT Basin.

a. Facilities. APC's Hydrologic Data Acquisition System (HDAS) is a combination of over 100 rain, stage, and evaporation gages located in the river basins where APC dams and reservoirs are located. The largest majority of these gages are owned and operated by APC. APC also utilizes data from relevant USGS gages. The rainfall gages and river gages are equipped with data collecting platforms that store data on site and transmit to orbiting satellites. The stations continuously collect various types of data including stage, flow, and precipitation. All the rainfall, reservoir, and river stage reporting gages regularly used by the Corps and APC in the ACT Basin, including the Coosa River Basin above Weiss Dam, are shown on Plate 5-1. Figure 5-1 shows a typical encoder with wheel tape housed in a stilling well used for measuring river stage or lake elevation. Figure 5-2 shows a typical precipitation station, with rain gage, solar panel, and Geostationary Operational Environmental Satellite (GOES) antenna for transmission of data.

Figure 5-1 Encoder with Wheel Tape for Measuring the River Stage or Lake Elevation in the Stilling Well

Figure 5-2 Typical Field Installation of a Precipitation Gage

All rainfall gages equipped as data collecting platforms are capable of being part of the reporting network. Data are available from many stations in and adjacent to the ACT Basin. For operation of the Weiss Project, APC operates the HDAS that delivers real time rainfall and river stage data through SouthernLINC packet data radios and dedicated network connections. The rainfall stations APC uses to operate the facility are listed in Table 5-1. The sites in the vicinity of Weiss are shown on Plate 5-1, along with other gage locations.

Table 5-1 Rainfall Reporting Network

Basin	Station
Etowah River (Below Allatoona Dam)	Dallas, GA
Oostanaula River	Dalton, GA
	Adairsville, GA
Coosa River (Above Weiss Dam)	LaFayette, GA
	Mt. Alto
	Cedartown, GA
	Menlo, AL
	Gaylesville, AL
	Fort Payne, AL
	Blue Pond, AL
	Weiss Dam, AL
Coosa River Weiss Dam to Gadsden	Collinsville, AL
	Rock Run, AL
	Ellisville, AL
	Colvin Gap, AL
	Gadsden, AL
	Gadsden SP., AL

All river stage gages equipped as data collecting platforms are also capable of being part of the reporting network. Data are available from many stations in and adjacent to the ACT Basin. The river stage reporting network gages used for operation of the Weiss Dam are shown in the Table 5-2 below. The locations of river stage stations are shown on Plate 5-1.

Table 5-2 River Gage Reporting Network

Stream	Station	River Miles Above Mouth	Drainage Area
Etowah River Basin Below Allatoona Dam			
Etowah River	Allatoona	47.00	1110
Etowah River	Cartersville (Nr)	38.22	1330
Etowah River	Cartersville (Nr)(2)	38.22	1330
Etowah River	Kingston (Nr) (4)	21.51	1630
Etowah River	Rome (So RR)	1.80	1810
Etowah River	Rome (2nd Ave)	0.90	1816
Oostanaula River Basin			
Talking Rock Cr	Talking Rock		119
Coosawattee R	Ellijay	1.00	90
Coosawattee P.	Carters	26.60	376
Coosawattee R.	Carters	24.91	531
Coosawattee R.	Pine Chapel	6.60	856
Conasauga R	Eton		252
Conasauga R.	Tilton	12.14	682
Oostanaula R.	Resaca	43.16	1610
Oostanaula R	Calhoun		1624
Oostanaula R.	Rome	4.50	2120
Oostanaula R.	ROME (5th Ave.) (4)	0.35	2150
Oostanaula R.	ROME (5th Ave.)	0.35	2150
Coosa River Basin Above Weiss Powerhouse			
Coosa B.	Mayo's Bar	278.8	4040
Chattooga R.	Summerville	(3)	193
Chattooga B.	Gaylesville	(3)	368
Little River	Blue Pond	(3)	194
Terrapin Creek	Ellisville	(3)	258
Coosa River Basin Gadsden to Weiss Powerhouse			
Coosa River	Gadsden	174.6	5800
Coosa River	Gadsden SP	174.6	5800

Data are collected at sites throughout the ACT Basin through a variety of sources and integrated into one verified and validated central database. The basis for automated data collection at a gage location is the Data Collection Platform. The Data Collection Platform is a computer microprocessor at the gage site. A Data Collection Platform has the capability to interrogate sensors at regular intervals to obtain real-time information (e.g., river stage, reservoir elevation, water and air temperature, precipitation). The Data Collection Platform then saves the information, performs simple analysis of it, and then transmits the information to a fixed geostationary satellite. Data Collection Platforms transmit real-time data at regular intervals to the GOES System operated by the National Oceanic and Atmospheric Administration (NOAA). The GOES Satellite's Data Collection System sends the data directly down to the NOAA Satellite and Information Service in Wallops Island, Virginia. The data are then rebroadcast over a domestic communications satellite (DOMSAT). The Mobile District Water Management Section operates and maintains a Local Readout Ground System (LRGS) that collects the Data Collection Platform-transmitted, real-time data from the DOMSAT. Figure 5-3 depicts a typical schematic of how the system operates.

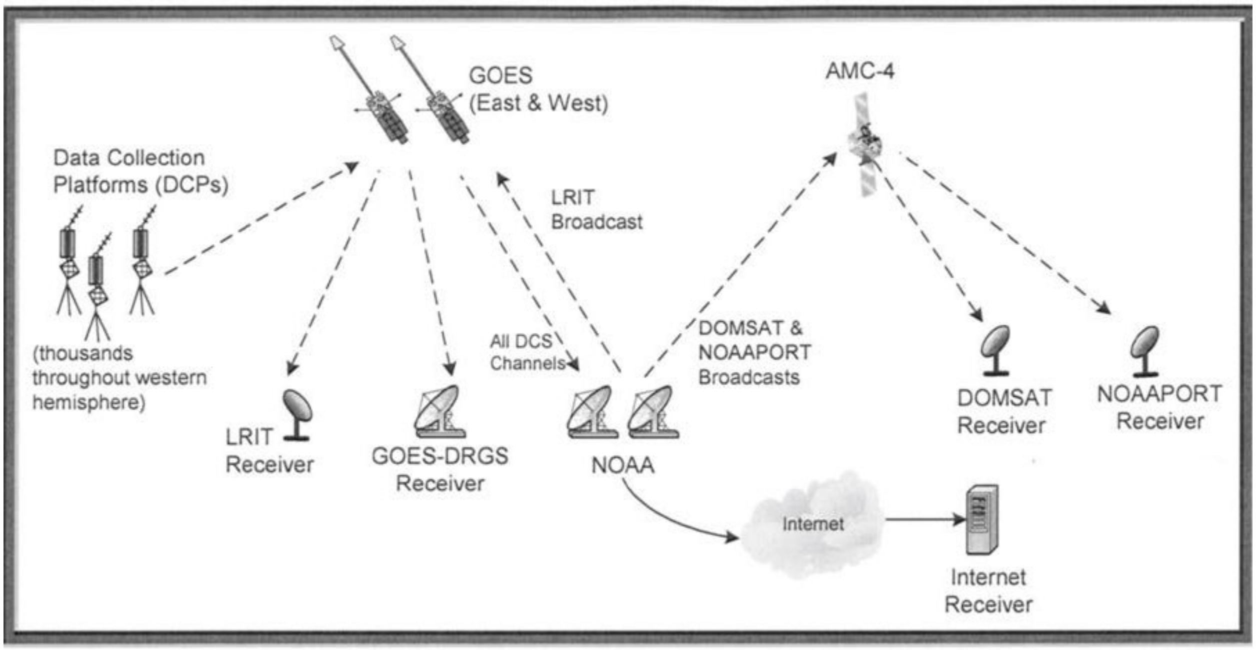

Figure 5-3 Typical configuration of the GOES System

<u>b. Reporting.</u> Central to APC hydro operations, monitoring, and reporting network is the Hydro Optimization Management System (HOMS). HOMS is a complex and dynamic system of data collection, analysis, and management tools, and includes an arrangement of hydrologic and flow monitoring systems and tools as well. HOMS exists for the purpose of real time monitoring, and as a decision tool and support for computer applications related to the operation of Alabama Power's 14 hydroelectric facilities located within the Coosa, Tallapoosa and Black Warrior River Basins.

The Corps operates and maintains a Water Control Data System (WCDS) for the Mobile District that integrates large volumes of hydrometeorological and project data so the basin can be regulated to meet the operational objectives of the system. The WCDS, in combination with the Corps Water Management System (CWMS), together automate and integrate data acquisition, data management, and data dissemination.

<u>c. Maintenance.</u> Maintenance of data reporting equipment in the Coosa River Basin near Weiss Dam is a cooperative effort among the USGS, NWS, Corps, and APC.

If gages appear to be out of service, the following agencies can be contacted for repair:

USGS South Atlantic Water Science Center - Georgia, 1770 Corporate Dr., Suite 500, Norcross, Georgia 30093 Phone: (678) 924-6700 Web: http://ga.water.usgs.gov

USGS Lower Mississippi-Gulf Water Science Center - Alabama, 75 TechnaCenter Drive, Montgomery, Alabama 36117 Phone: (334) 395-4120 Web: http://al.water.usgs.gov

NWS Southern Region, 819 Taylor Street, Room 10E09, Fort Worth, TX 76102
Phone: (817) 978-1100 Web: http://www.srh.noaa.gov/

U.S. Army Corps of Engineers, Mobile District, 109 Saint Joseph Street, Mobile, AL 36602-3630, Phone: (251) 690-2730 Web: https://www.sam.usace.army.mil/Missions/Civil-Works/Water-Management/.

5-02. Water Quality Stations. Water quality measurements are made at 14 USGS gaging stations within the Alabama River Basin. The data for these stations can be obtained from the USGS yearly publication, Water Resources Data Alabama and Water Resources Data Georgia.

5-03. Sediment Stations. Alabama Power Company has made provision for such surveys if required in the future by identifying 17 silt ranges in the Weiss Reservoir. These ranges were surveyed on the ground prior to impoundment and were surveyed with an echo sounder immediately after impoundment. These data are intended to be background data for any subsequent surveys when made.

5-04. Recording Hydrologic Data. At Weiss Dam, the plant control system is equipped with one or more programmable logic controllers (PLC). The PLC receives data from various inputs from the dam; then a server located at the Alabama Power's corporate headquarters polls the plant PLC for data. Additional data essential to HOMS is collected through HDAS, a combination of over 100 rain, stage, and evaporation gages located in the river basins where Alabama Power dams and reservoirs are located. The largest majority of these gages are owned and operated by Alabama Power. Where physically practical, Alabama Power pulls data from adjacent USGS rain and stage gages to enhance the viability of the overall HDAS. All data collected in the field is transmitted either via Alabama Power's dedicated network connections, where available, or the SouthernLINC Wireless radio network. Data is stored on servers located at the Alabama Power Company facilities.

Data collected from the various sources are then rendered into web and desktop applications to monitor operations and activities at the Alabama Power hydro facilities. These applications are provided to the Power System Coordinator (PSC) at the Alabama Control Center Hydro Desk (ACC or Hydro Desk) to monitor the operations and activities at hydropower facilities 24 hours per day, seven days per week.

Most reservoir data are transmitted in hourly increments for inclusion in daily log sheets that are retained indefinitely. Gage data are transmitted in increments of 15 minutes, one hour, or other intervals. Reservoir data are examined and recorded in water control models every morning (or other times when needed). Reservoir data are examined and recorded as needed. The data may be used in forecast models.

Automated timed processes also provide provisional real-time data needed for support of real-time operational decisions. Interagency data exchange has been implemented with the USGS and NWS Southeast River Forecast Center (SERFC). A direct link to SERFC is maintained to provide real-time products generated by NWS offices. Information includes weather and flood forecasts and warnings, tropical storm information, NEXRAD radar rainfall, graphical weather maps and more. Likewise, a direct link to USGS gages in the field allows for direct downloading of USGS data to Corps databases.

5-05. Communication Network. APC communicates with its projects via Southern Linc Wireless radios and dedicated network connections that interfaces with its Alabama Control Center Hydro Desk located in Birmingham, Alabama. Data is stored on servers located at the Alabama Power Company facilities.

5-06. Communication with Project.

a. Between Regulating Office and Project Office. Direct communication between the APC and Weiss Dam is provided by APC's SouthernLINC network telephone and email. The power plant at Weiss Dam is operated by remote control from the Alabama Control Center Hydro Desk located in Birmingham, Alabama. Personnel are available but not always on duty at the dam.

b. Between Regulating/Project Office and Others. The Water Management Section communicates daily with the NWS and APC Reservoir Management to exchange data and forecasting information. Data exchange is normally accomplished by electronic transmission to the Mobile District server and is supplemented by telephone and facsimile when necessary. The Water Management Section also has a computer link with the NWS's AWIPS (Advanced Weather Interactive Processing System) communication system via the River Forecast Center in Atlanta, Georgia. The Water Management Section uses a telephone auto-answer recorded message to provide daily information to the public. Water resources information for the Weiss Project is available to the public at the Corps' website, https://www.sam.usace.army.mil/Missions/Civil-Works/Water-Management/. The site contains real-time information, historical data and general information. Information for the Weiss Lake is also provided by the APC at https://lakes.alabamapower.com.

Emergency communication for the Corps and APC personnel during non-duty hours is available at the numbers found on the emergency contact information list located in Exhibit G.

The United States Geological Survey (USGS) operates numerous stage and rain gages in the Coosa River basin near Weiss Dam which are funded by both the Corps and APC. These measurements are reported through the GOES system and are available to both APC and the Corps on the USGS web site.

5-07. Project Reporting Instructions. Communications for exchange of data between the Corps Water Management Section and APC Reservoir Management and ACC Hydro Desk will normally be accomplished by electronic transmission to the Corps' WCDS server. The APC provides the Corps with hourly and daily reservoir data for all of their ACT projects. This includes reservoir pool and tailwater elevations, inflows, discharges and precipitation. APC also provides 7-day discharge forecasts for each project. The hourly data is transmitted and stored in the Corps database once every hour, 24 hours a day. Daily data, including the 7-day forecast for each project, is provided once a day around 0800 hours, and includes both midnight and 0600 hours data for the APC projects.

In addition to automated data, project operators maintain record logs of gate position, water elevation, and other relevant hydrological information including inflow and discharge. This information is stored by the APC and the Corps Water Management Section. Unforeseen or emergency conditions at the project that require unscheduled manipulations of the reservoir should be reported to the Corps Water Management Section as soon as possible.

If the automatic data collection and transfer are not working, operators will, upon request, fax or email daily or hourly project data to the Water Management Section for manual input into the database.

5-08. Warnings. During floods, dangerous flow conditions, or other emergencies, the proper authorities and the public must be informed. In general, flood warnings are coupled with river forecasting. The NWS has the legal responsibility for issuing flood forecast to the public, and will have the lead role for disseminating the information. For emergencies involving the Weiss Project, the APC Reservoir Management and ACC Hydro Desk will begin notifications of local law enforcement, government officials, and emergency management agencies in accordance with APC's Emergency Action Plan for Weiss Dam.

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6 - HYDROLOGIC FORECASTS

6-01. General.

a. Role of USACE. The Water Management Section maintains real-time observation of river and weather conditions in the Mobile District. The Water Management Section has capabilities to make forecasts for several areas in the ACT Basin. Those areas include all the Federal projects and other locations. Observation of real-time stream conditions provides guidance of the accuracy of the forecasts. The Corps maintains contact with the River Forecast Center to receive forecast and other data as needed. Daily operation of the ACT River Basin during normal, flood risk management, and drought conservation regulation requires accurate, continual short-range and long-range elevation, streamflow, and river-stage forecasting. These short-range inflow forecasts are used as input in computer model simulations so that project release determinations can be optimized to achieve the regulation objectives stated in this manual. The Water Management Section continuously monitors the weather conditions occurring throughout the basin and the weather and hydrologic forecasts issued by the NWS. The Water Management Section then develops forecasts that are to meet the regulation objectives of regulating the ACT projects. The Water Management Section prepares five-week inflow and lake elevation forecasts weekly based on estimates of rainfall and historical observed data in the basin. These projections assist in maintaining system balance and providing project staff and the public lake level trends based on the current hydrology and operational goals of the period. In addition, the Water Management Section provides weekly hydropower generation forecasts based on current power plant capacity, latest hydrological conditions, and system water availability.

b. Role of Other Agencies. The NWS is responsible for preparing and publicly disseminating forecasts relating to precipitation, temperatures, and other meteorological elements related to weather and weather-related forecasting in the ACT Basin. The Water Management Section uses the NWS as a key source of information for weather forecasts. The meteorological forecasting provided by the Birmingham, Alabama and Peachtree City, Georgia offices of the NWS is considered critical to the Corps' water resources management mission. The 24- and 48-hour Quantitative Precipitation Forecasts (QPFs) are invaluable in providing guidance for proactive management of basin release determinations. Using precipitation forecasts and subsequent runoff directly relates to project release decisions.

1) The NWS is the Federal agency responsible for preparing and issuing streamflow and river-stage forecasts for public dissemination. That role is the responsibility of the Southeast River Forecast Center (SERFC) co-located in Peachtree City, Georgia with the Peachtree City Weather Forecast Office. SERFC is responsible for the supervision and coordination of streamflow and river-stage forecasting services provided by the NWS Weather Service Forecast Office in Peachtree City, Georgia. SERFC routinely prepares and distributes five-day streamflow and river-stage forecasts at key gaging stations along the Alabama, Coosa, and Tallapoosa Rivers. Streamflow forecasts are available at additional forecast points during periods of above normal rainfall. In addition, SERFC provides a revised regional QPF on the basis of local expertise beyond the NWS Hydrologic Prediction Center QPF. SERFC also provides the Water Management Section with flow forecasts for selected locations on request.

c. Role of Alabama Power. The flood regulation schedule that has been adopted is based on current reservoir level and inflows or forecasts of inflow. The APC has developed a computer model of the river system that utilizes rainfall and river gage stations located strategically throughout the basin. The APC is continually evaluating the results, and as experience is gained, improvements will be incorporated into the model.

6-02. Flood Condition Forecasts. During flood conditions, quantifiable flow forecasts are prepared based on rainfall that has already fallen. Operational decisions are made on the basis of actual streamflow and/or stage data. Streamflow and/or stage forecasts resulting from rainfall that has already occurred are considered in the planning process of potential future operations including any variances that may need to be obtained. APC prepares flow and stage forecasts on an as needed basis for internal use and decision support, where applicable. The NWS SERFC produces official forecasts that are made publically available on their website.

a. Requirements. Accurate flood forecasting requires a knowledge of antecedent conditions, rainfall and runoff that has occurred, and tables or unit hydrographs to apply the runoff to existing flow conditions. Predictive QPF data are needed for what if scenario.

b. Methods. The Corps provides a link to the NWS website so that the Water Management Section, the affected county emergency management officials, and the public can obtain this vital information in a timely fashion. When hydrologic conditions exist so that all or portions of the ACT Basin are considered to be flooding, existing Corps streamflow and short and long-range forecasting runoff models are run on a more frequent, as-needed basis. Experience demonstrates that the sooner a significant flood event can be recognized and the appropriate release of flows scheduled, an improvement in overall flood risk management can be achieved. Stored storm water that has accumulated from significant rainfall events must be evacuated following the event and as downstream conditions permit to provide effective flood risk management. Flood risk management carries the highest priority during significant runoff events that pose a threat to human health and safety. The accumulation and evacuation of storage for the authorized purpose of flood risk management is accomplished in a manner that will prevent, insofar as possible, flows exceeding those which will cause flood damage downstream. During periods of significant basin flooding, the frequency of contacts between the Water Management Section and SERFC staff are increased to allow a complete interchange of available data upon which the most reliable forecasts and subsequent project regulation can be based. Table 6-1 provides SERFC forecast locations in the Alabama River Basin.

Table 6-1 SERFC Forecast Locations for the Alabama River Basin

Daily Stage/Elevation Forecasts				
	Station	**Station ID**	**Critical Stage**	**Flood Stage**
	Montgomery	MGMA1	26	35
	R. F. Henry TW	TYLA1		122
	Millers Ferry TW	MRFA1		66
	Claiborne TW	CLBA1	35	42
Daily 24-hour Inflow in 1000 SFD Forecast				
Reservoir		**Station ID**		
R. F. Henry		TYLA1		
Millers Ferry		MRFA1		
Additional Stage Forecasts Only for Significant Rises				
River/Creek	**Station**	**Station ID**	**Critical Stage**	**Flood Stage**
Coosa	Weiss Dam	CREA1		564
Coosa	Gadsden	GAPA1		511
Coosa	Logan Martin Dam	CCSA1		465
Coosa	Childersburg	CHLA1		402
Coosa	Wetumpka	WETA1	40	45
Tallapoosa	Wadley	WDLA1	30	13
Tallapoosa	Milstead	MILA1	15	40
Tallapoosa	Tallapoosa Wt Plt	MGYA1	15	25
Catoma Creek	Montgomery	CATA1	16	20
Alabama	Selma	SELA1	30	45
Cahaba	Cahaba Hts	CHGA1		14
Cahaba	Centreville	CKLA1	20	23
Cahaba	Suttle	SUTA1	28	32
Cahaba	Marion Junction	MNJA1	15	36

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7 - WATER CONTROL PLAN

7-01. General Objectives. The Weiss project will normally operate to produce peaking power. During periods of low stream flow the storage within the range of power-pool drawdown between elevations 564.0 and 558.0, amounting to 148,400 acre-feet (0.52 inch), will augment the flow of the river downstream. This storage will also be available seasonally for flood risk management. Above the top of power pool and extending to elevation 572.0, there is available for control of floods surcharge storage totaling 301,959 acre-feet (1.42 inches), within which reservoir releases will be scheduled as dictated by an induced surcharge schedule which will achieve significant improvement in downstream flow resulting from high to moderate frequency floods. Reservoir operations during large floods resulting from major storms will require special consideration and may deviate from the induced surcharge schedule when firm forecasts of reservoir inflows and hydrographs of flows into the Coosa River from sub-basins downstream from Weiss Dam show that the flood risk management operation can be improved. Deviations from normal operations are discussed in more detail in Section 7-15.

7-02. Constraints. APC releases water from Weiss project in conjunction with other reservoirs to provide a weekly volume of flow to the Alabama River for navigation.

7-03. Overall Plan for Water Control Management. The water control operations of Weiss Dam are in accordance with the regulation schedule as outlined in the following paragraphs. Any deviation from the prescribed instructions during flood operations, which can occur due to planned or unplanned events as described in section 7-15, will be at the direction of the Water Management Section Mobile District, Corps of Engineers. Deviations during normal operations will be coordinated with the APC Reservoir Management. Mobile Water Management Section will notify South Atlantic Division (SAD) regarding all deviations.

The conservation storage pool at Weiss was designed to provide the necessary capacity to store water for subsequent use to meet the multiple conservation purposes for which the project was constructed. The top of conservation pool elevation, also known as the top of power pool elevation, is the reservoir's normal maximum operating level for conservation storage purposes. If the elevation is higher than the conservation limit, the reservoir level is in the flood pool. The conservation pool is regulated between a minimum elevation of 549 feet NGVD29 and a seasonal variable top-of-conservation pool ranging between elevations 561 to 564 feet NGVD29. The Weiss guide curves are shown on Plate 7-1.

7-04. Standing Instructions to Project Operator.

a. Power operations. Power operations at Weiss are scheduled as outlined in Section 7-10. The seasonally varying top-of-power-pool curve is shown on Plate 7-1.

b. Flood regulation schedule. Table 7-1 contains the basic regulation schedule for flood risk management showing required operations and reservoir outflows for the various pool elevations and inflow rates. This schedule, in a modified form which includes detailed operating instructions, is used by Alabama Power Company operating personnel in carrying out the flood risk management operations. The induced surcharge schedule is shown on Plate 7-2.

Table 7-1 Weiss Flood Regulation Schedule

Rule	Condition	Outflow	Operation
1	Below project guide curve	Ranging up to full discharge capacity of power plant	Operate power plant as required to satisfy normal system load requirements.
2	At project guide curve and below elev. 564.0 ft	Ranging up to full discharge capacity of power plant	Releases shall be made through power plant at rates up to continuous operation at plant capacity (3 units at full gate) as required to keep reservoir stage at or below project guide curve, as long as this level is below elevation 564.0 ft.
3	Above project guide curve and below elev. 564.0 ft	Full discharge capacity of power plant	Releases shall be made through power plant operating continuously at plant capacity (3 units at full gate) until reservoir stage: Recedes to project guide curve after which rule 2 applies, or Reaches elevation 564.0 ft, after which rule 4 applies.
4	At elev. 564.0 ft	Ranging up to 40,000 cfs	Maintain reservoir stage at elevation 564.0 ft by passing the inflow up to 40,000 cfs. Releases will be made through the power plant operating continuously at plant capacity (3 units at full gate) supplemented by spillway discharge as required.
5	Rising above elev. 564.0 ft	40,000 cfs unless higher rate is specified by induced surcharge schedule	Maintain total discharge of 40,000 cfs by discharging through the power plant operating continuously at plant capacity (3 units at full gate) supplemented by spillway discharge as required. Continue this operation until: Reservoir stage recedes to elev. 564.0 ft after which rule 4 applies, or, Reservoir stage and rate of inflow are such that higher rate of outflow is required by induced surcharge schedule, in which case rule 6 applies.
6	Rising above elev. 564.0 ft with releases above 40,000 cfs specified by induced surcharge schedule	As specified by induced surcharge schedule	Operate according to induced surcharge schedule, passing the required outflow through the power plant and spillway.
7	Stages downstream of Weiss exceed or are expected to exceed flood stage as a result of local inflows	Reduce up to 50% of surcharge schedule	Temporarily reduce the release prescribed by the plan, provided that the release will not be reduced below 50% of the amount required by the surcharge schedule and that the total addition of floodwaters stored in Weiss will not exceed a volume of 22,500 cfs-days.
8	Above elev. 564.0 ft and falling	As specified by induced surcharge schedule	When the reservoir level begins to fall maintain the gate openings in effect at time of peak reservoir stage and continue power plant discharge in effect at that time until reservoir level recedes to elevation 564.0 ft. When pool recedes to elevation 564.0 ft rule 4 applies.

c. Operating instructions for spillway gates at dam and powerhouse. The flood regulation schedule is satisfied by deducting the full gate discharge of the power plant from the scheduled release rate and passing the difference through the spillway. By reference to Plates 2-6 to 2-13 the gate positions required to achieve the desired spillway release for reported headwater and tailwater levels are determined. The use of Plates 2-6 to 2-13 insures the proper sequence of opening and closing gates and limits the range in opening as between individual gates. Plates 2-14 and 2-15 pertain to the discharge of trash bays. For the trash bay at the powerhouse the headwater elevation applies to the forebay level, rather than reservoir stage.

Plate 2-14 relates discharge through the trash bay at the powerhouse, to gate opening for a forebay stage ranging from elevation 564.0 to elevation 572.0. This structure will operate whenever the power plant is partially or entirely inoperative during flood periods. Also, this trash bay will operate to discharge, insofar as possible, any scheduled flood risk management release in excess of 51,000 second-feet. Plate 2-15 is applicable to the trash bay at the spillway. The capacity discharge is shown for a range in headwater level from elevation 558.0 to elevation 572.0.

7-05. Flood Risk Management.

Insofar as possible, within the limits of the discharge capacity of the power plant, the reservoir level will be maintained on the guide curve. Whenever the inflow causes the reservoir to rise above the level designated by the guide curve with the power plant operating at full gate capacity, the plant will continue to operate around the clock at full gate capacity until the reservoir recedes to the limiting level designated by the guide curve.

When the reservoir level is at elevation 564.0, all inflow will be passed through the power plant until its discharge capacity is exceeded. Thereafter, the excess will be passed through the spillway with gate positions adjusted at the end of each 6-hour period as required to maintain the reservoir at elevation 564.0, until the total release rate (spillway plus powerhouse) reaches 40,000 cfs. Thereafter, as long as the inflow continues to equal or exceed 40,000 cfs, the release rate will be limited to 40,000 cfs until the reservoir rises and/or the inflow increases to a point where a higher release rate is dictated by the induced surcharge curve shown on Plate 22. Every 6 hours thereafter the release rate will be adjusted to conform to the induced surcharge schedule. At all times when release rates greater than 51,000 cfs are scheduled, the excess must be discharged continually through the gated overflow section adjacent to the powerhouse to the extent of its capacity until the rate of reservoir release reduces to 51,000 cfs. During this time the powerhouse overflow section operates as a control works to improve flow conditions in the river reach between the dam and the powerhouse.

When the rate of reservoir inflow becomes equal to the reservoir release rate, the positions of the spillway gates at that time are maintained during the evacuation of flood storage above elevation 564.0, until the reservoir level recedes to elevation 564.0. In the event a second flood enters the reservoir prior to completion of evacuation to elevation 564.0, the rate of reservoir release will be as dictated by the induced surcharge schedule. When the reservoir level has receded elevation 564.0 the power plant will continue to operate at capacity around-the-clock until the reservoir coincides with the level shown on the guide curve, after which the power plant is operated as required to maintain the reservoir on or below the limits shown on the guide curve. Table 7-1 shows a summary of the flood regulation for Weiss Dam as discussed above.

The regulation plan described above and in Table 7-1 will achieve significant improvement in downstream flow conditions resulting from minor to moderate frequency floods. A moderate flood can be expected to occur on average once in 2 to 3 years (natural peak flow of 50,000 cfs to 60,000 cfs). However, in the event of major storm over the Coosa River basin APC and the District Engineer, USACE Mobile District will collaborate in the prompt analysis of all available information and in the formation of special operating procedures appropriate to the circumstances as they relate to the maintenance of power output and most effective utilization of flood risk management capacities. A major flood can be expected to occur on average once in 10 years. During the real-time operation of the project, a major storm event will be characterized by firm forecasted surcharge release exceeding 40,000 cfs.

Normally flood risk management operations will be in accordance with the regulation plan described above. However, since the limited amount of storage allocated to flood risk management will generally not affect any appreciable reduction in major flood peaks, it is important that special consideration be given to operation of the reservoir during a major flood. When firm forecasts indicate that a major flood is in progress, APC and the District Engineer, USACE Mobile District will collaborate in the prompt analysis of all available information and in determining whether a deviation from the induced surcharge schedule will improve the flood risk management operation. The collaboration includes but is not limited to exchange of forecasted releases of upstream USACE projects, projected APC pool elevations, inflows and discharges, joint communication with SERFC staff, sharing forecast modeling results, and relevant ground observations.

Any departure from the regulation schedule will require approval by the District Engineer, USACE Mobile District and is coordinated by the Water Management Section Chief. Details of the forecasting procedures, which will be developed by APC with the concurrence of the District Engineer, USACE Mobile District and which will be revised from time to time as experience dictates, are contained in Section 6-02.

7-06. Recreation. The lake at Weiss Dam creates a large recreational area providing opportunities for fishing, boating and other water sports. Recreational activities are best served by maintaining a full conservation pool. Lake levels above top of conservation pool invade the camping and park sites. When the lake recedes several feet below the top of conservation pool, access to the water and beaches may become limited. Water management personnel are aware of recreational impacts resulting from reservoir fluctuations and attempt to maintain reasonable lake levels, especially during the peak recreational use periods, but there are no specific requirements relative to maintaining recreational levels. Other project functions usually determine releases from the dam and the resulting lake levels.

7-07. Water Quality. Weiss Dam is an integral project in the overall basin development for use of water resources. Water quality within the ACT basin requires a system analysis and response plan. The reservoir developments must be coordinated to insure compliance with statuary requirements. During late summer, dissolved oxygen levels are often less than 4 mg/L in the deeper portions of the lake, while the upper portions of the water column will have dissolved oxygen levels above 4 mg/L. Dissolved oxygen levels in the releases from the dam can result in tailwater dissolved oxygen levels that are at times less than State dissolved oxygen criteria. Alabama enforces minimum DO concentrations in waterbodies designated for recreation with a standard of no less than 5 mg/L at all times when the turbines are in operation. APC has added aeration blower systems to their projects at Weiss and at H. Neely Henry and Logan Martin to ensure that dissolved oxygen standards are met.

7-08. Fish and Wildlife. APC implements a variable minimum flow in the bypassed section of the Coosa River from the Weiss Dam spillway during normal (non-flood) operations, which ranges from 4 to 9 percent of the flow in the Coosa River at the USGS gage at Mayo’s Bar, near Rome, GA (USGS 02397000), depending on the month of the year. APC’s flow target of 4,640 cfs (minimum 7-day average from Jordan, Bouldin, and Thurlow Projects), while principally intended to support downstream navigation and water quality needs, also provides sustained flows for fish and wildlife.

7-09. Water Conservation/Water Supply.

7-10. Hydroelectric Power. The guide curve delineating the storage in Weiss Reservoir allocated to power generation and to flood risk management throughout the year is shown on Plate 7-1. This seasonally varying top-of-power-pool curve is a division between the power and flood risk management pools and normally the reservoir level will be maintained at or below the curve except when storing flood water. The compulsory drawdown each winter is to elevation 561 to allow for higher flows during that time of year.

Normally, the plant will operate on a weekly cycle and the power generated will be available for use in daily peak load periods Monday through Friday. At such times as the reservoir level is below that shown on the guide curve (top-of-power-pool), the power plant will be operated in accordance with this and system requirements. Whenever the reservoir reaches the elevation shown on the guide curve (top-of-power-pool), the power plant will be operated as necessary up to full-gate capacity to discharge the amount of water required to keep the reservoir level from exceeding that shown on the guide curve (top-of-power-pool).

7-11. Navigation. Navigation is an important use of water resources in the ACT Basin. The Alabama River, from Montgomery downstream to the Mobile area, provides a navigation route for commercial barge traffic, serving as a regional economic resource. A minimum flow is required to ensure usable water depths to support navigation. APC releases water from their storage projects in conjunction with other reservoirs to provide a weekly volume of flow to the Alabama River. Congress has authorized continuous navigation on the river, when sufficient water is available. The three Corps locks and dams on the Alabama River and a combination of dredging, river training works, and flow augmentation together support navigation depths on the river. The lack of regular dredging and routine maintenance has led to inadequate depths at times in the Alabama River navigation channel.

When supported by maintenance dredging, ACT Basin reservoir storage, and hydrologic conditions, adequate flows will provide a reliable navigation channel. In so doing, the goal of the water control plan is to ensure a predictable minimum navigable channel in the Alabama River for a continuous period that is sufficient for navigation use. Figure 7-1 shows the effect of dredging on flow requirements for different navigation channel depths using 2004 – 2010 survey data. As shown on Figure 7-1, pre-dredging conditions exist between November and April; dredging occurs between May and August; and post-dredging conditions exist from September through October, until November rainfall causes shoaling to occur somewhere along the navigation channel.

A 9-foot-deep by 200-foot-wide navigation channel is authorized on the Alabama River to Montgomery, Alabama. When a 9.0-foot channel cannot be met, a shallower 7.5-foot channel would still allow for light loaded barges moving through the navigation system. A minimum depth of 7.5 feet can provide a limited amount of navigation. Under low flow conditions, even the 7.5-foot depth has not been available at all times.

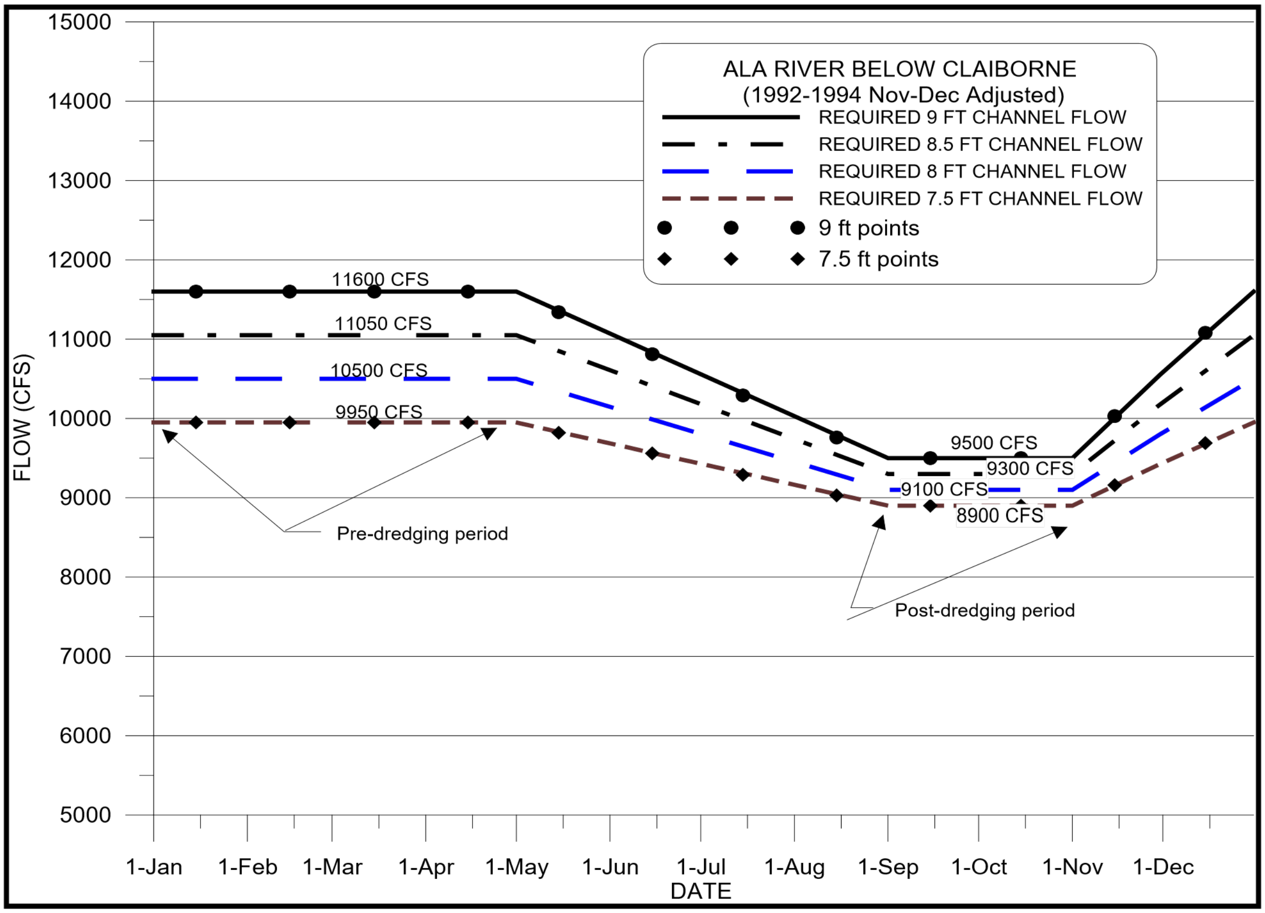

Figure 7-1 Flow-Depth Pattern (Navigation Template) Using 2004 – 2010 Survey Data

Flow releases from upstream APC projects have a direct influence on flows needed to support navigation depths on the lower Alabama River. Flows for navigation are most needed in the unregulated part of the lower Alabama River below Claiborne Lock and Dam. When flows are available, R. F. Henry, Millers Ferry, and Claiborne are regulated to maintain stable pool levels, coupled with the necessary channel maintenance dredging, to support sustained use of the authorized navigation channel and to provide the full navigation depth of nine feet. When river conditions or funding available for dredging of the river indicates that project conditions (9foot channel) will probably not be attainable in the low water season, the three Alabama River projects are operated to provide flows for a reduced project channel depth as determined by surveys of the river. APC operates its reservoirs on the Coosa and Tallapoosa Rivers (specifically flows from their Jordan, Bouldin, and Thurlow (JBT) Projects) to provide a minimum navigation flow target in the Alabama River at Montgomery, Alabama. The monthly minimum navigation flow targets are shown in Table 7-2.

Table 7-2 Monthly Navigation Flow Target in CFS

Month	9.0-ft target below Claiborne Lake (from Navigation Template) (cfs)	9.0-ft Jordan, Bouldin, Thurlow goal (cfs)	7.5-ft target below Claiborne Lake (from Navigation Template) (cfs)	7.5-ft Jordan, Bouldin, Thurlow goal (cfs)
Jan	11,600	9,280	9,950	7,960
Feb	11,600	9,280	9,950	7,960
Mar	11,600	9,280	9,950	7,960
Apr	11,600	9,280	9,950	7,960
May	11,340	9,072	9,820	7,856
Jun	10,810	8,648	9,560	7,648
Jul	10,290	8,232	9,290	7,432
Aug	9,760	7,808	9,030	7,224
Sep	9,500	7,600	8,900	7,120
Oct	9,500	7,600	8,900	7,120
Nov	10,030	8,024	9,160	7,328
Dec	11,080	8,864	9,690	7,752

However, flows may be reduced if conditions warrant. Additional intervening flow or drawdown discharge from the R. F. Henry and Millers Ferry Projects must be used to provide a usable depth for navigation and/or meet the 7Q10 flow of 6,600 cfs below Claiborne Dam. However, the limited storage afforded in both the R. E. “Bob” Woodruff and William “Bill” Dannelly Lakes can only help meet the 6,600 cfs level at Claiborne Lake for a short period. As local inflows diminish or the storage is exhausted, a lesser amount would be released depending on the amount of local inflows. Table 7-3 and Figure 7-2 show the required basin inflow for a 9.0-foot channel; Table 7-4 and Figure 7-3 show the required basin inflow for a 7.5-foot channel.

During low-flow periods, it is not always possible to provide the authorized 9-foot deep by 200-foot-wide channel dimensions. In recent years, funding for dredging has been reduced resulting in higher flows being required to provide the design navigation depth. In addition, recent droughts in 2000 and 2007 had a severe impact on the availability of navigation depths in the Alabama River.

Historically, navigation has been supported by releases from storage in the ACT Basin. Therefore, another critical component in the water control plan for navigation involves using an amount of storage from APC storage projects similar to that which has historically been used, but in a more efficient manner.

Table 7-3 Basin inflow above APC Projects required to meet a 9.0-Foot Navigation Channel

Month	APC navigation Target (cfs)	Monthly historic storage usage (cfs)	Required basin inflow (cfs)
Jan	9,280	–994	10,274
Feb	9,280	–1,894	11,174
Mar	9,280	–3,028	12,308
Apr	9,280	–3,786	13,066
May	9,072	–499	9,571
Jun	8,648	412	8,236
Jul	8,232	749	7,483
Aug	7,808	1,441	6,367
Sep	7,600	1,025	6,575
Oct	7,600	2,118	5,482
Nov	8,024	2,263	5,761
Dec	8,864	1,789	7,075

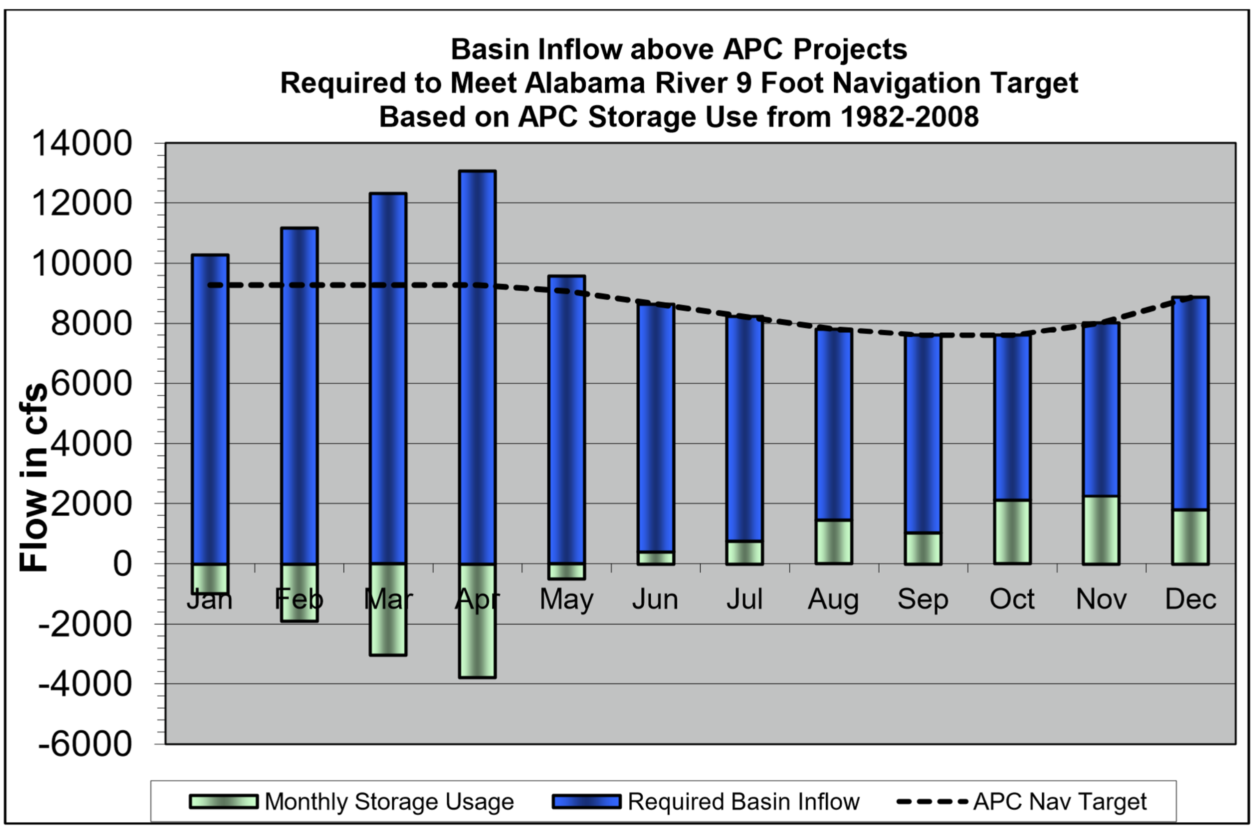

Figure 7-2 Flow Requirements from Rainfall (or Natural Sources) and Reservoir Storage to Achieve the JBT Goal for Navigation Flows for a 9-foot Channel

Table 7-4 Basin inflow above APC Projects required to meet a 7.5-Foot Navigation Channel

Month	APC navigation Target (cfs)	Monthly historic storage usage (cfs)	Required basin inflow (cfs)
Jan	7,960	–994	8,954
Feb	7,960	–1,894	9,854
Mar	7,960	–3,028	10,988
Apr	7,960	–3,786	11,746
May	7,856	–499	8,355
Jun	7,648	412	7,236
Jul	7,432	749	6,683
Aug	7,224	1,441	5,783
Sep	7,120	1,025	6,095
Oct	7,120	2,118	5,002
Nov	7,328	2,263	5,065
Dec	7,752	1,789	5,963

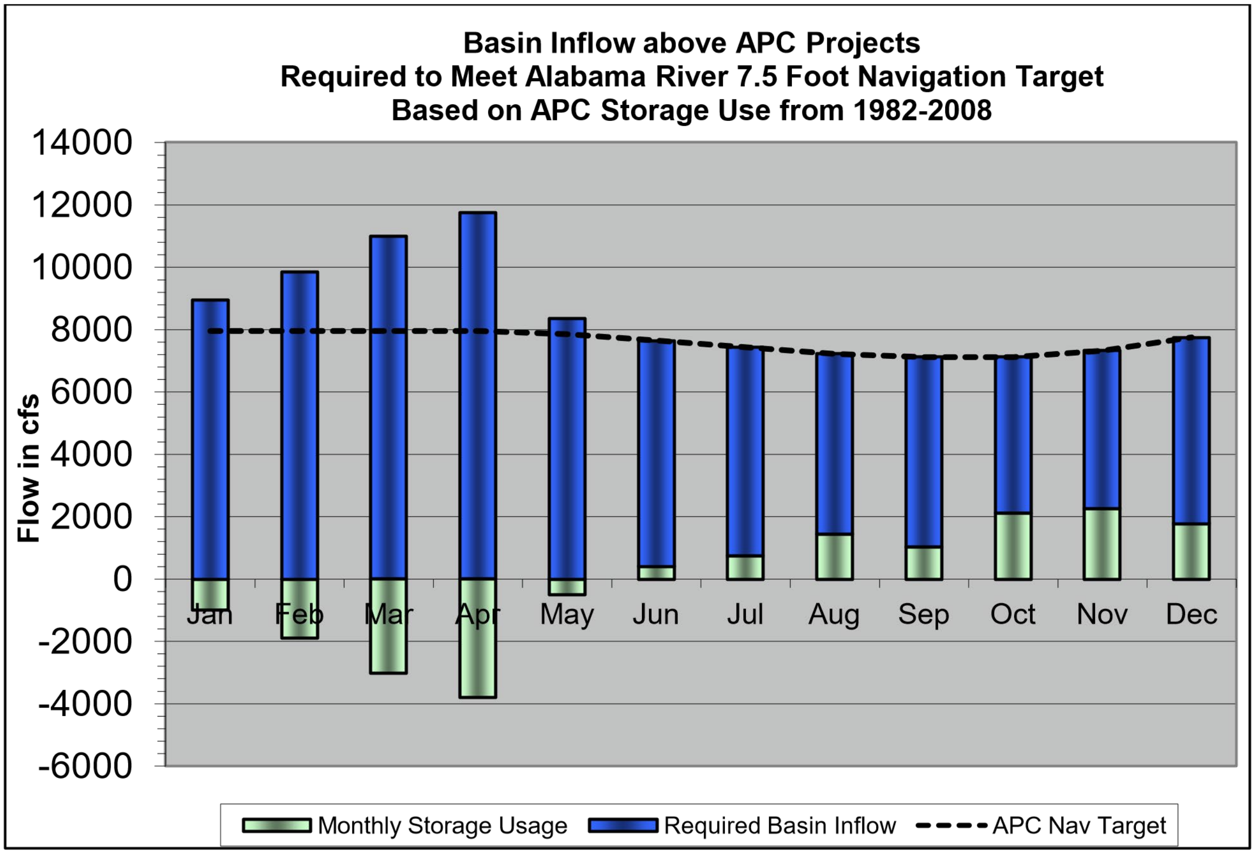

Figure 7-3 Flow Requirements from Rainfall (or Natural Sources) and Reservoir Storage to Achieve the JBT Goal for Navigation Flows for a 7.5-foot Channel

The ACT Basin navigation regulation plan is based on storage and flow/stage/channel depth analyses using basin inflows and average storage usage by APC (e.g., navigation operations would not be predicated on use of additional storage) during normal hydrologic conditions. Under that concept, the Corps and APC make releases that support navigation when basin inflows meet or exceed seasonal targets for either the 9.0-foot or 7.5-foot channel templates. Triggers are also identified (e.g., when basin inflow are less than required natural flows) to change operational goals between the 9.0-foot and 7.5-foot channels. Similarly, basin inflow triggers are identified when releases for navigation are suspended and only 4,640 cfs releases would occur. During drought operations, releases to support navigation are suspended until system recovery occurs as defined in the ACT Basin Drought Contingency Plan found in Exhibit F.

During normal flow periods, no special water control procedures are required for navigation at the R. F. Henry Project other than maintaining the proper pool level. The normal maximum allowable drawdown at elevation 123.0 feet NGVD29 provides a clearance of 13.0 feet over the upper lock sill and should provide minimum depths for a 9-foot navigation channel at Montgomery and up to Bouldin Dam. Navigable depth is normally available downstream of the project if Millers Ferry is within its normal operating level. However, shoaling between Selma and R. F. Henry may result in the need to make water releases to increase the depth over any shoals. This will be accomplished by regular or specially scheduled hydropower releases when possible.

During high flow periods, navigation will be discontinued through the R. F. Henry Lock during flood periods when the headwater reaches elevation 131.0 feet NGVD29. At this elevation the discharge will be 156,000 cfs which is expected to occur on an average of once every three years and the freeboard will be 1-foot on the guide and lock walls.

In the event that the Mobile District Water Management Section determines upcoming reductions in water releases may impact the available navigation channel depth, they shall contact the Black Warrior/Tombigbee - Alabama/Coosa Project Office, and the Mobile District Navigation Section, to coordinate the impact. Water Management shall provide the Claiborne tailwater gage forecast to the project office and the Navigation Section. Using this forecast and the latest available project channel surveys, the project office and the Navigation Section will evaluate the potential impact to available navigation depths. Should this evaluation determine that the available channel depth is adversely impacted, the project office and the Navigation Section will work together, providing Water Management with their determination of the controlling depth. Thereafter, the project office and the Navigation Section will coordinate the issuance of a navigation bulletin. The notices will be issued as expeditiously as possible to give barge owners, and other waterway users, sufficient time to make arrangements to light load or remove their vessels before action is taken at upstream projects to reduce flows. The bulletin will be posted to the Mobile District Navigation web site at https://www.sam.usace.army.mil/Missions/Civil-Works/Navigation/Navigation-Notices/.

Although special releases will not be standard practice, they could occur for a short duration to assist maintenance dredging and commercial navigation for special shipments if basin hydrologic conditions are adequate. The Corps will evaluate such requests on a case by case basis, subject to applicable laws and regulations and the basin conditions.

7-12. Drought Contingency Plans. An ACT Basin Drought Contingency Plan (DCP) has been developed to implement water control regulation drought management actions. The plan includes operating guidelines for drought conditions and normal conditions. The Weiss Project operates in concert with other APC projects to meet the provisions of the DCP related to flow requirements from the Coosa and Tallapoosa River Basins. APC and the Corps will coordinate water management during drought with other federal agencies, navigation interests, the states, and other interested parties as necessary. The following information provides a summary of the DCP water control actions for the ACT Basin projects. The drought plan is described in detail in Exhibit F Drought Contingency Plan.

The ACT Basin Drought Plan matrix defines monthly minimum flow requirements except where noted for the Coosa, Tallapoosa, and Alabama Rivers as a function of a Drought Intensity Level (DIL) and time of year. Such flow requirements are daily averages. The ACT Basin drought plan is activated when one or more of the following drought triggers is exceeded:

1. Low basin inflow
2. Low state line flow
3. Low composite conservation storage

Drought management actions would become increasingly more austere when two triggers are exceeded (Drought Level 2) or all three are exceeded (Drought Level 3). The combined occurrences of the drought triggers determine the DIL. Table 7-5 lists the three drought operation intensity levels applicable to APC projects.

Table 7-5 ACT Basin Drought Intensity Levels

Drought Intensity Level (DIL)	Drought Level	No. of Triggers Exceeded
-	Normal Regulation	0
DIL 1	Moderate Drought	1
DIL 2	Severe Drought	2
DIL 3	Exceptional Drought	3

Drought management measures for ACT Basin-wide drought regulation consists of three major components:

- Headwater regulation at Allatoona Lake and Carters Lake in Georgia
- Regulation at APC projects on the Coosa and Tallapoosa Rivers
- Regulation at Corps projects downstream of Montgomery on the Alabama River

The headwater regulation component includes water control actions in accordance with established action zones, minimum releases, and hydropower generation releases in accordance with project water control plans. Regulation of APC projects will be in accordance with Table 7-6, ACT Drought Management Plan, in which the drought response will be triggered by one or more of the three indicators - state line flows, basin inflow, or composite conservation storage. Corps operation of its Alabama River projects downstream of Montgomery will respond to drought operations of the APC projects upstream.

Table 7-6 ACT Drought Management Plan

<table>
<tr><th></th><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th colspan="2">Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td rowspan="4">Drought Level Response[a]</td><td colspan="13">DIL 0 - Normal Operations</td></tr>
<tr><td colspan="13">DIL 1: Low Basin Inflows or Low Composite or Low State Line Flow</td></tr>
<tr><td colspan="13">DIL 2: DIL 1 criteria + (Low Basin Inflows or Low Composite or Low State Line Flow)</td></tr>
<tr><td colspan="13">DIL 3: Low Basin Inflows + Low Composite + Low State Line Flow</td></tr>
<tr><td rowspan="4">Coosa River Flow[b]</td><td colspan="3">Normal Operation: 2,000 cfs</td><td colspan="2">4,000 (8,000)</td><td colspan="2">4,000 – 2,000</td><td colspan="6">Normal Operation: 2,000 cfs</td></tr>
<tr><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="3">4,000 +/- cfs</td><td>6/15 Linear Ramp down</td><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="3">Jordan 2,000 +/-cfs</td></tr>
<tr><td colspan="3">Jordan 1,600 to 2,000 +/-cfs</td><td colspan="3">2,500 +/- cfs</td><td>6/15 Linear Ramp down</td><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="3">Jordan 1,600 to 2,000 +/-cfs</td></tr>
<tr><td colspan="3">Jordan 1,600 +/-cfs</td><td colspan="4">Jordan 1,600 to 2,000 +/-cfs</td><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="2">Jordan 1,600 to 2,000 +/-cfs</td><td>Jordan 1,600 +/cfs</td></tr>
<tr><td rowspan="4">Tallapoosa River Flow[c]</td><td colspan="13">Normal Operations: 1200 cfs</td></tr>
<tr><td colspan="4">Greater of: 1/2 Yates Inflow or 2 x Heflin Gage(Thurlow Lake releases > 350 cfs)</td><td colspan="6">1/2 Yates Inflow</td><td colspan="3">1/2 Yates Inflow</td></tr>
<tr><td colspan="4">Thurlow Lake 350 cfs</td><td colspan="6">1/2 Yates Inflow</td><td colspan="3">Thurlow Lake 350 cfs</td></tr>
<tr><td colspan="7">Maintain 400 cfs at Montgomery WTP (Thurlow Lake release 350 cfs)</td><td colspan="3">Thurlow Lake 350 cfs</td><td colspan="3">Maintain 400 cfs at Montgomery WTP (Thurlow Lake release 350 cfs)</td></tr>
<tr><td rowspan="4">Alabama River Flow[d]</td><td colspan="13">Normal Operation: Navigation or 4,640 cfs flow</td></tr>
<tr><td colspan="4">4,200 cfs (10% Cut) - Montgomery</td><td colspan="6">4,640 cfs - Montgomery</td><td colspan="3">Reduce: Full – 4,200 cfs</td></tr>
<tr><td colspan="5">3,700 cfs (20% Cut) - Montgomery</td><td colspan="5">4,200 cfs (10% Cut) - Montgomery</td><td colspan="3">Reduce: 4,200 cfs-> 3,700 cfs Montgomery (1 week ramp)</td></tr>
<tr><td colspan="4">2,000 cfs Montgomery</td><td colspan="3">3,700 cfs Montgomery</td><td colspan="3">4,200 cfs (10% Cut) - Montgomery</td><td colspan="3">Reduce: 4,200 cfs -> 2,000 cfs Montgomery (1 month ramp)</td></tr>
<tr><td rowspan="4">Guide Curve Elevation</td><td colspan="13">Normal Operations: Elevations follow Guide Curves as prescribed in License (Measured in Feet)</td></tr>
<tr><td colspan="13">Corps Variances: As Needed; FERC Variance for Lake Martin</td></tr>
<tr><td colspan="13">Corps Variances: As Needed; FERC Variance for Lake Martin</td></tr>
<tr><td colspan="13">Corps Variances: As Needed; FERC Variance for Lake Martin</td></tr>
</table>

Note these are base flows that will be exceeded when possible.

Jordan flows are based on a continuous +/- 5% of target flow.

Thurlow Lake flows are based on continuous +/- 5% of target flow: flows are reset on noon each Tuesday based on the prior day's daily average at Heflin or Yates.

Alabama River flows are 7-Day Average Flow.

7-13. Flood Emergency Action Plans. APC maintains the Flood Emergency Action Plan for the Weiss Project. The plan was developed and is updated in accordance with FERC guidelines. APC is responsible for notifying the appropriate agencies/organizations in the unlikely event of an emergency at the Weiss Dam. The Flood Emergency Action Plan is updated at least once a year, with a full reprint every five years. Inundation maps, developed by APC and updated as necessary, are also provided in the Weiss Project Flood Emergency Action Plan.

7-14. Other. Other considerations than just serving the authorized project purposes must be served from the basin as needed. Adjustments are made to system regulation at times for downstream construction, to aid in rescue or recovery from drowning accidents, environmental studies, or cultural resource investigation.

7-15. Deviation from Normal Regulation. Advance approval by USACE is required prior to any deviation from the plan of regulation prescribed or approved by USACE in the interest of flood control or navigation, except in emergency situations. Requests for deviation from the approved water control plan shall comply with the requirements described in subparagraphs below. Any departure from the regulation schedule will require approval by the Division Engineer or delegated authority which is coordinated by the Water Management Section Chief. Prior approval for a deviation is required except as noted in subparagraph a below.

a. Emergencies. Examples of some emergencies that can be expected to occur at a project are drowning and other accidents, failure of the operation facilities, chemical spills, treatment plant failures and other temporary pollution problems. Water control actions necessary to abate the problem are taken immediately unless such action would create equal or worse conditions. APC will notify the Mobile District and SAD office as soon as practicable.

b. Unplanned Deviations. Unplanned instances can create a temporary need for deviations from the normal regulation plan. Unplanned deviations may be classified as either major or minor but do not fall into the category of emergency deviations. Construction accounts for many of the minor deviations and typical examples include utility stream crossings, bridge work, and major construction contracts. Minor deviations can also be necessary to carry out maintenance and inspection of facilities. The possibility of the need for a major deviation mostly occurs during extreme flood events. Requests for changes in release rates generally involve periods ranging from a few hours to a few days, with each request being analyzed on its own merits. In evaluating the proposed deviation, consideration must be given to impacts on project and system purposes, upstream watershed conditions, potential flood threat, project condition, and alternative measures that can be taken. Approval for unplanned deviations, either major or minor, will be obtained from SAD through the Mobile District Water Management Section by telephone or electronic mail prior to implementation.

c. Planned Deviations. Each condition should be analyzed on its merits. Sufficient data on flood potential, lake and watershed conditions, possible alternative measures, benefits to be expected, and probable effects on other authorized and useful purposes, together with the district recommendation, will be presented by letter or electronic mail to SAD for review and approval. Components of APC deviation request will include: a statement of current and forecasted weather conditions; rainfall or drought status; charts indicating forecast of pool elevations, inflows and discharge with and without deviation; indication of the benefits or impacts to the downstream reach(es); statement of benefit of deviation; rationale for request; expected duration of the request; conditions of communication/updates; conditions of suspension of request; and contact information to discuss details.

7-16. Rate of Release Change. Gradual changes are important when releases are being decreased and downstream conditions are very wet, resulting in saturated riverbank conditions. The Corps acknowledges that a significant reduction in basin releases over a short period can result in some bank sloughing, and release changes are scheduled accordingly when a slower rate of change does not significantly affect downstream flood risk. Overall, the effect of basin regulation on streambank erosion has been reduced by the regulation of the basin because higher peak-runoff flows into the basin are captured and metered out more slowly.

8 - EFFECT OF WATER CONTROL PLAN

8-01. General. There are 5,270 square miles of drainage area above Weiss Dam. Allatoona Reservoir controls the runoff from 1,110 square miles of this area in the upper Etowah River basin. From Allatoona Dam the Etowah River flows 48 miles down to Rome, Georgia, where it joins the Oostanaula River to form the Coosa River. Weiss Dam is located about 60 miles downstream from Rome. The 4,160 square miles of drainage area above Weiss Dam not controlled by Allatoona Dam are divided as follows: remainder in Etowah basin, 750 square miles; Oostanaula basin, 2,150 square miles; and Coosa River basin below Rome, 1,260 square miles.

The areas which may be appreciably affected by flood risk management operations include the 50-mile reach of the Coosa River flood plain between the dam and Gadsden and the City of Gadsden itself. The operation of Weiss Dam will also afford some reduction in flood heights below Gadsden. However, a large portion of the flood plain below Gadsden is within the reservoir areas of H. Neely Henry Dam, and Logan Martin Dam. Logan Martin Dam is also operated for flood risk management and its effectiveness will be enhanced by proper coordination of its operation with that of Weiss Dam. Approximately 68 percent of the 7,750-square mile drainage area above Logan Martin Dam is situated above Weiss Dam. Drainage areas at principal points and tributary junctions in the area influenced by the Weiss project are listed in Table 8-1.

The impacts of the ACT Master Water Control Manual and its Appendices, including this water control manual were fully evaluated in a Supplemental Environmental Impact Statement (EIS) that was published in March 2021. A Record of Decision (ROD) for the action was signed in March 2021. During the preparation of the EIS, a review of all direct, secondary and cumulative impacts was made. As detailed in the EIS, the decision to prepare the Water Control Manual and the potential impacts was coordinated with Federal and State agencies, environmental organizations, Native American tribes, and other stakeholder groups and individuals having an interest in the basin. The ROD and EIS are public documents and references to their accessible locations are available upon request.

Table 8-1 Drainage Areas of Coosa River Basin above Childersburg, Alabama

COOSA RIVER

River Miles above Mouth	Point on River	Tributary	Drainage Area in square miles	
			Tributary	Coosa
86.29	USGS gage, Childersburg, AL	-	-	8390
99.50	Logan Martin Dam	-	-	7750
148.00	Henry Dam	-	-	6620
174.76	USGS gage, Gadsden, AL	-	-	5800
206.25	Weiss Powerhouse	-	-	5610
220.20	Below junction, Terrapin Creek	Terrapin Creek	289	5571
-	(USGS gage at Ellisville, AL)	Terrapin Creek	258	-
225.65	Weiss Dam	-	-	5270
232.98	Below junction, Chattooga River	Chattooga River	675	5208
-	(USGS gage above Gaylesville, AL)	Chattooga River	368	-
278.65	Mayo's Bar	-	-	4040
285.78	Confluence Etowah & Oostanaula , Rome, GA	-	-	4010

ETOWAH RIVER

River Miles above Mouth	Point on River	Drainage Area in square miles
0.00	Junction, Oostanaula River, Rome, GA	1860
47.86	Allatoona Dam	1110

OOSTANAULA RIVER

River Miles above Mouth	Point on River	Drainage Area in square miles
0.00	Junction, Etowah River, Rome, GA	2150
0.35	USGS gage, Rome 5th Ave, GA	2150
43.16	USGS gage, Resaca, GA	1610
46.95	Confluence Conasauga & Coosawattee Rivers	1596

COOSAWATEE RIVER

River Miles above Mouth	Point on River	Drainage Area in square miles
0.00	Junction, Conasauga River	859
24.90	USGS gage, Carters, GA	531
26.80	Carters Dam	376

8-02. Flood Risk Management. The Weiss Dam project contains 10 percent of the conservation storage in the ACT Basin. The discharge percent chance exceedance curve at the dam site for the period 1967 – 2009 is shown on Plate 8-1. The flood regulation plan for Weiss Reservoir will provide substantial reductions in downstream flood peaks during minor and moderate floods. The limited amount of storage allocated to flood risk management will generally not affect any appreciable reduction in major flood peaks, but the available storage will be utilized through an induced surcharge schedule so that the peak discharge for major floods will not be any greater than would have occurred under natural conditions. Since the amount of flood risk management storage varies seasonally, the degree of control that Weiss Dam can exercise on floods of the same magnitude will vary with the time of the year.

A number of floods of different magnitudes were routed through Weiss Reservoir, following the regulation plan discussed in Section 0. The results of those routings showed that floods with natural peak flows of 50,000 cfs to 60,000 cfs can be controlled to a maximum outflow of 40,000 cfs. A flood of this magnitude can be expected to occur on an average of once in 2 to 3 years. Reservoir routings made by the Alabama Power Company included a flood designated "Maximum Flood of Record". This is a synthetic flood with peak discharge equal to that estimated for the flood of April 1886 which is the maximum known in the Coosa River basin. The routing shows the peak reservoir outflow equal to the natural peak discharge of 107,000 cfs, indicating that the allocated flood risk management storage and regulation plan adequately compensate for the effect of valley storage displaced by the reservoir.

a. Spillway Design Flood. Regulation of the spillway design flood is shown on Plate 8-2. The initial pool for the spillway design flood was assumed to be maximum summer-level power pool, elevation 564.0.

b. Other Floods. Historic Floods. Significant floods occurred in March and April of 1944, November and December of 1948, March and April of 1951 .Effects of flood risk management operations for three of these floods are on Plates 8-3 through 8-5.

8-03. Recreation. Weiss Lake is an important recreational resource, providing significant economic and social benefits for the region and the nation. The project contains 30,027 acres of water at the summer power pool elevation of 564.0 feet NGVD29. A wide variety of recreational opportunities are provided at the lake including boating, fishing, camping, picnicking, water skiing, hunting, and sightseeing. The effects of the Weiss water control operations on recreation opportunities are minimal between the summer top of conservation pool elevations of 564 feet NGVD29 and the winter top of conservation level of 561 feet NGVD29.

8-04. Water Quality. One of the water quality requirements in the ACT River basin is maintenance of a minimum flow in the lower river reaches. The natural low, seven-day-duration, flow expected to occur every ten years is the focus of regulation for water quality. This flow requirement is measured at Claiborne, on the Alabama River.

8-05. Fish and Wildlife. The Coosa River consists of 255 river miles between its beginning at the confluence of the Etowah and Oostanaula Rivers to its confluence with the Tallapoosa River forming the Alabama River. Of these 255 river miles, 238 miles are impounded through a series of six APC dams. These six impoundments have a total of 81,300 acres of water. The Weiss Lake comprises 52 of the 238 lake impounded river miles (22 percent) and 30,027 of the 81,300 acres of water (37 percent) within the Coosa River Basin. There are 147 species of fish, 53 species of freshwater mussels, and 91 species of aquatic snails within the Coosa River Basin.

Operational flow changes affect habitat for reservoir fisheries and other aquatic resources mainly through changes in water levels, changes in reservoir flushing rates (retention times), and associated changes in water quality parameters, such as primary productivity, nutrient loading, dissolved oxygen concentrations, and vertical stratification. Seasonal water level fluctuations can substantially influence littoral (shallow-water) habitats, decreasing woody debris deposition, restricting access to backwaters and wetlands, and limiting seed banks and stable water levels necessary for native aquatic vegetation. Those limitations, in turn, significantly influence the reproductive success of resident fish populations. High water levels inundating shoreline vegetation during spawning periods frequently have been associated with enhanced reproductive success and strong year class development for largemouth bass, spotted bass, bluegill, crappie, and other littoral species. Conversely, low or declining water levels can adversely affect reproductive success by reducing the area of available littoral spawning and rearing habitats.

In reservoirs like Weiss with relatively stable water levels and short hydraulic retention, longer post-winter retention is associated with greater crappie production, possibly related to reduced flushing of young-of-year fish in the discharge from the impoundment and more stable feeding conditions.

8-06. Water Conservation/Water Supply.

8-07. Hydroelectric Power. The Weiss Dam hydropower Project, along with 13 other hydroelectric facilities throughout the State of Alabama, provides approximately six percent of the APC's power generation. The State of Alabama depends on these facilities as a source of dependable and stable electricity. Hydroelectric power is also one of the cheaper forms of electrical energy, and it can be generated and supplied quickly as needed in response to changing demand.

Hydropower is typically produced as peak energy at Weiss Dam, i.e., power is generated during the hours that the demand for electrical power is highest, causing significant variations in downstream flows. Daily hydropower releases from the dam vary from zero during off-peak periods to as much as 24,650 cfs, which is approximately turbine capacity. Often, the weekend releases are lower than those during the weekdays. Lake elevations can vary on average about 0.65 feet during a 24-hour period as a result of hydropower releases. Tailwater levels can also vary significantly daily because of peaking hydropower operations at H. Neely Henry Dam, characterized by a rapid rise in downstream water levels immediately after generation is initiated and a rapid fall in stage as generation is ceased. Except during high flow conditions when hydropower may be generated for more extended periods of time, this peaking power generation scenario with daily fluctuating stages downstream is repeated nearly every week day (not generally on weekends). The project generates an estimated 210,935 megawatt hours of energy annually. [Preparer's Note: Awaiting info from USACE/APC.]

Hydropower generation by the Weiss Dam Hydropower Plant, in combination with the other hydropower power projects in the ACT Basin, helps to provide direct benefits to a large segment of the basin's population in the form of dependable, stable, and relatively low-cost power. Hydropower plays an important role in meeting the electrical power demands of the region.

8-08. Navigation. APC releases water from Weiss Dam Project in conjunction with their other storage projects in the ACT Basin to provide flows to support navigation. The navigation plan provides the flexibility to support flow targets when the system experiences normal flow conditions, reduced support as basin hydrology trends to drier conditions, and suspension of navigation support during sustained low flow conditions.

8-09. Drought Contingency Plans. The importance of drought contingency plans has become increasingly obvious as more demands are placed on the water resources of the basin. During low flow conditions, the reservoirs within the basin may not be able to fully support all project purposes. Several drought periods have occurred since construction of the Weiss Project in 1961. The duration of low flows can be seasonal or they can last for several years. Some of the more extreme droughts occurred in the early and mid 1980's, and most of the time period between late-1998 to mid-2009. There were periods of high flows during these droughts but the lower than normal rainfall trend continued.

The purpose of drought planning is to minimize the effect of drought, to develop methods for identifying drought conditions, and to develop both long- and short-term measures to be used to respond to and mitigate the effects of drought conditions. During droughts, reservoir regulation techniques are planned to preserve and ensure the more critical needs.

For the Weiss Project, the APC and the Corps will coordinate water management activities during the drought with other private power companies and federal agencies, navigation interests, the states, and other interested state and local parties as necessary. Drought operations will be in accordance with Table 7-6, ACT Drought Management Plan.

8-10. Flood Emergency Action Plans. Normally, all flood risk management operations are directed by APC Reservoir Management following the flood risk management procedures outlined in this manual with data sharing and communication between APC and the Water Management Section of the Corps. If, however, a storm of flood-producing magnitude occurs and all communications are disrupted between APC and the Corps, flood risk management measures, as previously described in Chapter 7 of this appendix, will begin and/or continue.

An emergency contact information list is shown in Exhibit G.

8-11. Frequencies. [Preparer's Note: Are there frequency curves for this section?]

a. Peak Inflow Probability.

b. Pool Elevation Duration and Frequency.

c. Key Control Points.

8-12. Other Studies.

a. Examples of Regulation. Pool elevation, inflow and outflow for the period of record are plotted on Plates 24 through 28. This demonstrates the actual reservoir regulation activity for the full period. [Preparer's Note: Water Mgt is developing this data and awaiting additional data from APC.]

b. Channel and Floodway Improvement.

c. Miscellaneous Studies. Alabama Power Company has studies underway to develop fore-casting procedures for reservoir inflow and for flood hydrographs on the Coosa River between Weiss and Gadsden. Once these procedures are developed, studies will be continually in progress to improve them as operating experience is gained. Also, project operations are continually reviewed and analyzed by both the Alabama Power Company and the Mobile District for possible improvements in the regulation plan or operating technique that would result in additional project benefits without violating any authorized project functions.

9 - WATER CONTROL MANAGEMENT

9-01. Responsibilities and Organization.

a. USACE. It is the responsibility of the Secretary of the Army to prescribe the aforementioned rules and regulations for the proper operation of the Weiss development in the interest of flood risk management and navigation. This responsibility is administered through the District Engineer, USACE Mobile District who will monitor the operation of the Weiss project for compliance with the established rules and regulations. The Hydrology and Hydraulics Section maintains daily records of precipitation, river stages, reservoir elevations and general stream-flow conditions throughout the Mobile District, with special emphasis on the areas affecting or affected by reservoir operation. This section will perform the following duties in connection with the operation of the Weiss development:

a. Maintain liaison with personnel of Reservoir Management for the daily exchange of hydrologic data.

b. Maintain records of rainfall and river stages for the Coosa River Basin, and records of pool level and outflow at Weiss Dam and other impoundments in the basin.

c. Monitor operations of the power plant and spillway at Weiss Dam for compliance with the regulation schedule for flood risk management operation, chart 20.

d. Transmit to Reservoir Management any instructions for special operations which may be required due to unusual flood conditions. (Except in emergencies where time does not permit, these instructions will first be cleared with the Chief of Engineering Division.)

b. Other Federal Agencies. Other federal agencies work closely with APC and the Corps to provide their agency support for the various project purposes of Weiss and to meet the federal requirements for which they might be responsible. The responsibilities and interagency coordination between the Corps and the federal agencies are discussed in Paragraph 9-02.

c. State, County and Local Agencies. The Alabama Office of Water Resources (OWR) administers programs for river basin management, river assessment, water supply assistance, water conservation, flood mapping, the National Flood Insurance Program and water resources development. Further, OWR serves as the state liaison with federal agencies on major water resources related projects, conducts any special studies on instream flow needs, and administers environmental education and outreach programs to increase awareness of Alabama's water resources.

1). The Alabama Department of Environmental Management Drinking Water Branch works closely with the more than 700 water systems in Alabama that provide safe drinking water to four million citizens.

2). The Alabama Chapter of the Soil and Water Conservation Society fosters the science and the art of soil, water, and related natural resource management to achieve sustainability.

d. Alabama Power Company. As stated in Public Law 436, 83rd Congress, and in the Federal Power Commission's license for the construction, operation and maintenance of Project No. 2146, it is the responsibility of the Alabama Power Company to operate and maintain the Weiss development in accordance with such reasonable rules and regulations as may be prescribed by the Secretary of the Army in the interest of flood risk management and navigation. The license further specifies certain terms and conditions to be met by the licensee in operating and maintaining the project in the interest of navigation. Day to day operation of the plant is assigned to the Alabama Control Center (ACC) in Birmingham as part of the Power Delivery System under the direction of Reservoir Operations Coordinator. Long range water planning and flood risk management operation is assigned to Reservoir Management in Birmingham as part of Southern Company Services (SCS) GEM-Hydro under the direction of System Operations Supervisor.

e. Stakeholders. Many non-federal stakeholder interest groups are active in the ACT Basin. The groups include lake associations, municipal and industrial (M&I) water users, navigation interests, environmental organizations, and other basin-wide interests groups. Coordinating water management activities with the interest groups, state and federal agencies, and others is accomplished as required on an ad-hoc basis and on regularly scheduled water management teleconferences when needed to share information regarding water control regulation actions and gather stakeholder feedback.

9-02. Interagency Coordination.

a. Local press and USACE Bulletins. The local press includes any periodic publications in or near the Weiss watershed and the ACT Basin. Montgomery, Alabama has some of the largest daily papers. These papers often publish articles related to the rivers and streams. Their representatives have direct contact with the Corps and APC through their respective Public Affairs offices. In addition, the local press and the public can access current project information on the Corps and APC web pages.

b. National Weather Service (NWS). NWS is the federal agency in NOAA that is responsible for weather and weather forecasts. The NWS along with its River Forecast Center maintains a network of reporting stations throughout the nation. It continuously provides current weather conditions and forecasts. It prepares river forecasts for many locations including the ACT Basin. Often, it prepares predictions on the basis of what if scenarios. Those include rainfall that is possible but has not occurred. In addition, the NWS provides information on hurricane tracts and other severe weather conditions. It monitors drought conditions and provides the information. Information is available through the Internet, the news, and the Mobile District's direct access.

c. U.S. Geological Survey (USGS). The USGS is an unbiased, multidisciplinary science organization that focuses on biology, geography, geology, geospatial information, and water. The agency is responsible for the timely, relevant, and impartial study of the landscape, natural resources, and natural hazards. Through the APC-USGS partnership and the Corps-USGS Cooperative Gaging Program, the USGS maintains a comprehensive network of gages in the ACT Basin. The USGS Water Science Centers in Georgia and Alabama publish real-time reservoir levels, river and tributary stages, and flow data through the USGS National Water Information Service (NWIS) web site.

d. U.S. Fish and Wildlife Service (USFWS). The USFWS is an agency of the Department of the Interior whose mission is working with others to conserve, protect and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. The USFWS is the responsible agency for the protection of federally listed threatened and endangered species and federally designated critical habitat in accordance with the Endangered Species Act of 1973. The USFWS also coordinates with other federal agencies under the auspices of the Fish and Wildlife Coordination Act. APC and the Corps, Mobile District, with support from the Water Management Section, coordinate water control actions and management with USFWS in accordance with both laws.

EXHIBIT A

SUPPLEMENTARY PERTINENT DATA

1 **GENERAL INFORMATION**

FERC License Number	2146
License Issued	September 4, 1957
License Expiration Date	July 28, 2007
Licensed Capacity, kw	87,750
Project Location	Near Town of Leesburg; County of Cherokee; Coosa River; 566 river miles above Mobile
Total Area Encompassed by Existing Project Boundary (land and water), acres	81,980.5
Acres of Water within Existing Project Boundary	30,200
Acres of Mainland within Existing Project Boundary	51,780.5
Weiss Dam Drainage Basin, square miles	5,270
Length of River from Weiss Dam to Allatoona Dam, miles	108
Length of River from Weiss Dam to H. Neely Henry Dam, miles	78

2 **DAM**

Date of Construction	July 31, 1958
In-service Date	June 5, 1961
Construction Type	Gravity concrete and earth-fill
Elevation Top of Abutments, NGVD29	590
Gross Head at Normal Pool Elevation (564 NGVD29), feet	56
Spillway Elevation (to top of 16-ft gate), NGVD29	572
Spillway Elevation (to top of 40-ft gates), NGVD29	570
Total Length of Water Retaining Structures, feet	31,679

DAM (cont'd)

Length of Earth Dikes	
East diversion earth embankment, feet	*Approx..5,280*
West diversion earth embankment, feet	*7,128*
East powerhouse earth embankment, feet	*9,504*
West powerhouse earth embankment, feet	*8,976*
Saddle dike "A", feet	*3,700*
Saddle dike "B", feet	*2,500*
Saddle dike "C", feet	*3,300*
Length of Powerhouse (substructure), feet	256
Length of concrete spillway, feet	275
Length of Spillway (gated), feet	216
Spillway Gates	7 total
Gates, Width by Height, feet	5 - 40 x 38
Trash gate at Spillway, Width by Height, feet	1 - 16 x 22
Trash gate at Powerhouse, Width by Height, feet	1 - 16 x 22
Hazard Classification	High
Spillway Capacity at 585.5 ft NGVD29, cfs	296,800
At dam site, cfs	284,000
At powerhouse, cfs	12,800

<u>RESERVOIR - WEISS LAKE</u>

Length of Impoundment, mile	52
Pool Elevations: Normal, feet NGVD29	564
Gross Storage:	
Normal Pool @ Elev 564 ft, acre-feet	306,655
Minimum Pool @ Elev 549 ft, acre-feet	43,238
Usable Storage Capacity (between 564 and 549 NGVD29), acre-feet	263,417
Surface Area (at 564 NGVD29), acres	30,200
Miles Shoreline (including tributaries) at 564 NGVD29	447
Water Residence Time, days	18
Existing Classification	PWS/F/S

1 **POWERHOUSE**

Length (Superstructure), feet	256
Width (Superstructure), feet	67
Height, feet	58
Construction Type (Superstructure)	Reinforced Concrete Gravity
Draft Tube Invert Elevation, feet NGVD29	461.1
Operating Floor Elevation, feet NGVD29	560.0
Normal Tailwater Elevation, feet NGVD29	between 508 & 518
High Tailwater Elevation, feet NGVD29 (three units generating)	519.7
Discharge Capacity, cfs	26,128
Intake Invert Elevation, feet NGVD29	554
Outdoor Gantry Crane Capacity, tons	150

2 **TURBINES (3)**

Rated Net Head (Gross Static), feet	49
Manufacturer	Allis Chalmers
Type	Propeller
Rated Discharge Capacity: Maximum, cfs	8,600 each
Speed, rpm	90
Rated Output at 49 ft head, hp	39,100 each

3 **GENERATORS (3)**

Manufacturer	Westinghouse
Nameplate Rating, kw	29,250 each
Rated Output, kva	32,500
Power Factor	0.9
Voltage, volts	11,500
Number of Phases	3
Frequency	60 cycle
Estimated average annual generation, kwh	215,500,000

TRANSFORMERS

Transmission Voltage	
Low side, volts	11,500
High side, volts	115,000
Rating, kilovolt amp	105,000

FLOOD FLOWS – WEISS DAM

Probable Maximum Flood	
Inflow, cfs	496,500
Outflow. Cfs	315,000
Maximum Elevation, feet NGVD29	586.8
Top of Embankment and Spillway, feet NGVD29	590.0

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EXHIBIT B

UNIT CONVERSIONS

AREA CONVERSION

UNIT	m^2	km^2	Ha	in^2	ft^2	yd^2	mi^2	ac
1 m^2	1	10^{-6}	10^{-4}	1550	10.76	1.196	$3.86 X 10^{-7}$	$2.47 X 10^{-4}$
1 km^2	10^6	1	100	$1.55 X 10^9$	$1.076 X 10^7$	$1.196 X 10^6$	0.3861	247.1
1 ha	10^4	0.01	1	$1.55 X 10^7$	$1.076 X 10^7$	$1.196 X 10^4$	$3.86 X 10^{-3}$	2,471
1 in^2	$6.45 X 10^{-4}$	$6.45 X 10^{10}$	$6.45 X 10^{-8}$	1	$6.94 X 10^{-3}$	$7.7 X 10^{-4}$	$2.49 X 10^{-10}$	$1.57 X 10^7$
1 ft^2	.0929	$9.29 X 10^{-8}$	$9.29 X 10^{-6}$	144	1	0.111	$3.59 X 10^{-8}$	$2.3 X 10^{-5}$
1 yd^2	0.8361	$8.36 X 10^{-7}$	$8.36 X 10^{-5}$	1296	9	1	$3.23 X 10^{-7}$	$2.07 X 10^{-4}$
1 mi^2	$2.59 X 10^6$	2.59	259	$4.01 X 10^9$	$2.79 X 10^7$	$3.098 X 10^6$	1	640
1 ac	4047	0.004047	0.4047	$6. 27 X 10^6$	43560	4840	$1.56 X 10^{-3}$	1

LENGTH CONVERSION

UNIT	cm	M	km	in.	ft	yd	mi
cm	1	0.01	0.0001	0.3937	0.0328	0.0109	$6.21 X 10^{-6}$
m	100	1	0.001	39.37	3.281	1.094	$6.21 X 10^{-4}$
km	10^5	1000	1	39,370	3281	1093.6	0.621
in.	2.54	0.0254	$2.54 X 10^{-5}$	1	0.0833	0.0278	$1.58 X 10^{-5}$
ft	30.48	0.3048	$3.05 X 10^{-4}$	12	1	0.33	$1.89 X 10^{-4}$
yd	91.44	0.9144	$9.14 X 10^{-4}$	36	3	1	$5.68 X 10^{-4}$
mi	$1.01 X 10^5$	$1.61 X 10^3$	1.6093	63,360	5280	1760	1

FLOW CONVERSION

UNIT	m^3/s	m^3/day	l/s	ft^3/s	ft^3/day	ac-ft/day	gal/min	gal/day	mgd
m^3/s	1	86,400	1000	35.31	$3.05 X 10^6$	70.05	$1.58 X 10^4$	$2.28 X 10^7$	22.824
m^3/day	$1.16 X 10^{-5}$	1	0.0116	$4.09 X 10^{-4}$	35.31	$8.1 X 10^{-4}$	0.1835	264.17	$2.64 X 10^{-4}$
l/s	0.001	86.4	1	0.0353	3051.2	0.070	15.85	$2.28 X 10^4$	$2.28 X 10^{-2}$
ft^3/s	0.0283	2446.6	28.32	1	$8.64 X 10^4$	1.984	448.8	$6.46 X 10^5$	0.646
ft^3/day	$3.28 X 10^{-7}$	1233.5	$3.28 X 10^{-4}$	$1.16 X 10^{-5}$	1	$2.3 X 10^{-5}$	$5.19 X 10^{-3}$	7.48	$7.48 X 10^{-6}$
ac-ft/day	0.0143	5.451	14.276	0.5042	43,560	1	226.28	$3.26 X 10^5$	0.3258
gal/min	$6.3 X 10^{-5}$	0.00379	0.0631	$2.23 X 10^{-3}$	192.5	$4.42 X 10^{-3}$	1	1440	$1.44 X 10^{-3}$
gal/day	$4.3 X 10^{-8}$	3785	$4.38 X 10^{-4}$	$1.55 X 10^{-6}$	11,337	$3.07 X 10^{-6}$	$6.94 X 10^{-4}$	1	10^{-6}
mgd	0.0438		43.82	1.55	$1.34 X 10^5$	3.07	694	10^6	1

VOLUME CONVERSION

UNIT	liters	m^3	in^3	ft^3	gal	ac-ft	million gal
liters	1	0.001	61.02	0.0353	0.264	8.1 X 10^{-7}	2.64 X 10^{-7}
m^3	1000	1	61,023	35.31	264.17	8.1 X 10^{-4}	2.64 X 10^{-4}
in^3	1.64 X 10^{-2}	1.64 X 10^{-5}	1	5.79 X 10^{-4}	4.33 X 10^{-3}	1.218 X 10^{-8}	4.33 X 10^{-9}
ft^3	28.317	0.02832	1728	1	7.48	2.296 X 10^{-5}	7.48 X 10^{6}
gal	3.785	3.78 X 10^{-3}	231	0.134	1	3.07 X 10^{-6}	10^{6}
ac-ft	1.23 X 10^{6}	1233.5	75.3 X 10^{6}	43,560	3.26 X 10^{5}	1	0.3260
million gallon	3.785 X 10^{6}	3785	2.31 X 10^{8}	1.34 X 10^{5}	10^{6}	3.0684	1

COMMON CONVERSIONS

1 million gallons per day (MGD) = 1.55 cfs

1 day-second-ft (DSF) = 1.984 acre-ft = 1 cfs for 24 hours

1 cubic foot per second of water falling 8.81 feet = 1 horsepower

1 cubic foot per second of water falling 11.0 feet at 80% efficiency = 1 horsepower

1 inch of depth over one square mile = 2,323,200 cubic feet

1 inch of depth over one square mile = 0.0737 cubic feet per second for one year

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EXHIBIT C

MEMORANDUM OF UNDERSTANDING

EXHIBIT C

MEMORANDUM OF UNDERSTANDING

between

U. S. ARMY ENGINEER DISTRICT, MOBILE, CORPS OF ENGINEERS

and

ALABAMA POWER COMPANY

concerning

OPERATION OF WEISS DAM

for

FLOOD CONTROL AND NAVIGATION

- PURPOSE

1.1 The purpose of this memorandum of understanding is to delineate and affirm:

a. The responsibilities of the Alabama Power Company and the Corps of Engineers in fulfilling their obligations under Public Law 436, 83rd Congress, insofar as they concern the operation of Weiss Dam for flood control and navigation; and

b. The functions and procedures of the two agencies in carrying out their responsibilities.

SECTION 2 - REFERENCES

2.1 Public Law 436, 83rd Congress, approved 28 June 1954. Suspends the authorization of Federal development of the Coosa River for the development of electric power, to permit development by private interests under a license to be issued by the Federal Power Commission; requires the licensee to provide flood control storage in certain of the dams constructed; and provides that the operation and maintenance of the dams shall be subject to reasonable rules and regulations of the Secretary of the Army in the interest of flood control and navigation.

2.2 Application of the Alabama Power Company to the Federal Power Commission for a license for the development of the Coosa River, Project No. 2146. Describes the proposed projects, their interrelationship with other developments, and contains a statement of the proposed reservoir operation plans.

2.3 Federal Power Commission's Order Issuing License to Alabama Power Company, Project No. 2146, as amended, including exhibits. Describes the projects, designates the elevation of full power pool and the amount of storage to be allocated for flood control and states that "The operation of the dams constituting the project in the interest of flood control, including the control of the level of the pool caused by each of the dams, and the discharge of water through the spillways or any outlet structures of such dams, shall be in accordance with such reasonable rules and regulations as may be prescribed by the Secretary of the Army". The license further specifies certain terms and conditions concerning the operation of the project for navigation, and states that such operation shall at all times be controlled by such reasonable rules and regulations in the interest of navigation as may be made from time to time by the Secretary of the Army.

2.4 Corps of Engineers' Reservoir Regulation Manual for the Alabama-Coosa River Basin, Appendix B, Reservoir Regulation Manual for Weiss Dam. Describes in detail the procedures to be followed in carrying out the rules and regulations for operation of Weiss Dam for flood control and navigation as set forth in this memorandum of understanding.

SECTION 3 - DESCRIPTION OF PROJECT

3.1 The Weiss development, located on the Coosa River near Lees-burg, Alabama, consists of a dam having a concrete gated spillway section with compacted earth abutment dikes; a reservoir with full power pool at elevation 564 feet msl., having a surface area of approximately 27,800 acres; a diversion canal from the reservoir to a forebay created by dikes; an 87,750—kw. power plant; a substation; and appurtenant electrical and mechanical facilities. The dam is located at river mile 226, about 50 miles upstream from Gadsden, Alabama, and about 1 mile southeast of the town of Leesburg. Total drainage area above the dam, including the 1,110 square miles controlled by Allatoona Reservoir, is 5,270 square miles. The reservoir, extending from the dam about 52 miles upstream to Mayo's Bar, is located in Cherokee County, Alabama, and Floyd County, Georgia. The power plant, situated on the right bank of the river, is located about *3* miles from the dam, below the forebay lake and diversion canal which were constructed across a twenty—mile bend of the river. Exhibit 1 presents a general layout of the Weiss project.

SECTION 4

RESPONSIBILITIES OF ALABAMA POWER COMPANY AND CORPS OF ENGINEERS

4.1 As stated in Public Law 436, 83rd Congress, and in the Federal Power Commission's license for the construction, operation and maintenance of Project No. 2146, it is the responsibility of the Alabama Power Company to operate and maintain the Weiss development in accordance with such reasonable rules and regulations as may be prescribed by the Secretary of the Army in the interest of flood control and navigation. The license further specifies certain terms and conditions to be met by the licensee in operating and maintaining the project in the interest of navigation.

4.2 It is the responsibility of the Secretary of the Army to prescribe the aforementioned rules and regulations for the proper operation of the Weiss development in the interest of flood control and navigation. This responsibility is administered through the District Engineer of the Mobile District who will monitor the operation of the Weiss project for compliance with the established rules and regulations.

SECTION 5 - REGULATION PLAN

5.1 The Weiss project will normally operate to produce peaking power. During periods of low stream flow the storage within the range of power pooi drawdown between elevations 564.0 and 558.0, amounting to 148,400 acre—feet (0.52 inch), will augment the flow of the river downstream. This storage will also be available seasonally for flood control. Above the top of the power pool and extending to elevation 574.0, there is available for control of floods surcharge storage totaling 397,000 acre-feet (1.42 inches), within which reservoir releases will be scheduled as dictated by an induced surcharge schedule which will achieve significant improvement in downstream flow resulting from high to moderate frequency floods. Reservoir operations during large floods resulting from major storms will require special consideration and may deviate from the induced surcharge schedule when firm forecasts of reservoir inflows and hydro— graphs of flows into the Coosa River from sub-basins downstream from Weiss Dam show that the flood control operation can be improved.

5.2 Reservoir operation for power production. A curve delineating the storage in Weiss reservoir allocated to power generation and to flood control throughout the year is shown on Exhibit 2. This seasonally varying top-of-power-pool curve is a firm division between the power and flood control pools and normally the reservoir level will be maintained at or below the curve except when storing flood waters. The drawdown each year is to elevation 558.0, minimum power pool. Normally, the plant will operate on a weekly cycle and the power generated will be available for use in daily peak-load periods Monday through Friday. At such times as the reservoir level is below that shown on the storage delineation curve (top-of-power-pool), the power plant will be operated in accordance with the system requirements. Whenever the reservoir reaches the elevation shown on the storage delineation curve (top-of-power-pool), the power plant will be operated as necessary up to full-gate capacity to discharge the amount of water required to keep the reservoir level from exceeding that shown on the storage delineation curve (top-of-power-pool).

5.3 <u>Reservoir operation for flood control</u>. Insofar as possible, within the limits of the discharge capacity of the power plant, the reservoir level will be maintained on or below the storage delineation curve. When the reservoir is below elevation 564.0 and the inflow causes it to rise above the level designated by the storage delineation curve with the power plant operating at full-gate capacity, the plant will continue to operate around-the-clock at full-gate capacity until the reservoir is restored to the proper level designated by the storage delineation curve.

5.4 When the reservoir is at elevation 564.0, all inflow will be passed through the power plant until its discharge capacity is exceeded. Thereafter, the excess will be passed through the spillway with gate positions adjusted at the end of each 6-hour period as required to maintain the reservoir at elevation 564.0, until the total release rate (spillway plus powerhouse), reaches 40,000 cfs. Thereafter, as long as the inflow continues to equal or exceed 40,000 cfs, the release rate will be limited to 40,000 cfs until the reservoir rises and/or the inflow increases to a point where a higher release rate is dictated by the induced surcharge schedule shown on Exhibit 3. Every 6 hours thereafter the release rate will be adjusted to conform with the induced surcharge schedule. At all times when release rates greater than 51,000 cfs are scheduled, the excess must be discharged continually through the gated overflow section adjacent to the powerhouse to the extent of its capacity until the rate of reservoir release reduces to 51,000 cfs. During this time the powerhouse overflow section operates as a control works to prevent or minimize flood damages in the river reach between the dam and the powerhouse.

5.5 When the rate of reservoir inflow becomes equal to the reservoir release rate, the positions of the spillway gates at that time are maintained during the evacuation of flood storage above elevation 564.0, until the reservoir level recedes to elevation 564.0. In the event a second flood enters the reservoir prior to completion of evacuation to elevation 564.0, the rate of reservoir release will be as dictated by the induced surcharge schedule. When the reservoir level has receded to elevation 564.0 the power plant will continue to operate at capacity around-the—clock until the reservoir coincides with the level shown on the storage delineation curve, after which the power plant is operated as required to maintain the reservoir on or below the limits shown on the storage delineation curve.

5.6 <u>Reservoir operation for major floods</u>. Normally all flood control operation will be in accordance with the regulation plan described above. However, since the limited amount of storage allocated to flood control will generally not effect any appreciable reduction in major flood peaks, it is important that special consideration be given to operation of the reservoir during a major flood. When firm forecasts indicate that a major flood is in progress the Company and the District Engineer will collaborate in the prompt analysis of all available information and in determining whether a deviation from the induced surcharge schedule will improve the flood control operation. Any departure from the regulation schedule will require approval by the District Engineer. Details of the forecasting procedures, which will be developed by the Company with the concurrence of the District Engineer and which will be revised from time to time as experience dictates, will be contained in the regulation manual.

5.7 Reservoir operation for navigation. Specific rules for operation of the reservoir in the interest of navigation will be prescribed and listed in the reservoir regulation manual as navigation develops on the Coosa River.

SECTION 6 - COLLECTION AND EXCHANGE OF DATA

6.1 Both the Alabama Power Company and the Corps of Engineers collect and maintain records of hydrologic data and other information in connection with the operation of projects in the Coosa River basin. In order to properly operate the Weiss project and follow the regulation plan described in Section 5, the Alabama Power Company collects and maintains records of the reservoir level, river levels below the dam and powerhouse, inflow to the reservoir, discharge from the powerhouse and through the spillway, and rainfall over the Coosa River basin below Rome, Georgia. The Mobile District collects and maintains records of rainfall and stream flow in the Coosa River basin above Rome, Georgia, and the reservoir level, inflow and discharge at Allatoona Dam on the Etowah River.

6.2 Since the data collected by the Power Company are needed by the Corps of Engineers in carrying out its responsibility of monitoring the flood control operations of the Weiss project, and the data collected by the Corps of Engineers supplements the data being collected by the Company and is of value to them in planning their project operations, each agency will furnish the other with such of its hydrologic and operating data as may be needed or found beneficial in its operations.

6.3 The regulation manual describes the procedures to be followed and lines of communications to be used in exchanging the data and in issuing reservoir regulation instructions. Existing and future communications facilities of the Company will be utilized to the maximum practicable extent, supplemented where necessary by facilities provided by the Corps of Engineers and/or commercial communications facilities.

ALABAMA POWER COMPANY	UNITED STATES OF AMERICA
/s/ Walter Bouldin	/s/ R. C. Marshall
WALTER BOULDIN	R. C. MARSHALL
President	Colonel, Corps of Engineers
	District Engineer
Date 12-13-65	Date 11-19-65

EXHIBIT D

PUBLIC LAW 436

83RD CONGRESS, 2ND SESSION

EXHIBIT D PUBLIC LAW 436

83RD CONGRESS, 2ND SESSION

Public Law 436 - 83d Congress
Chapter 408 - 2d Session
H. R. 8923

AN ACT

To provide for the development of the Coosa River, Alabama and Georgia

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That in connection with the comprehensive program for the development of the water resources of the Alabama-Coosa River and tributaries, authorized by the Rivers and Harbors Act, approved March 2, 1945 (59 Stat. 10), it is hereby declared to be the policy of the Congress, where private interests are considering applying for authority to undertake the development of resources covered by such authorization, that the power from such development shall be considered primarily for the benefit of the people of the section as a whole and shall be sold to assure the widest possible use, particularly by domestic and rural consumers, and at the lowest possible cost.

Sec. 2. The authorization of the comprehensive plan for the Alabama-Coosa River and tributaries, as provided in the Rivers and Harbors Act, approved March 2, 1945, insofar as it provides for the development of the Coosa River for the development of electric power, is hereby suspended to permit the development of the Coosa River, Alabama and Georgia, by a series of dams in accordance with the conditions of a license, if issued, pursuant to the Federal Power Act and in accordance with the provisions and requirements of this Act.

Sec. 3. The series of dams, together with the existing hydroelectric power dams on the Coosa River, shall, in the judgment of the Federal Power Commission, be best adapted to the comprehensive plan for the development of the Coosa River for the use or benefit of interstate commerce, for the improvement and utilization of waterpower development, and for other beneficial public uses, including recreational purposes.

Sec 4. The dams constructed by the licensee shall provide a substantially continuous series of pools and shall include basic provisions for the future economical construction of navigation facilities.

Sec. 5. The license relating to such development shall require the maximum flood control storage which is economically feasible with respect to past floods. of record but in no event shall flood control storage be less than that required to compensate for the effects of valley storage displaced by the proposed reservoirs of the licensee, or less in quantity and effectiveness than the amount of flood control storage which could feasibly be provided by the currently authorized federal multiple purpose project at Howell Mills Shoals constructed to elevation 490, with surcharge storage to elevation 495.

Sec. 6. Before a license is issued, the applicant for the license shall submit a report on the details of its plan of development to the Federal Power Commission.

Sec 7. The Chief of Engineers shall review any plan of development submitted to the Federal Power Commission for the purpose of acquiring a license and shall make recommendations with respect to such plan to such Commission with particular regard to flood control and navigation, and its adaptability to the comprehensive plan for the entire basin development.

Sec. 8. The license may provide for the construction of the series of dams in sequence on the condition that the dam or dams providing the maximum flood control benefits shall be constructed first unless a different order of construction is approved by the Secretary of the Army.

Sec. 9. The operation and maintenance of the dams shall be subject to reasonable rules and regulations of the Secretary of the Army in the interest of flood control and navigation.

Sec. 10. An allocation of cost of flood control provided in addition to that required to compensate for displaced valley storage and of cost of navigation shall be approved by the Federal Power Commission, taking into consideration recommendations of the Chief of Engineers based upon flood control and navigation benefits estimated by the Chief of Engineers.

Sec 11. If the Federal Power Commission shall issue a license under this Act, the Commission shall simultaneously make a full report to the Public Works Committees of the Senate and House of Representatives of the Congress, setting out the major provisions and conditions inserted in such license, and a copy of the Commission's report shall forthwith be submitted to the Chief of Engineers who shall review the same and promptly submit to said committees his views as to whether the major provisions and conditions in such license are adaptable to the comprehensive plan. In the event the Congress by legislative enactment adopts a policy of compensating such licensees for navigation and flood control costs, any such allocated navigation and flood control costs are hereby authorized to be compensated through annual contributions by the United States.

Sec 12. Unless it is beyond the reasonable control of a licensee acting in good faith and exercising due diligence: (1) an application for a preliminary permit under the Federal Power Act relating to the development of the Coosa River shall be prosecuted with reasonable diligence before the Federal Power Commission; (2) an application for a license to construct such dams shall be filed with such Commission within two years after the date of the enactment of this Act; (3) construction of one such dam shall be commenced within a period of one year subsequent to the date of the issuance of a license by such Commission, (4) at least one such dam and its power plant shall be completed and in operation in accordance with the terms of the license within five years from the date of the issuance of such license by such Commission; and (5) the remaining dams included in the license issued by such Commission shall be completed within ten years from the date of the commencement of construction of the first dam, subject to the provisions of Section 13 of the Federal Power Act: "Provided," That if any such conditions are not fulfilled, or if the Commission denies the application for a license, the authorization relating to the Alabama-Coosa River provided for in the Act, approved March 2, 1945, shall have the same status as it would have had if this Act had not been enacted, so far as the uncompleted project works are concerned; in which event the outstanding license may be terminated or revoked and the uncompleted and completed project may be sold or acquired by the United States as provided in Sections 13 and 26 of the Federal Power Act.

Sec. 13. Nothing in this Act shall be deemed to affect in any way the authorization of the development of the Alabama-Coosa River and tributaries other than that portion of the development involving projects on the Coosa River or the authority of the Federal Power Commission to issue a license for the complete development of the Coosa River by States or municipalities under section 7 (a) of the Federal Power Act or to find under section 7 (b) of said Act that the development should be under taken by the United States itself.

Approved June 28, 1954

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EXHIBIT E

EXTRACTS FROM PROJECT LICENSE

EXTRACTS FROM PROJECT LICENSE

Federal Energy Regulatory Commission Project License for major project No. 2146-111, Issued 20 June 2013, authorizes the continued operation and maintenance by the Alabama Power Company of the H. Neely Henry Project, an existing development on the Coosa River near Gadsden, Alabama. Extracts from the project license especially pertinent to flood risk management, navigation, water use and reservoir regulation concerning the H. Neely Henry Project are quoted below for guidance and reference purposes.

"**Article 8.** The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe."

"**Article 11.** Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United states, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act."

Article 12. The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission my prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned."

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters."

"**Article 15.** The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing."

"Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license."

"**Article 18.** So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

"Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.“

“<u>Article 21.</u> Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.”

“<u>Article 22.</u> Whenever the United States shall desire to construct, complete, or improve navigation facilities in connection with the project, the Licensee shall convey to the United States, free of cost, such of its lands and rights-of-way and such rights of passage through its dams or other structures, and shall permit such control of its pools, as may be required to complete and maintain such navigation facilities.”

“<u>Article 23.</u> The operation of any navigation facilities which may be constructed as a part of, or in connection with, any dam or diversion structure constituting a part of the project works shall at all times be controlled by such reasonable rules and regulations in the interest of navigation, including control of the level of the pool caused by such dam or diversion structure, as may be made from time to time by the Secretary of the Army.”

“<u>Article 24.</u> The Licensee shall furnish power free of cost to the United States for the operation and maintenance of navigation facilities in the vicinity of the project at the voltage and frequency required by such facilities and at a point adjacent thereto, whether said facilities are constructed by the Licensee or by the United States.”

“<u>Article 25.</u> The Licensee shall construct, maintain, and operate at its own expense such lights and other signals for the protection of navigation as may be directed by the Secretary of the Department in which the Coast Guard is operating.”

“**<u>Article 28.</u>** The Licensee shall interpose no objection to, and shall in no way prevent, the use by the agency of the United States having jurisdiction over the lands of the United States affected, or by persons or corporations occupying lands of the United States under permit, of water for fire suppression from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license, or the use by said parties of water for sanitary and domestic purposes from any stream, conduit, or body of water, natural or artificial, used by the Licensee in the operation of the project works covered by the license.

EXHIBIT F

ALABAMA-COOSA-TALLAPOOSA (ACT) RIVER BASIN

DROUGHT CONTINGENCY PLAN

DROUGHT CONTINGENCY PLAN

FOR

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

ALLATOONA DAM AND LAKE

CARTERS DAM AND LAKE

ALABAMA POWER COMPANY COOSA RIVER PROJECTS

ALABAMA POWER COMPANY TALLAPOOSA RIVER PROJECTS

ALABAMA RIVER PROJECTS

US Army Corps of Engineers ®

South Atlantic Division

Mobile District

March 2015

DROUGHT CONTINGENCY PLAN
FOR THE
ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

I – INTRODUCTION

1-01. <u>Purpose of Document</u>. The purpose of this Drought Contingency Plan (DCP) is to provide a basic reference for water management decisions and responses to water shortage in the Alabama-Coosa-Tallapoosa (ACT) River Basin induced by climatological droughts. As a water management document it is limited to those drought concerns relating to water control management actions for Federal U.S. Army Corps of Engineers (Corps) and Alabama Power Company (APC) dams. This DCP does not prescribe all possible actions that might be taken in a drought situation due to the long-term nature of droughts and unique issues that may arise. The primary value of this DCP is in documenting the overall ACT Basin Drought Management Plan for the system of Corps and APC projects; in documenting the data needed to support water management decisions related to drought regulation; and in defining the coordination needed to manage the ACT project's water resources to ensure that they are used in a manner consistent with the needs which develop during a drought. This DCP addresses the water control regulation of the five Corps impoundments and the APC Coosa and Tallapoosa projects (Table 1) in regard to water control regulation during droughts. Details of the drought management plan as it relates to each project and its water control regulation during droughts are provided in the water control manual within the respective project appendix to the ACT Basin Master Water Control Manual.

II – AUTHORITIES

2-01. <u>Authorities</u>. The following list provides the policies and guidance that are pertinent to the development of drought contingency plans and actions directed therein.

A. ER 1110-2-1941, "Drought Contingency Plans", dated 02 Feb 2018. This regulation provides policy and guidance for the preparation of drought contingency plans as part of the Corps of Engineers' overall water management activities.

B. ER 1110-2-8156, "Preparation of Water Control Manuals", dated 30 Sep 2018. This document provides a guide for preparing water control manuals for individual water resource projects and for overall river basins to include drought contingency plans.

C. ER 1110-2-240, "Water Control Management", dated 30 May 2016. This regulation prescribes the policies and procedures to be followed in water management activities including special regulations to be conducted during droughts. It also sets the responsibility and approval authority in development of water control plans.

D. EM 1110-2-3600, "Management of Water Control Systems", dated 10 Oct 2017. This guidance memorandum requires that the drought management plan be incorporated into the project water control manuals and master water control manuals. It also provides guidance in formulating strategies for project regulation during droughts.

1 **Table 1. Reservoir impoundments within the ACT River Basin**

River/Project Name	Owner/State/ Year Initially Completed	Total storage at Full Pool (acre-feet)	Conservation Storage (acre-feet)	Percentage of ACT Basin Conservation Storage (%)
Coosawattee River				
Carters Dam and Lake	Corps/GA/1974	383,565	141,402	5.9
Carters Reregulation Dam	Corps/GA/1974	17,500	16,000	0.1
Etowah River				
Allatoona Dam and Lake	Corps/GA/1949	349,922	281,916	10.8
Hickory Log Creek Dam	CCMWA/Canton/2007	17,702	NA	NA
Coosa River				
Weiss Dam and Lake	APC/AL/1961	306,655	263,417	10.0
H. Neely Henry Dam and Lake	APC/AL/1966	120,853	118,210	4.5
Logan Martin Dam and Lake	APC/AL/1964	273,467	144,383	5.5
Lay Dam and Lake	APC/AL/1914	262,887	92,352	3.5
Mitchell Dam and Lake	APC/AL/1923	170,783	51,577	1.9
Jordan Dam and Lake	APC/AL/1928	236,130	19,057	0.7
Walter Bouldin Dam	APC/AL/1967	236,130	NA	--
Tallapoosa River				
Harris Dam and Lake	APC/AL/1982	425,721	207,317	7.9
Martin Dam and Lake	APC/AL/1926	1,628,303	1,202,340	45.7
Yates Dam and Lake	APC/AL/1928	53,908	6,928	0.3
Thurlow Dam and Lake	APC/AL/1930	17,976	NA	--
Alabama River				
Robert F. Henry Lock and Dam/R.E. “Bob” Woodruff Lake	Corps/AL/1972	247,210	36,450	1.4
Millers Ferry Lock and Dam/ William “Bill” Dannelly Lake	Corps/AL/1969	346,254	46,704	1.8
Claiborne Lock and Dam and Lake	Corps/AL/1969	102,480	NA	--

III – DROUGHT IDENTIFICATION

3-01. Definition. Drought can be defined in different ways - meteorological, hydrological, agricultural, and socioeconomic. In this DCP, the definition of drought used in the *National Study of Water Management During Drought* is used:

> "Droughts are periods of time when natural or managed water systems do not provide enough water to meet established human and environmental uses because of natural shortfalls in precipitation or streamflow."

That definition defines drought in terms of its impact on water control regulation, reservoir levels, and associated conservation storage. Water management actions during droughts are intended to balance the water use and water availability to meet water use needs. Because of hydrologic variability, there cannot be 100 percent reliability that all water demands are met. Droughts occasionally will be declared and mitigation or emergency actions initiated to lessen the stresses placed on the water resources within a river basin. Those responses are tactical measures to conserve the available water resources (USACE 2009).

3-02. Drought Identification. There is no known method of predicting how severe or when a drought will occur. There are, however, indicators that are useful in determining when conditions are favorable: below normal rainfall; lower than average inflows; and low reservoir levels, especially immediately after the spring season when rainfall and runoff conditions are normally the highest. When conditions indicate that a drought is imminent, the Corps Water Management Section (WMS) and APC will increase the monitoring of the conditions and evaluate the impacts on reservoir projects if drought conditions continue or become worse for 30-, 60-, or 90-day periods. Additionally, WMS and APC will determine if a change in operating criteria would aid in the total regulation of the river system and if so, what changes would provide the maximum benefits from any available water.

Various products are used to detect and monitor the extent and severity of basin drought conditions. One key indicator is the U.S. Drought Monitor available through the U.S. Drought Portal, www.drought.gov. The National Weather Service (NWS) Climate Prediction Center (CPC) also develops short-term (6- to 10-day and 8- to 14-day) and long-term (1-month and 3-month) precipitation and temperature outlooks and a U.S. Seasonal Drought Outlook, which are useful products for monitoring dry conditions. The Palmer Drought Severity Index is also used as a drought reference. The Palmer index assesses total moisture by using temperature and precipitation to compute water supply and demand and soil moisture. It is considered most relevant for non-irrigated cropland and primarily reflects long-term drought. However, the index requires detailed data and cannot reflect an operation of a reservoir system. The Alabama Office of the State Climatologist also produces a Lawn and Garden Moisture Index for Alabama, Florida, Georgia, and South Carolina, which gives a basin-wide ability to determine the extent and severity of drought conditions. The runoff forecasts developed for both short- and long-range periods reflect drought conditions when appropriate. There is also a heavy reliance on the latest El Niño Southern Oscillation (ENSO) forecast modeling to represent the potential effects of La Niña on drought conditions and spring inflows. Long-range models are used with greater frequency during drought conditions to forecast potential effects on reservoir elevations, ability to meet minimum flows, and water supply availability. A long-term, numerical model, Extended Streamflow Prediction, developed by the NWS, provides probabilistic forecasts of streamflow and reservoir stages on the basis of climatic conditions, streamflow, and soil moisture. Extended Streamflow Prediction results are used in projecting possible future drought conditions. Other parameters and models can indicate a lack of rainfall and runoff and the degree of severity and continuance of a drought. For example, models using data of previous droughts or a percent of current to mean monthly flows with several operational schemes have proven helpful in forecasting reservoir levels for water management planning purposes. Other parameters considered during drought management are the ability of the various lakes to meet the demands placed on storage, the probability that lake elevations will return to normal seasonal levels, basin streamflows, basin groundwater table levels, and the total available storage to meet hydropower marketing system demands.

3-03. Historical Droughts. Drought events have occurred in the ACT Basin with varying degrees of severity and duration. Five of the most significant historical basin wide droughts occurred in 1940-1941, 1954-1958, 1984-1989, 1999-2003, and 2006-2009. The 1984 to 1989 drought caused water shortages across the basin in 1986. This resulted in the need for the Corps to make adjustments in the water management practices. Water shortages occurred again from 1999 through 2002 and during 2007 through 2008. The 2006 to 2009 drought was the most devastating recorded in Alabama and western Georgia. Precipitation declines began in December 2005. These shortfalls continued through winter 2006-07 and spring 2007, exhibiting the driest winter and spring in the recorded period of record. The Corps and APC had water levels that were among the lowest recorded since the impoundments were constructed. North Georgia received less than 75 percent of normal precipitation (30-year average). The drought reached peak intensity in 2007, resulting in a D-4 Exceptional Drought Intensity (the worst measured) throughout the summer of 2007.

3-04. Severity. Water shortage problems experienced during droughts are not uniform throughout the ACT River Basin. Even during normal, or average, hydrologic conditions, various portions of the basin experience water supply problems. The severity of the problems are primarily attributed to the pattern of human habitation within the basin; the source of water utilized (surface water vs. ground water); and the characteristics of the water resources available for use. During droughts, these problems can be intensified. A severe drought in the basin develops when a deficiency of rainfall occurs over a long time period and has a typical duration of 18 to 24 months. The number of months of below normal rainfall is more significant in determining the magnitude of a drought in the basin than the severity of the deficiency in specific months. However, the severity of the rainfall deficiency during the normal spring wet season has a significant impact on the ability to refill reservoirs after the fall/winter drawdown period. Another confounding factor which influences droughts in the basin is the variability of rainfall over the basin, both temporarily and spatially.

IV – BASIN AND PROJECT DESCRIPTION

4-01. Basin Description. The headwater streams of the Alabama-Coosa-Tallapoosa (ACT) River Basin rise in the Blue Ridge Mountains of Georgia and Tennessee and flow southwest, combining at Rome, Georgia, to form the Coosa River. The confluence of the Coosa and Tallapoosa Rivers in central Alabama forms the Alabama River near Wetumpka, Alabama. The Alabama River flows through Montgomery and Selma and joins with the Tombigbee River at the mouth of the ACT Basin to form the Mobile River about 45 miles above Mobile, Alabama. The Mobile River flows into Mobile Bay at an estuary of the Gulf of Mexico. The total drainage area of the ACT Basin is approximately 22,739 square miles: 17,254 square miles in Alabama; 5,385 square miles in Georgia; and 100 square miles in Tennessee. A detailed description of the ACT River Basin is provided in the ACT Master Water Control Manual, Chapter 4 – Watershed Characteristics.

4-02. <u>Project Description</u>. The Corps operates five projects in the ACT Basin: Allatoona Dam and Lake on the Etowah River; Carters Dam and Lake and Reregulation Dam on the Coosawattee River; and Robert F. Henry Lock and Dam, Millers Ferry Lock and Dam, and Claiborne Lock and Dam on the Alabama River. Claiborne is a lock and dam without any appreciable water storage behind it. Robert F. Henry and Millers Ferry are operated as run-of-river projects and only very limited pondage is available to support hydropower peaking and other project purposes. APC owns and operates eleven hydropower dams in the ACT Basin; seven dams on the Coosa River and four dams on the Tallapoosa River. Figure 1 depicts the percentage of conservation storage of each project in the ACT Basin. Figure 2 shows the project locations within the basin. Figure 3 provides a profile of the basin and each project.

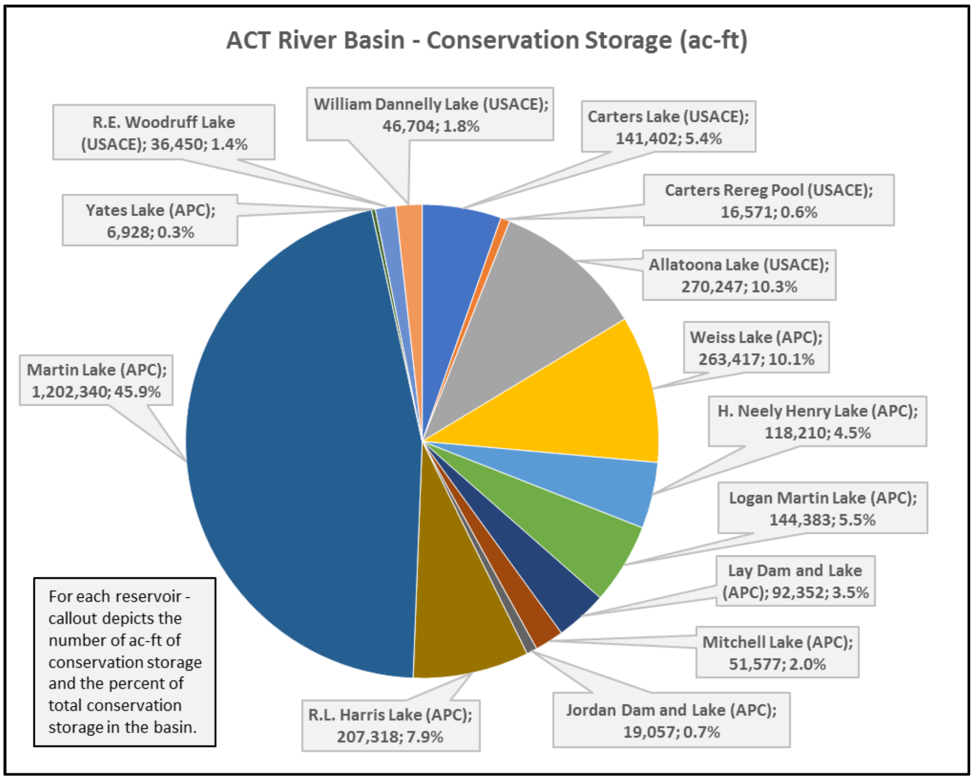

Figure 1. ACT Basin Reservoir Conservation Storage

A. **General.** Of the 16 reservoirs (considering Jordan Dam and Lake and Bouldin Dam as one reservoir and Carters Lake and Carters Reregulation Dam as one reservoir), Lake Martin on the Tallapoosa River has the greatest amount of storage, containing 45.9 percent of the conservation storage in the ACT Basin. Allatoona Lake, R.L. Harris Lake, Weiss Lake, and Carters Lake are the next four largest reservoirs in terms of storage. APC controls approximately 80 percent of the available conservation storage; Corps projects (Robert F. Henry Lock and Dam, Millers Ferry Lock and Dam, Allatoona Lake, and Carters Lake) control approximately 20 percent. The two most upstream Corps reservoirs, Allatoona Lake and Carters Lake, account for 15.7 percent of the total basin conservation storage.

Figure 2. Alabama-Coosa-Tallapoosa River Basin Project Location Map

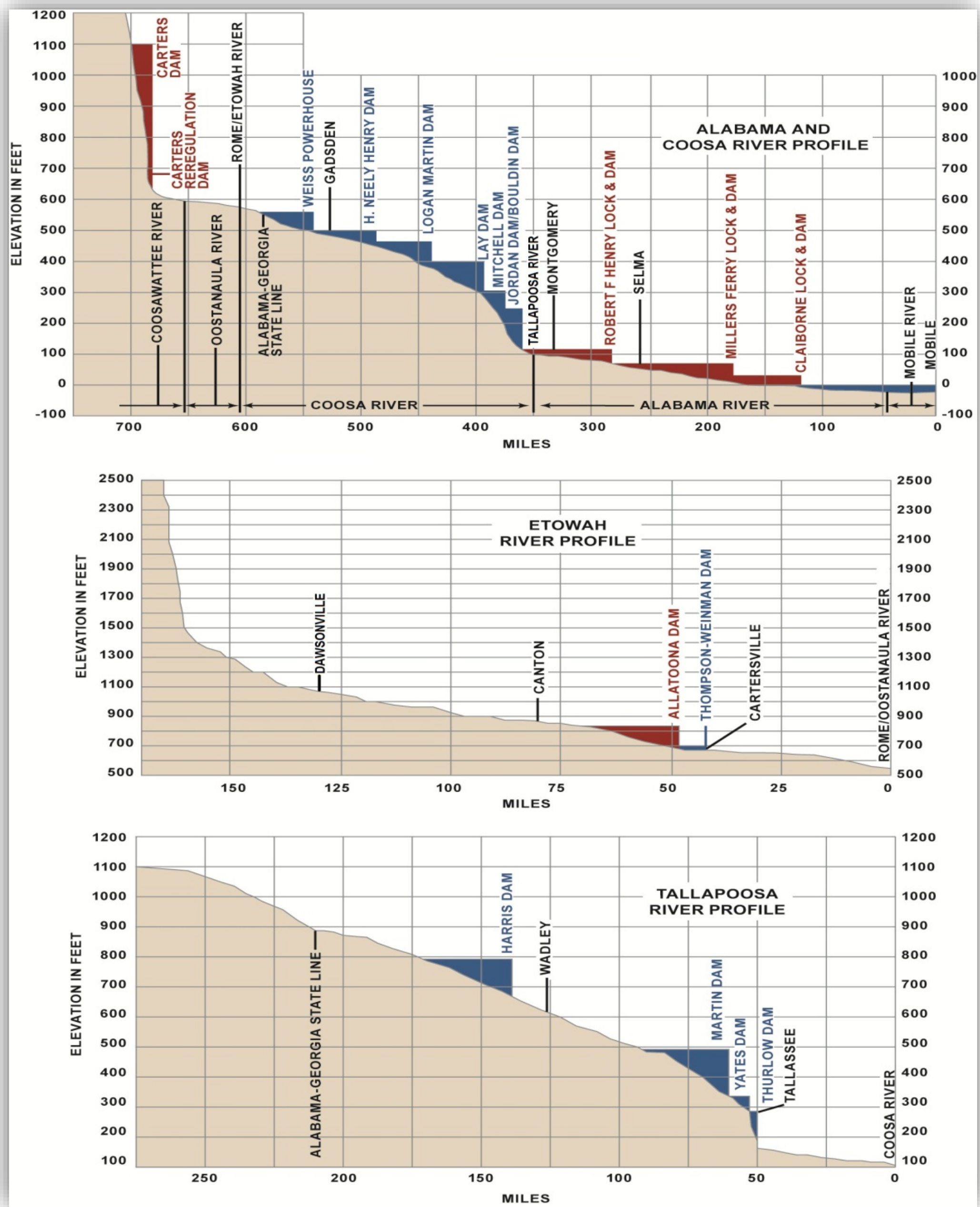

Figure 3. Alabama-Coosa-Tallapoosa River Basin Profile Map

B. **Allatoona Dam and Lake**. The Corps' Allatoona Dam on the Etowah River creates the 11,422 acres Allatoona Lake. The project's authorization, general features, and purposes are described in the Allatoona Dam and Lake Water Control Manual. The Allatoona Lake top of conservation pool is elevation 841 feet NGVD29 during the late spring and summer months (May through August); transitions to elevation 835 feet NGVD29 in the fall (October through mid-November); transitions to a winter drawdown to elevation 824.5 feet NGVD29 (1-15 January); and refills back to elevation 841 feet NGVD29 during the winter and spring wet season as shown in the water control plan guide curve (Figure 4). However, the lake level may fluctuate significantly from the guide curve over time, dependent primarily upon basin inflows but also influenced by project operations, evaporation, withdrawals, and return flows. A minimum flow of about 240 cfs is continuously released through a small unit, which generates power while providing a constant flow to the Etowah River downstream. Under drier conditions when basin inflows are reduced, project operations are adjusted to conserve storage in Allatoona Lake while continuing to meet project purposes in accordance with four action zones as shown on Figure 4.

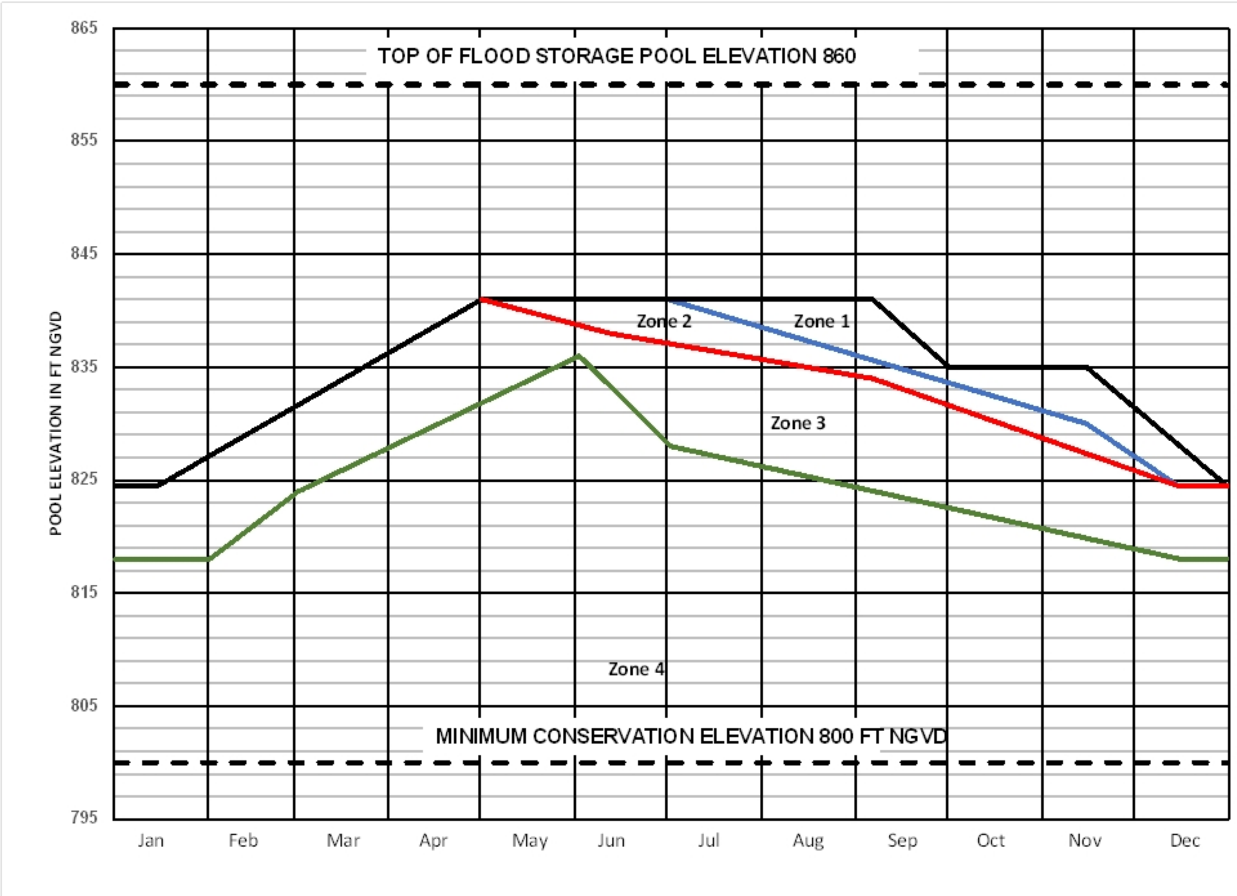

Figure 4. Allatoona Lake Guide Curve and Action Zones

C. **Carters Dam and Lake and Reregulation Dam**. Carters Lake is formed by Carters Dam, a Corps' reservoir on the Coosawattee River in northwest Georgia upstream of Rome, Georgia. The Carters project is a pumped-storage peaking facility that utilizes a Reregulation Dam and storage pool in conjunction with the main dam and lake. The project's authorization, general features, and purposes are described in the Carters Dam and Lake and Regulation Dam water control manual. The Carters Lake top of conservation pool is elevation 1,074 feet NGVD29 from 1 May to 1 November; transitioning to elevation 1,072 feet NGVD29 between 1 November and 1 December; remains at elevation 1,072 feet NGVD 29 from 1 December to April; then transitioning back to 1,074 feet NGVD29 between 1 April and 1 May. This is shown in the water control plan guide curve (Figure 5). As expected with a peaking/pumped storage operation, both Carters Lake and the reregulation pool experience frequent elevation changes. Typically, water levels in Carters Lake vary no more than 1 to 2 feet per day. The reregulation pool will routinely fluctuate by several feet (variable) daily as the pool receives peak hydropower discharges from Carters Lake and serves as the source for pumpback operations into Carters Lake during non-peak hours. The reregulation pool will likely reach both its normal maximum elevation of 696 feet NGVD29 and minimum elevation of 677 feet NGVD29 at least once each week. However, the general trend of the lake level may fluctuate significantly from the guide curve over time, dependent primarily upon basin inflows but also influenced by project operations and evaporation. Carters Regulation Dam provides a seasonal varying minimum release to the Coosawattee River for downstream fish and wildlife conservation. Under drier conditions when basin inflows are reduced, project operations are adjusted to conserve storage in Carters Lake while continuing to meet project purposes in accordance with action zones as shown on Figure 5. In Zone 2, Carters Regulations Dam releases are reduced to 240 cfs.

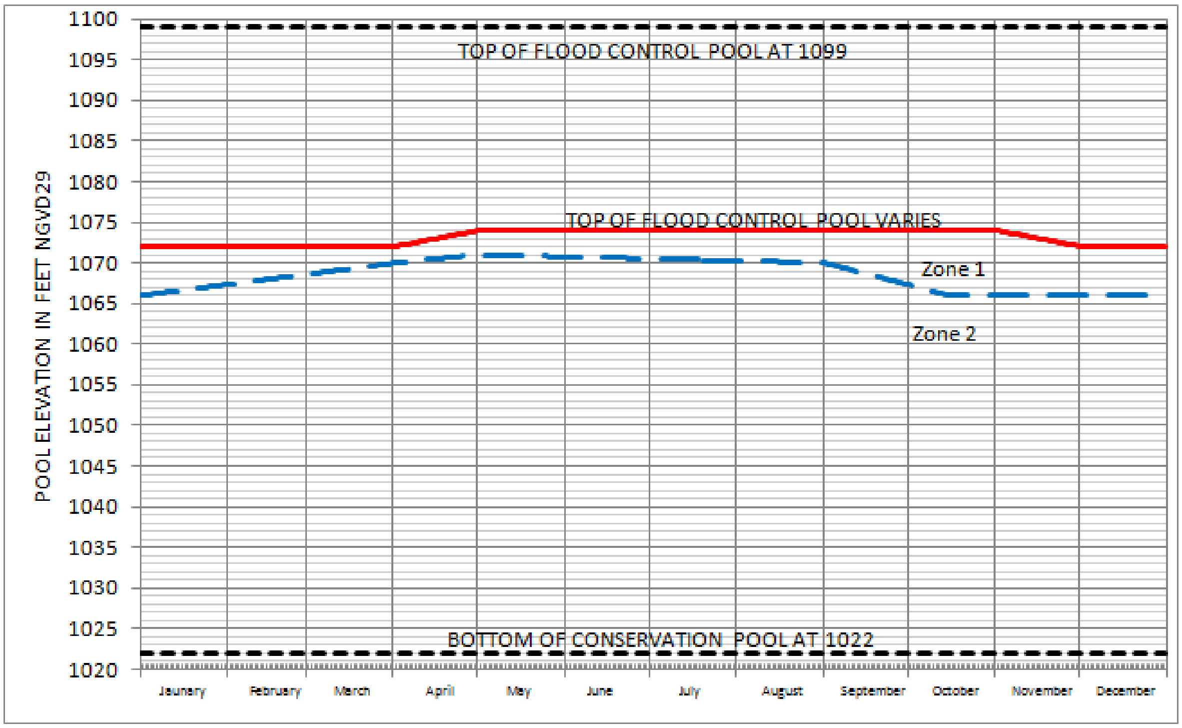

Figure 5. Carters Lake Guide Curve and Action Zones

D. **APC Coosa River Projects**. APC owns and operates the Coosa Hydro system of projects at Weiss Lake, H. Neely Henry Lake, Logan Martin Lake, Lay Lake, Mitchell Lake, and Jordan/Bouldin Dam and Lake on the Coosa River in the ACT Basin. APC Coosa River projects function mainly to generate electricity by hydropower. In addition, the upper three projects (Weiss, H. Neely Henry, and Logan Martin) operate pursuant to Public Law 83-436 regarding the requirement for the projects to be operated for flood risk management and navigation in accordance with reasonable rules and regulations of the Secretary of the Army. The rules and regulations are addressed in a memorandum of understanding between the Corps and APC (Exhibit B of the *Master Water Control Manual, Alabama-Coosa-Tallapoosa (ACT) River Basin, Alabama, Georgia*), in individual water control manuals for the three projects, and in this ACT Basin DCP. The Weiss Lake is on the Coosa River in northeast Alabama, about 80 mi northeast of Birmingham, Alabama, and extends into northwest Georgia for about 13 miles upstream on the Coosa River. The dam impounds a 30,027 acres reservoir (Weiss Lake) at the normal summer elevation of 564 feet NGVD29 as depicted in the regulation guide curve shown in Figure 6 (source APC). The H. Neely Henry Lake is on the Coosa River in northeast Alabama, about 60 miles northeast of Birmingham, Alabama. The dam impounds an 11,200 acres reservoir at the normal summer elevation of 508 feet NGVD29 as depicted in the regulation guide curve shown in Figure 7 (source APC). The Logan Martin Lake is in northeast Alabama on the Coosa River, about 40 miles east of Birmingham, Alabama. The dam impounds a 15,269-acre reservoir at the normal summer elevation of 465 feet NGVD29 as depicted in the regulation guide curve shown in Figure 8 (source APC). The projects' authorizations, general features, and purposes are described in the Weiss, H. Neely Henry, and Logan Martin water control manual appendices to the ACT Basin Master Water Control Manual.

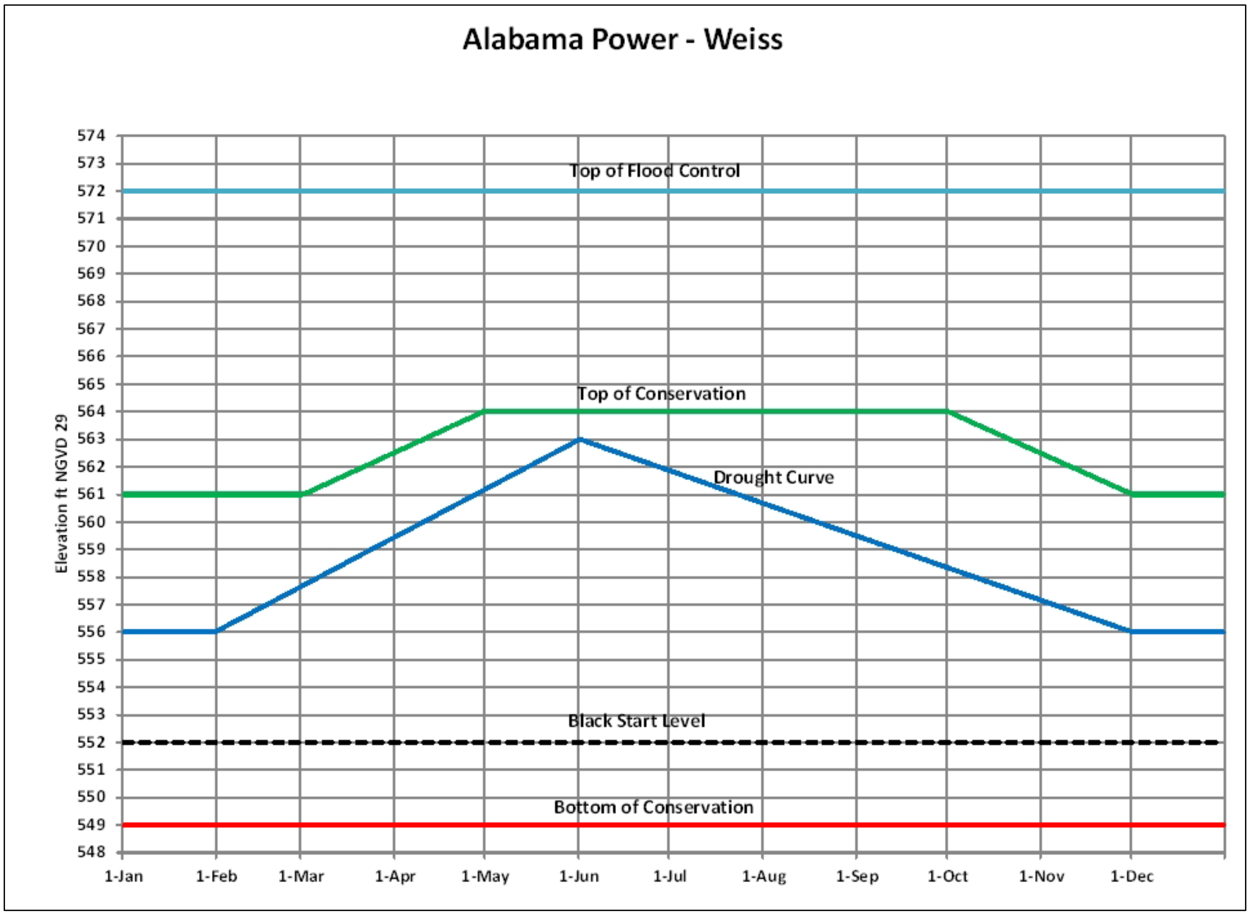

Figure 6. Weiss Lake Guide Curve

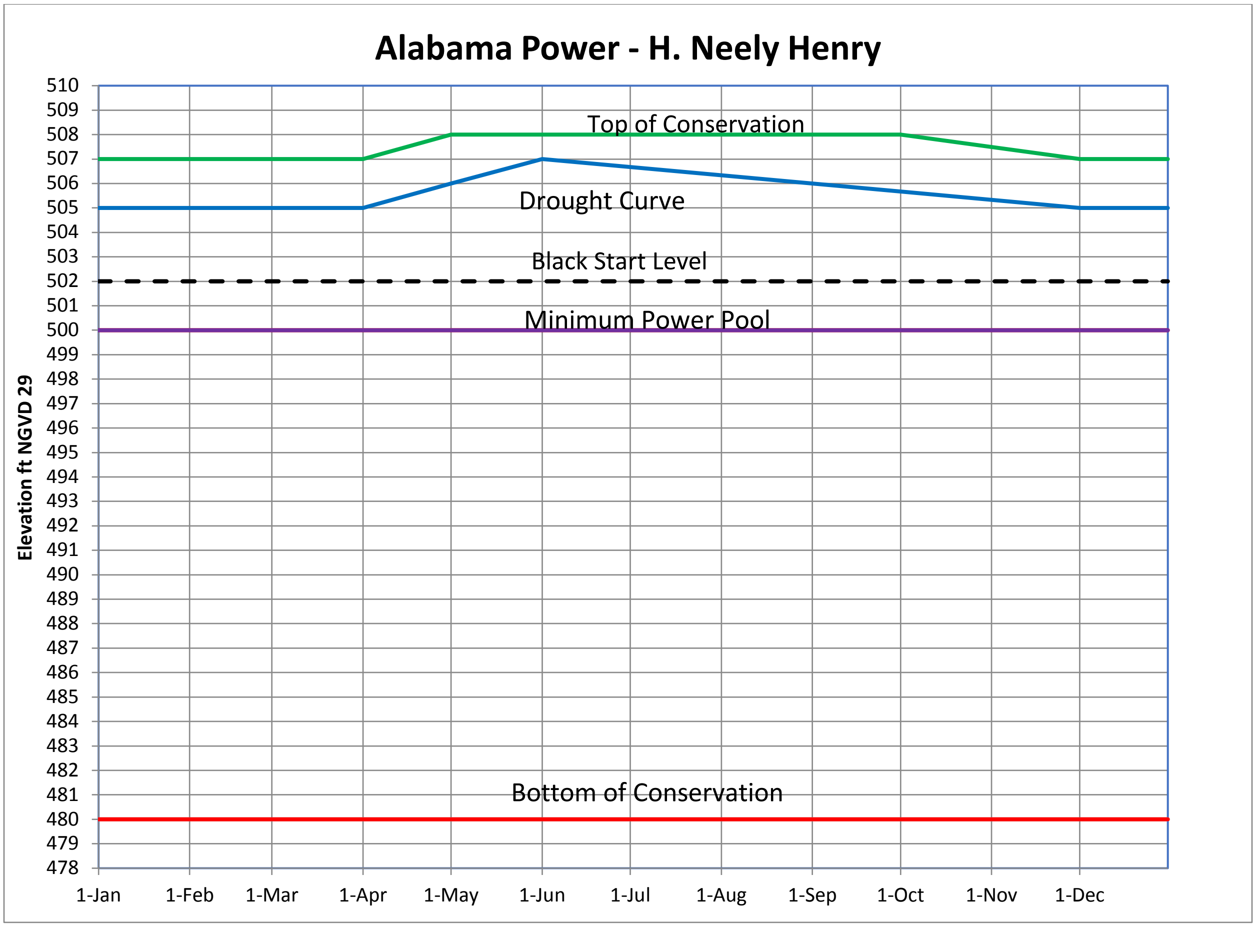

Figure 7. H. Neely Henry Lake Guide Curve

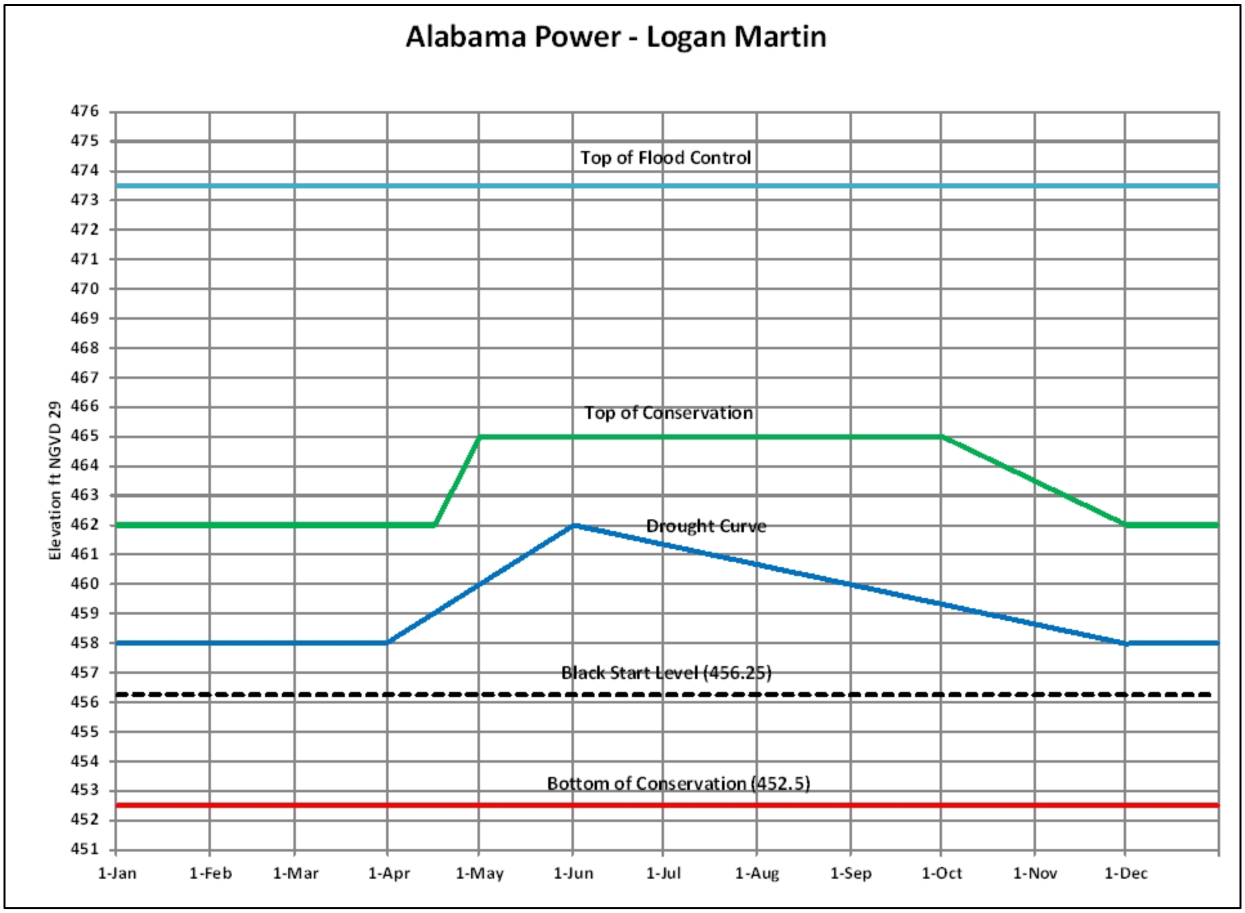

Figure 8. Logan Martin Lake Guide Curve

The downstream Coosa River APC run-of-river hydropower projects (Lay Dam and Lake, Mitchell Dam and Lake, and Jordan/Bouldin Dams and Lake) have no appreciable storage and are operated in conjunction with the upstream Coosa projects to meet downstream flow requirements and targets in support of the ACT Basin Drought Plan and navigation.

E. **APC Tallapoosa River Projects**. APC owns and operates the Tallapoosa River system of projects at Harris Dam and Lake, Martin Dam and Lake, Yates Dam, and Thurlow Dam in the ACT Basin. APC Tallapoosa River projects function mainly to generate electricity by hydropower. In addition, the Robert L. Harris Project operates pursuant to 33 CFR, Chapter II, Part 208, Section 208.65 regarding the requirement for the project to be operated for flood risk management and navigation in accordance with reasonable rules and regulations of the Secretary of the Army. The rules and regulations prescribed are described in a memorandum of understanding between the Corps and APC, individual water control manuals for the APC projects, and this DCP.

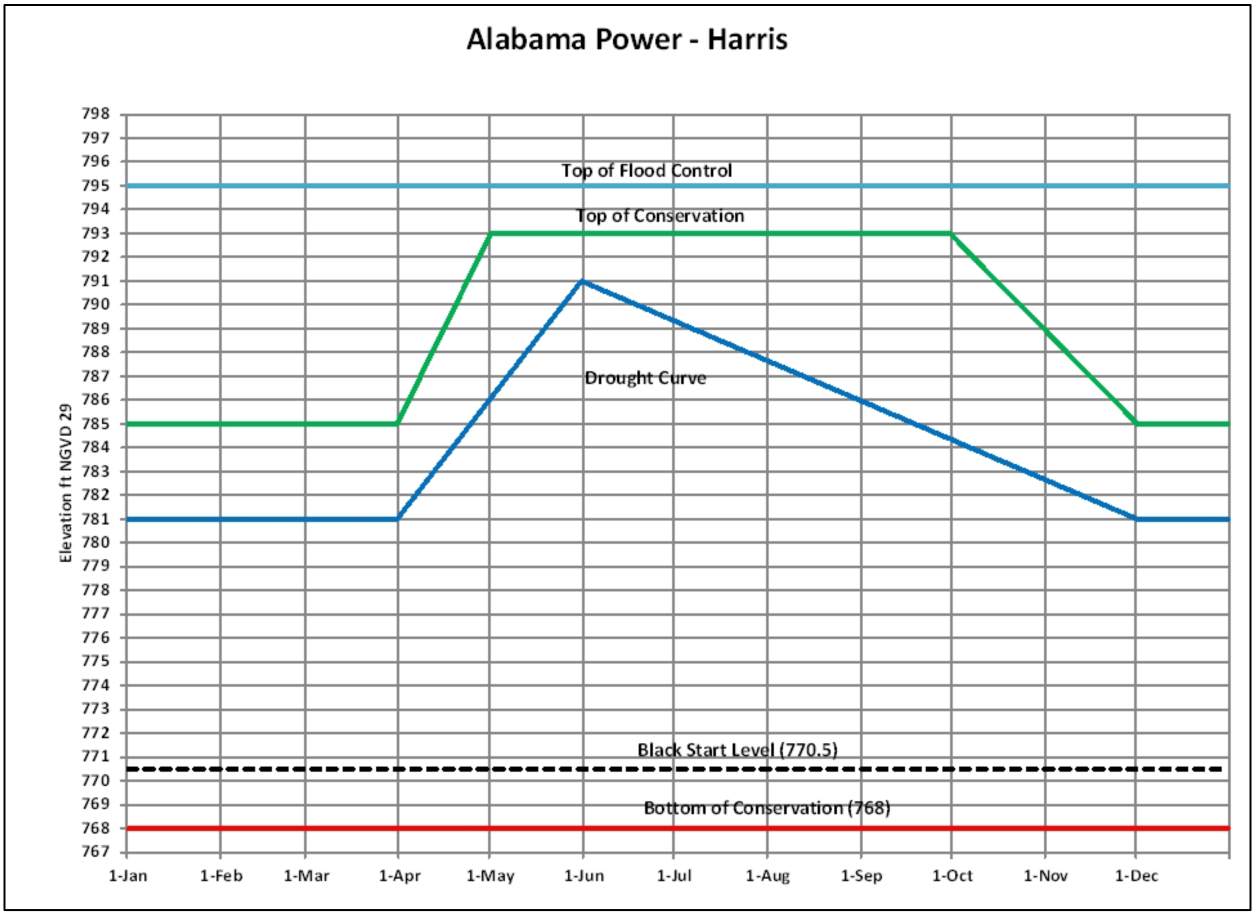

Figure 9. Robert L. Harris Lake Guide Curve

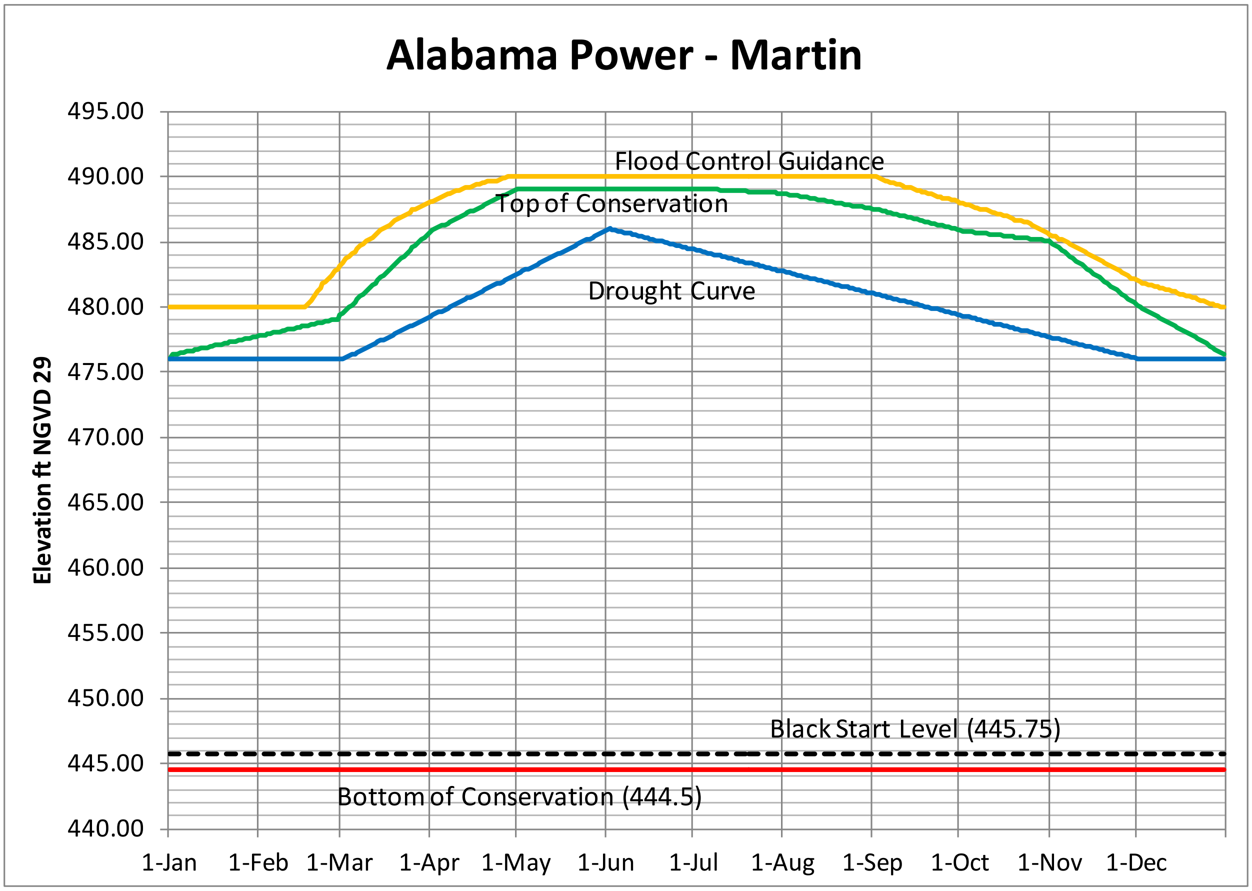

Figure 10. Martin Lake Guide Curve

F. **Corps Alabama River Projects**. The Corps operates three run-of-river lock and dam projects (Robert F. Henry, Millers Ferry, Claiborne) on the Alabama River in the lower ACT Basin to support commercial navigation. Claiborne Lake, together with R.E. "Bob" Woodruff Lake and William "Bill" Dannelly Lake, are collectively referred to as the Alabama River Lakes. The primary location used for communicating the available reliable navigation depth is the Claiborne Lock and Dam tailwater elevation. The water surface elevation is related to the available navigation depth based on the latest hydrographic surveys of the lower Alabama River reach downstream of Claiborne.

(1) Robert F. Henry. The R.E. "Bob" Woodruff Lake is created by the Robert F. Henry Lock and Dam on the Alabama River at river mile 236.3. R.E. "Bob" Woodruff Lake extends from the Robert F. Henry Lock and Dam upstream to the Walter Bouldin Dam. In addition to hydropower and navigation, R.E. "Bob" Woodruff Lake provides recreation and fish and wildlife conservation. R.E. "Bob" Woodruff Lake is 77 miles long and averages 1,300 feet wide. It has a surface area of 12,510 acres and a storage capacity of 234,200 acre-feet at a normal pool elevation of 126 feet NGVD29. Lake levels are typically fairly stable with minimal fluctuation between the operating pool elevation limits, 123 feet NGVD29 to 126 feet NGVD29. The emergency drawdown pool elevation is 122 feet NGVD29. An authorized 9-foot-deep by 200-foot-wide navigation channel exists over the entire length of the lake. The Jones Bluff hydropower plant generating capacity is 82 MW (declared value). The lake is a popular recreation destination, receiving up to two million visitors annually.

(2) Millers Ferry. The William “Bill” Dannelly Lake is created by the Millers Ferry Lock and Dam on the Alabama River at river mile 133. William “Bill” Dannelly Lake is 103 miles long and averages almost 1,400 feet wide. The reservoir has a surface area of 18,500 acres and a storage capacity of 346,254 acre-feet at a normal full pool elevation of 80 feet NGVD29. Lake levels remain fairly stable on a day-to-day basis with minimal fluctuation between the operating pool elevation limits, 79 feet NGVD29 to 80 feet NGVD29. It has an authorized 9-foot-deep by 200-foot-wide navigation channel which extends the entire length of the reservoir. The facility is a multipurpose reservoir constructed by the Corps for both navigation and hydropower. The reservoir also provides recreational benefits and has lands managed for wildlife mitigation. The Millers Ferry hydropower plant generating capacity is 90 MW (declared value). The reservoir provides ample recreation opportunities. Recreation visitors number three million annually.

(3) Claiborne. Claiborne Lake is created by the Claiborne Lock and Dam on the Alabama River at river mile 72.5. The lake is similar to a wide river, averaging about 800 feet wide, with a surface area of 5,930 acres. Claiborne Lake extends 60 miles upstream to the Millers Ferry Lock and Dam. Storage capacity in the lake is 96,360 acre-feet at a normal pool elevation of 35 feet NGVD29. The operating pool elevation limits are between 32 feet NGVD29 and 36 feet NGVD29. The lake has an authorized 9-foot-deep, 200-foot-wide navigation channel extending its entire length. The primary purpose of the Corps project is navigation. No hydropower generating capability exists at the project. The lake also provides recreation benefits and lands managed for wildlife mitigation.

G. As other ACT water management objectives are addressed, lake levels might decline during prime recreation periods. Drought conditions will cause further drawdowns in lake levels. While lake levels will be slightly higher than what would naturally occur if no specific drought actions are taken, reservoir levels will decline thus triggering impacts associated with reaching initial recreation and water access limited levels. Large reservoir drawdowns impact recreational use: access to the water for boaters and swimmers is inhibited; submerged hazards (e.g., trees, shoals, boulders) become exposed or nearly exposed, posing safety issues; and exposed banks and lake bottoms become unsightly and diminish the recreation experience. Consequently certain levels are identified in each Corps impoundment at which recreation would be affected. The *Initial Impact level* (IIL) represents the level at which recreation impacts are first observed (i.e., some boat launching ramps are unusable, most beaches are unusable or minimally usable, and navigation hazards begin to surface). The *Recreation Impact level* (RIL) defines the level at which major impacts on concessionaires and recreation are observed (more ramps are not usable, all beaches are unusable, boats begin having problems maneuvering in and out of marina basin areas, loss of retail business occurs). The level at which severe impacts are observed in all aspects of recreational activities is called the *Water Access Limited level* (WAL). At this point, all or almost all boat ramps are out of service, all swimming beaches are unusable, major navigation hazards occur, channels to marinas are impassable and/or wet slips must be relocated, and a majority of private boat docks are unusable. The individual project water control manuals describe the specific impact levels at each project and provide information regarding the effects of the water control plans on recreation.

V – WATER USES AND USERS

5-01. Water Uses and Users.

A. Uses – The ACT Basin rivers and lakes provide for wastewater dilution, M&I water supply, fish and wildlife propagation, hydropower generation, and recreational boating and fishing.

B. Users – The following tables list the surface water uses and water users within Georgia and Alabama in the ACT Basin.

Table 2. Surface water use: ACT Basin (Georgia 2005)

Water use category	Quantity (mgd)	% of total
Total Use	788.98	100%
Public Supply	154.78	19.6%
Domestic and Commercial	0.30	0.0%
Industrial and Mining	32.49	4.1%
Irrigation	11.31	1.4%
Livestock	16.18	2.1%
Thermoelectric Power Generation	573.92	72.8%

Table 3. M&I surface water withdrawal permits in the ACT Basin (Georgia)

River basin	Permit holder	Permit number	County	Source water	Permit limit max day (mgd)	Permit limit monthly average (mgd)
Coosa River Basin (Georgia)—upstream counties to downstream counties						
Coosa	Dalton Utilities, Conasauga R	155-1404-01	Whitfield	Conasauga River	49.400	40.300
Coosa	Dalton Utilities, Mill Creek	155-1404-02	Whitfield	Mill Creek	13.200	7.500
Coosa	Dalton Utilities, Coahulla Cr	155-1404-03	Whitfield	Coahulla Creek	6.000	5.000
Coosa	Dalton Utilities, Freeman Sprngs	155-1404-04	Whitfield	Freeman Springs	2.000	1.500
Coosa	Dalton Utilities - River Road	155-1404-05	Whitfield	Conasauga River	35.000	18.000
Coosa	Chatsworth WW Commission	105-1405-01	Murray	Holly Creek	1.100	1.000
Coosa	Chatsworth WW Commission	105-1405-02	Murray	Eton Springs	1.800	1.800
Coosa	Chatsworth WW Commission	105-1409-01	Murray	Carters Lake	2.550	2.300
Coosa	Chatsworth, City of	105-1493-02	Murray	Coosawattee River	2.200	2.000
Coosa	Ellijay, City of - Ellijay R	061-1407-01	Gilmer	Ellijay River	0.550	0.450
Coosa	Ellijay - Gilmer County W & S Authority	061-1408-01	Gilmer	Cartecay River	4.000	4.000
Coosa	Calhoun, City of	064-1411-03	Gordon	Big Spring	7.000	6.000
Coosa	Calhoun, City of	064-1412-01	Gordon	City Of Calhoun Spring	0.638	0.537
Coosa	Calhoun, City of	064-1492-02	Gordon	Oostanaula River	6.200	3.000
Coosa	Calhoun, City of	064-1493-01	Gordon	Coosawattee River	18.000	16.000

Table 3 (continued). M&I surface water withdrawal permits in the ACT Basin (Georgia)

River basin	Permit holder	Permit number	County	Source water	Permit limit max day (mgd)	Permit limit monthly average (mgd)
Coosa	Jasper, City of	112-1417-02	Pickens	Long Swamp Creek	1.000	1.000
Coosa	Bent Tree Community, Inc.	112-1417-03	Pickens	Chestnut Cove Creek and unnamed creek	0.250	0.230
Coosa	Bent Tree Community, Inc.	112-1417-04	Pickens	Lake Tamarack	0.250	0.230
Coosa	Big Canoe Utilities Company, Inc.	112-1417-05	Pickens	Lake Petit	1.000	1.000
Coosa	Big Canoe Utilities Company, Inc.	112-1417-06	Pickens	Blackwell Creek	2.650	2.650
Coosa	Etowah Water & Sewer Authority	042-1415-01	Dawson	Etowah River	5.500	4.400
Coosa	Cherokee County Water & Sewerage Auth	028-1416-01	Cherokee	Etowah River	43.200	36.000
Coosa	Gold Kist, Inc	028-1491-03	Cherokee	Etowah River	5.000	4.500
Coosa	Canton, City of	028-1491-04	Cherokee	Etowah River	23.000	18.700
Coosa	Canton, City of (Hickory Log Creek)	028-1491-05	Cherokee	Etowah River	39.000	39.000
Coosa	Bartow County Water Department	008-1411-02	Bartow	Bolivar Springs	0.800	0.800
Coosa	Adairsville, City of	008-1412-02	Bartow	Lewis Spring	5.100	4.100
Coosa	New Riverside Ochre Company, Inc.	008-1421-01	Bartow	Etowah River	5.000	5.000
Coosa	New Riverside Ochre Company, Inc.	008-1421-02	Bartow	Etowah River	6.000	6.000
Coosa	Emerson, City of	008-1422-02	Bartow	Moss Springs	0.630	0.500
Coosa	Gerdau AmeriSteel US, Inc. – Cartersville Steel Mill	008-1423-01	Bartow	Pettit Creek	2.000	1.500
Coosa	Baroid Drilling Fluids, Inc.	008-1423-02	Bartow	Etowah River	3.400	2.500
Coosa	Cartersville, City of	008-1423-04	Bartow	Etowah River	26.420	23.000
Coosa	Georgia Power Co. - Plant Bowen	008-1491-01	Bartow	Etowah River	520.000	85.000
Coosa	CCMWA	008-1491-05	Bartow	Allatoona Lake	86.000	78.000
Coosa	Cartersville, City of	008-1491-06	Bartow	Allatoona Lake	21.420	18.000
Coosa	La Fayette, City of Dry Creek	146-1401-01	Walker	Dry Creek	1.000	0.900
Coosa	La Fayette, City of Big Spring	146-1401-02	Walker	Big Spring	1.650	1.310
Coosa	Mount Vernon Mills - Riegel Apparel Div.	027-1401-03	Chattooga	Trion Spring	9.900	6.600
Coosa	Summerville, City of	027-1402-02	Chattooga	Raccoon Creek	3.000	2.500
Coosa	Summerville, City of	027-1402-04	Chattooga	Lowe Spring	0.750	0.500
Coosa	Mohawk Industries, Inc.	027-1402-05	Chattooga	Chattooga R./ Raccoon Cr.	4.500	4.000
Coosa	Oglethorpe Power Corp.	057-1402-03	Floyd	Heath Creek	3,838.000	3,030.000
Coosa	Floyd County - Brighton Plant	057-1414-02	Floyd	Woodward Creek	0.800	0.700
Coosa	Cave Spring, City of	057-1428-06	Floyd	Cave Spring	1.500	1.300
Coosa	Floyd County	057-1428-08	Floyd	Old Mill Spring	4.000	3.500
Coosa	Berry Schools, The (Berry College)	057-1429-01	Floyd	Berry (Possum Trot) Reservoir	1.000	0.700

Table 3 (continued). M&I surface water withdrawal permits in the ACT Basin (Georgia)

River basin	Permit holder	Permit number	County	Source water	Permit limit max day (mgd)	Permit limit monthly average (mgd)
Coosa	Inland-Rome Inc.	057-1490-01	Floyd	Coosa River	34.000	32.000
Coosa	Georgia Power Co. - Plant Hammond	057-1490-02	Floyd	Coosa River	655.000	655.000
Coosa	Rome, City of	057-1492-01	Floyd	Oostanaula & Etowah R	18.000	16.400
Coosa	Rockmart, City of	115-1425-01	Polk	Euharlee Creek	2.000	1.500
Coosa	Vulcan Construction Materials, L.P.	115-1425-03	Polk	Euharlee Creek	0.200	0.200
Coosa	Cedartown, City of	115-1428-04	Polk	Big Spring	3.000	2.600
Coosa	Polk County Water Authority	115-1428-05	Polk	Aragon, Morgan, Mulco Springs	1.600	1.100
Coosa	Polk County Water Authority	115-1428-07	Polk	Deaton Spring	4.000	4.000
Tallapoosa River Basin (Georgia)						
Tallapoosa	Haralson County Water Authority	071-1301-01	Haralson	Tallapoosa River	3.750	3.750
Tallapoosa	Bremen, City of	071-1301-02	Haralson	Beech Creek & Bremen Reservoir (Bush Creek)	0.800	0.580
Tallapoosa	Bowdon, City of Indian	022-1302-01	Carroll	Indian Creek	0.400	0.360
Tallapoosa	Southwire Company	022-1302-02	Carroll	Buffalo Creek	2.000	1.000
Tallapoosa	Villa Rica, City of	022-1302-04	Carroll	Lake Paradise & Cowens Lake	1.500	1.500
Tallapoosa	Carrollton, City of	022-1302-05	Carroll	Little Tallapoosa River	12.000	12.000
Tallapoosa	Bowdon, City of Lake Tysinger	022-1302-06	Carroll	Lake Tysinger	1.000	1.000

Source: GAEPD 2009a

Table 4. M&I surface water withdrawals in the ACT Basin (Georgia)

Basin (subbasin)	Withdrawal by	County	Withdrawal (mgd)
Coosa River Basin (Georgia)			
Coosa (Conasauga)	Dalton Utilities	Whitfield	35.38
Coosa (Conasauga)	City of Chatsworth	Murray	1.26
Coosa (Coosawattee)	Ellijay-Gilmer County Water System	Gilmer	3.12
Coosa (Coosawattee)	City of Fairmount	Gordon	0.06
Coosa (Oostanaula)	City of Calhoun	Gordon	9.10
Coosa (Etowah)	Big Canoe Corporation	Pickens	0.48
Coosa (Etowah)	City of Jasper	Pickens	1.00
Coosa (Etowah)	Bent Tree Community	Pickens	0.07
Coosa (Etowah)	Lexington Components Inc (Rubber)	Pickens	0.01
Coosa (Etowah)	Etowah Water and Sewer Authority	Dawson	1.50
Coosa (Etowah)	Town of Dawsonville	Dawson	0.10
Coosa (Etowah)	City of Canton	Cherokee	2.83
Coosa (Etowah)	Cherokee County Water System	Cherokee	15.81
Coosa (Etowah)a	Gold Kist, Inc.	Cherokee	1.94
Coosa (Etowah)	City of Cartersville	Bartow	13.26
Coosa (Etowah)	New Riverside Ochre Company, Inc (Chemicals)	Bartow	1.67
Coosa (Etowah)	Gerdau AmeriSteel US, Inc. – Cartersville Steel Mill (Primary metals)	Bartow	0.16
Coosa (Etowah)	Georgia Power Co – Plant Bowen	Bartow	38.92
Coosa (Etowah)	CCMWA	Bartow	44.42
Coosa (Upper Coosa)	City of Lafayette	Walker	1.20
Coosa (Upper Coosa)	City of Summerville	Chattooga	2.05
Coosa (Upper Coosa)	Mount Vernon Mills – Riegel Apparel Division (Textiles)	Chattooga	2.74
Coosa (Oostanaula)	City of Cave Spring (Domestic/Commercial)	Floyd	0.30
Coosa (Etowah / Oostanaula)	City of Rome	Floyd	9.98
Coosa (Upper Coosa)	Floyd County Water System	Floyd	2.57
Coosa (Upper Coosa)	Inland-Rome Inc. (Paper)	Floyd	25.74
Coosa (Upper Coosa)	Georgia Power Co - Plant Hammond	Floyd	535.00
Coosa (Upper Coosa)	Polk County Water Authority	Polk	2.22
Coosa (Etowah)	Vulcan Construction Materials	Polk	0.09
Tallapoosa River Basin (Georgia)			
Tallapoosa (Upper)	City of Bremen	Haralson	0.32
Tallapoosa (Upper)	Haralson County Water Authority	Haralson	2.05
Tallapoosa (Upper)	City of Bowdon	Carroll	0.75
Tallapoosa (Upper)	Southwire Company	Carroll	0.09
Tallapoosa (Upper)	City of Carrollton	Carroll	5.37
Tallapoosa (Upper)	City of Temple	Carroll	0.26
Tallapoosa (Upper)	City of Villa Rica	Carroll	0.58
Tallapoosa (Upper)	Carroll County Water System	Carroll	4.08

Table 5. Surface water use - ACT Basin (Alabama, 2005) (mgd)

ACT subbasin	HUC	Public supply	Industrial	Irrigation	Livestock	Thermo-electric	Total, by Subbasin
Upper Coosa	03150105	2.12	0	3.10	0.40	0	5.62
Middle Coosa	03150106	33.24	65.83	7.91	0.87	142.68	250.53
Lower Coosa	03150107	10.96	0.89	5.10	0.35	812.32	829.62
Upper Tallapoosa	03150108	0.90	0	0.15	0.40	0	1.45
Middle Tallapoosa	03150109	19.09	0	0.52	0.32	0	19.93
Lower Tallapoosa	03150110	38.22	2.23	4.22	0.28	0	44.95
Upper Alabama	03150201	10.40	30.63	3.84	0.84	4.14	49.85
Cahaba	03150202	52.90	0	3.49	0.25	0	56.64
Middle Alabama	03150203	0	21.04	1.73	0.48	0	23.25
Lower Alabama	03150204	0	54.61	0.64	0.02	0	55.27
Total - By Use Category		167.83	175.23	30.70	4.21	959.14	1337.11

Source: Hutson et al. 2009

Table 6. M&I surface water withdrawals in the ACT Basin (Alabama)

Basin (subbasin)	Withdrawal by	County	Withdrawal (mgd)
Coosa River Basin (Alabama)			
Coosa (Upper)	Centre Water Works & Sewer Board	Cherokee	1.19
Coosa (Upper)	Piedmont Water Works & Sewer Board	Calhoun	0.93
Coosa (Middle)	Jacksonville Water Works & Sewer Board	Calhoun	1.34
Coosa (Middle)	Anniston Water Works & Sewer Board	Calhoun	0.08
Coosa (Middle)	Fort Payne Water Works Board	DeKalb	8.10
Coosa (Middle)	Goodyear Tire and Rubber Company	Etowah	9.87
Coosa (Middle)	Gadsden Water Works & Sewer Board	Etowah	14.86
Coosa (Middle)	Alabama Power Co – Gadsden Steam Plant	Etowah	142.68
Coosa (Middle)	SIC 32 – Unnamed Stone, Glass, Clay, and/or Concrete Products	St. Clair	3.49
Coosa (Middle)	Talladega/Shelby Water Treatment Plant	Talladega	6.44
Coosa (Middle)	Talladega County Water Department	Talladega	0.81
Coosa (Middle)	Talladega Water Works & Sewer Board	Talladega	1.62
Coosa (Middle)	Bowater Newsprint, Coosa Pines Operation	Talladega	52.47
Coosa (Lower)	Sylacauga Utilities Board	Talladega	3.25
Coosa (Lower)	SIC 22 – Unnamed Textile	Talladega	0.89
Coosa (Lower)	Goodwater Water Works & Sewer Board	Coosa	0.46
Coosa (Lower)	Alabama Power Co – E.C. Gaston Plant	Shelby	812.32
Coosa (Lower)	Clanton Waterworks & Sewer Board	Chilton	1.79
Coosa (Lower)	Five Star Water Supply	Elmore	5.46
Tallapoosa River Basin (Alabama)			
Tallapoosa (Upper)	Heflin Water Works	Cleburne	0.51
Tallapoosa (Upper)	Wedowee Gas, Water, and Sewer	Randolph	0.39
Tallapoosa (Middle)	Roanoke Utilities Board	Randolph	1.29
Tallapoosa (Middle)	Clay County Water Authority	Clay	1.87
Tallapoosa (Middle)	Lafayette	Chambers	0.53
Tallapoosa (Middle)	Central Elmore Water & Sewer Authority	Elmore	4.83
Tallapoosa (Middle)	Alexander City Water Department	Tallapoosa	10.57
Tallapoosa (Lower)	West Point Home, Inc	Lee	2.23
Tallapoosa (Lower)	Opelika Water Works Board	Lee	2.61
Tallapoosa (Lower)	Auburn Water Works Board	Lee	5.75
Tallapoosa (Lower)	Tallassee	Tallapoosa	1.98
Tallapoosa (Lower)	Tuskegee Utilities	Macon	2.71
Tallapoosa (Lower)	Montgomery Water Works & Sewer Board	Montgomery	25.17
Alabama River Basin			
Alabama (Upper)	Montgomery Water Works & Sewer Board	Montgomery	10.40
Alabama (Upper)	International Paper	Autauga	30.63
Alabama (Upper)	Southern Power Co – Plant E. B. Harris	Autauga	4.14
Alabama (Cahaba)	Birmingham Water Works & Sewer Board	Shelby	52.90
Alabama (Middle)	International Paper – Pine Hill	Wilcox	21.04
Alabama (Lower)	Alabama River Pulp Company	Monroe	54.61

Source: Hutson et al. 2009

VI. – CONSTRAINTS

6-01. <u>General.</u> The availability of water resources in the ACT Basin is constrained by existing water supply storage contracts, Corps water control manuals, minimum flow requirements from Allatoona and Carters Dams, APC FERC licenses, Corps-APC Memorandum of Understanding, and industrial water quality flow needs. Existing water supply storage contracts do not include the use of the inactive storage pool and would require developing and implementing an emergency storage contract in order to access this water resource. Each Corps project has a water control manual that specifies operational requirements for varying basin conditions and requires a deviation approval to operate outside the parameters established by the manual. The Allatoona Project has a minimum flow release requirement of 240 cfs for downstream purposes. The Carters Project has a seasonally varying minimum flow release requirement that ranges from 250 – 865 cfs during normal conditions and a minimum of 240 cfs during low flow conditions. The APC projects are operated under FERC licenses which define specific operational requirements for each project and require approval from FERC and possibly the Corps and State agencies before any revised operations could be implemented. The Corps and APC projects are also operated under the rules and regulations found in the Corps-APC Memorandum of Understanding, which describes operational requirements for flood conditions and navigation within the ACT Basin. Some industrial NPDES permits within the ACT Basin have water quality discharge limitations which are impacted by the volume of water flow in the river.

VII – DROUGHT MANAGEMENT PLAN

7-01. <u>General</u>. The Drought Contingency Plan (DCP) for the ACT Basin implements drought conservation actions on the basis of composite system storage, state line flows, and basin inflow as triggers to drive drought response actions. The DCP also recognizes that a basin-wide drought plan must incorporate variable hydropower generation requirements from its headwater projects in Georgia (Allatoona Dam and Carters Dam), a reduction in the level of navigation service provided on the Alabama River as storage across the basin declines, and that environmental flow requirements must still be met to the maximum extent practicable. The ACT basin-wide drought plan is composed of three components — Headwater regulation at Allatoona Lake and Carters Lake in Georgia; Regulation at APC projects on the Coosa and Tallapoosa Rivers; and Downstream Alabama River regulation at Corps projects downstream of Montgomery, Alabama.

A. **Headwater Regulation for Drought at Allatoona Lake and Carters Lake**. Drought regulation at Allatoona Lake and Carters Lake consists of progressively reduced hydropower generation as pool levels decline in accordance with the conservation storage action zones established in the projects' water control plans. For instance, when Allatoona Lake is operating in normal conditions (Conservation storage Zone 1); hydropower generation typically ranges from 0 to 4 hours per day. However, as the pool drops to lower action zones during drought conditions, generation could be reduced to 0 to 2 hours per day. As Carters Lake pool level might drop into a conservation storage Zone 2, seasonal varying minimum target flows would be reduced to 240 cfs. The water control manual for each project describes the drought water control regulation plan in more detail.

B. **Drought Regulation at APC Projects on the Coosa, Tallapoosa, and Alabama River**. Regulation guidelines for the Coosa, Tallapoosa, and Alabama Rivers have been defined in a drought regulation matrix (Table 7) on the basis of a Drought Intensity Level (DIL). The DIL is a drought indicator, ranging from one to three. The DIL is determined on the basis of three basin drought criteria (or triggers). A DIL from 1 to 3 indicates some level of drought conditions. The

DIL increases as more of the drought indicator thresholds (or triggers) occur. The drought regulation matrix defines minimum average daily flow requirements on a monthly basis for the Coosa, Tallapoosa, and Alabama Rivers as a function of the DIL and time of year. The combined occurrences of the drought triggers determine the DIL. Three intensity levels for drought operations are applicable to APC projects.

DIL 1 — (moderate drought) 1 of 3 triggers occur

DIL 2 — (severe drought) 2 of 3 triggers occur

DIL 3 — (exceptional drought) all 3 triggers occur

(1) Drought Indicators. The indicators used to determine drought intensity include the following:

1. **Low basin inflow**. The total basin inflow needed is the sum of the total filling volume plus 4,640 cfs. The total filling volume is defined as the volume of water required to return the pool to the top of the conservation guide curve and is calculated using the area-capacity tables for each project. Table 8 lists the monthly low basin inflow criteria. The basin inflow value is computed daily and checked on the first and third Tuesday of the month. If computed basin inflow is less than the value required, the low basin inflow indicator is triggered. The basin inflow is total flow above the APC projects excluding Allatoona Lake and Carters Lake. It is the sum of local flows, minus lake evaporation and diversions. Figure 11 illustrates the local inflows to the Coosa and Tallapoosa Basins. The basin inflow computation differs from the navigation basin inflow, because it does not include releases from Allatoona Lake and Carters Lake. The intent is to capture the hydrologic condition across APC projects in the Coosa and Tallapoosa Basins.

Table 7. ACT Basin Drought Regulation Plan Matrix

<table>
<tr><th></th><th>Jan</th><th>Feb</th><th>Mar</th><th>Apr</th><th>May</th><th colspan="2">Jun</th><th>Jul</th><th>Aug</th><th>Sep</th><th>Oct</th><th>Nov</th><th>Dec</th></tr>
<tr><td rowspan="4">Drought Level Response[a]</td><td colspan="13">Normal Operations</td></tr>
<tr><td colspan="13">DIL 1: Low Basin Inflows or Low Composite or Low State Line Flow</td></tr>
<tr><td colspan="13">DIL 2: DIL 1 criteria + (Low Basin Inflows or Low Composite or Low State Line Flow)</td></tr>
<tr><td colspan="13">DIL 3: Low Basin Inflows + Low Composite + Low State Line Flow</td></tr>
<tr><td rowspan="4">Coosa River Flow[b]</td><td colspan="3">Normal Operation: 2,000 cfs</td><td colspan="2">4,000 (8,000)</td><td colspan="2">4,000 – 2,000</td><td colspan="6">Normal Operation: 2,000 cfs</td></tr>
<tr><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="3">4,000 +/- cfs</td><td>6/15 Linear Ramp down</td><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="3">Jordan 2,000 +/-cfs</td></tr>
<tr><td colspan="3">Jordan 1,600 to 2,000 +/-cfs</td><td colspan="3">2,500 +/- cfs</td><td>6/15 Linear Ramp down</td><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="3">Jordan 1,600 to 2,000 +/-cfs</td></tr>
<tr><td colspan="3">Jordan 1,600 +/-cfs</td><td colspan="4">Jordan 1,600 to 2,000 +/-cfs</td><td colspan="3">Jordan 2,000 +/-cfs</td><td colspan="2">Jordan 1,600 to 2,000 +/-cfs</td><td>Jordan 1,600 +/-cfs</td></tr>
<tr><td rowspan="4">Tallapoosa River Flow[c]</td><td colspan="13">Normal Operations: 1200 cfs</td></tr>
<tr><td colspan="4">Greater of: 1/2 Yates Inflow or
2 x Heflin Gage(Thurlow Lake releases > 350 cfs)</td><td colspan="6">1/2 Yates Inflow</td><td colspan="3">1/2 Yates Inflow</td></tr>
<tr><td colspan="4">Thurlow Lake 350 cfs</td><td colspan="6">1/2 Yates Inflow</td><td colspan="3">Thurlow Lake 350 cfs</td></tr>
<tr><td colspan="7">Maintain 400 cfs at Montgomery WTP
(Thurlow Lake release 350 cfs)</td><td colspan="3">Thurlow Lake 350 cfs</td><td colspan="3">Maintain 400 cfs at Montgomery WTP
(Thurlow Lake release 350 cfs)</td></tr>
<tr><td rowspan="4">Alabama River Flow[d]</td><td colspan="13">Normal Operation: Navigation or 4,640 cfs flow</td></tr>
<tr><td colspan="4">4,200 cfs (10% Cut) - Montgomery</td><td colspan="6">4,640 cfs - Montgomery</td><td colspan="3">Reduce: Full – 4,200 cfs</td></tr>
<tr><td colspan="5">3,700 cfs (20% Cut) - Montgomery</td><td colspan="5">4,200 cfs (10% Cut) - Montgomery</td><td colspan="3">Reduce: 4,200 cfs-> 3,700 cfs
Montgomery (1 week ramp)</td></tr>
<tr><td colspan="4">2,000 cfs
Montgomery</td><td colspan="3">3,700 cfs
Montgomery</td><td colspan="3">4,200 cfs (10% Cut) - Montgomery</td><td colspan="3">Reduce: 4,200 cfs -> 2,000 cfs
Montgomery (1 month ramp)</td></tr>
<tr><td rowspan="4">Guide Curve Elevation</td><td colspan="13">Normal Operations: Elevations follow Guide Curves as prescribed in License (Measured in Feet)</td></tr>
<tr><td colspan="13">Corps Variances: As Needed; FERC Variance for Lake Martin</td></tr>
<tr><td colspan="13">Corps Variances: As Needed; FERC Variance for Lake Martin</td></tr>
<tr><td colspan="13">Corps Variances: As Needed; FERC Variance for Lake Martin</td></tr>
</table>

a. Note these are based on flows that will be exceeded when possible.
b .Jordan flows are based on a continuous +/- 5% of target flow.
c. Thurlow Lake flows are based on continuous +/- 5% of target flow: flows are reset on noon each Tuesday based on the prior day's daily average at Heflin or Yates.
d. Alabama River flows are 7-Day Average Flow.

Table 8. Low Basin Inflow Guide (in cfs-days)

Month	Coosa Filling Volume	Tallapoosa Filling Volume	Total Filling Volume	Minimum JBT Target Flow	Required Basin Inflow
Jan	628	0	628	4,640	5,268
Feb	626	1,968	2,594	4,640	7,234
Mar	603	2,900	3,503	4,640	8,143
Apr	1,683	2,585	4,269	4,640	8,909
May	248	0	248	4,640	4,888
Jun			0	4,640	4,640
Jul			0	4,640	4,640
Aug			0	4,640	4,640
Sep	–612	–1,304	–1,916	4,640	2,724
Oct	–1,371	–2,132	–3,503	4,640	1,137
Nov	–920	–2,748	–3,667	4,640	973
Dec	–821	–1,126	–1,946	4,640	2,694

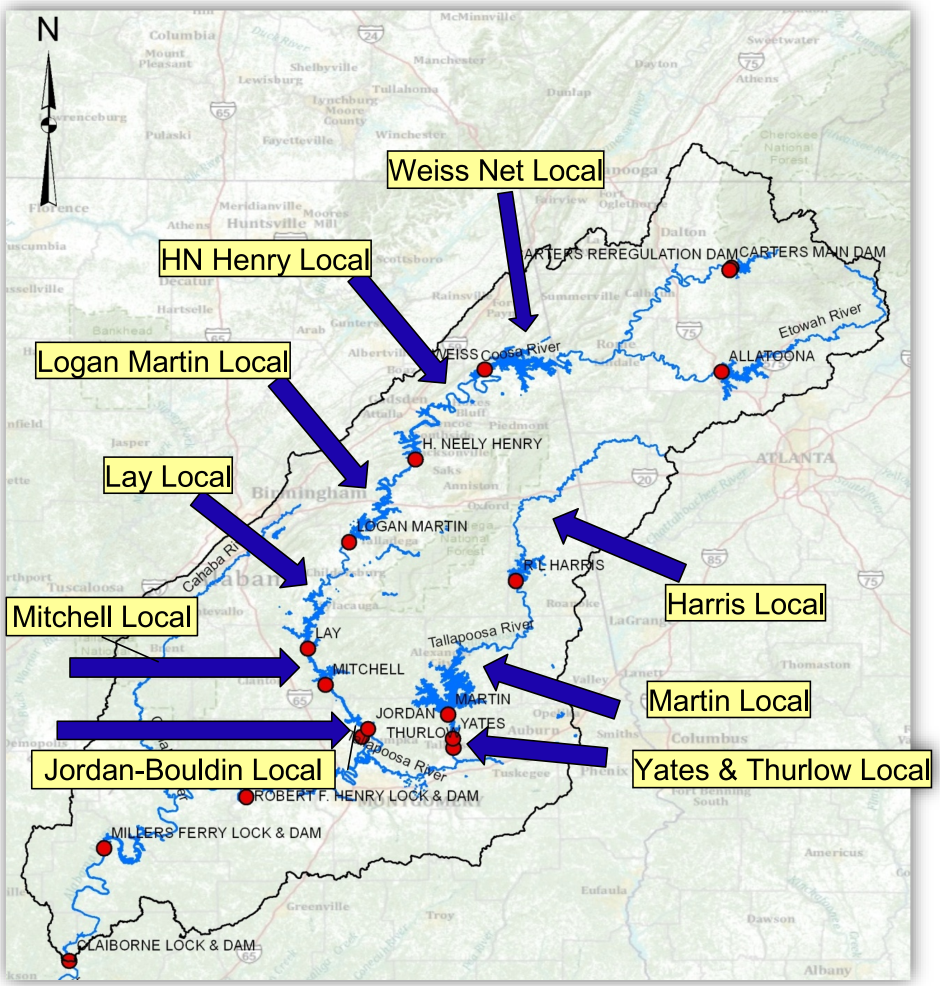

Figure 11. ACT Basin Inflows

2. **Low composite conservation storage**. Low composite conservation storage occurs when the APC projects' composite conservation storage is less than or equal to the storage available within the drought contingency curves for the APC reservoirs. Composite conservation storage is the sum of the amounts of storage available at the current elevation for each reservoir down to the drought contingency curve at each APC major storage project. The reservoirs considered for the trigger are R.L. Harris Lake, H. Neely Henry Lake, Logan Martin Lake, Lake Martin, and Weiss Lake. Figure 12 plots the APC composite zones. Figure 13 plots the APC low composite conservation storage trigger. If the actual active composite conservation storage is less than or equal to the active composite drought zone storage, the low composite conservation storage indicator is triggered. That computation is performed on the first and third Tuesday of each month, and is considered along with the low state line flow trigger and basin inflow trigger.

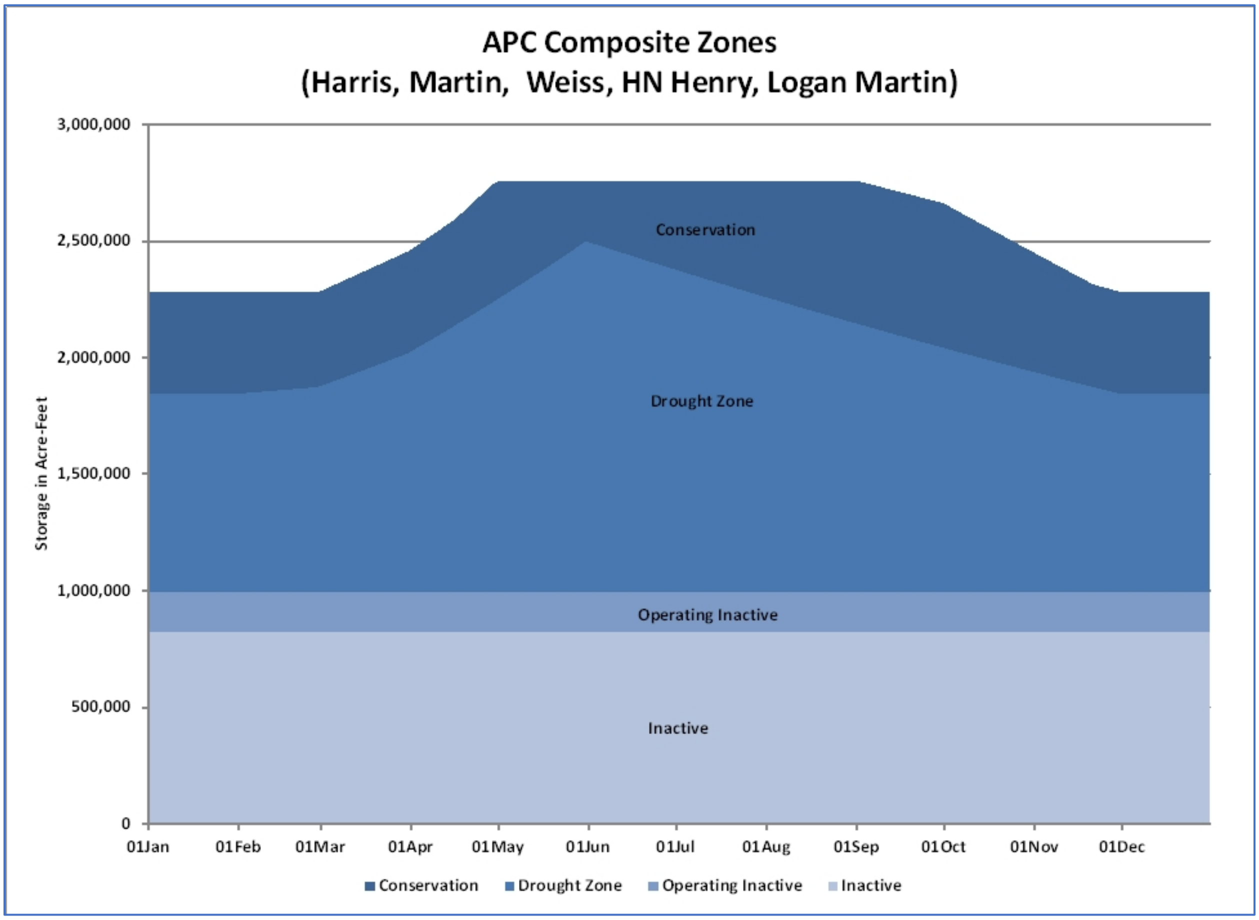

Figure 12. APC Composite Zones

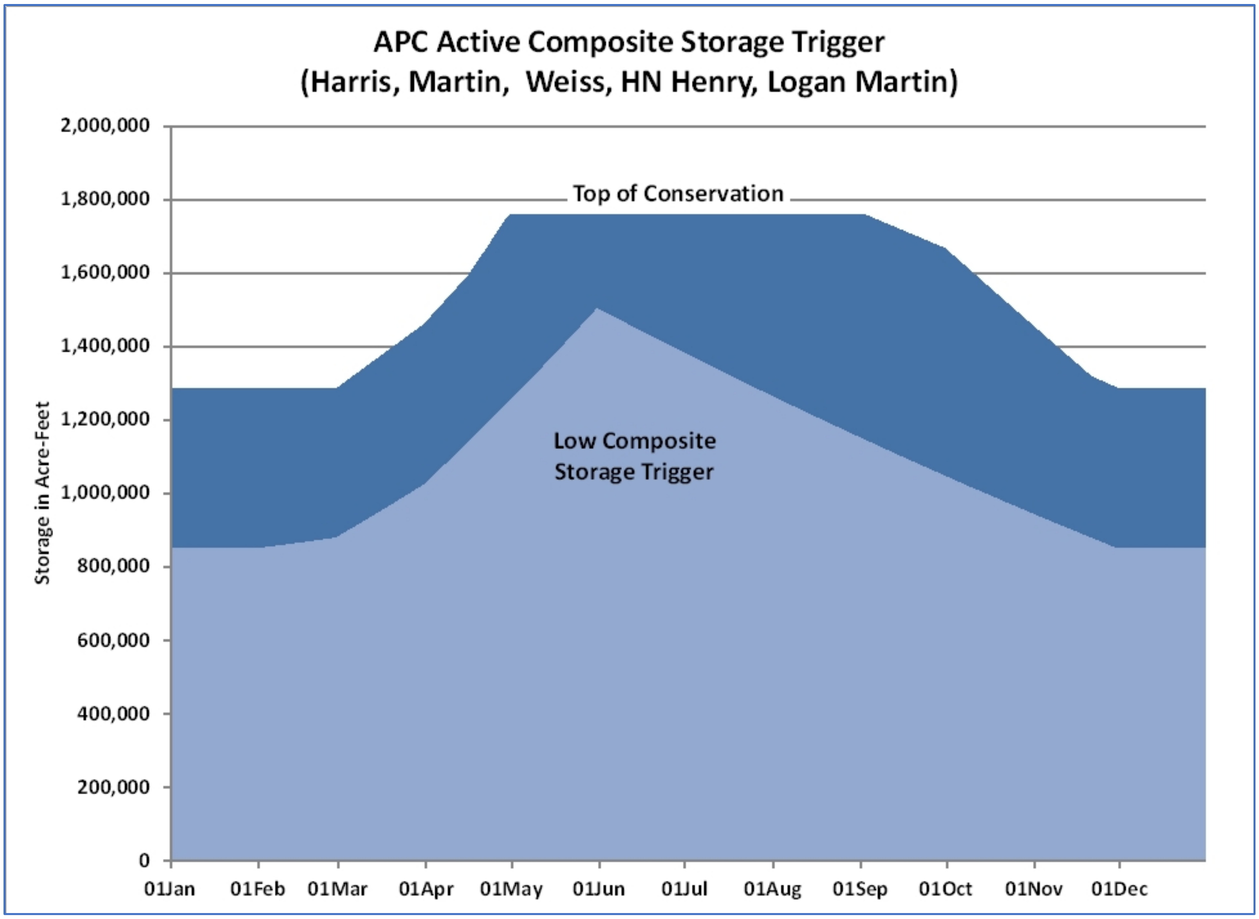

Figure 13. APC Low Composite Conservation Storage Drought Trigger

3. **Low state line flow**. A low state line flow trigger occurs when the Mayo's Bar USGS gage measures a flow below the monthly historical 7Q10 flow. The 7Q10 flow is defined as the lowest flow over a 7-day period that would occur once in 10 years. Table 9 lists the Mayo's Bar 7Q10 value for each month (determined from observed flows from 1949 – 2006). The lowest 7-day average flow over the past 14 days is computed and checked at the first and third Tuesday of the month. If the lowest 7-day average value is less than the Mayo's Bar 7Q10 value, the low state line flow indicator is triggered. If the result is greater than or equal to the trigger value from Table 9, the flow is considered normal, and the state line flow indicator is not triggered. The term state line flow is used in developing the drought management plan because of the proximity of the Mayo's Bar gage to the Alabama-Georgia state line and because it relates to flow data upstream of the Alabama-based APC reservoirs. State line flow is used only as a source of observed data for one of the three triggers and does not imply that flow targets exist at that geographic location. The ACT Basin drought matrix does not include or imply any Corps regulation that would result in water management decisions at Carters Lake or Allatoona Lake.

Table 9. State Line Flow Triggers

Month	Mayo's Bar (7Q10 in cfs)
Jan	2,544
Feb	2,982
Mar	3,258
Apr	2,911
May	2,497
Jun	2,153
Jul	1,693
Aug	1,601
Sep	1,406
Oct	1,325
Nov	1,608
Dec	2,043

Note: Based on USGS Coosa River at Rome Gage (Mayo's Bar, USGS 02397000) observed flow from 1949 to 2006

(2) Drought Regulation. The DIL is computed on the first and third Tuesday of each month. Once a drought operation is triggered, the DIL can only recover from drought condition at a rate of one level per period. For example, as the system begins to recover from an exceptional drought with DIL 3, the DIL must be stepped incrementally back to zero to resume normal operations. In that case, even if the system triggers return to normal quickly, it will still take at least a month before normal operations can resume - conditions can improve only to DIL 2 for the next 15 days, then DIL 1 for the next 15 days, before finally returning to normal operating conditions.

For normal operations, the matrix shows a Coosa River flow between 2,000 cfs and 4,000 cfs with peaking periods up to 8,000 cfs occurring. The required flow on the Tallapoosa River is a constant 1,200 cfs throughout the year. The navigation flows on the Alabama River are applied to the APC projects. The required navigation depth on the Alabama River is subject to the basin inflow.

For DIL 1, the Coosa River flow varies from 2,000 cfs to 4,000 cfs. On the Tallapoosa River, the required flow is the greater of one-half of the inflow into Yates Lake or twice the Heflin USGS gage from January thru April. For the remainder of the year, the required flow is one-half of Yates Lake inflow. The required flows on the Alabama River are reduced from the amounts required for DIL 0.

For DIL 2, the Coosa River flow varies from 1,600 cfs to 2,500 cfs. On the Tallapoosa River, the minimum is 350 cfs for part of the year and one-half of Yates Lake inflow for the remainder of the year. The requirement on the Alabama River is between 3,700 cfs and 4,200 cfs.

For DIL 3, the flows on the Coosa River range from 1,600 cfs to 2,000 cfs. A constant flow of 350 cfs on the Tallapoosa River is required. It is assumed an additional 50 cfs will occur between Thurlow Lake and the City of Montgomery water supply intake. Required flows on the Alabama River range from 2,000 cfs to 4,200 cfs

In addition to the flow regulation for drought conditions, the DIL affects the flow regulation to support navigation operations. Under normal operations, the APC projects are operated to meet the needed navigation flow target or 4,640 cfs flow as defined in the navigation measure section. Once drought operations begin, flow regulation to support navigation operations is suspended.

7-02. Extreme Drought Conditions. An extreme drought condition exists when the remaining composite conservation storage is depleted, and additional emergency actions may be necessary. When conditions have worsened to this extent, utilization of the inactive storage must be considered. Such an occurrence would typically be contemplated in the second or third year of a drought. Inactive storage capacities have been identified for the two Federal projects with significant storage (Figures 14 and 15). The operational concept established for the extreme drought impact level and to be implemented when instituting the use of inactive storage is based on the following actions:

(1) Inactive storage availability is identified to meet specific critical water use needs within existing project authorizations.

(2) Emergency uses and users will be identified in accordance with emergency authorizations and through stakeholder coordination. Typical critical water use needs within the basin are associated with public health and safety.

(3) Weekly projections of the inactive storage water availability to meet the critical water uses in the ACT Basin will be utilized when making water control decisions regarding withdrawals and water releases from the Federal reservoirs.

(4) The inactive storage action zones will be developed and instituted as triggers to meet the identified priority water uses (releases will be restricted as storage decreases).

(5) Dam safety considerations will always remain the highest priority. The structural integrity of the dams due to static head limitations will be maintained.

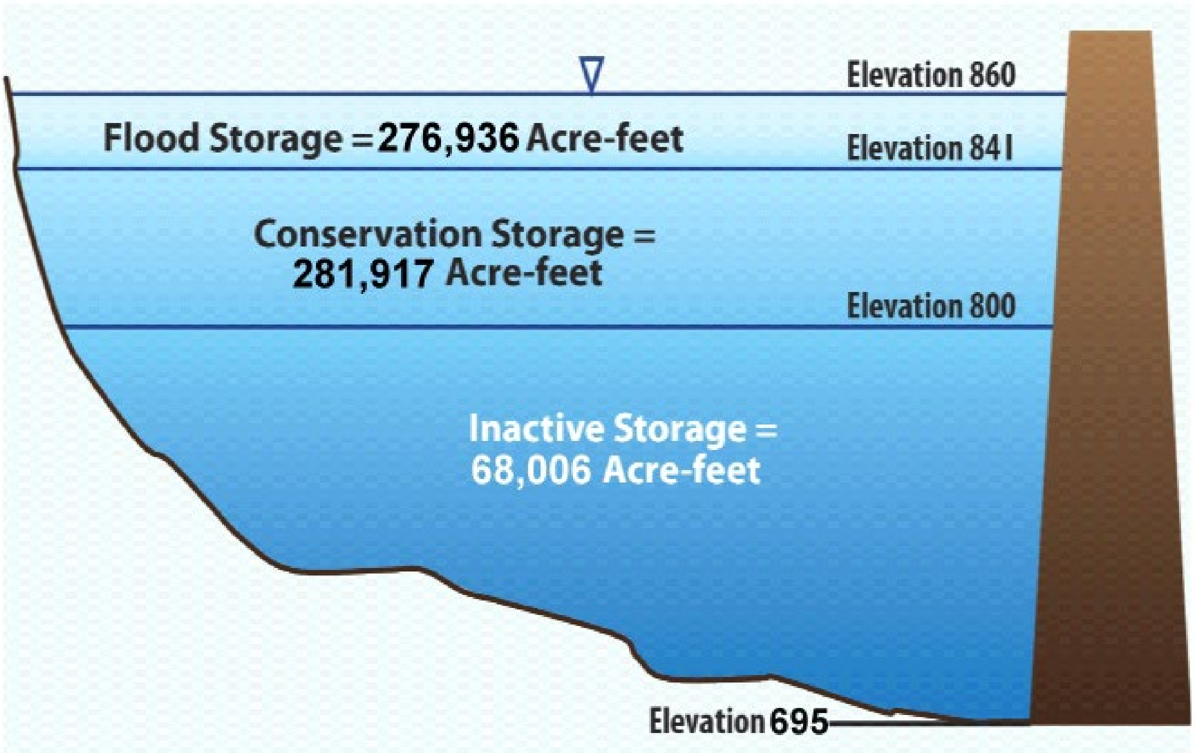

Figure 14. Storage in Allatoona Lake

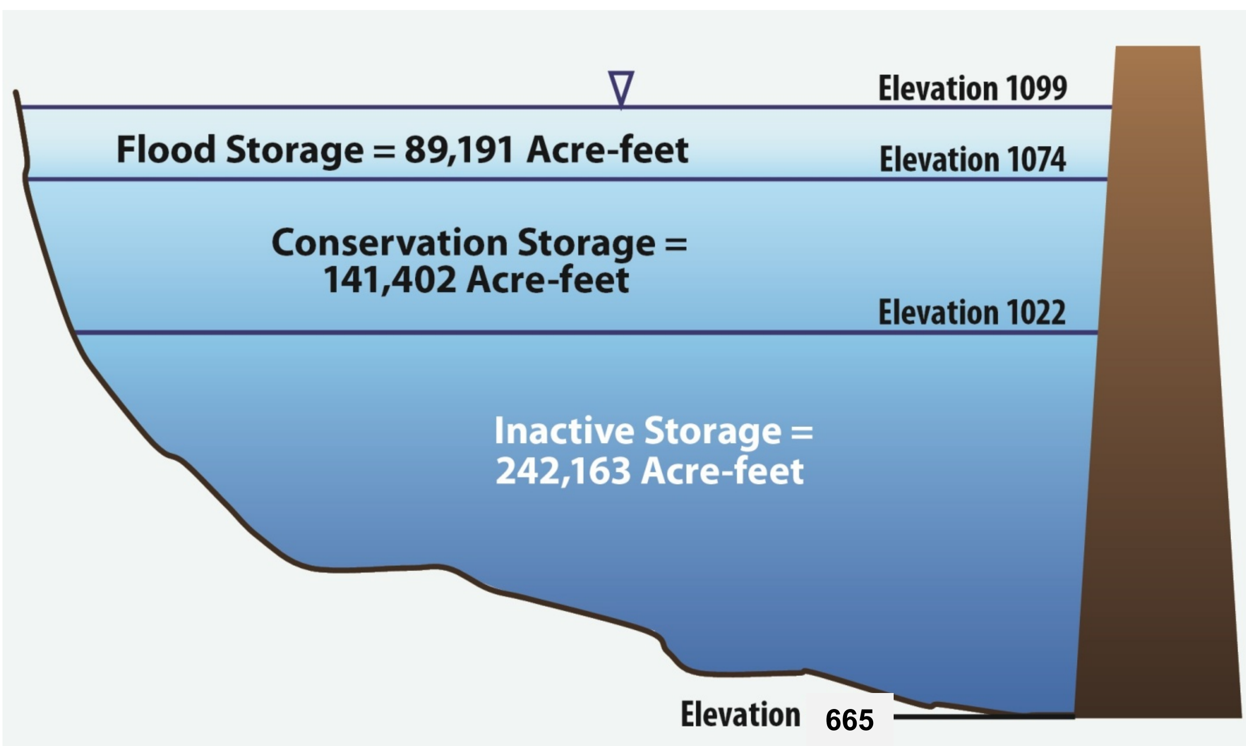

Figure 15. Storage in Carters Lake (excluding reregulation pool)

VIII – DROUGHT MANAGEMENT COORDINATION AND PROCEDURES

8-01. USACE Coordination. It is the responsibility of the Mobile District Water Management Section and APC to monitor climatological and hydrometeorological conditions at all times to make prudent water management decisions. The Water Management Section makes daily decisions and coordinates with APC every two weeks or more often if conditions warrant and with other district representatives from the various areas for which the river systems are operated -- hydropower, recreation, navigation, environmental, and others to exchange information concerning the operation of the river system. This coordination includes conducting weekly meetings with these other district elements. Daily water management decisions regarding water availability, lake level forecasts, and storage forecasts are determined using the information obtained along with current project and basin hydrometeorological data. A weekly District River System Status report is prepared that summarizes the conditions in each of the river basins. When conditions become evident that normal low flow conditions are worsening, the Water Management Section will elevate the district coordination to a heightened awareness. When drought conditions are imminent, Emergency Management representatives will be notified of the conditions and will be included in the regular coordination activities.

8-02. Interagency Coordination. The Water Management Section will support the environmental team regarding actions that require coordination with the U.S. Fish and Wildlife Service (USFWS) for monitoring threatened and endangered species and with the Environmental Protection Agency (EPA), Georgia Environmental Protection Division (GAEPD), and Alabama Department of Environmental Management (ADEM) regarding requests to lower minimum flow targets below Claiborne Dam.

8-03. Public Information and Coordination. When conditions determine that a change in the water control actions from normal regulation to drought regulation is imminent, it is important that various users of the system are notified so that any environmental or operational preparations can be completed prior to any impending reduction in reservoir discharges, river levels, and reservoir pool levels. In periods of severe drought within the ACT Basin it will be within the discretion of the Division Commander to approve the enactment of ACT Basin Water Management conference calls. The purposes of the calls are to share ongoing water management decisions with basin stakeholders and to receive stakeholder input regarding needs and potential impacts to users within the basin. Depending upon the severity of the drought conditions, the calls will be conducted at regular monthly or bi-weekly intervals. Should issues arise, more frequent calls would be implemented.

a. Local Press and Corps Bulletins. The local press consists of periodic publications in or near the ACT Basin. Montgomery, Columbus, and Atlanta have some of the larger daily papers. The papers often publish articles related to the rivers and streams. Their representatives have direct contact with the Corps through the Public Affairs Office. In addition, they can access the Corps Web pages for the latest project information. The Corps and the Mobile District publish e-newsletters regularly which are made available to the general public via email and postings on various websites. Complete, real-time information is available at the Mobile District's Water Management homepage https://www.sam.usace.army.mil/Missions/Civil-Works/Water-Management/. The Mobile District Public Affairs Office issues press releases as necessary to provide the public with information regarding Water Management issues and activities and also provides information via the Mobile District web site.

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EXHIBIT G

EMERGENCY CONTACT INFORMATION

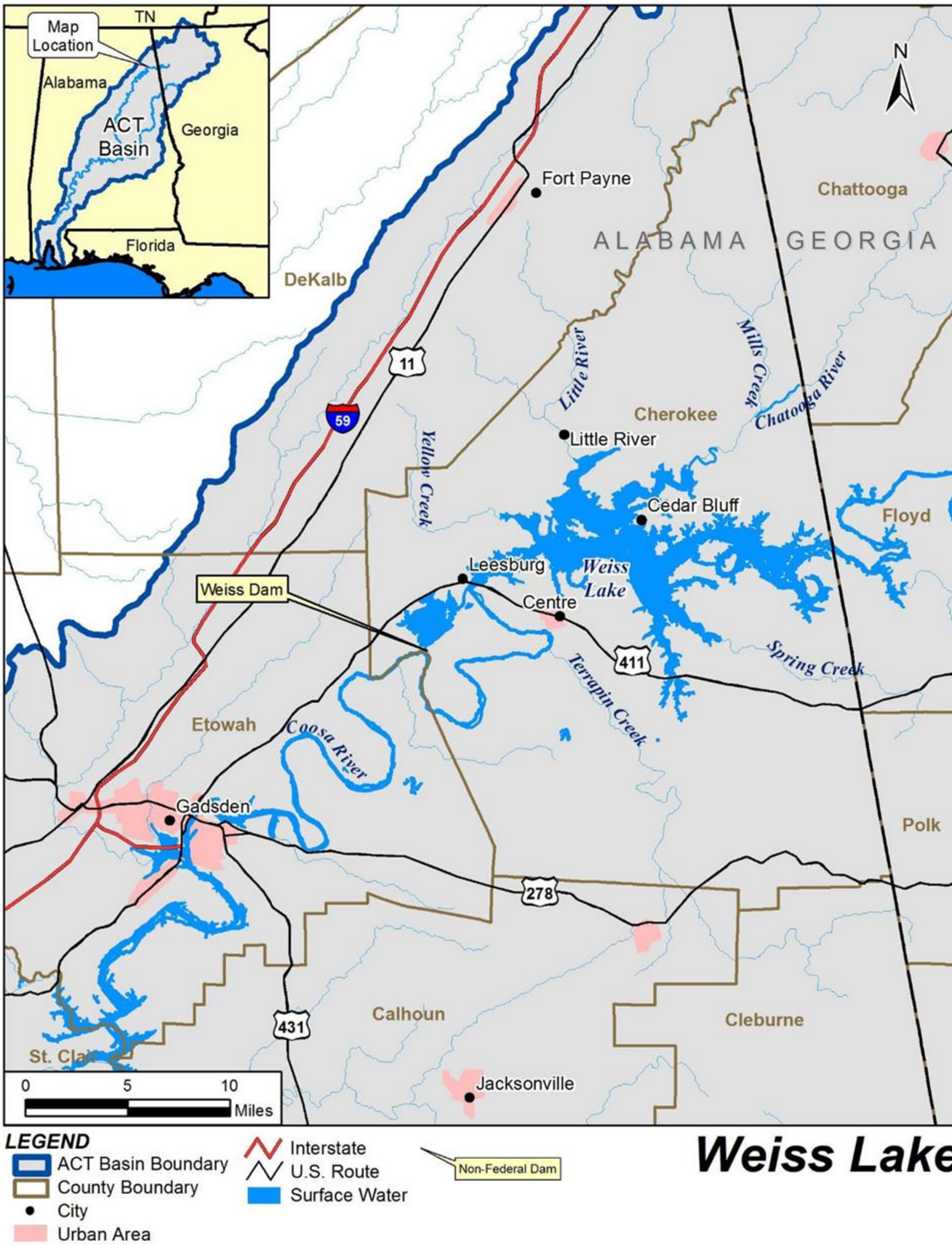
Alabama Power Company:

Reservoir Operations Supervisor	(205) 257-1401
Reservoir Operations Supervisor Alternate Daytime	(205) 257-4010
Reservoir Operations Supervisor After-Hours	(205) 257-4010
Weiss Powerhouse	(256)

US Army Corps of Engineers:

Water Management Section	(251) 690-2737
Chief of Water Management	(251) 690-2730 or (251) 509-5368

PLATES



ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

PROJECT MAP

CORPS OF ENGINEERS

U.S. ARMY

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE
ALABAMA-COOSA-TALLAPOOSA
RIVER BASIN MAP

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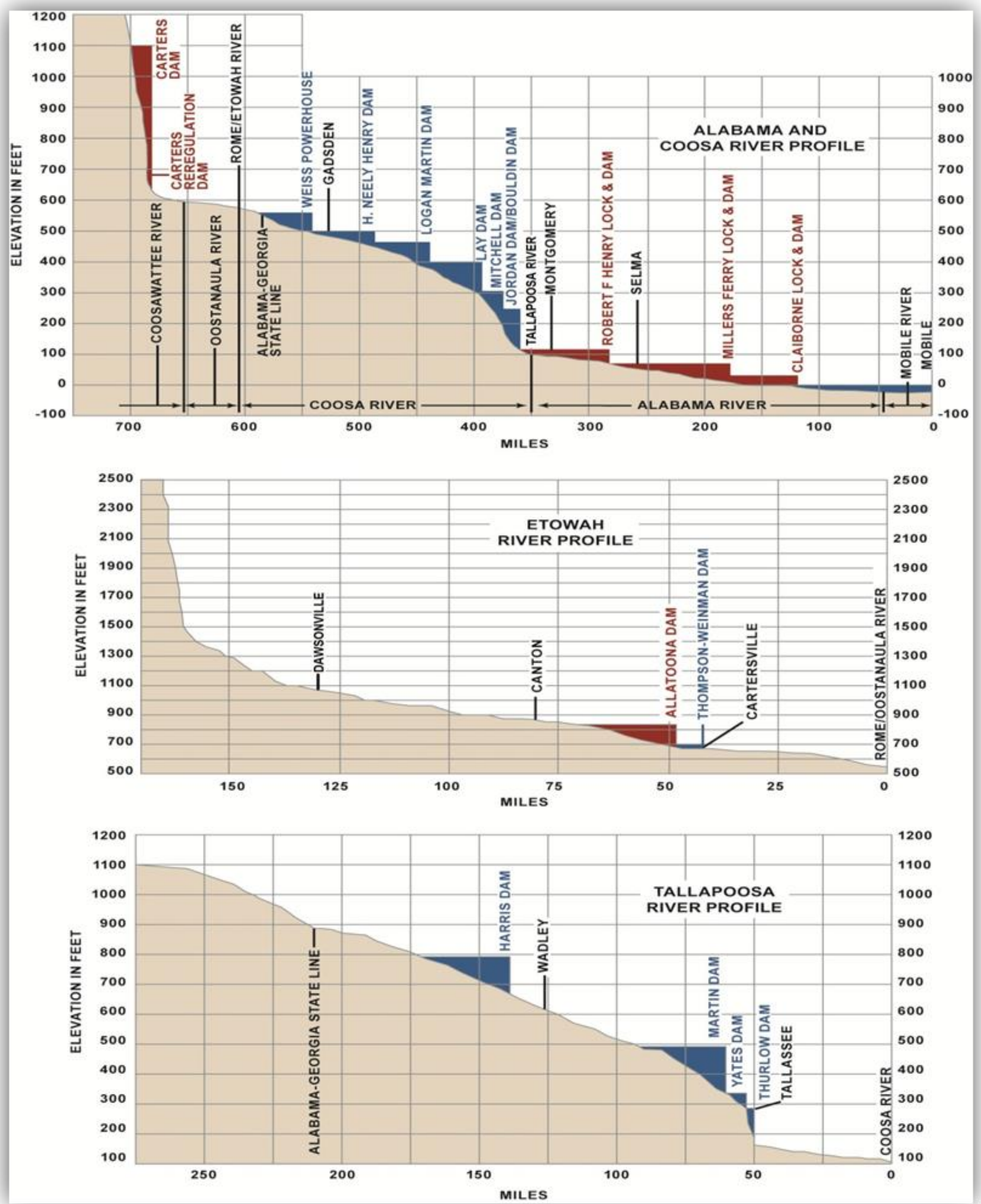
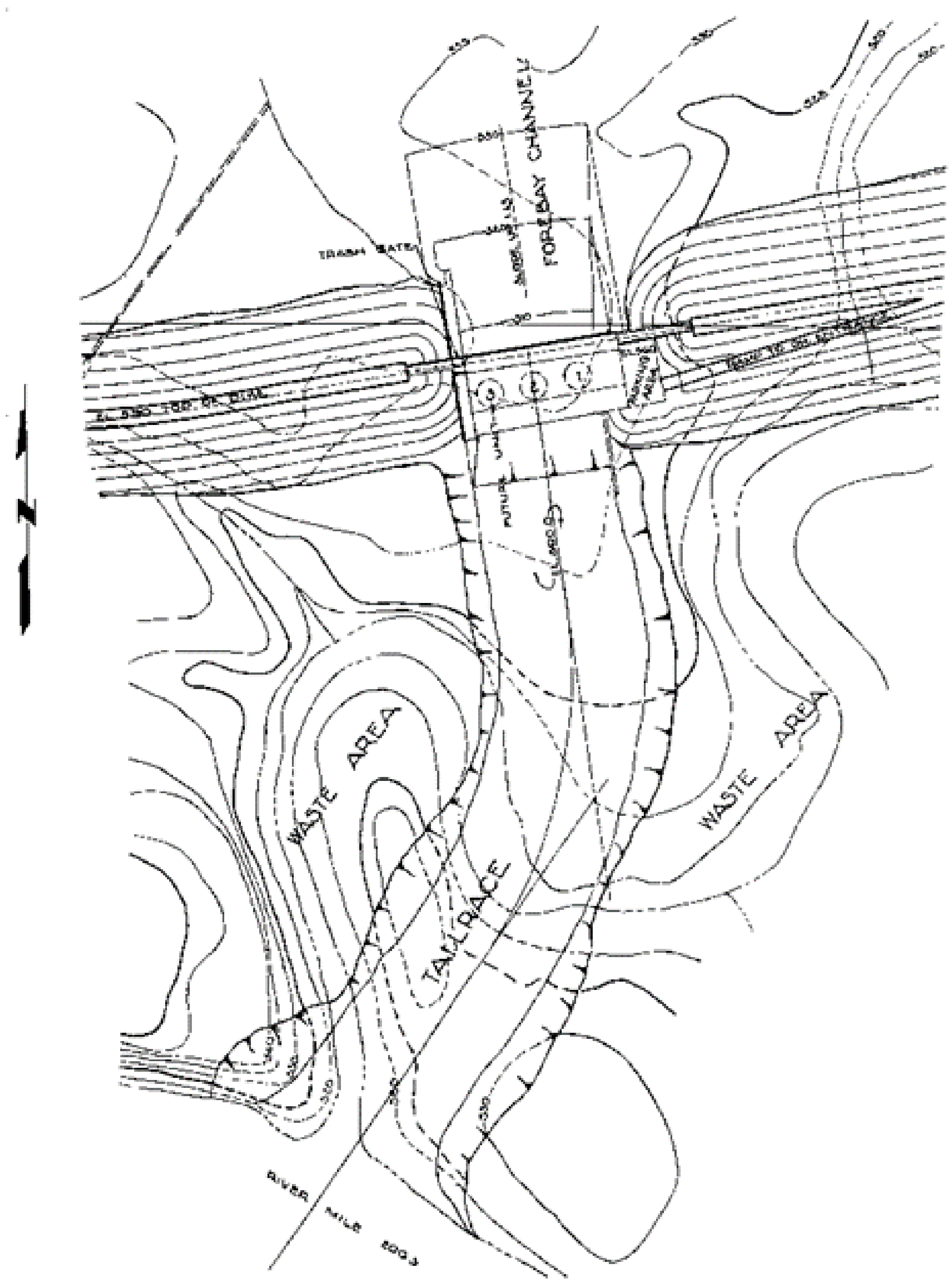
APPENDIX B PLATE 2-2

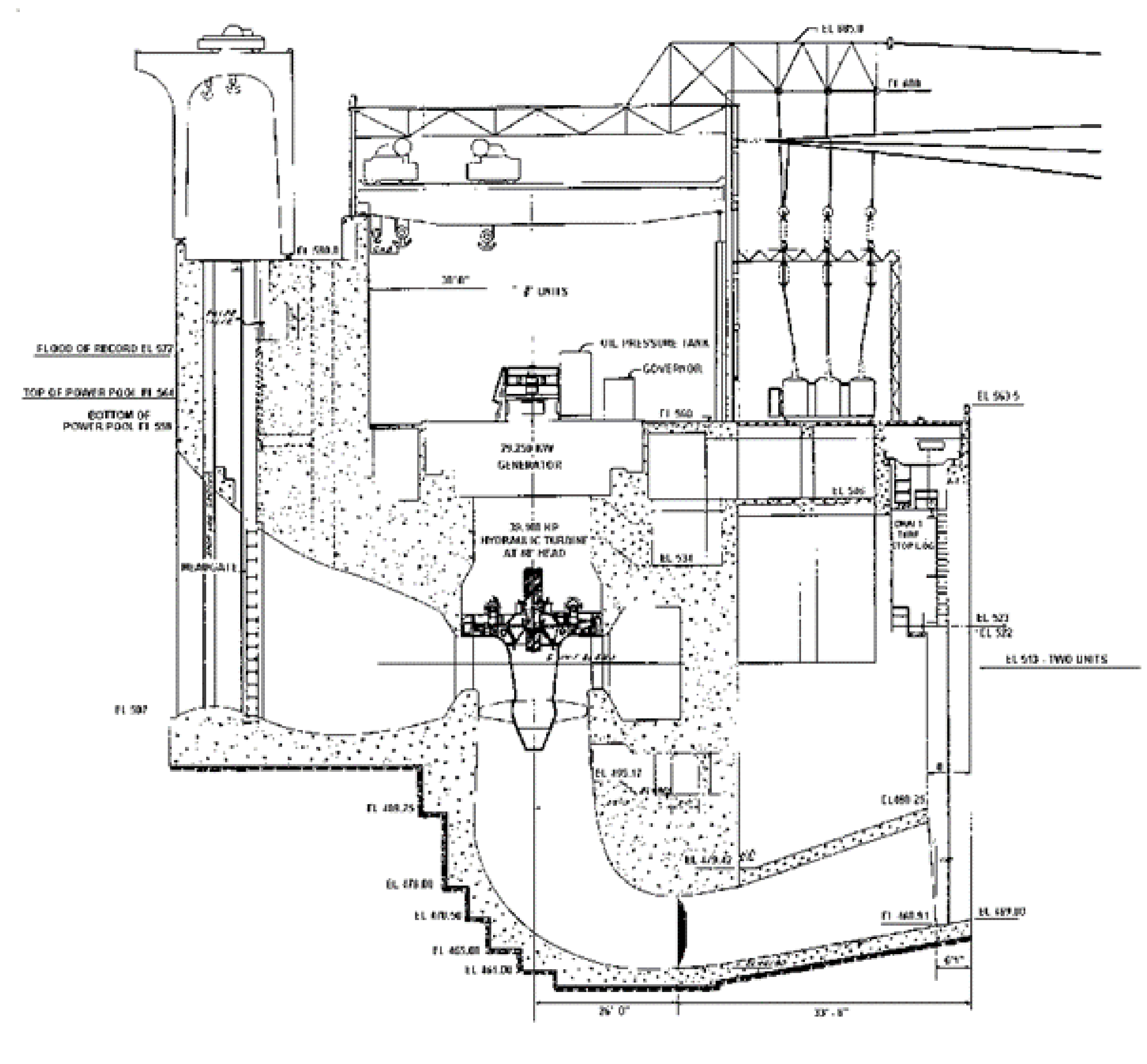


ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN PROFILE



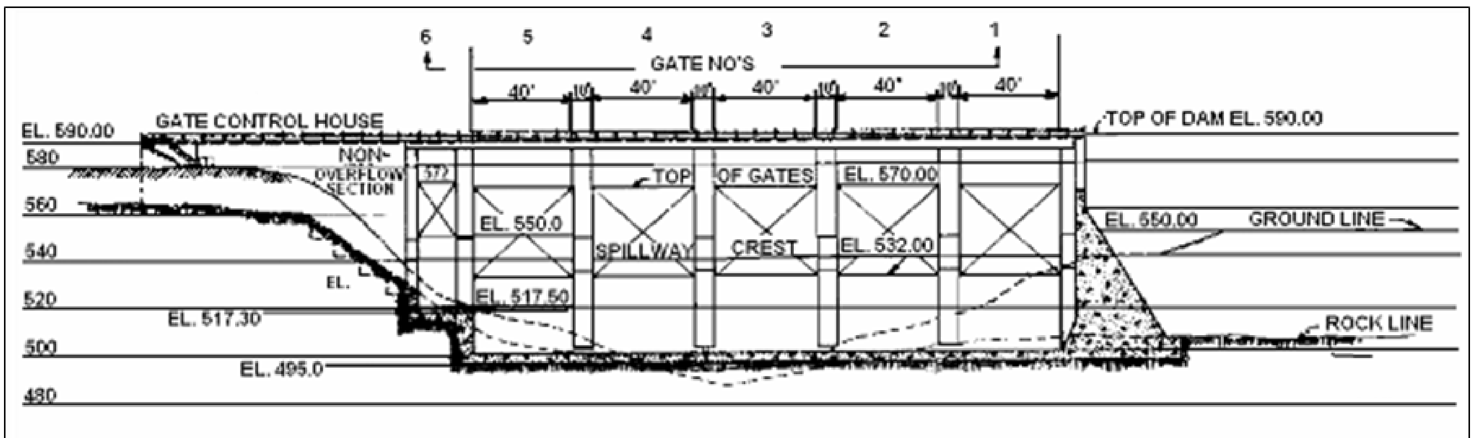


POWER HOUSE TRANSVERSE SECTION

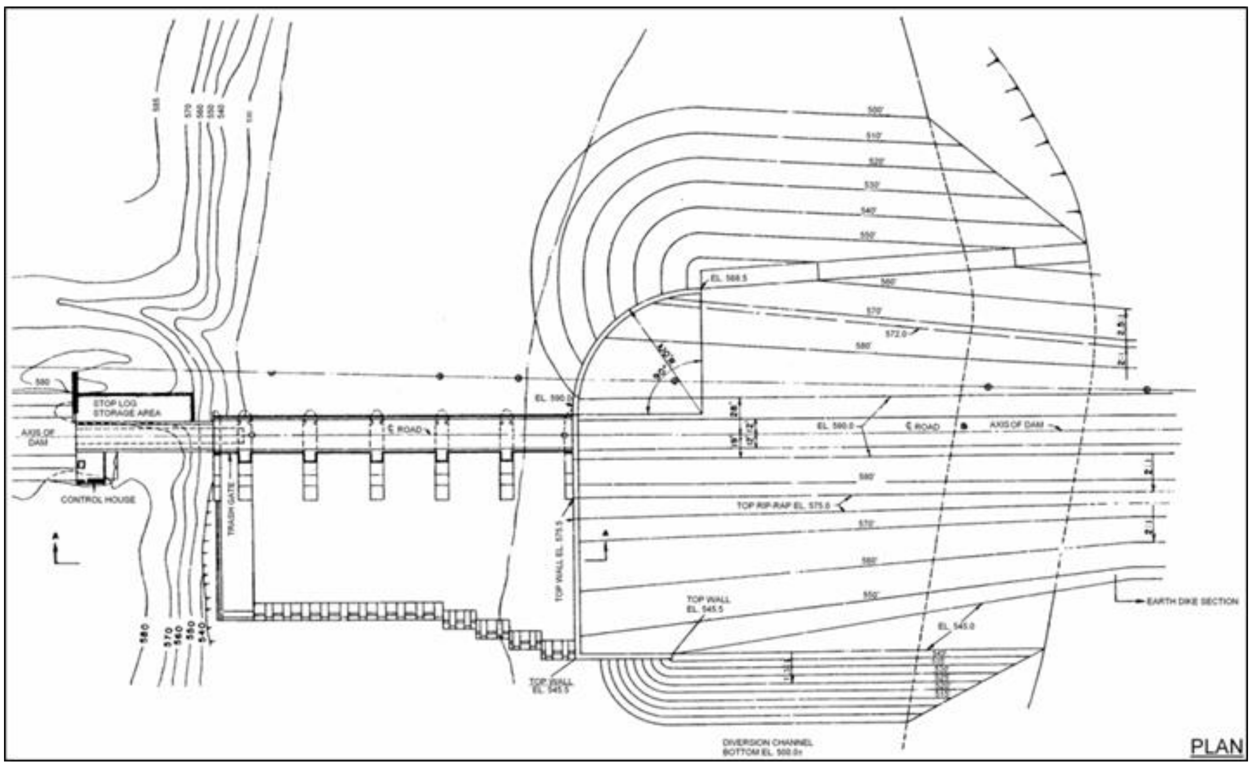
ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

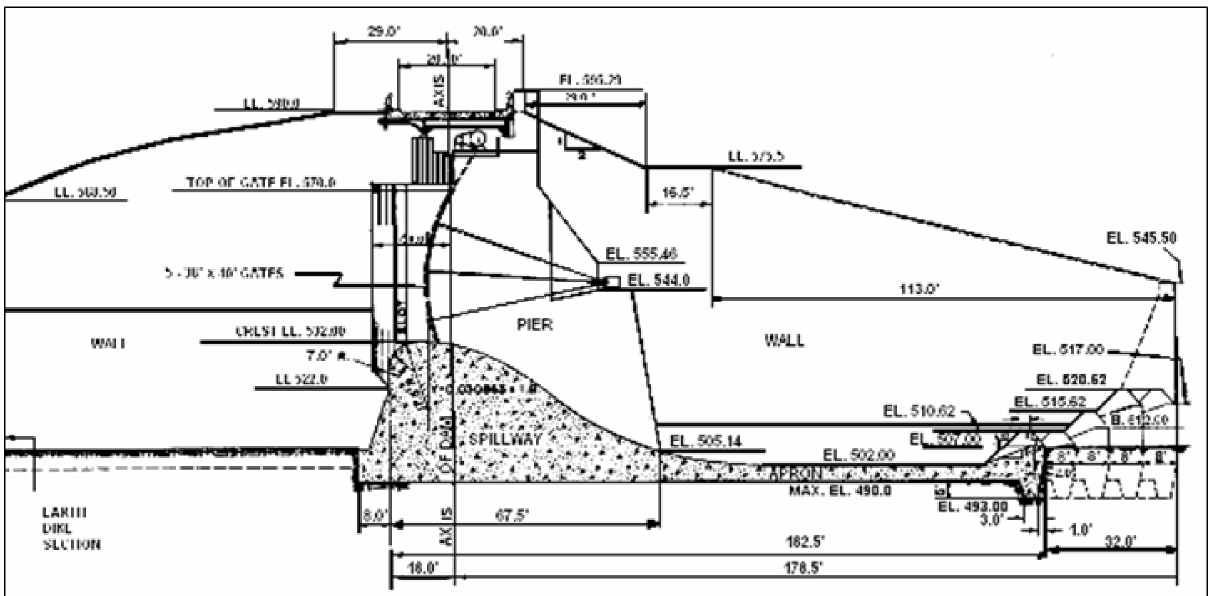
POWERHOUSE PLAN ELEVATION AND SECTION



SECTION A-A
ELEVATION



PLAN



SPILLWAY SECTION

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

SPILLWAY PLAN, ELEVATION, & SECTION

WEISS GATE OPERATION SCHEDULE

GATE ARRANGEMENT NO.	DIAL SETTING – GATE NUMBER 1 (EAST)	2	3	4	5 (WEST)	GATE ARRANGEMENT NO.	DIAL SETTING – GATE NUMBER 1 (EAST)	2	3	4	5 (WEST)	GATE ARRANGEMENT NO.	DIAL SETTING – GATE NUMBER 1 (EAST)	2	3	4	5 (WEST)	GATE ARRANGEMENT NO.	DIAL SETTING – GATE NUMBER 1 (EAST)	2	3	4	5 (WEST)	GATE ARRANGEMENT NO.	DIAL SETTING – GATE NUMBER 1 (EAST)	2	3	4	5 (WEST)
1	-	-	0.25	-	-	51	2.50	2.50	2.75	2.50	2.50	101	5.00	5.00	5.25	5.00	5.00	151	7.50	7.50	7.75	7.50	7.50	201	10.00	10.00	10.25	10.00	10.00
2	0.25	-	0.25	-	-	52	2.75	2.50	2.75	2.50	2.50	102	5.25	5.00	5.25	5.00	5.00	152	7.75	7.50	7.75	7.50	7.50	202	10.25	10.00	10.25	10.00	10.00
3	0.25	-	0.25	-	0.25	53	2.75	2.50	2.75	2.50	2.75	103	5.25	5.00	5.25	5.00	5.25	153	7.75	7.50	7.75	7.50	7.75	203	10.25	10.00	10.25	10.00	10.25
4	0.25	0.25	0.25	-	0.25	54	2.75	2.75	2.75	2.50	2.75	104	5.25	5.25	5.25	5.00	5.25	154	7.75	7.75	7.75	7.50	7.75	204	10.25	10.25	10.25	10.00	10.25
5	0.25	0.25	0.25	0.25	0.25	55	2.75	2.75	2.75	2.75	2.75	105	5.25	5.25	5.25	5.25	5.25	155	7.75	7.75	7.75	7.75	7.75	205	10.25	10.25	10.25	10.25	10.25
6	0.25	0.25	0.50	0.25	0.25	56	2.75	2.75	3.00	2.75	2.75	106	5.25	5.25	5.50	5.25	5.25	156	7.75	7.75	8.00	7.75	7.75	206	10.25	10.25	10.50	10.25	10.25
7	0.50	0.25	0.50	0.25	0.25	57	3.00	2.75	3.00	2.75	2.75	107	5.50	5.25	5.50	5.25	5.25	157	8.00	7.75	8.00	7.75	7.75	207	10.50	10.25	10.50	10.25	10.25
8	0.50	0.25	0.50	0.25	0.50	58	3.00	2.75	3.00	2.75	3.00	108	5.50	5.25	5.50	5.25	5.50	158	8.00	7.75	8.00	7.75	8.00	208	10.50	10.25	10.50	10.25	10.50
9	0.50	0.50	0.50	0.25	0.50	59	3.00	3.00	3.00	2.75	3.00	109	5.50	5.50	5.50	5.25	5.50	159	8.00	8.00	8.00	7.75	8.00	209	10.50	10.50	10.50	10.25	10.50
10	0.50	0.50	0.50	0.50	0.50	60	3.00	3.00	3.00	3.00	3.00	110	5.50	5.50	5.50	5.50	5.50	160	8.00	8.00	8.00	8.00	8.00	210	10.50	10.50	10.50	10.50	10.50
11	0.50	0.50	0.75	0.50	0.50	61	3.00	3.00	3.25	3.00	3.00	111	5.50	5.50	5.75	5.50	5.50	161	8.00	8.00	8.25	8.00	8.00	211	10.50	10.50	10.75	10.50	10.50
12	0.75	0.50	0.75	0.50	0.50	62	3.25	3.00	3.25	3.00	3.00	112	5.75	5.50	5.75	5.50	5.50	162	8.25	8.00	8.25	8.00	8.00	212	10.75	10.50	10.75	10.50	10.50
13	0.75	0.50	0.75	0.50	0.75	63	3.25	3.00	3.25	3.00	3.25	113	5.75	5.50	5.75	5.50	5.75	163	8.25	8.00	8.25	8.00	8.25	213	10.75	10.50	10.75	10.50	10.75
14	0.75	0.75	0.75	0.50	0.75	64	3.25	3.25	3.25	3.00	3.25	114	5.75	5.75	5.75	5.50	5.75	164	8.25	8.25	8.25	8.00	8.25	214	10.75	10.75	10.75	10.50	10.75
15	0.75	0.75	0.75	0.75	0.75	65	3.25	3.25	3.25	3.25	3.25	115	5.75	5.75	5.75	5.75	5.75	165	8.25	8.25	8.25	8.25	8.25	215	10.75	10.75	10.75	10.75	10.75
16	0.75	0.75	1.00	0.75	0.75	66	3.25	3.25	3.50	3.25	3.25	116	5.75	5.75	6.00	5.75	5.75	166	8.25	8.25	8.50	8.25	8.25	216	10.75	10.75	11.00	10.75	10.75
17	1.00	0.75	1.00	0.75	0.75	67	3.50	3.25	3.50	3.25	3.25	117	6.00	5.75	6.00	5.75	5.75	167	8.50	8.25	8.50	8.25	8.25	217	11.00	10.75	11.00	10.75	10.75
18	1.00	0.75	1.00	0.75	1.00	68	3.50	3.25	3.50	3.25	3.50	118	6.00	5.75	6.00	5.75	6.00	168	8.50	8.25	8.50	8.25	8.50	218	11.00	10.75	11.00	10.75	11.00
19	1.00	1.00	1.00	0.75	1.00	69	3.50	3.50	3.50	3.25	3.50	119	6.00	6.00	6.00	5.75	6.00	169	8.50	8.50	8.50	8.25	8.50	219	11.00	11.00	11.00	10.75	11.00
20	1.00	1.00	1.00	1.00	1.00	70	3.50	3.50	3.50	3.50	3.50	120	6.00	6.00	6.00	6.00	6.00	170	8.50	8.50	8.50	8.50	8.50	220	11.00	11.00	11.00	11.00	11.00
21	1.00	1.00	1.25	1.00	1.00	71	3.50	3.50	3.75	3.50	3.50	121	6.00	6.00	6.25	6.00	6.00	171	8.50	8.50	8.75	8.50	8.50	221	11.00	11.00	11.25	11.00	11.00
22	1.25	1.00	1.25	1.00	1.00	72	3.75	3.50	3.75	3.50	3.50	122	6.25	6.00	6.25	6.00	6.00	172	8.75	8.50	8.75	8.50	8.50	222	11.25	11.00	11.25	11.00	11.00
23	1.25	1.00	1.25	1.00	1.25	73	3.75	3.50	3.75	3.50	3.75	123	6.25	6.00	6.25	6.00	6.25	173	8.75	8.50	8.75	8.50	8.75	223	11.25	11.00	11.25	11.00	11.25
24	1.25	1.25	1.25	1.00	1.25	74	3.75	3.75	3.75	3.50	3.75	124	6.25	6.25	6.25	6.00	6.25	174	8.75	8.75	8.75	8.50	8.75	224	11.25	11.25	11.25	11.00	11.25
25	1.25	1.25	1.25	1.25	1.25	75	3.75	3.75	3.75	3.75	3.75	125	6.25	6.25	6.25	6.25	6.25	175	8.75	8.75	8.75	8.75	8.75	225	11.25	11.25	11.25	11.25	11.25
26	1.25	1.25	1.50	1.25	1.50	76	3.75	3.75	4.00	3.75	3.75	126	6.25	6.25	6.50	6.25	6.25	176	8.75	8.75	9.00	8.75	8.75	226	11.25	11.25	11.50	11.25	11.25
27	1.25	1.25	1.50	1.25	1.50	77	4.00	3.75	4.00	3.75	3.75	127	6.50	6.25	6.50	6.25	6.25	177	9.00	8.75	9.00	8.75	8.75	227	11.50	11.25	11.50	11.25	11.25
28	1.50	1.25	1.50	1.25	1.50	78	4.00	3.75	4.00	3.75	4.00	128	6.50	6.25	6.50	6.25	6.50	178	9.00	8.75	9.00	8.75	9.00	228	11.50	11.25	11.50	11.25	11.50
29	1.50	1.50	1.50	1.25	1.50	79	4.00	4.00	4.00	3.75	4.00	129	6.50	6.50	6.50	6.25	6.50	179	9.00	9.00	9.00	8.75	9.00	229	11.50	11.50	11.50	11.25	11.50
30	1.50	1.50	1.50	1.50	1.50	80	4.00	4.00	4.00	4.00	4.00	130	6.50	6.50	6.50	6.50	6.50	180	9.00	9.00	9.00	9.00	9.00	230	11.50	11.50	11.50	11.50	11.50
31	1.50	1.50	1.75	1.50	1.50	81	4.00	4.00	4.25	4.00	4.00	131	6.50	6.50	6.75	6.50	6.50	181	9.00	9.00	9.25	9.00	9.00	231	11.50	11.50	11.75	11.50	11.50
32	1.75	1.50	1.75	1.50	1.50	82	4.25	4.00	4.25	4.00	4.00	132	6.75	6.50	6.75	6.50	6.50	182	9.25	9.00	9.25	9.00	9.00	232	11.75	11.50	11.75	11.50	11.50
33	1.75	1.50	1.75	1.50	1.75	83	4.25	4.00	4.25	4.00	4.25	133	6.75	6.50	6.75	6.50	6.75	183	9.25	9.00	9.25	9.00	9.25	233	11.75	11.50	11.75	11.50	11.75
34	1.75	1.75	1.75	1.50	1.75	84	4.25	4.25	4.25	4.00	4.25	134	6.75	6.75	6.75	6.50	6.75	184	9.25	9.25	9.25	9.00	9.25	234	11.75	11.75	11.75	11.50	11.75
35	1.75	1.75	1.75	1.75	1.75	85	4.25	4.25	4.25	4.25	4.25	135	6.75	6.75	6.75	6.75	6.75	185	9.25	9.25	9.25	9.25	9.25	235	11.75	11.75	11.75	11.75	11.75
36	1.75	1.75	2.00	1.75	1.75	86	4.25	4.25	4.50	4.25	4.25	136	6.75	6.75	7.00	6.75	6.75	186	9.25	9.25	9.50	9.25	9.25	236	11.75	11.75	12.00	11.75	11.75
37	2.00	1.75	2.00	1.75	1.75	87	4.50	4.25	4.50	4.25	4.25	137	7.00	6.75	7.00	6.75	6.75	187	9.50	9.25	9.50	9.25	9.25	237	12.00	11.75	12.00	11.75	11.75
38	2.00	1.75	2.00	1.75	2.00	88	4.50	4.25	4.50	4.25	4.50	138	7.00	6.75	7.00	6.75	7.00	188	9.50	9.25	9.50	9.25	9.50	238	12.00	11.75	12.90	11.75	12.00
39	2.00	2.00	2.00	1.75	2.00	89	4.50	4.50	4.50	4.25	4.50	139	7.00	7.00	7.00	6.75	7.00	189	9.50	9.50	9.50	9.25	9.50	239	12.00	12.00	12.00	11.75	12.00
40	2.00	2.00	2.00	2.00	2.00	90	4.50	4.50	4.50	4.50	4.50	140	7.00	7.00	7.00	7.00	7.00	190	9.50	9.50	9.50	9.50	9.50	240	12.00	12.00	12.00	12.00	12.00
41	2.00	2.00	2.25	2.00	2.00	91	4.50	4.50	4.75	4.50	4.50	141	7.00	7.00	7.25	7.00	7.00	191	9.50	9.50	9.75	9.50	9.50	241	12.00	12.00	12.25	12.00	12.00
42	2.25	2.00	2.25	2.00	2.00	92	4.75	4.50	4.75	4.50	4.50	142	7.25	7.00	7.25	7.00	7.00	192	9.75	9.50	9.75	9.50	9.50	242	12.25	12.00	12.25	12.00	12.00
43	2.25	2.00	2.25	2.00	2.25	93	4.75	4.50	4.75	4.50	4.75	143	7.25	7.00	7.25	7.00	7.25	193	9.75	9.50	9.75	9.50	9.75	243	12.25	12.00	12.25	12.00	12.25
44	2.25	2.25	2.25	2.00	2.25	94	4.75	4.75	4.75	4.50	4.75	144	7.25	7.25	7.25	7.00	7.25	194	9.75	9.75	9.75	9.50	9.75	244	12.25	12.25	12.25	12.00	12.25
45	2.25	2.25	2.25	2.25	2.25	95	4.75	4.75	4.75	4.75	4.75	145	7.25	7.25	7.25	7.25	7.25	195	9.75	9.75	9.75	9.75	9.75	245	12.25	12.25	12.25	12.25	12.25
46	2.25	2.25	2.50	2.25	2.25	96	4.75	4.75	5.00	4.75	4.75	146	7.25	7.25	7.50	7.25	7.25	196	9.75	9.75	10.00	9.75	9.75	246	12.25	12.25	12.50	12.25	12.25
47	2.50	2.25	2.50	2.25	2.25	97	5.00	4.75	5.00	4.75	4.75	147	7.50	7.25	7.50	7.25	7.25	197	10.00	9.75	10.00	9.75	9.75	247	12.50	12.25	12.50	12.25	12.25
48	2.50	2.25	2.50	2.25	2.50	98	5.00	4.75	5.00	4.75	5.00	148	7.50	7.25	7.50	7.25	7.50	198	10.00	9.75	10.00	9.75	10.00	248	12.50	12.25	12.50	12.25	12.50
49	2.50	2.50	2.50	2.25	2.50	99	5.00	5.00	5.00	4.75	5.00	149	7.50	7.50	7.50	7.25	7.50	199	10.00	10.00	10.00	9.75	10.00	249	12.50	12.50	12.50	12.25	12.50
50	2.50	2.50	2.50	2.50	2.50	100	5.00	5.00	5.00	5.00	5.00	150	7.50	7.50	7.50	7.50	7.50	200	10.00	10.00	10.00	10.00	10.00	250	12.50	12.50	12.50	12.50	12.50

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

GATE OPERATION SCHEDULE

WEISS GATE OPERATION SCHEDULE

GATE ARRANGE-MENT NO.	DIAL SETTING – GATE NUMBER 1 (EAST)	2	3	4	5 (WEST)
251	12.50	12.50	12.75	12.50	12.50
252	12.75	12.50	12.75	12.50	12.50
253	12.75	12.50	12.75	12.50	12.75
254	12.75	12.75	12.75	12.50	12.75
255	12.75	12.75	12.75	12.75	12.75
256	12.75	12.75	13.00	12.75	12.75
257	13.00	12.75	13.00	12.75	12.75
258	13.00	12.75	13.00	12.75	13.00
259	13.00	13.00	13.00	12.75	13.00
260	13.00	13.00	13.00	13.00	13.00
261	13.00	13.00	13.25	13.00	13.00
262	13.25	13.00	13.25	13.00	13.00
263	13.25	13.00	13.25	13.00	13.25
264	13.25	13.25	13.25	13.00	13.25
265	13.25	13.25	13.25	13.25	13.25
266	13.25	13.25	13.50	13.25	13.25
267	13.50	13.25	13.50	13.25	13.25
268	13.50	13.25	13.50	13.25	13.50
269	13.50	13.50	13.50	13.25	13.50
270	13.50	13.50	13.50	13.50	13.50
271	13.50	13.50	13.75	13.50	13.50
272	13.75	13.50	13.75	13.50	13.50
273	13.75	13.50	13.75	13.50	13.75
274	13.75	13.75	13.75	13.50	13.75
275	13.75	13.75	13.75	13.75	13.75
276	13.75	13.75	14.00	13.75	13.75
277	14.00	13.75	14.00	13.75	13.75
278	14.00	13.75	14.00	13.75	14.00
279	14.00	14.00	14.00	13.75	14.00
280	14.00	14.00	14.00	14.00	14.00
281	14.00	14.00	14.25	14.00	14.00
282	14.25	14.00	14.25	14.00	14.00
283	14.25	14.00	14.25	14.00	14.25
284	14.25	14.25	14.25	14.00	14.25
285	14.25	14.25	14.25	14.25	14.25
286	14.25	14.25	14.50	14.25	14.25
287	14.50	14.25	14.50	14.25	14.25
288	14.50	14.25	14.50	14.25	14.50
289	14.50	14.50	14.50	14.25	14.50
290	14.50	14.50	14.50	14.50	14.50
291	14.50	14.50	14.75	14.50	14.50
292	14.75	14.50	14.75	14.50	14.50
293	14.75	14.50	14.75	14.50	14.75
294	14.75	14.75	14.75	14.50	14.75
295	14.75	14.75	14.75	14.75	14.75
296	14.75	14.75	15.00	14.75	14.75
297	15.00	14.75	15.00	14.75	14.75
298	15.00	14.75	15.00	14.75	15.00
299	15.00	15.00	15.00	14.75	15.00
300	15.00	15.00	15.00	15.00	15.00

GATE ARRANGE-MENT NO.	DIAL SETTING – GATE NUMBER 1 (EAST)	2	3	4	5 (WEST)
301	15.00	15.00	15.25	15.00	15.00
302	15.25	15.00	15.25	15.00	15.00
303	15.25	15.00	15.25	15.00	15.25
304	15.25	15.25	15.25	15.00	15.25
305	15.25	15.25	15.25	15.25	15.25
306	15.25	15.25	15.50	15.25	15.25
307	15.50	15.25	15.50	15.25	15.25
308	15.50	15.25	15.50	15.25	15.50
309	15.50	15.50	15.50	15.25	15.50
310	15.50	15.50	15.50	15.50	15.50
311	15.50	15.50	15.75	15.50	15.50
312	15.75	15.50	15.75	15.50	15.50
313	15.75	15.50	15.75	15.50	15.75
314	15.75	15.75	15.75	15.50	15.75
315	15.75	15.75	15.75	15.75	15.75
316	15.75	15.75	16.00	15.75	15.75
317	16.00	15.75	16.00	15.75	15.75
318	16.00	15.75	16.00	15.75	16.00
319	16.00	16.00	16.00	15.75	16.00
320	16.00	16.00	16.00	16.00	16.00
321	16.00	16.00	16.25	16.00	16.00
322	16.25	16.00	16.25	16.00	16.00
323	16.25	16.00	16.25	16.00	16.25
324	16.25	16.25	16.25	16.00	16.25
325	16.25	16.25	16.25	16.25	16.25
326	16.25	16.25	16.50	16.25	16.25
327	16.50	16.25	16.50	16.25	16.25
328	16.50	16.25	16.50	16.25	16.50
329	16.50	16.50	16.50	16.25	16.50
330	16.50	16.50	16.50	16.50	16.50
331	16.50	16.50	16.75	16.50	16.50
332	16.75	16.50	16.75	16.50	16.50
333	16.75	16.50	16.75	16.50	16.75
334	16.75	16.75	16.75	16.50	16.75
335	16.75	16.75	16.75	16.75	16.75
336	16.75	16.75	17.00	16.75	16.75
337	17.00	16.75	17.00	16.75	16.75
338	17.00	16.75	17.00	16.75	17.00
339	17.00	17.00	17.00	16.75	17.00
340	17.00	17.00	17.00	17.00	17.00
341	17.00	17.00	17.25	17.00	17.00
342	17.25	17.00	17.25	17.00	17.00
343	17.25	17.00	17.25	17.00	17.25
344	17.25	17.25	17.25	17.00	17.25
345	17.25	17.25	17.25	17.25	17.25
346	17.25	17.25	17.50	17.25	17.25
347	17.50	17.25	17.50	17.25	17.25
348	17.50	17.25	17.50	17.25	17.50
349	17.50	17.50	17.50	17.25	17.50
350	17.50	17.50	17.50	17.50	17.50

GATE ARRANGE-MENT NO.	DIAL SETTING – GATE NUMBER 1 (EAST)	2	3	4	5 (WEST)
351	17.50	17.50	17.75	17.50	17.50
352	17.75	17.50	17.75	17.50	17.50
353	17.75	17.50	17.75	17.50	17.75
354	17.75	17.75	17.75	17.50	17.75
355	17.75	17.75	17.75	17.75	17.75
356	17.75	17.75	18.00	17.75	17.75
357	18.00	17.75	18.00	17.75	17.75
358	18.00	17.75	18.00	17.75	18.00
359	18.00	18.00	18.00	17.75	18.00
360	18.00	18.00	18.00	18.00	18.00
361	18.00	18.00	18.25	18.00	18.00
362	18.25	18.00	18.25	18.00	18.00
363	18.25	18.00	18.25	18.00	18.25
364	18.25	18.25	18.25	18.00	18.25
365	18.25	18.25	18.25	18.25	18.25
366	18.25	18.25	18.50	18.25	18.25
367	18.50	18.25	18.50	18.25	18.25
368	18.50	18.25	18.50	18.25	18.50
369	18.50	18.50	18.50	18.25	18.50
370	18.50	18.50	18.50	18.50	18.50
371	18.50	18.50	18.75	18.50	18.50
372	18.75	18.50	18.75	18.50	18.50
373	18.75	18.50	18.75	18.50	18.75
374	18.75	18.75	18.75	18.50	18.75
375	18.75	18.75	18.75	18.75	18.75
376	18.75	18.75	19.00	18.75	18.75
377	19.00	18.75	19.00	18.75	18.75
378	19.00	18.75	19.00	18.75	19.00
379	19.00	19.00	19.00	18.75	19.00
380	19.00	19.00	19.00	19.00	19.00
381	19.00	19.00	19.25	19.00	19.00
382	19.25	19.00	19.25	19.00	19.00
383	19.25	19.00	19.25	19.00	19.25
384	19.25	19.25	19.25	19.00	19.25
385	19.25	19.25	19.25	19.25	19.25
386	19.25	19.25	19.50	19.25	19.25
387	19.50	19.25	19.50	19.25	19.25
388	19.50	19.25	19.50	19.25	19.50
389	19.50	19.50	19.50	19.25	19.50
390	19.50	19.50	19.50	19.50	19.50
391	19.50	19.50	19.75	19.50	19.50
392	19.75	19.50	19.75	19.50	19.50
393	19.75	19.50	19.75	19.50	19.75
394	19.75	19.75	19.75	19.50	19.75
395	19.75	19.75	19.75	19.75	19.75
396	19.75	19.75	20.00	19.75	19.75
397	20.00	19.75	20.00	19.75	19.75
398	20.00	19.75	20.00	19.75	20.00
399	20.00	20.00	20.00	19.75	20.00
400	20.00	20.00	20.00	20.00	20.00

GATE ARRANGE-MENT NO.	DIAL SETTING – GATE NUMBER 1 (EAST)	2	3	4	5 (WEST)
401	20.00	20.00	20.25	20.00	20.00
402	20.25	20.00	20.25	20.00	20.00
403	20.25	20.00	20.25	20.00	20.25
404	20.25	20.25	20.25	20.00	20.25
405	20.25	20.25	20.25	20.25	20.25
406	20.25	20.25	20.50	20.25	20.25
407	20.50	20.25	20.50	20.25	20.25
408	20.50	20.25	20.50	20.25	20.50
409	20.50	20.50	20.50	20.25	20.50
410	20.50	20.50	20.50	20.50	20.50
411	20.50	20.50	20.75	20.50	20.50
412	20.75	20.50	20.75	20.50	20.50
413	20.75	20.50	20.75	20.50	20.75
414	20.75	20.75	20.75	20.50	20.75
415	20.75	20.75	20.75	20.75	20.75
416	20.75	20.75	21.00	20.75	20.75
417	21.00	20.75	21.00	20.75	20.75
418	21.00	20.75	21.00	20.75	21.00
419	21.00	21.00	21.00	20.75	21.00
420	21.00	21.00	21.00	21.00	21.00
421	21.00	21.00	21.25	21.00	21.00
422	21.25	21.00	21.25	21.00	21.00
423	21.25	21.00	21.25	21.00	21.25
424	21.25	21.25	21.25	21.00	21.25
425	21.25	21.25	21.25	21.25	21.25
426	21.25	21.25	21.50	21.25	21.25
427	21.50	21.25	21.50	21.25	21.25
428	21.50	21.25	21.50	21.25	21.50
429	21.50	21.50	21.50	21.25	21.50
430	21.50	21.50	21.50	21.50	21.50
431	21.50	21.50	21.75	21.50	21.50
432	21.75	21.50	21.75	21.50	21.50
433	21.75	21.50	21.75	21.50	21.75
434	21.75	21.75	21.75	21.50	21.75
435	21.75	21.75	21.75	21.75	21.75
436	21.75	21.75	22.00	21.75	21.75
437	22.00	21.75	22.00	21.75	21.75
438	22.00	21.75	22.00	21.75	22.00
439	22.00	22.00	22.00	21.75	22.00
440	22.00	22.00	22.00	22.00	22.00
441	22.00	22.00	22.25	22.00	22.00
442	22.25	22.00	22.25	22.00	22.00
443	22.25	22.00	22.25	22.00	22.25
444	22.25	22.25	22.25	22.00	22.25
445	22.25	22.25	22.25	22.25	22.25
446	22.25	22.25	22.50	22.25	22.25
447	22.50	22.25	22.50	22.25	22.25
448	22.50	22.25	22.50	22.25	22.50
449	22.50	22.50	22.50	22.25	22.50
450	22.50	22.50	22.50	22.50	22.50

GATE ARRANGE-MENT NO.	DIAL SETTING – GATE NUMBER 1 (EAST)	2	3	4	5 (WEST)
451	22.50	22.50	22.75	22.50	22.50
452	22.75	22.50	22.75	22.50	22.50
453	22.75	22.50	22.75	22.50	22.75
454	22.75	22.75	22.75	22.50	22.75
455	22.75	22.75	22.75	22.75	22.75
456	22.75	22.75	23.00	22.75	22.75
457	23.00	22.75	23.00	22.75	22.75
458	23.00	22.75	23.00	22.75	23.00
459	23.00	23.00	23.00	22.75	23.00
460	23.00	23.00	23.00	23.00	23.00
461	23.00	23.00	23.25	23.00	23.00
462	23.25	23.00	23.25	23.00	23.00
463	23.25	23.00	23.25	23.00	23.25
464	23.25	23.25	23.25	23.00	23.25
465	23.25	23.25	23.25	23.25	23.25
466	23.25	23.25	23.50	23.25	23.25
467	23.50	23.25	23.50	23.25	23.25
468	23.50	23.25	23.50	23.25	23.50
469	23.50	23.50	23.50	23.25	23.50
470	23.50	23.50	23.50	23.50	23.50
471	23.50	23.50	23.75	23.50	23.50
472	23.75	23.50	23.75	23.50	23.50
473	23.75	23.50	23.75	23.50	23.75
474	23.75	23.75	23.75	23.50	23.75
475	23.75	23.75	23.75	23.75	23.75
476	23.75	23.75	24.00	23.75	23.75
477	24.00	23.75	24.00	23.75	23.75
478	24.00	23.75	24.00	23.75	24.00
479	24.00	24.00	24.00	23.75	24.00
480	24.00	24.00	24.00	24.00	24.00
481	24.00	24.00	24.25	24.00	24.00
482	24.25	24.00	24.25	24.00	24.00
483	24.25	24.00	24.25	24.00	24.25
484	24.25	24.25	24.25	24.00	24.25
485	24.25	24.25	24.25	24.25	24.25
486	24.25	24.25	24.50	24.25	24.25
487	24.50	24.25	24.50	24.25	24.25
488	24.50	24.25	24.50	24.25	24.50
489	24.50	24.50	24.50	24.25	24.50
490	24.50	24.50	24.50	24.50	24.50
491	24.50	24.50	24.75	24.50	24.50
492	24.75	24.50	24.75	24.50	24.50
493	24.75	24.50	24.75	24.50	24.75
494	24.75	24.75	24.75	24.50	24.75
495	24.75	24.75	24.75	24.75	24.75
496	24.75	24.75	25.00	24.75	24.75
497	25.00	24.75	25.00	24.75	24.75
498	25.00	24.75	25.00	24.75	25.00
499	25.00	25.00	25.00	24.75	25.00
500	25.00	25.00	25.00	25.00	25.00

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

GATE OPERATION SCHEDULE

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam: 532

Headwater Elevation at Spillway/Diversion Dam

Pos	558	560	562	564	566	568	570	572
0.00	0	0	0	0	0	0	0	0
0.25	254	264	274	282	0	0	0	0
0.50	508	528	546	564	0	0	0	0
0.75	764	792	820	848	0	0	0	0
1.00	1018	1056	1094	1130	1166	1200	1234	1266
1.25	1272	1320	1368	1414	1458	1500	1542	1584
1.50	1524	1584	1640	1696	1750	1800	1852	1900
1.75	1780	1848	1914	1980	2042	2102	2162	2218
2.00	2032	2112	2188	2262	2334	2402	2470	2536
2.25	2286	2376	2462	2546	2626	2704	2780	2854
2.50	2538	2638	2736	2828	2918	3006	3092	3174
2.75	2792	2902	3008	3110	3210	3308	3400	3492
3.00	3044	3166	3282	3394	3504	3610	3712	3812
3.25	3294	3426	3554	3676	3794	3910	4022	4130
3.50	3544	3688	3824	3958	4086	4210	4330	4448
3.75	3796	3948	4096	4238	4376	4510	4640	4766
4.00	4046	4210	4368	4520	4668	4812	4950	5086
4.25	4296	4472	4640	4802	4960	5112	5260	5404
4.50	4546	4732	4910	5084	5252	5414	5570	5724
4.75	4794	4990	5180	5364	5542	5712	5880	-
5.00	5040	5248	5450	5644	5830	-	-	-
5.25	-	-	-	5922	6120	6310	6496	6678
5.50	-	-	-	6202	6410	6610	-	-
5.75	-	-	-	6480	6698	-	-	-
6.00	-	-	-	6758	6986	-	-	-

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam: 534

Headwater Elevation at Spillway/Diversion Dam

Pos	558	560	562	564	566	568	570	572
0.00	0	0	0	0	0	0	0	0
0.25	244	254	264	274	0	0	0	0
0.50	490	508	528	550	0	0	0	0
0.75	742	768	798	832	0	0	0	0
1.00	998	1036	1078	1116	1152	1188	1224	1260
1.25	1256	1304	1358	1406	1452	1496	1538	1584
1.50	1516	1578	1640	1696	1750	1800	1852	1900
1.75	1780	1848	1914	1980	2042	2102	2162	2218
2.00	2032	2112	2188	2262	2334	2402	2470	2536
2.25	2286	2376	2462	2546	2626	2704	2780	2854
2.50	2538	2638	2736	2828	2918	3006	3092	3174
2.75	2792	2902	3008	3110	3210	3308	3400	3492
3.00	3044	3166	3282	3394	3504	3610	3712	3812
3.25	3294	3426	3554	3676	3794	3910	4022	4130
3.50	3544	3688	3824	3958	4086	4210	4330	4448
3.75	3796	3948	4096	4238	4376	4510	4640	4766
4.00	4046	4210	4368	4520	4668	4812	4950	5086
4.25	4296	4472	4640	4802	4960	5112	5260	5404
4.50	4546	4732	4910	5084	5252	5414	5570	5724
4.75	4794	4990	5180	5364	5542	5712	5880	-
5.00	5040	5248	5450	5644	5830	-	-	-
5.25	-	-	-	5922	6120	6310	6496	6678
5.50	-	-	-	6202	6410	6610	-	-
5.75	-	-	-	6480	6698	-	-	-
6.00	-	-	-	6758	6986	-	-	-

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

SPILLWAY DISCHARGE

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
536								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
0.00	0	0	0	0	0	0	0	0
0.25	234	244	254	264	274	0	0	0
0.50	468	490	510	528	546	0	0	0
0.75	706	738	768	798	828	0	0	0
1.00	946	988	1028	1066	1104	1142	1178	1212
1.25	1188	1240	1292	1340	1386	1434	1478	1522
1.50	1432	1496	1556	1618	1674	1728	1784	1836
1.75	1680	1754	1826	1900	1962	2030	2092	2174
2.00	1936	2028	2112	2196	2276	2352	2428	2500
2.25	2194	2296	2394	2488	2578	2666	2752	2834
2.50	2454	2570	2678	2786	2886	2984	3082	3174
2.75	2722	2844	2966	3082	3198	3308	3400	3492
3.00	2990	3128	3260	3388	3504	3610	3712	3812
3.25	3262	3406	3554	3676	3794	3910	4022	4130
3.50	3534	3688	3824	3958	4086	4210	4330	4448
3.75	3796	3948	4096	4238	4376	4510	4640	4766
4.00	4046	4210	4368	4520	4668	4812	4950	5086
4.25	4296	4472	4640	4802	4960	5112	5260	5404
4.50	4546	4732	4910	5084	5252	5414	5570	5724
4.75	4794	4990	5180	5364	5542	5712	5880	6042
5.00	5040	5248	5450	5644	5830	-	6188	6360
5.25	-	-	-	5922	6120	6310	6496	6678
5.50	-	-	-	6202	6410	6610	-	-
5.75	-	-	-	6480	6698	-	-	-
6.00	-	-	-	6758	-	-	-	-

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
538								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
0.00	0	0	0	0	0	0	0	0
0.25	224	236	246	256	0	0	0	0
0.50	450	472	492	510	0	0	0	0
0.75	678	710	740	770	0	0	0	0
1.00	906	948	990	1030	1068	1106	1142	1178
1.25	1136	1190	1242	1292	1342	1388	1434	1480
1.50	1366	1432	1496	1556	1618	1670	1728	1782
1.75	1600	1678	1754	1826	1892	1960	2026	2090
2.00	1834	1926	2012	2094	2172	2248	2324	2400
2.25	2074	2176	2274	2368	2458	2544	2628	2712
2.50	2312	2426	2540	2644	2742	2840	2938	3028
2.75	2558	2682	2804	2924	3030	3140	3244	3346
3.00	2804	2950	3086	3220	3350	3472	3590	3706
3.25	3054	3214	3366	3510	3672	3784	3914	4040
3.50	3310	3486	3644	3804	3980	4100	4240	4372
3.75	3572	3758	3932	4102	4288	4420	4570	4714
4.00	3836	4034	4220	4402	4602	4744	4906	5060
4.25	4098	4312	4510	4706	4920	5072	5244	5404
4.50	4368	4594	4806	5012	5242	5404	5570	5724
4.75	4636	4880	5102	5326	5542	5712	5880	6042
5.00	4908	5164	5406	5644	5830	6010	6188	6360
5.25	-	-	-	5922	6120	6310	6496	6678
5.50	-	-	-	6202	6410	6610	-	-
5.75	-	-	-	6480	6698	-	-	-
6.00	-	-	-	6758	-	-	-	-

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

SPILLWAY DISCHARGE

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
540								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
0.00	0	0	0	0	0	0	0	0
0.25	216	226	236	246	0	0	0	0
0.50	430	454	474	494	0	0	0	0
0.75	648	680	712	744	0	0	0	0
1.00	866	908	952	994	1034	1070	1108	1144
1.25	1084	1138	1192	1246	1294	1342	1390	1436
1.50	1302	1366	1434	1500	1560	1616	1672	1730
1.75	1526	1600	1678	1754	1826	1892	1958	2026
2.00	1744	1834	1926	2010	2092	2172	2246	2322
2.25	1966	2070	2176	2272	2364	2452	2536	2624
2.50	2190	2308	2426	2534	2634	2738	2832	2930
2.75	2418	2548	2678	2796	2912	3024	3128	3238
3.00	2648	2792	2934	3064	3192	3314	3430	3546
3.25	2878	3036	3192	3334	3472	3608	3732	3858
3.50	3112	3286	3450	3610	3760	3902	4040	4176
3.75	3348	3538	3716	3886	4044	4204	4352	4494
4.00	3588	3790	3984	4162	4336	4504	4662	4822
4.25	3832	4048	4250	4462	4632	4816	4982	5144
4.50	4082	4586	4822	5052	5264	5458	5686	5860
4.75	4334	4860	5112	5344	5580	5794	6014	6220
5.00	4592	4860	5112	5344	5580	5794	6014	6220
5.25	-	-	-	5650	5894	6120	6354	6572
5.50	-	-	-	5954	6212	6452	6698	6918
5.75	-	-	-	6260	6530	6784	7034	7268
6.00	-	-	-	6568	6854	7120	7382	-
6.25	-	-	-	6882	7186	-	-	-
6.50	-	-	-	7194	-	-	-	-

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
542								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
2.75	2282	2418	2550	2674	2792	2908	3016	3126
3.00	2494	2646	2790	2930	3058	3184	3308	3424
3.25	2710	2878	3036	3184	3328	3464	3600	3726
3.50	2930	3108	3280	3444	3596	3746	3892	4030
3.75	3154	3344	3530	3704	3868	4032	4190	4338
4.00	3382	3582	3782	3968	4146	4322	4484	4648
4.25	3604	3824	4036	4236	4430	4612	4798	4960
4.50	3832	4070	4292	4504	4716	4906	5102	5284
4.75	4066	4312	4554	4774	4998	5198	5410	5600
5.00	4294	4556	4812	5052	5288	5500	5718	5928
5.25	-	-	5070	5330	5582	5806	6034	6258
5.50	-	-	5352	5612	5878	6108	6356	6582
5.75	-	-	-	5922	6202	6472	6728	6982
6.00	-	-	-	6218	6510	6796	7064	7324
6.25	-	-	-	6516	6816	7114	7396	7668
6.50	-	-	-	6812	7128	7440	7728	-
6.75	-	-	-	7108	7438	7764	-	-
7.00	-	-	-	7412	7756	-	-	-
7.25	-	-	-	7720	-	-	-	-

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

SPILLWAY DISCHARGE

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
544								
Headwater Elevation at Spillway/Diversion Dam								
Pos	**558**	**560**	**562**	**564**	**566**	**568**	**570**	**572**
2.75	2136	2280	2418	2548	2674	2796	2904	3018
3.00	2336	2494	2646	2786	2926	3058	3182	3306
3.25	2536	2706	2876	3032	3180	3324	3458	3594
3.50	2736	2928	3106	3278	3440	3596	3742	3884
3.75	2946	3146	3342	3522	3698	3866	4022	4180
4.00	3152	3296	3578	3774	3958	4138	4306	4480
4.25	3364	3596	3818	4028	4226	4416	4598	4782
4.50	3574	3824	4060	4286	4496	4700	4890	5082
4.75	3788	4052	4304	4544	4766	4980	5192	5390
5.00	4002	4282	4550	4804	5038	5264	5488	5704
5.25	-	-	4796	5064	5312	5552	5788	6016
5.50	-	-	5066	5334	5590	5850	6098	6336
5.75	-	-	-	5598	5868	6148	6400	6654
6.00	-	-	-	5866	6154	6442	6716	6974
6.25	-	-	-	6142	6444	6746	7024	7294
6.50	-	-	-	6418	6734	7050	7344	7624
6.75	-	-	-	6690	7030	7352	7664	7950
7.00	-	-	-	6964	7318	7660	7978	8286
7.25	-	-	-	7256	7624	7974	8306	-
7.50	-	-	-	7586	7960	8336	-	-
7.75	-	-	-	7884	8266	8664	-	-
8.00	-	-	-	8166	8592	8996	-	-
8.25	-	-	-	8468	8908	-	-	-
8.50	-	-	-	8762	-	-	-	-

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
546								
Headwater Elevation at Spillway/Diversion Dam								
Pos	**558**	**560**	**562**	**564**	**566**	**568**	**570**	**572**
2.75	1986	2138	2286	2420	2548	2676	2792	2906
3.00	2168	2336	2500	2648	2790	2928	3054	3180
3.25	2352	2536	2716	2874	3032	3182	3322	3456
3.50	2538	2736	2930	3108	3272	3436	3590	3736
3.75	2730	2942	3150	3340	3518	3698	3860	4022
4.00	2922	3150	3372	3576	3772	3956	4134	4302
4.25	3114	3358	3596	3812	4022	4222	4414	4594
4.50	3310	3568	3820	4058	4280	4488	4690	4888
4.75	3504	3782	4046	4296	4534	4758	4974	5184
5.00	3700	3998	4278	4544	4792	5024	5260	5482
5.25	-	-	-	4784	5056	5300	5548	5784
5.50	-	-	-	5036	5320	5578	5836	6084
5.75	-	-	-	5288	5586	5858	6124	6390
6.00	-	-	-	5542	5854	6140	6426	6700
6.25	-	-	-	5798	6124	6424	6724	7008
6.50	-	-	-	6052	6402	6714	7022	7318
6.75	-	-	-	6320	6676	7012	6730	7632
7.00	-	-	-	6578	6960	7300	7632	7948
7.25	-	-	-	6840	7236	7592	7948	8274
7.50	-	-	-	7114	7526	7896	8254	8596
7.75	-	-	-	7380	7790	8200	8560	8920
8.00	-	-	-	7646	8072	8498	8872	9244
8.25	-	-	-	7914	8356	8796	9184	9570
8.50	-	-	-	8194	8644	9094	9496	9896
8.75	-	-	-	8456	8928	9398	9812	-
9.00	-	-	-	8728	9216	9702	-	-
9.25	-	-	-	9002	9506	-	-	-
9.50	-	-	-	9276	9794	-	-	-
9.75	-	-	-	9564	-	-	-	-
10.00	-	-	-	9840	-	-	-	-

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

SPILLWAY DISCHARGE

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
548								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
7.75	-	-	-	6946	7370	7792	8174	8556
8.00	-	-	-	7200	7634	8068	8468	8868
8.25	-	-	-	7444	7898	8352	8762	9172
8.50	-	-	-	7690	8160	8628	9052	9476
8.75	-	-	-	7948	8434	8918	9356	9794
9.00	-	-	-	8196	8698	9198	9650	10102
9.25	-	-	-	8446	8962	9478	9946	10414
9.50	-	-	-	8704	9238	9770	10252	10734
9.75	-	-	-	8968	9518	10068	10564	-
10.00	-	-	-	9230	9796	10362	10874	-
10.25	-	-	-	9758	10354	10950	-	-
10.50	-	-	-	10284	10910	-	-	-
10.75	-	-	-	10826	-	-	-	-

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
550								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
7.75	-	-	-	6482	6924	7366	7764	8036
8.00	-	-	-	6706	7168	7628	8040	8452
8.25	-	-	-	6936	7412	7888	8316	8742
8.50	-	-	-	7168	7662	8156	8596	9034
8.75	-	-	-	7402	7912	8422	8876	9330
9.00	-	-	-	7640	8166	8692	9164	9636
9.25	-	-	-	7880	8424	8966	9450	9934
9.50	-	-	-	8114	8674	9232	9734	10236
9.75	-	-	-	8360	8936	9510	10026	10542
10.00	-	-	-	8608	9194	9780	10318	10854
10.50	-	-	-	9106	9724	10340	10906	11470
11.00	-	-	-	9592	10246	10898	11492	12086
11.50	-	-	-	10098	10786	11474	12096	12718
12.00	-	-	-	10602	11326	12048	12698	-
12.50	-	-	-	11114	11870	12624	-	-
13.00	-	-	-	11624	12412	-	-	-
13.50	-	-	-	12144	12968	-	-	-
14.00	-	-	-	12662	-	-	-	-
14.50	-	-	-	13192	-	-	-	-

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
552								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
10.50	-	-	-	8398	9064	9730	10316	10902
11.00	-	-	-	8864	9562	10260	10876	11490
11.50	-	-	-	9338	10070	10800	11446	12088
12.00	-	-	-	9812	10576	11340	12014	12686
12.50	-	-	-	10294	11092	11888	12590	13292
13.00	-	-	-	10774	11606	12436	13166	13896
13.50	-	-	-	11264	12128	12992	13756	14520
14.00	-	-	-	11752	12650	13548	14346	15144
14.50	-	-	-	12238	13174	14110	14938	-
15.00	-	-	-	12722	13696	14670	-	-
15.50	-	-	-	13222	14236	-	-	-
16.00	-	-	-	13722	14774	-	-	-
16.50	-	-	-	14252	-	-	-	-
17.00	-	-	-	14780	-	-	-	-

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

SPILLWAY DISCHARGE

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
554								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
10.50	-	-	-	7608	8342	9076	9686	10306
11.00	-	-	-	8038	8814	9570	10210	10868
11.50	-	-	-	8478	9282	10074	10752	11438
12.00	-	-	-	8916	9756	10576	11292	12008
12.50	-	-	-	9364	10234	11094	11846	12596
13.00	-	-	-	9810	10714	11612	12398	13182
13.50	-	-	-	10266	11216	12140	12956	13772
14.00	-	-	-	10720	11694	12668	13514	14360
14.50	-	-	-	11182	12192	13200	14078	14954
15.00	-	-	-	11642	12688	13732	14640	15548
15.50	-	-	-	12110	13196	14282	15226	16172
16.00	-	-	-	12578	13704	14830	15812	16794
16.50	-	-	-	13076	14236	15396	16404	-
17.00	-	-	-	13574	14768	15960	16996	-
17.50	-	-	-	14080	15306	16532	-	-
18.00	-	-	-	14586	15844	17102	-	-
18.50	-	-	-	15090	16386	-	-	-
19.00	-	-	-	15594	16928	-	-	-
20.00	-	-	-	16604	-	-	-	-

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
556								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
10.50	-	-	-	-	-	8310	9010	9710
11.00	-	-	-	-	-	8776	9510	10244
11.50	-	-	-	-	-	9260	10020	10780
12.00	-	-	-	-	-	9742	10530	11316
12.50	-	-	-	-	-	10236	11052	11868
13.00	-	-	-	-	-	10728	11574	12420
13.50	-	-	-	-	-	11232	12108	12982
14.00	-	-	-	-	-	11736	12640	13542
14.50	-	-	-	-	-	12240	13176	14110
15.00	-	-	-	10448	11596	12742	13710	14676
15.50	-	-	-	10904	12084	13262	14268	15272
16.00	-	-	-	11358	12570	13780	14824	15868
16.50	-	-	-	11816	13072	14326	15446	16564
17.00	-	-	-	12272	13572	14872	16066	17260
17.50	-	-	-	12742	14078	15416	16598	17778
18.00	-	-	-	13210	14584	15958	17128	18296
18.50	-	-	-	13682	15096	16510	17708	18904
19.00	-	-	-	14152	15606	17060	18286	19510
19.50	-	-	-	14628	16128	17628	18882	20136
20.00	-	-	-	15102	16650	18196	19478	-
20.50	-	-	-	15598	17180	18758	20088	-
21.00	-	-	-	16094	17708	19320	-	-
21.50	-	-	-	16596	18248	19900	-	-
22.00	-	-	-	17096	18788	-	-	-
22.50	-	-	-	17606	19328	-	-	-
23.00	-	-	-	18116	19866	-	-	-
23.50	-	-	-	18618	-	-	-	-
24.00	-	-	-	19118	-	-	-	-
24.50	-	-	-	19634	-	-	-	-
25.00	-	-	-	20150	-	-	-	-

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

SPILLWAY DISCHARGE

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
558								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
10.50	-	-	-	-	-	-	-	9056
11.00	-	-	-	-	-	-	-	9552
11.50	-	-	-	-	-	-	-	10066
12.00	-	-	-	-	-	-	-	10578
12.50	-	-	-	-	-	-	-	11094
13.00	-	-	-	-	-	-	-	11608
13.50	-	-	-	-	-	-	-	12140
14.00	-	-	-	-	-	-	-	12672
14.50	-	-	-	-	-	-	-	13210
15.00	-	-	-	-	-	11680	12714	13748
15.50	-	-	-	-	-	12178	13248	14316
16.00	-	-	-	-	-	12674	13780	14884
16.50	-	-	-	-	-	13180	14320	15460
17.00	-	-	-	-	-	13686	14860	16034
17.50	-	-	-	-	-	14200	15408	16618
18.00	-	-	-	-	-	14712	15956	17200
18.50	-	-	-	-	-	15234	16520	17806
19.00	-	-	-	-	-	15754	17082	18410
19.50	-	-	-	-	-	16282	17646	19010
20.00	-	-	-	-	-	16810	18210	19608
20.50	-	-	-	13884	15626	17366	18804	20238
21.00	-	-	-	14352	16138	17922	19396	20868
21.50	-	-	-	14826	16654	18480	19988	21494
22.00	-	-	-	15300	17170	19038	20578	22118
22.50	-	-	-	15774	17682	19588	21162	22736
23.00	-	-	-	16248	18194	20138	21746	-
23.50	-	-	-	16726	18714	20700	22346	-
24.00	-	-	-	17202	19232	21260	22944	-
24.50	-	-	-	17690	19758	21826	-	-
25.00	-	-	-	18176	20284	22390	-	-

Discharge (cfs) from Single Gate

Tailwater Elevation at Spillway/Diversion Dam								
560								
Headwater Elevation at Spillway/Diversion Dam								
Pos	558	560	562	564	566	568	570	572
20.50	-	-	-	-	-	15838	17408	18976
21.00	-	-	-	-	-	16364	17966	19568
21.50	-	-	-	-	-	16886	18526	20168
22.00	-	-	-	-	-	17406	19086	20766
22.50	-	-	-	-	-	17946	19660	21372
23.00	-	-	-	-	-	18486	20232	21976
23.50	-	-	-	-	-	19032	20812	22588
24.00	-	-	-	-	-	19578	21390	23200
24.50	-	-	-	-	-	20130	21974	23816
25.00	-	-	-	-	-	20680	22556	24432

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

SPILLWAY DISCHARGE

Powerhouse Trashbay – Gated Discharge
Headwater Elevation

Gate Opening Feet (Arc Length)	**558**	**559**	**560**	**561**	**562**	**563**	**564**	**565**	**566**	**567**	**568**	**569**	**570**	**571**	**572**
1.0	300	320	340	360	370	390	400	420	430	450	460	470	480	490	500
2.0	570	600	630	660	690	720	750	780	810	850	880	910	930	950	980
3.0	800	850	900	940	980	1030	1070	1110	1150	1180	1220	1260	1290	1330	1360
4.0	980	1030	1090	1140	1190	1230	1280	1310	1330	1360	1480	1520	1570	1610	1650
5.0	1150	1200	1250	1310	1380	1440	1500	1560	1630	1690	1750	1800	1850	1900	1950
6.0			1450	1520	1600	1670	1740	1810	1870	1940	2000	2050	2100	2150	2200
7.0				1730	1800	1880	1950	2030	2100	2180	2250	2320	2390	2460	2530
8.0				1850	1950	2050	2150	2240	2340	2430	2520	2610	2700	2790	2880
9.0					2100	2230	2350	2460	2580	2690	2800	2900	3000	3100	3200
10.0						2400	2550	2860	2800	2930	3050	3170	3290	3400	3520
11.0							2800	2940	3080	3210	3350	3480	3610	3730	3860
12.0									3380	3520	3660	3790	3920	4040	4170
13.0										3820	3970	4100	4240	4370	4500
14.0											4200	4360	4500	4640	4780
15.0												4640	4790	4930	5080
16.0													5050	5200	5360
17.0														5450	5630

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

POWERHOUSE TRASHBAY – GATED DISCHARGE

Capacity Discharge Rating

Trash Bays at Powerhouse and Spillway

Headwater Elevation (Feet-msl)	558	559	560	561	562	563	564	565	566	567	568	569	570	571	572	573
0.0	1230	1480	1740	2010	2290	2590	2900	3230	3580	3950	4340	4740	5150	5580	6020	6470
0.1	1255	1505	1765	2035	2320	2620	2930	3265	3615	3985	4280	4780	5190	5620	6065	6515
0.2	1280	1530	1790	2065	2350	2650	2960	3300	3650	4020	4420	4820	5230	5660	6110	6560
0.3	1305	1555	1820	2090	2380	2680	2995	3335	3585	4060	4460	4860	5275	5705	6155	6605
0.4	1330	1585	1845	2120	2410	2710	3030	3370	3725	4100	4500	4900	5320	5750	6200	6650
0.5	1355	1610	1875	2150	2440	2745	3065	3405	3765	4140	4540	4945	5365	5795	6245	6700
0.6	1380	1635	1900	2175	2470	2775	3095	3440	3800	4180	4580	4985	5405	5840	6290	6745
0.7	1405	1660	1925	2205	2500	2805	3125	3475	3835	4220	4620	5025	5445	5885	6335	6790
0.8	1430	1685	1955	2230	2530	2835	3160	3510	3870	4260	4660	5065	5490	5930	6380	6935
0.9	1455	1710	1980	2260	2560	2865	3195	3545	3910	4300	4700	5105	5535	5975	6425	6980

* Headwater Elevation applies to:

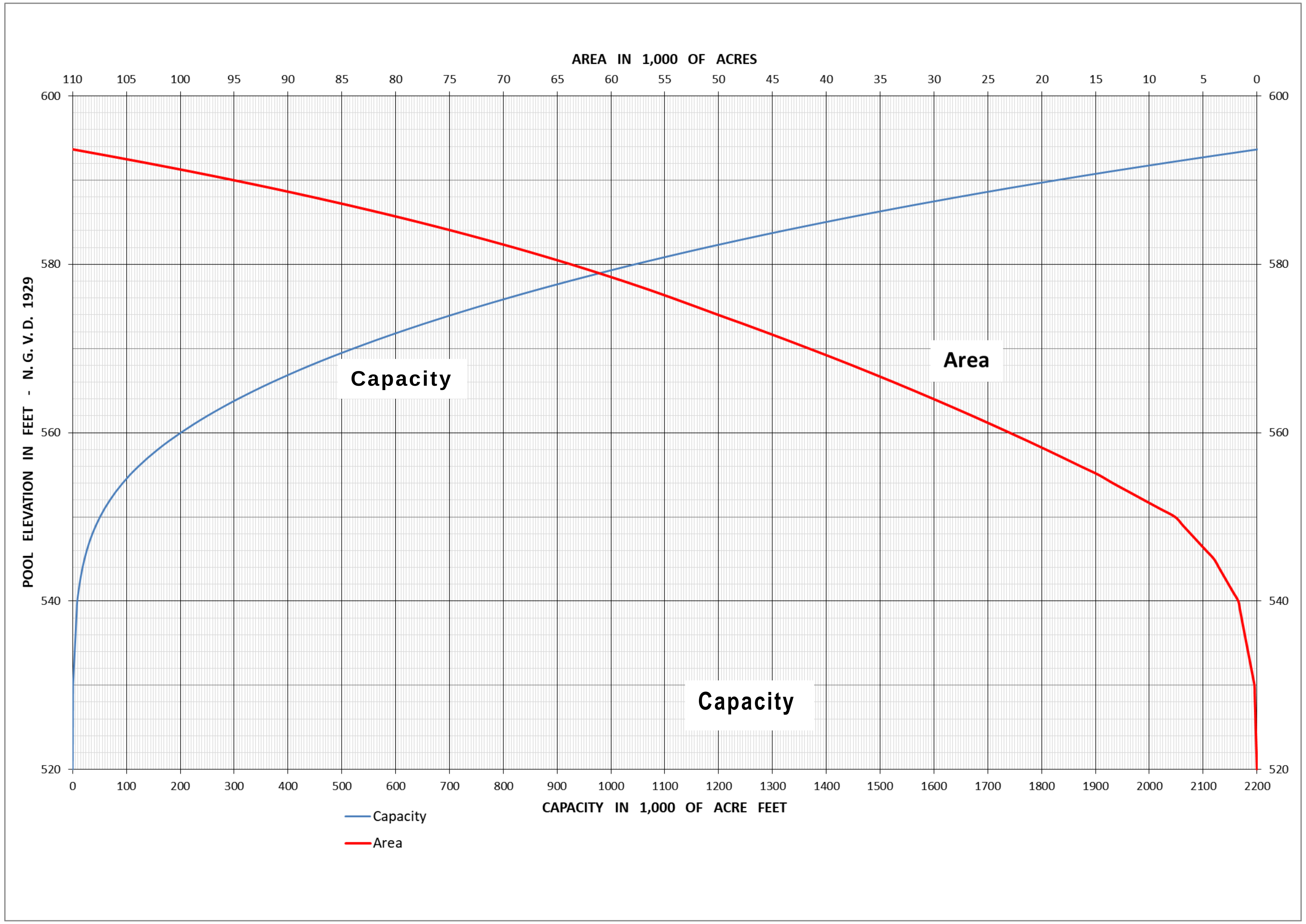
Reservoir level at spillway trash bay

Forebay level at powerhouse trash bay

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

CAPACITY DISCHARGE RATING



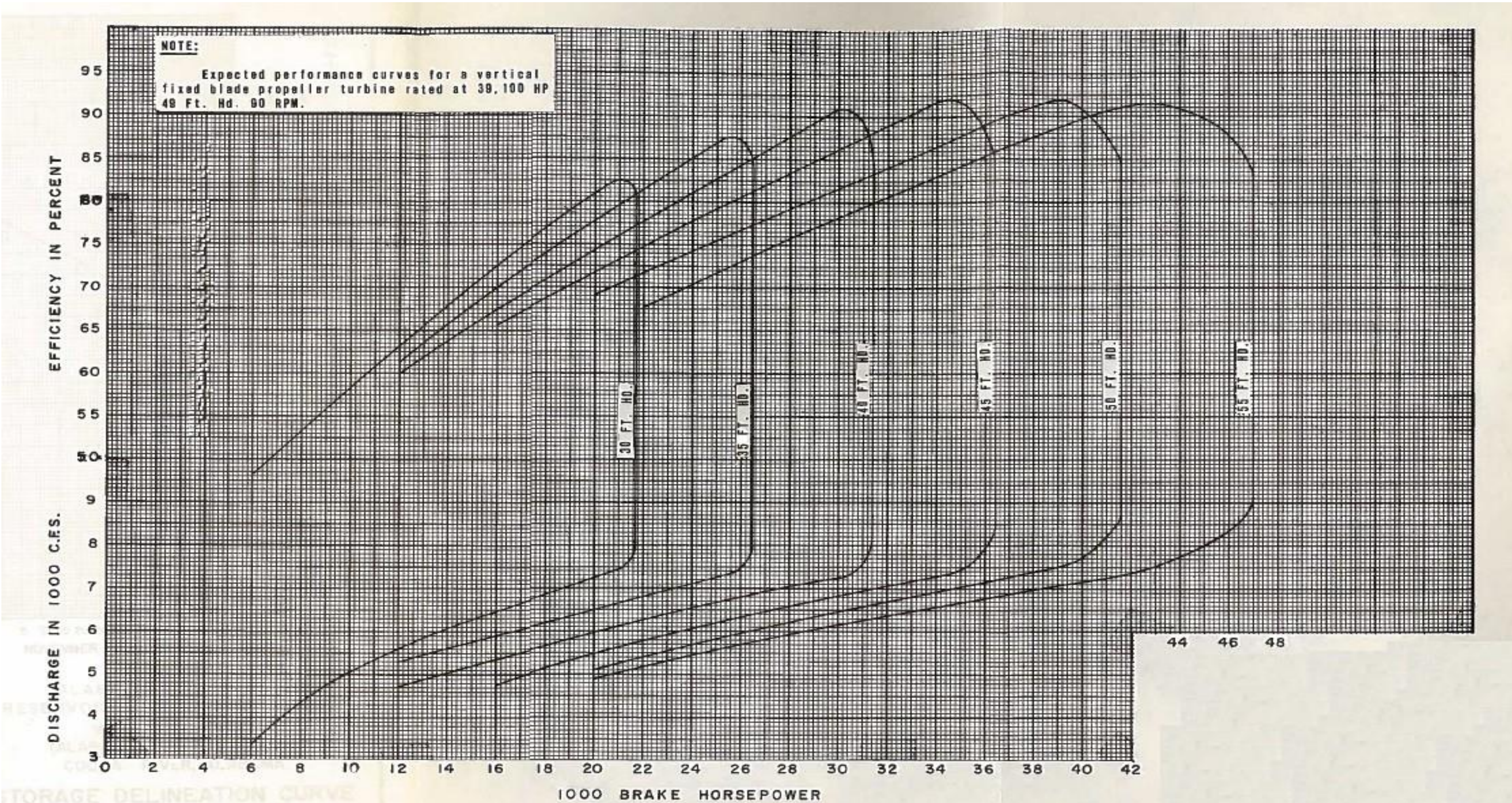
AREA CAPACITY TABLE					
Pool Elevation (Feet)	Total Area (Acres)	Total Storage (Acre-Feet)	Pool Elevation (Feet)	Total Area (Acres)	Total Storage (Acre-Feet)
520	0	0	558	19603	158039
521	23	75	559	21265	178471
522	46	149	560	22973	200810
523	70	224	561	24692	224641
524	93	298	562	26439	250205
525	116	373	563	28218	277533
526	139	447	(2)564	30027	306655
527	162	522	565	31870	337604
528	186	597	566	33744	370409
529	209	671	567	35652	405106
530	232	746	568	37596	441727
531	382	1522	569	39576	480310
532	533	2299	(5)570	41606	521305
533	683	3075	571	43659	563937
534	834	3852	(1)572	45749	608641
535	984	4628	573	47877	655454
536	1134	5405	574	50045	704414
537	1285	6182	575	52174	755560
538	1435	6958	576	54303	808793
539	1586	7735	577	56519	864197
540	1736	8511	578	58825	921863
541	2189	10519	579	61225	981881
542	2642	12776	580	63723	1044348
543	3094	15372	581	66323	1109364
544	3547	18399	582	69029	1177033
545	4000	21951	583	71846	1247462
546	4723	26121	584	74777	1320766
547	5445	30996	585	77829	1397060
548	6168	36671	586	81004	1476468
(3)549	6890	43238	587	84309	1559115
(4)550	7613	50788	588	87749	1645135
551	9053	59412	589	91330	1734664
552	10493	69204	590	95056	1827847
553	11932	80256	591	98935	1924831
554	13372	92657	592	102972	2025773
555	14722	106502	593	107173	2130833
556	16356	122096	593.7	110172	2205799
557	17967	139256			

(1) Top of flood control
(2) Top of conservation
(3) Minimum conservation
(4) Spillway crest elevation
(5) Top of gates – closed position

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

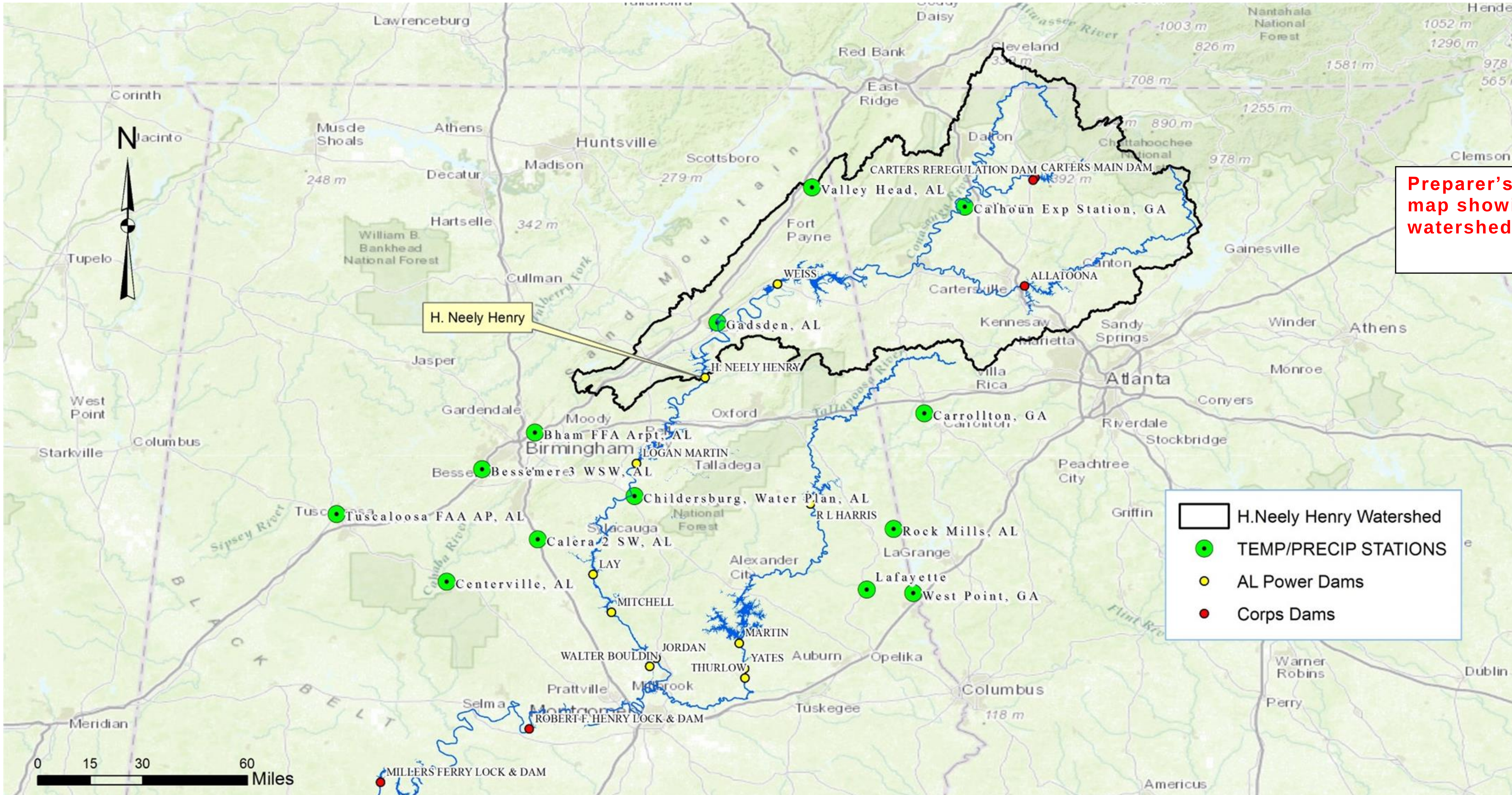
WATER CONTROL MANUAL
WEISS DAM AND LAKE

AREA AND CAPACITY



ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE
PERFORMANCE CURVES – TURBOGENERATOR UNIT



Preparer's Note: Need map showing Weiss watershed.

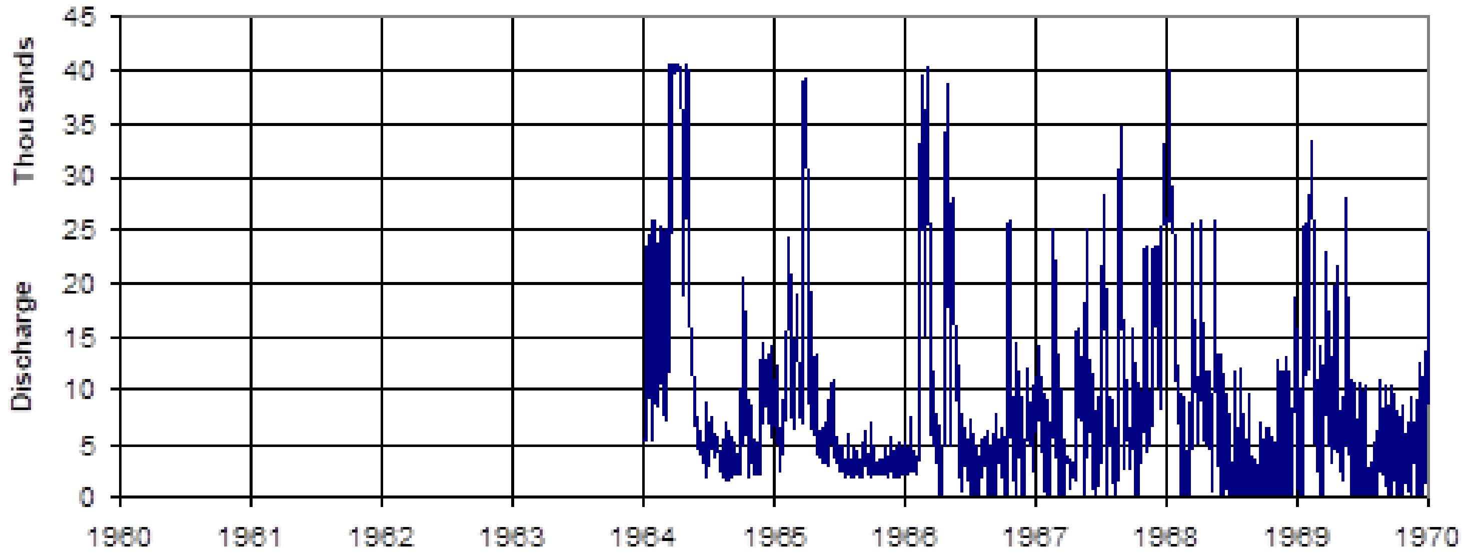
ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

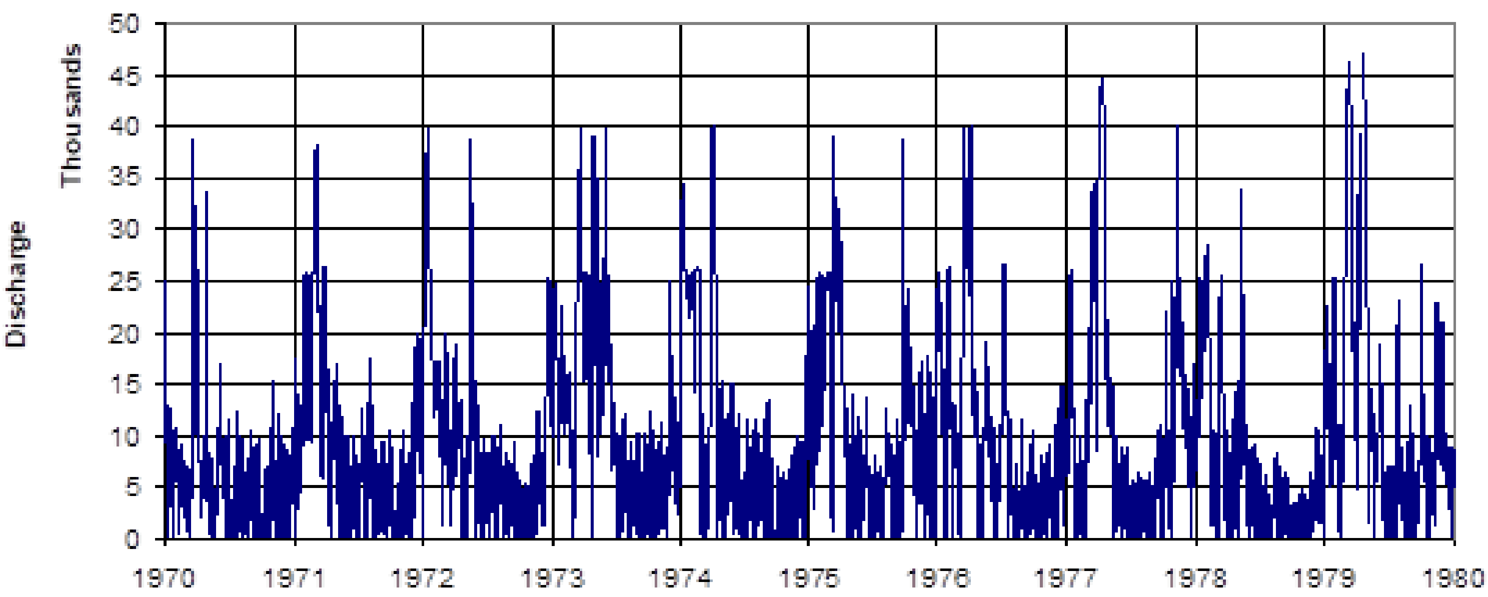
WATER CONTROL MANUAL
WEISS DAM AND LAKE

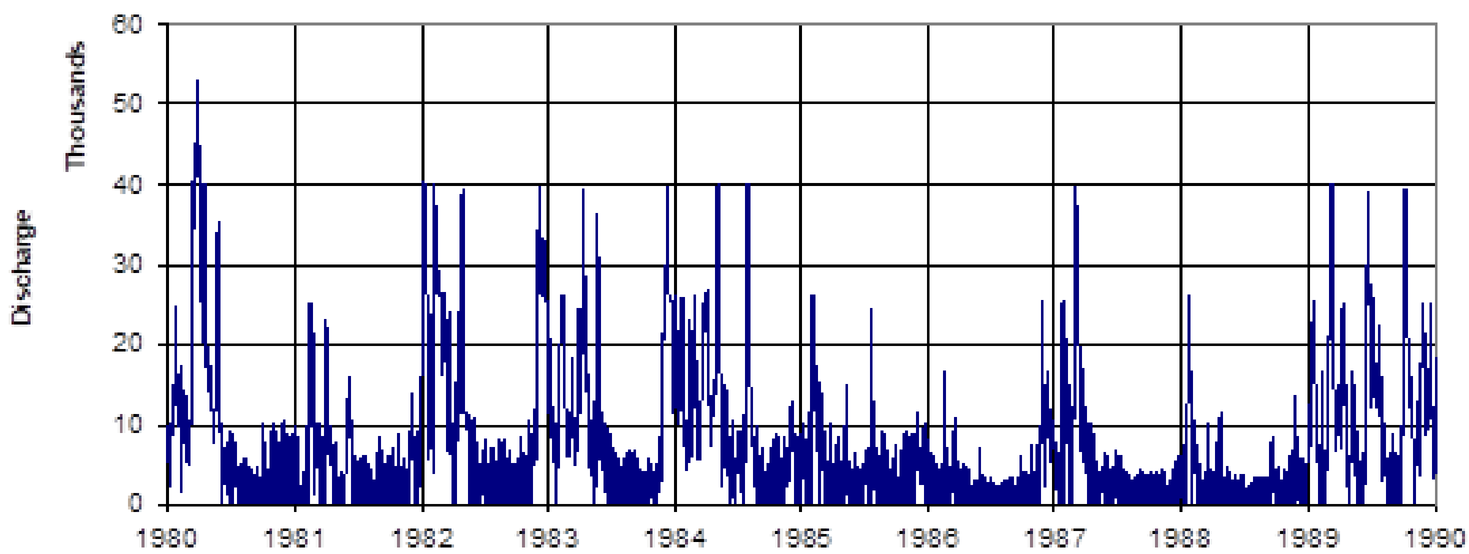
TEMPERATURE AND
PRECIPITATION STATIONS

Hydrographs

Average Daily Discharge Hydrographs at Damsite







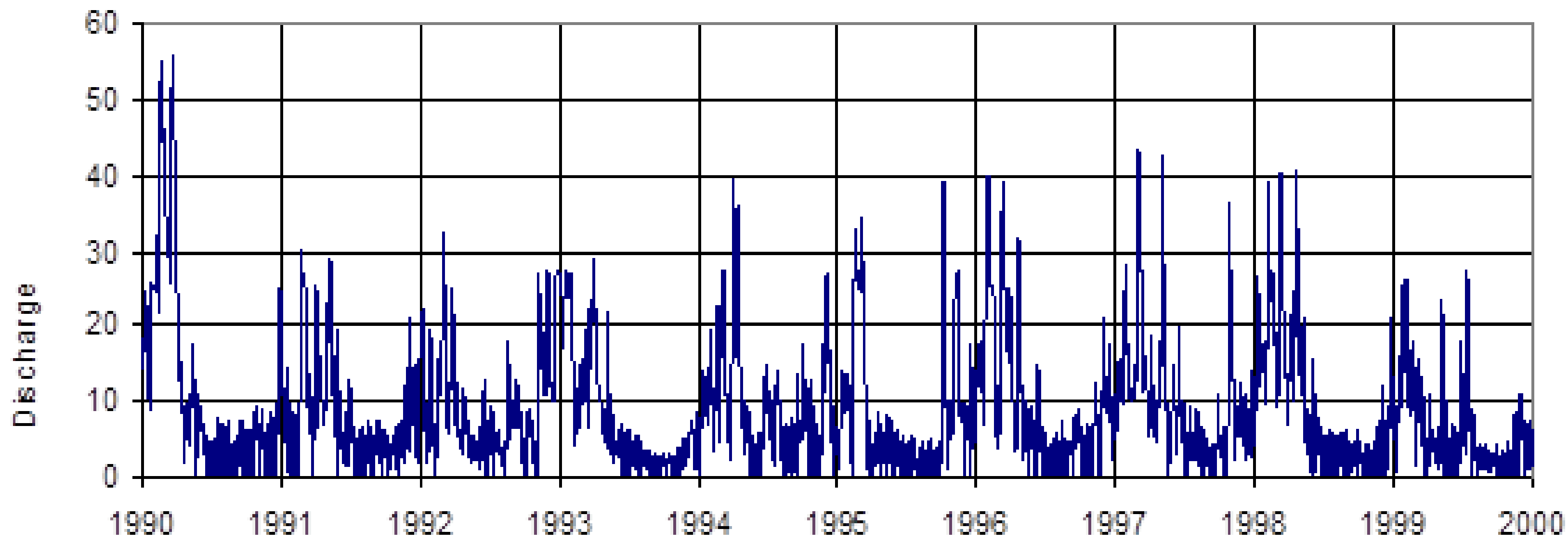
ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

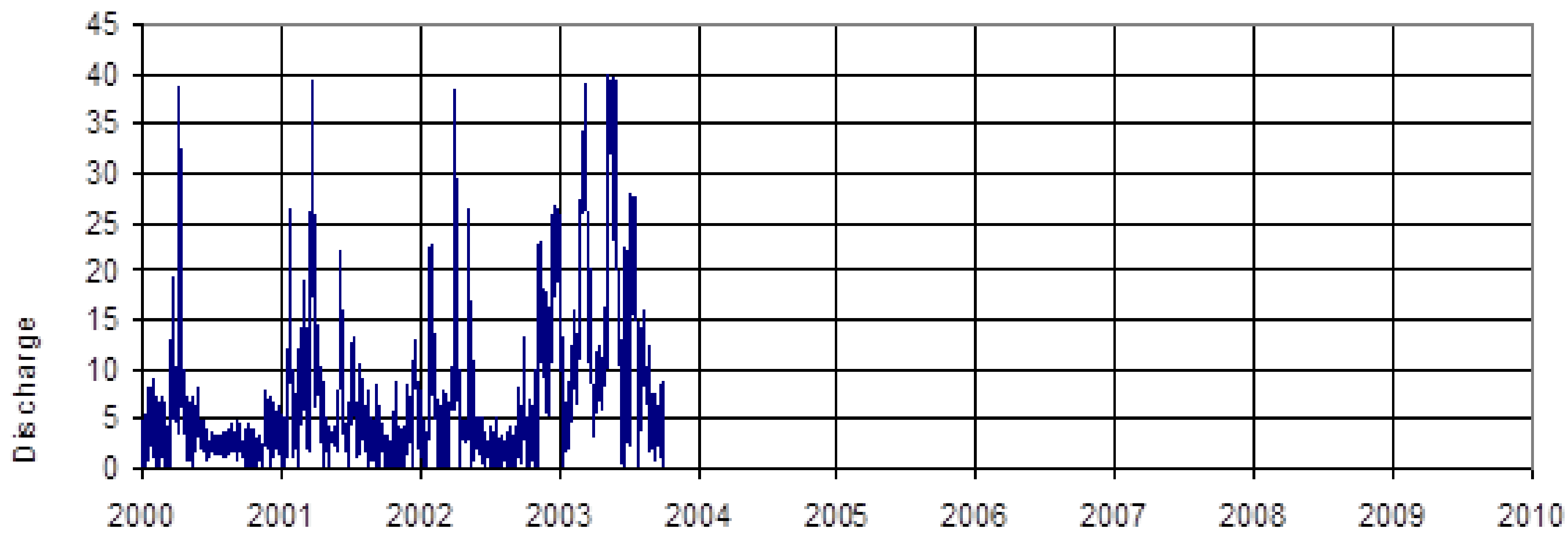
WATER CONTROL MANUAL
WEISS DAM AND LAKE

DISCHARGE HYDROGRAPHS

Hydrographs

Average Daily Discharge Hydrographs at Damsite



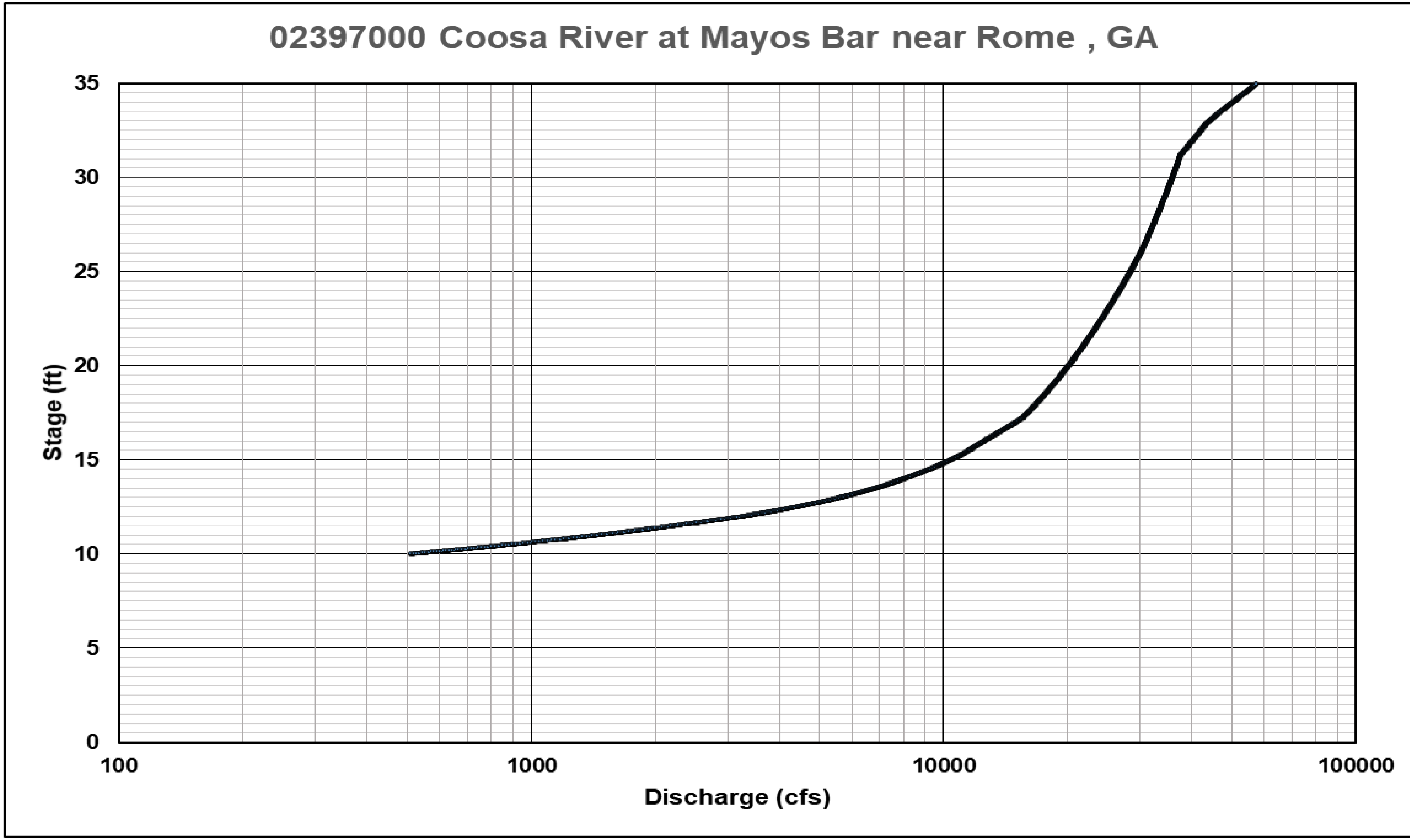


Preparer's Note: Awaiting updated info from Water Mgt/APC.

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

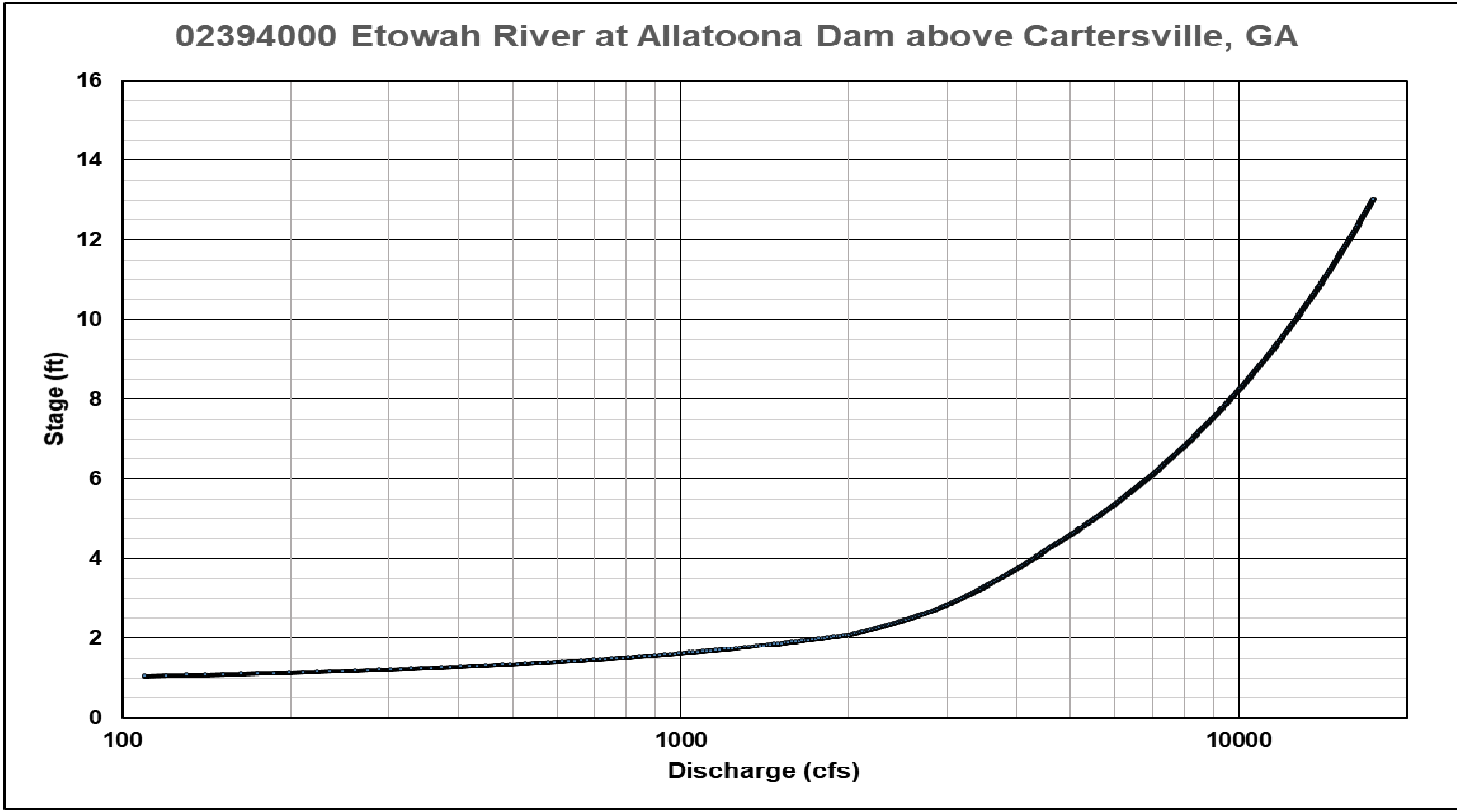
DISCHARGE HYDROGRAPHS



ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

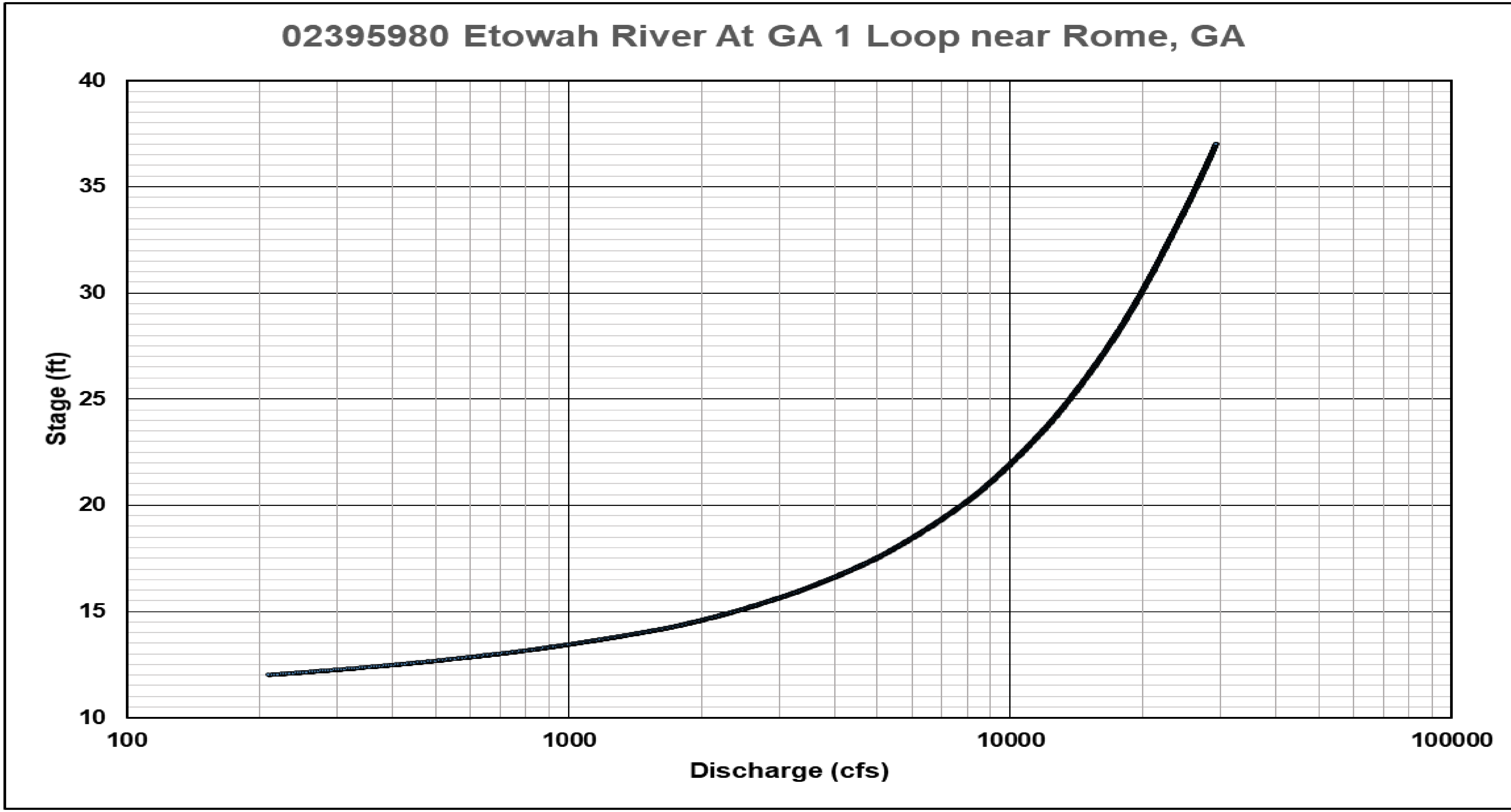
RATING CURVE



ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

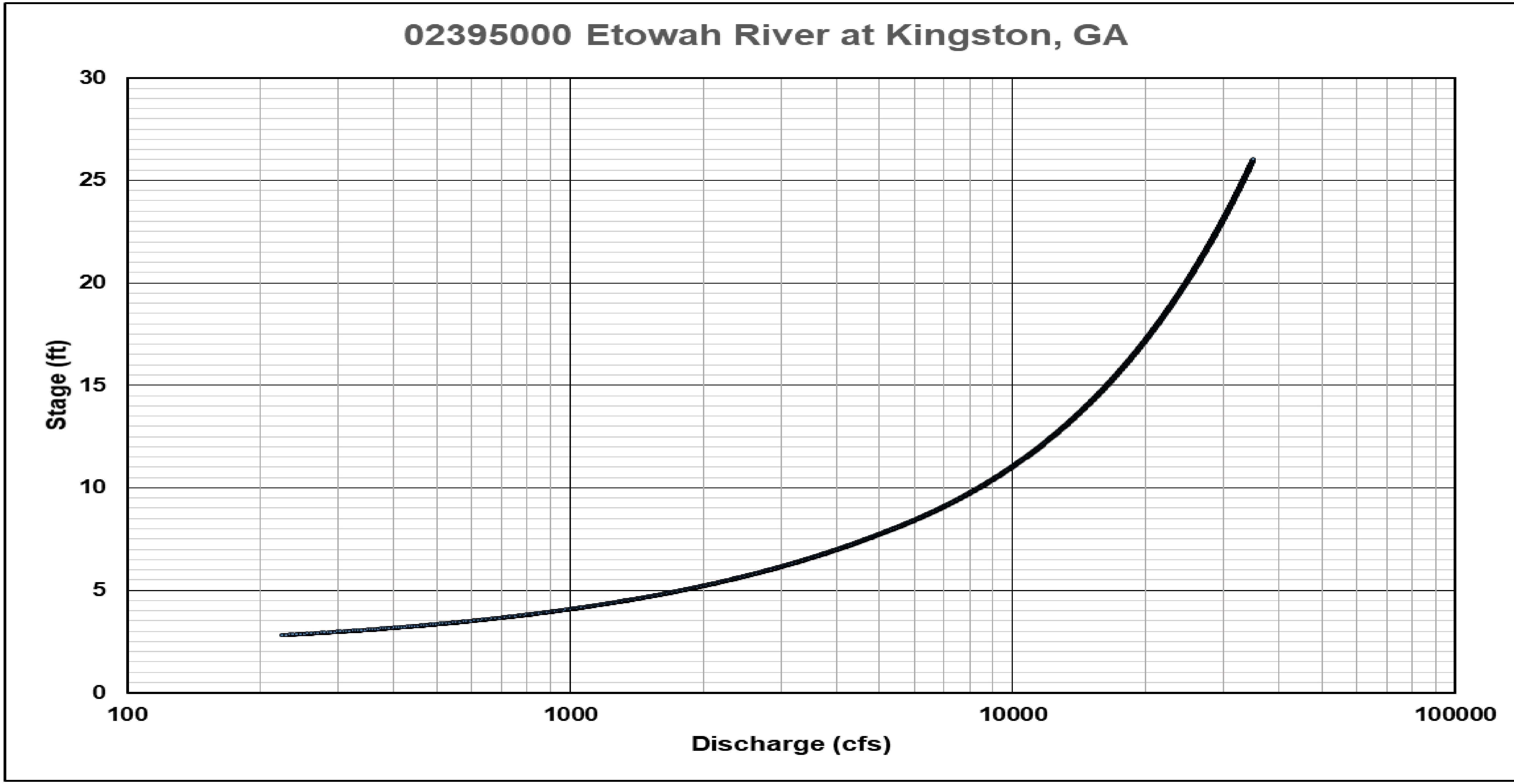
RATING CURVE



ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

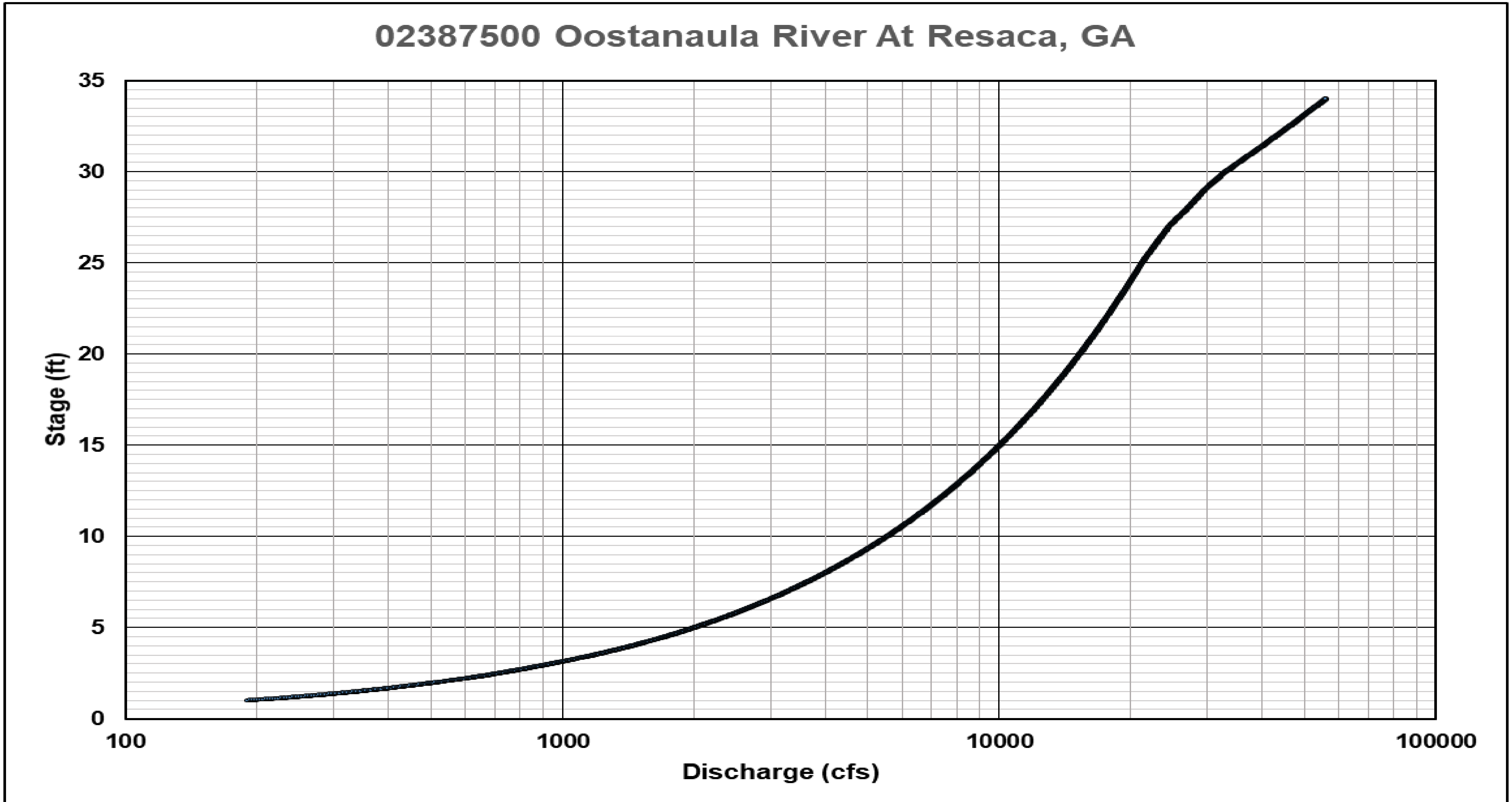
RATING CURVE



ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

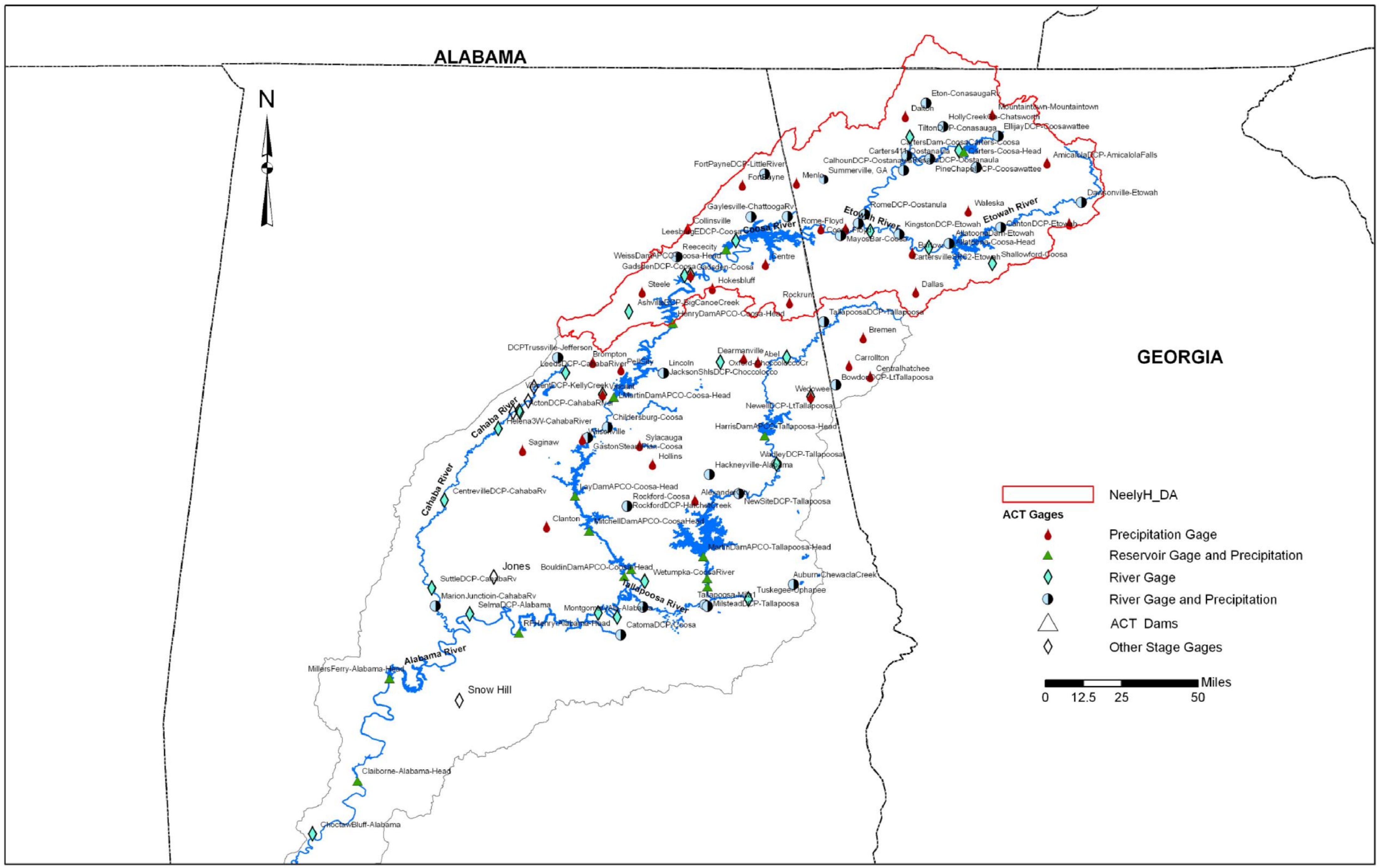
RATING CURVE



ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

RATING CURVE



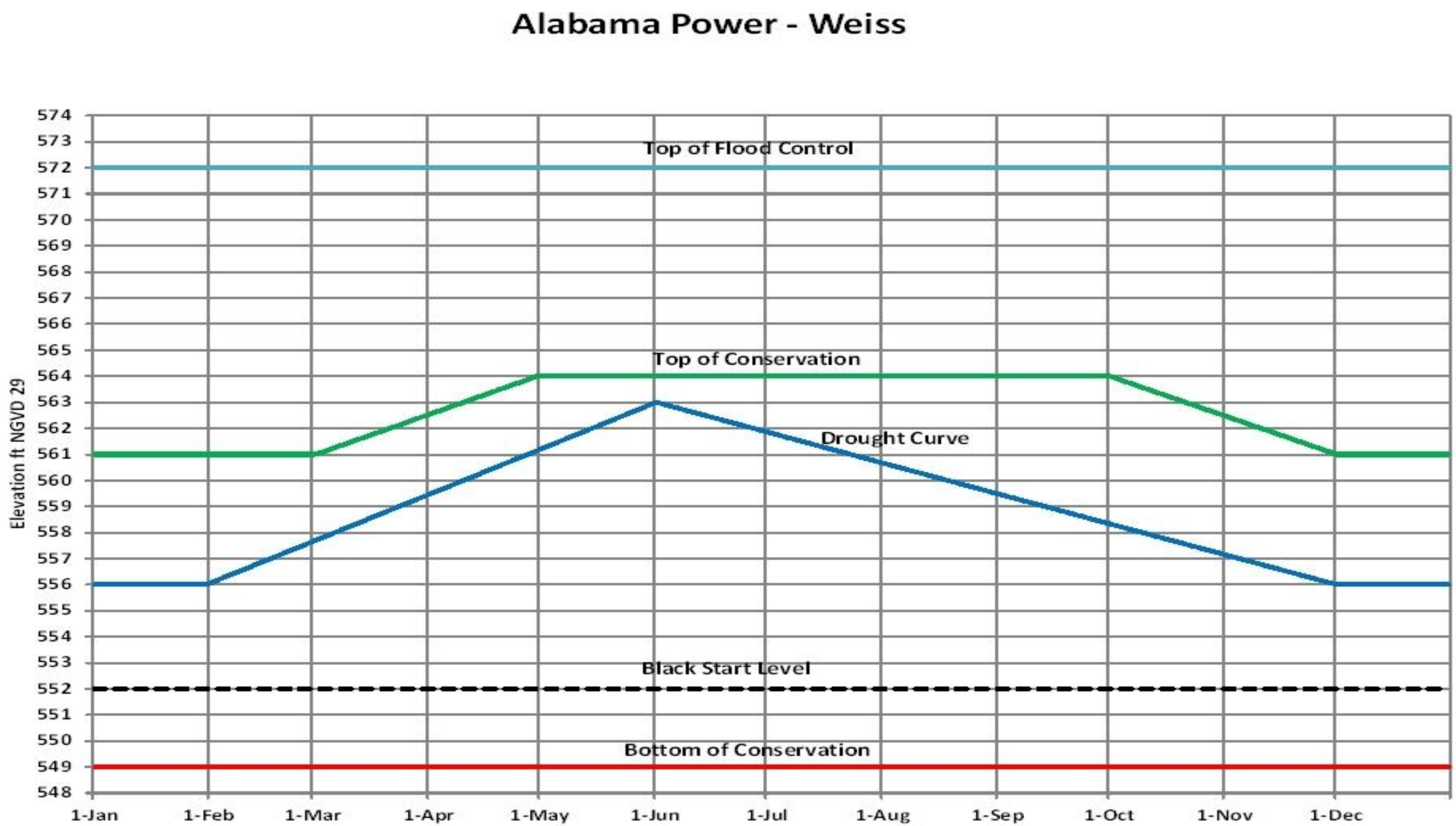
Preparer's Note: Need updated table to show Weiss Basin.

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

ACT REPORTING STATIONS

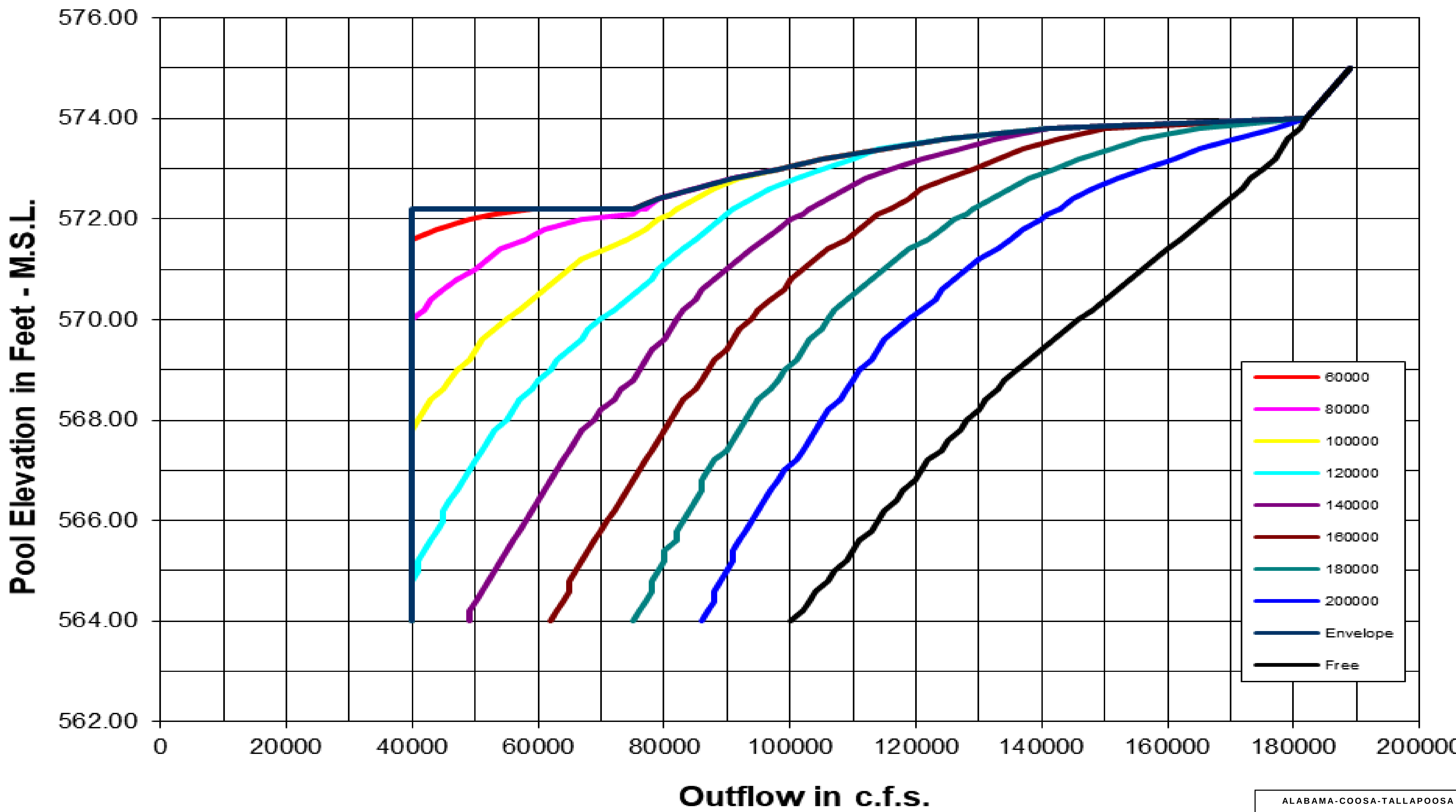
APPENDIX B PLATE 5-1



ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

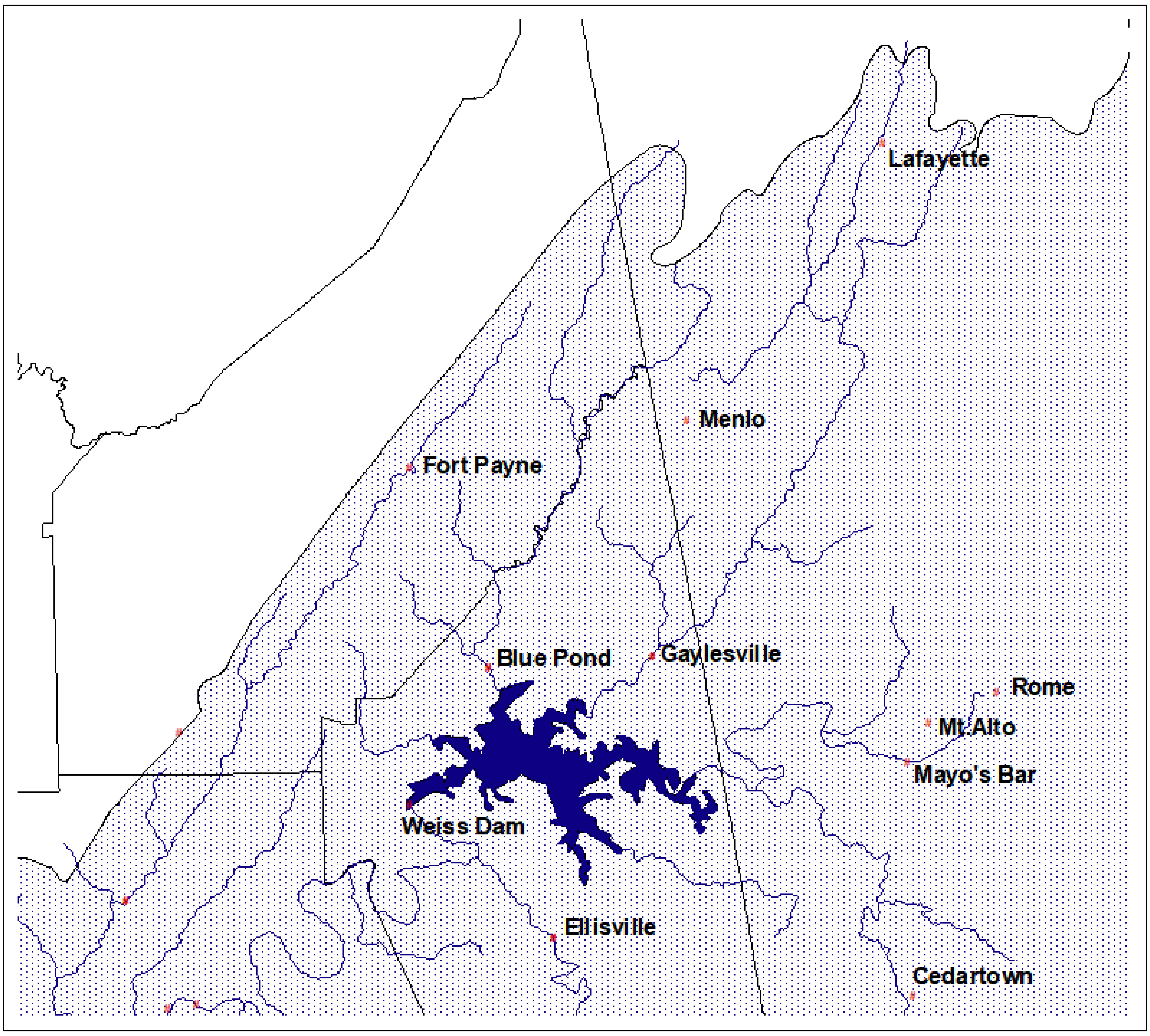
WEISS GUIDE CURVES

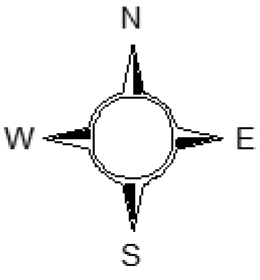


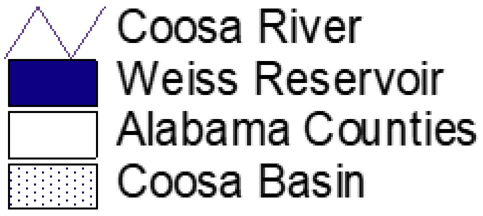
ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

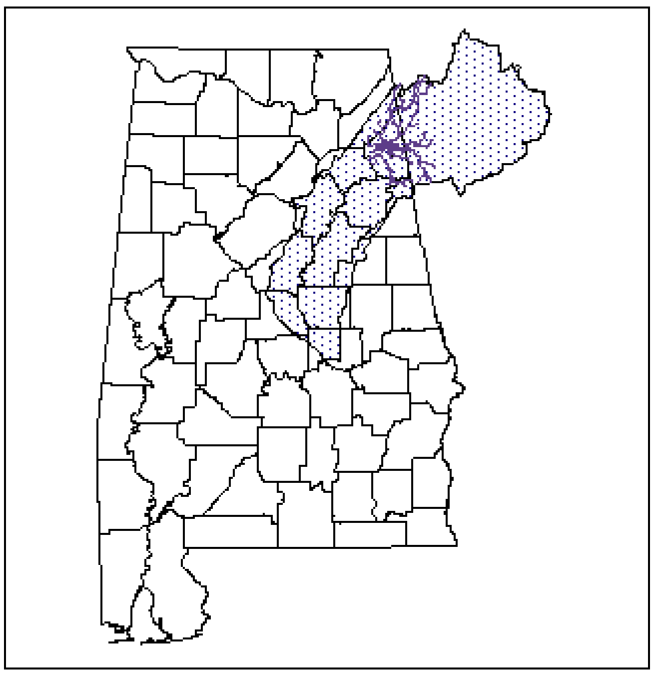
WATER CONTROL MANUAL
WEISS DAM AND LAKE
INDUCED SURCHARGE CURVES

Automatic Rain Reporting Hydrologic Network









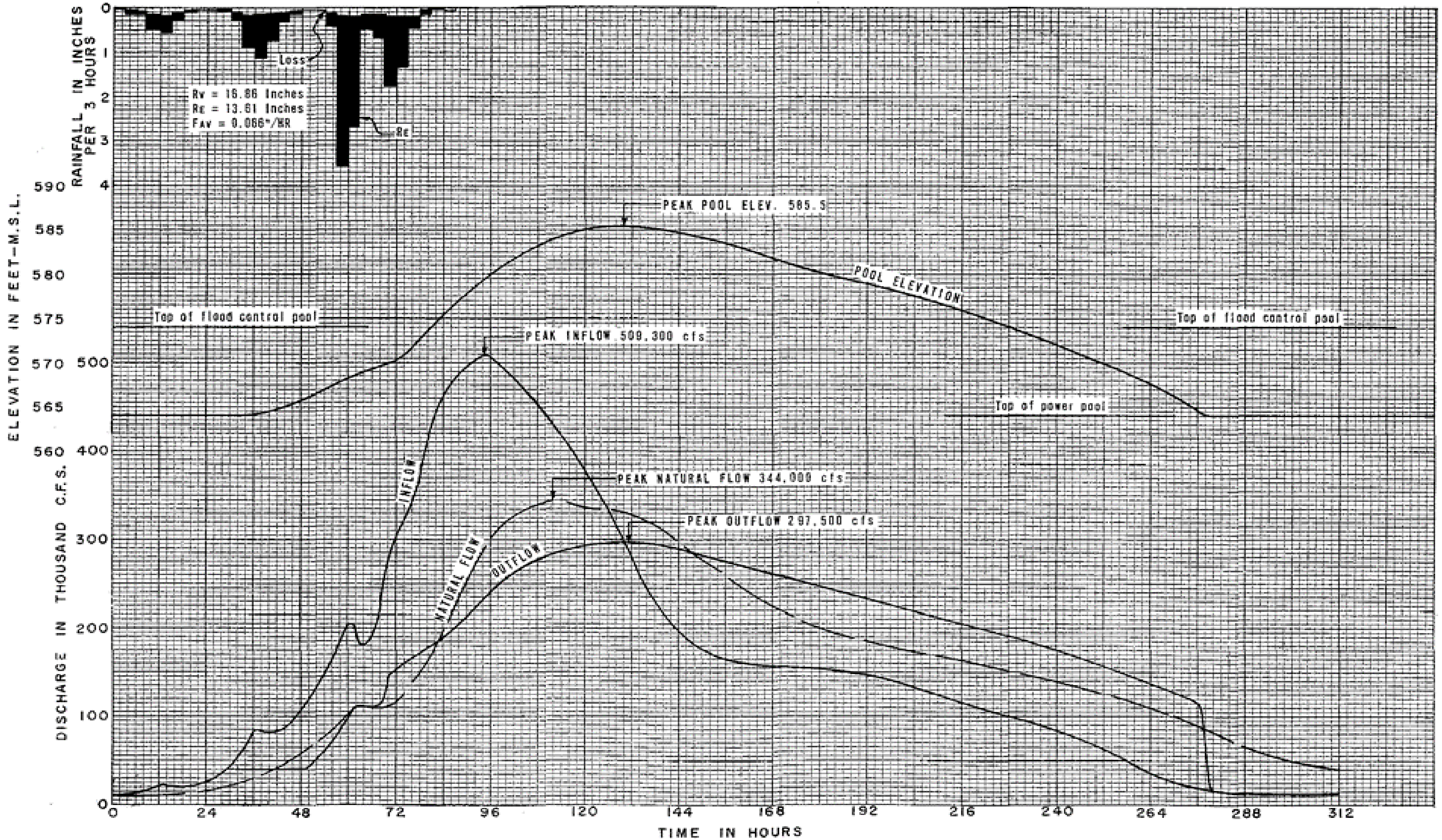
ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

AUTOMATIC RAIN REPORTING
HYDROLOGIC NETWORK

Inflow-Outflow-Pool Stage Hydrographs

Spillway Design Flood



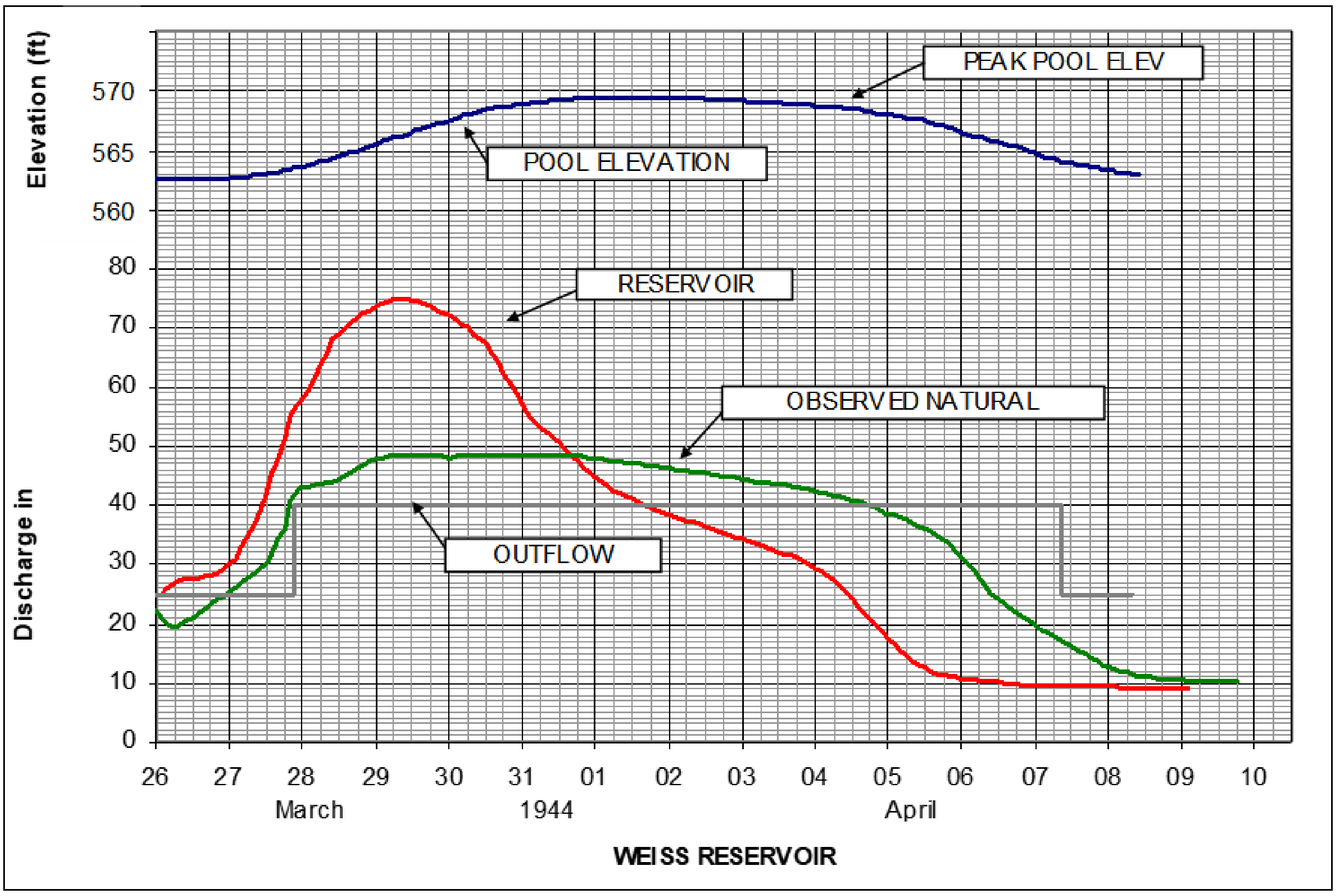
ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

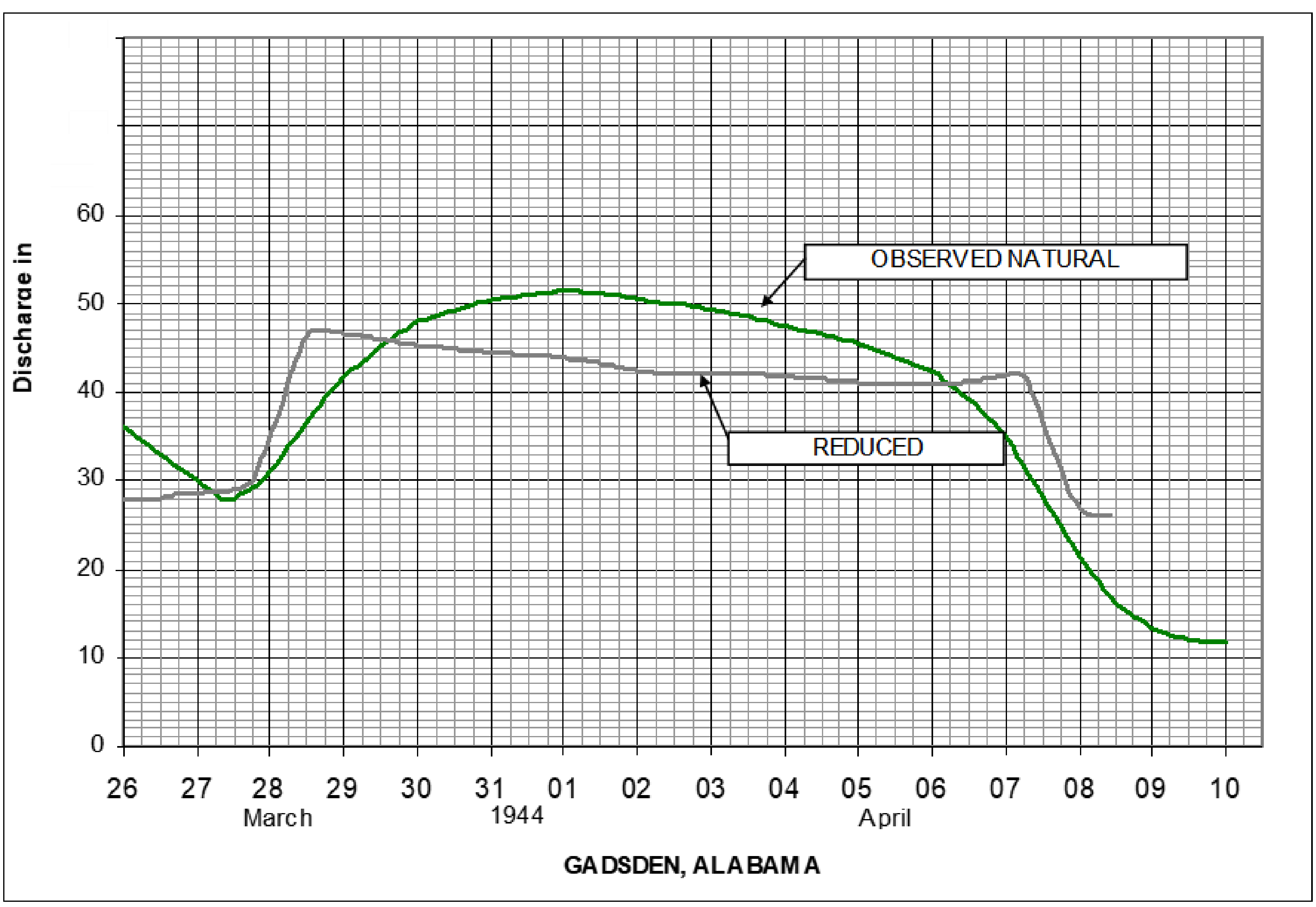
WATER CONTROL MANUAL
WEISS DAM AND LAKE

INFLOW-OUTFLOW-POOL
STAGE HYDROGRAPHS

Effect of Reservoir Regulation

Flood of March & April 1944



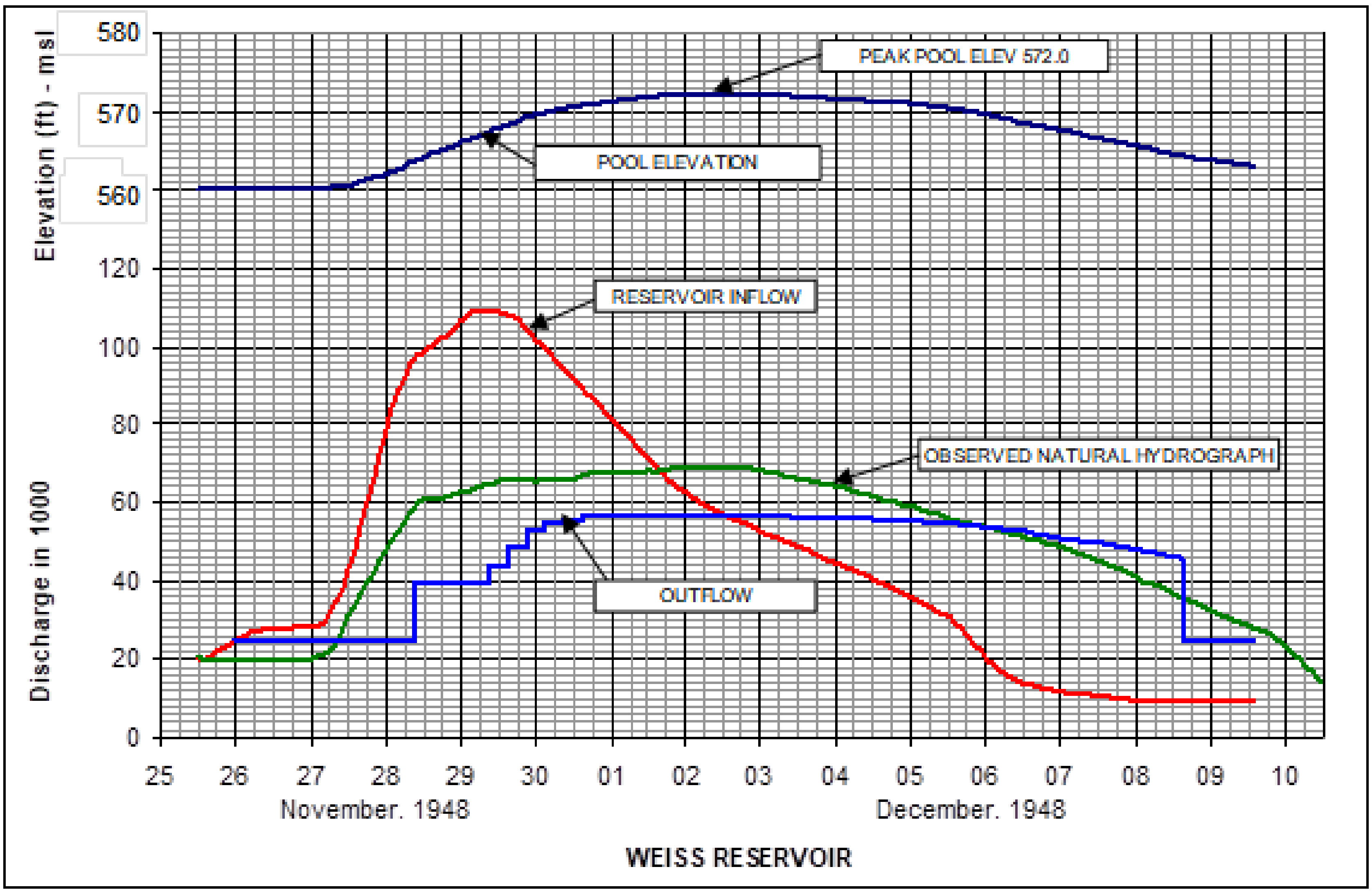


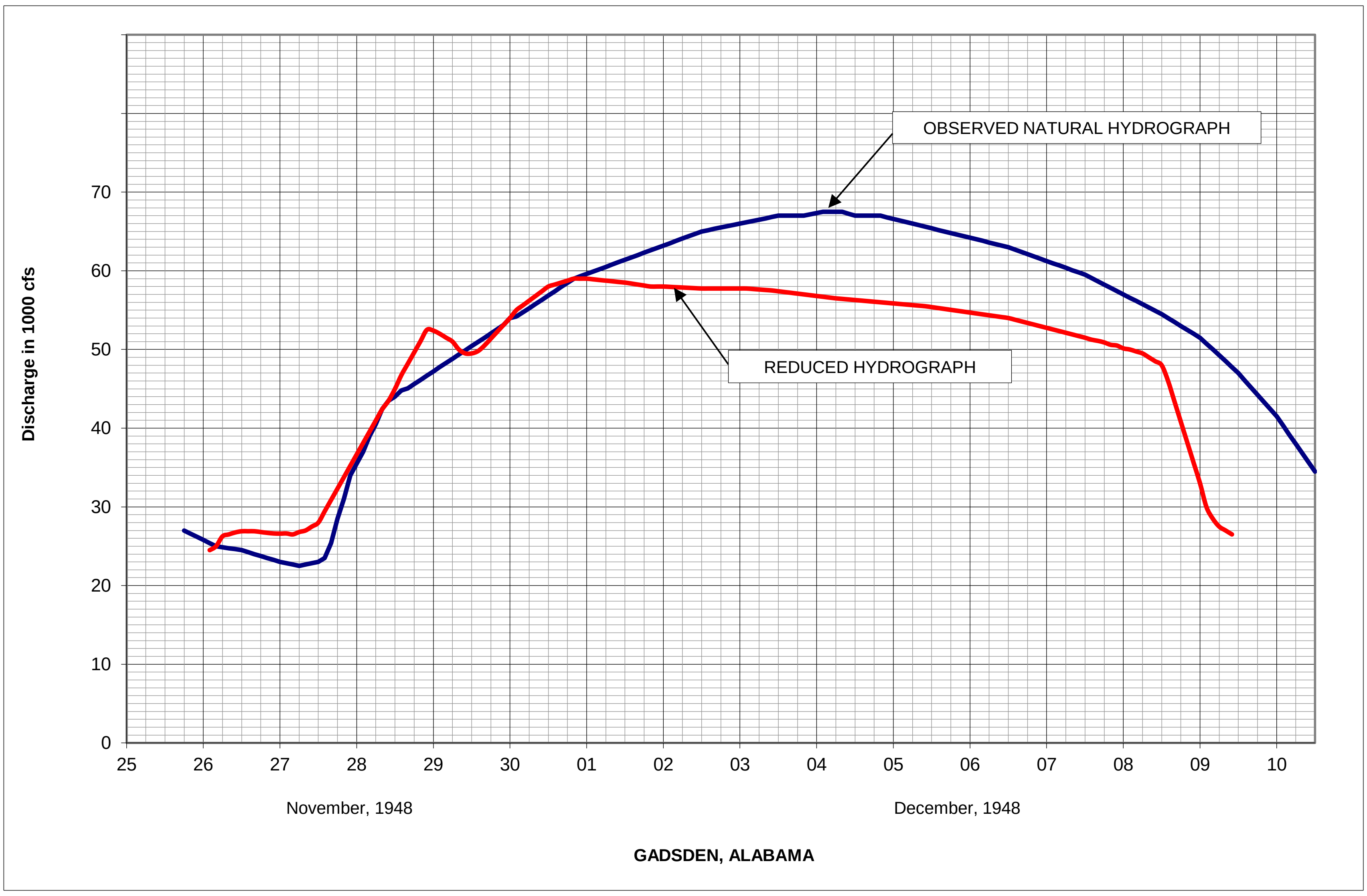
ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

FLOOD OF MARCH & APRIL 1944

Effect of Reservoir Regulation
Flood of November & December, 1948





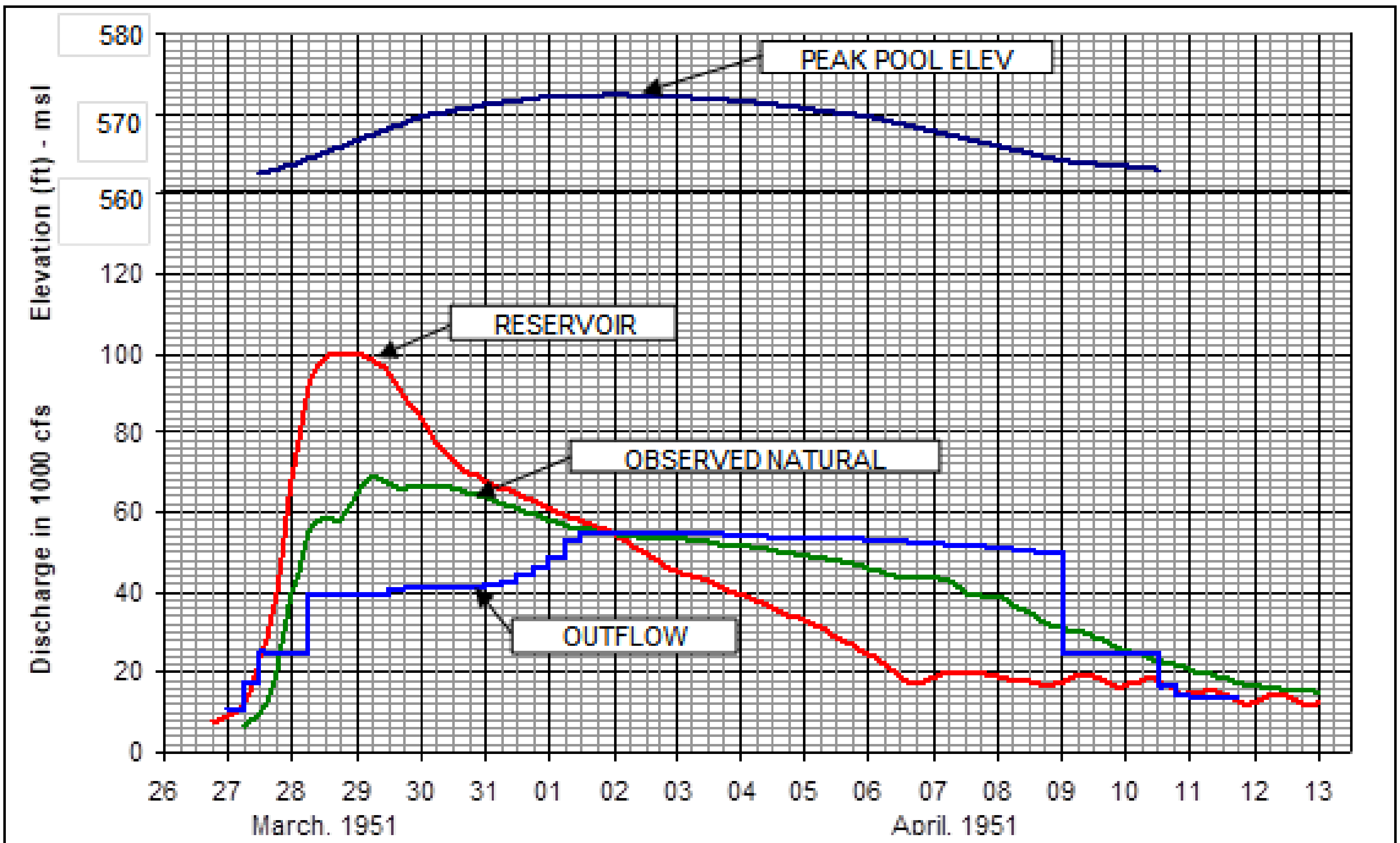
ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

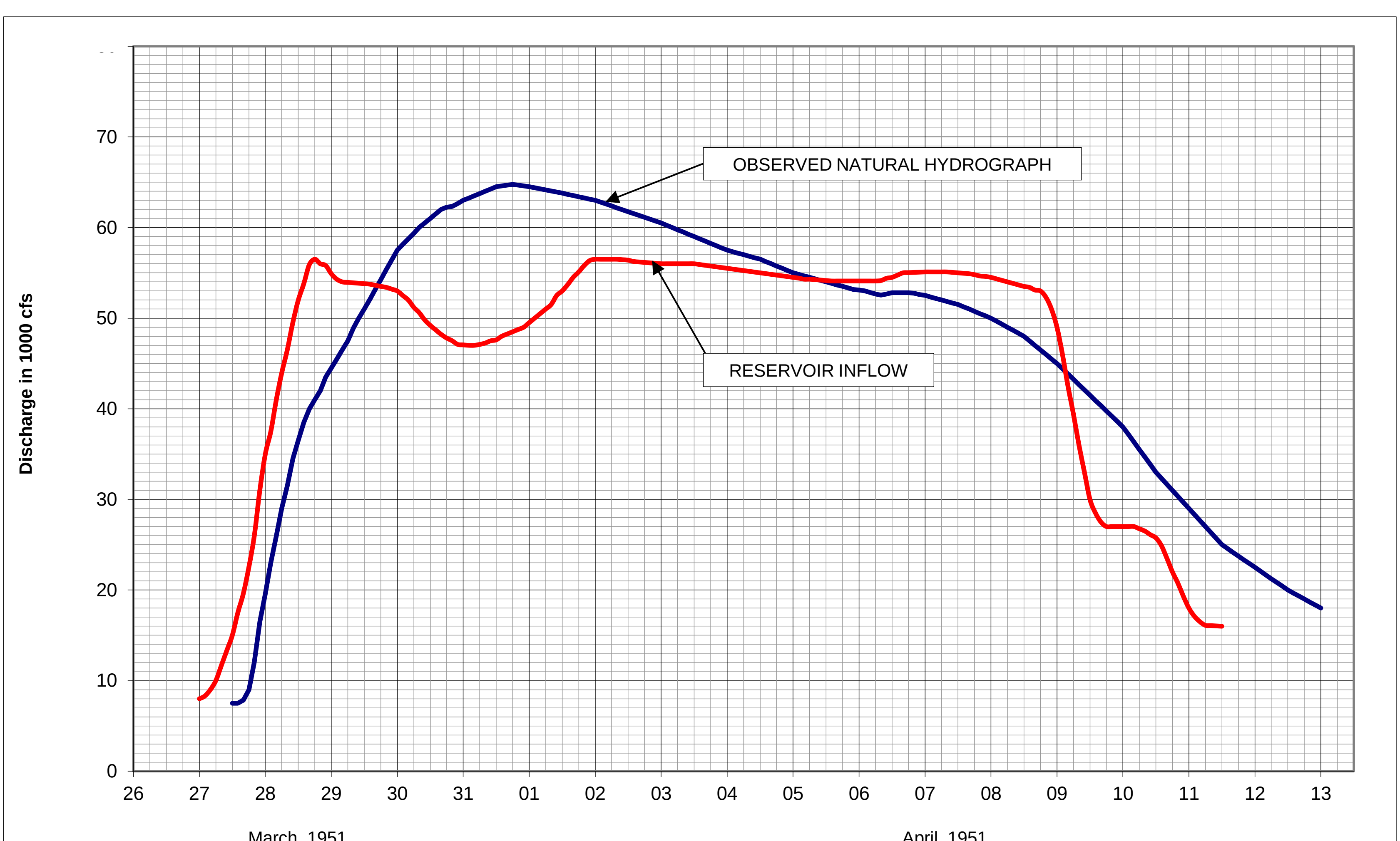
FLOOD OF NOVEMBER & DECEMBER 1948

Effect of Reservoir Regulation

Flood of March & April, 1951



WEISS RESERVOIR



GADSDEN, ALABAMA

ALABAMA-COOSA-TALLAPOOSA RIVER BASIN

WATER CONTROL MANUAL
WEISS DAM AND LAKE

FLOOD OF MARCH & APRIL
1951