November 2020

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

Final Feasibility Report and Integrated Supplemental Environmental Impact Statement

Appendix F. Public Involvement (Attachment 3, Part 1 of 2)

US Army Corps of Engineers®
Mobile District

Prepared for:
U.S. Army Corps of Engineers
Mobile District
P.O. Box 2288
Mobile, AL 36628

Prepared by:
Tetra Tech, Inc.
10306 Eaton Place
Suite 340
Fairfax, VA 22030

Attachment 3. Agency and Public Comments and USACE Responses

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T-01

From: Autumn Gorrell <Autumn.Gorrell@chickasaw.net>
Sent: Tuesday, November 19, 2019 1:38 PM
To: ACT-ACR
Subject: [Non-DoD Source] Re: Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoirs Water Control Manuals

Follow Up Flag: Follow up
Flag Status: Flagged

Good Afternoon,

Our office received a letter regarding the Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoirs Water Control Manuals. **A**
Thank you for the project notification.
This project is outside of our area of interest at this time.

Sincerely,

Autumn L. Gorrell
Historic Preservation Tech.
Chickasaw Nation
Division of Historic Preservation and Repatriation
Department of Culture and Humanities
Office: 1-580-559-0700 Ex.62731
Email:Autumn.Gorrell@chickasaw.net

T-02

From: Caitlin Rogers <caitlinh@ccppcrafts.com>
Sent: Monday, December 16, 2019 4:42 PM
To: ACT-ACR
Subject: [Non-DoD Source] Draft FR/SEIS
Attachments: 2020-134-1.jpg

Mr. Flakes,

Attached is the concurrence letter for your project. Thanks

Caitlin

--
Caitlin Rogers
Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, SC 29730

803-328-2427 ext. 226
Caitlinh@ccppcrafts.com

Please Note: We CANNOT accept Section 106 forms via e-mail, unless requested. Please send us hard copies. Thank you for your understanding

Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, South Carolina 29730

Office 803-328-2427
Fax 803-328-5791

December 16, 2019

Attention: Curtis M. Flakes
Department of the Army – Mobile District
P.O. Box 2288
Mobile, AL 36628-0001

Re. THPO #	SAC #	Project Description
2020-134-1		Draft FR and Integrated SEIS for the Allatoona Lake Water Supply Storage Rellocation Study and Updates to Weiss and Logan Martin Reservoirs Water Control Manuals

Dear Mr. Flakes,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.** **A**

If you have questions please contact Caitlin Rogers at 803-328-2427 ext. 226, or e-mail caitlinh@ccppcrafts.com.

Sincerely,

Caitlin Rogers for

Wenonah G. Haire
Tribal Historic Preservation Officer

T-03

From: Lindsey Bilyeu <lbilyeu@choctawnation.com>
Sent: Monday, December 23, 2019 11:49 AM
To: ACT-ACR
Subject: [Non-DoD Source] RE: Draft Feasibility Report and SEIS for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoirs Water Control Manuals

Good Morning,

The Choctaw Nation of Oklahoma thanks the USACE, Mobile District, for the correspondence regarding the above referenced project. The Choctaw Nation Historic Preservation Department requests the GIS shapefiles of the project area so that we can determine if the project lies in our area of historic interest. **A**

If you have any questions, please contact me.

Thank you,

Lindsey D. Bilyeu, MS
Senior Compliance Review Officer
Historic Preservation Department
Choctaw Nation of Oklahoma
P.O. Box 1210
Durant, OK 74702
580-924-8280 ext. 2631

C-01

US Army Corps of Engineers

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Date: 12/9/19

Comments Should Be Submitted by December 30, 2019

Information About You

First Name: John ~~WALLACE~~ Last Name: WALLACE

Title: Field Representative

Organization

- [ ] Agency (federal, state, or local)
- [x] Congressional
- [ ] Company
- [ ] General Public

Organization: 11th Congressional District

Preferred Method of Communication

- [ ] Phone: [redacted]
- [x] Email: john.wallace@mail.house.gov
- [ ] Mailing Address: [redacted]

Comment Categories

- [x] Water Supply
- [x] Flood Storage
- [x] Water Management
- [x] Cultural Resources
- [x] Hydropower
- [x] Lake Levels
- [x] Threatened and Endangered Species
- [x] Navigation
- [x] Economic Resources
- [x] Fisheries
- [x] Environmental Resources
- [ ] Other
- [x] Water Quality
- [x] Recreation

Geographic Area of Interest

- [x] Alabama-Coosa-Tallapoosa (ACT) River Basin
- [x] Coosa Drainage Area
- [x] Etowah Drainage Area
- [x] Tallapoosa Drainage Area
- [x] Oostanaula Drainage Area
- [x] Alabama River
- [x] Mobile Bay
- [x] Other

US Army Corps of Engineers

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Comment

This is a lot better location for this presentation than the small room at Lake Acworth.

I have been assured that these changes would not lower the Lake Allatoona levels. A

I really enjoy working with the local Lake Allatoona USCAE Rangers and staff! ☺ B

☐ Attach additional sheets of paper if you need more space for comments

Specific questions may be directed to Inland Environment Team, U.S. Army Corps of Engineers, Mobile District, Planning and Environmental Division, (251) 690-2023

Thank you for helping us to understand what resources in the ACT River Basin are important to you!

F-01

From: Monroe, Ashley <Monroe.Ashley@epa.gov>
Sent: Thursday, December 12, 2019 8:18 AM
To: ACT-ACR
Subject: [Non-DoD Source] Allatoona Lake Water Supply Storage Reallocation Study and Updates

Follow Up Flag: Follow up
Flag Status: Flagged

Hello:

Could I please have the ACR Study HEC-ResSim Model Supporting Documnetation? **A**

Thank you,

Ashley

Ashley Monroe, PhD
US EPA Region 4
Wetlands and Streams Regulatory
Atlanta Federal Center - MC 9T25
61 Forsyth Street SW
Atlanta, Georgia 30303
404-562-9232

F-02

From: Kajumba, Ntale <Kajumba.Ntale@epa.gov>
Sent: Wednesday, December 18, 2019 2:44 PM
To: ACT-ACR
Subject: [Non-DoD Source] FW: RE: Extension Request -Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin

FYI

From: Kajumba, Ntale
Sent: Monday, December 16, 2019 11:25 AM
To: Jacobson, Jennifer L CIV USARMY CESAM (USA) <Jennifer.L.Jacobson@usace.army.mil>
Cc: Fite, Mark <Fite.Mark@epa.gov>
Subject: RE: Extension Request -Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin

Hi Jenny,

I hope all is well. I am sending a follow-up email to our conversation regarding an extension request for the proposed project. I understand that the request would be sent along with others that previously requested a review extension. Is there any update from upper management? This would assist in our planning efforts since our associate reviewers and management will be on leave for the holidays. **A**

Thanks,

Ntale

Ntale Kajumba
NEPA Section, Acting Chief
Strategic Programs Office
Office of the Regional Administrator
U.S. EPA, Region 4
61 Forsyth Street, S.W.
Atlanta, Georgia 30303
(404) 562-9620
Kajumba.ntale@epa.gov

F-03

From: Dixie Cordell <dixie.cordell@sepa.doe.gov>
Sent: Tuesday, January 07, 2020 11:47 AM
To: ACT-ACR
Cc: Herb R. Nadler; Judy L. Worley
Subject: [Non-DoD Source] SEPA Comments on Draft FR/SEIS for the Allatoona Lake Water Supply Storage Reallocation Study
Attachments: SEPA Response Draft FRSEIS 1-7-20.pdf

Good morning,

Attached you will find a letter detailing SEPA's concerns for the Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement (FR/SEIS) for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoirs Project Water Control Manuals, Alabama and Georgia. The original letter will also be mailed.

Please let me know if you have any questions.

Thanks.

Dixie K. Cordell

Dixie K. Cordell, PE
U. S. Department of Energy
Southeastern Power Administration
1166 Athens Tech Road
Elberton, GA 30635-6711
Tel. 706-213-3851
E-Mail dixie.cordell@sepa.doe.gov

F-03

Department of Energy
Southeastern Power Administration
Elberton, Georgia 30635-6711

January 7, 2020

Colonel Sebastien P. Joly
District Commander
Mobile District, USACE
Attn: Draft FR/SEIS
P. O. Box 2288
Mobile, AL 36628-0001

Dear Colonel Joly:

Southeastern Power Administration (Southeastern) is pleased to have an opportunity to provide comments on the Mobile District's Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement (Draft FR/SEIS) regarding Allatoona Lake Water Supply Reallocation Study and Updates to Weiss and Logan Martin Reservoirs Project Water Control Manuals. As the Federal agency with responsibility for marketing power from the District's hydroelectric projects, we are very interested in changes that will be taken which will affect the projects, in terms of capacity reductions, energy reductions, seasonal redistributions of power, operational constraints, or restrictions to the daily timing of peaking generation. Southeastern has identified a number of potential concerns with the Draft FR/SEIS.

The first concern for Southeastern is the proposed reallocation of storage to water supply. While Southeastern appreciates the Corps of Engineers' efforts of introducing additional project storage from the flood control pool to accommodate a portion of the supply request, the currently-proposed reallocation, plus the previously reallocated amounts of storage at Allatoona, appear to exceed the historic discretionary reallocation authority threshold for serious impacts of the lesser of 50,000 acre-feet or 15% of conservation storage. What will be the required approval process for this reallocation to take place? **A**

With respect to the current water supply use, page 4-1, lines 19-20 indicates that current water supply users have exceeded their existing storage agreements on multiple occasions over the last 15 years. In terms of impacts to hydropower, the excess withdrawals during this period represented lost generation, as well as additional replacement power costs, since this period included numerous drought years. Will the final document include a quantification of impacts to hydropower during this period and the method by which hydropower will be compensated for the losses? Also, is there a projected effective date for the water storage contracts? **B**

We also question the baseline that was selected to compare water demand impacts to the level of 2050 withdrawals. The selection of the most-extreme year 2006, as stated in the document on page 3-29, line 9 minimizes the perceived impacts of the increased future withdrawals. In addition, for clarification purposes, page 4-6, line 26 states that the NAA uses the 2007 water demands. Is this accurate? **C**

In Appendix D, Attachment 2 "Projected Impacts to Hydropower Report", it indicates the baseline of "Base2018" was selected, which represents the current condition with uncapped water withdrawals. By utilizing this as a baseline for comparison, it tends to minimize the real impacts the 2050 withdrawals will have on hydropower by inflating the reference point of comparison. We also question the Base2018 average energy listed for the federal projects, as well as some of the capacity capability numbers listed for Allatoona. **D**

In addition to the direct effects of the reallocation at Allatoona, Southeastern also has some concerns regarding the changes proposed for the operation of the Alabama Power projects of Weiss Lake and Logan Martin Lake, as they have the potential to negatively impact the Federal Hydropower purpose. Southeastern markets power from the two Mobile District projects that are downstream on the Alabama River, R.F. Henry Lock and Dam (Henry) and Millers Ferry Lock and Dam (Millers). For Weiss Lake, the proposed reduced winter drawdown from elevation 558 ft. to elevation 561 ft. represents an annual reduction in flows in the river system during the low-flow fall months, which would have subsequently been available to provide generation benefits downstream at Henry and Millers. Also, the delay in the start of the seasonal drawdown of the summer pool at Weiss from August 31 to September 30 represents a shift in generation from a month of higher monetary value for the customers to a period of lower value. Likewise, for Logan Martin Lake, the proposed reduced winter drawdown from elevation 460 ft. to elevation 462 ft. also represents an annual reduction in river system flows during the low flow fall months, which would also reduce generation availability at Henry and Millers. Also, for both Weiss and Logan Martin, the raising of the winter guide curve would result in a lower volume of flood storage available for spring inflows. As a result, the projects may have to discharge more flow sooner, which may result in spilling or lost generation downstream at Henry and Millers. **E**

With respect to the proposed changes in maximum surcharge levels at Weiss (a reduction of 2 ft. from 574 ft. to 572 ft.), and at Logan Martin (a reduction of 3.5 ft. from 477 ft. to 473.5 ft.), and the corresponding changes to the flood release regulation schedules, these changes would tend to increase the volume of flow in the river sooner during high inflow events due to the reduced flood storage and increased release schedules at the projects. This may ultimately result in additional spilling and lost generation benefits downstream at Henry and Millers. **F**

From an implementation perspective, the timeline is unclear since there seems to be a number of outstanding issues identified in the document that still need to be completed. The document indicates that the Corps of Engineers will conduct additional analysis of flood impacts to private property upstream and downstream of Weiss and Logan Martin. Then it indicates that Alabama Power may be required to purchase any additional identified real interests as part of the proposed plan. Then the document indicates that a modification to the Alabama Power FERC License would be required, and that the Corps of Engineers and Alabama Power would have to enter into an MOA. It also states that, due to the summer pool rise at Allatoona, the shoreline management **G** plan will need updating; also, that riprap work, dock work, and beach work would be required. The question we have is, "What is the projected timeline for the completion of these tasks, and is implementation of the Tentatively Selected Plan contingent on the completion of these tasks?"

Southeastern appreciates the effort the Mobile District has put into the development of the Draft FR/SEIS and we look forward to continuing to work with the District on this issue. Should you have any questions, please feel free to contact Dixie Cordell at (706) 213-3851.

Sincerely,

Herbert Nadler

Herbert R. Nadler
Assistant Administrator
Power Resources

F-04

From: Kajumba, Ntale <Kajumba.Ntale@epa.gov>
Sent: Wednesday, January 29, 2020 4:37 PM
To: Malsom, Michael F CIV USARMY CESAM (USA); ACT-ACR
Cc: Buskey, Traci P.
Subject: [Non-DoD Source] FW: CEQ: 20190272. EPA Comments on Allatoona Lake Draft FR/SEIS
Attachments: 20190272.pdf

Hi Mike,

Attached is the comment letter from EPA regarding the Allatoona Lake Water Supply Storage and Updates to Weiss and Logan Martin reservoirs.

Ntale

Ntale Kajumba
NEPA Section
Strategic Programs Office
Office of the Regional Administrator
U.S. EPA, Region 4
61 Forsyth Street, S.W.
Atlanta, Georgia 30303
(404) 562-9620
Kajumba.ntale@epa.gov

F-04

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

JAN 2 9 2020

Mr. Mike Malson
U.S. Army Corps of Engineers, Mobile District
Environment and Resources Branch
Planning and Environmental Division
P.O. Box 2288
Mobile, Alabama 36628-0001

Re: EPA Comments for the Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement (Draft FR/SEIS) for Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoir Project Water Control Manuals; Alabama and Georgia. CEQ No. 20190272

Dear Mr. Malson:

Pursuant to Section 102(2)(C) of the National Environmental Policy Act and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency Region 4 has reviewed the U.S. Army Corps of Engineers (USACE), Mobile District's Draft FR/SEIS for Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoir Project Water Control Manuals (WCMs). The EPA previously provided comments on the USACE's Final Environmental Impact Statement assessing updates to the Master Water Control Manual (Master Manual) and individual project manuals and Alabama Power Company (APC) reservoir projects in the Alabama-Coosa-Tallapoosa (ACT) River Basin on February 15, 2015.

The 2015 ACT River Basin Master Manual, and associated individual project water control manuals, guide the operation of USACE reservoirs for multiple federally authorized purposes and certain APC reservoirs that were constructed to support federally authorized flood risk management and navigation. However, a request by the State of Georgia for additional water supply storage reallocation at Allatoona Lake for municipal and industrial use was not included. The state of Georgia 2050 water supply need from Allatoona Lake is 94 million gallons per day (mgd) including current water supply contract amounts: 57 MGD for Cobb County-Marietta Water Authority and 37 MGD for City of Cartersville. In addition, WCM updates for two APC reservoir projects, Weiss and Logan Martin, were also deferred because additional flood risk analysis and flood easements were needed before updates could be complete. APC's request involves raising the winter water level, while lowering the upper limit of flood storage at Weiss and Logan Martin reservoir projects that the USACE oversees for navigation and flood risk management.

The EPA participated in meetings during scoping and the DEIS process and provided scoping comments on the deferred actions above on August 15, 2018. The proposed project examined various alternatives related to Georgia's water supply request and APC's request to change current flood operations. The USACE's Tentatively Selected Plan (TSP) addresses Georgia's water supply request through a combined reallocation from conservation and flood storage. The TSP includes the use of the USACE's storage accounting practices at Allatoona Lake.

The EPA previously recommended that the Draft FR/SEIS discuss efforts to address efficiency within the existing system. The Draft FR/SEIS acknowledges water conservation and efficiency efforts by the utilities, such as the Cobb County-Marietta Water Authority. The EPA appreciates these efforts and recommends continued implementation of efficiency or conservation measures as a mechanism to minimize water supply withdrawal or storage use and ensure that the WCMs operations meet water quality standards, including downstream uses and adequate flows to maintain the physical integrity of the habitat. Optimizing system management with conservation measures can reduce conflicts among uses, easing pressure on the ACT system and easing management of releases and flows for environmental protection.

The EPA also recommended that the Draft FR/SEIS include information regarding how the proposed modification to the winter pool levels at the Weiss and Logan Martin reservoirs may affect downstream flows in the Basin and impact the overall operations of the preferred alternative. During the public meetings, many commenters, including those directly affected, expressed concern about the potential for increased flooding. Many of these residents supported raising the winter pool levels at Weiss and Logan Martin lakes if their flood risk did not increase. According to the Draft FR/SEIS, APC indicates that flood impacts from the proposed changes will be minimal and would not significantly change current operations at the Weiss and Logan Martin reservoir projects.

The EPA recommends that the USACE and the utilities continue to engage entities within the basin, monitoring and adaptively managing the ACT system as needed to protect human health and the environment. We appreciate the opportunity to review the proposed project. If you have any questions regarding EPA's comments, please contact Ntale Kajumba at (404) 562-9620 or kajumba.ntale@epa.gov.

Sincerely,

Ntale Kajumba for

Mark J. Fite
Director
Strategic Programs Office

cc: Enclosure

EPA's Detailed Comments on the Draft FR/SEIS for Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoir Project Water Control Manuals Alabama and Georgia. CEQ No: 20190272

Alternative

Based on the tables that provide an overview of the alternatives analysis, it is unclear how the alternatives were ranked and evaluated.

A

Recommendation: The FSEIS should better explain how the alternatives analysis criteria were evaluated (e.g., whether all criteria were ranked and then summed, or were the criteria weighted equally).

Water Resource Modeling

Eleven alternatives were evaluated using various models for water resources: HEC-ResSim, HEC-5Q and HEC-RAS modeling. The HEC-5Q water quality model was adjusted to include high flow and low flow drought conditions over a 7-year modeling period. However, HEC-ResSim does not appear to incorporate such an adjustment. The HEC-ResSim model simulations that were used for the alternatives analysis appear to focus on median flow, which excludes the more infrequent high or low flow events. It is important to evaluate the frequency of low flow events (e.g. maximum number of consecutive days B
<365 cubic feet per second by month during drought years) in order to determine the effect on stream flow conditions and drought operations.

Recommendation: The EPA recommends that the SFEIS include an explanation for the HEC-ResSim model simulation prioritization of median flow events. Low flow events should be integrated into the HEC-ResSim model results.

Water Conservation and Efficiency

The EPA appreciates the State of Georgia's reduction in demand from 124-148 mgd to 94 mgd based on updated population projections and implementation of conservation and efficiency. However, the Draft FR/SEIS does not specify the specific actions taken to conserve water resources and improve the efficiency of the system. This information would help the public understand whether all conservation and efficiency measures (i.e., EPA Best Practices to Consider When Evaluating Water Conservation and C
Efficiency, 2016) have been addressed. For example, the Draft FR/SEIS does not discuss the reason for the increased leakage from Allatoona Dam. Leakage from Units 1 and 2 increased from 75 cubic feet per second (cfs) to 150 cfs, but the Draft FR/SEIS does not include a reason for the increase.

Recommendation: The EPA recommends including information in the Final FR/SEIS that accounts for the increase in leakage from Allatoona Lake and Dam. The EPA also requests a copy or a link to the water audit and management plan for Allatoona Lake and Dam, if available. This would help increase the public's and the EPA's understanding regarding how water conservation and efficiency best practices have been implemented.

Aquatic Life and Endangered Species

U.S. Fish & Wildlife Service (FWS) has been actively engaged in the WCM and the proposed project. They have submitted comments to the USACE regarding the protection of threatened and endangered species within the ACT Basin.

Recommendations: EPA principally defers to FWS on this project. The Draft FR/SEIS discusses the D
importance of water quality to aquatic life in the ACT basin. It is quite likely that water quality is an important factor for some of the species within the Basin. Any actions that could significantly alter

water quality must address effects on the protected species. The EPA recommends that the Final FR/SEIS include the results of the USACE consultation with the FWS.

S-01

From: Liang, Hailian <Hailian.Liang@dnr.ga.gov>
Sent: Friday, November 15, 2019 9:56 AM
To: ACT-ACR
Cc: Hathorn, James E Jr CIV USARMY CESAM (US); Zeng, Wei; Capp, James; elizabeth booth; John Allen; Shelly Ellerhorst; Jiang, Feng
Subject: [Non-DoD Source] ACR Study HEC-ResSim and HEC-5Q Models and Documentations

Follow Up Flag: Follow up
Flag Status: Flagged

Good morning,

The Corps just released Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement (Draft FR/SEIS – November 2019) related to Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoirs Project Water Control Manuals, Alabama and Georgia (or Allatoona-Coosa Reallocation Study).

I am writing to request for following models and documentations associated with above Draft FR/SEIS and Allatoona-Coosa Reallocation Study: **A**

- ACR Study HEC-ResSim Model and Supporting Documentation
- ACR Study HEC-5Q Water Quality Model and Supporting Documentation

Given the limited time available for review and comments, it is crucial that we can obtain those models and supporting documentations as soon as they are available so that we could conduct our review in a timely manner.

I highly appreciate your help.

Hailian

Hailian Liang, Ph.D.
Hydrology Unit Manager
Water Supply Program
Watershed Protection Branch
Georgia Environmental Protection Division
2 Martin Luther King Jr. Drive SE, Suite 1354 East Tower
Atlanta, Georgia 30334
Phone: 404-651-5155
Email: Hailian.Liang@dnr.ga.gov

S-02

From: Atkins, Brian <Brian.Atkins@adeca.alabama.gov>
Sent: Monday, November 18, 2019 5:12 PM
To: ACT-ACR
Subject: [Non-DoD Source] ACR Study HEC-ResSim Model Supporting Documentation

Hello,

Can you please send the link to download the model and data files related to the ACT Draft Feasibility and Integrated Supplemental Environmental Impact Statement? Thanks! **A**

Sincerely,

J. Brian Atkins, P.E.
Division Chief
Office of Water Resources Division
Alabama Department of Economic and Community Affairs
401 Adams Avenue | Suite 434 | Montgomery, Alabama 36104
334.242.5497
Blockedwww.adeca.alabama.gov/owr
brian.atkins@adeca.alabama.gov

S-03

From: John Neiman <JNeiman@maynardcooper.com>
Sent: Friday, November 22, 2019 4:27 PM
To: ACT-ACR
Cc: Atkins, Brian; cassie.golden@adeca.alabama.gov
Subject: [Non-DoD Source] request for extension ACT SEIS
Attachments: COE Extension Letter.pdf

Please see attached a request for extension of the comment period from my client, Brian Atkins, on behalf of the State of Alabama Office of Water Resources.

JOHN NEIMAN
T: **205.254.1228**
C: **205.790.6838**
jneiman@maynardcooper.com
1901 Sixth Ave. N. Suite 2400
Birmingham, AL 35203
Click here for my website profile

MAYNARD
COOPER GALE

OFFICE OF THE GOVERNOR

KAY IVEY
GOVERNOR

ALABAMA DEPARTMENT OF ECONOMIC AND COMMUNITY AFFAIRS

KENNETH W. BOSWELL
DIRECTOR

STATE OF ALABAMA

November 22, 2019

Colonel Sebastien P. Joly
Commander and District Engineer
U.S. Army Corps of Engineers
Mobile District
Attn: PD-EI (ACT-ACR DSEIS)
Post Office Box 2288
Mobile, AL 36628–0001
ACT-ACR@usace.army.mil.

Dear Colonel Joly:

The State of Alabama, through its Office of Water Resources, respectfully requests a 60-day extension, through March 2, 2020, to offer comments on the Corps' Draft Feasibility Report and Supplemental Environmental Impact Statement (Draft FR/SEIS) for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoir Project Water Control Manuals in the Alabama-Coosa-Tallapoosa River Basin.

A

Alabama requests this extension for two reasons. First, the Corps has granted a substantial allocation from Allatoona Lake, and Alabama will need sufficient time to conduct its analysis of the background data and ResSim reservoir simulation model, which we have separately requested from the Corps. Second, the Corps has issued the Draft FR/SEIS shortly before Thanksgiving and has set a due date for comments shortly after Christmas. In light of the magnitude of this decision, it will be impracticable to submit comments during the holidays. Thank you for your consideration.

Sincerely,

J. Brian Atkins

J. Brian Atkins, P.E.
Division Chief
Alabama Office of Water Resources

JB/cg

cc: Governor Kay Ivey
Kenneth W. Boswell, Director, ADECA

05136744.1

S-04

From: John Allen [mailto:jallen@kmcllaw.com]
Sent: Friday, December 13, 2019 2:08 PM
To: Purcell, Cornelius W (Neil) CIV USARMY CEHQ (US) <Cornelius.W.Purcell@usace.army.mil>; Mullins, Kristina K CIV USARMY CESAM (USA) <Kristina.Mullins@usace.army.mil>; Creswell, Michael W HQ <Michael.W.Creswell@usace.army.mil>
Cc: Shelly Ellerhorst <sellerhorst@kmcllaw.com>; 'Rick Dunn (richard.dunn@dnr.ga.gov)' <richard.dunn@dnr.ga.gov>
Subject: [Non-DoD Source] ACT Draft EIS: Request for Extension of Review Period by the State of Georgia

On behalf of the State of Georgia, please see the attached request for a 30-day extension in the time to comment on the Corps' Draft Environmental Impact Statement for the ACT Storage Reallocation Study. Thank you for your attention to this matter.

Best regards,

John Allen

John C. Allen

direct: 404-390-2001

Kazmarek Mowrey Cloud Laseter LLP

1230 Peachtree St N.E., Suite 900

Atlanta, Georgia 30309

kmcllaw.com <http://kmcllaw.com/>

LinkedIn <https://www.linkedin.com/company/kmcl-llp>

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

EPD Director's Office
2 Martin Luther King, Jr. Drive
Suite 1456, East Tower
Atlanta, Georgia 30334
404-656-4713

December 13, 2019

BY ELECTRONIC MAIL
Colonel Sebastian P. Joly
U.S. Army Corps of Engineers
Mobile District
Attn: PD-EI (ACT-ACR DSEIS)
Post Office Box 2288
Mobile, AL 36628

Re: Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals in the Alabama-Coosa-Tallapoosa River Basin (November 2019) ("Draft EIS")
Request for Extension of Review Period by the State of Georgia

Dear Colonel Joly:

In response to the Federal Register Notice of November 15, 2019, "Environmental Impact Statements; Notice of Availability," 84 Fed. Reg. 62,530, the State of Georgia requests that the U.S. Army Corps of Engineers ("Corps") extend the period designated for public comments. Specifically, the State respectfully requests that the review period be extended by 30 days from December 30, 2019 until January 29, 2020. **A**

The Draft EIS addresses two requests—a request from the State of Georgia to reallocate storage space in Allatoona Lake to address Georgia's anticipated 2050 water supply needs; and a request from Alabama Power Company to modify flood operations at Weiss Lake and Logan Martin Lake. As the proponent of one of the requests, the State has a strong and concrete interest in the Draft EIS and, particularly, in the Corps' response to Georgia's request. The Corps' response will affect almost one-million Georgia citizens who rely on Allatoona Lake for water supply.

Of particular concern to the State—and the primary reason for requesting an extension—is that the State has found an error in the Corps' HEC-ResSim modeling that affects every model run in the Draft EIS containing Georgia's storage accounting. The effects of this error are pervasive and working through the ramifications will take the State some time. Compounding the State's need for additional time, the State did not receive all of the requested models from the Corps until November 22, 2019, a full week **B** into the existing 45-day comment period. It is critical that the State have adequate time to review and understand the models and the effects of the error prior to submitting comments on the Draft EIS.

In similar situations, the Corps has routinely granted extensions to comment periods for Draft and Final EIS. For example, in the updates to the Alabama-Coosa-Tallapoosa ("ACT") Water Control Manual, the Corps published the Draft EIS with an original comment deadline of May 1, 2013. In response to requests for extensions, the Corps extended the comment period by 30-days to May 31, 2013. Similarly, when the Corps published the Final EIS for the ACT Water Control Manual, the original comment deadline was December 8, 2014. Subsequently, and again in response to requests for extension, the Corps extended the comment period by almost 70-days to February 15, 2015. **C**

Considering the State's unique interest in the Draft EIS, the modeling error found by the State, the Corps' delay in providing copies of the models on which the Draft EIS is based, and the State's strong interest in reviewing and correcting the same, the State respectfully requests that the comment period be extended until January 29, 2020. The State appreciates your attention to this matter. Please contact me if we can be of assistance.

Respectfully Submitted,

Richard E. Dunn
Director

S-05

From: Shelly Ellerhorst <sellerhorst@kmcllaw.com>
Sent: Wednesday, January 29, 2020 1:29 PM
To: ACT-ACR
Subject: [Non-DoD Source] Comments of the State of Georgia: Draft FR and Integrated Supplemental EIS for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals in the ACT Riv...
Attachments: GA EPD Comments on 2019 Draft SEIS for ACT WCM w Memo.pdf

Dear Colonel Joly,

Attached please find the comments of the State of Georgia on the Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals in the Alabama-Coosa-Tallapoosa River Basin ("Draft SEIS"), with Attachment 1, a memorandum from Wei Zeng, Ph.D., Water Supply Program Manager and Hailian Liang, Hydrology Unit Manager, Georgia Environmental Protection Division, to Richard Dunn, Director, Georgia Environmental Protection Division, regarding Technical Comments on the Draft SEIS. Both documents were sent out today in hard copy to your attention.

Please do not hesitate to contact me with any questions.

Sincerely,
Shelly Jacobs Ellerhorst

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S-05

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
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January 29, 2020

Via U.S. MAIL and E-MAIL (ACT-ACR@usace.army.mil)
Colonel Sebastien P. Joly
Commander
U.S. Army Corps of Engineers
Mobile District
Attn: PD-EI (ACT-ACR DSEIS)
Post Office Box 2288
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Re: Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals in the Alabama-Coosa-Tallapoosa River Basin (November 2019)

COMMENTS OF THE STATE OF GEORGIA

Dear Colonel Joly:

In response to the Federal Register Notice of November 15, 2019 (84 Fed. Reg. 62,530), the State of Georgia respectfully submits the following comments regarding the Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals in the Alabama-Coosa-Tallapoosa River Basin (the "Draft SEIS"). The U.S. Army Corps of Engineers (the "Corps") extended the original deadline to submit comments from December 30, 2019 to January 29, 2020. 84 Fed. Reg. 71,411. Thus, the State is timely submitting these comments. As always, the State appreciates the opportunity to submit comments and partner with the Corps on issues critical to the State.

I. Introduction

The Draft SEIS addresses two requests. The first is a March 30, 2018 supplemental and updated request from the State of Georgia[1] to reallocate sufficient storage in Allatoona Lake to address Georgia's anticipated water supply need of 94 million gallons per day ("mgd") by 2050 (the "Water Supply Request"). The Corps is responding to the Water Supply Request as a result

[1] The State made its original request for additional storage for water supply purposes from Allatoona Lake on January 29, 2013.

of a 2018 court order. *See Georgia, et al. v. U.S. Army Corps of Engineers*, 1:14-cv-03953-RWS (N.D.Ga). That court order requires the Corps to respond to Georgia's Water Supply Request by no later than March 1, 2021. The Draft SEIS's Tentatively Selected Plan ("TSP") reallocates storage in Allatoona Lake to meet all of Georgia's projected 2050 water supply needs. The Draft SEIS does not, however, adopt specific storage accounting methodologies requested as part of Georgia's Water Supply Request.

The second request addressed in the Draft SEIS is a request from Alabama Power Company ("APC") to modify flood operations at Weiss Lake and Logan Martin Lake (the "APC Request"). The Corps is addressing the APC Request because it was "deferred from the 2015 ACT River Basin Master Manual update because changes to flood operations proposed by APC required further detailed study of flood risks at both projects." Draft SEIS at xxi. The Draft SEIS makes clear that some of the "further detailed study of flood risks" has still not occurred. Despite that, the TSP adopts APC's requested modifications to flood operations at both Weiss Lake and Logan Martin Lake.

Georgia offers the following comments for eight broad purposes: (1) to advocate that the modeling in the Draft SEIS confirms that the Corps should and—for legal reasons—must choose one of the alternatives using Georgia's storage accounting; (2) to request that the Corps both correct and provide additional detail on its Future Without Project Alternative; (3) to request that the Corps confirm in the Final SEIS that the Corps has legal authority to grant Georgia's request under the Water Supply Act; (4) to request that the Corps recalculate its cost of storage in the Final SEIS using the correct inputs; (5) to request that the Corps adequately study the legal authority and potential impacts from APC's Request; (6) to request that the Corps confirm that the Final SEIS can proceed with an alternative only addressing the State's Water Supply Request if the Corps cannot move forward with the APC request; (7) to show that the Final SEIS can select an alternative only reallocating from conservation storage; and (8) to point out aspects of the Draft SEIS that require clarification or correction prior to issuing the Final SEIS.

In addition, attached is a technical memorandum prepared by the Georgia Environmental Protection Division's ("EPD's") Water Supply Program ("EPD Tech Memo"), which is incorporated and adopted into these comments as Attachment 1. The EPD Tech Memo explains certain modeling errors in the Draft SEIS, uses modeling to show that alternatives using Georgia's storage accounting methodology have the same or better impacts than alternatives using the Corps' current storage accounting methodology, and presents modeling results comparing the impacts of specific proposed alternatives.

II. The Corps Must Select an Alternative that Uses Georgia's Proposed Storage Accounting Measures.

As part of its 2018 Water Supply Request, the State of Georgia asked the Corps to adopt Georgia's storage accounting methodology for determining the amount of storage available under existing and future water supply contracts at Allatoona Lake. Georgia made four specific requests. First, Georgia requested that the Corps honor the State's existing allocation of "made inflows" to the Cobb County-Marietta Water Authority ("Cobb-Marietta") as reflected in EPD Permit No. 008-1491-05 (Modified Nov. 7, 2014) ("Cobb-Marietta Permit"). The Cobb-Marietta Permit grants Cobb-Marietta the exclusive right to impound water released from Hickory Log **A**

Creek Reservoir and certain return flows in Cobb-Marietta's existing storage space in Allatoona Lake. Second, the State requested that the Corps credit made inflows in accordance with any future allocations by EPD. Absent a decision by the Corps to recognize these made inflows, the State next asked the Corps to provide a detailed and reasoned explanation for its decision. Finally, Georgia requested that the Corps adopt additional storage accounting measures related to determinations of when storage accounts are full and how the Corps allocates natural inflows when the Allatoona rule curve is not at full summer pool. In the Draft SEIS, the Corps failed to adopt an alternative utilizing Georgia's storage accounting and failed to provide a detailed and reasoned explanation for its decision.

A. The Corps Must Grant Georgia's Request to Credit Made Inflows.

1. The Corps is Legally Required to Defer to Georgia's Existing Allocation of Water Rights. **B**

The Corps has long recognized that the purpose of allocating water supply storage in a reservoir is to provide storage space and not to allocate water. The Corps' consistent and long-stated policy has been that the Corps contracts for *storage space in a reservoir,* but a state must *provide water rights* to a user. Because the Corps does not allocate water rights, it must defer to states—like Georgia—that do.

Georgia is the protector and manager of its water resources, and the State acts through its agencies to protect its water and citizens through permits that control the allocation of such resources. Georgia's Constitution provides for the State's control over its waters. "[T]he General Assembly shall have the power to provide by law for: (1) Restrictions upon land use in order to protect and preserve the natural resources, environment, and vital areas of this state." Section VI, Paragraph II. This constitutional mandate is codified in the Georgia Water Supply Act. The Act provides:

> The people of the State of Georgia are dependent upon the rivers, streams, lakes, and subsurface waters of the state for public and private water supply. . . . To achieve this end, the government of the state shall assume responsibility for the quality and *quantity of such water resources* and the establishment and maintenance of a . . . *water quantity control program* adequate for present needs and designed to care for the future needs of the state. . . .

O.C.G.A. § 12-5-21(a) (emphasis added). The Act explains how this will be done:

> The achievement of the purposes described in subsection (a) of this Code section requires that the Environmental Protection Division . . . have the *authority to regulate the withdrawal, diversion, or impoundment of the surface waters* of the state, ...

Id. at § 12-5-21(b) (emphasis added).

The State manages large water withdrawals under a regulated riparian and reasonable use permit system. This means that the State issues permits to riparian users in a manner designed to allow riparian owners to fulfill their water needs while not unreasonably infringing on the use of water by other riparian owners. Georgia has a specific rule addressing how it permits water withdrawals, diversions, and impoundments from federal projects:

> When a user has contracted for the right to utilize storage space within a reservoir that is owned or operated by an agency of the federal government, the Director shall retain authority to allocate any State water rights subject to regulation under O.C.G.A §12-5-31, including the right to withdraw State waters from the project as well as the right to impound made inflow to the reservoir. When the Director allocates to a specific user made inflows to a reservoir, pursuant to the permitting authority and procedure provided by O.C.G.A. §12-5-31, that user will have the right to impound such flows in the storage space for which it has contracted, to the extent storage space is available.

Ga. Comp. R & Regs. 361-3-6-.07(16) ("Made Inflow Rule").

The State has exercised this authority by allocating return flows created by or for Cobb-Marietta in Allatoona Lake to Cobb-Marietta through the Cobb-Marietta Permit. Legally, the Corps must recognize and account for Georgia's allocation to Cobb-Marietta made pursuant to the Made Inflow Rule and consistent with the principles of state sovereignty.

The Corps' treatment of return flows in the Draft SEIS does the opposite. It intrudes on Georgia's right to allocate water within its borders because the TSP ignores Georgia's existing allocation of its water resources. The Cobb-Marietta Permit allocates all return flows made by or for Cobb-Marietta into Allatoona Lake to Cobb-Marietta to impound and store provided the total volume of water held in its storage does not exceed 12,485 acre-feet of water. Under the TSP, however, the Corps' storage accounting would allocate all return flows—regardless of source—proportionally to Cobb-Marietta. Because Cobb-Marietta's currently contracted storage occupies 4.61% of the reservoir conservation storage, the storage accounting used in the TSP allocates only 4.61% of the return flows made by or for Cobb-Marietta to Cobb-Marietta. To the extent the Corps has a different legal understanding of Cobb-Marietta's Permit, the Corps must defer to the State's interpretation which is explained above. Under Georgia law, the Corps may not take 95.39% (100% State allocation minus 4.61% of the Corps' allocation) of return flows attributed to Cobb-Marietta and allocate those flows to other reservoir users, thus infringing on Cobb-Marietta's legal right to that water.

If the Corps selects the TSP in its Record of Decision, the Corps will be (1) allocating water rights in contravention of decades of Corps policy, and (2) disregarding the existing allocation already made by Georgia to Cobb-Marietta though the Cobb-Marietta Permit by crediting Cobb-Marietta with only a fraction of the return flows Georgia has granted it. Because Georgia has already allocated specific return flows to Cobb-Marietta, ignoring that allocation is no longer an option available to the Corps. Instead of placing itself in this indefensible position, the Corps must instead select an alternative in the Final SEIS and ROD that utilizes Georgia's storage accounting methodology, which is consistent with Georgia law.

2. Encouraging made inflows reflects sound water management policy.

Aside from the legal requirement that the Corps recognize Georgia's existing allocation of its water resources, utilizing a storage accounting methodology that credits made inflows is sound water policy. Georgia's state-wide water plan favors and incentivizes made inflows as a form of water reuse and efficient use of the State's water resources. Creating made inflows can be costly for a user, but users—like Cobb-Marietta—spend this money because they see the benefit in creating flows that would not otherwise exist. As discussed above, in Georgia, one of the greatest benefits is that the State can, under specific circumstances, allocate those made inflows to the user that created them. The storage accounting methodology selected in the TSP, however, results in the reverse incentive. If users receive only a small percentage of credit for made inflows, then that lessens the incentive for users to build storage projects like Hickory Log Creek, construct water reclamation facilities, and otherwise engage in management practices that increase the sustainability of water supplies. Made inflows to a reservoir increase the yield of the reservoir by reducing net withdrawals, thereby keeping reservoir levels higher and mitigating any impact of water supply withdrawals. **C**

The Final SEIS should incentivize smart water policy that preserves Allatoona Lake as a water supply source for the future. Georgia's storage accounting methodology does precisely that and should be adopted in the Final SEIS. If the Corps chooses otherwise, Georgia requests that the Final SEIS address why the Corps does not want to incentivize return flows to Allatoona Lake.

B. The Draft SEIS Does Not Provide a Reasonable Explanation for its Failure to Adopt an Alternative Using Georgia's Storage Accounting Methodology.

The Draft SEIS provides two—or maybe three—reasons why the Corps did not choose an alternative with Georgia's storage accounting as the TSP: (1) Georgia's storage accounting methodology may or may not be consistent with current law; (2) the Corps can only implement Georgia's storage accounting methodology after or if a pending rule is promulgated; and (3) Georgia's methodology is not consistent with South Atlantic Division ("SAD") storage accounting. None of these reasons, however, are legally sound. **D**

To begin, Georgia's storage accounting is consistent with current law. The Corps acknowledges that all federal action alternatives considered in the Draft SEIS, including those alternatives that utilize Georgia's storage accounting methodology, "can be implemented under current law." *See* Draft SEIS at 4-18, line 27. Yet, in a separate part of the Draft SEIS, the Corps indicates that any alternative utilizing Georgia's storage accounting methodology would not be "implementable by current law, USACE policy *and* practice." *See* Draft SEIS Table 4-3 at 4-13 (emphasis added). These two statements cannot be reconciled: Georgia's storage accounting methodology cannot be both "implemented under current law" and not "implementable by current law." The Corps addressed this discrepancy as part of its Frequently Asked Questions. *See* U.S. Army Corps of Engineers, *Frequently Asked Questions,* https://www.sam.usace.army.mil/Missions/Planning-Environmental/Allatoona-Lake-Water-Supply-Storage-Reallocation-Study-and-Updates-to-Weiss-and-Logan-Martin-Reservoirs-

Project-Water-Control-Manuals/ACR-FAQ/, (last visited January 16, 2020) ("FAQ"). Question 24 and, specifically Footnote 1, confirm that all the alternatives carried forward by the Corps in the Draft SEIS, including the alternatives utilizing Georgia's storage accounting methodology, "could be implemented consistent with currently applicable law." Therefore, Georgia requests that the Final SEIS delete the language in Table 4-3 suggesting that Georgia's storage accounting is not implementable under current law and confirm that Georgia's storage accounting can legally be implemented.

Second, the Draft SEIS notes a pending national rule that will address some, but not all, of the storage accounting issues raised as part of Georgia's Water Supply Request. *See* 2016 Notice of Proposed Rulemaking, U.S. Army Corps of Engineers, Use of U.S. Army Corps of Engineers Reservoir Projects for Domestic, Municipal & Industrial Water Supply, 81 Fed. Reg. 91556 (Dec. 16, 2016) (the "Water Supply Rule"). The Draft SEIS states that implementing "an alternative that utilizes the State of Georgia's recommended storage accounting methodology would be contingent upon a final decision" on the Water Supply Rule. *See* Draft SEIS at 4-18, lines 30-32. On January 21, 2020, however, the Corps announced that it was withdrawing the Water Supply Rule with no stated intention of issuing a new national rule at any point in the future. Therefore, the now-withdrawn Water Supply Rule does not prevent the Corps from adopting Georgia's storage accounting methodology in the Final SEIS. Georgia requests that the Corps delete any language suggesting otherwise. Because there will be no national rule addressing storage accounting and the treatment of made inflows, the Corps must address these issues—as they relate to Allatoona Lake—as part of its response to Georgia's Water Supply Request in the Final SEIS. Further, in announcing his intention to direct the Corps to withdraw the Water Supply Rule, President Trump stated that one purpose of withdrawing the rule was to "allow states to manage their water resources based on their own needs." This supports Georgia's position that the Corps must defer to Georgia's allocation of its water resources and adopt Georgia's storage accounting methodology.

Finally, the Draft SEIS suggests that Georgia's storage accounting methodology is inconsistent with SAD's storage accounting. *See* Draft SEIS at 4-18, lines 28-29. However, Georgia is not aware of any formal written SAD storage accounting policy setting consistent storage accounting procedures for all Corps Districts within the SAD, and the Draft SEIS cites no such policy document. Footnote 1 of the Corps' responses to Frequently Asked Questions states only that Georgia's storage accounting methodology is "not consistent with current USACE *practice* at Allatoona Lake." (Emphasis in original). If a written policy exists,[2] the Corps should include a reference to it in the Final SEIS. If such written policy does not exist, then the Corps should clarify its statement regarding any SAD policy in the Final SEIS.

If the Corps concedes, as it does in its responses to its Frequently Asked Questions, that adopting Georgia's storage accounting methodology is consistent with current law, that its decision on storage accounting at Allatoona Lake cannot be affected by the now-withdrawn Water Supply Rule, and that there is no formal Corps policy on storage accounting, then the Corps has not provided any explanation—let alone the reasoned one requested in Georgia's

[2] Even if such a policy does exist, however, it has certainly not been part of a rulemaking process and therefore would not be binding upon the Corps.

Water Supply Request—for failing to utilize Georgia's storage accounting methodology. Therefore, the Final SEIS must either select an alternative utilizing Georgia's storage accounting methodology or provide a reasoned explanation for why it does not.

C. The Draft SEIS Supports Selecting Alternative 13.

In addition to the legal and policy reasons discussed above, the impacts analysis in the Draft SEIS supports selecting an alternative using Georgia's proposed storage accounting. The Draft SEIS demonstrates that Alternative 13[3] has the most beneficial and least negative impacts of all alternatives, including the TSP. *See* EPD Tech Memo at pp. 5-18. Alternative 13 and the TSP are identical except for the selected storage accounting methodology—the TSP uses the Corps' current storage accounting and Alternative 13 uses Georgia's proposed storage accounting. While NEPA proscribes a process and not an outcome, the Corps may not arbitrarily choose an alternative. The Corps is legally required "to examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 42–43 (1983). Here, the Draft SEIS does not explain why the Corps chose the TSP over Alternative 13, objectively the best alternative. Georgia requests that the Final SEIS and ROD select Alternative 13 instead of the TSP. If the Corps chooses not to select Alternative 13, the Final SEIS must include a "satisfactory explanation" as to why the Corps did not choose the most beneficial and least negative alternative. **E**

III. The Draft SEIS Model of the Future Without Project Alternative Does Not Reflect the Reality of the ACT Basin in the Absence of a Storage Reallocation.

Unlike many Environmental Impact Statements, the Draft SEIS contains both a No Action Alternative ("NAA") and a Future without Project ("FWOP") Alternative. Having both alternatives in the Draft SEIS is useful: the NAA provides the Corps a current model of the ACT Basin,[4] and the FWOP, if correctly modeled as discussed below, provides the Corps a model of the ACT Basin in 2050 in the absence of a reallocation. Because all the action alternatives are 2050-looking, comparing the action alternatives to the FWOP provides the Corps critical information that is otherwise masked in an NAA comparison. That is, a comparison between the action alternatives and the NAA provides the Corps information on the impacts resulting from the State's requested reallocation *and* the impacts associated with an increase in water supply demand between current and 2050. That increased demand exists regardless of a reallocation and necessarily has associated impacts. A comparison between the action alternatives and the FWOP allows the Corps to distill the impacts of just the State's requested reallocation because **F**

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[3] As explained in the EPD Tech Memo, the Draft SEIS does not correctly model Alternative 13. EPD corrected the Draft SEIS's error and created an Alternative 13A. EPD Tech Memo at pp. 3-4. The conclusions discussed here hold true for the corrected Alternative 13A.

[4] As explained in the EPD Tech Memo, there is an error in the NAA model—the NAA model overestimates basin withdrawals by placing 35 mgd on Richland Creek to allegedly meet Paulding County's water supply demand even though Paulding County's 2006 demand is already accounted for out of Allatoona Lake. EPD Tech Memo at pp. 21-22.

both the FWOP and the action alternatives have the same 2050 demand. Because the FWOP provides such valuable information, the Final SEIS must model it correctly.

As modeled in the Draft SEIS, the FWOP necessarily rests on two false assumptions—first, that Georgia would allow the more than 915,000 Georgians who rely on Allatoona Lake for water supply to go without water and, second, that in the absence of a reallocation from Allatoona Lake, Georgia would not pull water from anywhere else in the ACT Basin. Neither of those assumptions is correct. And, more importantly, the Draft SEIS does not adequately account for either situation. The State, therefore, requests that the Final SEIS (1) include a discussion of the severe impacts of water shortages in the FWOP; or (2) model or evaluate what the future will look like in the absence of a reallocation from Allatoona Lake.

With respect to the first assumption—that Georgia would allow massive water shortages to take place—the Draft SEIS simply acknowledges that there would be "adverse" consequences to municipal and industrial water supply in the Etowah River (including Allatoona Lake). Draft SEIS at Table 5-1 at 5-7. Georgia requests that the Final SEIS include a discussion of the impacts of the water shortages. Under the FWOP alternative, the Corps' modeling demonstrates that Cobb-Marietta would experience water shortages 23% of the time and Cartersville would experience water shortages 38.4% of the time. This means that taps for residents, hospitals, schools, fire departments, emergency responders, and businesses would run dry more than a third of the time (e.g., two or more days of every week). The consequences would be catastrophic, and Georgia would not let this happen. Based on those consequences, Georgia maintains that the Final SEIS should re-designate the "adverse" impact to a "substantially adverse" impact.

This leads to the second false assumption—that in the absence of a federal reallocation, Georgia would not pull water from elsewhere in the Georgia portion of the ACT Basin—an assumption undermined by the Draft SEIS. The Draft SEIS evaluates nine non-federal water supply options as potential alternatives to a reallocation from Allatoona Lake. *See* Draft SEIS Table 4-4 at 4-14 to 4-15. Of the nine non-federal alternatives evaluated in the Draft SEIS, the Corps only carried forward two: Alternative 15, constructing a pipeline from Hickory Log Creek to the Wyckoff Water Treatment Plant; and Alternative 19, constructing new reservoirs. *Id.* at Table 4-5 at 4-16. Both the Hickory Log Creek pipeline and any new reservoirs would necessarily be in the ACT Basin. *See* Draft SEIS, App. B, Att. 2, Allatoona Lake Reallocation - Evaluation of Potential Alternatives ("Hazen Report") at 9-10, 14-15. And, because the new reservoir option would impound water from the Georgia portion of the ACT Basin, the impacts on the state-line flow would result in impacts similar to a reallocation from Allatoona Lake. The Draft SEIS does not model or consider these hydrologic impacts. Similarly, the Draft SEIS does not consider the negative environmental impacts associated with either of these two alternatives, including the impacts associated with building the pipeline (disturbing over 2,000 linear feet of wetlands and 20 stream crossings) or constructing two new reservoirs from scratch (the loss of forested, wetland, and stream habitats). *See* Hazen Report at 10, 14. Thus, as modeled in the Draft SEIS, the FWOP underestimates the impacts anticipated in the ACT Basin in 2050. Georgia believes that if the Corps models or even evaluates each of these alternatives, the likely impacts will be more adverse than those shown in the FWOP and more realistic. Georgia, therefore, requests that the FWOP model in the Final SEIS include the foreseeable non-federal alternatives.

IV. The Corps has the Legal Authority to Reallocate Storage to Meet Georgia's 2050 Demand under the Water Supply Act.

The Water Supply Act of 1958 provides the Corps with legal authority to reallocate storage in federal reservoirs for the benefit of municipal and industrial water supply. 43 U.S.C. §390b. The Corps may reallocate storage so long as the reallocation will not "seriously affect the purposes for which the project was authorized, surveyed, planned, or constructed," or "involve major structural or operational changes." 43 U.S.C. §390b(e). Georgia believes the Draft SEIS evidences that the Corps has the requisite legal authority under the Water Supply Act to grant Georgia's Request. Georgia, therefore, requests that the Final SEIS include an additional and specific discussion of the Corps' Water Supply Act legal authority. **G**

Allatoona Lake has seven federally authorized purposes: flood risk management, hydropower, navigation, recreation, water supply, water quality, and fish and wildlife. Draft SEIS at Table 2-2 at 2-4. Table 4-6 of the Draft SEIS contains a comparison of the NAA, FWOP, and nine action alternatives across four of those purposes: hydropower, flood risk, navigation, and recreation. Draft SEIS at 4-19. A review of this chart as a whole demonstrates that none of the action alternatives cause a major operational change to or a serious effect on any of the four project purposes evaluated. By way of example, as compared to the NAA, the hydropower capacity value of the TSP is nearly identical—$265.80 million under the NAA and $265.88 million under the TSP. *Id.* Similarly, if there is a flood equivalent to the 1979 flood, there would be, under modeled worst-case conditions, only a 3.6% increase in the dollar value of flood impact damages attributable to changes at Allatoona Lake between the NAA and TSP. *See id.,* Draft SEIS at Table 4-8 at 4-21. The percent of time a seven-and-a-half-foot navigational channel will be available is nearly identical between the NAA (85.9%) and the TSP (85.1%). *Id.* at Table 4-6. Finally, annual recreational dollars at Allatoona Lake increase under the TSP by $0.7 million ($73.8 million under the NAA and $74.5 million under the TSP).

Table 5-1 addresses the three federally authorized purposes—water supply, water quality, and fish and wildlife—not addressed in Table 4-6. *See* Draft SEIS at Table 5-1 at 5-2. This table also demonstrates that the reallocation falls squarely within the Corps' Water Supply Act authority. For water quality above Weiss Lake (the largest section of the ACT Basin potentially affected by the Allatoona Reallocation), water quality in the TSP is generally the same or better than the water quality under the NAA. *See* Draft SEIS at 5-2 to 5-4. The same is true of the Biological Resources (fish and wildlife) impacts—the impacts from the TSP are generally the same or better than those under the NAA for the relevant portion of the Basin. *See id.* at 5-5 to 5-7. Finally, with respect to water supply, the TSP is substantially better than the NAA because of the reallocation of storage from Allatoona Lake.

Georgia maintains that the above discussion and the related charts and modeling in the Draft SEIS prove that the reallocation from Allatoona Lake in the TSP will not cause a major operational change or a serious impact on any project purpose at Allatoona Lake. As a result, the Corps has ample authority under the Water Supply Act to implement the reallocation provided for in the TSP. Moreover, Georgia maintains that the Draft SEIS demonstrates that the Corps could choose any of the Allatoona Lake reallocation alternatives (Alternatives 3, 4, 5, 8, 10, 11, 12, and 13) and still be well within its legal authority under the Water Supply Act. Georgia requests that the Final SEIS include an acknowledgement of the Corps' legal authority under the Water Supply Act to select any of the Allatoona Lake reallocation alternatives.

V. The Draft SEIS Overestimates the Projected Cost of Storage.

Engineering Regulation 1105-2-100 (April 22, 2000) governs how the Corps calculates the cost of reallocated storage. Under that Engineering Regulation, the Corps must generally consider four pricing methods—benefits foregone, revenues foregone, replacement costs, and updated cost of storage—and then choose the method yielding the highest cost. ER 1105-2-100 at E-216-17. Table 7-3 includes a summary of the storage costs associated with each of the four options for the Allatoona Lake storage reallocation. Draft SEIS at 7-19. Based on the numbers, the Draft SEIS chooses to calculate the cost of the Allatoona Lake storage based on the "updated cost of storage" method. *Id.* Using this method, the Draft SEIS determines that the cost of reallocating storage from Allatoona Lake is $21,968,000. Georgia maintains this number is incorrect and the actual cost of the storage should be substantially lower. As a result, Georgia requests that the Corps re-evaluate its "updated cost of storage" calculation and include the corrected number in the Final SEIS. **H**

The Corps estimates the "updated cost of storage" as follows: "by updating the cost of the *joint use* features from the *midpoint of construction* to the fiscal year in which the reallocation of storage is approved. The updated cost of the joint use features is then multiplied by the proportion of useable storage that is to be reallocated to estimate the value of the reallocated storage." Draft SEIS at App. B at B-50 (emphasis added). To determine the costs of the "joint use" features, the Corps must "*exclude* infrastructure costs allocated to specific project purposes such as *recreation facilities*." *Id.* at B-52. The Draft SEIS, however, specifically *includes* the costs allocated to recreation facilities in its calculation. The Draft SEIS adds $592,000 to the updated cost of storage for the "[a]dditional annual costs for *modifications to recreation features*." *Id.* Similarly, the Draft SEIS *includes* $965,000 of 1939-dollar costs ($36,508,000 in 2020-dollars) for construction of the Power Plant. *Id.* at B-54. Georgia requests that the Corps remove the (1) half-million-dollar cost—an infrastructure cost attributable to recreational facilities— and (2) thirty-six million-dollar cost—an infrastructure cost attributable to hydropower—from the "updated cost of storage calculation" in the Final SEIS and subsequent water supply contract.

To determine the "midpoint of construction," the Corps must determine the midpoint between "the start of the month when lands for the project were first acquired or on the date when the first construction contract was awarded whichever was earlier" and "the end of the government FY in which final deliberate impoundment of the reservoir pool was initiated." *Id.* The Draft SEIS uses 1939 as the "midpoint of construction" date. This date, however, is entirely too early to be a midpoint. We know from elsewhere in the Draft SEIS that the Federal Government did not start to acquire lands for Allatoona Lake until "beginning in the 1940's." Draft SEIS at App. A at 3-1. The project was not authorized until 1941 (*Id.* at 2-7; Flood Control Act of 1941 (Public 35 Law (P.L.) 77-228)), and the contract for the construction of the main dam was not awarded until April 29, 1946. *Id.* at 3-2. Thus, the start date for determining the "midpoint of construction" is, at the earliest, 1941 (when the Corps began acquiring land). The end date—the final impoundment of the pool—is either 1949 (when the filling of the reservoir commenced) or 1950 (when the reservoir reached elevation). *Id.* Assuming, conservatively, a start date of 1941 and an end date of 1949, the "midpoint of construction" can be no earlier than 1945. Georgia understands that moving the "midpoint of construction" six years forward from 1939, the year used in the Draft SEIS calculation, to 1945 creates substantial savings in the "updated cost of storage." Georgia, therefore, requests that the Final SEIS use 1945 or later as the "midpoint of construction" date for storage cost calculations.

VI. The Draft SEIS Fails to Adequately Study Proposed Changes to Alabama Power Projects.

In addition to Georgia's Water Supply Request, the Draft SEIS includes a request by APC to lower the established maximum surcharge levels and reduce winter drawdown levels at Weiss Lake and Logan Martin Lake. For Weiss Lake, APC proposes lowering the maximum surcharge elevation from 574 feet to 572 feet and raising the winter drawdown elevation from 558 feet to 561 feet. *See* Draft SEIS at xxii, lines 14-16. For Logan Martin Lake, APC proposes lowering the maximum surcharge elevation from 477 feet to 473.5 feet and raising the winter drawdown elevation from 460 feet to 462 feet. *See* Draft SEIS at xxii, lines 16-18. APC's requested changes would result in a substantial reduction in available flood storage that the Draft SEIS has not fully legally or factually analyzed as required by NEPA and by Public Law 83-436, the statute authorizing private development of power projects on the Coosa River. *See* Draft SEIS, Table 4-2 at 4-11. **I**

A. NEPA Requires a Full Study of Potential Impacts Prior to Selecting a Proposed Alternative.

NEPA requires all reasonable alternatives be rigorously explored and objectively evaluated. 40 C.F.R. § 1502.14(a); *see also* 42 U.S.C. § 4332(2)(E). This requirement applies to the Weiss Lake and Logan Martin Lake flood control operational changes contained in the TSP. However, by its own admission, the Corps has not yet considered several critical aspects of APC's proposal, including the effects of loss of flood storage, impacts on changes to flood operations, and how APC's pending FERC license will affect all APC operations in the Basin. **J**

NEPA requires the Corps to know the answers to these questions in order to rigorously explore and objectively evaluate whether it can grant APC's Request. NEPA also requires the Corps to make its analysis of these questions available to the public early in the process to allow informed comments on the Corps' analysis. The Draft SEIS acknowledges that the Corps does not yet have this information but states that the Corps will analyze and address the outstanding questions and issues prior to issuing the Final SEIS. *See e.g.,* Draft SEIS at xxii at lines 22-23 (noting that the Corps must "conduct additional analysis of impacts to private property both upstream and downstream of Weiss and Logan Martin dams."), Draft SEIS at 4-18, lines 19-25 (acknowledging that APC has not provided all the information the Corps needs to fully study the potential impacts of the substantial reductions in available flood storage).

However, NEPA requires more—a central tenet of NEPA is to ensure that an agency will inform the public that it has considered environmental concerns in its decision-making process. *See Baltimore Gas and Electric Co. v. Natural Resources Defense Council*, 462 U.S. 87 (1983). If the Corps waits until the Final SEIS to address central issues related to APC's proposal, the public will not have sufficient opportunity to review the new analysis to ensure that the Corps has appropriately considered it. If the Corps chooses to move forward without fulfilling both the spirit and the text of NEPA, the State requests that the Corps move forward with just the Allatoona Lake reallocation and delay the APC request until the Corps has sufficiently considered and provided the public with notice of all aspects and impacts of APC's request.

Absent full consideration under NEPA, Georgia fears the Final SEIS addressing APC's request will be fatally deficient. For example, APC's request would result in a substantial reduction in available flood storage at Weiss Lake and Logan Martin Lake. At Weiss Lake, APC's proposal to lower the maximum surcharge elevation from 574 feet to 572 feet would result in a loss of 95,759 acre-feet of dedicated flood storage (24%) with a total loss of 30% in the winter resulting from raising the winter drawdown elevation from 558 feet to 561 feet. *See* Draft SEIS at 4-21, lines 4-6. At Logan Martin Lake, APC's proposal to lower the maximum surcharge elevation from 477 feet to 473.5 feet would result in a loss of 85,573 acre-feet of dedicated flood storage (35%) while also raising the winter drawdown elevation from 460 feet to 462 feet. *See* Draft SEIS at 4-21, lines 6-7. While the Draft SEIS categorizes the incremental flood risk of the proposed change in APC operations as "Negligible/no change," Georgia believes the Final SEIS should explain how the Corps reached that conclusion.

To account for the dramatic reduction in available flood storage, in anticipation of a flood event, APC proposes to modify flood operations at Weiss and Logan Martin Lakes by releasing 20,000 extra cfs of water (from 50,000 cfs to 70,000 cfs) to keep Logan Martin and Weiss within the proposed surcharge elevations. Draft SEIS at 2-23, lines 7-10. The Draft SEIS refers to the extra 20,000 cfs as a "non-damaging" release but does not explain why the Corps has determined that substantial increase of 20,000 cfs to be "non-damaging." *Id* at 7-4, lines 8-12. And, in fact, the "non-damaging" qualifier seems to be undercut by two separate statements in the Draft SEIS. *See* EPD Tech Memo at pp. 23-24.

First, the "non-damaging" designation appears to be premature given the Draft SEIS's statement that the Corps "*will* conduct additional analysis of impacts to private property both upstream and downstream of Logan Martin Dam." *Id.* (emphasis added). If the Corps has not yet fully studied the impacts of the new release, how can the Draft SEIS refer to such releases as "non-damaging"? Second, modeling results in the Draft SEIS indicate that APC's proposed changes could result in an extra 4.68 feet of flooding downstream of Weiss Lake. *See* Draft SEIS App. C, Att. 4: Allatoona-Coosa Reallocation Study-Flood Risk Management Impact Analysis at C-30. Also, the additional 20,000 cfs release from Logan Martin Lake could result in raising the Childersburg stage height by more than 2.5 feet, reaching above the flood stage designated by the National Weather Service. *See* EPD Tech Memo at p. 24. How did the Corps determine that a potential 4.68 feet increase of flood water below Weiss or over 2.5 feet increase at Childersburg is "non-damaging"? Even if these potential increases will not affect structures, what will they affect? Does APC have easements for this additional flooding?

Further complicating the Corps' ability to fully analyze APC's request is that the Corps cannot adequately anticipate APC operations until the Federal Energy Regulatory Commission ("FERC") issues a new license for APC's Coosa River Projects. A 2018 court decision from the U.S. Court of Appeals for the D.C. Circuit overturned FERC's decision and vacated APC's license. *See American Rivers v. FERC,* 895 F.3d 32 (D.C. Cir. 2018). As a result, APC is operating subject to a provisional license while FERC is conducting additional evaluation under

NEPA and the Endangered Species Act prior to issuing APC a new license. The terms of the license will impact how APC must operate both Weiss Lake and Logan Martin Lake in the future. Because the Corps does not currently know the terms of APC's new license, the Corps cannot adequately model and anticipate how APC will operate those projects, and the effects those FERC-related operations will have on flood control operations.

As discussed above, NEPA requires the Corps' analysis and the underlying information be made available to the public prior to a Final SEIS. Doing so here will likely require the Corps to separate Georgia's Request from APC's Request given the Corps' impending March 2021 court deadline for responding to Georgia's Request.

B. The Draft SEIS does Not Establish that APC's Proposed Changes Comply with Statutory Requirements.

APC constructed and operates Weiss Lake and Logan Martin Lake subject to the requirements set forth in Public Law 83-436, which amended the River and Harbor Act of 1945 to allow the private development of certain water resource projects on the Coosa River. Although APC operates these projects subject to a FERC license, Public Law 83-436 provides that the Corps maintains authority over the projects as to flood control and navigation. **K**

Public Law 83-436 sets three express limits on APC's ability to modify flood control operations at its projects on the Coosa River:

1. The projects must continue to provide the maximum flood control that is economically feasible.
2. Total flood control storage of the Coosa projects may not be less than the storage of the valley area displaced by construction of the projects.
3. Total flood control storage may not be less in quantity and effectiveness than the amount of storage provided by the originally authorized Howell Mill Shoals project.

While the Draft SEIS addresses the second limitation, it does not address the first, and it does not adequately address the third.

The first limitation—whether APC's proposed changes to flood storage at Weiss and Logan Martin will continue to provide for maximum flood control—is key. Yet, the Draft SEIS acknowledges that the Corps has not yet made this determination, stating that APC "has not yet provided documentation to support the requirement that [granting APC's request] is providing the maximum flood control that is economically feasible." *See* Draft SEIS at 4-18, lines 23-24. It is not clear how APC, after operating under the current flood control provisions for decades, can now establish that it is not economically feasible to continue providing the same level of flood protection. Due to the potential impact of APC's proposed reduction in flood storage and revision in flood risk operations, the Corps should provide the public an opportunity to review its analysis of this statutory requirement.

With respect to the third limitation, the Draft SEIS states that the Corps has reviewed documentation from APC and is "satisfied that the change in flood operations still provides more flood storage than the displaced valley storage," but the Draft SEIS does not explain why the

Corps is "satisfied" and it does not provide that documentation for public review. *See* Draft SEIS at 4-18, lines 20-21. The Final SEIS should provide additional information regarding the Corps' analysis of this requirement and should provide the documents it relies on to make that determination.

Based on the current discussion in the Draft SEIS, the Corps does not have enough information to determine that APC's proposed flood storage changes and revisions to flood risk operations comply with the applicable statutory requirements. Nor has the Corps made the necessary documents available for public review. Before selecting an alternative adopting APC's requested changes, the State requests that the Corps complete and explain its analysis of the limiting factors in Public Law 83-436. The State further requests that the Corps make all relevant information related to that analysis available for public review.

VII. The Final SEIS may Proceed with the Allatoona Storage Reallocation without APC's Requested Flood Control Changes.

Once the Corps has completed a full review of APC's proposed flood control changes, the Corps may determine that APC's request poses an unacceptable downstream flooding risk or does not comply the with the statutory requirements found in Public Law 83-436. Or, the Corps may still have insufficient information to fully analyze APC's request prior to the March 2021 deadline for responding to Georgia's Water Supply Request. If the Corps is unable or unwilling to implement APC's proposed changes at Weiss Lake and Logan Martin Lake within the required timeframe, the record contained in the Draft SEIS supports a decision by the Corps to issue the Final SEIS reallocating storage from Allatoona Lake without also addressing APC's requested changes. **L**

Alternatives 3, 4, 5, and 8 all reallocate storage at Allatoona Lake without including APC's requested changes. *See* Draft SEIS Table 4-5, page 4-16. Table 5-1 indicates that, in almost every respect, these alternatives are more beneficial, or at least no worse, than Alternatives 9, 10, 11, 12, and 13—the alternatives that include APC's proposed changes. *See* Draft SEIS, Table 5-1, pages 5-2 – 5-8. Table 5-1 shows that one of the benefits of the Allatoona-reallocation-only alternatives is that without APC's requested changes, water quality below Weiss Lake improves. In addition, the Draft SEIS includes an analysis of Alternative 3, which does not include APC's requested changes, fulfilling the Corps' obligations under NEPA to fully analyze alternatives that include the reallocation of storage in Allatoona Lake to meet Georgia's projected 2050 needs. Therefore, if the Corps determines that APC's proposed changes are not feasible, or if APC does not provide the necessary information in time to meet the Corps' March 2021 deadline for responding to Georgia's Water Supply Request, the existing record is sufficient for the Corps to grant just Georgia's request in the Final SEIS.

VIII. The Final SEIS may Proceed with a Reallocation Entirely from Conservation Storage.

The TSP grants Georgia's 2050 water supply request by reallocating storage from both the conservation and the flood pool. In addition to the TSP's hybrid reallocation, the Draft SEIS analyzed other alternatives reallocating storage only from the conservation pool. Alternative 10 is one such example. Alternative 10 is exactly the same as the TSP except that Alternative 10 **M** reallocates all storage from the conservation pool only. By comparing the impacts on the seven authorized purposes outlined in Table 5-1 for Alternative 10 and the TSP, we can isolate the differences (or lack thereof) in impacts between a hybrid reallocation (TSP) and a conservation pool-only allocation (Alternative 10).

In terms of water supply, flood risk management, hydropower, and navigation, the impacts between the TSP and Alternative 10 are identical. The impacts from both Alternative 10 and the TSP are very similar for fish and wildlife conservation. And, more importantly, as compared to the NAA, both Alternative 10 and the TSP have either "slightly beneficial" impacts or "negligible/no change" impacts on fish and wildlife conservation. The impacts on water quality between the TSP and Alternative 10 are also very similar, with Alternative 10 having slightly more positive and slightly fewer negative impacts than the TSP. Finally, for impacts on recreation, Alternative 10 and the TSP are identical except with regard to Allatoona Lake. Because the entire reallocation in Alternative 10 is coming from conservation storage, Allatoona Lake's level will be lower. As a result, the impact on recreation at Allatoona Lake from Alternative 10 is "slightly adverse" while the same impact from the TSP is "slightly beneficial." See Draft SEIS at Table 5-1.

The above comparison analysis demonstrates that with certain isolated exceptions, the impacts between an all conservation reallocation (Alternative 10) and a hybrid reallocation (TSP) are nearly identical. This analysis provides the Corps with a sufficient record to choose an all conservation reallocation in the Final SEIS or ROD should it decide to.

IX. Aspects of the Draft SEIS Require Corrections or Clarifications in the Final SEIS.

A. Comments on the Draft SEIS

1. Figures 2-6, 2-10, and 2-12 contain dated information. The Corps should update storage volumes using updated information. **N**
2. Section 3.1.1.5.3 (Page 3-9) (Lines 13-25): This paragraph states that the reported withdrawal numbers are from 2018. However, these withdrawal numbers are from 2006 (*See* Table 3-7). **O**
3. Section 3.1.2.1.7 Nonpoint Sources (Page 3-14) (Line 16): The Georgia Environmental Protection Division issues the fish consumption advisories, not the Georgia Wildlife Resources Division. **P**
4. Section 4.4.1.1 (Page 4-6) (Line 26): The sentence should read that the NAA uses 2006 water demands in the ResSim model instead of 2007. **Q**
5. Table 4-2 (Page 4-9): Among the values of storage reallocated, the number 52,775 acre-feet represents a total amount reallocated (including existing allocated storage), while the other reallocated storage values are incremental. **R**
6. Table 4-2 (Page 4-10): The second assumption in Georgia's recommended storage accounting methodology states: "All storage accounts are full at 840 ft." It should state: "All storage accounts are full at Guide Curve." **S**
7. Table 4-2 (Page 4-10): The third assumption in Corps' storage accounting should indicate that all storage accounts are full at either 840 or 841 feet, depending on summer pool level of the alternative. **T**

8. Table 4-6 (Page 4-19): Hydropower statistics are inconsistent with Appendix D (Hydropower Impact Analysis). **U**
9. Section 4.5.6 (Page 4-20) (Line 4): "Alternative 0, Alternative 1, and Alternative 2" should be Alternative 1, Alternative 1a, and Alternative 2. **V**
10. Table 4-7 (Page 4-20): The Percent Change from Base in the last column is calculated as the difference between the Proposed Structures Impaired and the Base Structures Impaired divided by the Proposed Structures Impaired. The difference should be divided by the Base Structures Impaired. Similar issues occur in Table 4-8 (Page 4-21), Table 4-9 (Page 4-21), and Table 4-10 (Page 4-22). **W**
11. Table 5-1 (Page 5-3): Phosphorus - Etowah River – Canton, GA to Allatoona Lake – Alternative 3 slightly adverse result needs to be shaded pink. **X**
12. Table 5-3 (Page 5-16): Georgia EPD was only able to partially replicate this table using the Corps' HEC-ResSim simulation results. Similar issues occur in Table 5-15 (Page 5-49). The Corps should provide a better articulation of how these tables were derived or the templates used in deriving these tables. **Y**
13. Section 5.1.2.2 (Page 5-27) (Lines 9-10): "Any deviations between Alternative 11 and the NAA over that three-year period would are minor as shown in the figure." "would are minor" should be "would be minor." **Z**
14. Section 5.2.2 (Page 5-35) (Line 12): Georgia's water temperature criteria are as follows: shall not exceed 90° F. At no time is the temperature of the receiving waters to be increased more than 5° F above intake temperature. *See* Ga. Comp. R. & Regs 391-3-6-.03. The increase will not be more than 1.5°F applies to estuarine waters. *See id.* Georgia's water quality standards do not contain seasonal changes to the above temperature standard. **AA**
15. Section 5.16.1 (Page 5-67) (Lines 5-7): The language suggests that the Corps can terminate a storage agreement based on some unforeseen conditions. The Corps needs to define what these conditions are. **AB**
16. Section 7.6.4 (Page 7-20) (Line 21): The annual first cost to the user is listed as \$21,968,000. According to Table 7.4, this is the total cost of storage. The annual cost of storage is listed as \$1,103,000. **AC**

B. Comments on the Master Manual (Appendix A.2 of Draft SEIS)

1. Pertinent Data (Page xvii) (Line 35): Lake area acres are listed as 41,150 acres, while the ResSim model uses a lake area of 39,210 acres. **AD**
2. Pertinent Data (Page xvii) (Line 44): Lake area acres are listed as 2,000 acres, while the ResSim model uses a lake area of 2,004 acres. **AE**
3. Pertinent Data (Page xviii) (Line 6): Lake area acres are listed as 574 acres, while the ResSim model uses a lake area of 570 acres. **AF**
4. Pertinent Data (Page xviii) (Line 15): Lake area acres are listed as 30,200 acres, while the ResSim model uses a lake area of 30,027 acres. **AG**
5. Pertinent Data (Page xviii) (Line 44): Lake area acres are listed as 12,000 acres, while the ResSim model uses a lake area of 11,795 acres. **AH**

6. Pertinent Data (Page xix) (Line 6): Lake area acres are listed as 5,850 acres, while the ResSim model uses a lake area of 5,855 acres. **AI**

7. Pertinent Data (Page xix) (Line 15): Lake area acres are listed as 5,880 acres, while the ResSim model uses a lake area of 5,937 acres. **AJ**

8. Pertinent Data (Page xix) (Line 25): Lake area acres are listed as 6,800 acres, while the ResSim model uses a lake area of 734 acres. **AK**

9. Table 1-1 (Page 1-3): **AL**
   - Weiss Top storage at top of flood pool is listed as 608,614 acre-ft but should be 608,641 acre-ft.
   - Martin Total storage at normal pool is listed as 1,667,814 acre-ft but should be 1,628,303 acre-ft. Martin surface area at normal pool is listed as 39,807 acres but should be 39,210 acres.
   - Yates Total storage at normal pool is listed as 55,992 acre-ft but should be 53,908 acre-ft. Yates surface area at normal pool is listed as 2,045 acres but should be 2,004 acres.
   - Thurlow Total storage at normal pool is listed as 18,494 acre-ft but should be 17,976 acre-ft. Thurlow surface area at normal pool is listed as 585 acres but should be 570 acres.
   - Claiborne total storage at normal pool is listed as 102,408 acre-ft but should be 102,480 acre-ft.

10. Figure 2-1 (Page 2-2): Listed Allatoona storage of 270,247 acre-feet is not consistent with storage of 281,247 acre-feet listed in Table 1-1. **AM**

11. Section 2-05 (Page 2-12) (Lines 7-8): States that reservoir covers approximately 5,890 acres, while ResSim model uses a value of 5,937 acres. **AN**

12. Table 4-1 (Page 4-1): The owner of R.L. Harris should be APC, not APO. **AO**

13. Section 4-05 (Page 4-10) (Line 5): Update information in Tables 4-5, 4-6 and 4-7 as referenced in Preparer's Note. **AP**

14. Section 6-02 (Page 6-2) (Lines 38-39): The manual states "When flooding conditions exist in some or all of the ACT Basin, existing Corps streamflow and short- and long-range forecasting runoff models are run on a more frequent, as-needed basis." Does this sentence mean that the Corps will provide local inflow prediction to guide APC on how much surcharge should be released from APC projects? If so, what model is used for this prediction? What is the error for this prediction? We understand that the current flood risk analysis of Weiss and Logan Martin flood operations are based on historical hydrology in which the local inflow is perfectly known. However, in the actual operations, APC needs to rely on forecasted local inflow to determine the releases during flood event. Since the forecasted local inflow has inherent error in it, the flood risk analysis should consider such inherent error. **AQ**

15. Section 7-03 (Page 7-4) (Lines 10,16, 29): In these paragraphs, the manual appears to suggest that in "drought operations," the Corps could produce more power in Allatoona than the peak generation normally specified for Zone 1, Zone 2 and Zone 3. Such a conclusion is not consistent with the Drought Contingency Plan. **AR**

16. Section 7-05 (Page 7-6) (Lines 28-30): The manual states "Under certain instances, induced surcharge operations will be required to assure project integrity. During induced surcharged operations, flows may increase the height of flooding levels downstream." This statement does not mention any flooding risk at downstream control points as mentioned in the individual manuals of Weiss and Logan Martin in which the induced surcharge should be cut back when the downstream control point is flooded or expected to be flooded [Rule 7, Table 7-1, Page 7-2 of Appendix A.4 Weiss Manual and Rule 5, Table 7-1, Page 7-2 of Appendix A.5 Logan Martin Manual].	**AS**
17. Section 7-09 (Page 7-9) (Lines 5-7): The manual states "The reservoir storage allocated to water supply was proportionally reduced to 6,054 ac-ft for the City of Cartersville and 12,485 ac-ft for Cobb-Marietta. This was established when the reallocation at Allatoona was approved in 2021." This statement addresses existing allocated storage being updated to reflect the loss of conservation storage due to sedimentation and states that this storage amount was established in 2021. However, when the manual goes into effect in 2021, storage allocated to Cartersville and Cobb-Marietta will also include the additional storage reallocation anticipated in the TSP. Therefore, these numbers need to be updated to reflect the anticipated reallocation of storage.	**AT**
18. Page E-C-4, Table 1: The total storage at Full Pool of Jordan and Bouldin should be consistent with the numbers in Table 1-1.	**AU**
19. Page E-C-7: Figure 1 should be consistent with Figure 1-1	**AV**
20. Page E-C-10: (Lines 1-2): The statement "The Corps' Allatoona Dam on the Etowah River creates the 11,862 acres Allatoona Lake." should be modified as "The Corps' Allatoona Dam on the Etowah River creates the 11,422 acres Allatoona Lake."	**AW**
21. Page E-C-13, Figure 7: The Black Start Level is 502.5 feet, not 502 feet.	**AX**
22. Page E-C-27: Table 8 needs to be updated according to new guide curves in Weiss and Logan Martin.	**AY**

C. Comments on the Allatoona Manual (Appendix A.3 of Draft SEIS)

1. Pertinent Data (Page xvi): Tailwater elevation is not consistent with ResSim Model Allatoona Tailwater setting.	**AZ**
2. Table 4-1 (Page 4-1): The owner of R.L. Harris is APC, not APO.	**BA**
3. Section 7-07 (Page 7-11) (Line 9): The manual states that current leakage from the powerhouse amounts to 40 to 60 cfs and is not included in the minimum releases through the turbines. Further, the resultant total continuous flow from the project ranges from 280 to 300 cfs. These numbers are not consistent with the ResSim model, which uses a 365 cfs minimum release.	**BB**
4. Table 7-8 (Page 7-17): Table 7-8 needs to be updated according to the new conservation pool in APC reservoirs.	**BC**

5. Section 7-14 (Page 7-21) (Lines 23-25): With the normal seepage from the project, the actual minimum flow released to meeting the minimum flow is around 365 cfs, as presented in the HEC ResSim model. **BD**

6. Table 1 (Page E-D-4): The storage listed for Jordan, Walter Bouldin, Robert F. Henry, Millers Ferry, and Claiborne reservoirs is not consistent with the ResSim Model. **BE**

7. Figure 7 (Page E-D-14): The level of Black Start Level for the H. Neely Henry Lake Guide Curve is 502.5 feet, not 502 feet. **BF**

8. Page E-D-17 (Lines 15-16): The manual lists a surface area of 12,510 acres and a storage capacity of 234,200 acre-feet at a normal pool elevation of 125 ft NDVG29. The storage in the ResSim model is 234,211 acre-feet. **BG**

9. Page E-D-18 (Lines 3-4): In the manual, 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. The storage in the ResSim model is 339,042 acre-feet and the area is 17,865 acres at a normal full pool elevation of 80.4 feet NGVD29. **BH**

10. Table 8 (Page E-D-28): Table 8 needs to be updated in accordance to APC's new proposed rule curves. **BI**

D. Comments on the Weiss Manual (Appendix A.4 of Draft SEIS)

1. Pertinent Data (Page xiii) (Line 2): Drainage area below Carters Dam should be Drainage area above Carters Dam. **BJ**

2. Pertinent Data (Page xiii) (Line 2): Drainage area below Carters and Allatoona Dam-square miles: missing number for drainage area. **BK**

3. Pertinent Data (Page xv) (Line 2): Total storage, elevation 585.5 should be 1,436,764 acre-feet. Flood risk management storage, elevation 572 to 564 should be 301,986 acre-feet. Flood risk management storage, elevation 572 to 561 should be 384,000 acre-feet. **BL**

4. Section 7-01 (Page 7-1) (Lines 11-13): 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 Coosa River from sub-basins downstream from Weiss Dam show that the flood risk management operation can be improved. This needs to be clarified as we learned from the Draft SEIS that the benefit from cutback operation during flood operation is counted as the impacts of proposed operation. The manual states that this is a deviation from the induced surcharge schedule. It is unclear whether operation protocol should be closely followed (when downstream flood risk management benefit from cut-back in induced surcharge operation can be claimed) or deviated when real flood risks present themselves (when benefit cannot be claimed under the protocol). **BM**

	5. Table 7-1 (Page 7-2) Weiss Flood Regulation Schedule: Rule 7 states "Stages downstream of Weiss exceed or are expected to exceed flood stage as a result of local inflows, 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 and that the total addition of floodwaters stored in Weiss will not exceed a volume of 22,500 cfs-days". This rule needs to be clarified: (1) Who will forecast the local inflow? (2) What is the error of this forecasted local inflow? (3) Given a forecasted local inflow, where is the rating curve for downstream control points? (4) If the stage at downstream control points are forecasted to exceed or are expected to exceed flood stage as a result of local inflows, how do the operators at Weiss determine how much flow needs to be discharged? In order to do so, it seems that induce surcharge curves need to be modified according to different stages at the downstream control points.	**BN**
	6. Section 7-05 (Page 7-3) (Line 20): The manual states "where a higher release rate is dictated by induced surcharge curve shown on plate 22". There is no plate 22. Should plate 22 be changed to plate 7-3?	**BO**
	7. Section 8-02 (Page 8-3) (Lines 2-3): The manual states "The discharge percent chance exceedance curve at the dam site for the period 1967-2009 is shown on Plate 8-1." Plate 8-1 is automatic Rain Reporting Network, not referenced exceedance curve.	**BP**
	8. Page E-A-3 (Line 2): Listed surface area (at 564 NGVD) of 30,200 acres should be 30,027 acres.	**BQ**
	9. Page E-A-4 (Line 1): The manual lists the discharge capacity, 26,128 cfs. This number is 26,021 cfs in the ResSim model.	**BR**
	10. Table 8 (Page E-F-27): This table needs to be updated according to new guide curves for Weiss and Logan Martin.	**BS**

E. Comments on the Logan Martin Manual (Appendix A.5 of Draft SEIS)

	1. Pertinent Data (Page xiii): The manual states "Available conservation storage (summer), elev 465 to 452.5, acre-ft 144,383." In the ResSim model, the available conservation storage (summer pool, between elevation 465 to 452.5) is 141,897 acre-feet.	**BT**
	2. Pertinent Data (Page xiii): The manual states "Inactive Storage, below elevation 452.5 ft NGVD 129,084." In the ResSim model, the inactive storage (below elevation 452.5) is 131, 570 acre-feet.	**BU**
	3. Pertinent Data (Page xiii): The manual states "Seasonal storage, elevation 460 to 465 ft NGVD 29 (0.16 in runoff), acre-ft 67,602." It should be: "Seasonal storage, elevation 462 to 465 ft NGVD 29 (0.10 in runoff), acre-ft 42,574."	**BV**
	4. Section 4-06 (Page 4-6) (Line 12): The manual states "Discharge records from January 1965 through June 2019 at Logan Martin Dam are shown on Plates 4-2 and	**BW**

4-3." The discharge data shown on Plates 4-2 and 4-3 are from 1965-2003, not from 1965-2019.

5. Section 5-06 (Page 5-6) (Lines 9-11): The manual states "The power plant at Weiss Dam is operated by remote control from the Alabama Control Center Hydro Desk located in Birmingham, Alabama." This should read: "The power plant at Logan Martin Dam is operated by remote control from the Alabama Control Center Hydro Desk located in Birmingham, Alabama." **BX**

6. Section 5-08 (Page 5-7) (Lines 7-8): The manual states "For emergencies involving the Weiss Project…" This should read: "For emergencies involving the Logan Martin Project. . ." **BY**

7. Table 7-1 (Page 7-2) Logan Martin Flood Regulation Schedule: Rule 5 provides that when the reservoir elevation is above the project guide curve elevation with downstream control in place, APC is to reduce up to 50% of surcharge schedule, and operation is dictated by high downstream stages. Reduction in release is not to exceed 11,000 cfs-days in added storage. This rule needs to be clarified: (1) Who will forecast the local inflow? (2) What is the error of this forecasted local inflow? (3) Given a forecasted local inflow, where is the rating curve for downstream control points? (4) If the stage at downstream control points are forecasted to exceed or are expected to exceed flood stage as a result of local inflows, how do the operators at Logan Martin determine how much flow needs to be discharged? In order to do so, it seems that induce surcharge curves need to be modified according to different stages at the downstream control points. **BZ**

8. Section 9-01 (Page 9-1): All references to "Weiss" should be replaced with "Logan Martin." **CA**

9. Page E-A-3, Part 2: The manual states "Minimum Pool @ Elev 452.5, acre-ft 131,522." In the ResSim model, the inactive storage (below elevation 452.5) is 131,570 acre-feet. **CB**

10. Page E-A-3, Part 2: The manual states "Usable Storage Capacity (between 465 and 452.5 NGVD), acre-ft 141,945." In the ResSim model, the storage between elevation 465 to 452.5 is 141,897 acre-feet. **CC**

11. Page E-A-3, Part 2: The manual states that the surface area (at 465 NGVD) is acres 15,260. In the ResSim model the surface area (at 465 NGVD) is acres 15,269. **CD**

12. Page E-C-5 (Lines 5-6): The manual states that the compulsory drawdown each year is to elevation 460.0. The compulsory drawdown should be to elevation 462 ft. **CE**

13. Table 7 (Page E-F-27): This table needs to be updated according to new guide curves for Weiss and Logan Martin. **CF**

F. Comments on the Modeling Report (Appendix C of Draft SEIS)

1. Evaporation time series in Oct/Nov 2011-Dec 2012 were modified. The modeling report should explain the reason and if UIF need to be changed as well. **CG**

2. Page 74, Subsection 2. Two Foot Pool Draw Down – the rule described in this subsection is inconsistent with ResSim model. In the model, the same condition (Logan Marin inflow rising) has been stated twice with a AND between them. **CH**
3. Table 11 (Page 92): The value of "12,985" acre-feet and "13,235" acre-feet of reallocated storage is inconsistent with the modeling parameters. **CI**
4. Page 122 (Line 4): The initial estimated outflow from HLCR is the local inflow – evaporation – delta storage – minimum out. This should be the local inflow – evaporation – delta storage. **CJ**

G. Comments on the Allatoona-Coosa Reallocation (ACR) Water Supply Reallocation (WSR) Hydropower Analysis Draft (Appendix D of Draft SEIS)

1. Section 2.4 (Page 15) (PDF Page 132/196): Except for scenarios Base2018 and Basecap, the reallocation storages for other scenarios are inconsistent with Draft SEIS. A reallocation of "32,809 AF" is not correct in any of the federal action alternatives. **CK**
2. Section 3.2 (Page 18) (PDF Page 140/196) (Table 3-4): For energy produced by Carters, the simulated energy produced in each day is exactly same for Base2018 and BaseCap scenario, but the numbers in the table are different. Thus, the energy production needs to be checked. Water supply operation only affects Allatoona—not Carters. There is no reason for Carters' energy production to be different among the alternatives. **CL**
3. Section 3.4 (Page 25) (PDF Page 147/196) (Table 3-9): These number needs to be checked according to the results of Table 3-4 in Page 18 (PDF Page 140/196). **CM**
4. Section 4.1.3 (Page 30) (PDF Page 155/196) (Table 4-3): For Dependable capacity of Carters, energy produced in each day is exactly same for Base2018 and BaseCap scenario, but dependable capacity in BaseCap is lower than that in Baseline. **CN**
5. Section 4.2.3 (Page 39) (PDF Page 165/196) (Table 4-7): These numbers need to be updated with the results of Table 4-3. **CO**

X. Conclusion

Please give the foregoing comments careful consideration in the Final SEIS. Please contact me if you have any questions or if I can be a resource for additional information that would assist you in this process.

Respectfully submitted,

Richard E. Dunn
Director
Georgia Environmental Protection Division
On behalf of the State of Georgia

ATTACHMENT 1

Memorandum

To: Richard Dunn, Director

From: Wei Zeng, Water Supply Program Manager
Hailian Liang, Hydrology Unit Manager

Date: January 29, 2020

Re: Technical comments on the Army Corps of Engineers 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 (Draft SEIS)

Introduction

In the Draft SEIS, the Army Corps of Engineers (Corps) analyzed the impact of (1) a request from the State of Georgia asking the Corps to reallocate storage from Allatoona Lake to meet projected water supply needs for Cobb County-Marietta Water Authority (CCMWA) and the City of Cartersville, and (2) a request from Alabama Power Company (APC) to revise its flood risk operations at Weiss and Logan Martin reservoirs on the Coosa River. You asked the Water Supply Program within EPD's Watershed Protection Branch to conduct a technical review of the Draft SEIS. We analyze and compare various alternatives in the Draft SEIS and then provide technical corrections required prior to the Final SEIS. This memorandum summarizes our findings.

Draft SEIS Alternatives

In order to analyze the impacts from both requests on the authorized purposes of relevant portions of the Alabama-Coosa-Tallapoosa (ACT) River Basin, the Corps first developed a No Action Alternative (NAA or Alternative 1). The NAA is meant to reflect the status quo, including existing water supply operations at Allatoona Lake, existing APC operations at Weiss and Logan Martin, and existing Corps operations of federal projects throughout the Basin.

The Corps then developed the Future Without Project Alternative (FWOP or Alternative 2). In the FWOP, the Corps incorporates Georgia's 2050 projected water supply needs but limits those needs to the storage capacity under existing storage contracts between the municipalities and the Corps using the Corps' existing storage accounting methodology. As a result, Georgia's water supply needs beyond the existing storage capacity are left unmet.

Finally, the Corps developed a number of measures to address both requests and combined them to form many federal action alternatives that assess the impact of both requests (individually and in conjunction) on the authorized purposes of the ACT Basin. The combination of these measures facilitates useful comparisons among the federal action alternatives. For example, if one needs to compare an alternative with the Corps' storage accounting mechanism with another one employing Georgia's storage accounting mechanism, this can be done by comparing two alternatives that are otherwise identical (e.g. Alternative 11 and Alternative 13).

The Corps developed numerous federal and non-federal alternatives for consideration. In addition to the NAA (Alternative 1), NAA (Baseline-Capped) (Alternative 1a), and FWOP (Alternative 2), the Corps developed and carried forward nine federal action alternatives to assess the impacts of requests from the State of Georgia and APC. *See* Figure 1 (a screen capture of the Draft SEIS's Table 4-5 listing these alternatives and the incorporated measures). Among these alternatives, the Corps identified Alternative 11 as the Tentatively Selected Plan (TSP).

Table 4-5. Final Array of Alternatives

#	Alternative	Meets GA 2050 Demands 94 mgd	Storage Accounting Method		Reallocation			APC Requested Changes	Screened or Carried Forward
			USACE	GA	Inactive Pool	Conservation Pool	Flood Pool		
1	NAA		✓						**Carried Forward**
1a	NAA (Baseline-Capped)		✓						**Carried Forward**
2	FWOP		✓						**Carried Forward**
3	WS1	✓		✓		✓			**Carried Forward**
4	WS2	✓	✓			✓			**Carried Forward**
5	WS3	✓		✓		✓	✓		**Carried Forward**
6	WS4	✓	✓				✓		Screened
7	WS5				✓				Screened
8	WS6	✓	✓			✓	✓		**Carried Forward**
9	MFO1		✓					✓	**Carried Forward**
10	WS2 + MFO1	✓	✓			✓		✓	**Carried Forward**
11	WS6 + MFO1	✓	✓			✓	✓	✓	**Carried Forward**
12	WS1 + MFO1	✓		✓		✓		✓	**Carried Forward**
13	WS3 + MFO1	✓		✓		✓	✓	✓	**Carried Forward**
	Nonfederal Water Supply Alternatives								
14	*Conservation*								Screened
15	*Construct a pipeline to convey water from Hickory Log Creek Reservoir to Wyckoff Water Treatment Plant (CCMWA)*	✓ (partial)							**Carried Forward**
16	*Pipe desalinated water from the Georgia coast*	✓							Screened
17	*Pipe water from the Tennessee River*	✓							Screened
18	*Drill new wells*								Screened
19	*Construct new reservoirs*	✓							**Carried Forward**
20	*Purchase water from existing nonfederal reservoirs*								Screened
21	*Withdraw more water from the Chattahoochee River (CCMWA)*	✓							Screened
22	*Withdraw water from the Etowah River below Allatoona Dam (Cartersville)*	✓							Screened

Note: Alternative 1a is used for analysis purposes only to identify effects of storage exceedances. This is not an implementable alternative.

Figure 1. Alternatives considered by the Corps (Table 4-5 in the Draft SEIS)

The Water Supply Program's review and analysis focused on trying to answer the following questions: (1) How do the alternatives using Georgia's storage accounting compare to the alternatives using the Corps' existing storage accounting? (2) Given the significant data gaps and lack of information related to the APC study, does the Draft SEIS allow the Corps to choose an alternative that addresses only Georgia's request?

To evaluate the first question, we compare Alternative 13 with the TSP (Alternative 11). These two alternatives are identical with the exception of storage accounting. Alternative 13 uses Georgia's storage accounting methodology while the TSP (Alternative 11) uses the Corps' existing storage accounting.

To evaluate the second question, we compare Alternative 8 with the TSP (Alternative 11). These alternatives are identical with the exception of the APC operation. While the TSP reflects both reallocation of storage to meet Georgia's water supply request and APC's proposed change in its flood risk operations, Alternative 8 only incorporates reallocation of storage to meet Georgia's water supply request.

Draft SEIS Error in Modeling Georgia's Storage Accounting

Before we discuss the questions outlined above, we must start with discussing an error in the Corps' modeling of alternatives using Georgia's storage accounting mechanism. In order to meaningfully compare alternatives, we must first address and correct this modeling error. **CP**

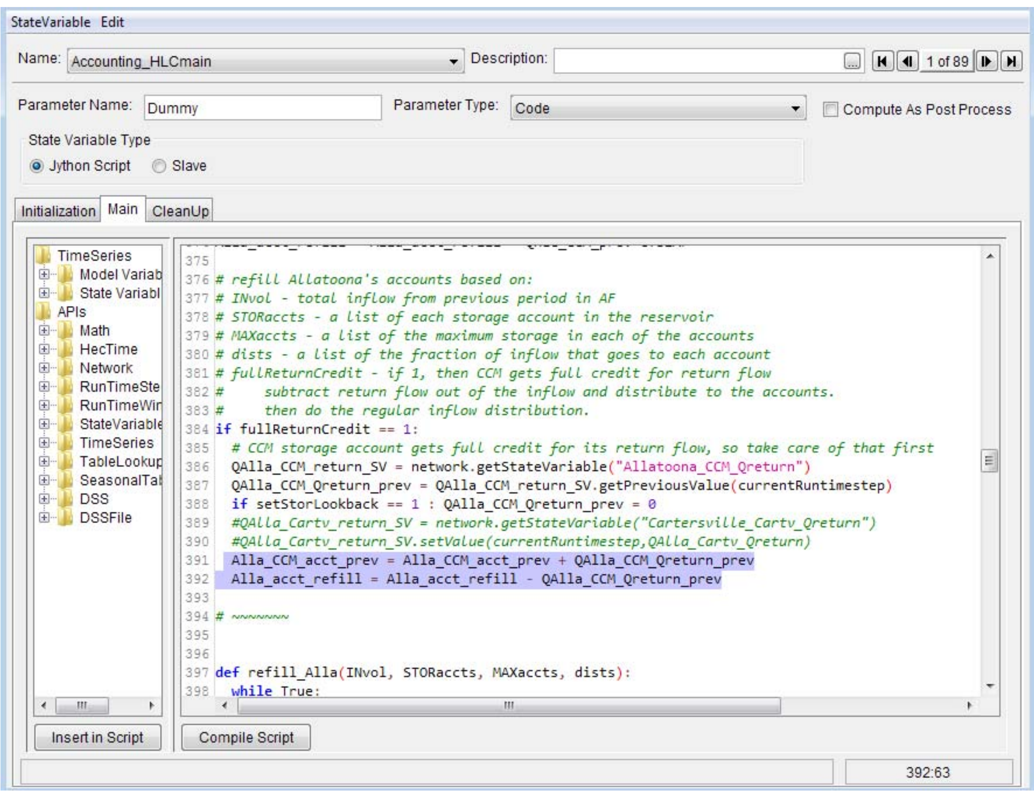

Figure 2. Script used in the Corps computation of CCMWA's account balance

We will use Alternative 13 to demonstrate the error. Within the Corps' ACT Basin HEC-ResSim model, the Corps developed a script to calculate storage account balances (State Variable named Accounting_HLCmain). Part of the script used to compute CCMWA's account balance is shown in Figure 2. In the two lines of highlighted script, the Corps left out the conversion factor of 1.9835 which converts cubic feet per second per day (cfs-day) to acre-feet.

The equation in Line 391 reads:

Alla_CCM-acct_prev = Alla_CCM_acct_prev + QAlla_CCM_Qreturn_prev

In this equation, the variable Alla_CCM-acct_prev represents CCMWA's storage account balance in Allatoona in acre-feet. The variable QAlla_CCM_Qreturn_prev represents combined return flows made by Cobb County in cfs-day. (Note 1 cfs-day is equivalent to 1.9835 acre-feet of volume.) When the two variables are placed into the same equation on Line 391, QAlla_CCM_Qreturn_prev (cfs-day) needs to be converted to acre-feet with a multiplication factor of 1.9835. The model does not make this conversion—that is, the model does not include the 1.9835 multiplier.

The same issue exists in the equation in Line 392. The same variable QAlla_CCM_Qreturn_prev (in cfs-day) needs to be converted to acre-feet with a multiplication factor of 1.9835. The model does not include this conversion.

The same issues exist in all the alternatives using Georgia's storage accounting mechanism. These are Alternatives 3, 5, 12, and 13. This error does not occur in the alternatives using the Corps' existing storage accounting methodology.

To correct the error, the Water Supply Program revised the script to include the correct multiplication factor.[1] We use this corrected model in our analysis and summaries in this technical memorandum. For concise reference and to avoid confusion, we refer to the corrected Alternative 13 as Alternative 13A.

[1] After this correction, we found that in Alternative 13 using Georgia's storage accounting methodology, storage in Hickory Log Creek Reservoir was not fully utilized in the critical hydrologic period. The Program revised the Corps model to use up available storage in Hickory Log Creek Reservoir to support water supply operations in Allatoona.

<u>Georgia Storage Accounting Provides Similar or Better Environmental Consequences Compared to Existing Corps Storage Accounting</u>

[Comparison between Alternatives 13A and 11]

We assess the impact of the two alternatives by looking at the following indicators: simulated Allatoona elevation, Allatoona release, flow at Mayo's Bar (representing flow near the state line), flow in the Coosa River downstream of Logan Martin, flow in the Alabama River at the confluence between the Coosa and Tallapoosa Rivers, statistics in drought operations, statistics in navigation, annual average energy production, and recreational availability.

Allatoona Elevation

Figure 3 shows median simulated daily Allatoona elevation for Alternative 13A and Alternative 11. The two curves appear to be identical, indicating very little difference in median Allatoona elevation between the two alternatives. (Figure 3 has the same format as Figure 5-1 in the Draft SEIS.)

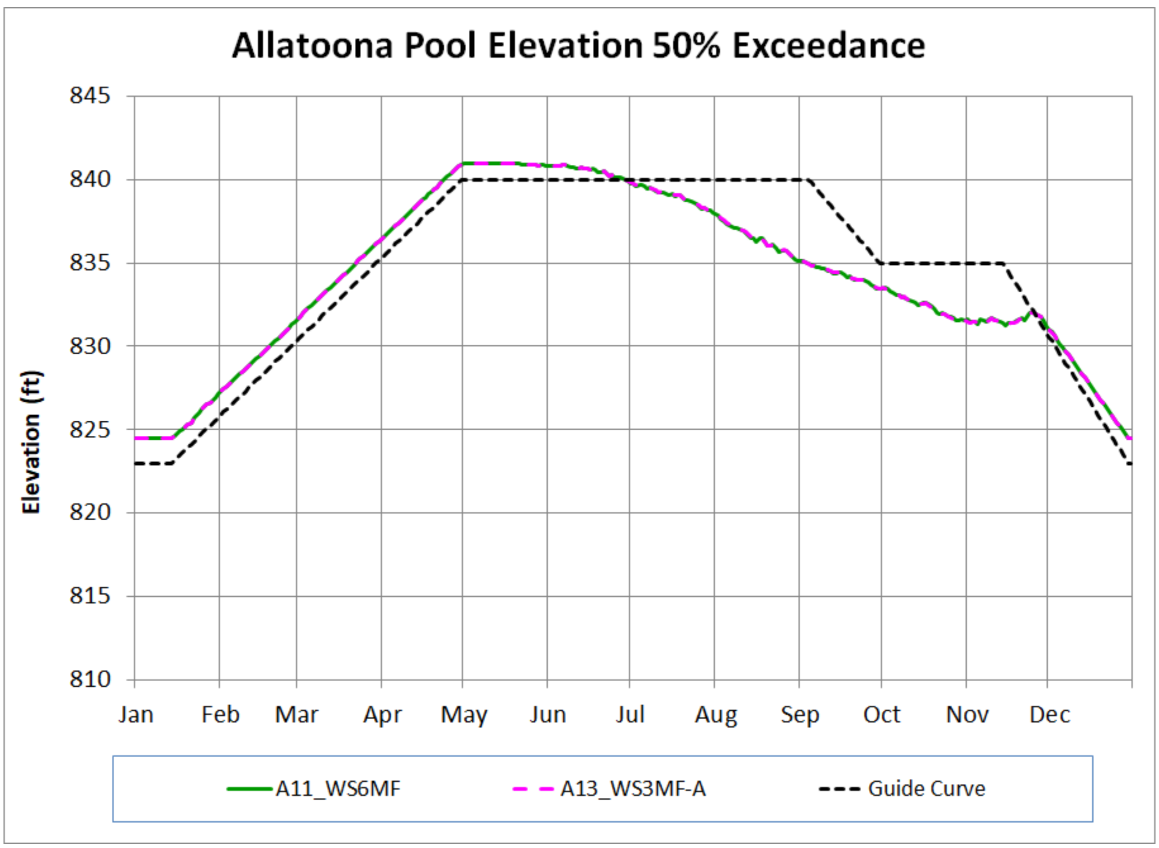

Figure 3. Median simulated Allatoona elevation (Alternative 11 and Alternative 13A)

Figure 4 shows simulated daily Allatoona elevations that are exceeded 90% of the time. Here, Alternative 13A shows more positive results than Alternative 11. Detectable elevation benefits from Alternative 13A can be observed from late September to early November, and more pronounced benefits can be seen from Alternative 13A lasting through November. (Figure 4 has the same format as Figure 5-2 in the Draft SEIS.)

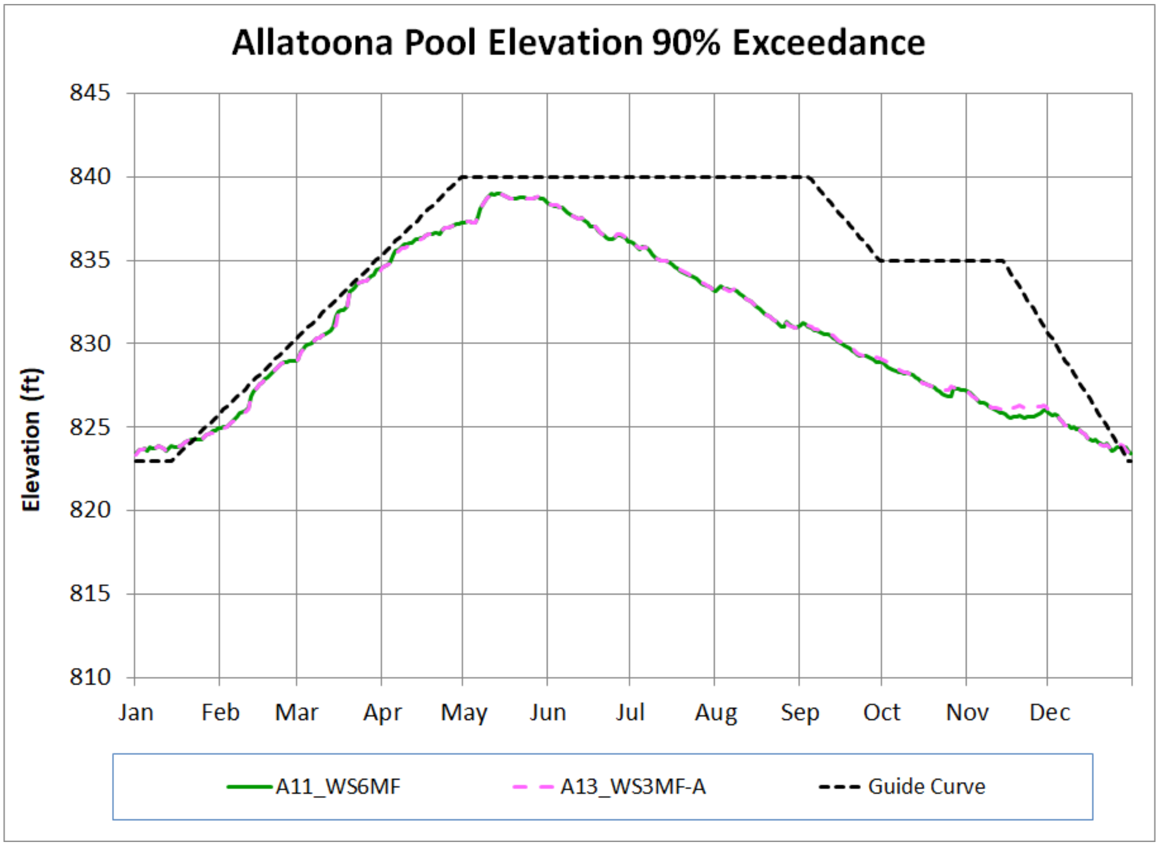

Figure 4. Ninety percent exceeded simulated Allatoona elevation (Alternative 11 and Alternative 13A)

Allatoona Release

Figure 5 shows median simulated release from Allatoona. The two curves representing Alternative 13A and Alternative 11 are almost identical with the exception of Alternative 13A providing slightly higher flows in September and November. (Figure 5 has the same format as Figure 5-8 in the Draft SEIS.)

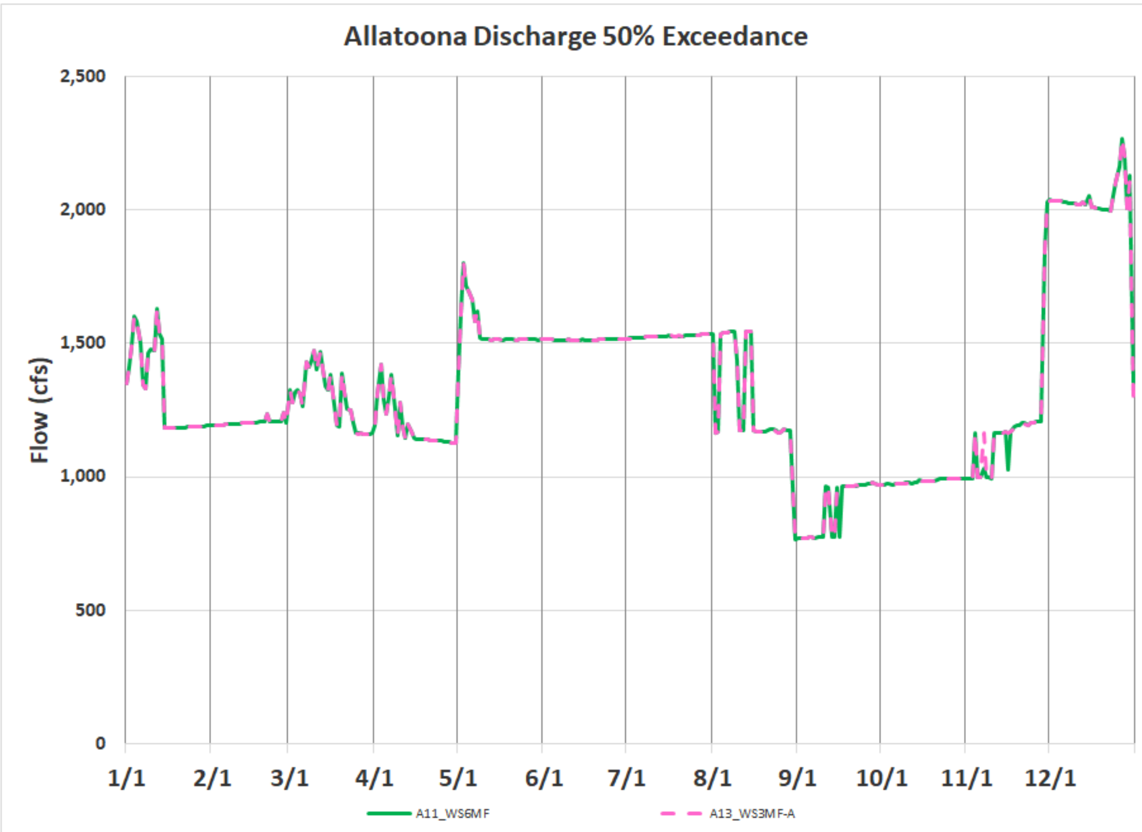

Figure 5. Median simulated Allatoona release (Alternative 11 and Alternative 13A)

Figure 6 shows simulated releases from Allatoona that are exceeded 90% of the time. The two curves representing Alternative 13A and Alternative 11 are almost identical with the exception of slight differences (in both directions) in December. (Figure 6 has the same format as Figure 5-9 in the Draft SEIS.)

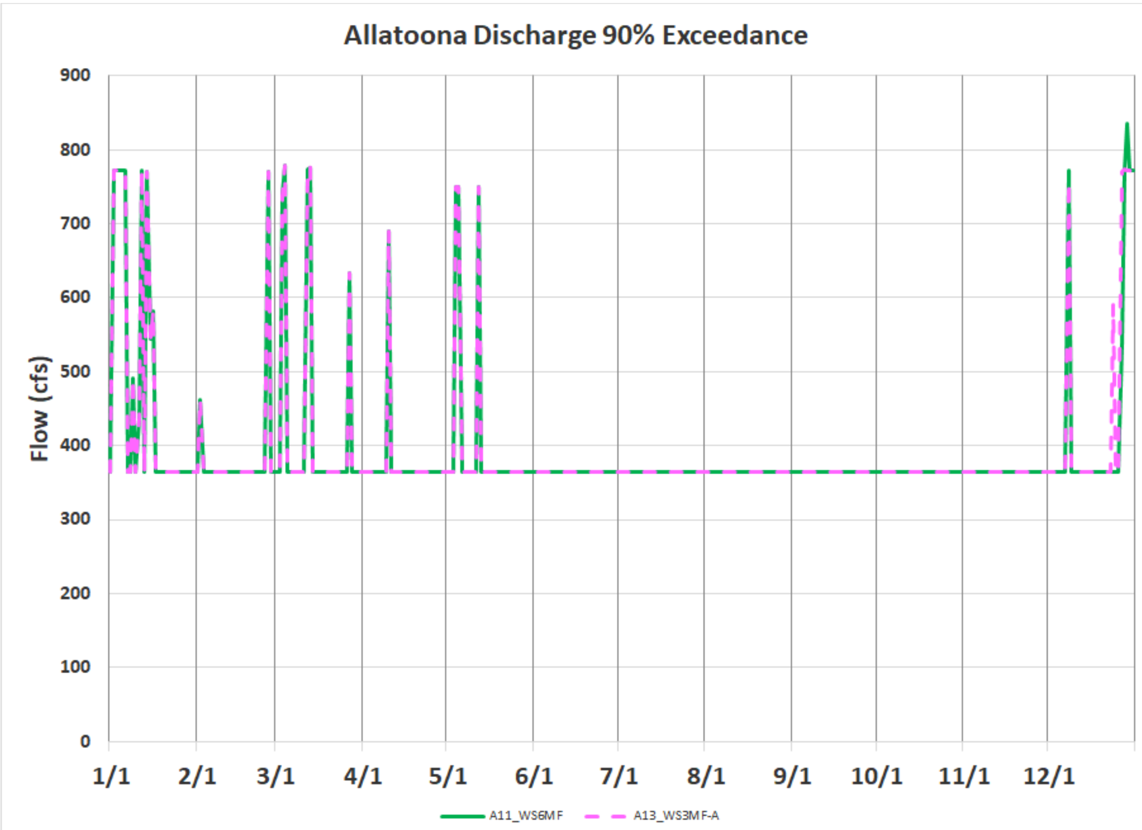

Figure 6. Ninety percent exceeded simulated Allatoona release (Alternative 11 and Alternative 13A)

Table 1 is similar in format to Table 5-4 in the Draft SEIS. It contains key statistics (exceedance levels at 10%, 25%, 50%, 75%, and 90%) of simulated Allatoona releases. Table 1 demonstrates that there are only very minor differences between Alternative 13A and Alternative 11.

Stream Flow at Coosa River near Rome

Figure 7 shows median simulated stream flow in the Coosa River near Rome. Figure 8 shows simulated stream flow in the Coosa River near Rome that are exceeded 90% of the time. In both figures, the two curves are almost identical, indicating very little difference between the two alternatives.

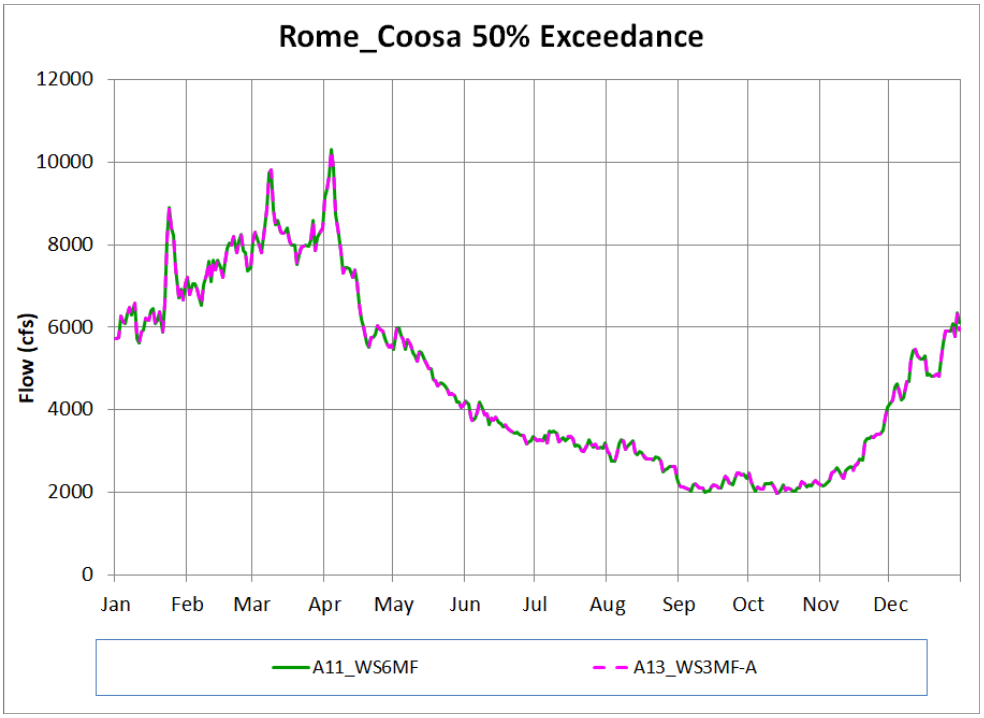

Figure 7. Median simulated Mayo's Bar flow (Alternative 11 and Alternative 13A)

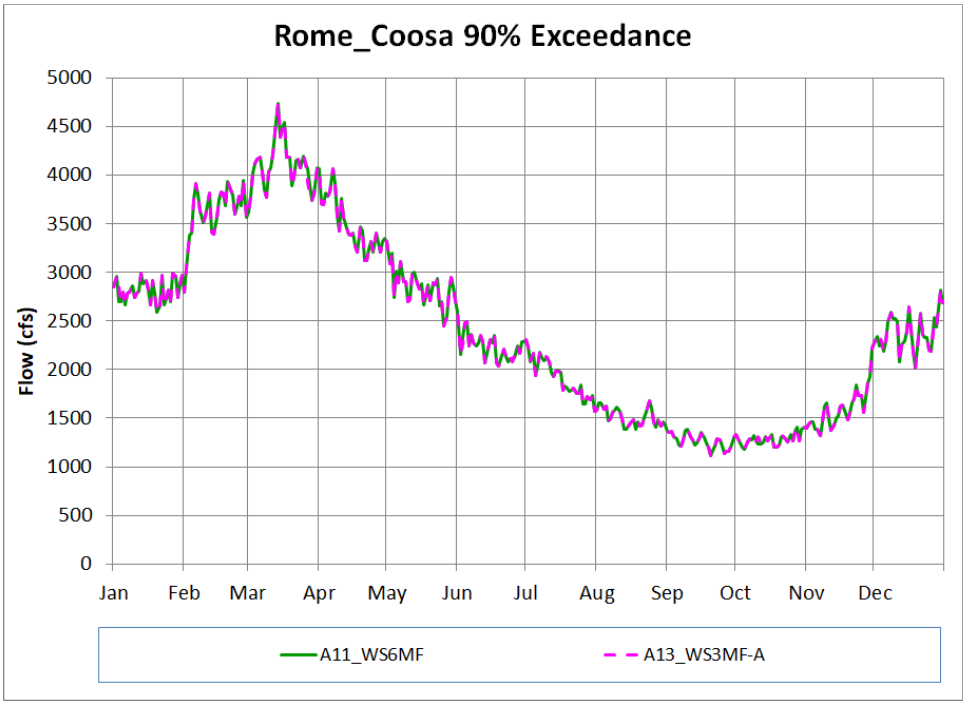

Figure 8. Ninety percent exceeded simulated Mayo's Bar flow (Alternative 11 and Alternative 13A)

Figure 9 provides a hydrograph of simulated stream flow in the Coosa River near Rome between January 1, 2007 and December 31, 2009. This is a commonly recognized period of critical drought in the ACT Basin. Alternative 13A provides a hydrograph that is almost identical to the one provided by Alternative 11.

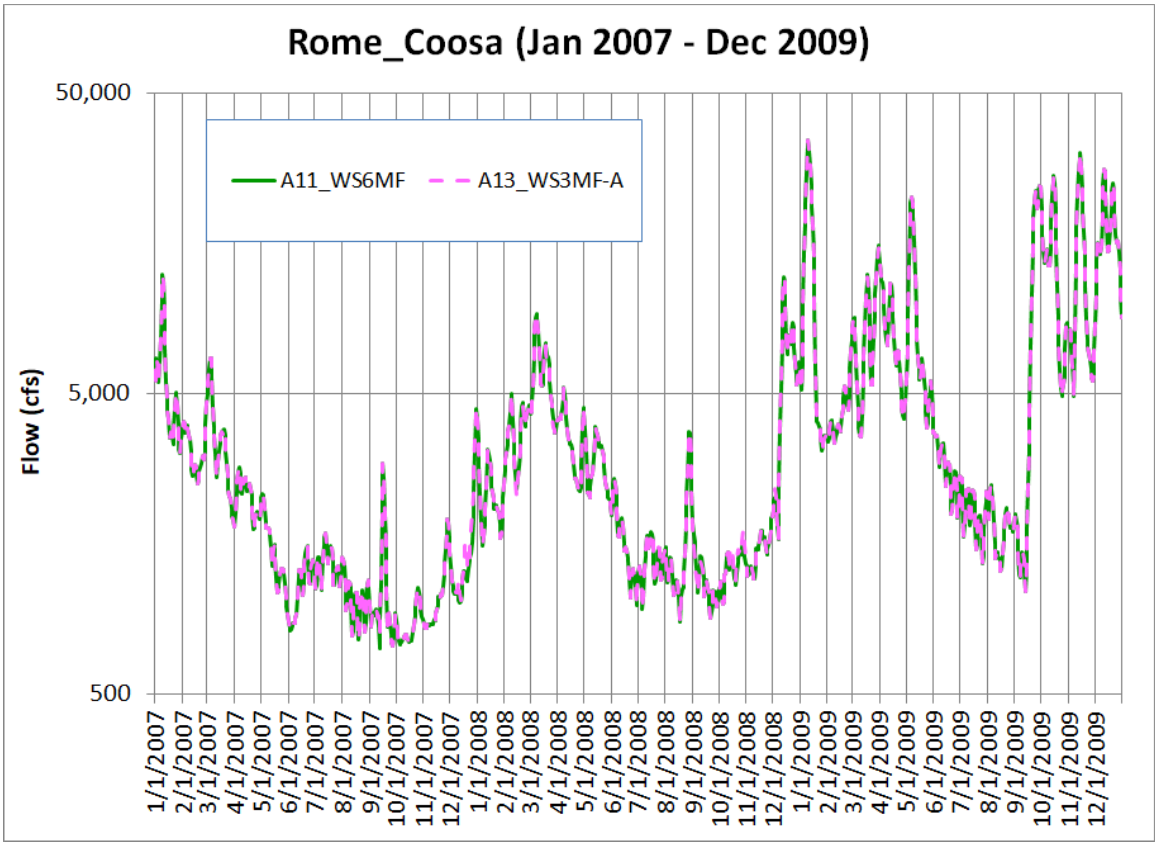

Figure 9. Simulated flow at Coosa River at Rome (Alternative 13A and Alternative 11)

Table 2 shows key statistics of stream flow in the Coosa River near Rome. They include flow exceedance levels at 10%, 25%, 50%, 75%, and 90% of the entire year, the month of September, and the month of December. There are virtually no differences in these statistics between Alternative 13A and Alternative 11. (Table 2 is similar in format to Table 5-5 in the Draft SEIS.)

Table 3 presents a slightly different way of looking at stream flow near Rome. Table 3 contains data regarding the percent of days when flows are higher than Monthly 7Q10s. Again, there is virtually no difference between Alternative 13A and Alternative 11. (Table 3 is similar to Table 5-6 in the Draft SEIS.)

Stream Flow Downstream of Logan Martin

Figure 10 shows median simulated stream flow in the Coosa River downstream of Logan Martin. The two curves are almost identical, indicating very little difference between the two alternatives.

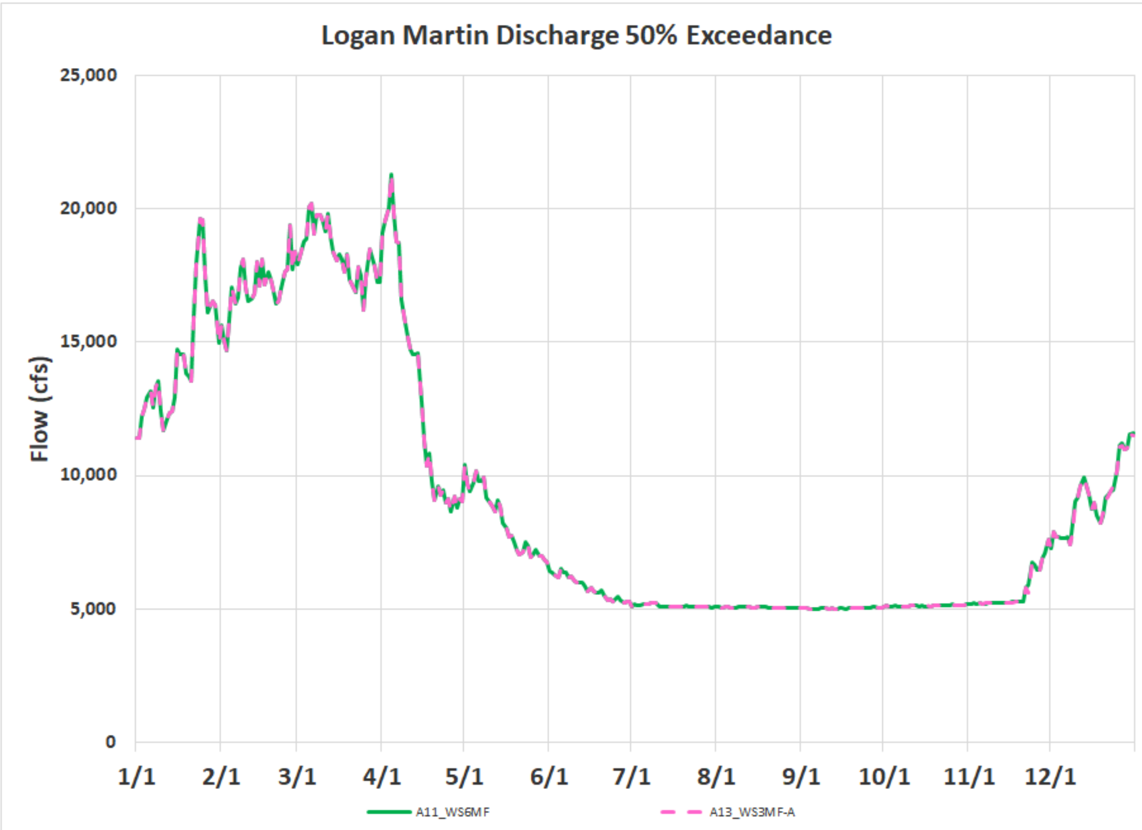

Figure 10. Median simulated flow downstream of Logan Martin (Alternative 11 and Alternative 13A)

Figure 11 shows simulated stream flow in the Coosa River downstream of Logan Martin that is exceeded 90% of the time. Alterative 13A is almost identical to Alternative 11 for the first seven months, September, and October. There are some moderate differences in the months of August and November, with Alternative 11 having more fluctuations than Alternative 13A. In December, Alternative 13A provides slightly higher flows compared to Alternative 11.

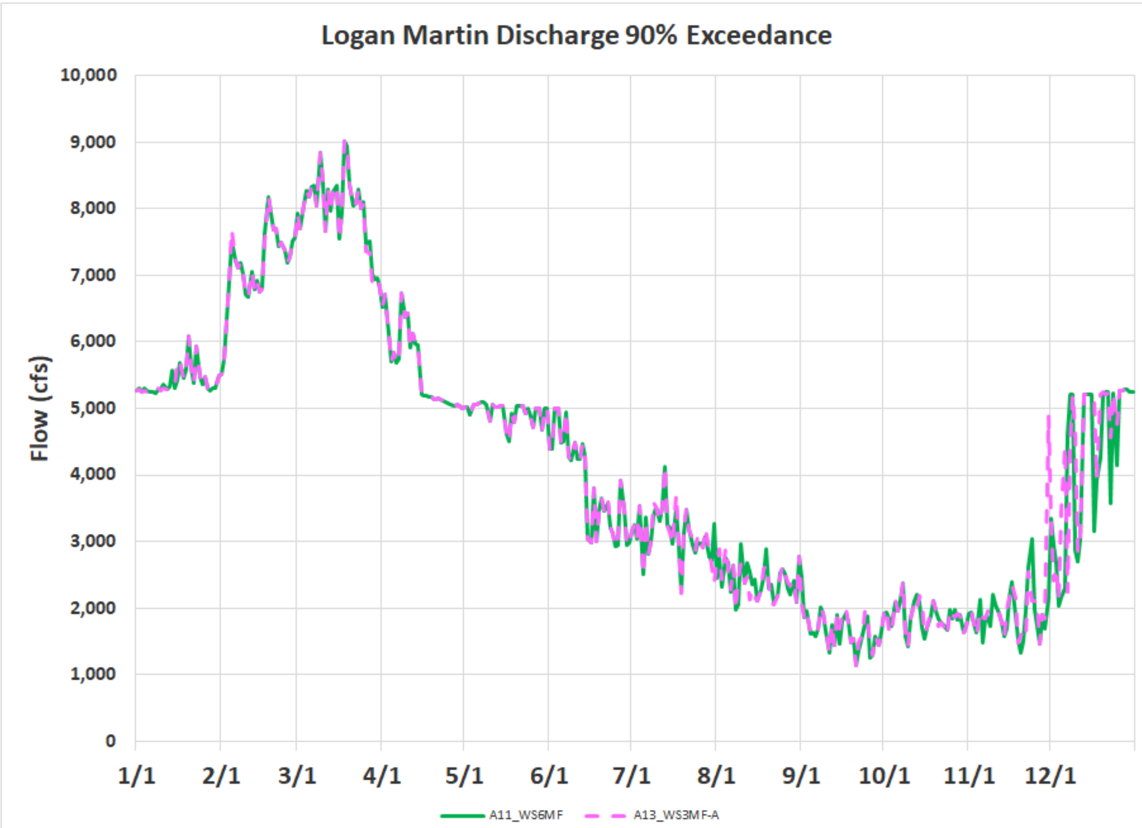

Figure 11. Ninety percent exceeded simulated Logan Martin Release (Alternative 11 and Alternative 13A)

Table 4 shows key statistics of stream flow in the Coosa River downstream of Logan Martin. They include flow exceedance levels at 10%, 25%, 50%, 75%, and 90% of the entire year, the month of March, and the month of September. There are virtually no differences in the annual and March statistics between Alternative 13A and Alternative 11. At the lower end of the flow spectrum for the month of September, we see slightly higher flows in Alternative 13A. (Table 4 is similar in format to Table 5-7 in the Draft SEIS.)

Stream Flow at Alabama River at the Confluence between Coosa and Tallapoosa Rivers

Figure 12 shows median simulated stream flow in the Alabama River at the confluence between the Coosa and Tallapoosa Rivers. The two curves are almost identical, indicating very little difference between the two alternatives.

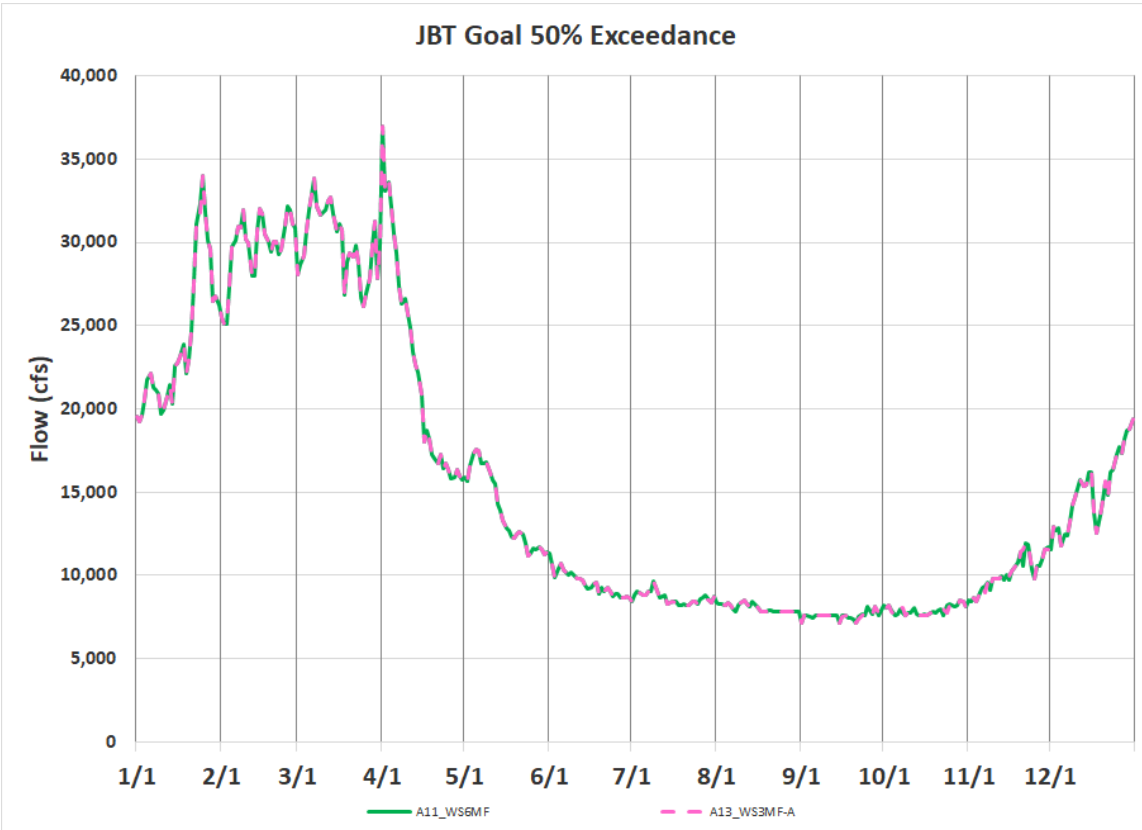

Figure 12. Median simulated flow at Alabama River at Confluence between Coosa and Tallapoosa Rivers (Alternative 11 and Alternative 13A)

Figure 13 shows simulated stream flow in the Alabama River at the confluence between the Coosa and Tallapoosa Rivers that is exceeded 90% of the time. Alternative 13A is almost identical to Alternative 11 for the first ten months of the year. There are some differences in the months of November and December, with Alternative 11 providing slightly higher flows than Alternative 13A in November and with Alternative 13A providing slightly higher flows than Alternative 11 in December.

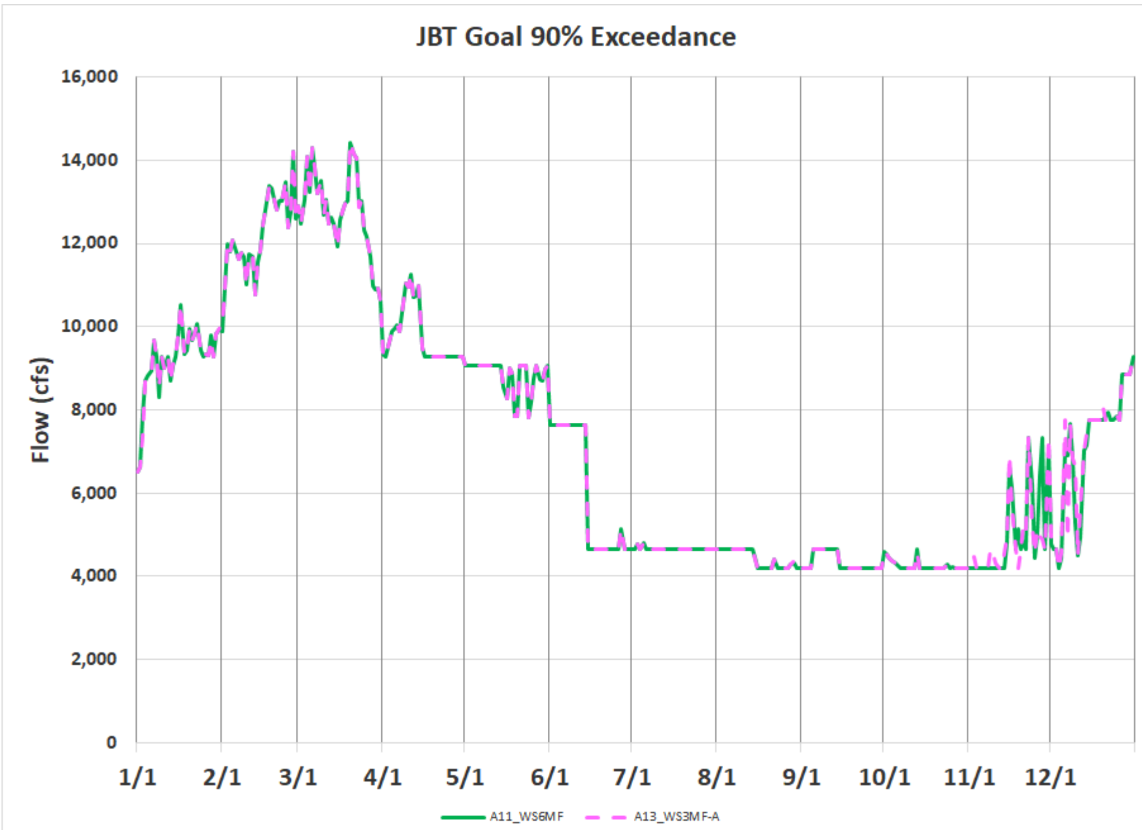

Figure 13. Ninety percent exceeded simulated flow at Alabama River at confluence between Coosa and Tallapoosa Rivers (Alternative 11 and Alternative 13A)

Figure 14 compares the flow exceedance at Alabama River at confluence between Coosa and Tallapoosa Rivers. The two curves are virtually identical, indicating very little difference between the two alternatives.

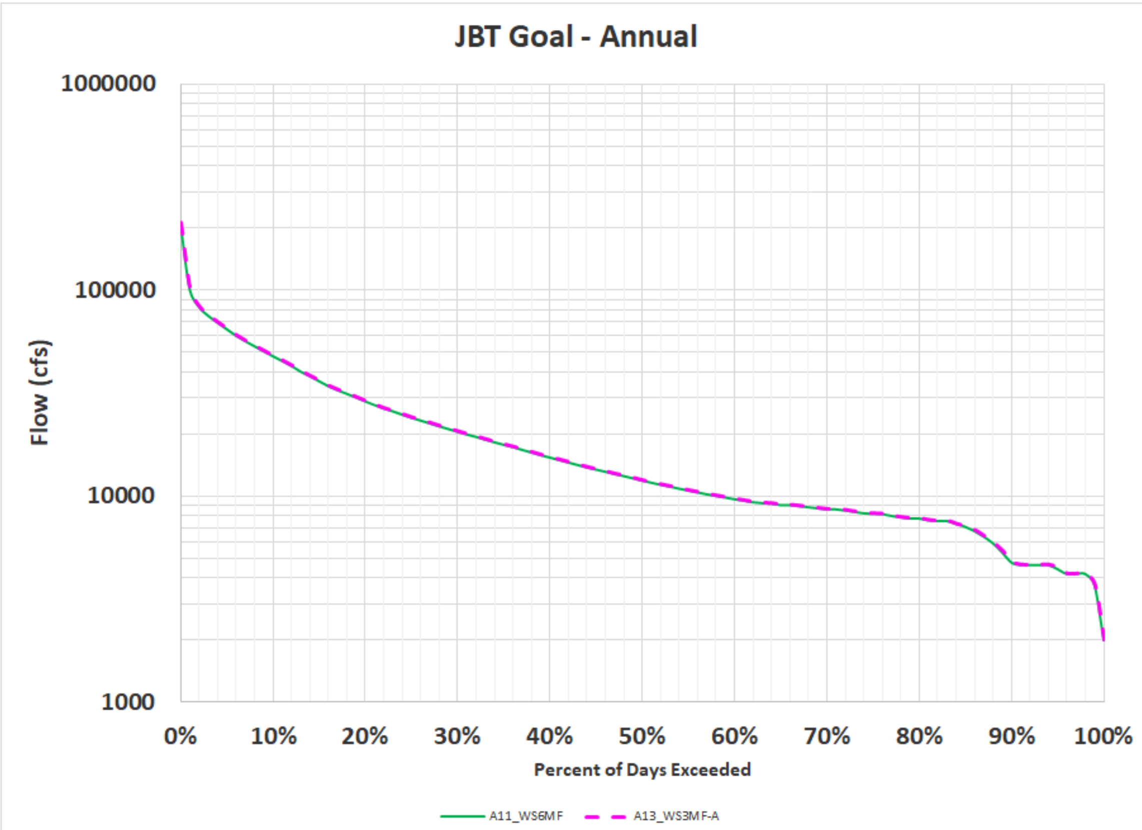

Figure 14. Flow exceedance at Alabama River at confluence between Coosa and Tallapoosa Rivers (Alternative 11 and Alternative 13A)

Table 5 shows key statistics of flow at the Alabama River at the confluence between the Coosa and Tallapoosa Rivers. They include flow exceedance levels at 10%, 25%, 50%, 75%, and 90% of the entire year, the month of September, and the month of December. There are minor differences in the annual, September, and December statistics between Alternative 13A and Alternative 11. (Table 5 is similar in format to Table 5-8 in the Draft SEIS.)

Drought Operations

The Corps' determination of drought operation in the ACT Basin is based on hydrologic information in three categories: state line flow trigger, basin inflow trigger, and composite conservation storage trigger. A drought operation is initiated when any one of these triggers is activated. The level of drought response is determined by the number of drought triggers activated. For example, if only one of the triggers is activated, then the basin is in Drought Level 1 response. If all three triggers are activated, then the basin is in Drought Level 3 response. The Corps used Tables 5-9, 5-10, and 5-11 in the Draft SEIS to assess the frequency of drought operations and the activation of different drought triggers.

We evaluated the frequency of drought operations and the activation of different drought triggers and included the results in Tables 6, 7, and 8 (modeled after Tables 5-9, 5-10, and 5-11).[2] Table 6 presents the number of occurrences of drought operations triggered and the number of each drought levels triggered. The statistics of Alternative 13A are exactly the same as those of Alternative 11.

Table 7 presents the percentage of days when the ACT Basin is under different modes of operation, including normal and different levels of drought responses. There is very little difference between Alternative 13A and Alternative 11, although Alternative 13A does provide additional time (0.1%) when the system is under normal operations.

Table 8 presents percentage of days when the ACT Basin is under drought operations and percentage of days when individual drought triggers are activated. The statistics of Alternative 13A and Alternative 11 are almost the same.

Navigation

Table 9 presents percentage of days when a 9-foot or a 7.5-foot navigation channel is available at the Alabama River below Claiborne Lock and Dam.[3] Alternative 13A provides the same or slightly better frequency of navigation depth availability compared to Alternative 11.

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[2] The frequency of drought operations and drought triggers could change slightly once the Corps addresses the inconsistency in the Basin Inflow Drought Trigger as discussed on page 22 below.

[3] We developed Table 9 following the format of Table 5-15 in the Draft SEIS. We used the Corps' modeling results and calculated the percentage of days when the two levels of navigation depth channel are available. This methodology is consistent with descriptions provided by the Corps personnel in its public meetings after release of the Draft SEIS. We noticed that results in our Table 9 are close but not exactly the same as results shown in Table 5-15. However, we believe the methodology adopted by the Corps in its post-processing sheets exaggerates the differences in navigation availability between the NAA and the action alternatives.

Hydropower Generation

Table 10 contains annual average power generation at all ACT Basin federal and APC reservoirs resulting from the various alternatives. Table 10 is very similar to Tables 3-4 and 3-5 in the Appendix D (Project Impacts to Hydropower) of the Draft SEIS. There is virtually no difference between Alterative 11 and Alternative 13A in the amount of energy generated by each individual reservoir and collectively by all federal and APC reservoirs.

Recreation

Table 11 presents statistics of recreational impacts at various levels resulting from multiple alternatives. Table 11 is similar to Table 4 of the Draft SEIS Appendix D (Recreation Impact Analysis Summary Memorandum). Statistics show that Alternative 13A would cause almost the same level of recreational impact as Alternative 11, with a slight benefit in reduced frequency of Water Access Limit – the most serious level of impact.

The Draft SEIS Allows the Corps to Grant Georgia's Water Supply Request Even if It Does Not Grant APC's Requested Operational Changes

CQ

[Comparison between Alternatives 11 and 8]

As stated earlier, the Draft SEIS makes clear that the Corps lacks sufficient information to thoroughly analyze the impacts of proposed APC operational changes. To determine whether the Corps can grant Georgia's Water Supply Request even if it cannot grant APC's request, we must compare two alternatives that both grant Georgia's request and are identical except that one incorporates proposed APC operational changes and the other does not. For purposes of this memo, we chose Alternative 11 and Alternative 8.

Since water supply in the Georgia portion of the ACT Basin and the Corps' operation of Allatoona and Carters are identical between these two alternatives, there are no differences between the two alternatives in all authorized purposes inside Georgia. Therefore, there is no need to present a full set of comparisons as we have done in the earlier sections of this memorandum. Instead, we chose to present two figures and two tables on flows at Mayo's Bar (representing state line flow) to verify this point. We also compare Alternative 8 and Alternative 11 with respect to flow at the Coosa River downstream of Logan Martin, flow at the Alabama River, drought operations, navigation, and hydropower generation.

Figures 15 and 16 show that both median flow and flows that are exceeded 90% of the time at Mayo's Bar are identical in Alternative 11 and Alternative 8. This can also be shown by flow statistics in Tables 2 and 3. Environmental consequences upstream of the state line are identical in Alternative 11 and Alternative 8. The environmental impact on the Georgia portion of the ACT Basin resulting from Alternative 8 is exactly the same as Alternative 11.

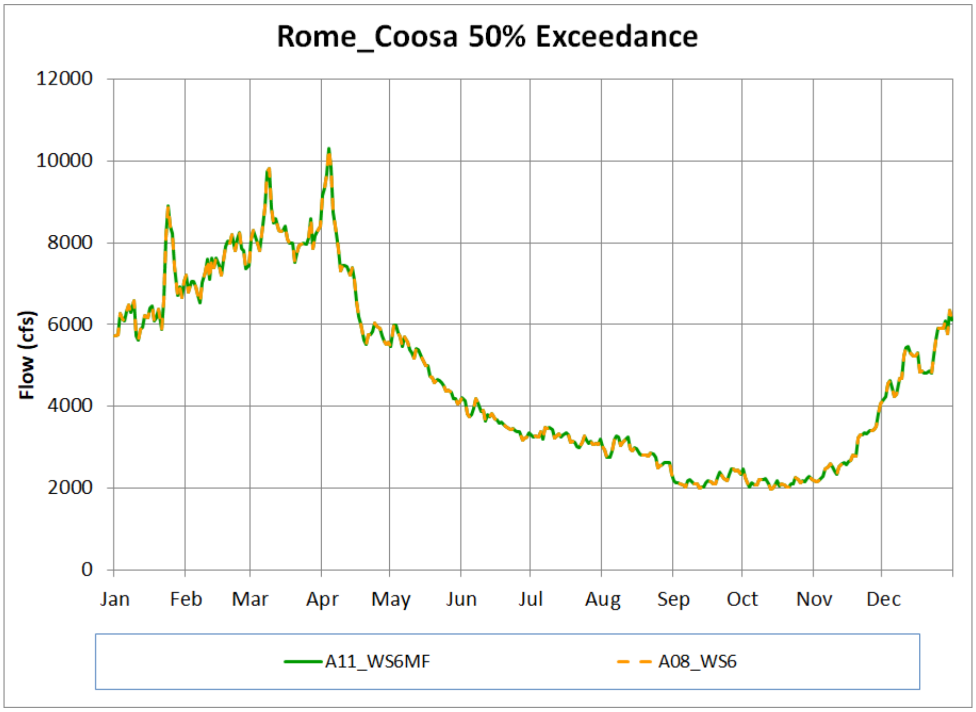

Figure 15. Median simulated Mayo's Bar flow (Alternative 11 and Alternative 8)

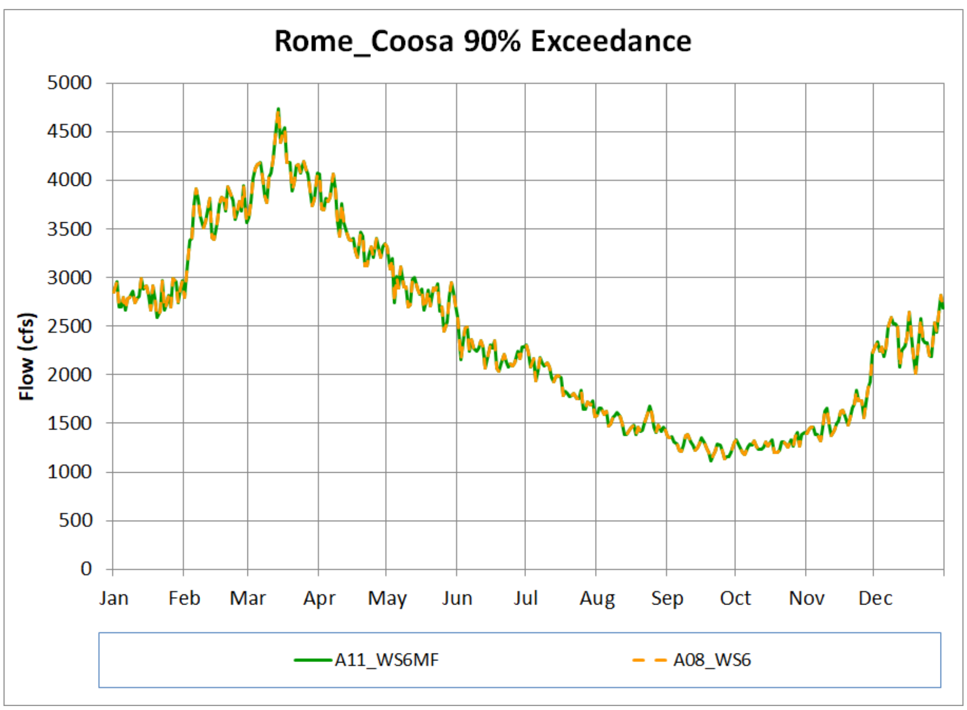

Figure 16. Ninety percent exceeded simulated Mayo's Bar flow (Alternative 11 and Alternative 8)

Having established that flows at the state line are the same for Alternative 8 and Alternative 11, we further observe that any identified incremental impacts (downstream of the state line) between Alternative 8 and Alternative 11 are entirely the result of proposed operational changes by APC. That is, environmental impacts downstream of the state line occur because of the APC changes, not because of the Allatoona storage reallocation.

Flow at Coosa River Downstream of Logan Martin

As discussed above, Table 4 presents key statistics of flows in the Coosa River downstream of Logan Martin. The annual flow statistics demonstrate that Alternative 8 provides higher flows than Alternative 11 at 10%, 50%, 75%, and 90% exceedance levels. For example, at the 90% exceedance level of flow, Alternative 8 provides 223 cfs of additional flow compared to Alternative 11. This corresponds to a 6.4% increase.

For the month of September, Alternative 8 provides higher flows—some substantially higher—at 10%, 25%, 50%, 75%, and 90% exceedance levels. For example, at the 75% exceedance level, Alternative 8 provides a flow of 3,423 cfs, which is 598 cfs higher than the 2,825 cfs provided by Alternative 11. This represents an increase of more than 17%.

Flow at Alabama River at Confluence between Coosa and Tallapoosa Rivers

As discussed above, Table 5 presents key statistics of flows in the Alabama River at the confluence between the Coosa and Tallapoosa Rivers. The annual flow statistics demonstrate that Alternative 8 provides higher flows than Alternative 11 at 10%, 50%, 75%, and 90% exceedance levels. For example, at the 90% exceedance level of flow, Alternative 8 provides a flow of 5,069 cfs, which is 298 cfs higher than the 4,771 cfs provided by Alternative 11. This corresponds to a 5.9% increase.

For the month of December, Alternative 8 provides higher flows at 10%, 25%, 50%, 75%, and 90% exceedance levels than Alternative 11. For example, at the 90% exceedance level, Alternative 8 provides a flow of 8,219 cfs, which is 467 cfs higher than the 7,752 cfs provided by Alternative 11. This represents an increase of 5.7%.

Drought Operations

As we did above, we again use Tables 6, 7, and 8 to show how Alternative 8 compares with Alternative 11 with respect to drought operations. Table 6 presents the number of occurrences of drought operations triggered and the number of each drought level triggered. Statistics of Alternative 8 are exactly the same as those of Alternative 11. In Table 7, there are some minor differences between Alternative 8 and Alternative 11. For example, under Alternative 8, the ACT Basin is under Level 2 drought response 3.7% of the time, as compared to 3.8% under Alternative 11. Finally, in Table 8, the drought response statistics of Alternative 8 and Alternative 11 are almost the same.

Navigation

A discussed above, Table 9 presents navigation channel depth availability (at the Alabama River below Claiborne Lock and Dam) under multiple alternatives.[4] Alternative 8 provides a slightly higher channel depth availability compared to Alternative 11. This is true for both a 9-foot channel depth and a 7.5-foot channel depth.

Hydropower Generation

As discussed above, Table 10 contains annual average power generation at all ACT Basin federal or APC reservoirs resulting from multiple alternatives. A comparison between Alternative 8 and Alternative 11 shows that there is slightly more energy generated by most of the federal and APC reservoirs under Alternative 8 than under Alternative 11. For example, under Alternative 8, the total annual average energy production by federal reservoirs is 1,360,756 MWH, which is 2,240 MWH (or 0.16%) higher than under Alternative 11. For the aggregation of all federal and APC reservoirs, the annual energy production under Alternative 8 is 5,551,137 MWH, which is 10,294 MWH (or 0.19%) higher than under Alternative 11 (5,540,843 MWH).

Other Technical Issues in the Draft SEIS

In addition to the modeling (HEC-ResSim) error in implementing Georgia's storage accounting methodology discussed above, three other technical issues need to be addressed in the Final SEIS. This section describes all three.

Draft SEIS Places 35 mgd on Richland Creek Reservoir in All Alternatives and Overestimates Water Supply Withdrawals

CR

Upon review of the HEC-ResSim models accompanying the Draft SEIS, we discovered that the NAA (Alternative 1) and all the federal action alternatives have incorporated a water supply demand of 35 mgd placed on Richland Creek Reservoir (RCR). This is incorrect. While RCR is deigned to someday potentially support a 35 mgd demand, RCR does not currently support such a demand nor is it projected to support such a demand through 2050.

Placing a 35 mgd water supply demand on RCR overestimated the overall impact of water supply withdrawals. Paulding County's 2006 demand was 10.57 mgd. This 10.57 mgd was included as part of Allatoona Lake's 2006 water supply demand, and therefore was captured in the Draft SEIS NAA. Paulding County's projected 2050 demand (by the North Georgia Metropolitan Water Management District's Water Management Plan) is 24 mgd.[5] Both

[4] *See* Footnote 3.

[5] Even though Paulding County's projected 2050 water supply need is 24 mgd, this demand will be placed in the Richland Creek Reservoir, which is outside any federal projects. Paulding County's future demand is therefore not directly related to Georgia's water supply request and

numbers—10.57 mgd and 24 mgd—are much lower than the 35 mgd used in the Draft SEIS modeling.

When Georgia submitted its 2018 ACT Water Supply Request update to the Corps, we placed Paulding County's current water demand of 10.57 mgd on Allatoona Lake as part of the Baseline-2006 Alternative. We did not have a separate Paulding County demand placed on either the Kingston Reach or the RCR because Paulding County is currently withdrawing from Allatoona Lake (via CCMWSA). The NAA used in the Final SEIS should follow Georgia's approach and not place an additional 35 mgd demand on RCR since Paulding County's demand of 10.57 mgd has already been reflected in demand placed on Allatoona. The NAA in the Draft SEIS overestimates total withdrawals within Georgia by 35 mgd.

In modeling water supply alternatives that meet Georgia's 2018 updated request, we placed Paulding County's current demand of 10.57 mgd in the Kingston Reach.[6] We understand that Paulding County's demand will ultimately come out of the stretch of the Etowah River between Allatoona Dam and the Kingston USGS gage, even after the construction and operation of RCR. Because the Corps only analyzes the effect of changes to federal projects and congressionally authorized purposes, placing Paulding County's (current) demand of 10.57 mgd on either the Kingston Reach or on the RCR is reasonable. However, for the reasons discussed above, the Corps should not model 35 mgd as Paulding County's demand on RCR.

Draft SEIS has Inconsistent Basin Inflow Drought Trigger

Upon review of the HEC-ResSim models accompanying the Draft SEIS, we discovered an inconsistency in basin inflow, one of the three elements in the drought triggering mechanism. The other two elements are state line flow and composite storage. **CS**

The basin inflow element was developed as part of the 2015 ACT Water Control Manual, containing two concepts – Computed Basin Inflow and Required Basin Inflow. This basin inflow element of the drought response is triggered when the former is lower than the latter. Required Basin Inflow is derived from the volume of water necessary to fill APC reservoirs to their respective rule curves (top of conservation pool). The Draft SEIS, and specifically the TSP, contemplates changes to APC's rule curves at Weiss and Logan Martin Lakes. As a result, the volume of water needed to fill these reservoirs under the TSP and all alternatives adopting APC's proposed changes will be different from the volume of water needed when the 2015

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the Draft SEIS. Thus, using Paulding County's current level of water supply needs in this analysis is reasonable.

[6] Using Paulding County's current (2006) withdrawal of 10.57 mgd for modeling Georgia's 2018 updated request is consistent with Georgia's approach of keeping all water supply withdrawals from sources other than Allatoona Lake at current levels so as to isolate the impact of a reallocation at Allatoona.

Manual was published and different from the volume of water needed for all alternatives not adopting APC's proposed changes. Therefore, the computation for Required Basin Inflow must be updated in the Final SEIS for all alternatives adopting APC's proposed changes.

Inconsistency in Flood Impact Modeling Data

Although Table 5-1 of the Draft SEIS shows a "Negligible/no change" effect in flood risk management on the Coosa River downstream of Weiss under the TSP (Alternative 11), the Corps' modeling results suggest otherwise. Figure 17 shows simulated gage height at Gadsden, Alabama (downstream of Weiss). Under the February 1990 flood event, maximum simulated gage height at Gadsden is 512.43 feet under both the NAA (Alternative 1) and Alternative 8 (identical to the TSP but without APC's proposed operational changes). However, the maximum simulated gage height is 1.30 feet higher under the TSP (Alternative 11), indicating two points: (1) the additional inundation is the result of APC's proposed changes; and (2) implementing APC's proposed operational changes could have a noticeable impact (not "negligible/no change") on flood risk management. **CT**

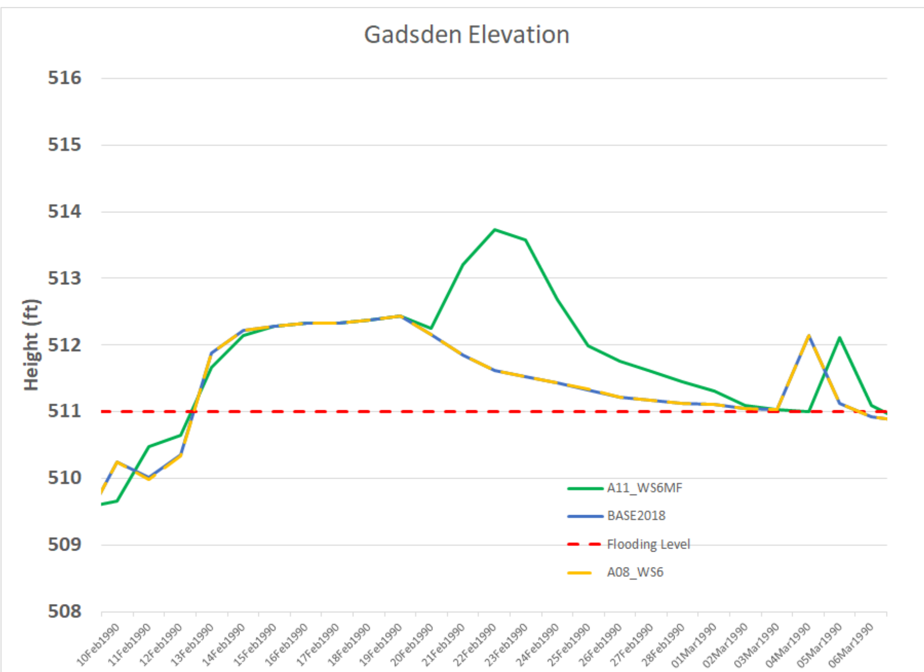

Figure 17. Simulated gage height at Gadsden, Alabama (downstream of Weiss) (NAA, TSP, and Alternative 8)

The Draft SEIS also states that "APC has proposed to modify flood operations by releasing more water during flood events to keep reservoir pool levels within the newly proposed maximum surcharge elevation and to acquire the necessary flowage easements downstream to accommodate increased non-damaging releases from 50,000 cfs to 70,000 cfs." (*See* Draft SEIS at 2-23, Lines 7-10.) However, this statement is inconsistent with ResSim modeling data and the relevant flood stage as set by the National Weather Service (NWS). Figure 18 shows stage height at Childersburg as a result of both inflow and Lay elevation. This data reflects physical settings at Coosa River at Childersburg and is an integral part of the ResSim model. For example, when Lay elevation is at 395.4 feet and the inflow is at 50,000 cfs, the corresponding Childersburg stage height is 400.0 feet. According to the same data, if inflow is increased from 50,000 cfs to 70,000 cfs, stage height, the Childersburg stage height will rise by more than 2.5 feet, reaching above the Flood Stage designated by NWS. Given this substantial increase in stage height, it is unclear how the Corps can characterize the extra 20,000 cfs as "non-damaging releases." The Final SEIS should address this discrepancy and explain how the Corps determines the "non-damaging" qualifier.

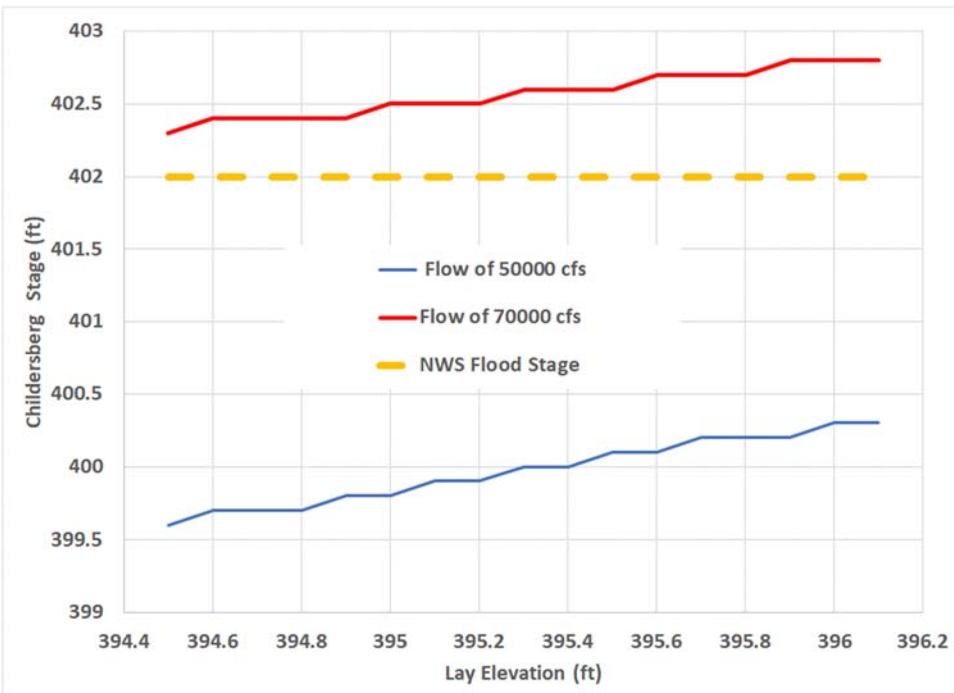

Figure 18. Rating curve in Coosa River at Childersburg (ResSim model)

Summary

Based on the Draft SEIS and our technical evaluation, we make the following observations. First, the Final SEIS must correct the modeling error related to Georgia's storage accounting mechanism. Second, with the Georgia's corrected storage accounting mechanism, Alternative 13A provides the same or better environmental consequences as compared to the TSP (Alternative 11). Thus, the Final SEIS should consider changing the TSP from Alternative 11 to Alternative 13A. Third, if the Corps decides not to move forward with the APC Study, the Draft SEIS provides sufficient information for the Final SEIS to choose an alternative that only addresses the Reallocation Study. This is because the environmental consequences of Georgia's water supply request are identical in the Georgia portion of the ACT Basin in alternatives with and without the APC operational changes (e.g., Alternative 8 vs. Alternative 11). We have also observed that the environmental consequences in the Alabama portion of the ACT Basin are no worse in an alternative (Alternative 8) without the APC operational changes than one with such changes (Alternative 11). Finally, the Final SEIS must address the technical issues raised in this memorandum. **CU**

Table 1. Allatoona release statistics (Draft SEIS Table 5-4)

	Percent of days exceeded	BASE2018	A08_WS6	A10_WS2MF	A11_WS6MF	A13_WS3MF-A
Annual	10%	3063	2963	3007	2963	2959
	25%	1929	1911	1921	1911	1910
	50%	1197	1192	1187	1192	1192
	75%	776	773	772	773	773
	90%	365	365	365	365	365
September	10%	1762	1935	1673	1935	1924
	25%	1160	1156	1151	1156	1156
	50%	965	961	962	961	961
	75%	569	569	365	569	569
	90%	365	365	365	365	365
December	10%	4294	4108	4218	4108	4108
	25%	2804	2651	2759	2651	2639
	50%	2091	2025	2038	2025	2024
	75%	1979	1534	1872	1534	1516
	90%	769	365	365	365	365

Table 2. Statistics of flow at Coosa River at Rome (Draft SEIS Table 5-5)

Period	**% days exceeded**	**BASE2018**	**A08_WS6**	**A10_WS2MF**	**A11_WS6MF**	**A13_WS3MF-A**
Annual (entire year)	10	14,145	14,098	14,119	14,098	14,094
	25	7,150	7,104	7,127	7,104	7,100
	50	4,079	4,069	4,072	4,069	4,069
	75	2,604	2,608	2,581	2,608	2,608
	90	1,798	1,805	1,791	1,805	1,805
September	10	4,422	4,541	4,360	4,541	4,543
	25	2,965	3,020	2,935	3,020	3,020
	50	2,173	2,178	2,135	2,178	2,178
	75	1,653	1,651	1,638	1,651	1,657
	90	1,291	1,280	1,278	1,280	1,280
December	10	14,281	14,172	14,247	14,172	14,172
	25	8,262	8,166	8,244	8,166	8,166
	50	5,276	5,135	5,255	5,135	5,135
	75	3,530	3,397	3,487	3,397	3,395
	90	2,669	2,492	2,576	2,492	2,490

Table 3. Percent of days when flow at Coosa River at Rome exceeded Monthly 7Q10s (Draft SEIS Table 5-6)

		Percent of days flow would exceed 7Q10 values				
Month	**Monthly 7Q10 Value (cfs)**	**BASE2018**	**A08_WS6**	**A10_WS2MF**	**A11_WS6MF**	**A13_WS3MF-A**
January	2,544	94.1%	94.1%	94.0%	94.1%	94.1%
February	2,982	94.5%	94.6%	94.5%	94.6%	94.6%
March	3,258	97.0%	97.1%	97.0%	97.1%	97.1%
April	2,911	94.6%	94.7%	94.7%	94.7%	94.8%
May	2,497	93.3%	93.4%	93.2%	93.4%	93.4%
June	2,153	91.7%	92.0%	91.8%	92.0%	92.0%
July	1,693	93.6%	93.6%	93.5%	93.6%	93.6%
August	1,601	88.2%	88.7%	87.8%	88.7%	88.7%
September	1,406	85.4%	85.4%	85.0%	85.4%	85.3%
October	1,325	89.4%	89.4%	89.6%	89.4%	89.6%
November	1,608	89.8%	88.9%	89.4%	88.9%	89.0%
December	2,043	96.3%	95.2%	95.7%	95.2%	95.1%
Note: Based on USGS Coosa River at Rome Gage (Mayo's Bar, USGS 02397000) observed flow from 1949 to 2006						

Table 4. Statistics of flow Downstream of Logan Martin (Draft SEIS Table 5-7)

	Percent of day	BASE2018	A08_WS6	A10_WS2MF	A11_WS6MF	A13_WS3MF
Annual	10%	29842	29705	29284	29289	29293
	25%	14414	14375	14441	14414	14414
	50%	7026	7008	6958	6955	6956
	75%	5094	5095	5080	5081	5082
	90%	3475	3490	3217	3268	3265
March	10%	50000	50000	48109	48036	48036
	25%	33028	32855	31620	31625	31625
	50%	18293	18249	18344	18322	18322
	75%	12007	11967	12004	12015	12016
	90%	8069	8069	8127	8117	8117
September	10%	7857	7969	6827	7009	7009
	25%	5120	5121	5105	5108	5107
	50%	5037	5040	5021	5024	5023
	75%	3398	3423	2821	2825	2885
	90%	2019	2026	1732	1742	1760

Table 5. Statistics of flow at Alabama River at Confluence between Coosa and Tallapoosa Rivers (Draft SEIS Table 5-8)

	Percent of days exceeded	BASE2018	A08_WS6	A10_WS2MF	A11_WS6MF	A13_WS3MF-A
Annual	10%	49025	48929	47971	47973	47973
	25%	24089	24066	24102	24092	24097
	50%	12047	12031	11931	11930	11925
	75%	8260	8253	8232	8232	8232
	90%	4989	5069	4682	4771	4803
September	10%	12519	12623	11281	11436	11436
	25%	9005	9050	8706	8768	8776
	50%	7600	7600	7600	7600	7600
	75%	4640	4641	4640	4640	4640
	90%	4614	4639	4638	4638	4638
December	10%	50837	50827	48872	48781	48781
	25%	26606	26408	25627	25508	25466
	50%	15862	15724	14994	14864	14900
	75%	9985	9867	9345	9340	9320
	90%	8332	8219	7752	7752	7752

Table 6. Number of times Drought Operations triggered (Table 5-9 in Draft SEIS)

	BASE2018	A08_WS6	A10_WS2MF	A11_WS6MF	A13_WS3MF-A
Drought Level 1	124	122	124	122	122
Drought Level 2	32	30	30	30	30
Drought Level 3	3	3	3	3	3

Table 7. Percent of time ACT system operating in normal and drought mode (Table 5-10 in Draft SEIS)

	BASE2018	A08_WS6	A10_WS2MF	A11_WS6MF	A13_WS3MF-A
Normal	82.3%	81.8%	81.7%	81.8%	81.9%
Drought Level 1	12.9%	13.5%	13.7%	13.7%	13.6%
Drought Level 2	3.8%	3.7%	3.7%	3.8%	3.8%
Drought Level 3	1.0%	1.0%	0.9%	0.8%	0.8%

Table 8. Percent of time Drought Operation activated and individual drought triggers met (Table 5-11 in Draft SEIS)

	BASE2018	A08_WS6	A10_WS2MF	A11_WS6MF	A13_WS3MF-A
Drought Operation Activated	17.7%	18.2%	18.3%	18.2%	18.1%
State Line Flow Trigger Met	12.7%	13.1%	13.2%	13.1%	13.0%
Basin Inflow Trigger Met	9.3%	9.4%	9.4%	9.4%	9.4%
Composite Conservation Storage Trigger Met	1.3%	1.2%	0.9%	0.9%	0.9%

Table 9. Alabama River Navigation Channel Depth Availability (following Draft SEIS Table 5-15)

Alternative	Storage Accounting Method	Percentage of time 9-ft Navigation Depth Channel Available	Percentage of time 7.5-ft Navigation Depth Channel Available
Base2018	USACE	82.8%	85.7%
A08_WS6	USACE	82.8%	85.9%
A10_WS2MF	USACE	82.1%	85.2%
A11_WS6MF	USACE	82.2%	85.4%
A13_WS3MF-A	GA	82.2%	85.6%

Table 10. Annual average energy generated by ACT federal and APC reservoirs (Appendix D (Project Impact to Hydropower) Tables 3-4 and 3-5)

	Owner	BASE2018	A08_WS6	A10_WS2M	A11_WS6MF	A13_WS3MF-A
ALLATOONA	Federal	107,554	105,686	104,756	105,686	105,694
CARTERS	Federal	659,601	659,601	659,601	659,601	659,601
MILLERS FERRY	Federal	327,871	327,932	326,509	326,653	326,758
RF HENRY	Federal	267,636	267,537	266,491	266,576	266,639
Federal	Subtotal	1,362,661	1,360,756	1,357,357	1,358,516	1,358,692
HARRIS	Non-Federal	191,249	191,253	191,255	191,255	191,255
HN HENRY	Non-Federal	200,935	200,627	199,668	199,686	199,696
JORDAN	Non-Federal	277,600	277,384	274,938	274,902	274,898
LAY	Non-Federal	650,366	649,666	646,975	647,033	647,058
LOGAN MARTIN	Non-Federal	425,099	424,487	427,276	427,319	427,333
MARTIN	Non-Federal	417,215	417,212	417,191	417,194	417,209
MITCHELL	Non-Federal	550,016	549,403	546,998	547,007	547,021
THURLOW	Non-Federal	273,719	273,715	273,756	273,748	273,755
WALTER BOULDIN	Non-Federal	847,320	846,410	842,350	842,494	842,548
WEISS	Non-Federal	200,742	200,435	201,768	201,878	201,884
YATES	Non-Federal	159,796	159,791	159,816	159,812	159,815
Non-Federal		4,194,057	4,190,382	4,181,991	4,182,328	4,182,471
System		**5,556,719**	**5,551,137**	**5,539,348**	**5,540,843**	**5,541,163**
Note: The unit of the value is MWH						

Table 11. Recreation impacts on Allatoona (Appendix D (Recreation Impact Analysis Summary Memorandum) Table 4)

Elevation (feet)	840-837	837-835	835-828	<828
Alternatives	Full Pool	Initial Impact Level	Recreation Impact Level	Water Acess Limited
A08_WS6	34.7%	9.2%	37.1%	19.0%
A10_WS2MF	30.1%	10.1%	37.4%	22.5%
A11_WS6MF	34.7%	9.2%	37.1%	19.0%
A13_WS3MF-A	34.7%	9.2%	37.2%	18.9%
BASE2018	30.8%	10.4%	37.2%	21.6%

S-06

From: Brandt Hill <BHill@maynardcooper.com>
Sent: Wednesday, January 29, 2020 3:10 PM
To: ACT-ACR
Cc: Atkins, Brian; Smith, Claudia; Parker, Will
Subject: [Non-DoD Source] State of Alabama's Comments on Draft FR/SEIS for the Allatoona Lake Water Supply Reallocation Study and Updates to Weiss and Logan Martin Reservoirs Project WCMs
Attachments: 2020.01.29 - State of Alabama Comments on Draft FR-SEIS (05240311x80C68).PDF

To whom it may concern:

Attached please find the State of Alabama's comments on the Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals.

Thank you,

Brandt

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COOPER GALE

S-06

OFFICE OF THE GOVERNOR

KAY IVEY
GOVERNOR

ALABAMA DEPARTMENT OF ECONOMIC AND COMMUNITY AFFAIRS

KENNETH W. BOSWELL
DIRECTOR

STATE OF ALABAMA

January 29, 2020

USACE Mobile District
ATTN: Mike Malsom
P.O. Box 2288
Mobile, Alabama 36628-0001
(251) 690-2023
ACT-ACR@usace.army.mil
VIA EMAIL

Re: *Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement—Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals*

Dear Mr. Malsom:

The State of Alabama, through its Office of Water Resources, submits these comments on the Corps of Engineers' Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement ("FR/SEIS") for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals. These comments specifically address the proposal in the draft FR/SEIS to reallocate additional storage space in Allatoona Lake for municipal and industrial water supply purposes.

In summary, Alabama is concerned that the draft FR/SEIS has injected the Corps of Engineers into a matter that should be resolved by the States—namely, the long-running dispute between the States of Alabama and Georgia over the allocation of water in the ACT Basin. This is a dispute that should be resolved through the development of consensus between the States and ultimately by an interstate compact between the States, not by the unilateral action of a federal agency. The draft FR/SEIS unnecessarily interferes with State prerogatives, subverting the authorized purposes for Allatoona Lake of hydropower and navigation, for the sake of allowing Georgia to use federal resources to withdraw water from the ACT Basin that should be flowing into Alabama. This proposed action would violate the Water Supply Act and other federal laws. The Corps should withdraw the proposed action and choose **A** an alternative that allows the States to reach a consensus on this issue of inherently state concern.

I. There is Zero Analysis of Whether the Reallocation of Storage Space Required Congressional Authorization Under the Water Supply Act

B

The only authority the Corps has to reallocate storage space in Allatoona Lake comes from the Water Supply Act of 1958, 43 U.S.C. § 390b *et seq*. Under the Water Supply Act, however, the Corps must get congressional approval for any reallocation that will "seriously affect" authorized project purposes. It must also get congressional approval for any reallocation that will "involve major . . . operational changes":

> Modifications of a reservoir project heretofore authorized, surveyed, planned, or constructed to include storage as provided in [43 U.S.C. § 390b(b)] which would seriously affect the purposes for which the project was authorized, surveyed, planned, or constructed, or which would involve major structural or operational changes shall be made only upon the approval of Congress as now provided by law.

43 U.S.C. § 390b(e). Without congressional approval, the Corps has no authority to take any such major action. *Se. Fed. Power Customers v. Geren*, 514 F.3d 1316, 1323 (D.C. Cir. 2008).

The draft FR/SEIS cites this statutory limit, *see* FR/SEIS, 1-4, and it implies that the Corps has evaluated whether it has authority to adopt each of the proposed alternatives, *see id.* 4-12, 4-17. Yet the Corps never explains *how* it construed the scope of its authority under the Water Supply Act. There is, in other words, *zero analysis* about whether Congress must approve the reallocation of storage space in Allatoona Lake.[1]

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[1] This failure is especially concerning because the Corps appears to conflate the "seriously affect" and "major operational change" prongs of the Water Supply Act. The plain language of the statute shows that reallocation requires congressional approval if it would *either* (1) seriously affect authorized project purposes *or* (2) involve major operational changes. These prongs are distinct, disjunctive inquiries. In screening out proposed alternative WS4, the Corps states that it considered whether WS4 meets "all authorized project purposes"—an apparent reference to the "seriously affect" prong. FR/SEIS, 4-12. But then, in explaining what that criteria means, the Corps states that "[a]n action that would result in a major operational change would need additional authorization from Congress." *Id.* In the final FR/SEIS, the Corps should separately analyze each prong of the Water Supply Act.

This failure breaks from the Corps' usual practice of explaining why it asserts (or does not assert) authority to reallocate storage space without congressional approval. The Corps has, for example, repeatedly opined on whether it may reallocate storage in Lake Lanier. *See, e.g.*, Memorandum from Earl Stockdale, Chief Counsel, Dep't of the Army, to the Chief of Engineers, regarding Authority to Provide for Municipal and Industrial Water Supply from the Buford Dam/Lake Lanier Project, Georgia (June 25, 2012); Memorandum from Earl Stockdale, Chief Counsel, Dep't of the Army, to the Chief of Engineers, regarding Authority to Reallocate Storage for Municipal & Industrial Water Supply Under the Water Supply Act of 1958, 43 U.S.C. § 390b (Jan. 9, 2009); Memorandum from Earl Stockdale, Deputy Gen. Counsel, Dep't of the Army, to the Acting Assistant Sec'y of the Army for Civil Works, regarding Georgia Request for Water Supply from Lake Lanier (Apr. 15, 2002). Those long opinions studied both the history and characteristics of Lake Lanier, and they gave detailed reasons for the Corps' decisions.

This time, however, the Corps makes no effort at all to analyze whether Congress must approve the reallocation of storage space in Allatoona Lake. That lack of analysis violates the Administrative Procedure Act ("APA"), 5 U.S.C. § 500 *et seq*., in two ways.

First, omitting all analysis of the Corps' statutory authority denies the public a meaningful opportunity to comment on that analysis. Under the APA, the Corps must "give interested persons an opportunity to participate in [a] rule making through submission of written data, views, or arguments." 5 U.S.C. § 553(c). That chance to comment "must be a meaningful opportunity." *Rural Cellular Ass'n v. FCC*, 588 F.3d 1095, 1101 (D.C. Cir. 2009). As a result, the notice of a proposed rule "must include sufficient detail on its . . . basis in law." *Am. Med. Ass'n v. Reno*, 57 F.3d 1129, 1132 (D.C. Cir. 1995). When an agency does not provide enough detail on its authority to issue a rule, the agency's action is invalid. *See Global Van Lines, Inc. v. Interstate Commerce Comm'n*, 714 F.2d 1290, 1298 (5th Cir. 1983) (reversing a rule because the notice of proposed rulemaking did not give interested parties "a fair chance" to comment on the agency's legal authority to promulgate the rule).

The cursory citation in the draft FR/SEIS to the Water Supply Act provides nowhere near enough detail on the Corps' authority to reallocate storage space in Allatoona Lake. The Corps must explain when and how an effect on Allatoona Lake's authorized project purposes is a *serious* effect. *See* 43 U.S.C. § 390b(e). Similarly, it must explain when and how an operational change is a *major* change. *See id.* In doing so, the Corps must explain what facts it considers and how it considers them. (For example, it must articulate why it chose the various baselines it chose—and how it calculated them.) Until the Corps gives this analysis, there will not be a meaningful opportunity to rebut it.

Second, if the Corps does not explain its analysis under the Water Supply Act, its decision will be arbitrary and capricious. Under the APA, the Corps must give "a reasoned explanation for its decisions." *Am. Wild Horse Pres. Campaign v. Perdue*, 873 F.3d 914, 923 (D.C. Cir. 2017) (citing *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins.*, 463 U.S. 29, 52 (1983)). Thus, the Corps must explain "the complete . . . *legal* basis" for its rules. *Global Van Lines*, 714 F.2d at 1298 (citation omitted); *see City of New York v. FCC*, 814 F.2d 720, 728 (D.C. Cir. 1987) (invalidating a rule when the agency did not "explicitly" consider the relationship between two statutes), *aff'd on other grounds*, 486 U.S. 57 (1988); *United Mine Workers of Am. v. Dole*, 870 F.2d 662, 667 (D.C. Cir. 1989) (requiring a statement that is "fully explanatory of the complete factual and legal basis" for a new regulation) (cleaned up).

The Corps' duty to explain its decision applies all the more because the Corps faces adverse precedent. *See Dillmon v. NTSB*, 588 F.3d 1085, 1089–90 (D.C. Cir. 2009) ("Reasoned decision making . . . necessarily requires the agency to acknowledge and provide an adequate explanation for its departure from established precedent."). In *Southeastern Federal Power Customers, Inc. v. Geren*, the D.C. Circuit held that reallocating 9% of Lake Lanier's storage capacity to local consumption uses was a major operational change under the Water Supply Act. 514 F.3d at 1324. Thus, the court held that the reallocation required Congress's prior approval. *Id.* at 1325. Here, the Corps proposes to reallocate *at least* 18.54% of Allatoona Lake. *See* FR/SEIS, 7-1 (noting that total storage space being reallocated is "approximately 18.6%" of conservation pool); Exhibit A, Declaration of Charles Stover ("Stover Decl.") at Exh. 2 (calculating 18.54%). Yet the Corps somehow concludes that it can do so without congressional approval. If the Corps does not give its reasons for distinguishing *Geren*, its decision will be arbitrary and capricious. Along the same lines, the Corps has recognized "a rule of thumb" that it cannot reallocate more than 15% of storage capacity without congressional approval. 2002 Stockdale Memorandum at 11 n.3; *see also* Engineer Regulation ("ER") 1105-2-100, at 3-33 (Apr. 22, 2000). The Corps must explain why that rule does not apply here.

In short, the Corps must provide a detailed analysis—not mere conclusions—about whether Congress must approve the reallocation of storage space in Allatoona Lake.

II. The Available Data Shows that Congressional Authorization Was Required to Reallocate the Storage Space to Water Supply

Had the Corps performed the requisite statutory analysis, it would have revealed that the proposed reallocation of storage space in Allatoona Lake towards water supply does in fact "seriously affect the purposes for which the project was authorized" and "involve major structural or operational changes," such that it needed congressional authorization. **C**

A. The Corps must account for the total amount of storage space reallocated to water supply at Allatoona Lake

The Tentatively Selected Plan ("TSP") proposes reallocating 33,872 ac-ft of storage space in Allatoona Lake, including 22,202 ac-ft from conservation storage and 11,670 ac-ft from flood storage; the latter is achieved by raising the reservoir's guide curve. *See* FR/SEIS, 7-1. This particular reallocation dedicates 12.02% of conservation storage to water supply. *See C*, Figure 7-1. To be sure though, this particular reallocation is not the only reallocation that matters for purposes of the Water Supply Act analysis. Rather, the Corps must consider the *total* amount of storage space allocated to water supply since Allatoona Lake was first "authorized, surveyed, planned, or constructed" in the 1940s. 43 U.S.C. § 390b(e). Otherwise, the Corps could propose individual reallocations that on their own might not "seriously affect" other project purposes or involve "major operational change," but when aggregated do. **D**

Accordingly, when the Corps actually performs the statutory analysis in the final FR/SEIS, it ought to account for the storage space reallocated to water supply in the 1963 CCMWA contract and the 1966 and 1991 City of Cartersville contracts. *See* FR/SEIS, 2-13 n.2. Doing so reveals that, at least according the Corps' data, the total storage space allocated to water supply at Allatoona Lake is 52,411 ac-ft, or 18.54% of conservation storage. *See id.*, 7-1; Stover Decl. at Exh. 2.

B. The proposed reallocation is understated

A reallocation of 52,411 ac-ft or 18.54% of conservation storage alone requires Congress's approval. Yet there are at least two reasons to believe these figures are understated. **E**

First, the proposed reallocation of 52,411 ac-ft does not take into account diversions upstream from Allatoona Lake. This matters because net upstream diversions—the total amount of withdrawals in excess of any returns—reduce a reservoir's critical yield, which in turn determines how much storage space is needed to satisfy a user's water-supply demands. The lower the critical yield, the more storage needed to satisfy a given demand. Thus, if the critical yield is erroneously believed to be higher than it really is, then more storage space needs to be reallocated.

This is the situation here. In calculating that it needed to reallocate 52,411 ac-ft of storage space in order to satisfy the full 94 mgd requested by the State of Georgia, the Corps relies on a critical yield of 784.38 cfs, a figure which does not account for upstream diversions. *See* FR/SEIS, Appx. C, Attach. 10, Table 2 (Method A); *see also* Stover Decl. at Exh. 2. However, a critical yield that accounts for the upstream diversions identified by the Corps is just 765.34 cfs. *See* FR/SEIS, Appx. C, Attach. 10, Table 3 (Method B); Stover Decl. at Exh. 2. To continue to meet Georgia's full 94 mgd of water supply needs, then, the Corps would need to reallocate an additional

1,301 ac-ft of storage space. *See* Stover Decl. at Exh. 2. Combined with the existing storage contracts, the total allocation of storage space to water supply is 53,712 ac-ft, or 19.00% of conservation storage. *See id.* Thus, these figures, not the ones in the Corps' critical-yield analysis, better reflect the size of the reallocation.

Second, even these higher figures still may not accurately reflect the reallocation needed to meet Georgia's demands. That is because Method B used in the Corps' critical-yield analysis does not appear to account for the *full amount* of upstream diversions that it had accounted for in a prior critical-yield analysis performed in 2010. Specifically, in that 2010 analysis, the Corps identified 36 cfs in upstream diversions.[2] But in the 2019 analysis, as noted above, the Corps identified just 19 cfs in upstream diversions. *See* FR/SEIS, Appx. C, Attach. 10, Tables 2 & 3; Stover Decl. at Exh. 2.

The Corps does not say why there was a 47% drop in upstream diversions, from 36 cfs in 2010 to 19 cfs in 2019. At least one possible explanation—that the amount of water being released from Hickory Log Creek Reservoir ("HLCR") factored into the equation—was ruled out by the Corps. *See* FR/SEIS, Appx. C, Attach. 10, p. 1 (acknowledging that HLCR "had no impact on the yield results"). To the extent there is an explanation in the draft FR/SEIS, it does not appear evident from its face—a problem the Corps should fix in the final FR/SEIS. More generally speaking, the final FR/SEIS should provide clear tables and calculations showing the amount and location of withdrawals and returns used in its critical yield analysis.

Barring any legitimate explanation for the decline in upstream diversions between 2010 and 2019, the Corps should revise its critical-yield analysis to account for 36 cfs instead of 19 cfs in diversions. The State of Alabama has done this analysis already, and it shows that Georgia would need 2,509 ac-ft of storage space more than the 52,411 ac-ft it currently estimates it needs in order to satisfy its 94 mgd demand. *See* Stover Decl. at Exh. 2. And so, the total reallocation of storage space, including the full amount of upstream diversions, is actually 54,920 ac-ft, or 19.43% of conservation storage. *See id.*

C. Assumptions being made about projected future withdrawals and returns are not sufficiently explained

In granting Georgia's water supply request for 94 mgd, the draft FR/SEIS makes at least two erroneous assumptions that call into question its environmental-impact analysis. **F**

First, in evaluating Georgia's request for its projected water-supply demands of 94 mgd in 2050, the Corps—relying on data provided by the Metropolitan North

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[2] *See* Exhibit B, U.S. Army Corps of Eng'rs, *Federal Storage Reservoir Critical Yield Analysis*, Appx. B, Tables B-6, B-8 (Feb. 2010).

Georgia Water Planning District ("MNGWPD")—assumes that returns to Allatoona Lake from two wastewater treatment facilities owned by the Cobb County Water System will increase in the future from 17.2 mgd in 2006 to 25.6 mgd by 2050. *See* FR/SEIS, Appx. B, Attach. 1, Table 5. According to the Corps, "[c]urrent withdrawals from Allatoona Lake and associated returns of treated wastewater to the ACT River Basin are of specific interest in considering the proposed reallocation of storage at Allatoona Lake." FR/SEIS, 3-9; *see also id.* 5-67 ("The extent to which treated wastewater is returned to the lake, or at least to the ACT River Basin, would partially offset the commitment of additional reservoir storage to the water supply purpose."). While the Corps' storage accounting policy rightly does not credit individual users' storage accounts for returns, its decision to consider them in granting Georgia's request is problematic for several reasons.

As an initial matter, there is no reason to believe these returns will actually be made into Allatoona Lake. Every single year for the past 30-plus years, Georgia's users have illegally withdrawn more water from the reservoir than their contracts allotted—a disturbing practice that occurred because the Corps, despite publicly denouncing the practice, never enforced the withdrawal limits.[3] Why should the Corps now accept these users' assurances that they will return the projected amounts to Allatoona Lake, especially if they have little incentive to do so under the Corps' storage-accounting methods? To ensure these users do not withdraw excessive amounts of water, the Corps ought to have a system in place that would sanction users when their actual returns fall short of their projected ones.

Additionally, there is no explanation in the draft FR/SEIS for why, as the MNGWPD has projected, returns from the two wastewater treatment facilities will increase over the next 30 years. The Corps promises that it "reviewed and vetted the [MNGWPD's] analysis to ensure reliability and accuracy of the data," FR/SEIS, 3-29, but Alabama has concerns about that analysis and vetting process. The final FR/SEIS must explain in detail why *the Corps* projects returns to increase from 17.2 mgd in 2006 to 25.6 mgd by 2050, without relying on self-serving assurances from the MNGWPD.

Second, the draft FR/SEIS appears to presume that the rate of withdrawals upstream from Allatoona Lake will decrease in the future, but it is not clear if that presumption is the right one since the report does not contain any data on the matter. Throughout the draft FR/SEIS, the Corps acknowledges that upstream withdrawals from the Allatoona watershed have been increasing, and will continue increasing in

[3] If the Corps ultimately adopts the TSP and grants Georgia's request for additional storage space in the final FR/SEIS, then any water-supply storage agreements subsequently entered between it and CCMWA and Cartersville should be conditioned on those entities first paying for the cost of its excessive withdrawals from Allatoona Lake over the past 30 years.

the future, albeit at a slower rate. For example, it observes that "[w]ithdrawals for public water supply and other purposes are likely to increase, but the rate of increase is expected to slow as a result of water conservation and efficiency measures being implemented." FR/SEIS, Table 3-18. The Corps, however, should provide the public with the evidence it relied on to predict future withdrawal rates. If greater withdrawals are expected in the future, then the critical-yield analysis should account for that. Currently, the critical-yield analysis uses data from the drought year of 2006 to calculate the maximum amount of upstream diversions. *See* FR/SEIS, Appx. C, Attach. 10, Table 2. But if withdrawals continue increasing, using data from 2006 will eventually no longer reflect the true maximum amount of upstream diversions, and thus the reallocation figure will always be too small.

D. Regardless which reallocation amount is correct, the Corps needs the approval of Congress

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Whether it is an 18.54% or 19.43% reallocation of storage space, or somewhere in between, it needs approval from Congress. Otherwise, the Corps will act "in excess of [its] statutory . . . authority." 5 U.S.C. § 706(2)(C).

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1. The proposed reallocation would "seriously affect" other project purposes—specifically hydropower

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The Corps, as Alabama explained earlier, does not perform any meaningful analysis under the Water Supply Act of whether or not the proposed reallocation "seriously affects" other project purposes for which Allatoona Lake was originally "authorized, surveyed, planned, or constructed." 43 U.S.C. § 390b(e). When it does perform this analysis in the final FR/SEIS, however, the Corps should focus on the effects to the project's three original purposes as set forth in Section 2 of the River and Harbor Act of 1945, which as the Corps knows, are hydropower, navigation, and flood control. *See* FR/SEIS, xix; Rivers and Harbors Act of 1945, Pub. L. No. 79-14, § 2, 59 Stat. 10, 17; Flood Control Act of 1941, Pub. L. No. 77-228, § 2, 55 Stat. 638, 641; *see also* H.R. Doc. No. 77-414, at 2 (1941); H.R. Doc. No. 76-674, at 2 (1940).

The proposed reallocation here would indeed seriously affect these original project purposes, and in particular would negatively impact the hydropower purpose. The draft FR/SEIS concludes that operations under the TSP would result in only a "slightly adverse" effect to hydropower in the ACT system as a whole, and would actually benefit hydropower at Allatoona Dam. *See* FR/SEIS, Table 5-1; *id.*, Appx. D, Table D-13. But these findings are flawed because they use the wrong baseline against which to compare the TSP's effects. The result is that the projected loss in hydropower, as measured in terms of lowest and average annual generation and the value of dependable capacity, is understated in the draft FR/SEIS. That is true with respect to both the broader ACT system and Allatoona Dam specifically. These comments, however, focus on Allatoona.

In assessing the impact to hydropower at Allatoona Dam, the Corps compared conditions under the No Action Alternative ("NAA") with conditions under the TSP, and concluded that the TSP will benefit hydropower there. Specifically, the Corps estimates that the value of dependable capacity will increase from $12,171,439 under the NAA to $12,176,229 under the TSP. *See* FR/SEIS, Appx. D, Table D-13. But there are two problems with using the NAA as the baseline against which to measure changes to hydropower.

First, the NAA includes CCMWA and Cartersville's excessive withdrawals. As noted earlier, the Corps has acknowledged these withdrawals violated their respective storage contracts. *See, e.g.*, FR/SEIS, 4-1 ("Current water supply users have exceeded the yield found in their existing storage agreements at Allatoona Lake on multiple occasions over the last 15 years."). These unauthorized exceedances caused hydropower reductions on their own and, by including them in the NAA, the draft FR/SEIS masks the TSP's true effects on hydropower. And to be sure, these exceedances were substantial; the NAA includes peak withdrawals from 2006 of 61.1 mgd, almost double the authorized amount of 34 mgd. *See* FR/SEIS, Appx. B, Attach. 1, appx. a.

The Corps appears to acknowledge the issue with an NAA baseline, reflected by its decision to include in the draft FR/SEIS a "Baseline Capped" alternative that "caps" Georgia's withdrawals at the contractually authorized limits. But the Baseline Capped is used only sparingly as a reference point in the draft FR/SEIS. It is not the baseline used by the Corps when it determined there would be only a "slightly adverse" effect on system-wide hydropower. *See* FR/SEIS, Table 5-1.[4] Although the Corps offers no such assessment of how the TSP will affect hydropower specifically at Allatoona Dam, the Corps should do so in the final FR/SEIS. And in offering that assessment, the Corps should employ the Baseline Capped alternative as the baseline, since only it captures the actual changes to hydropower under approved operations and proposed operations.

The State of Alabama has already analyzed the changes to hydropower at Allatoona Dam using the Baseline Capped alternative, and it shows that the effect to hydropower under the TSP is in fact serious. For example, according to the Corps' data, the Lowest Annual Power generated at Allatoona Dam under the Baseline Capped alternative is 29.6 (GWh), and 27.6 (GWh) under the NAA. *See* Stover Decl.

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[4] Curiously, the "Benefits Forgone" analysis in the draft FR/SEIS uses the FWOP instead of the NAA as the baseline, perhaps because it reflects a positive, system-wide benefit to hydropower of $31,186. *See* FR/SEIS, Appx. D, Table D-15. This analysis however should determine the Benefits Foregone using the Baseline Capped alternative, which provides total system benefits of $138,722,373. *See id.,* Appx. D, Table D-13. Using that alternative as the baseline shows that the selection of the TSP will actually result in a negative, system-wide loss in benefits of $26,981.

at Exh. 4. Under the TSP, however, it is only 24.6 (GWh). *See id.* The 16.8% decrease in the Lowest Annual Power being generated from Baseline Capped conditions to TSP conditions will have a sufficiently "serious" effect on hydropower to have required congressional approval. Moreover, while the overall percentage change is less, the Average Annual Power being generated will also fall from 107.9 (GWh) under the Baseline Capped to 105.7 (GWh) under the TSP. *See id.*; *see also* FR/SEIS, Appx. D, Attach. 2, Tables 3 & 4.

Second, the NAA inexplicably does not always match up with the Proposed Action Alternative ("PAA") that was selected in the FEIS accompanying the 2015 ACT Manual. This is concerning, for conditions under the PAA and the NAA presumably should be identical. *See* FR/SEIS, Appx. B, B-15 ("System wide operations are those that were approved in the 2015 ACT WCM Update."). But conditions under the NAA and the PAA are not always the same. These discrepancies appear throughout the report, with respect to a variety of different metrics. To the State of Alabama's knowledge, there have been no operational changes in the interim that would account for these discrepancies.

An NAA that does not align with the PAA is problematic on a number of fronts, including under NEPA. *See infra*, at 12. But it is particularly problematic with respect to the Corps' ability to properly assess whether or not the TSP will seriously affect hydropower at Allatoona Dam. Had the Corps used the PAA as the baseline instead of the NAA, its analysis would have revealed that the TSP will have a significantly greater impact on hydropower than what the draft FR/SEIS reveals. For example, whereas Average Annual Power was 114.1 (GWh) under the PAA, it will drop by 7.3% to 105.7 (GWh) under the TSP. *See* Stover Decl. at Exhs. 3 & 4; *see also* FR/SEIS, Appx. D, Attach. 2, Tables 3 & 4. This percentage loss appears much more significant than the loss estimated using the NAA (or even the Baseline Capped) as the baseline, which is just 1.7%. *See* Stover Decl. at Exh. 4. Even more significant is the loss to Lowest Annual Power, which was 33.4 (GWh) under the PAA, but will drop by 26.3% to 24.6 (GWh) under the TSP. *See id.* at Exhs. 3 & 4.

The Corps should explain why there is a difference between the PAA and the NAA in the final FR/SEIS, and further, should account for those changes in its assessment of the TSP's effect on hydropower—as well as navigation and flood control—under the Water Supply Act. Until then, the Corps does not have the proper factual foundation on which its legal analysis can rest.

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2. The proposed reallocation involves "major operational change"

The Water Supply Act's other prong also requires congressional approval of the proposed reallocation. What constitutes "major structural or operational change" is **I**
not defined by the statute, but as previewed above, at least one court has looked to the percentage of conservation storage being reallocated to determine whether the action the agency proposes is sufficiently "major." In *Geren*, the D.C. Circuit Court of

Appeals observed that a reallocation of 23.7% of Lake Lanier's conservation storage space to water supply was "[o]n its face" the "type of major operational change referenced by" the Water Supply Act. 514 F.3d at 1324. Even a 9% percent (approximately 95,000 ac-ft) increase was "significant," according to the court. *Id.* Here, even assuming that 18.54% accurately reflects the size of the reallocation of Allatoona Lake's storage space to water supply, the TSP still easily exceeds the D.C. Circuit's threshold.

Moreover, as also noted earlier, the proposed reallocation easily exceeds the standard set forth in the Corps' own rules. Engineer Regulation 1105-2-100 provides that a reallocation from other project purposes may be allowed when it is no more than "15 percent of the total storage capacity allocated to all authorized project purposes or 50,000 acre feet, whichever is less." ER 1105-2-100, at 3-33. The regulation thus suggests that anything above these amounts, like the (at least) 52,411 ac-ft or 18.54% reallocation here, would require approval.

There is good reason to rely on the sorts of objective, quantifiable limits of the sort articulated by the D.C. Circuit in *Geren* and the Corps in its regulations. In particular, they serve as useful guidelines in attempting to determine where to draw the line between "major" and anything less than "major." They also help ensure that the Corps does not sidestep Congress as it did when reallocating storage space in Lake Lanier. *See Geren*, 14 F.3d at 1324.

Notably, the Corps seems to acknowledge in the draft FR/SEIS that some reallocations are big enough to require Congress's approval. One of the initial alternatives, WS4, proposed a reallocation of 52,775 ac-ft, or 16.34% of conservation storage. *See* FR/SEIS, Table 4-2; *id.* 4-12. Combined with existing storage agreements, the WS4 proposal would have reallocated 71,314 ac-ft, which is 25.2% of conservation storage, thus leaving only about 75% of conservation storage available for other project purposes. *See id.* 4-12. The Corps determined that WS4 was "implementable by current law and by USACE policy and practice," but ultimately screened it out on the basis that it "would result in a major operational change." *Id.* Yet the draft FR/SEIS does not explain in enough detail why WS4 but not the TSP was screened out, and in particular, does not say whether it was because of the size of WS4's reallocation. Even if 52,411 ac-ft is the correct size of the total reallocation under the TSP, that leaves just 229,506 ac-ft, or 81.46% of conservation storage, for other project purposes—just about 6% more than WS4 does. *See* FR/SEIS, Figure 7-1. If the Corps accounts for upstream diversions and a lower critical yield as Alabama believes it must (*see supra*, at 5), that leaves just 80.57% for other project purposes, about 5% more than WS4 does. *See* Stover Decl. at Exh. 2.

Numerical limits put the Corps in the best position to objectively and fairly determine when it needs to go to Congress for approval. But if the Corps chooses not to objectively base its decision on these types of limits, as it has done here, it still needs to explain why WS4 involves "major operational change" and the TSP does not.

3. *If the reallocation would not be feasible absent the changes to the 2015 Manual, the Corps' analysis needs to consider those changes too*

Finally, the Water Supply Act analysis must consider the aggregate effects and changes to Allatoona Lake since Congress authorized the project in the 1940s. In part, this means the Corps must consider the total effects and changes caused by its 2015 Manual. **J**

In 2015, the Corps adopted a new Water Control Manual for Allatoona Lake. By the Corps' own admission, the 2015 Manual was intended to create "substantially higher lake elevations" than historical averages.[5] To reach that goal, the 2015 Manual adopted new "action zones" that reduced the storage the Corps could use to generate hydropower, established a new guide curve that reduced downstream flows in dry months, and gave the Corps complete discretion to eliminate hydroelectric generation at any time. The 2015 Manual also reduced flood storage and eliminated navigation support. *See generally* Plaintiffs Alabama and Alabama Power's Joint Motion for Summary Judgment at 17–20, *Alabama v. U.S. Army Corps of Eng'rs*, No. 1:15-cv-00696-EGS (D.D.C. filed May 30, 2017) (Doc. 83). Those were major operational changes under anyone's metric.

In violation of the original authorizing legislation for the Allatoona Project, the Corps did not get Congress's approval for these modifications, and those modifications are currently the subject of pending litigation brought by the State of Alabama in the United States District Court for the District of Columbia. Now the Corps proposes to use the higher lake elevations created by the 2015 Manual to reallocate storage to consumptive uses. But the Corps cannot use the 2015 Manual to two-step around the Water Supply Act. Instead, to the extent that the 2015 Manual's operational changes relate to the TSP's operational changes—and to the extent that the TSP's effects on authorized project purposes exacerbate the 2015 Manual's effects on those purposes—the Corps must consider *all* such changes and effects in its Water Supply Act analysis. If the aggregate modifications require congressional approval, the Corps has no statutory authority to act.

III. The Draft FR/SEIS Is Not Consistent With NEPA

For all the reasons already discussed, the draft FR/SEIS's use of the NAA as the baseline for assessing the TSP's effect on the environment is misplaced. NEPA requires that agencies offer "a detailed statement . . . on . . . the environmental **K**

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[5] *See* U.S. Army Corps of Eng'rs, *Final Environmental Impact Statement: Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa River Basin in Georgia and Alabama* 6-19 (Oct. 2014) ("2014 FEIS"), *available at* https://www.sam.usace.army.mil/Portals/46/docs/planning_environmental/act/docs/ACT_EIS_Volume/ACT%20EIS%20Volume%201.pdf.

impact of the proposed action." 42 U.S.C. § 4332(2)(a). By incorporating into the NAA baseline CCMWA and Cartersville's peak withdrawals in 2007, the draft FR/SEIS overstates the purported baseline and thus understates the impact of the proposed reallocation on the environment and Allatoona Lake's project purposes. *See supra*, at 8-10; *see also* FR/SEIS, 5-9, note ("The no action simulation is the NEPA baseline.").

And, as also discussed earlier, the draft FR/SEIS runs afoul of NEPA for the additional reason that the NAA baseline does not align with the PAA selected in the 2015 Manual. *See supra*, at 10. Alabama highlighted how the mismatch between them works to mask the TSP's effects on hydropower and thus prevented the Corps from performing an accurate Water Supply Act analysis (had it tried to). But the effects being masked are not just to hydropower; in fact, by using an NAA that departs from the PAA, the TSP's effect on just about anything downstream from Allatoona Lake, including navigation, flood control, water quality and water quantity, recreation, and fish and wildlife, is understated. **L**

Take water quantity, for example—a subject which has long been important to Alabama, and which incidentally affects each of the metrics just listed. Under the NAA, the estimated average flow at the state line in Rome, Georgia is 6336 cfs, but is 6353 cfs under the PAA. Thus the impact under the TSP (6320 cfs) is greater when compared to the PAA instead of the NAA. The same can be said for the lowest 7-day flow at Rome, which actually shows an increase from the NAA (738 cfs) to the TSP (751 cfs), but a decrease when compared against the PAA (806 cfs). *See* Stover Decl. at Exh. 3.[6] The problem also is evident with projected elevation levels at Allatoona Lake. Under the NAA, the estimated lowest elevation level is 818.44 ft, is 821.5 ft under the PAA, and 817.3 ft under the TSP. *See* Stover Decl. at Exhs. 1 & 3. Thus, use of the PAA instead of the NAA as the baseline shows the TSP will cause reservoir levels to be lower, and average state-line flows slower, than the draft FR/SEIS indicates. **M**

In light of the foregoing, the final FR/SEIS should first use the Baseline Capped alternative instead of the NAA as the baseline in assessing the TSP's environmental impacts under NEPA, but further, should ensure that the Baseline Capped alternative is consistent with the PAA. Where they differ, the final FR/SEIS should explain why those differences exist. Otherwise, there is no meaningful way for the public to easily determine the environmental impacts anticipated under the TSP, other than to know that they are understated. **N**

Moreover, as the foregoing discussion suggests, a full disclosure of the environmental effects of the current operations should involve an evaluation of the **O**

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[6] Moreover, unique to the issue of state-line flow is the fact that the Corps' simulations of average and lowest 7-day state line flows under the alternatives in the draft FR/SEIS are significantly less than historical average and lowest 7-day flows. *See* Stover Decl. at Exhs. 1 & 5.

cumulative impact of both the Water Supply Storage proposal and the changes wrought by the 2015 Manual. As the Corps has recognized, the draft SEIS at issue here is "supplemental" to the EIS associated with the Manual, and the two should be analyzed together.

IV. The TSP Exacerbates (Or At Least Does Not Remedy) Existing Water Quality Problems in Violation of the Clean Water Act

Another troublesome aspect of the draft FR/SEIS is how it treats water quality problems, both existing and anticipated. When the Corps issued the FEIS for the 2015 Manual, it said that proposed operations would have a "minor adverse" effect on temperature in the Coosawattee, Oostanaula, and Tallapoosa Rivers, and on oxygen demand in the Coosawattee, Oostanaula, and Alabama Rivers. *See* 2014 FEIS, ES-23, Table ES-5. Further, to the extent that its proposed operations would cause water-quality impairments, the Corps refuted the notion that it had to fix them, instead leaving it to Alabama and Georgia state agencies and downstream users to deal with. Alabama has long argued that the Corps' irrational position on this matter is contrary to its own regulations and its duties to comply with "requirements" under the Clean Water Act, including state water-quality standards. *See* 33 U.S.C. § 1323(a). **P**

In any event, compared to the FEIS for the 2015 Manual update, the draft FR/SEIS here is much more forthcoming about the water-quality problems in the ACT Basin. At first blush, it appears these problems will get worse under the TSP. For example, the Corps admits that total phosphorous ("TP") levels at Weiss Lake will not meet Alabama's water-quality standards. *See* FR/SEIS, xxvii. It also admits the TSP will cause a slightly adverse effect on water temperature in the Coosa River between Rome and Weiss Lake and in Logan Martin Lake, and on nitrogen levels in Weiss Lake, H. Neely Henry Lake, and Logan Martin Lake. *See* FR/SEIS, Table 5-1. And, the TSP will have a negative effect on dissolved oxygen ("DO") levels above and downstream of Weiss Lake. *See* FR/SEIS, xxvii; *id.* 4-2; *id.* Appx. B, B-7. By all accounts, the TSP will impair water quality throughout the ACT Basin. **Q**

The Corps tries to downplay these problems, suggesting they already existed, and pledging that the TSP will not make them any worse. In the draft FR/SEIS, for example, the Corps assures that "[t]he reservoirs failing to meet state standards or USEPA acceptable ranges fail regardless of whether Alternative 11 or NAA is implemented." FR/SEIS, 5-39; *see also id.* (noting that, for chlorophyll *a*, "temporary exceedances of standards at equivalent concentrations for both the NAA and Alternative 11 would occur.").

If these water-quality standards were already being violated—which the Corps implicitly admits they were—then the FEIS for the 2015 Manual did not at all make that clear. That is an issue that may need to be addressed in proceedings regarding that update. But here, the fact that water-quality problems already exist does not justify granting a reallocation which will only solidify those problems. The Corps has **R** an affirmative obligation under the Clean Water Act to make sure that its actions do not cause water-quality standards to not be met. *See* 33 U.S.C. § 1323(a). That includes making sure that its operations don't force third parties whose NPDES permits are tied to water-quality standards to reduce authorized discharges or else face penalties. The Corps' regulations likewise direct the agency to "protect all existing and future uses" of a river system and "[e]nsure that water quality, as affected by the project and its operation, is . . . in compliance with applicable Federal and state water quality standards." ER 1110-2-8154 ¶¶ 6a, 6b, 8a. Just because the TSP will not make current conditions any worse does not mean current conditions are a satisfactory status quo. That is like saying CCMWA has withdrawn 30% more water from Allatoona Lake than its contract allows, but since it hasn't withdrawn any more than 30% lately, it's not breaching the contract.

Finally, the Corps seems to excuse some of these water-quality problems because they apparently will improve over time. In the draft FR/SEIS, the Corps notes that "[i]t was assumed during the [2015] Master Manual update process that, over time, violations of the water quality standards would decrease because of reductions achieved through the CWA." FR/SEIS, 5-64; *see also* 2014 FEIS, ES-89. To the extent the Corps made this same assumption in this draft FR/SEIS, it should point to the reductions that have actually been achieved. **S**

V. The Storage Accounting Methods Should Be Carried Forward

One part of the draft FR/SEIS that Alabama (mostly) agrees with is the Corps decision to carry forward its storage-accounting methods—and to reject Georgia's self-serving methods. *See* FR/SEIS, xxiv. In particular, the Corps has rightly declined to credit users' storage accounts for "made inflows"—water that flows naturally downstream from Hickory Log Creek Reservoir into Etowah River and then to Allatoona Lake. By instead crediting all inflows—both "made" and "natural"—to users on a pro rata basis, the Corps will have the flexibility it needs to operate the reservoir for all project purposes. Moreover, to the extent that Georgia's storage accounting methods consider made inflows from HLCR in determining the size of the proposed reallocation, there would need to be an established plan of operation for that reservoir. The draft FR/SEIS does not contemplate any such plan for HLCR, which is another reason to reject Georgia's request. **T**

The Corps is equally right to continue proportionally crediting users' accounts for so-called "return flows"—water that CCMWA withdraws from Allatoona Lake, treats as wastewater treatment facilities, and returns to the reservoir. If those flows were credited solely to CCMWA, then it would essentially result in a "closed loop" that treats water that would naturally flow downstream as instead being the property of CCMWA.[7] If CCMWA wants the exclusive right to consume the water it treats at **U**

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[7] The draft FR/SEIS at times refers to the practice of CCMWA's releasing water from HLCR which flows naturally into Allatoona Lake as "made inflows" and "return

its plants, then it should build the necessary infrastructure to deliver that water directly to its customers.

One aspect of the Corps' storage accounting practices may require further explanation, however. The Corps appears to have departed from historical practice by proposing, as CCMWA has requested, that when the conservation pool at Allatoona Lake is "full" at 841 ft, all users' storage accounts are likewise considered "full." As the Corps knows, CCMWA actually sued the agency in litigation that remains pending over, among other things, the Corps having declared that CCMWA's storage account was "empty" despite the conservation pool being "full." *See generally* Complaint at 5, *CCMWA v. U.S. Army Corps of Eng'rs*, No. 1:17-cv-00400-RWS (N.D. Ga. filed Feb. 1, 2017) (Doc. 1) ("The first principle that is violated is the Corps' rule that all storage accounts must be full when the conservation pool at Allatoona Lake is full."). The Corps did so because of excessive withdrawals by CCMWA. But now, the Corps appears to have heeded to CCMWA's demand here, outside the confines of that litigation. To the extent that the Corps is changing its position on the matter, it should acknowledge that in the final FR/SEIS, and further, should explain the basis for it. **V**

Sincerely,

J. Brian Atkins

J. Brian Atkins
Division Chief
Alabama Officer of Water Sources

JBA/jn

cc: Governor Kay Ivey
Senator Richard Shelby
Senator Doug Jones

Attachment

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flows," and likewise, CCMWA's withdrawal of such waters at its intake valve at Allatoona Lake as "pass through conveyance" and "flow through conveyance." *See* FR/SEIS, xxiii. In the final FR/SEIS, the Corps should refer to these practices consistently.

Exhibit A

Declaration of Charles Stover

DECLARATION OF CHARLES STOVER

1. My name is Charles Stover. I am over the age of 21 years, and I am competent to testify to the matters contained in this Declaration, which are true and correct to the best of my knowledge.

2. I have a B.S. degree in Civil Engineering from Auburn University and a J.D. degree from Birmingham School of Law.

3. I worked for Alabama Power Company for 44 years where I was involved in many hydrologic and hydrology studies, was the head of Reservoir Management, and later oversaw Environmental Compliance for all water-related issues.

4. I am a registered professional engineer in the State of Alabama and a member of the Alabama State Bar.

5. My 40-plus years of experience includes direct and extensive experience in hydrologic modeling and analysis. I have extensive experience performing hydrologic analyses, including hydrology, hydraulics, and reservoir operations on complex river systems in the Southeastern United States, including the river systems within the Alabama-Coosa-Tallapoosa River Basin. My experience includes water quantity and quality modeling of complex river systems in connection with which I have developed customized models and utilized software packages such as HEC-ResSim, HEC-5, HEC-RAS, and CE-QUAL-W2. I also have directed extensive experience in the development, application, interpretation, and enforcement of environmental and water resources policies, rules, and laws, including regulatory permitting and compliance.

6. I have reviewed the draft Feasibility Report and Supplemental Environmental Impact Statement ("FR/SEIS), including all of its attachments, issued in connection with the

update of the Alabama-Coosa-Tallapoosa ("ACT") River Basin Water Control Manual. I have also reviewed the modeling and other technical materials and data that have been made available by the United States Army Corps of Engineers ("Corps").

7. At the request of the Office of Water Resources of the Alabama Department of Economic and Community Affairs, I have prepared the following exhibits to accompany comments being submitted by OWR to the Corps in response to the draft FR/SEIS:

• Exhibit 1: Exhibit 1 reflects my analysis and comparison of the impacts on lake elevation at Allatoona Dam and state line flow at the Mayo's Bar, Georgia Gage, for actual historical the No Action Alternative, the Baseline Capped Alternative, the Future Without Project Alternative, and the Tentatively Selected Plan and other proposed alternatives in the FR/SEIS;	**W**
• Exhibit 2: Exhibit 2 reflects my analysis and comparison of the Corps' critical yield analysis performed in 2010 and in 2019;	**X**
• Exhibit 3: Exhibit 3 reflects my comparison of the Corps' model results for the Proposed Action Alternative for the 2015 ACT Manual Update with the No Action Alternative, the Baseline Capped Alternative, and the Future Without Project Alternative.	**Y**
• Exhibit 4: Exhibit 4 reflects my analysis and comparison of hydropower at Allatoona Lake under the No Action Alternative, the Baseline Capped Alternative, the Future Without Project Alternative, and the Tentatively Selected Plan;	**Z**
• Exhibit 5: Exhibit 5 reflects my analysis and comparison of the observed flows from 2007 to the No Action Alternative and the Tentatively Selected Plan flow simulations at Allatoona Lake.	**AA**

8. The foregoing exhibits were personally prepared by me. A true and correct copy of each of the foregoing exhibits is attached to this Declaration.

9. In my preparation of the exhibits, I have reviewed and relied upon information made available by the Corps in connection with the issuance of the draft FR/SEIS as well as other information that is referenced in the exhibits.

10. It is usual and customary in my field of hydrology, hydraulics, and reservoir operations and water resources to rely upon the types of information upon which I relied in the preparation of the exhibits.

11. The foregoing exhibits reflect my analysis, calculations, findings, and conclusions, which are based upon the information I reviewed as well as my education, training, and experience. The exhibits are true and correct to the best of my knowledge.

I declare under penalty of perjury that the foregoing is true and correct in accordance with 28 U.S.C. § 1746.

Executed on January 29, 2020

Charles M Stover

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Charles Stover

Exhibit 1

W

Analysis and comparison of the impacts on lake elevation at Allatoona Dam and state line flow at the Mayo's Bar, Georgia Gage

This exhibit analyzes and compares the impact on elevation levels at Allatoona Lake and state-line flows at the Mayo's Bar, Georgia Gage, for actual historical the No Action Alternative ("NAA"), the Baseline Capped Alternative ("Baseline Capped"), the Future Without Project Alternative ("FWOP"), the Tentatively Selected Plan ("TSP"), and other proposed alternatives in the draft FR/SEIS.

The Corps provided ResSim models for the various alternatives. The results are contained in the files provided by the Corps titled "\ACT-2018-daily-ClimateChange-17May2019\rss\Simulation_[*1,2,3&4*]\simulation.dss". The Corps also provided historical observed data in the file titled "\ACT-2018-daily-ClimateChange-17May2019\shared\ACTHEC_9_01FEB14.dss".

Using the math functions in DSSVue I took actual historical data points from DSS model simulation file identified as OBS_ADJ. The 2019 data points were pulled from DSS model simulation files identified as BASE2018—0, BASECAP-0, FWOP-0, A03_WS1-0, A04_WS2-0, A05_WS3-0, A06_WS4-0, A08_WS6, A09_FWOPMF-0, A10_WS2MF-0,A11_WS6MF-0, A12_WS1MF-0, and A13_WS3MF-0 provided by the Corps in December 2019.

The results are displayed in Table 1 below.

Using the math tools in DSSVue, the minimum Allatoona Lake elevation and the average flow were taken directly from the statistics function (see example in Figure 1). The 7-day low flow is computed with the smoothing algorithm set to 7 days, and then read as the minimum from the statistics function. The annual energy is first computed with the time accumulation function set to total energy for each year and then read as the average from the statistics function.

While the drop in both average and 7-day minimum flow appear modest, it must be seen that even the Baseline Capped incorporates significant reductions from both historical average and historical low flows. In particular the 7-day low flow in the TSP is reduced by a total of 22% from its historical value. It also is critical to point out that these model estimates are based on assumed rates of withdrawal and return in the year 2050 which will only be verified with the passage of time.

					Alternative Number and Name									
					Alt 3	Alt 4	Alt 5	Alt 6	Alt 8	Alt 9	Alt 10	Alt 11	Alt 12	Alt 13
	Actual	Base with Cap	NAA	FWOP	WS1	WS2	WS3	WS4	WS06	FWOP_MF	WS02_MF	WS06_MF	WS01_MF	WS03_MF
Lowest Allatoona Elevation (ft) (1951 - 2012)	809.34	818.46	818.44	818.51	818.45	816.85	818.67	817.53	817.3	818.68	816.85	817.3	818.43	818.68
Average State Line Flow (cfs)	6411	6341	6336	6334	6320	6320	6320	6323	6320	6334	6320	6320	6320	6320
Drop in Average State Line Flow Compared to Historical (cfs)		70	75	77	91	91	91	88	91	77	91	91	91	91
Drop in Average State Line Flow Compared to Base w/ Cap (cfs)					21	21	21	18	21	7	21	21	21	21
Lowest 7-Day Flow at the State Line (cfs)	961	754	738	818	751	751	751	751	751	818	751	751	751	751
Drop in Lowest 7-Day State Line Flow Compared to Historical (cfs)		207	223	143	210	210	210	210	210	143	210	210	210	210
Drop in Lowest 7-Day State Line Flow Compared to Base w/ Cap (cfs)					3	3	3	3	3		3	3	3	3

Elevations in feet NGVD29 commonly referred to as mean sea level.
Water flow in cfs is cubic feet per second

Table 1 – Alternatives Compared with Key Metrics

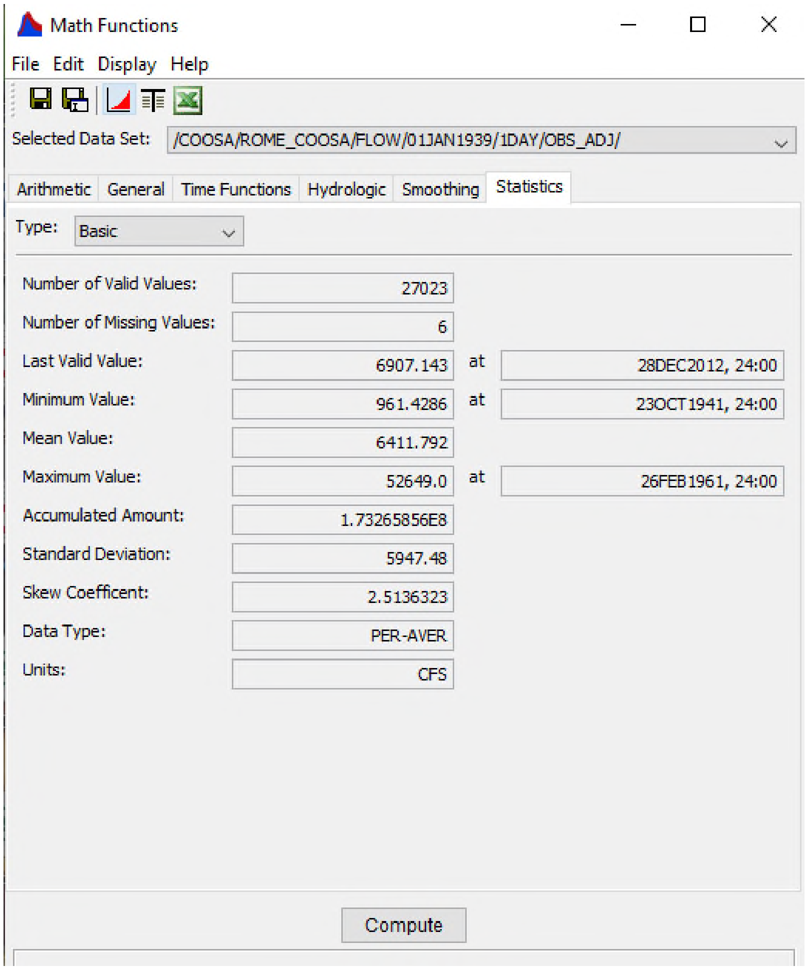


Figure 1 - Screenshot from the HEC-DSSVue Program: Statistics of the Observed Flow at Rome

Exhibit 2

X

Analysis of Critical Yield Analysis Performed by Corps in 2010 and 2019

In July 2019, the Corps conducted an updated Critical Yield Analysis for the ACT Basin. *See* FR/SEIS, Appendix C, Attachment 10 ("2019 Analysis"). The 2019 Analysis updated a Critical Yield Analysis performed in 2010 ("2010 Analysis").

The 2010 Analysis calculated the critical yield at Allatoona Lake without upstream diversions (Method A) and with upstream diversions (Method B). Method A determined the critical yield was 729 cubic feet per second ("cfs"), and Method B determined it was 693 cfs, thus there were 36 cfs in implied upstream diversions.

The 2019 Analysis also calculated the critical yield at Allatoona Lake using Method A and Method B. Method A determined the critical yield was 784.38, and Method B determined the critical yield was 765.34, thus there were 19 cfs in implied upstream diversions. *See* FR/SEIS, Appx. C, Attach. 10, Tables 2 & 3.

Table 1 below shows the percentage change in critical yield and implied upstream diversions from 2010 to 2019 under both methods.

Study Year	**Method A (without diversions)**	**Method B (with diversions)**	**Implied upstream diversion**
2010	729 cfs	693 cfs	36 cfs
2019	784.38 cfs	765.34 cfs	19 cfs
Increase	7%	9%	-47%

Water flow in cfs is cubic feet per second

Table 1 – Comparison of Yields by Method and Study Year

Assuming that the 2019 critical yield of 765.34 determined in Method B (with diversions) is used to determine the amount of storage space needed to satisfy Georgia's request for 94 million gallons per day ("mgd") in 2050, then the Corps needs to reallocate an additional 1,301 acre-feet ("ac-ft") of storage space beyond the 52,411 ac-ft proposed.

To compute the impact of varying yields on the storage required to be reallocated I used a conversion of 1.5472 cfs/mgd and the conservation storage of 281,917 acre-feet.

*(94 mgd * 1.5472 cfs/mgd) / 784.38 cfs = 18.54%*

I arrived at the 1,301 ac-ft number by performing the following calculation, as also reflected in Table 2 further below:

*(94 mgd * 1.5472 cfs/mgd) / 765.34 cfs = 19.00%*

19.00% – 18.54% = 0.46% of 281,917 = 1,301 ac-ft

Table 1 above shows that implied upstream diversions decreased by 44% between 2010 and 2019. Assuming that the 36 cfs in implied upstream diversions from 2010 are assumed in 2019, the additional 17 cfs in upstream diversions would impact the yield analysis and the storage space needed to satisfy Georgia's requested 94 mgd.

Assuming the 17 cfs directly impacts the yield reducing it from 765.34 to 748.34 cfs and repeating the above calculation.

*(94 mgd * 1.5472 cfs/mgd) / 748.34 cfs = 19.43%*

19.43% – 18.54% = 0.89% of 281,917 = 2,509 ac-ft

	Method A (without diversions)	**Method B (with diversions)**	**Method C (using implied diversion from 2010)**
Percent of conservation storage	18.6%*	19.00%	19.43 %
Additional storage in acre-feet		1,301	2,509
Acre-feet Needed for Reallocation	52,411*	53,712	54,920

Table 2– Varying Storage Requirements by Yield Method

Table 2 summarizes the calculations and demonstrates that upstream diversions are a significant factor in determining the storage needed to support a withdrawal of 94 mgd from Allatoona Lake.

* Value from Section 7.1.1 of the draft FR/SEIS.

Exhibit 3

Y

Comparison of the Corps' model results for the PAA for the 2015 ACT Manual with the NAA, the Baseline Capped, and the FWOP

The Water Control Manual for the ACT Basin was updated in 2015 to incorporate changes in operation at the Carters and Allatoona projects. The October 2014 FEIS accompanying the 2015 Manual update selected Plan G as the Preferred Action Alternative ("PAA"). Since no changes in operations have been approved since that time, it is reasonable to expect that the current NAA would be similar if not identical to the PAA that was approved for current operations in the FEIS; however, as can be seen in Table 1 below, that is not the case for any reasonably identifiable metrics. In fact, Allatoona Lake elevation, state-line flow and power output differ when compared to any of the three baseline alternatives presented in the draft FR/SEIS.

Data files used in this analysis were provided by the Corps for the 2014 study file …RPlansDFG/simulation.dss and for the current study …Simulation_1/simulation.dss. Using the math functions in DSSVue the 2014 I took data points from DSS model simulation file identified as HRPLANG—0. Using the math functions in DSSVue the 2019 I took data points from DSS model file identified as BASE2018—0, BASECAP—0, and FWOP—0. The minimum Allatoona Lake elevation level and the average flow computed are taken directly from the statistics function. The 7-day low flow is computed with the smoothing algorithm set for 7 days and then read as the minimum from the statistics function. The annual energy is first computed with the time accumulation function set to total energy for each year and then read as the average from the statistics function.

	Alternative Number and Name			
	2014	2019 Draft SEIS		
Metric	Plan G	Base with Cap	NAA	FWOP
Lowest Allatoona Elevation (ft)	821.5	818.46	818.44	818.51
Average State Line Flow (cfs)	6353	6341	6336	6334
Lowest 7 day Flow at the State Line (cfs)	806	754	738	818
Average annual Power (GWh)	114.1	107.9	107.5	106.5
Lowest Annual Power (GWh)	33.4	29.6	27.6	30.4

Elevations in feet NGVD29 commonly referred to as mean sea level.
Water flow in cfs is cubic feet per second
Energy in GWh is gigawatt-hours or millions of kilowatt-hours

Table 1 – Comparison of PAA and Baseline Alternatives

Exhibit 4

Z

Analysis of Energy Generated at Allatoona Dam
Under Various Alternatives

This exhibit evaluates the loss of energy generated at Allatoona Dam under the TSP. The data points were pulled from DSS model Simulation_1/simulation file identified as BASE2018—0, BASECAP—0, and FWOP—0 provided by the Corps in December 2019 using the math functions in DSSVue. The annual energy is first computed with the time accumulation function set to total energy for each year and then read as the average and minimum from the statistics function.

	Alternative				Loss	
				Alt 11		
	Base with Cap	NAA	FWOP	WS06_MF	Loss in Power From NAA	Percentage Loss
Average annual Power (GWh)	107.9	107.5	106.5	105.7	1.8	1.7%
Lowest Annual Power (GWh)	29.6	27.6	30.4	24.6	3.0	10.9%

Energy in GWh is gigawatt-hours or millions of kilowatt-hours

Table 1 – Energy Loss at Allatoona Under TSP

While the average annual loss is 1.7% the drought year of 2007 shows a drop of 10.9%. The loss compared to the FWOP alternative is even greater at 19.1%.

Exhibit 5

AA

Analysis of Flow Simulations at Allatoona Lake

The Corps provided ResSim models and results for the NAA and the TSP. The results from the Corps' HEC-ResSim modeling analyses are contained in the file provided by the Corps of Engineers titled "\ACT-2018-daily-ClimateChange-17May2019\rss\Simulation_3\simulation.dss". The Corps also provided historical observed data in the file titled "\ACT-2018-daily-ClimateChange-17May2019\shared\ACTHEC_9_01FEB14.dss".

HEC-DSSVue is a software package provided by the Corps to easily view data sets and model results contained in the ResSim models. The HEC-DSSVue was used to analyze the results from the NAA and TSP model runs provided by the Corps. The graph shown in Figure 1 below is a plot of three different flow sets at Rome for the year 2007. The x-axis is time, ranging from January 1, 2007 to December 31, 2007, and the y-axis is flow at Rome, Georgia measured in cubic feet per second (cfs). The three different flow sets plotted on Figure 1 are:

- The actual flow observed at Rome, measured at the USGS gaging station. The observed flow is represented by the blue line with the title "ROME_COOSA OBS_ADJ FLOW".

- The simulated flow at Rome for the NAA. This flow set was provided by the Corps and is represented by the green line with the title "ROME-COOSA BASELINE2018-0 FLOW".

- The simulated flow at Rome, GA for the TSP. This flow set was provided by the Corps and is represented by the red line with the title "ROME-COOSA A11_WS6MF-0 FLOW".

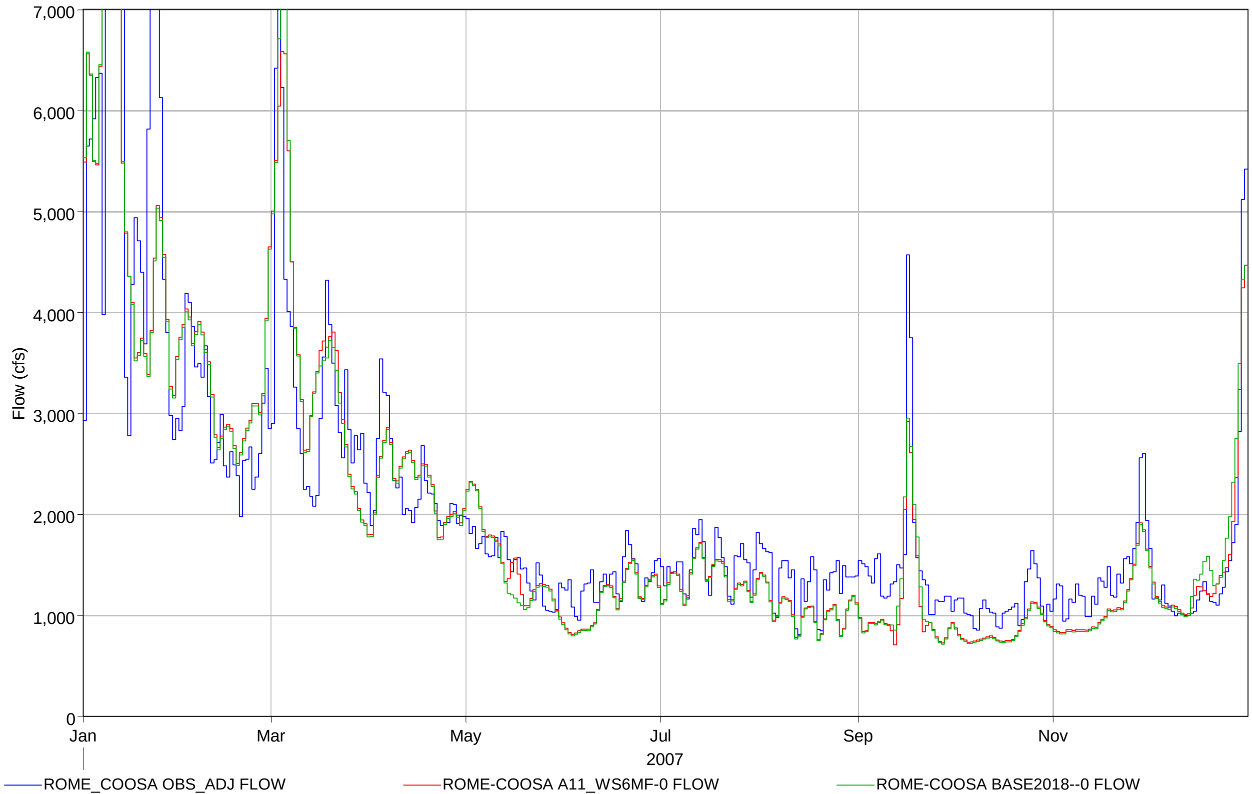


Figure 1 - HEC-DSSVue Plot of Flow at Rome, Georgia

The above graph shows that during the 2007 drought period, the results from the NAA do not reflect the actual flows observed at Rome. In fact, comparing the red, green, and blue lines from Figure 1 shows that the NAA (NAA BASE green line) and TSP (TSP A11 red line) would produce lower flows at Rome for most of the critical drought of 2007 compared to the flows that were actually observed (blue line) during the 2007 period.

To examine the impact to the critical summer period in the drought I used the HEC-DSSVue program to calculate the Rome average daily flow statistics for the actual observed flow and the simulated NAA and TSP flows for the period of June 1, 2007 through September 30, 2007. Figures 2, 3, and 4 show screenshots from the HEC-DSSVue program containing the average daily flow statistics (shown in the “Mean Value” boxes). The data statistics in Figure 2 are calculated from the actual observed flows at Rome (blue line from Figure 1). The data statistics in Figure 3 are calculated from the Corps’ NAA (green line from Figure 1) and the data statistics in Figure 4 are calculated from the Corps’ TSP (red line from Figure 1).

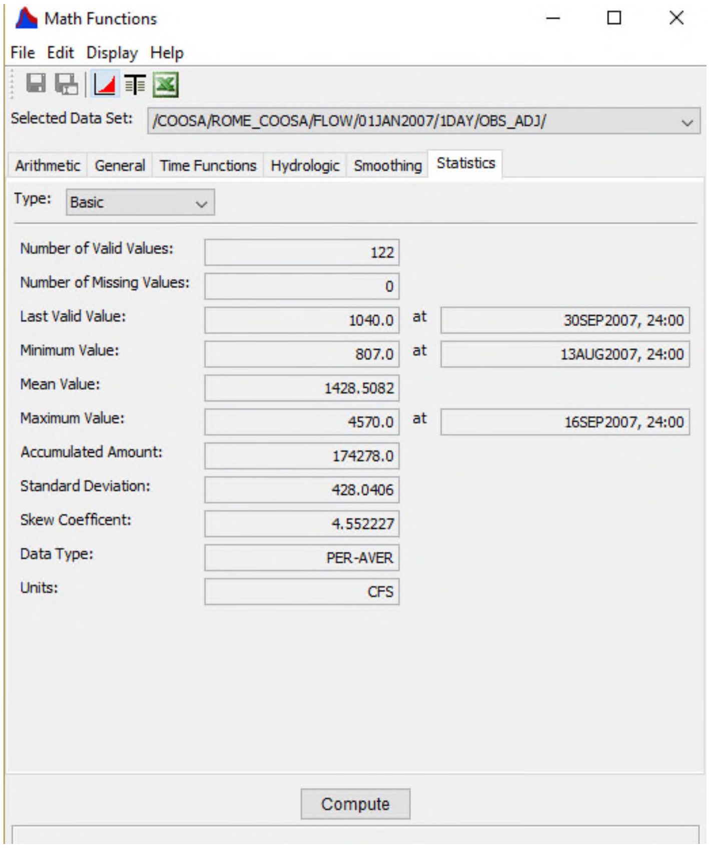


Figure 2 - Screenshot from the HEC-DSSVue Program: Statistics of the Observed Flow at Rome

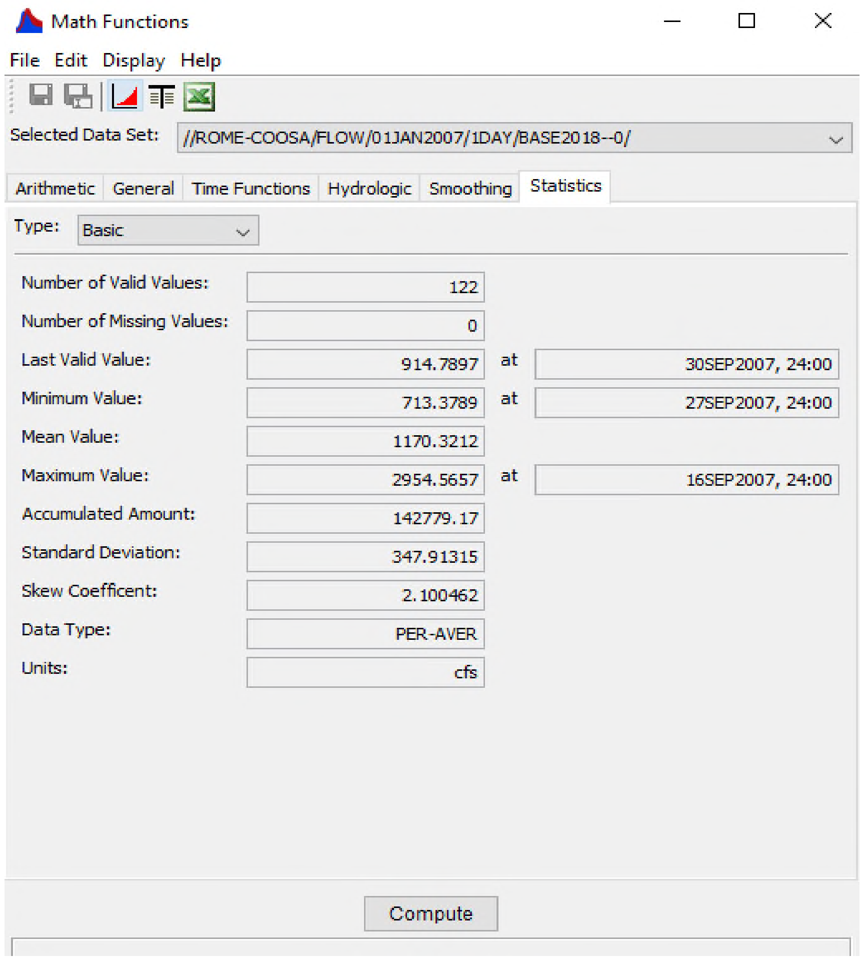


Figure 3 - Screenshot from the HEC-DSSVue Program: Statistics of the No Action Alternative Flow at Rome

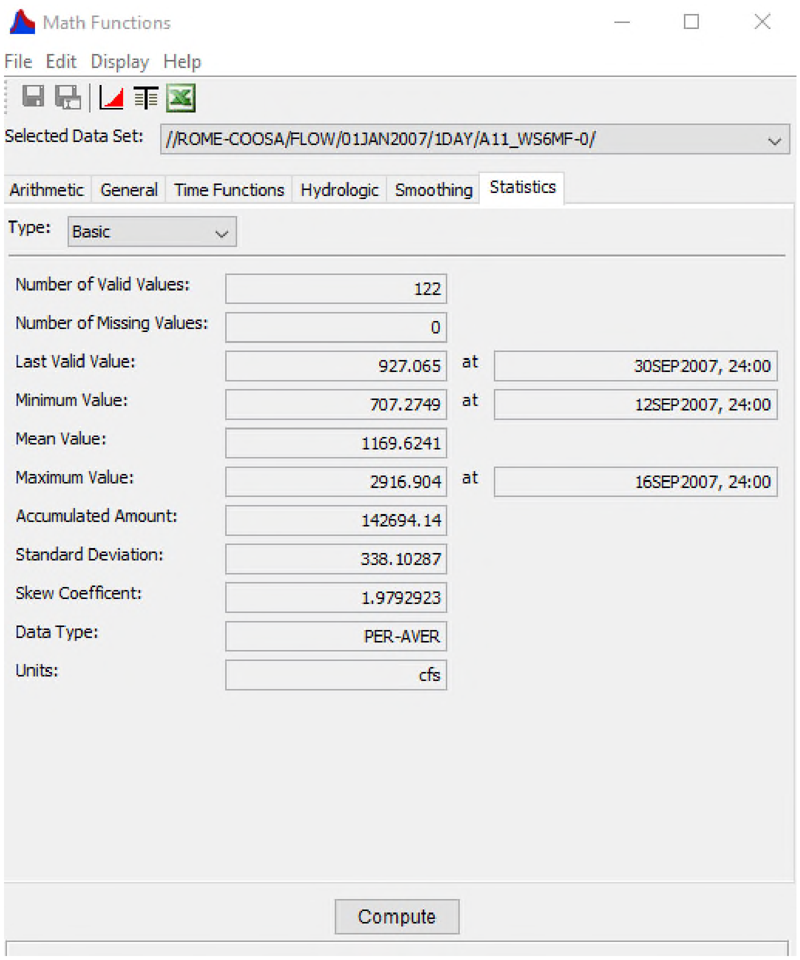


Figure 4 - Screenshot from the HEC-DSSVue Program: Statistics of the Tentatively Selected Plan Flow at Rome

Based on the statistics displayed in Figures 2, 3, and 4, the average daily flows for the period June 1, 2007 to September 30, 2007 are as follows:

- Observed average daily flow: 1,429 cfs
- NAA average daily flow: 1,170 cfs
- TSP average daily flow: 1,170 cfs

The difference between the observed average daily flow and the NAA flow is 256 cfs; in addition, the difference between the observed average daily flow and the TSP flow is also 256 cfs because the NAA average daily flows and TSP average daily flows for the June 1, 2007 to September 30, 2007 period are equal. Both the NAA and TSP simulations assume that on average there is 256 cfs less flow at Rome for every day between June 1, 2007 and September 30, 2007 compared to what was actually observed at Rome for that period and that the average NAA and TSP flows were 18% less than the observed average daily flow for that period.

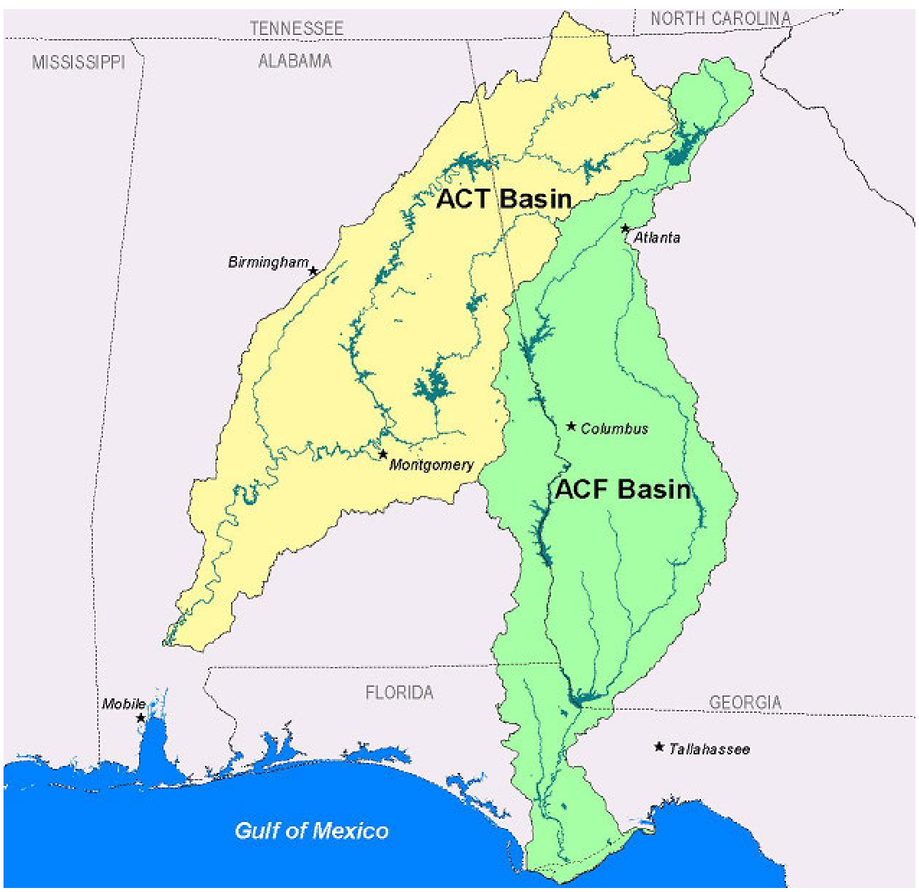
Exhibit B

U.S. Army Corps of Eng'rs
Federal Storage Reservoir Critical Yield Analysis
(Feb. 2010)

US Army Corps
of Engineers®
Mobile District

FEDERAL STORAGE RESERVOIR CRITICAL YIELD ANALYSES

ALABAMA-COOSA-TALLAPOOSA (ACT) AND APALACHICOLA- CHATTAHOOCHEE-FLINT (ACF) RIVER BASINS



February 2010

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FEDERAL STORAGE RESERVOIR
CRITICAL YIELD ANALYSES

EXECUTIVE SUMMARY

Alabama-Coosa-Tallapoosa and
Apalachicola-Chattahoochee-Flint River Basins

SCOPE AND PURPOSE

The Federal Storage Reservoir Critical Yield Analyses, Alabama-Coosa-Tallapoosa and Apalachicola-Chattahoochee-Flint Basins (Critical Yield Report) provides information and technical analysis in response to Congressional direction in reports accompanying the Energy and Water Development and Related Agencies Appropriations Act, 2010 (H.R. 3183; Public Law 111-85) which includes the following language:

"*Alabama-Coosa-Tallapoosa [ACT], Apalachicola-Chattahoochee- Flint [ACF] Rivers, Alabama, Florida, and Georgia.—The Secretary of the Army, acting through the Chief of Engineers, is directed to provide an updated calculation of the critical yield of all Federal projects in the ACF River Basin and an updated calculation of the critical yield of all Federal projects in the ACT River Basin within 120 days of enactment of this Act*."

Pursuant to this language, the U.S. Army Corps of Engineers (Corps), Mobile District, developed updated critical yields for the Federal projects in the ACF and ACT Basins.

Federal reservoirs in the ACF Basin that are included in these analyses are Buford Dam, West Point Dam, and Walter F. George Lock and Dam (reference Figure 1), because they hold the majority of water storage on the ACF System. George Andrews Lock and Dam and Jim Woodruff Lock and Dam are Federal projects on the ACF System that are excluded from the critical yield analyses. These projects are excluded from the analyses because they are 'run of river' impoundments with little or no usable water storage, and cannot significantly contribute to critical yield.

Federal reservoirs in the ACT River Basin that are included in these analyses are Carters Dam and Allatoona Dam (reference Figure 1), because they hold the majority of water storage in the Federal projects on the ACT System. The Carters Dam System consists of two dams: the main dam and a small, downstream dam impounding discharges from the main dam for pump back purposes. Only the main dam is included in the critical yield evaluations. R.F. Henry Lock and Dam, Millers Ferry Lock and Dam and Claiborne Lock and Dam are Federal reservoirs on the ACT System that are excluded from the critical yield analyses. These reservoirs are excluded from the analyses because they are 'run of river' impoundments with little or no usable water storage and cannot significantly contribute to critical yield.

Detailed critical yield analyses for the ACF and ACT Basins are presented in separate appendices.

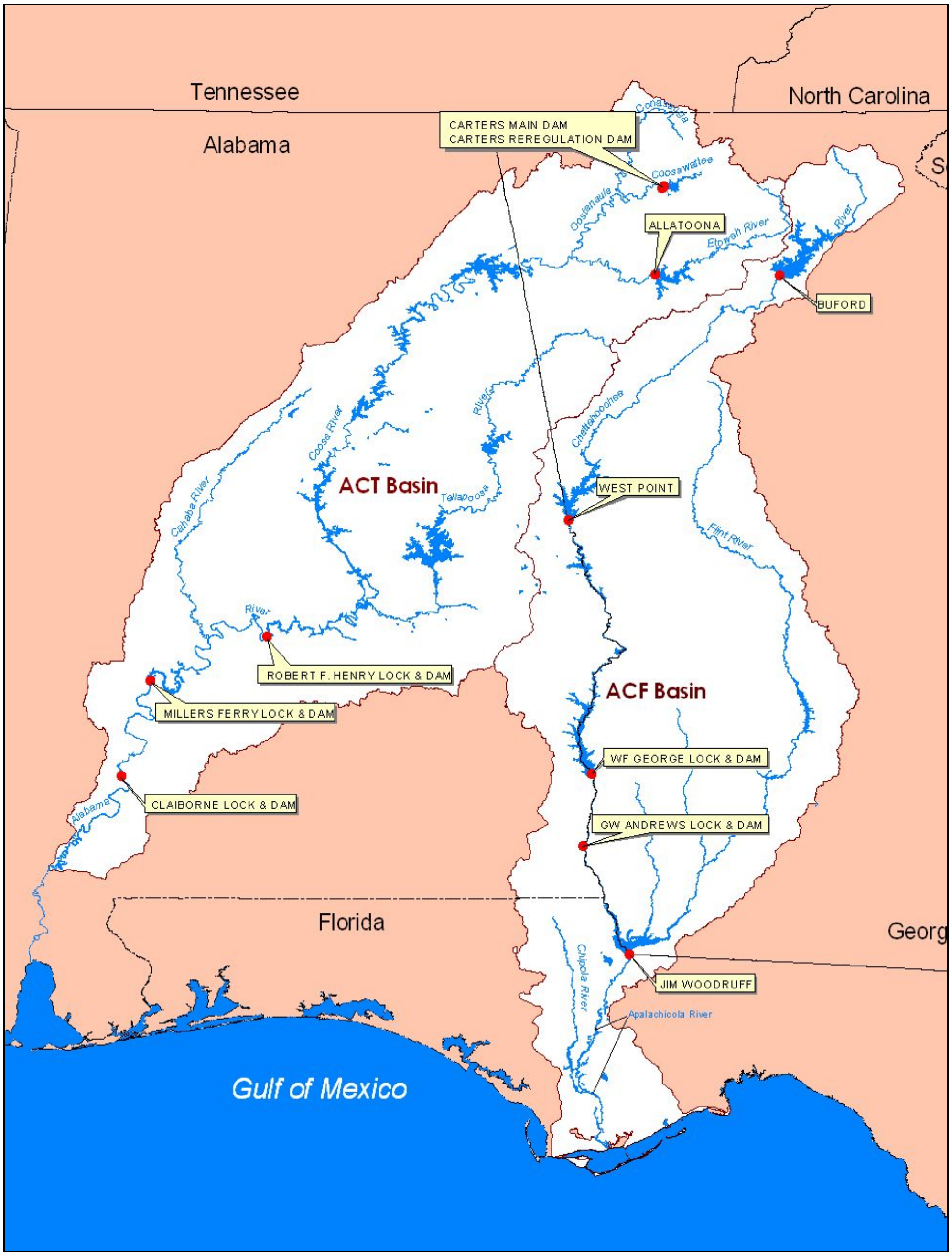


Figure 1. Federal Reservoir Projects in the ACF and ACT Basins

CRITICAL YIELD

Critical yield is the maximum amount of water that can be consistently removed from a reservoir through releases from the dam and/or withdrawals from the reservoir during the most severe drought in the period of record (1939-2008), without depleting the reservoir conservation storage. Conservation storage is the amount of water available in a reservoir to meet project purposes other than flood control. Critical yield is the amount of water available from a reservoir at any time under any conditions described in the hydrologic period of record. The Corps cannot guarantee critical yield will always be available because future droughts may be worse than droughts of the period of record, requiring more conservative operation of reservoirs.

Critical yield is important because it is the basis from which water stored in a reservoir is allocated to various project purposes. The amount or volume of water stored in a reservoir can be allocated to a specific project purpose, such as hydropower or water supply, based on a percent of critical yield. A change in critical yield could result in modifications of the allocations for a project purpose.

Critical yield can be expressed in cubic feet of water per second (cfs), representing the rate at which water can be removed. Critical yield can also be expressed in millions of gallons per day (mgd) or acre-feet per year (ac-ft/yr), representing the volume of water that can be removed from a reservoir. The conversions between rate and volume are:

$$1 \text{ cfs} = 0.6464 \text{ mgd} = 722.7 \text{ ac-ft/yr}$$

The analyses in this critical yield report to Congress expresses critical yield in cfs.

METHODOLOGY

This section briefly describes how the Corps determined critical yield and crucial datasets that significantly affect analyses results. A more detailed description of this process is provided in Appendix A - Critical Yield Methodology.

Unimpaired Flow Data Set

The unimpaired flow data set is historically observed flows, adjusted for some of the human influence within the river basins. Man-made changes in the river basins influence water flow characteristics and are reflected in measured flow records. Determining critical yield requires removing identifiable and quantifiable man-made changes such as municipal and industrial water withdrawals and returns, agricultural water use, and increased evaporation and runoff due to the construction of Federal surface water reservoirs, from the observed flow measurements.

These quantities are used to extrapolate diversions. The difference between water withdrawn and water returned is defined as a diversion. Diversions are a net volume or quantity assumed to be permanently lost from the water system.

The unimpaired flow dataset is not a perfectly replicated flow dataset representing conditions that would exist without the influence of human activities or a precise measure of natural flow conditions. This is because all human influences, such as land use changes, cannot be accounted for, and many flow set adjustments are estimates based upon assumptions, not direct measurements of the human influences.

The original unimpaired flow data set developed as part of the Alabama-Coosa-Tallapoosa and Apalachicola Chattahoochee Flint (ACT/ACF) River Basins Comprehensive Water Resources Study, ACT/ACF Comprehensive Water Resources Study, Surface Water Availability Volume I: Unimpaired Flow, July 8, 1997 included data at over 50 locations for the 1939 to 1993 period of record. This data set has recently been extended through 2008 and is available from the Corps. Because of the occurrence of negative flows in the daily values, the data has been smoothed using 3-, 5-, or 7-day averaging. This preserves the volume of the flow and eliminates most of the small negative flows in some of the daily flow data.

Droughts

Several drought periods have been identified from the historic record and from previous yield analyses (reference Appendix D – Prior Reports and References). Drought periods were identified in 1940-41; 1954-58; 1984-89; 1999-2003, and 2006-2008. These are shown below in Table 1. Each period is referenced in accordance to the decade or most severe year of occurrence. Critical yield was computed for each of the drought periods and the lowest value selected as the critical yield value for this report.

Table 1. Drought Periods

Drought Periods	Label
1940-1941	1940
1954-1958	1950
1984-1989	1980
1999-2003	2000
2006-2008	2007

Models

A computer simulation model is a computer program that simulates a simplified model of a system. The U.S. Army Corps of Engineers' Hydrologic Engineering Center's (HEC) Reservoir System Simulation (HEC-ResSim) is a computer program comprised of a graphical user interface (GUI) and a computational engine to simulate reservoir operations. HEC-ResSim was developed to aid engineers and planners performing water resources studies by representing the behavior of reservoirs and to help reservoir operators plan releases in real-time during day-to-day and emergency operations.

The HEC-ResSim model has a Firm Yield subroutine which calculates the largest, consistent release that can be reliably supplied during the flow record. The subroutine works by adjusting an operation rule which represents a reservoir management action. The subroutine computes a model simulation run through the period of record with a suggested release toward yield, then recomputes, interating that release until the largest release that can always be successfully made is found.

The ResSim ACT and ACF yield models include a net precipitation-evaporation rate for each reservoir that utilizes evaporation values developed for National Oceanic and Atmospheric Administration (NOAA) Technical Reports, monthly pan evaporation rates and National

Weather Service (NWS) reports of rainfall and flow rates. The net evaporation losses, evaporation minus precipitation, were computed in inches at the projects. The NOAA report was used because historic monthly evaporation data is not available at the projects. Historic monthly precipitation data was obtained from the NWS.

It is important to be aware that the most severe drought event at one reservoir may not be the most severe drought event at another reservoir in the same river system. For the purposes of computing critical yield on the ACF System, the lowest critical yield value (typically associated with the most severe drought event) at an upstream reservoir will be used to calculate a downstream reservoir's critical yield. This is because on the ACF System, the amount of water exiting an upstream reservoir influences the amount of water available in a downstream reservoir. This is germane to Methods A and B described below.

Method A (Without Diversions)

Method A assumes that there are no withdrawals from or returns to the lake and there are no withdrawals from or returns to the river as it flows between projects. This condition results in the maximum yield possible from the Federal projects. Critical yield from an upstream reservoir is assumed to be permanently removed from the system and does not contribute to the inflow at downstream reservoirs.

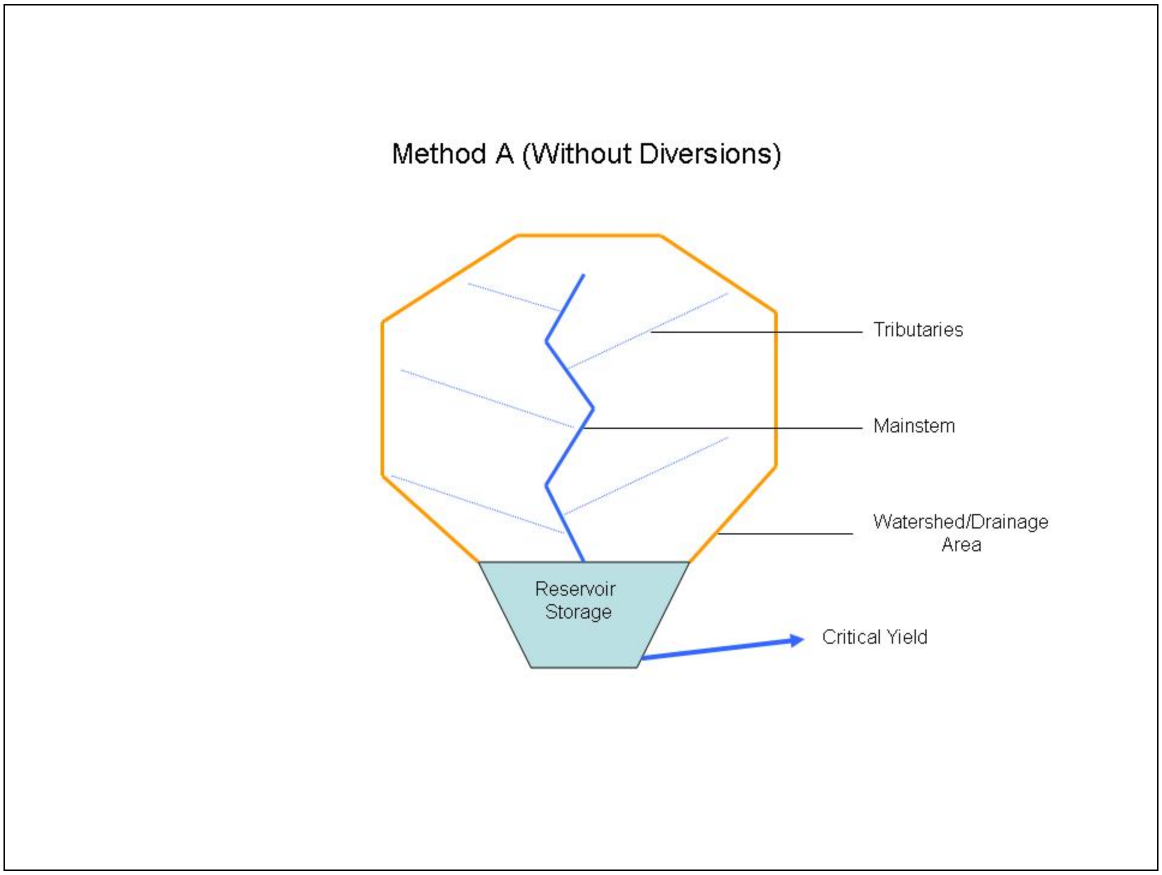


Figure 2. Critical Yield Method A (Without Diversions)

Method B (With Diversions)

Method B assumes net river withdrawals and returns are occurring; this method does not include withdrawals from the Corps reservoirs. Critical yield from an upstream reservoir is assumed to be permanently diverted from the system and does not contribute to the inflow at downstream reservoirs. This condition results in the most severe downstream impact. The results of Method B represent a conservative assessment of the critical yield available from Federal projects controlled by the Corps of Engineers. Method B used the most severe drought events documented during the hydrologic period of record and the year of maximum river withdrawals (2006 for the ACT; 2007 for the ACF) to make the calculations.

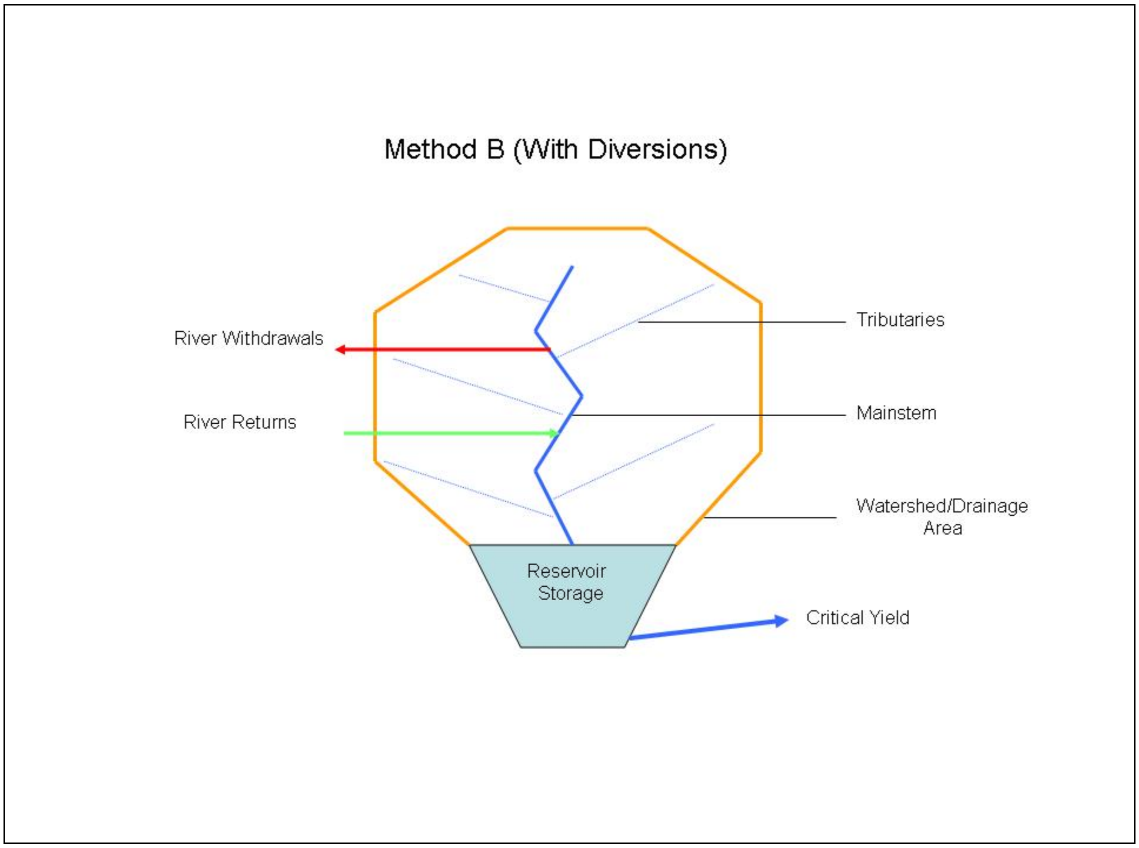


Figure 3. Critical Yield Method B (With Diversions)

Method C (River System Yield)

Method C computes a system yield for diversion from the most downstream storage reservoir. It assumes upstream reservoirs operate in tandem to maximize the critical yield at the most downstream reservoir. Method C computes critical yield for the ACF River System with and without net river withdrawals. The with net river withdrawals condition results represent the Corps' yield. The without net river withdrawals condition results represent the system theoretical maximum yield. Method C calculates the theoretical critical yield that might be observed if the upstream projects were operated solely to maximize yield at Walter F. George Lake. However, in reality the results could not be achieved because the Corps must operate in a balanced manner to achieve all authorized project purposes.

ACT critical yields are computed using only Methods A and B. This is because both Carters Dam and Allatoona Dam operate independently and do not influence water availability at the other reservoir.

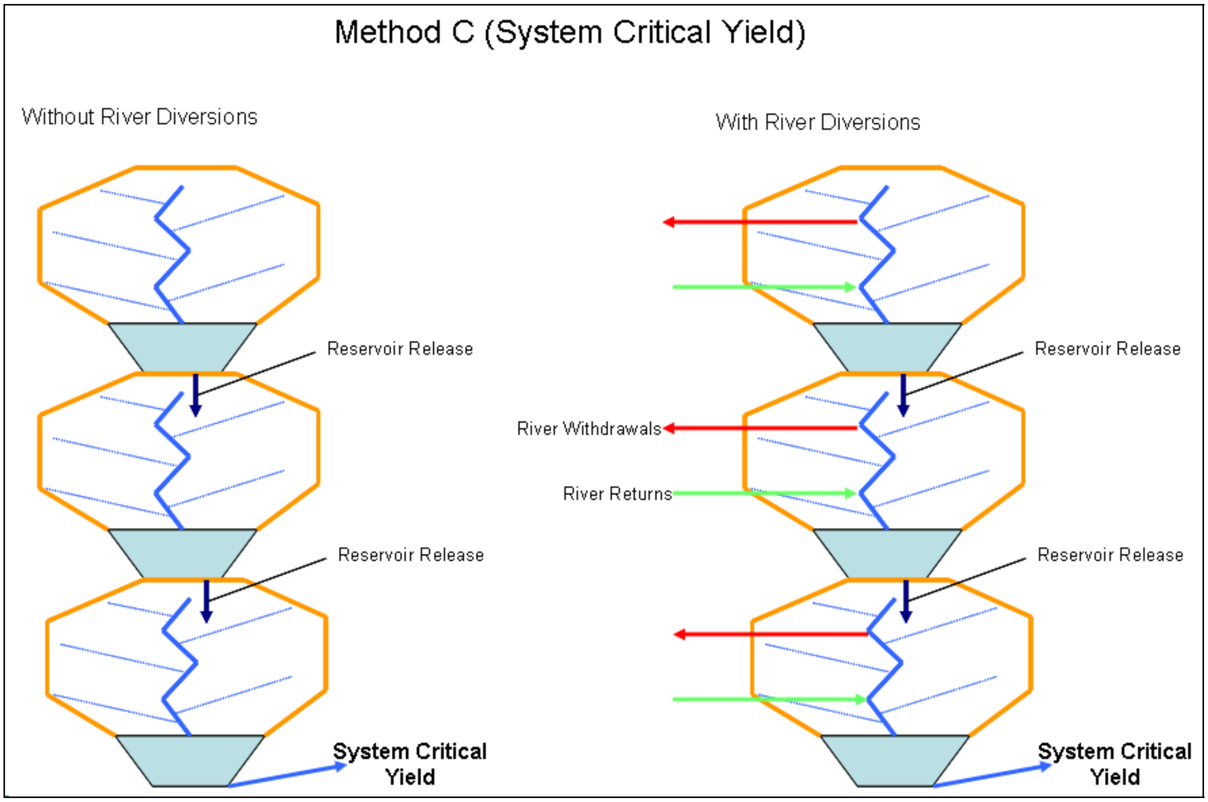


Figure 4. Critical Yield Method C (River System Yield)

Assumptions

Assumptions made for the critical yield analysis are listed below.

1. There is no attempt to address the probability that droughts more severe than those in the period of record may or may not occur.

2. The simulation model was operated only for critical yield. No other operating purposes were included. The critical yield represents the maximum flow that could be continuously provided to meet any, or all, demands (e.g., project purposes).

3. The upstream reservoir is the primary reservoir and its yield is met (maximized) before proceeding downstream. This is because upstream users can consumptively divert water, precluding the availability of water yield to a downstream user. Maximizing the yield of the upstream reservoir is consistent with current state-issued water withdrawal permits and may not apply in other regions of the United States. This is significant on the ACF only, since the ACF projects are operated in tandem.

4. Yield analysis is based on currently authorized conservation storage elevations.

5. Projects are full at the beginning of the drought period simulation. The pool level at the beginning of a drought simulation is important because it is a variable that directly affects the quantity or volume of water available as critical yield.

6. None of the critical yield is returned to the system. Critical yield is permanently diverted from the system and assumed to be consumptively used. For example: Buford Dam critical yield is not counted as inflow to West Point Lake. Inflows to West Point Lake are assumed to derive only from the West Point Lake drainage basin. This methodology determines the conservative individual project yield. The assumption is applicable to Methods A and B. The assumption is not applicable to Method C.

7. Existing area capacity curves as shown in the latest water control manuals were used.

CRITICAL YIELD ANALYSES RESULTS

A summary of model results is presented below for each basin. A more detailed description of basin-specific methods, modeling and results is presented in the Appendix B - ACT Basin and Appendix C - ACF Basin.

ACF Basin

Tables 2 and 3 list the critical yield of each federal reservoir on the ACF System and the critical drought period used in the calculations.

Table 2. Method A, ACF Project Yield (Without Diversions)

Project	Critical Yield (cfs)	Critical Drought
Buford Dam	1,465	1980
West Point Dam	1,167	2007
Walter F. George Lock and Dam	572	2007

The ACF River System diversions are municipal, industrial and agricultural withdrawals and returns from the Chattahoochee River and its tributaries located upstream of Lake Sidney Lanier, West Point Lake and Walter F. George Lake. Maximum river withdrawals occurred in 2007 and are reflected in the critical yield calculation for each drought period. Computation of Method A, ACF Project Yield (Without Diversions) did not include these withdrawals.

Table 3. Method B, ACF Project Critical Yield (With Diversions)

Project	Critical Yield (cfs)	Critical Drought	Critical Yield Reduction Attributable To Diversions
Buford Dam	1,460	1980's	0.4%
West Point Dam	891	2007	24%
Walter F. George Lock and Dam	470	2007	18%

Comparing the critical yield results from the Method A (Without Diversions) and Method B (With Diversions) allows us to quantify the impacts of the river withdrawals. The 2007 river withdrawals had a measurable impact, reducing critical yield as much as 23 percent at West Point and 17 percent at Walter F. George.

Table 4 below lists the Method C (River System Yield) results of operating the three ACF reservoirs together for a system yield at Walter F. George. When all reservoirs are operated for yield optimization at Walter F. George, the system yield obtained is greater than the sum of the individual reservoir yields.

Method C (River System Yield) was computed with and without river diversions. The 2007 river diversions reduce the critical yield at Walter F. George by 16 percent. This figure represents the percentage difference between 4,370 cfs (ACF System Without Divisions) and 3,683 cfs (ACF System With Diversions).

Table 4. Method C, ACF (River System Yield)

Project	System Critical Yield (cfs)	Critical Drought
ACF System (Without Diversions)	4,370	2007
ACF System (With Diversions)	3,683	2007

ACT Basin

Tables 5 and 6 list the critical yield of each project and the critical drought period used in the calculations.

Table 5. Method A, ACT Project Critical Yield (Without Diversions)

Project	Critical Yield (cfs)	Critical Drought
Allatoona Dam	729	2007
Carters Dam	390	2007

The ACT River System diversions are municipal, industrial and agricultural withdrawals and returns from the Coosawattee River and it tributaries upstream of Carters Lake and from the Etowah River and its tributaries upstream of Allatoona Lake. Maximum diversions occurred in 2006 and are reflected in the critical yield calculation for each drought period.

Table 6. Method B, ACT Project Critical Yield (With Diversions)

Project	Critical Yield (cfs)	Critical Drought	Critical Yield Reduction Attributable To Diversions
Allatoona Dam	693	2007	4.9%
Carters Dam	387	2007	0.8%

Comparing the yield results from the Method A (Without Diversions) and Method B (With Diversions) allows us to quantify the impacts of the river withdrawals. The 2006 river diversions have a measurable impact on the critical yield, as much as five percent at Allatoona Lake (reference Table 5).

SUMMARY

The results of Method B (With Diversions) (reference Tables 3 and 6) for both basins represent a realistic assessment of the critical yield from Federal projects controlled by the Corps.

Historical critical yield determinations are referenced in Appendix D - Prior Reports and References. The reader should be cautioned that there is not a direct correlation between the finding of historical critical yields and the findings of this Critical Yield Report. This is due to differences in the drought periods used in each set of analyses and methods employed to calculate the critical yield.

ACRONYMS

Acres	ac
acre-feet	ac-ft
acre-feet per year	ac-ft/yr
Alabama-Coosa-Tallapoosa	ACT
Apalachicola-Chattahoochee-Flint	ACF
cubic feet per second	cfs
elevation	Elev
Federal Energy Regulatory Commission	FERC
graphical user interface	GUI
Hydrologic Engineer Center	HEC
Hydrologic Engineering Center's, Reservoir Simulation Model	HEC-ResSim
Kilowatt	kW
Million gallons per day	mgd
Mean Sea Level	msl
Megawatt	MW
National Geodetic Vertical Datum of 1929	NGVD 29
National Oceanic and Atmospheric Administration	NOAA
National Weather Service	NWS
Revised Interim Operating Plan	RIOP
U.S. Army Corps of Engineers	Corps
United States Geological Survey	USGS

Appendix A

Critical Yield Methodology

Appendix A - Critical Yield Methodology

1 INTRODUCTION

The methodology describing how the Corps determined critical yield and crucial datasets that significantly affect analyses results is detailed below.

1.1 RIVER DIVERSIONS

The difference between water withdrawn from a river and water returned to the river is defined as a diversion. Diversions are a net volume or quantity assumed to be permanently lost from the river.

1.1.1 Unimpaired Flow Data Set

The unimpaired flow data set is historically observed flows, adjusted for some of the human influence within the river basins. Man-made changes in the river basins influence water flow characteristics and are reflected in measured flow records. Determining critical yield requires removing identifiable and quantifiable man-made changes such as municipal and industrial water withdrawals and returns, agricultural water use, and increased evaporation and runoff due to the presence of surface water reservoirs, from the observed flow measurements.

The daily unimpaired flow data set is used as the input flow series for all yield model simulations and represents the Corps' best estimate of a pre-development flow series. By making these flow adjustments for man-made activities, any combination of water demands input to the ResSim model and modeled over the entire flow record (1939 – 2008), produces a consistent basis for comparing yield results. Yield simulations are computed for with no water diversion and with current water diversion scenarios using current river diversions to compute yield accounts for existing conditions.

The unimpaired flow dataset is not an exact replication of a flow dataset representing conditions that would exist without the influence of human activities or a precise measure of natural flow conditions. This is because all human influences, such as land use changes, cannot be accounted for, and many flow set adjustments are estimates based upon assumptions, not direct measurements of the human influences.

The original unimpaired flow data set developed as part of the Alabama-Coosa-Tallapoosa and Apalachicola Chattahoochee Flint (ACT/ACF) River Basins Comprehensive Water Resources Study, ACT/ACF Comprehensive Water Resources Study, Surface Water Availability Volume I: Unimpaired Flow, July 8, 1997 . The Comprehensive Study was study conducted by the States of Alabama, Florida and Georgia and the Corps pursuant to a Memorandum of Understanding. One purpose of the study was to identify available water resources and water demands in the ACT and ACF Basins, and recommend a coordination mechanism for the equitable allocation of water resources between the States. Several technical modeling and assessment tools were developed to support this process, including the unimpaired flow dataset and the HEC-5 hydrological model.

The process accumulated data at over 50 locations for the 1939 to 1993 period of record. Because of the occurrence of negative flows in the daily values, the data has been smoothed using 3-, 5-, or 7-day averaging. This preserves the volume of the flow and eliminates most of the small negative flows in some of the daily flow data.

The Mobile District modeling team develops the unimpaired flow data sets every 1 - 3 years employing water use data provided by the States of Alabama, Florida and Georgia. The unimpaired flow datasets are reviewed by the states before finalizing. All supporting data and the final results of the analyses are provided to the states. This data set has recently been extended through 2008 and is available from the Corps of Engineers.

1.2 DROUGHT PERIOD UTILIZED IN CRITICAL YIELD

Several drought periods have been identified from the historic record and from previous yield analyses (reference Appendix D - References and Prior Reports). Drought periods were identified in 1940-41; 1954-58; 1984-89; 1999-2003, and 2006-2008. These are shown below in Table A-1 and described in more detail at Appendix E - Drought Descriptions.

Each period is referenced in accordance to the decade or most severe year of occurrence. Critical yield was computed for each of the drought periods and the lowest value selected as the critical yield value for this report.

Table A-1. Drought Periods

Drought Periods	Label
1940-1941	1940
1954-1958	1950
1984-1989	1980
1999-2003	2000
2006-2008	2007

The most recent drought and recovery period extend beyond 2008. Lake Lanier reached a historic low elevation of 1050.79 feet NGVD on December 28, 2007, and nearly again on December 8, 2008, when the pool reached elevation 1051 feet NGVD. A return to almost normal rainfall and conservative management allowed the reservoir to refill 20 feet over the next 10 months.

Lake Lanier recovery was marked by reaching full pool elevation of 1071 feet NGVD on October 14, 2009. Figure A-1 shows the most recent critical period for Lake Lanier and includes the drawdown and refill period through 2009.

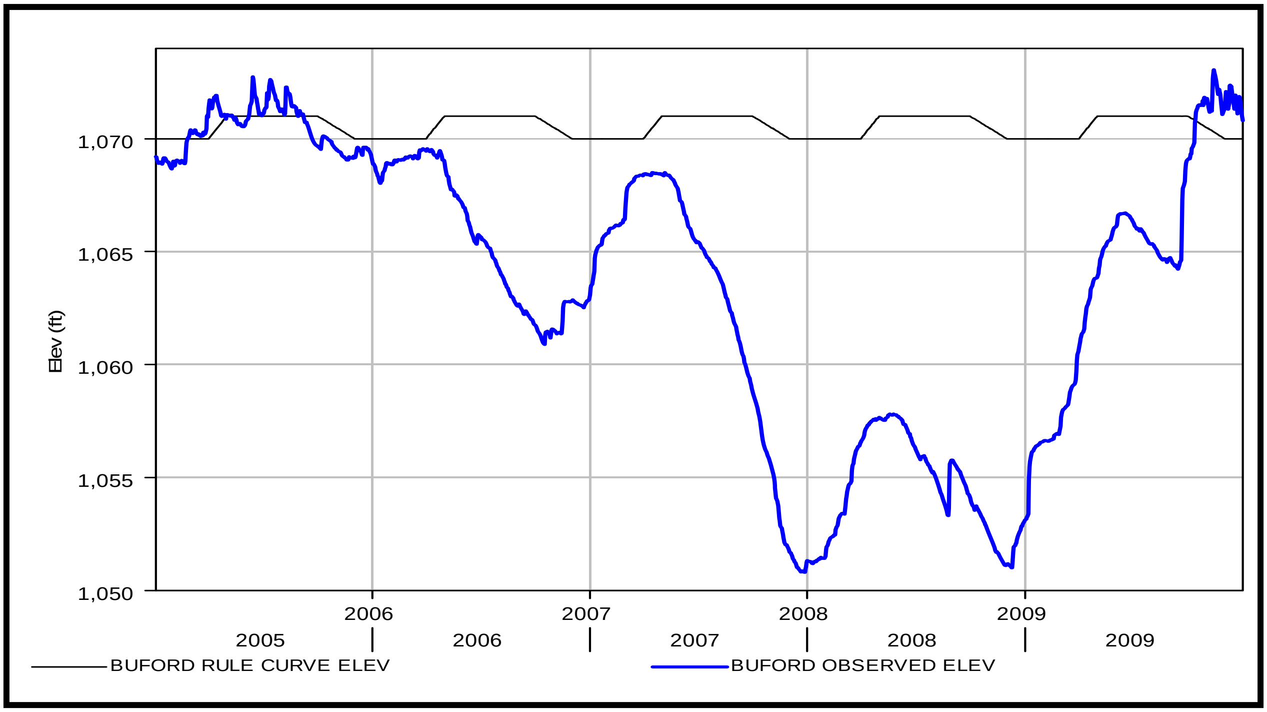


Figure A-1. Lake Lanier Pool Elevation 2005-2009

The data necessary to develop an unimpaired flow data set representing all of Calendar Year 2009 is not available. However, the Lake Lanier critical yield values from the partial 2007 drought are considered representative of actual critical yield because the lake steadily refilled from the low of December 8, 2008. Though the reservoir did refill in 2009, all yield values computed for the 2007 critical period will be recomputed when the unimpaired flow is extended to include Calendar Year 2009.

The remaining projects in the yield analysis, West Point Lake and Walter F. George Lake, refilled in 2008.

1.3 MODELS

A computer simulation model is a computer program that simulates a simplified model of a system. The U.S. Army Corps of Engineers' Hydrologic Engineering Center's (HEC) Reservoir System Simulation (HEC-ResSim) is a computer program comprised of a graphical user interface (GUI) and a computational engine to simulate reservoir operations. HEC-ResSim was developed to aid engineers and planners performing water resources studies by representing the behavior of reservoirs and to help reservoir operators plan releases in real-time during day-to-day and emergency operations.

The HEC-ResSim Firm Yield process calculates the release for a single minimum release operation rule that drains the reservoir's pool to empty once in the period of record. This figure can also be described as the largest release that can be supplied reliably throughout the record.

The process involves computing a simulation run with an estimate of the largest release, and recomputing iteratively with successive estimates until the correct release is found.

The user enters the maximum number of iterations that will be run and two tolerance values. The Storage Test Tolerance value shares the same units as the reservoir storage and is the value the reservoir must decrease in order to be considered empty. It will be used as the tolerance for all the zone storage values listed in the reservoir table. The Rule Test Tolerance value will share the same units as the minimum release rule and is used in the calculations as a test for violations of the minimum release rule.

The ResSim ACT and ACF yield models include a net precipitation-evaporation rate for each reservoir that utilizes evaporation values developed for National Oceanic and Atmospheric Administration (NOAA) Technical Reports, monthly pan evaporation rates and National Weather Service (NWS) reports of rainfall and flow rates. The net evaporation losses, evaporation minus precipitation, were computed in inches at the projects. The NOAA report was used because historic monthly evaporation data is not available at the projects. Historic monthly precipitation data was obtained from the NWS.

1.4 METHODS EMPLOYED IN CRITICAL YIELD ANALYSIS

There are several ways of computing critical yield. Sequential analysis is currently the most accepted method. This method uses the conservation of mass principles to account for the water in the reservoir inflows and releases. The fundamental equation is:

$$I - O = \Delta S$$

Where:

I = Total inflow during the time period, in volume units

O = Total outflow during the time period, in volume units

ΔS = Change in storage during the time period, in volume units

Sequential routing uses an iterative form of the above equation:

$$S_t = S_{t-1} + I_t - O_t$$

Where:

S_t = Storage at the end of time t, volume units

S_{t-1} = Storage at the end of time t-1, volume units

I_t = Average inflow during time step Δ, in volume units

O_t = Average outflow during time step Δ, in volume units

The HEC-ResSim computer application uses sequential analysis and the sequential routing method with the application's Firm Yield routine to maximize yield from a specified amount of storage.

It is important to be aware that the most severe drought event at one reservoir may not be the most severe drought event at another reservoir in the same river system. For the purposes of computing critical yield on the ACF System, the lowest critical yield value (typically associated with the most severe drought event) at an upstream reservoir will be used to calculate a downstream reservoir's critical yield. This is because on the ACF System, the amount of water exiting an upstream reservoir influences the amount of water available in a downstream reservoir. This is germane to Methods A and B described below.

1.4.1 Method A (Without Diversions)

Method A assumes that there are no withdrawals from or returns to the lake or the river as it flows between projects. This condition results in the maximum yield possible from the Federal projects. Critical yield from an upstream reservoir is assumed to be permanently removed from the system and does not contribute to the inflow at downstream reservoirs.

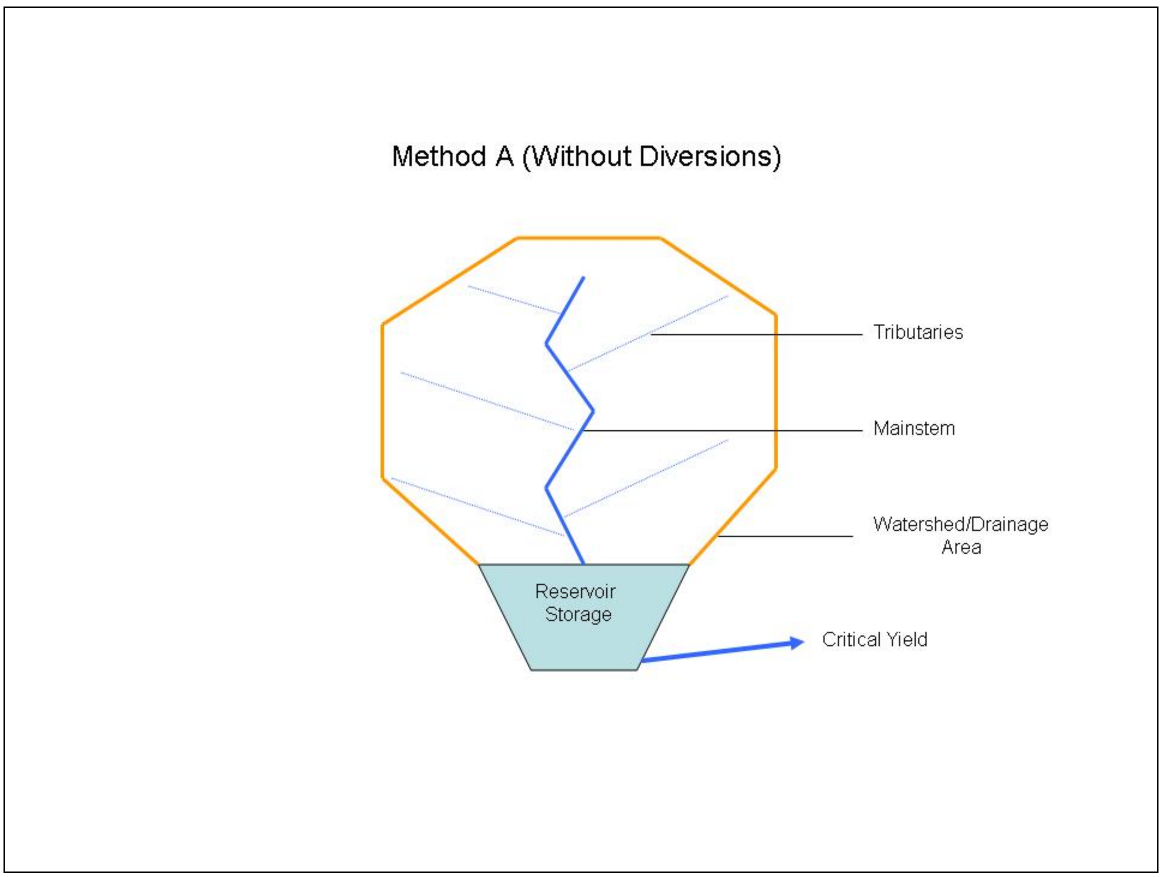


Figure A-2. Critical Yield Method A (Without Diversions)

1.4.2 Method B (With Diversions)

Method B assumes net river withdrawals and returns are occurring; this method does not include withdrawals from the Corps reservoirs. Critical yield from an upstream reservoir is assumed to be permanently diverted from the system and does not contribute to the inflow at downstream reservoirs. This condition results in the most severe downstream impact. The results of Method B represent a realistic assessment of the critical yield available from Federal projects controlled by the Corps. Method B used the most severe drought events documented during the hydrologic period of record and the year of maximum river withdrawals (2006 for the ACT; 2007 for the ACF) to make the calculations.

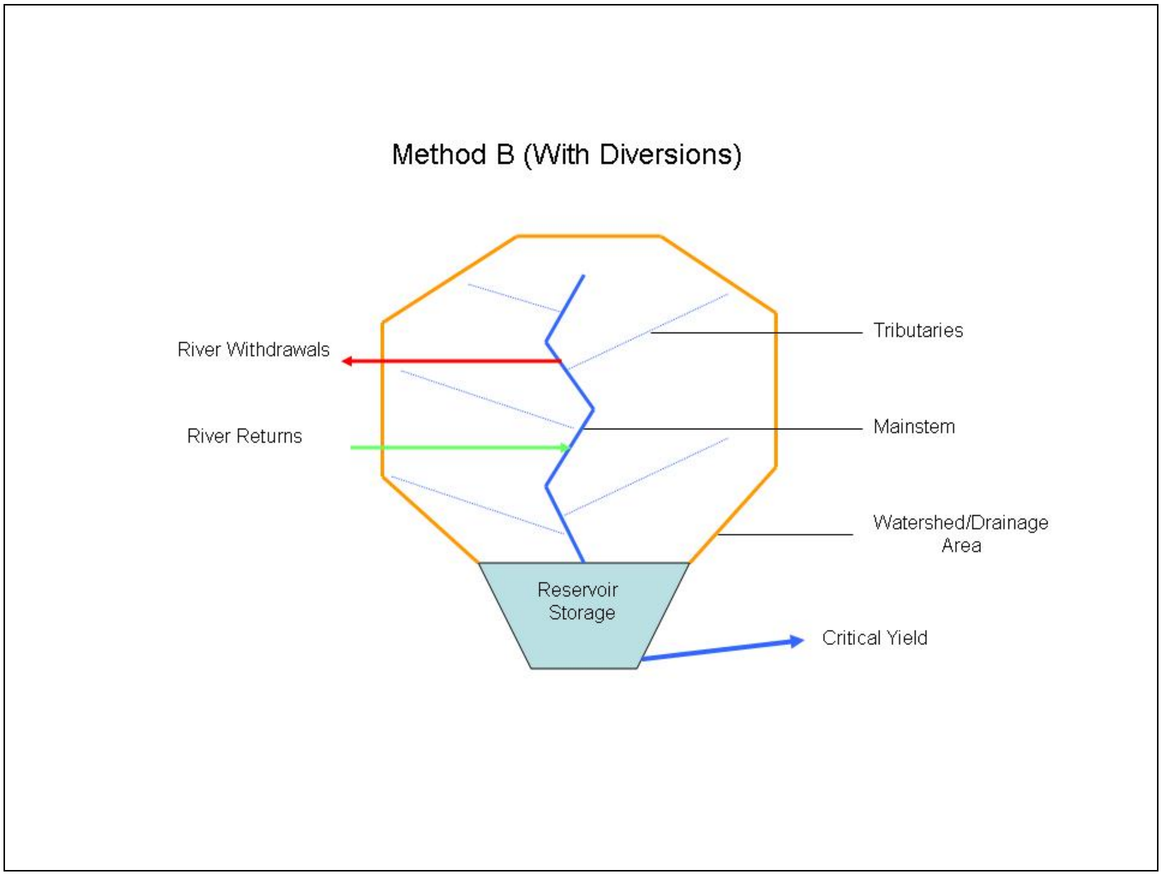


Figure A-3. Critical Yield Method B (With Diversions)

1.4.3 Method C (River System Yield)

Method C computes a system yield for diversion from the most downstream storage reservoir. It assumes upstream reservoirs operate in tandem to maximize the critical yield at the most downstream reservoir. Method C computes critical yield for the ACF River System with and without net river withdrawals. The with net river withdrawals condition results represent the Corps' yield. The without net river withdrawals condition results represent the system theoretical maximum yield.

ACT critical yields are computed using only Methods A and B. This is because both Carters Dam and Allatoona Dam operate independently and do not influence water availability at the other reservoir.

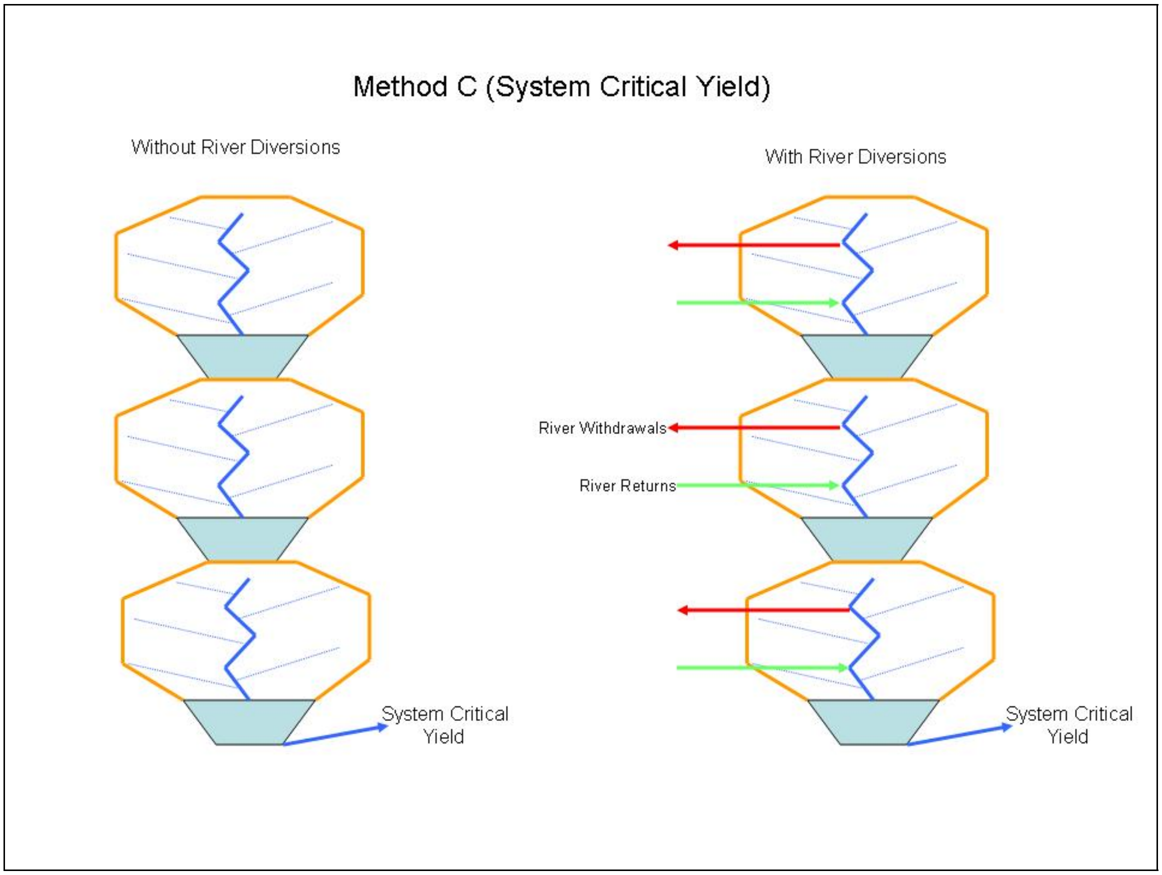


Figure A-4. Critical Yield Method C (System Critical Yield)

1.4.4 Seasonal Storage

The amount of conservation storage is seasonal at federal projects because of the seasonal drawdown to support flood reduction operations. Table A-2 lists the elevation difference in the guide curve and reduction in conservation storage for the federal projects.

Table A-2. Seasonal Conservation Storage Reduction

Project	Elevation Difference (feet)	Storage Difference (ac-ft)	Percent Reduction In Conservation Storage
Allatoona	17 = 840-823	164,702	58%
Carters	2 = 1074-1072	6,492	5%
Buford	1 = 1071 – 1070	38,200	4%
West Point	7 = 635 – 628	162,232	53%
Walter F. George	2 = 190 – 188	87,300	36%

For Allatoona, West Point and Walter F. George, the yield of these projects is highly dependent on the beginning of the critical dry period. In other words, does it begin during the winter level, summer level or transition level of the guide curve? Although all three projects have a high probability of refill to summer pool from a low winter level, extreme rare events will prevent the project from refilling. Consequently, if the critical period begins before the reservoir reaches full summer level the critical yield will be lower than when compared to starting at full summer level. For the determination of critical yields, the yield simulation begins approximately one year before the drought period begins. The analyses assume about one year of normal flows prior to the beginning of the drought period. Drawdown could start whenever flows were low enough for the lake to fall below a target level, be it winter, summer or transition. For the efficiency of computations, separate drought periods were run, always considering the prior year average flows and assuming the highest possible elevation on the guide curve as the target level.

Appendix B

Alabama-Coosa-Tallapoosa (ACT) Basin

Appendix B - Alabama-Coosa-Tallapoosa (ACT) Basin

1 ACT BASIN

1.1 DESCRIPTION OF BASIN

The headwater streams of the Alabama-Coosa-Tallapoosa (ACT) System 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, which flows through Montgomery and Selma and joins with the Tombigbee River at the bottom of the ACT Basin about 45 miles above Mobile to form the Mobile River. 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 22,800 square miles.

Progressing downstream from the headwater are the Cities of Rome, Georgia, Gadsden, and Montgomery, Alabama in the central portion of Alabama. The largest metropolitan area in the basin is Montgomery, Alabama.

Figure B-1. ACT Basin

Beginning in the headwaters of northeast Georgia with spring fed mountain streams the slope is steep, with rapid runoff during rainstorms. Some of the most upstream tributaries are the Oostanaula River, the Conasauga River, Ellijay River, the Cartecay River and Etowah River.

The Etowah River, which joins the Oostanaula River at Rome, Georgia, to form the Coosa River, lies entirely within Georgia. It is formed by several small mountain creeks which rise on the southern slopes of the Blue Ridge Mountains at an elevation of about 3,250 feet. The river flows southerly, southwesterly, and then northwesterly for 150 miles to Rome, Georgia. The drainage basin of 1,860 square miles has a maximum width of about 40 miles and a length of about 70 miles. Allatoona Dam is located on the Etowah River near Cartersville, Georgia. It is a multiple-purpose Corps project placed in operation early in 1950 and provides storage for power and flood control. Principal tributaries of the Etowah River are Amicalola, Settingdown, Shoal, Allatoona, Pumpkinvine and Euharlee Creeks and Little River. Three of these, Allatoona and Shoal Creeks, and Little River drain into Lake Allatoona.

The Coosawattee River is 45 miles long; and has a fall of 650 feet, an average of 14.4 feet per mile. The Carters Project is located on the Coosawattee River at river mile 26.8. This federal project consists of an earth-fill dam, and a downstream re-regulation reservoir that accommodates pump-back operations.

The Conasauga River, with its tributary Jacks River, rises on the northern slopes of the Cohutta Mountains in Fanning County, Georgia, at an elevation of about 3,150 feet. Its drainage basin, 727 square miles, has a maximum width of 25 miles and a length of 40 miles. The eastern and northern portions of the basin are rugged and mountainous, containing peaks over 4,000 feet in elevation. The river flows 90 miles from the headwater to join the Coosawattee River to form the Oostanaula River.

From its source at the confluence of the Coosawattee and Conasauga Rivers at Newtown Ferry, Georgia., the Oostanaula River meanders southwesterly through a broad plateau for 47 miles to its mouth at Rome, Georgia. Its total drainage area is 2,160 square miles.

The Coosa River, which is formed by the Etowah and Oostanaula Rivers at Rome, Georgia, flows first westerly, then southwesterly and finally southerly a total distance of 286 miles to its mouth, 11 miles below Wetumpka, Alabama, where it joins the Tallapoosa to form the Alabama River. The drainage area of the Coosa River is approximately 10,200 square miles. Alabama Power Company operates eleven dams with seven on the Coosa River. These are Weiss Dam, H. Neely Henry Dam, Logan Martin Dam, Lay Dam, Mitchell Dam, and Jordan-Bouldin Dams.

The Tallapoosa River, with a drainage area of 4,680 square miles, rises in northwestern Georgia at an elevation of about 1,250 feet, and flows westerly and southerly for 268 miles, joining the Coosa River south of Wetumpka, Alabama to form the Alabama River. There are four large power dams owned by the Alabama Power Company on the Tallapoosa River. These are Harris Dam, Martin Dam, Yates Dam, and Thurlow Dam.

The Alabama River meanders from the head near Wetumpka through the Coastal Plain westerly for about 100 miles to Selma, Alabama. From there it flows southwesterly 214 miles to its mouth near Calvert, Alabama. There are three Corps projects on the Alabama River. Robert F. Henry Lock and Dam and Millers Ferry Lock and Dam provide for hydropower and navigation. Claiborne Lock and Dam provides for navigation only.

1.1.1 Climate

The chief factors that control the climate of the Alabama-Coosa-Tallapoosa Basin are its geographical position in the southern end of the Temperate Zone, its proximity to the Gulf of Mexico and South Atlantic Ocean, and its range in altitude from almost sea level at the southern end to over 4,000 feet in the Blue Ridge Mountains to the north. The proximity of the warm South Atlantic and the semitropical Gulf of Mexico insures a warm, moist climate. Extreme temperatures range from near 110 degrees in the summer to values below zero in the winter. Severe cold weather rarely lasts longer than a few days. The summers, while warm, are usually not oppressive. In the southern end of the basin the average maximum January temperature is 60 degrees and the average minimum January temperature is 37 degrees.

The Maximum average July temperature is 91 degrees; in the southern end of the basin the corresponding minimum value is 69 degrees. The frost-free season varies in length from about 200 days in the northern valleys to about 250 days in the southern part of the basin. Precipitation is mostly in the form of rain, but some snow falls in the mountainous northern region on an average of twice a year.

1.1.2 Precipitation

The entire ACT Watershed lies in a region which ordinarily receives an abundance of precipitation. The watershed receives a large amount of rain and it is well distributed throughout the year. Winter and spring are the wettest periods and early fall the driest. Light snow is not unusual in the northern part of the watershed, but constitutes only a very small fraction of the annual precipitation and has little effect on runoff. Intense flood producing storms occur mostly in the winter and spring. They are usually of the frontal-type, formed by the meeting of warm moist air masses from the Gulf of Mexico with the cold, drier masses from the northern regions, and may cause heavy precipitation over large areas. The storms that occur in summer or early fall are usually of the thunderstorm type with high intensities over smaller areas. Tropical disturbances and hurricanes can occur producing high intensities of rainfall over large areas.

1.1.3 Storms and Floods

Major flood-producing storms over the ACT Watershed are usually of the frontal type, occurring in the winter and spring and lasting from 2 to 4 days, with their effect on the basin depending on their magnitude and orientation. The axes of the frontal-type storms generally cut across the long, narrow basin. Frequently a flood in the lower reaches is not accompanied by a flood in the upper reaches and vice versa. Occasionally, a summer storm of the hurricane type, such as the storms of July 1916 and July 1994, will cause major floods over practically the entire basin. However, summer storms are usually of the thunderstorm type with high intensities over small areas producing serious local floods. With normal runoff conditions, from 5 to 6 inches of intense and general rainfall are required to produce wide spread flooding, but on many of the minor tributaries 3 to 4 inches are sufficient to produce local floods.

Historically, minor or major floods within the ACT Basin occur about two times per year. The storms which occurred in July 1916, December 1919, March 1929, February 1961, and July 1994 are of special interest because of the intensities of precipitation over large areas. It should be noted that they represent both the hurricane and frontal types which produce the great floods in this area.

1.1.4 Runoff Characteristics

Within the ACT Basin rainfall occurs throughout the year but is less abundant during the August through November time frame. The amount of this rainfall that actually contributes to streamflow varies much more than the rainfall. Several factors such as plant growth and the seasonal rainfall patterns contribute to the volume of runoff.

Table B-1 and Table B-2 present the average monthly runoff for the basin. These tables divide the basin at Rome Georgia to show the different percentages of runoff verses rainfall for the northern and southern sections. The mountainous areas exhibit flashier runoff characteristics and somewhat higher percentages of runoff.

Figure B-2 and Figure B-3 present the same information in graphical form.

Table B-1. Average Monthly Runoff at Rome, Georgia

AVERAGE MONTHLY RUNOFF IN ACT BASIN MEASURED AT ROME GEORGIA												
MONTH	**JAN**	**FEB**	**MAR**	**APRIL**	**MAY**	**JUNE**	**JULY**	**AUG**	**SEPT**	**OCT**	**NOV**	**DEC**
AVG MONTHLY FLOW (CFS) AT ROME	6,525	9,602	11,652	12,828	10,565	7,038	4,636	4,234	3,188	2,778	2,867	4,162
AVG RUNOFF IN INCHES AT ROME	1.86	2.47	3.33	3.54	3.01	1.94	1.32	1.21	0.88	0.79	0.79	1.19
AVG RAINFALL IN INCHES	5.15	4.97	5.96	4.79	4.22	3.92	4.89	3.77	3.82	3.05	3.90	4.87
PERCENT OF RAINFALL AS RUNOFF	36%	50%	56%	74%	71%	50%	27%	32%	23%	26%	20%	24%

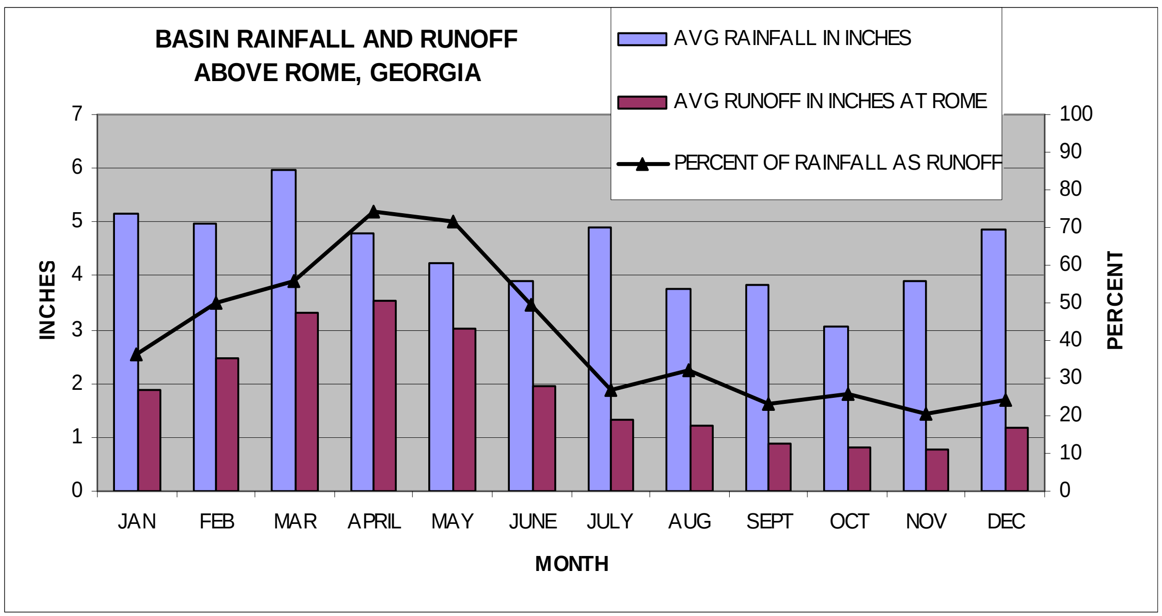


Figure B-2. Basin Rainfall and Runoff above Rome, Georgia

Table B-2. Average Monthly Runoff at Claiborne, Alabama

AVERAGE MONTHLY RUNOFF IN ACT BASIN MEASURED AT CLAIBORNE ALABAMA												
MONTH	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
AVG MONTHLY FLOW (CFS) AT CLAIBORNE	31,529	47,762	58,487	69,862	57,732	32,294	19,981	18,553	14,386	11,346	11,279	16,606
INCREMENTAL FLOW BETWEEN CLAIBORNE AND ROME	25,004	38,160	46,835	57,034	47,167	25,256	15,345	14,319	11,198	8,568	8,412	12,444
AVG RUNOFF IN INCHES BETWEEN CLAIBORNE AND ROME	1.65	2.52	3.10	3.77	3.12	1.67	1.01	0.95	0.74	0.57	0.56	0.82
AVG RAINFALL IN INCHES	5.19	5.15	6.10	4.90	4.18	4.16	5.28	3.95	3.63	2.84	4.07	4.93
PERCENT OF RAINFALL AS RUNOFF	32%	49%	51%	77%	75%	40%	19%	24%	20%	20%	14%	17%

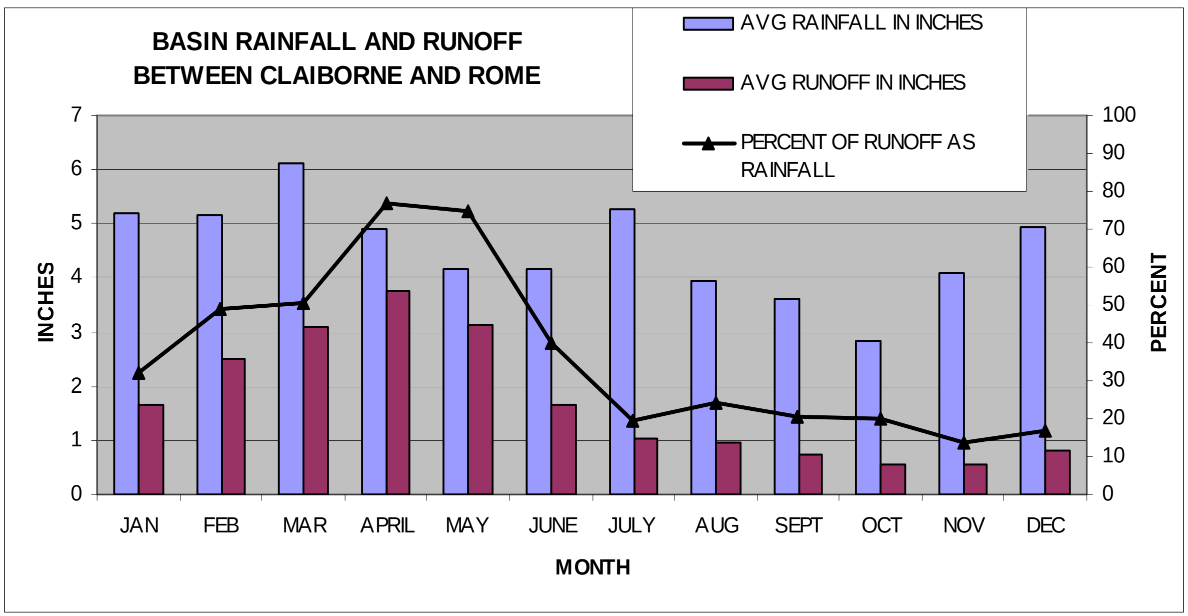


Figure B-3. Basin Rainfall and Runoff between Claiborne, Alabama and Rome, Georgia

1.2 RESERVOIRS

1.2.1 Reservoir Storage

Within the Alabama-Coosa-Tallapoosa River Basin there are five (5) federally owned reservoir projects; Carters Dam (Carters Lake), Allatoona Dam (Allatoona Lake), R.F. Henry Lock and Dam (Jones Bluff Powerhouse and Woodruff Reservoir), Millers Ferry Lock and Dam (William Danelly Lake), and Claiborne Lock and Dam (Claiborne Lake). These projects were built and are operated by the Corps, Mobile District Office. The Alabama Power Company owns and operates seven dams on the Coosa River and four on the Tallapoosa River.

The reservoir storage in the basin controlled by each of the reservoirs is listed in Table B-3 and shown graphically in Figure B-4. Claiborne Lock and Dam is not shown because the storage is insignificant.

Table B-3. ACT Basin Conservation Storage Percent by Acre-Feet

Project	Conservation Storage (ac-ft)	Percentage
*Allatoona	284,589	12%
*Carters	141,400	6%
Weiss	237,448	10%
Neely Henry	43,205	2%
L Martin	108,262	4%
Lay	77,478	3%
Mitchell	28,048	1%
Jordan/Bouldin	15,969	1%
Harris	191,129	8%
Martin	1,183,356	48%
Yates	5,976	0.2%
*RF Henry (Jones Buff)	47,179	2%
*Millers Ferry	64,900	3%
Total	**2,428,939**	

* Federal project

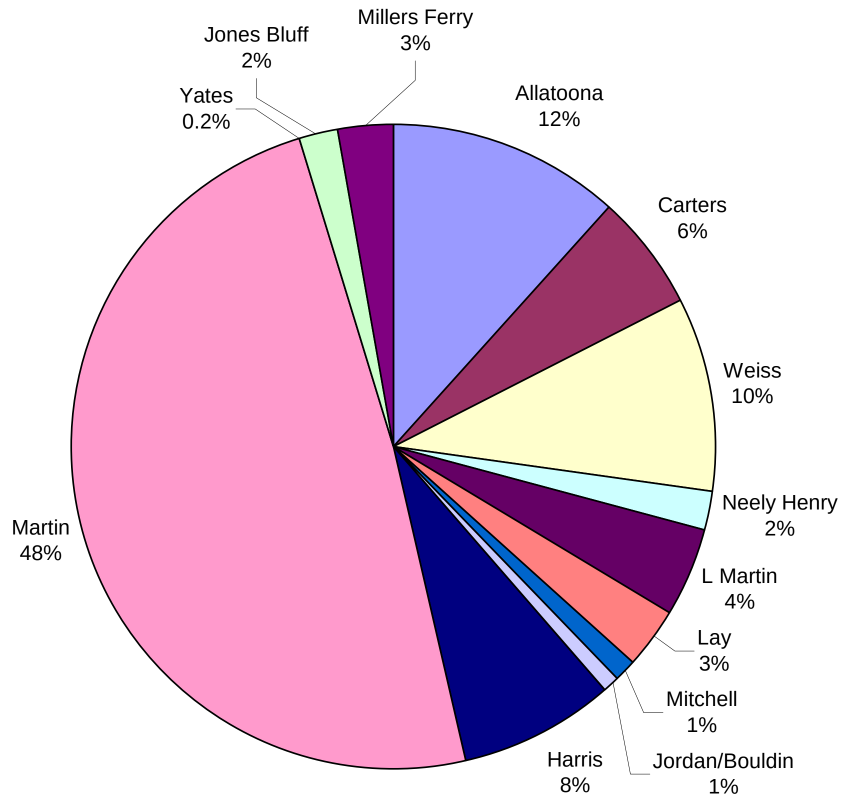


Figure B-4. ACT Basin Reservoir Conservation Storage Percent by Acre-Feet

The figure shows the greatest conservation storage (48%) in the basin is from the Alabama Power Company Lake Martin project on the Tallapoosa River. In addition, the Alabama Power Company controls 77% of the basin storage; federal projects (RF Henry, Millers Ferry, Allatoona, and Carters) control only 23%.

1.2.2 Reservoirs Selected for Yield

As shown above the only federal projects with significant storage are Allatoona and Carters. These two projects in the upper basin account for 18% of the total basin conservation storage. Therefore, yield analyses was performed on these two projects. These analyses are presented separately.

1.3 ALLATOONA DAM (ALLATOONA LAKE)

Allatoona Dam is located on the Etowah River in Bartow County, Georgia, about 32 miles northwest of Atlanta and 26 miles northeast of Rome, Georgia. The reservoir lies within Bartow, Cobb, and Cherokee Counties. The 1,110 square miles drainage area lies on the southern slopes of the Blue Ridge Mountains and consist of steep sloping mountain terrain.

Allatoona Dam is a multiple purpose project with principal purposes of flood control, hydropower, navigation, water quality, water supply, fish and wildlife enhancement and recreation. Its major flood protection area is Rome, Georgia, about 48 river miles downstream. Allatoona Dam operations, along with those of Carters Dam on the Coosawattee River which also contributes to flow at Rome, Georgia provide flood stage reductions at Rome. The project was completed in December 1949. An aerial photo of the dam is shown in Figure B-5.

Figure B-5. Allatoona Dam

1.3.1 Drainage Area

The Etowah River and its upstream tributaries originate in the Blue Ridge Mountains of northern Georgia, near the western tip of South Carolina. The northern boundary of the Allatoona drainage area is shared with the Carters Dam drainage area along a high ridge varying from elevation 1300 to 3800 feet NGVD and with the Tennessee and Chattahoochee Rivers along the eastern and southern boundaries along a lower ridge varying from elevation 1200 to 1900 feet NGVD. The creeks along the upper Etowah River have steep mountainous slopes which produce rapid runoff. However, the main stem above the reservoir is more than 70 miles long which produces large flood inflows that often persist for several days. The drainage area above the Allatoona Dam is 1,087 square miles.

The basin drainage area is shown on the following Figure B-6.

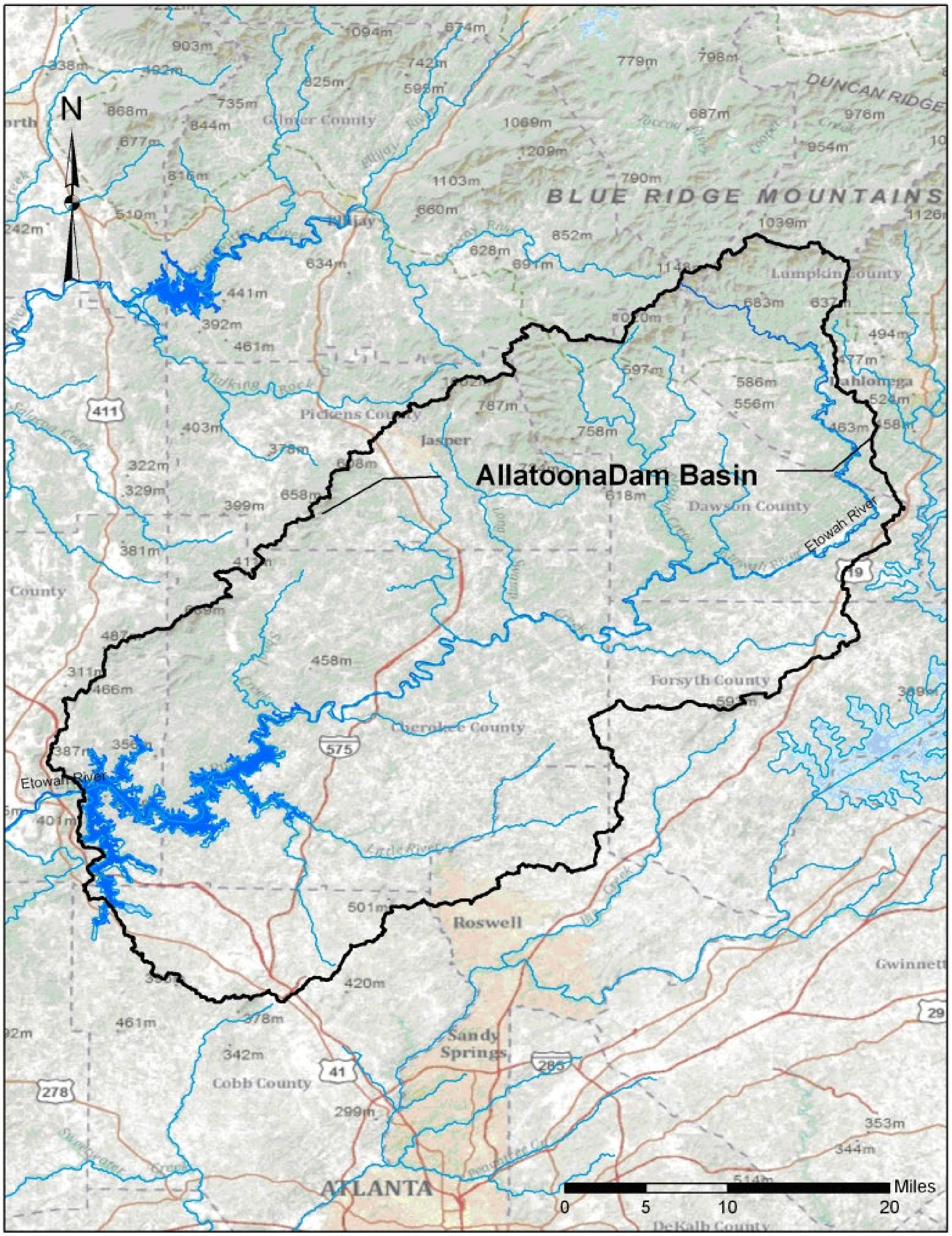


Figure B-6. Allatoona Basin Map

The Allatoona Dam basin controls five percent of the total ACT Basin area. The relation of the Allatoona drainage basin to the ACT Basin is shown in the following Figure B-7. The figure also shows where ACT flow may be influenced by the operation or presence of federal or

Alabama Power Company dams. The basin drainage areas above the federal dams and the Alabama Power Company dams are designated in different colors. The lower federal reservoirs are essentially run-of-the-river projects with limited storage.

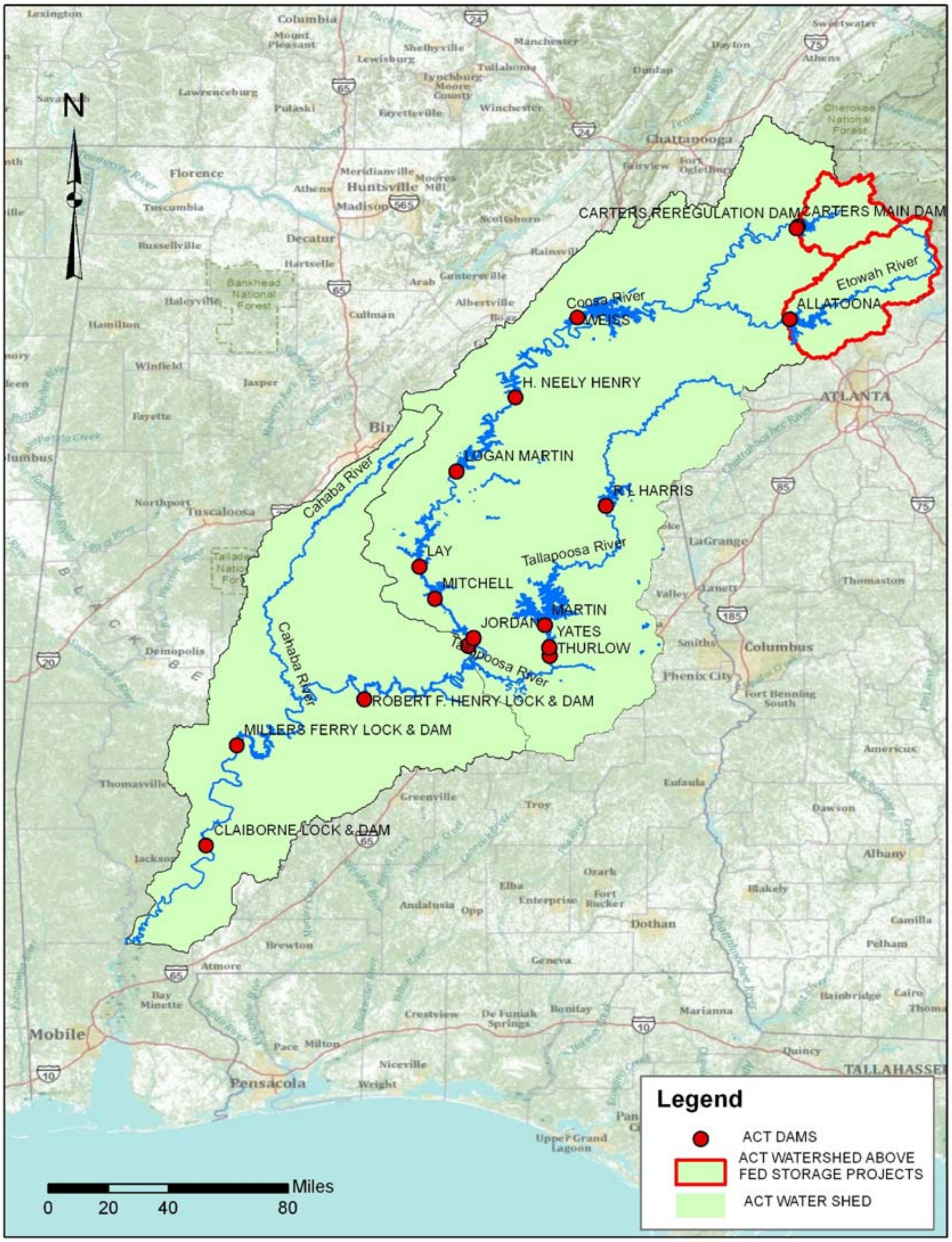


Figure B-7. Drainage Areas for Projects on the ACT

1.3.2 General Features

The project consists of Allatoona Lake extending 28 miles up the Etowah River at full summer conservation pool of 840 feet, a concrete gravity-type dam with gated spillway, earthen dikes, a 74,400 kilowatt (kW) power plant and appurtenances. The spillway section of the dam, with a crest at elevation 835 feet NGVD, has a total flow length of 500 feet, a net length of 400 feet, and a discharge capacity of 184,000 cfs at elevation 860 feet, full flood-control pool. It is equipped with 11 tainter gates. The powerhouse has two 36,000 kW main units and one 2,400 kW service unit, making a total power installation of 74,400 kW.

1.3.2.1 Dam

The dam is a concrete gravity-type structure with curved axis convex upstream, having a top elevation of 880 feet NGVD and an overall length of approximately 1,250 feet. The maximum height above the existing river bed is 190 feet. An 18-foot wide roadway is provided across the entire length of the dam.

1.3.2.2 Reservoir

The reservoir has a total storage capacity of 670,047 acre-feet at full flood-control pool, elevation 860 feet NGVD. At this elevation the reservoir covers a surface area of 19,201 acres (30 square miles) or 2.7 percent of the dam site drainage area. At full summer-level conservation pool, elevation 840 feet NGVD, the reservoir covers 11,862 acres and has a total storage capacity of 367,470 acre-feet; at full winter pool of elevation 823, the reservoir covers 7,610 acres and has a capacity of 202,770 acre-feet, at minimum conservation pool, elevation 800 feet, the area covered is 3,251 acres and the capacity is 82,890 acre-feet. Area and capacity curves are shown on Figure B-8 and in Table B-4.

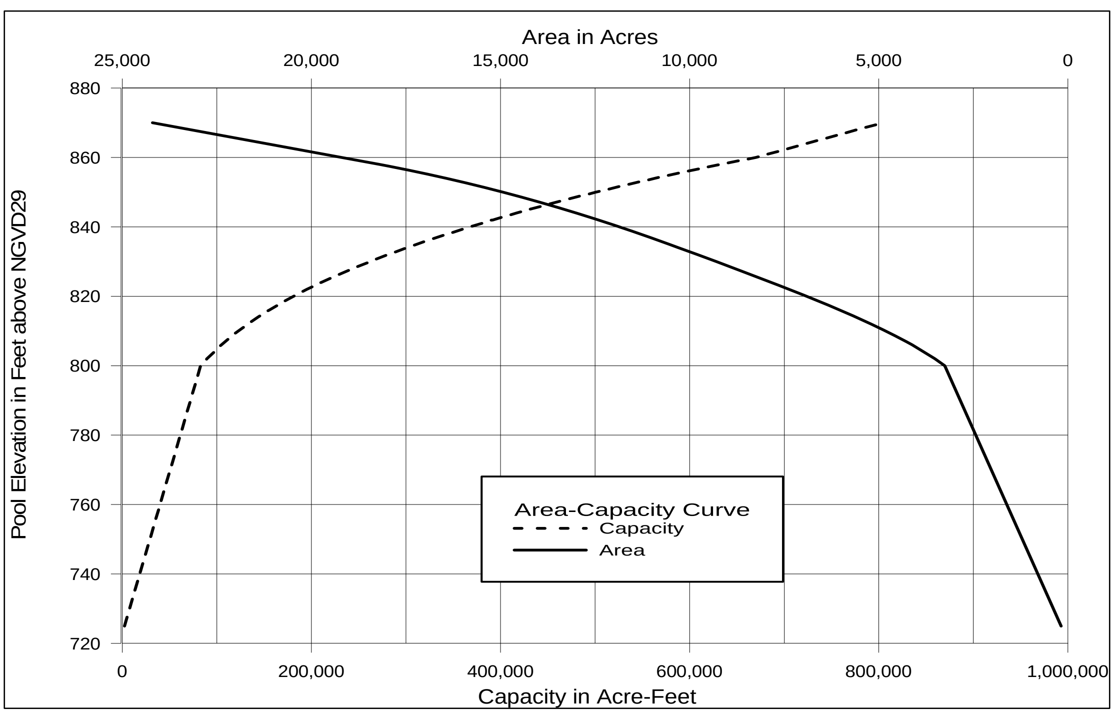


Figure B-8. Allatoona Area – Capacity Curves

Table B-4. Lake Allatoona Area and Capacity

Pool Elev	Total Area	Total Storage
(NGVD 29)	(ac)	(ac-ft)
695	0	0
725	182	2,359
750	508	10,382
760	734	16,534
770	1,042	25,326
780	1,493	37,861
790	2,190	56,021
* 800	3,251	82,891
801	3,381	86,207
802	3,516	89,655
803	3,657	93,241
804	3,804	96,971
805	3,957	100,851
806	4,116	104,887
807	4,281	109,085
808	4,452	113,451
809	4,629	117,991
810	4,812	122,711
811	5,001	127,617
812	5,196	132,715
813	5,397	138,011
814	5,602	143,511
815	5,811	149,217
816	6,024	155,135
817	6,241	161,267
818	6,462	167,619
819	6,686	174,193
820	6,913	180,993
821	7,142	188,021
822	7,373	195,279
** 823	7,606	202,769
824	7,841	210,493
825	8,078	218,453
826	8,317	226,651
827	8,558	235,089
828	8,801	243,769
829	9,046	252,893
830	9,293	261,863
831	9,542	271,281
832	9,793	280,994
833	10,045	290,868
834	10,298	301,040
835	10,552	311,465
836	10,808	322,145
837	11,067	333,082
838	11,329	344,281
839	11,594	355,743
*** 840	11,862	367,471
841	12,134	379,469
842	12,411	391,741
843	12,695	404,294
844	12,988	417,136
845	13,289	430,274
846	13,599	443,718
847	13,918	457,476
848	14,246	471,558
849	14,584	485,973
850	14,933	500,731
851	15,293	515,844
852	15,665	531,323
853	16,050	547,181
854	16,449	563,431
855	16,863	580,087
856	17,293	597,165
857	17,740	614,681
858	18,205	632,553
859	18,692	651,101
**** 860	19,201	670,047
870	24,200	804,000

* Bottom of conservation pool
** Top of winter conservation pool
*** Top of summer conservation pool
**** Top of flood control pool

1.3.3 Top of Conservation Pool

The top of conservation pool varies during the year from elevation 823 to 840 feet. Whenever surplus water is available the criteria is to hold the pool at elevation 840 from 30 April to 30 September, then decrease to 823 feet by 15 December, then hold 823 feet until 15 January, and then increase to 840 feet by 30 September, as shown in Figure B-9.

1.3.4 Regulation Plan

The Allatoona pool is generally regulated between winter pool elevation 823 and summer pool elevation 840. The pool may rise above elevation 840 for short periods of time during high flow periods. The top of the flood control pool is elevation 860. At this elevation, the area of the pool is 19,201 acres and the storage is 670,047 acre-feet.

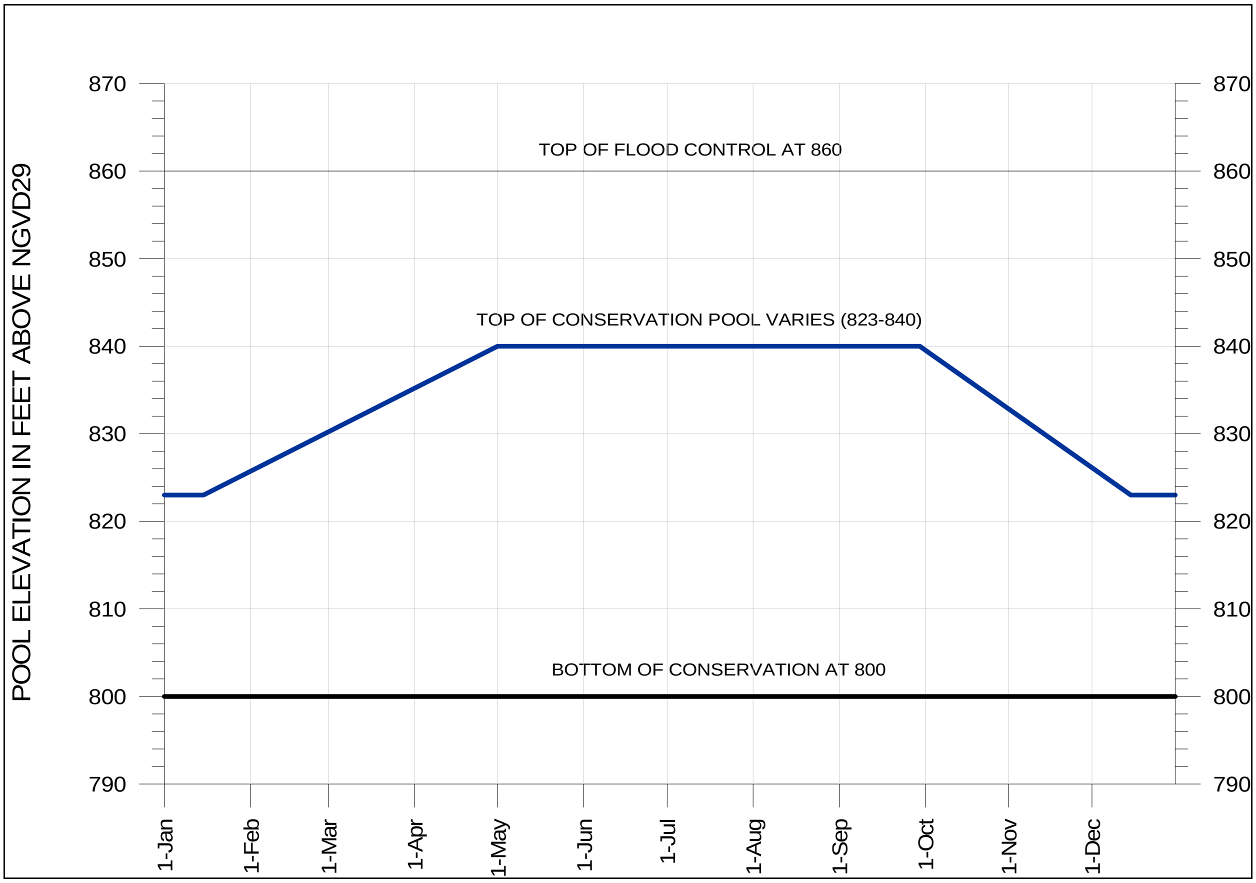


Figure B-9. Top and Bottom of Allatoona Conservation Pool

The storage for the yield analysis will be based on the storage in the conservation pool from elevation 800 to 823-840 (depending on the time of year).

1.3.5 Surface Water Inflows

Observed daily inflow, outflow (discharge), and pool elevation data for the period of record starting in March 1950, just after the pool filled, through the present (Oct 2009) are available. The data are presented in the following Figure B-10.

1.3.6 Unimpaired Flow

The existing unimpaired flow data set was updated through 2008 for use in the yield analysis. The daily data was smoothed using 3-, 5-, or 7-day averaging to eliminate small negative values. Although this averaging affects the peak values, the volume is the same and the yield computations were done on the smoothed data. A plot of this smoothed unimpaired daily flow averaged over each year for the period of record 1939 - 2008 is shown in Figure B-11. Daily flows for critical drought periods are plotted in more detail in Figures B-12 - B-16.

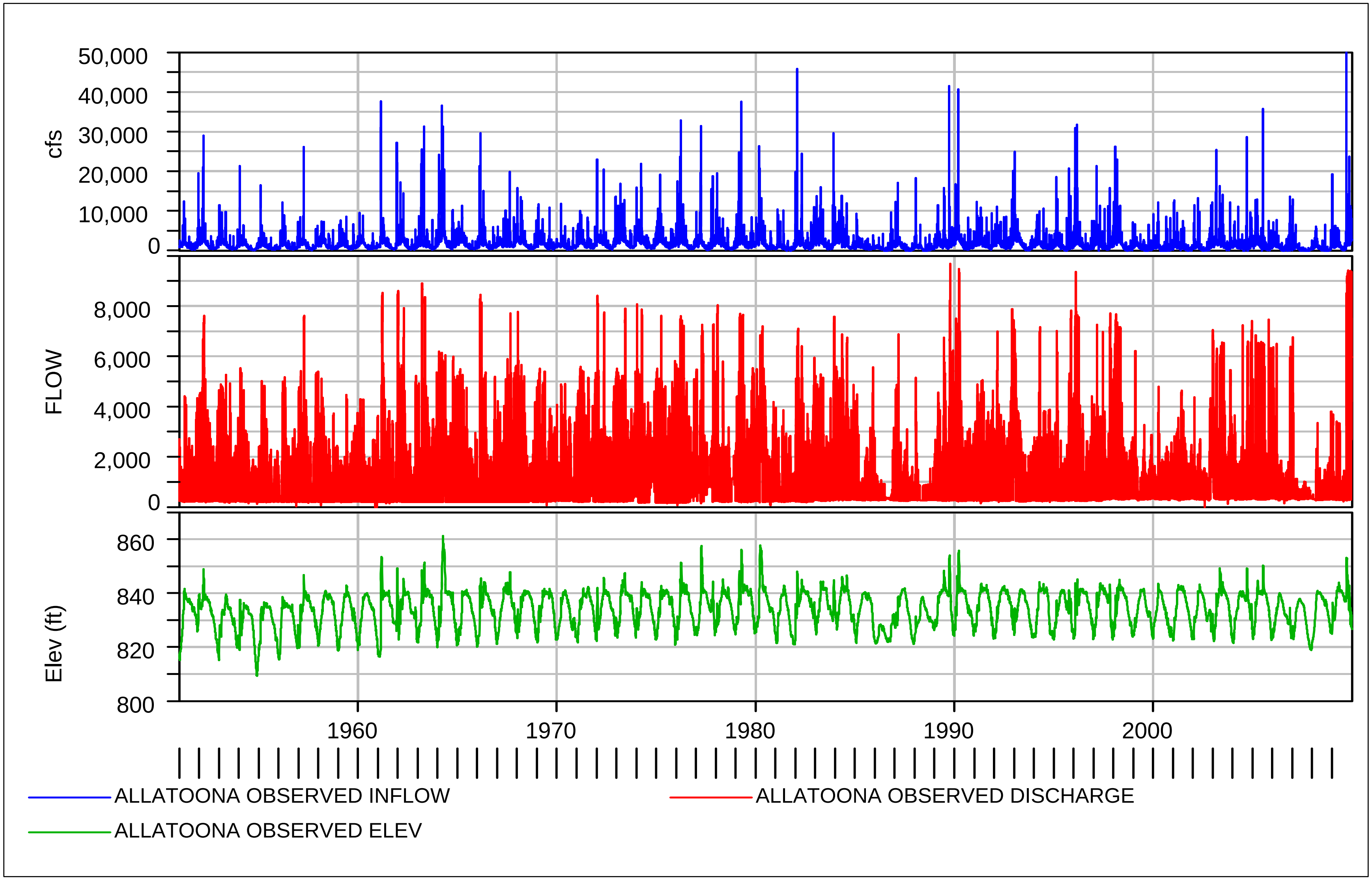


Figure B-10. Allatoona Inflow-Outflow-Pool Elevation (Jan 51 – Dec 2009)

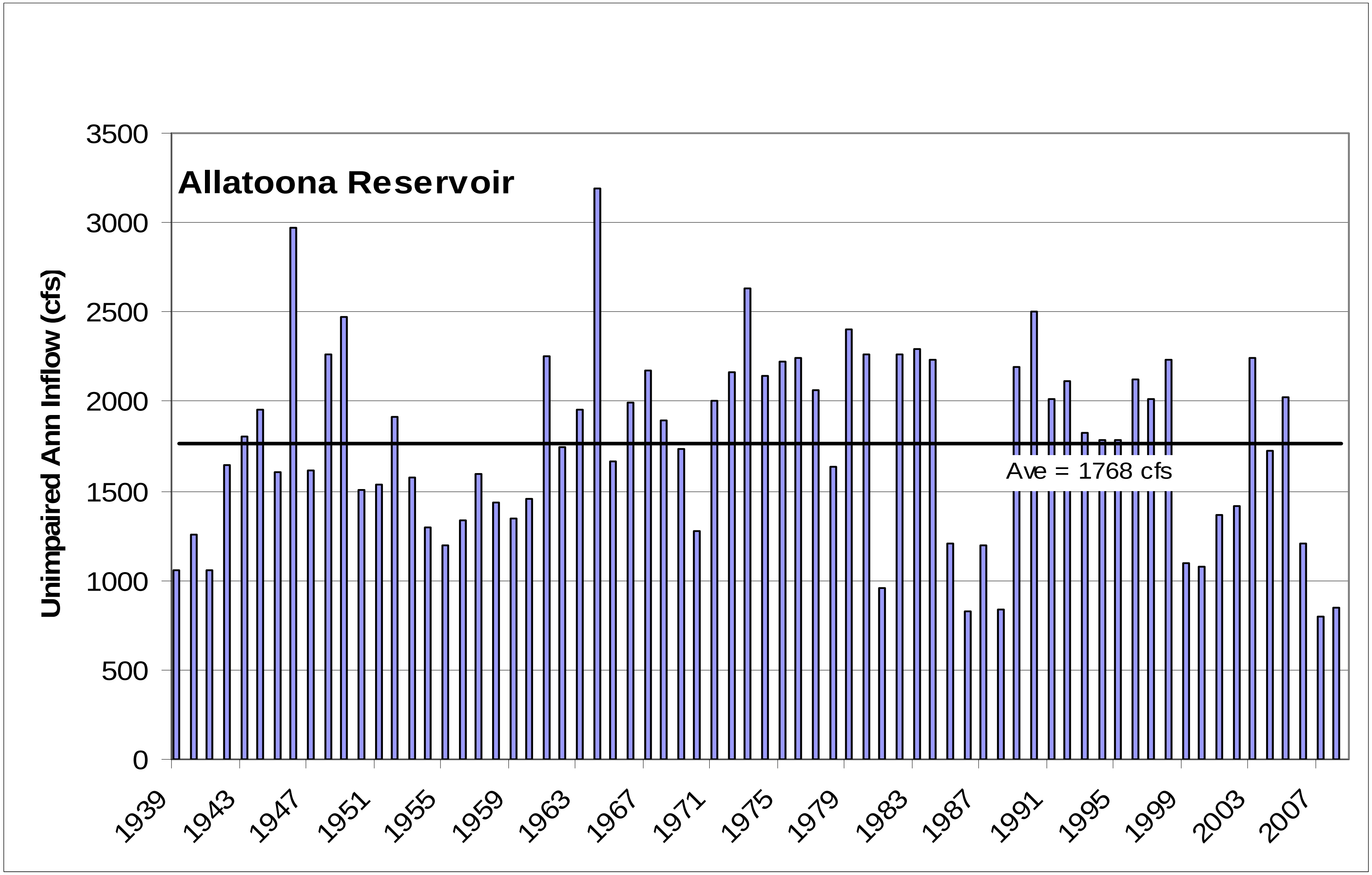


Figure B-11. Allatoona Unimpaired Annual Inflow Jan 1939 to Dec 2008

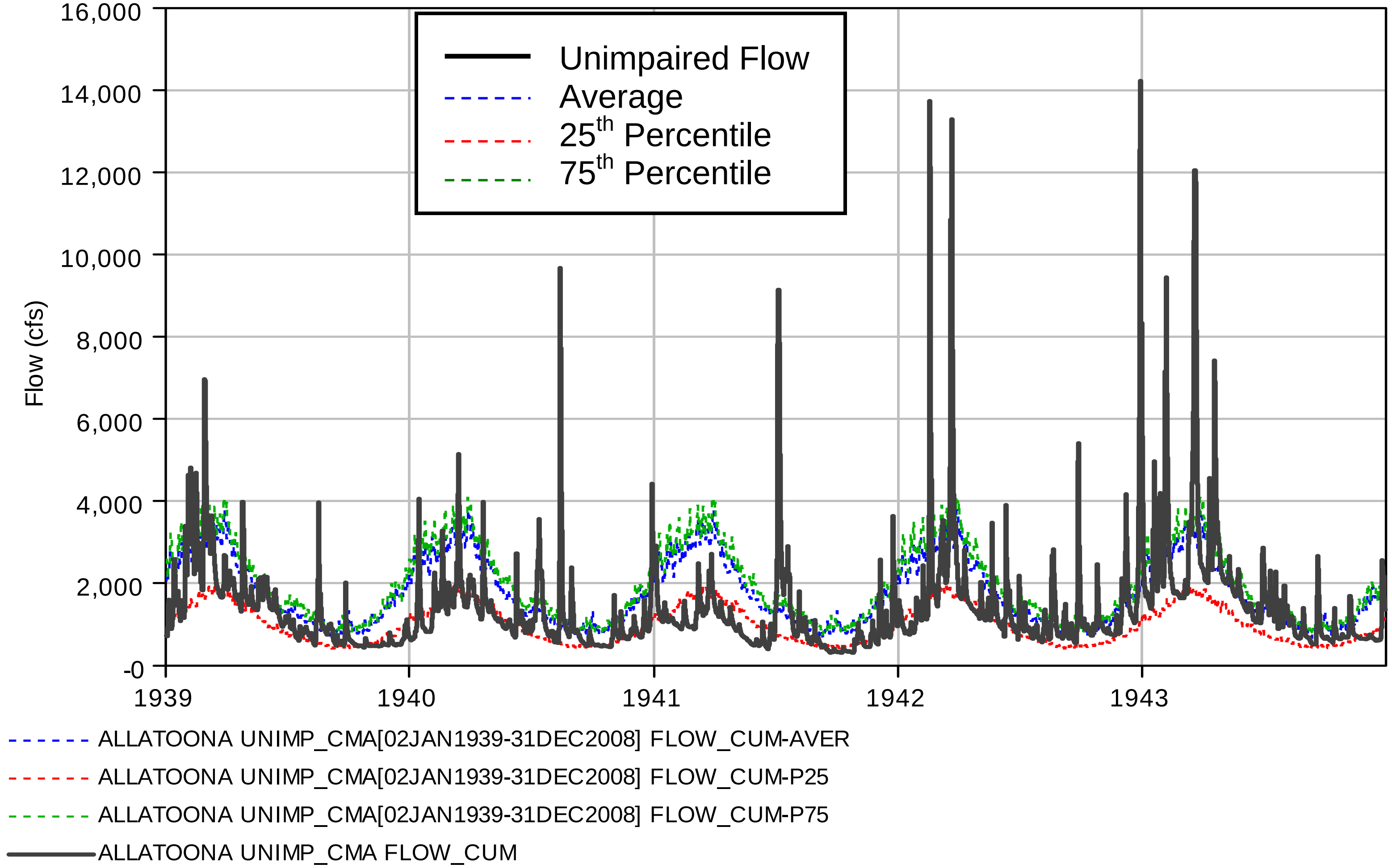


Figure B-12. Allatoona Unimpaired Inflow – 1939 - 1943 Drought; 75th Percentile, Average and 25th Percentile Flow

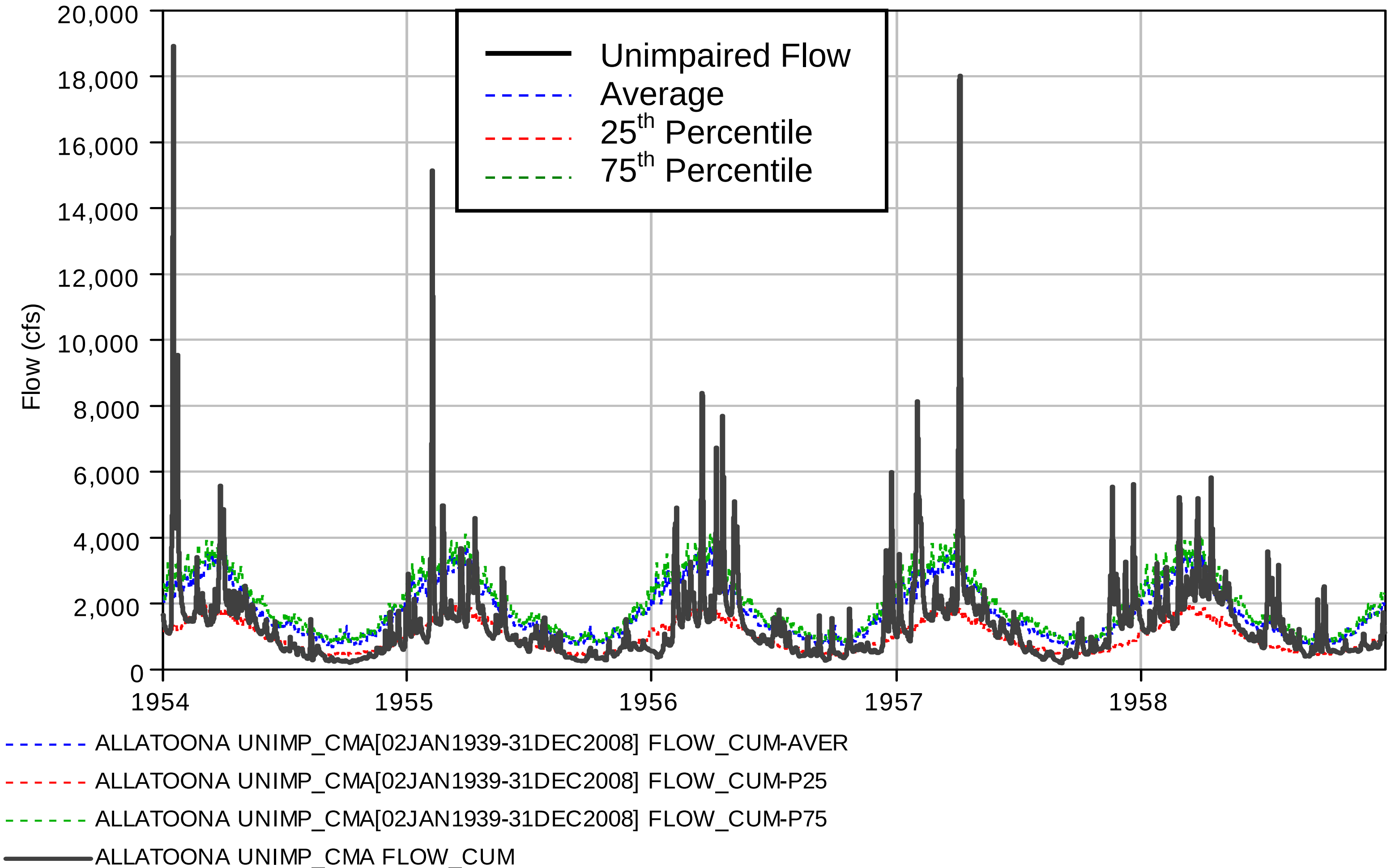


Figure B-13. Allatoona Unimpaired Inflow – 1954 - 1958 Drought; 75th Percentile, Average and 25th Percentile Flow

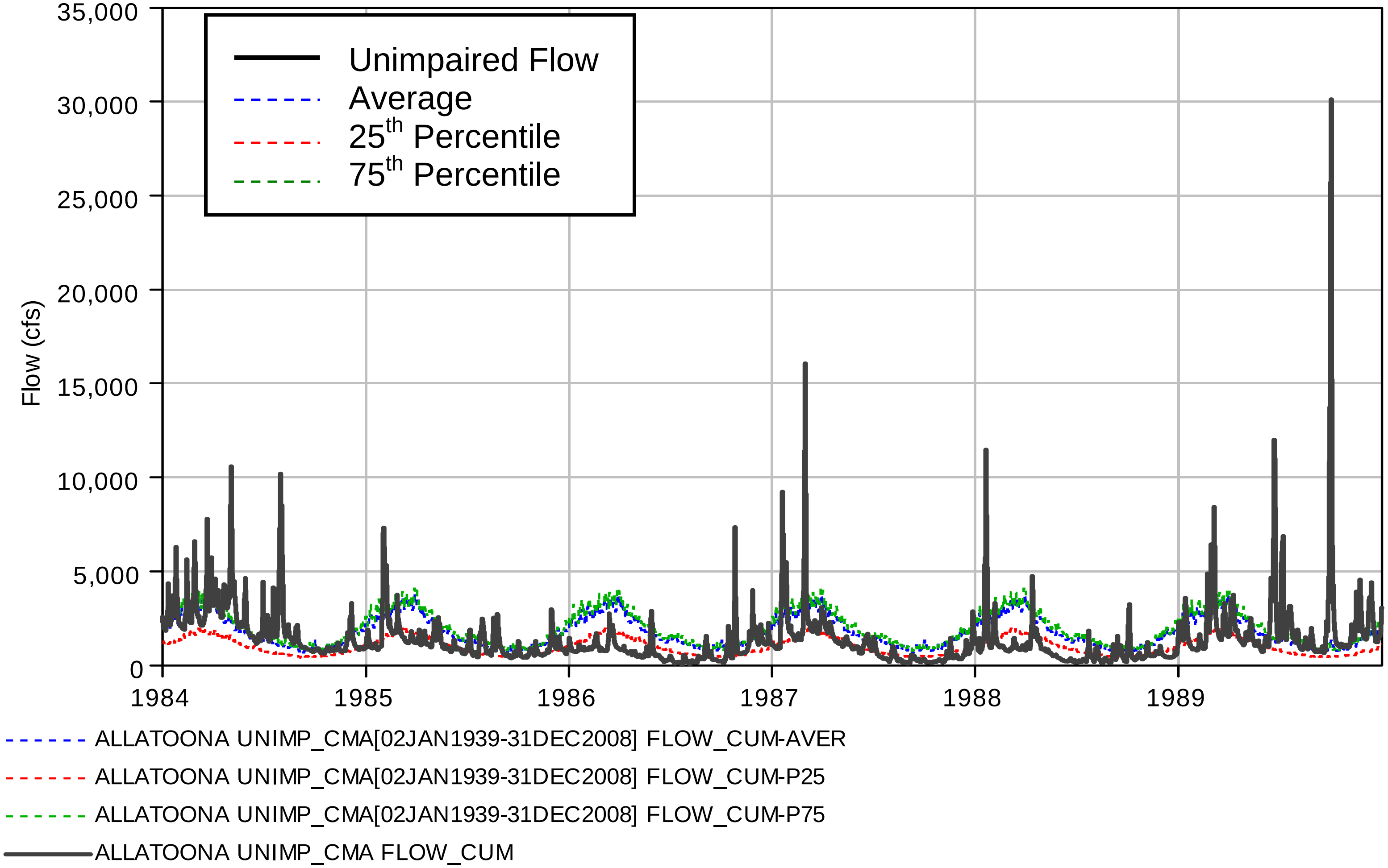


Figure B-14. Allatoona Unimpaired Inflow – 1984 - 1989 Drought; 75th Percentile, Average and 25th Percentile Flow

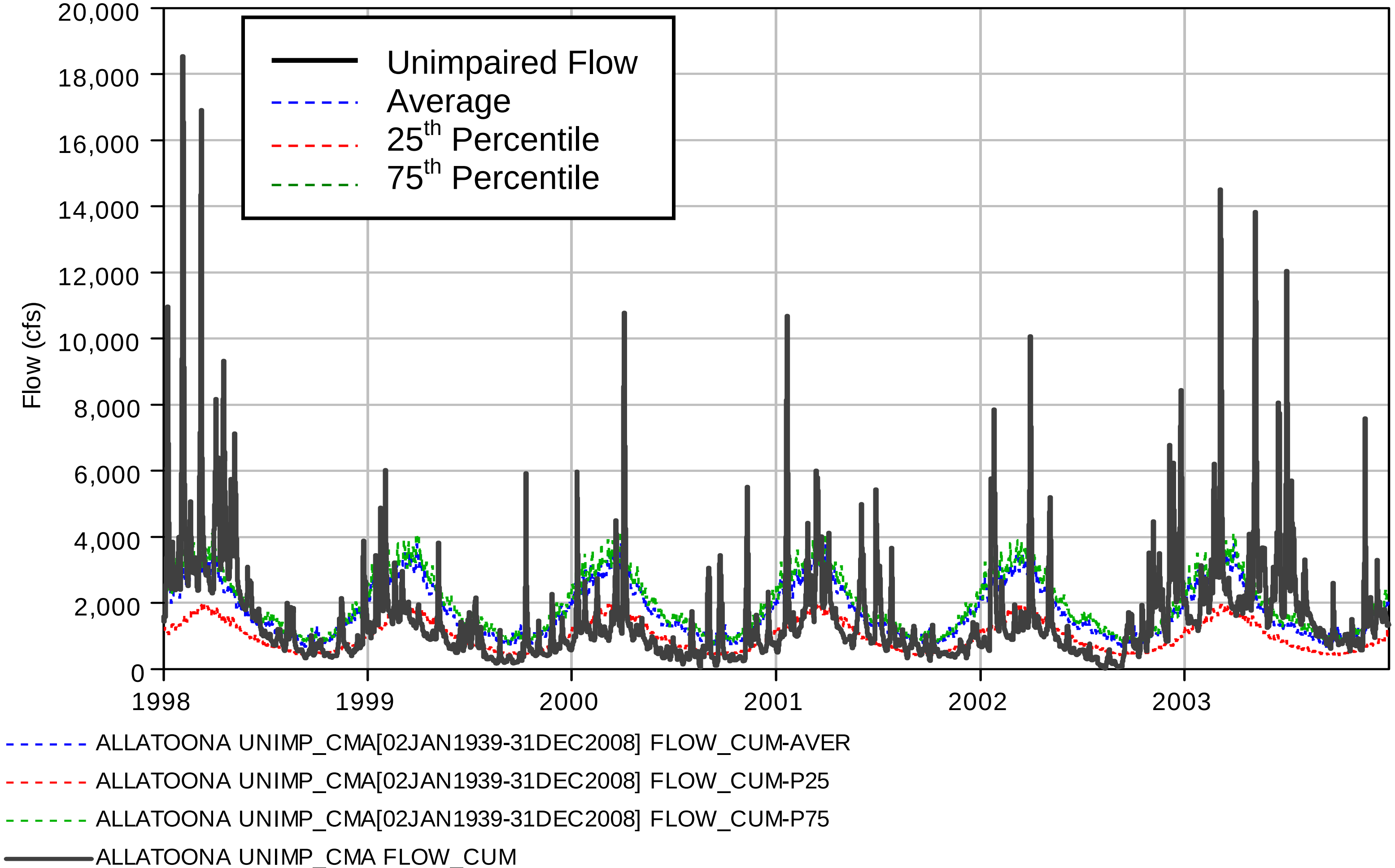


Figure B-15. Allatoona Unimpaired Inflow – 1998 - 2003 Drought; 75th Percentile, Average and 25th Percentile Flow

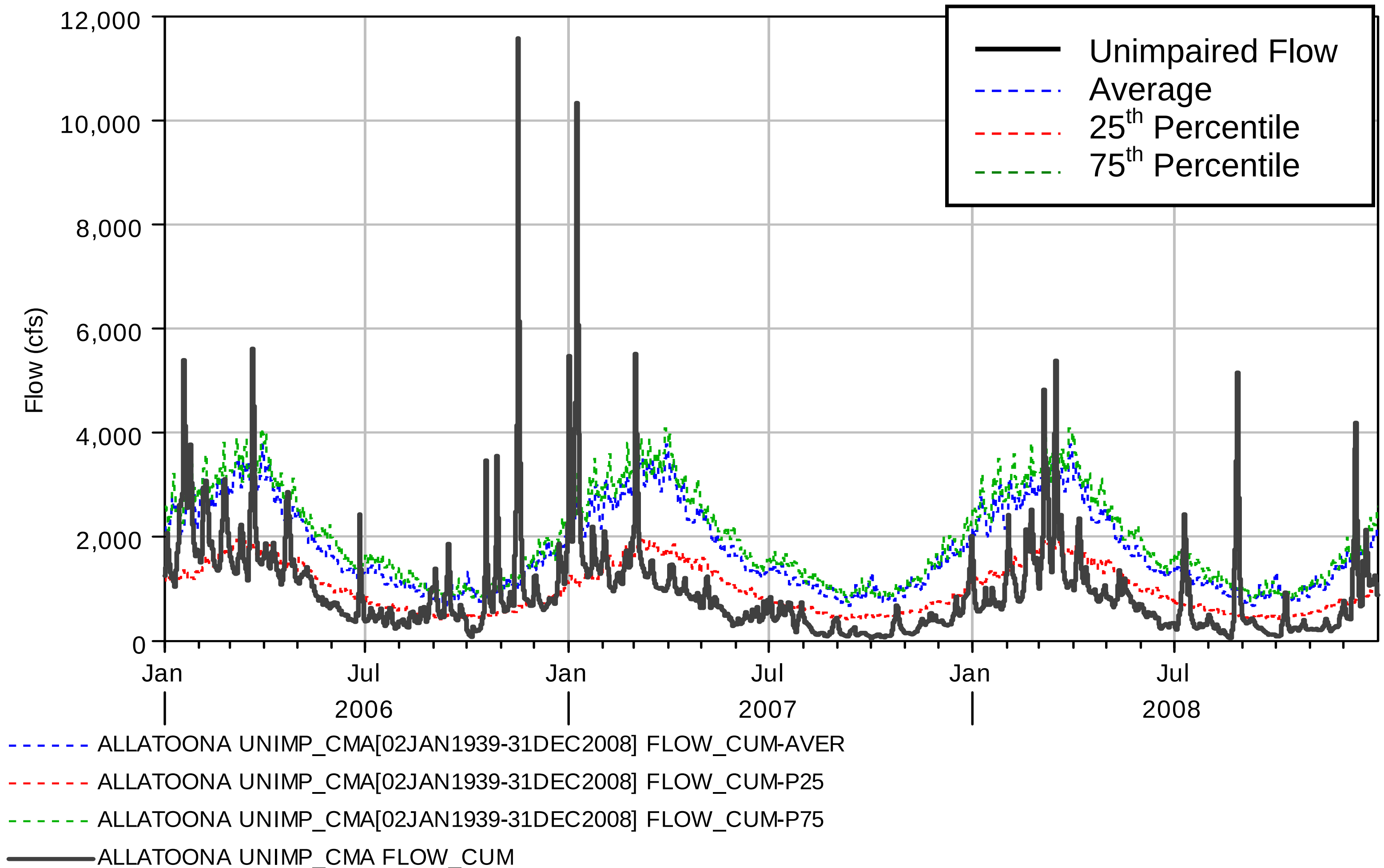


Figure B-16. Allatoona Unimpaired Inflow – 2006-2008 Drought; 75th Percentile, Average and 25th Percentile flow

1.4 CARTERS DAM (CARTERS LAKE)

The Carters project consists of the Carters Main Dam and the Reregulation Dam. The project is located on the Coosawattee River approximately 1.5 miles upstream of Carters, Georgia in northwest part of the state. It is about 60 miles north of Atlanta, Georgia, and approximately 50 miles southeast of Chattanooga, Tennessee. The reregulation dam was constructed approximately 1.8 miles downstream from the main dam. Both dams are located in Murray County with a large portion of the main reservoir extending into Gilmer County. The upper reaches of the reregulation pool extends into both Gordon and Gilmer Counties. The project was completed in 1975.

Carters project is designed primarily for flood control and hydroelectric power. Recreation, fish and wildlife conservation, and, water quality control are additional benefits of the project. An aerial photo of the dam is shown in Figure B-17.

Figure B-17. Carters Dam and Reregulation Dam

1.4.1 Drainage Area

The drainage area above Carters project is 373 square miles. The project is located at the northern end of the ACT River Basin. It is roughly square in shape with a maximum length and width of the basin is approximately 25 and 25 miles respectively. The Coosawattee River is formed by the juncture of the Ellijay and Cartecay Rivers at Ellijay, Georgia, about 21 miles upstream from the Carters project. These tributary streams rise in the Blue Ridge Mountains which have peaks up to 4000 feet NGVD. The southern boundary of the basin is shared with the northern boundary of the Allatoona Dam basin, which drains into the Etowah River. The Carters project basin is predominantly undeveloped. The basin drainage area is shown on the following Figure B-18.

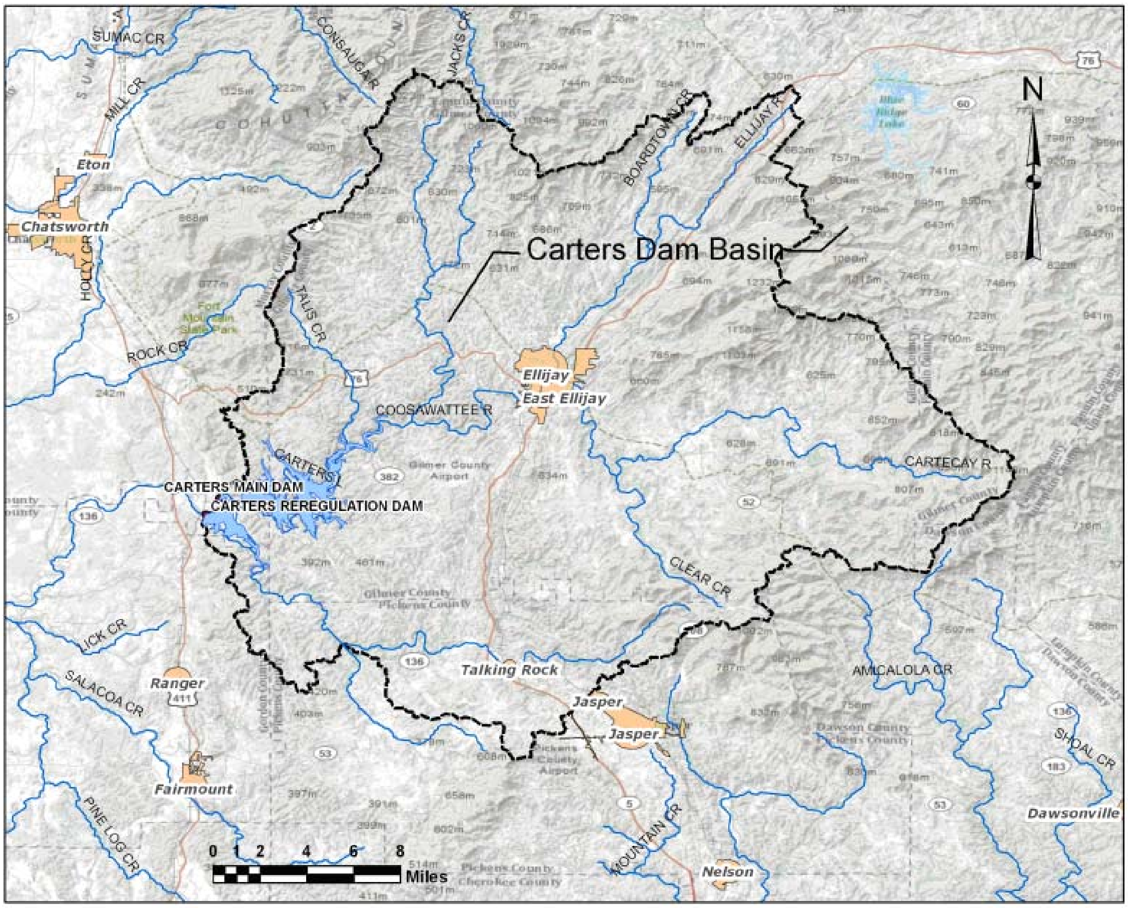


Figure B-18. Carters Basin Map

The Carters Dam basin controls two percent of the total basin area. The relation of the Carters drainage basin to the ACT Basin is shown in the following Figure B-19.

1.4.2 General Features

1.4.2.1 Main Dam

For the purposes of the yield analysis, only the influence of main dam will be analyzed since the reregulation dam has very little storage. The main dam consists of a 445-foot high rolled rock structure with an impervious earth core, powerhouse, an emergency gated spillway, saddle dikes, and low level sluice. The power house has two conventional 125,000 kW hydrogenerator turbine units (1 & 2) and two reversible 125,000 kW pump-turbine units (units 3 & 4), an erection bay, unloading bay and an entrance wing. The pump-back units are used along with the Carters Reregulation Dam, located 1.8 miles downstream of the main dam, to pump back water to the main reservoir during times of low power use. The reregulation dam consists of a gated spillway with earth and rock-fill dikes extending on either side to higher ground. The storage of the reregulation reservoir is not significant for yield computations. The overall length of the main dam is 2,053 feet.

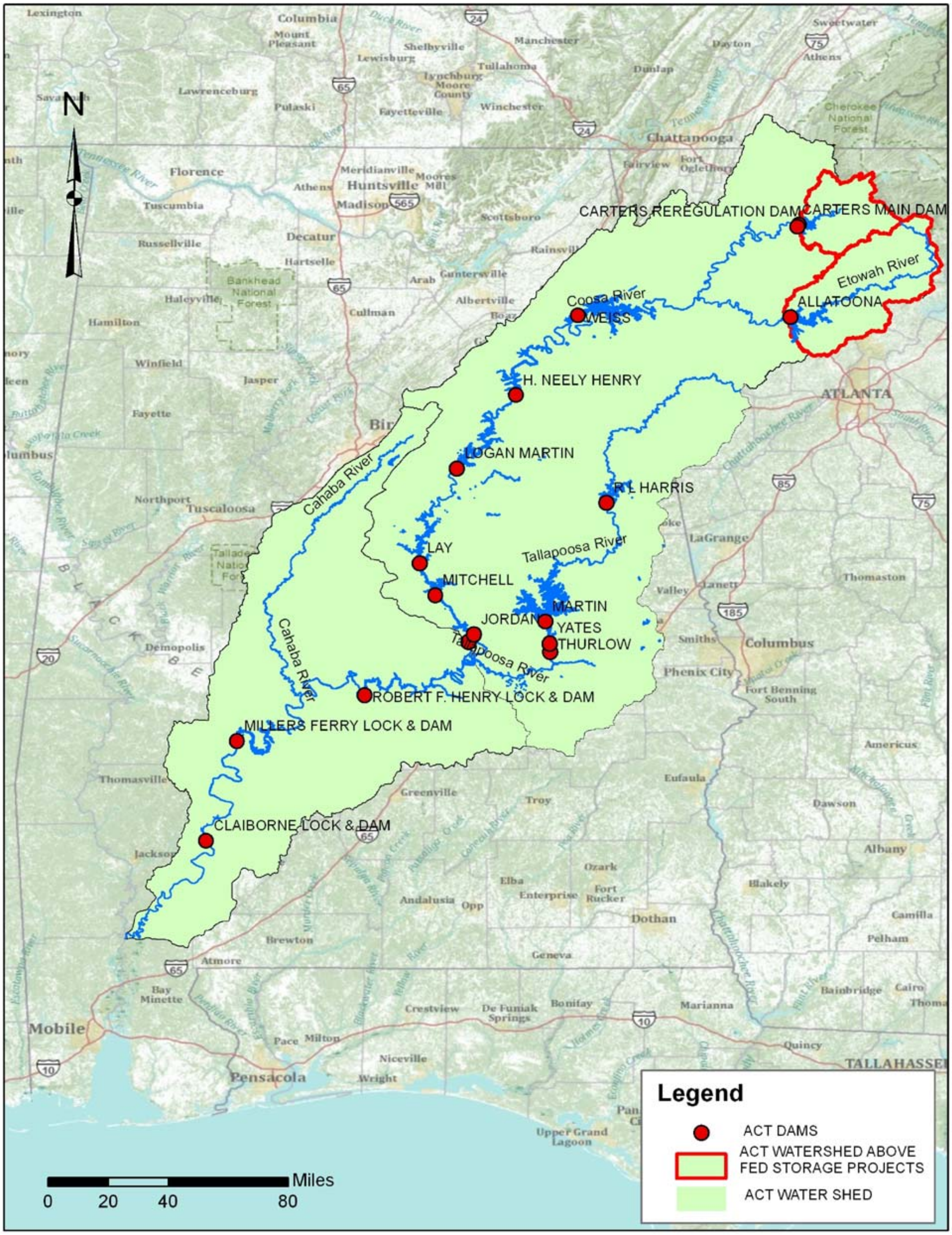


Figure B-19 – Drainage Areas For Projects on the ACT

1.4.2.2 Reservoir

The reservoir at maximum summer operating level (conservation pool) of elevation 1074, covers an area of 3,275 acres and has a total storage of 383,565 acre-feet. At the minimum operating level (conservation pool), elevation 1022, the reservoir covers an area of 2,196 acres and has a total storage of 242,163 acre-feet. Area and capacity curves are shown on Figure B-20 and in Table B-5.

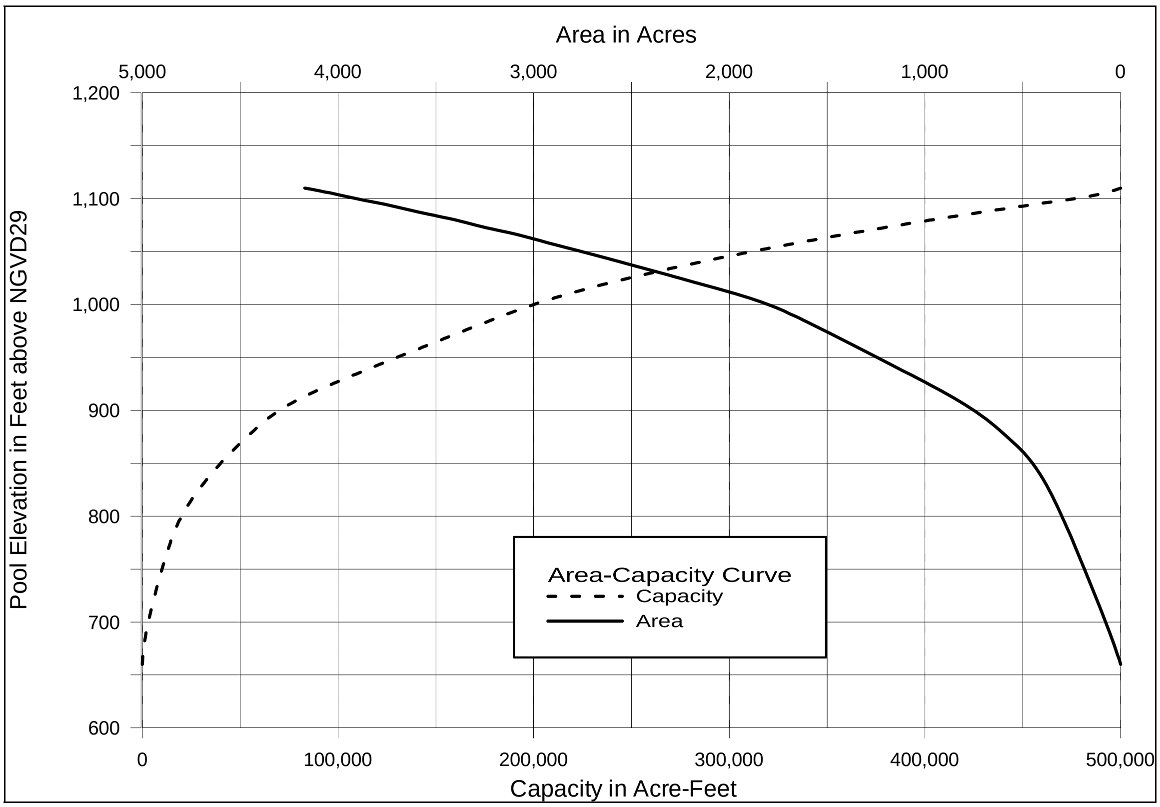


Figure B-20. Carters Area – Capacity Curves

Table B-5. Carters Reservoir Area and Capacity

Pool Elev (NGVD 29)	Total Area (ac)	Total Storage (ac-ft)
665	0	0
700	70	200
725	115	1,500
750	180	7,500
775	230	11,000
800	300	20,000
825	380	29,500
850	480	40,500
883	620	59,000
900	720	71,000
916	870	84,000
932	980	100,000
950	1,180	120,000
961	1,300	132,000
971	1,420	150,000
980	1,530	161,000
990	1,650	180,000
1000	1,800	195,000
1010	1,940	216,000
1020	2,158	237,810
*1022	2,196	242,163
1030	2,353	260,355
1040	2,552	284,880

Pool Elev (NGVD 29)	Total Area (ac)	Total Storage (ac-ft)
1050	2,754	311,403
1060	2,962	339,972
1065	3,060	355,050
**1070	3,179	370,671
***1072	3,230	377,073
****1074	3,275	383,565
1080	3,402	403,588
1085	3,530	420,923
1090	3,651	438,870
1095	3,770	457,442
1099	3,880	472,756
1105	4,030	491,030
1110	4,150	505,000
1120	4,400	550,000
1131	4,730	600,000
1142	5,000	650,000
1150	5,250	700,000
1160	5,530	750,000
1167	5,700	780,000
1169	5,800	800,000
1175	6,000	835,000
1182	6,500	880,000

* Bottom of power pool
** Crest of gated spillway
*** Top of power pool - November through April
**** Top of power pool - May through September

1.4.3 Top of Conservation Pool

The top of conservation pool varies during the year from elevation 1072 to 1074 feet. Whenever surplus water is available the criteria is to hold the pool at elevation 1074 from 1 May to 1 October, then decrease to 1072 feet by 15 October, then hold 1072 feet unti1 15 April, and then increase to 1074 feet by 1 May, as shown in Figure B-21.

1.4.4 Regulation Plan

The Carters pool is generally operated between the winter pool elevation 1072 and summer pool elevation of 1074. The pool may rise above elevation 1074 for short periods of time during high flow periods. The top of the flood control pool is elevation 1099. At this elevation, the area of the pool is 3,880 acres and the storage is 472,756 acre-feet.

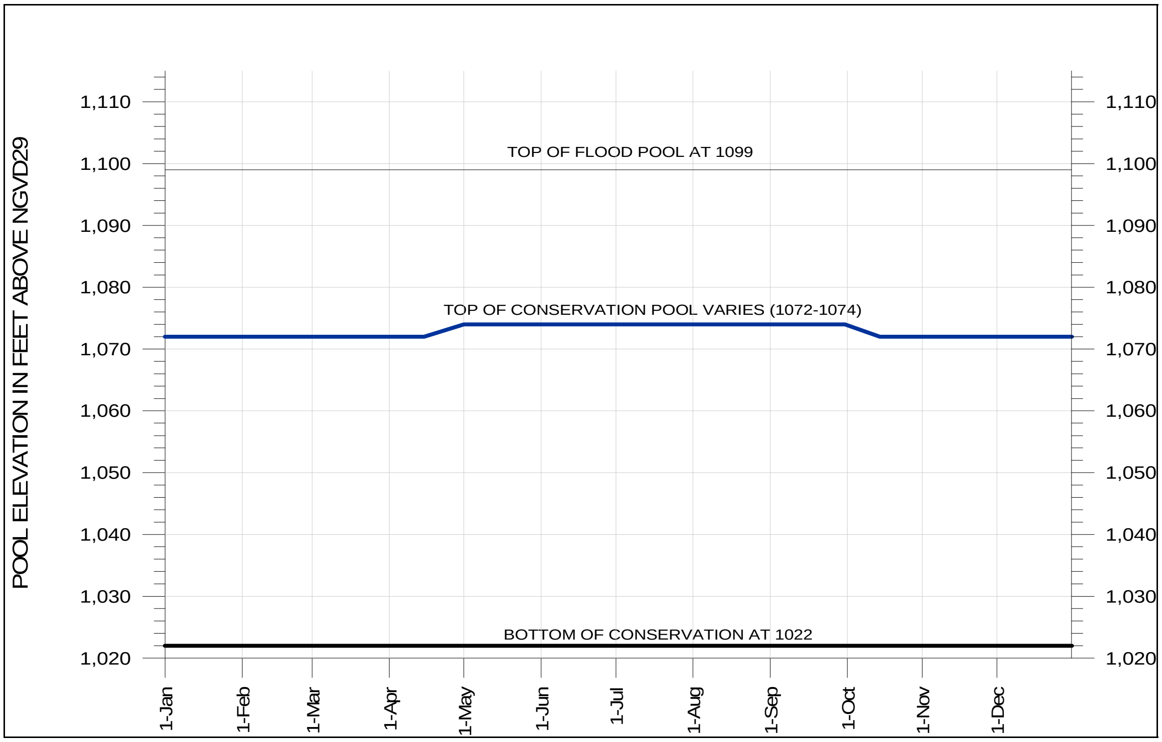


Figure B-21. Top and Bottom of Carters Conservation Pool

The storage for the yield analysis will be based on the storage in the conservation pool from 1022 to 1072-1074 (depending on the time of year).

1.4.5 Surface Water Inflows

Observed daily inflow, outflow (discharge), and pool elevation data for the period of record starting in July 1975, just after the pool filled, through the present (Oct 2009) are available. The data are presented in Figure B-22.

1.4.6 Unimpaired Flow

The existing unimpaired flow data set was updated through 2008 for use in the yield analysis. The daily data was not smoothed because no negative flows were present in the unimpaired flow. A plot of this unimpaired daily flow averaged over each year for the period of record 1939 – 2008 is shown in Figure B-23. Daily flows for critical drought periods are plotted in more detail in Figures B-24 – B-28.

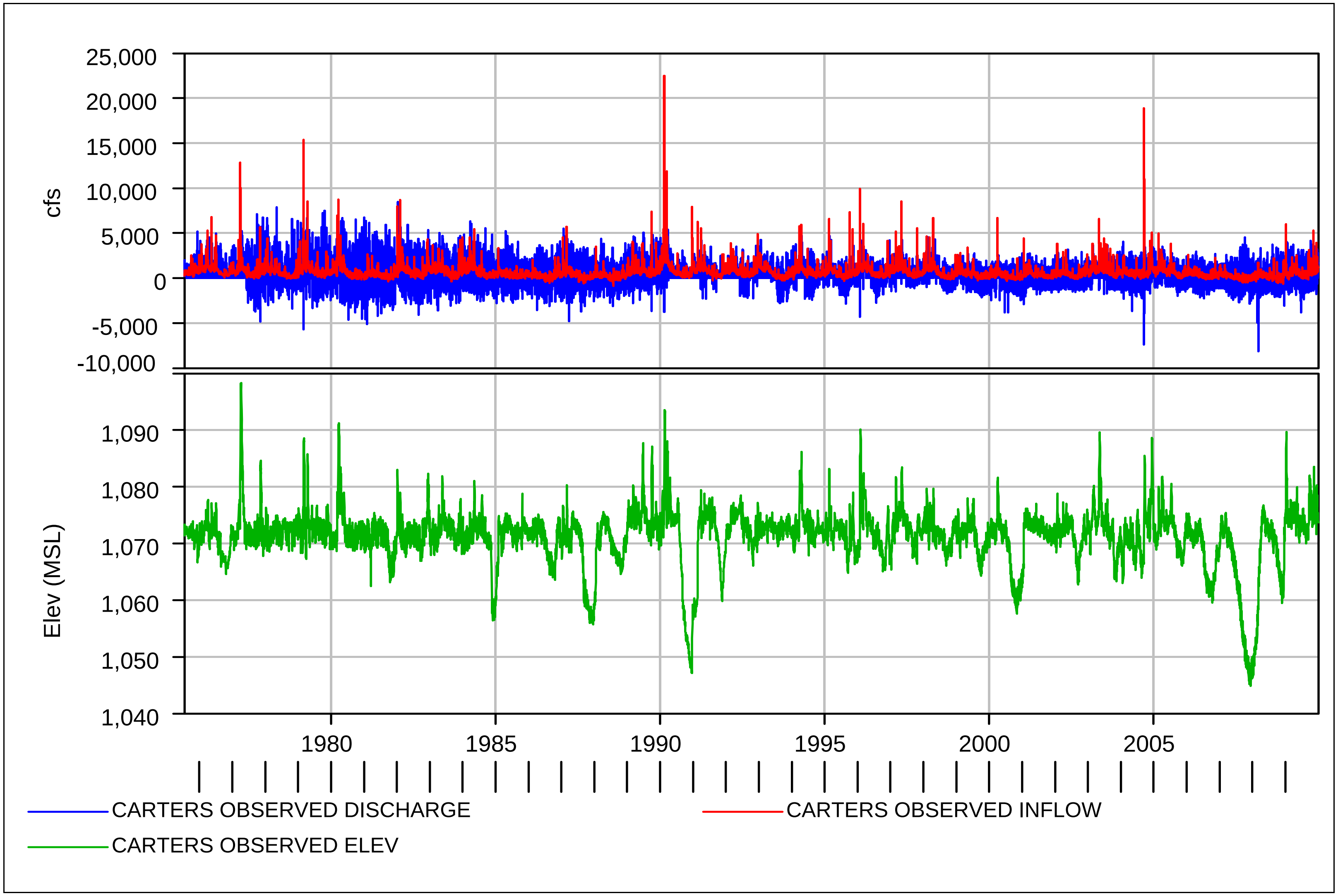


Figure B-22. Carters Inflow-Outflow-Pool Elevation (Jul 1975 – Dec 2009)
Note discharge values are negative because water is pumped back to the main reservoir.

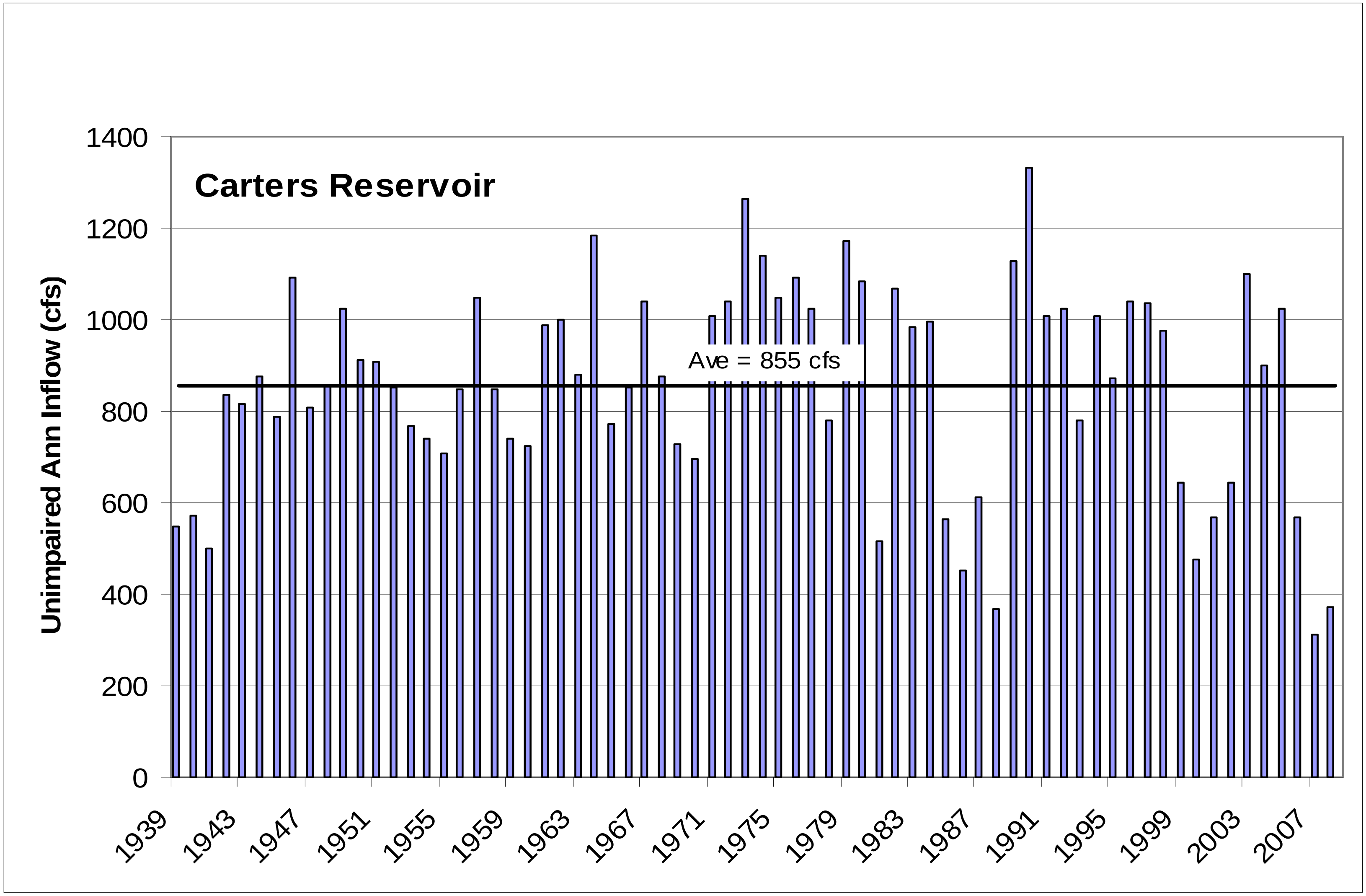


Figure B-23. Carters Unimpaired Annual Inflow Jan 1939 to Dec 2008

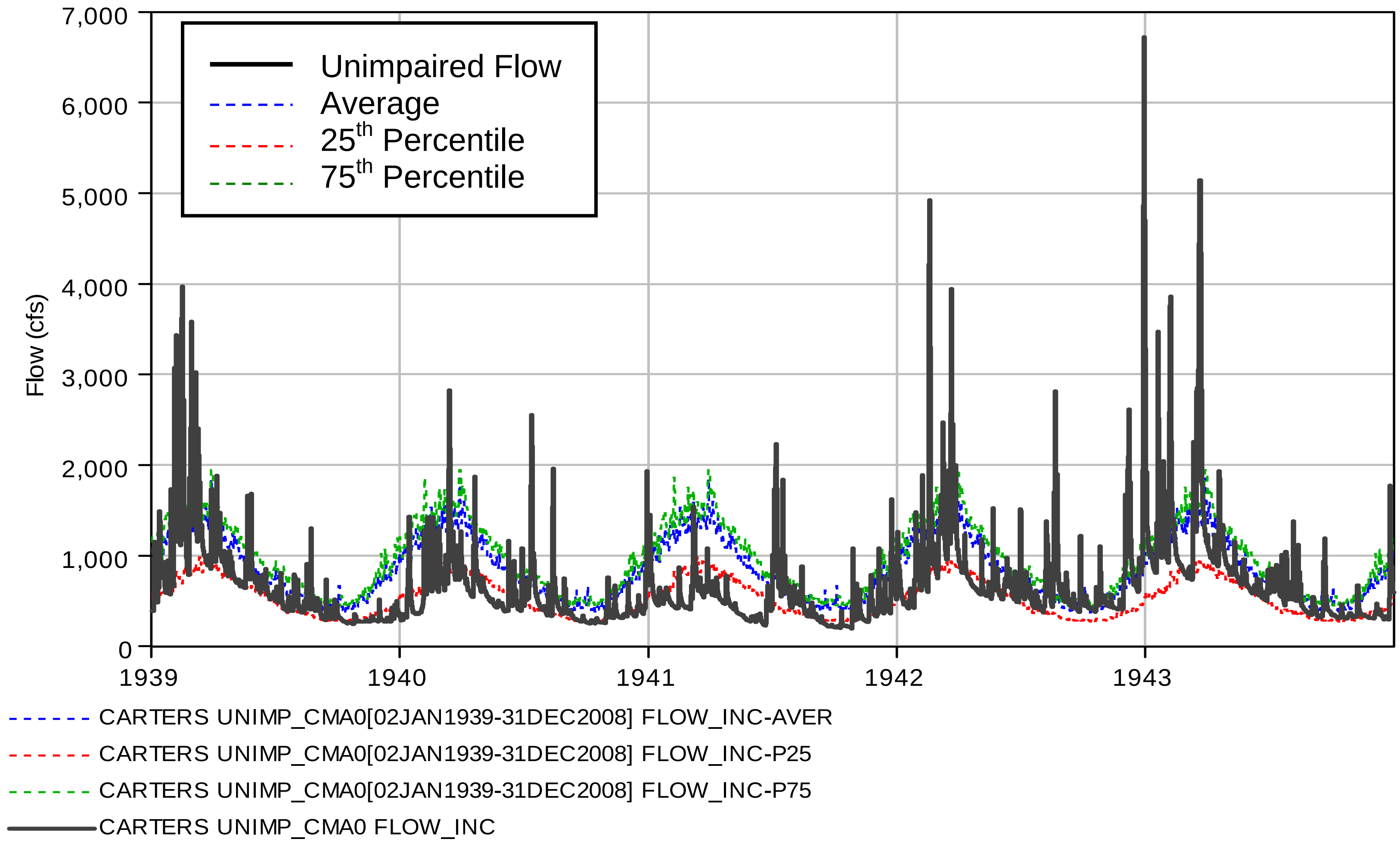


Figure B-24. Carters Unimpaired Inflow – 1940's Drought; 75th Percentile, Average and 25th Percentile Flow

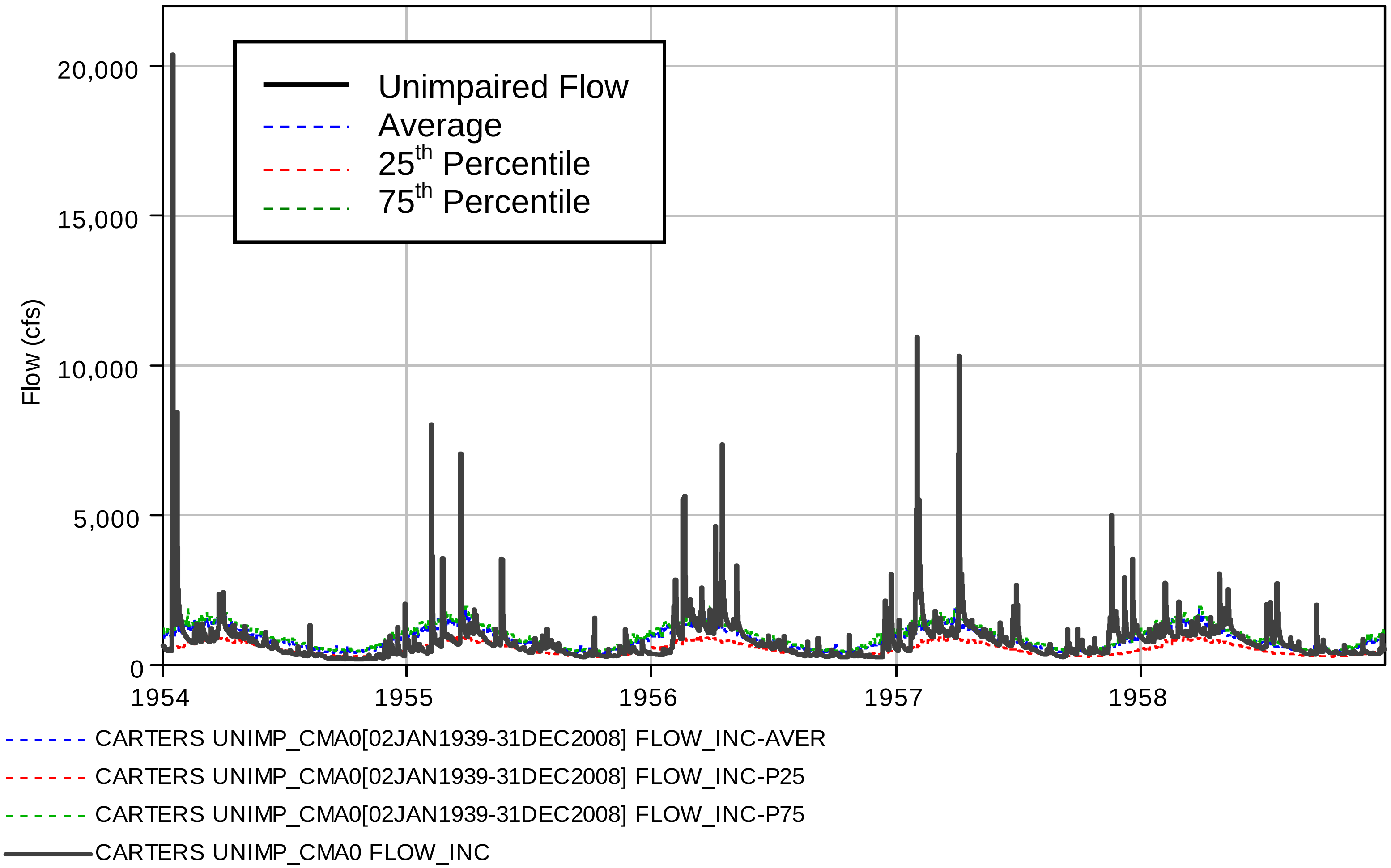


Figure B-25. Carters Unimpaired Inflow – 1950's Drought; 75th Percentile, Average and 25th Percentile Flow

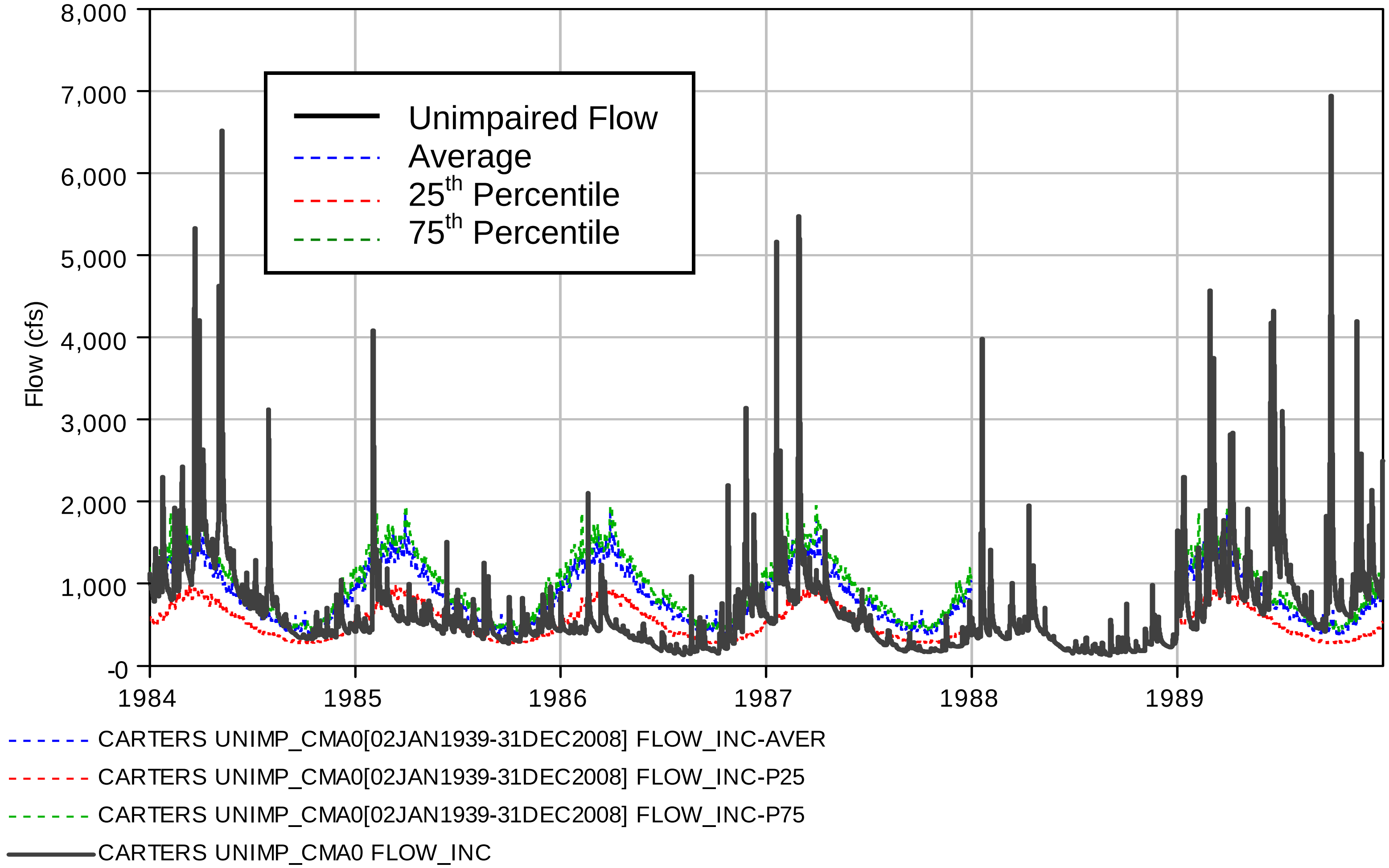


Figure B-26. Carters Unimpaired Inflow – 1980's Drought; 75th Percentile, Average and 25th Percentile Flow

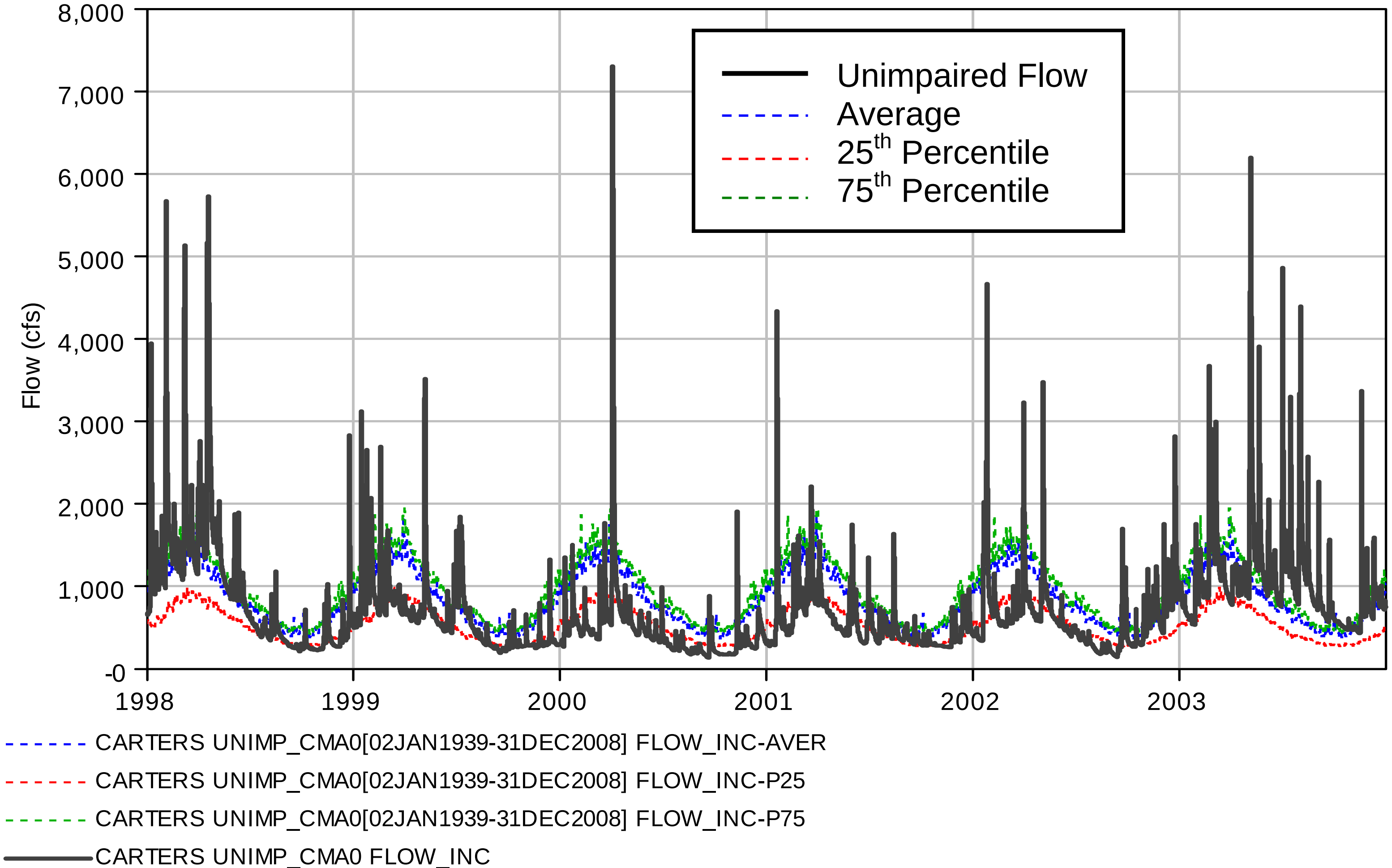


Figure B-27. Carters Unimpaired Inflow – 2000 Drought; 75th Percentile, Average and 25th Percentile Flow

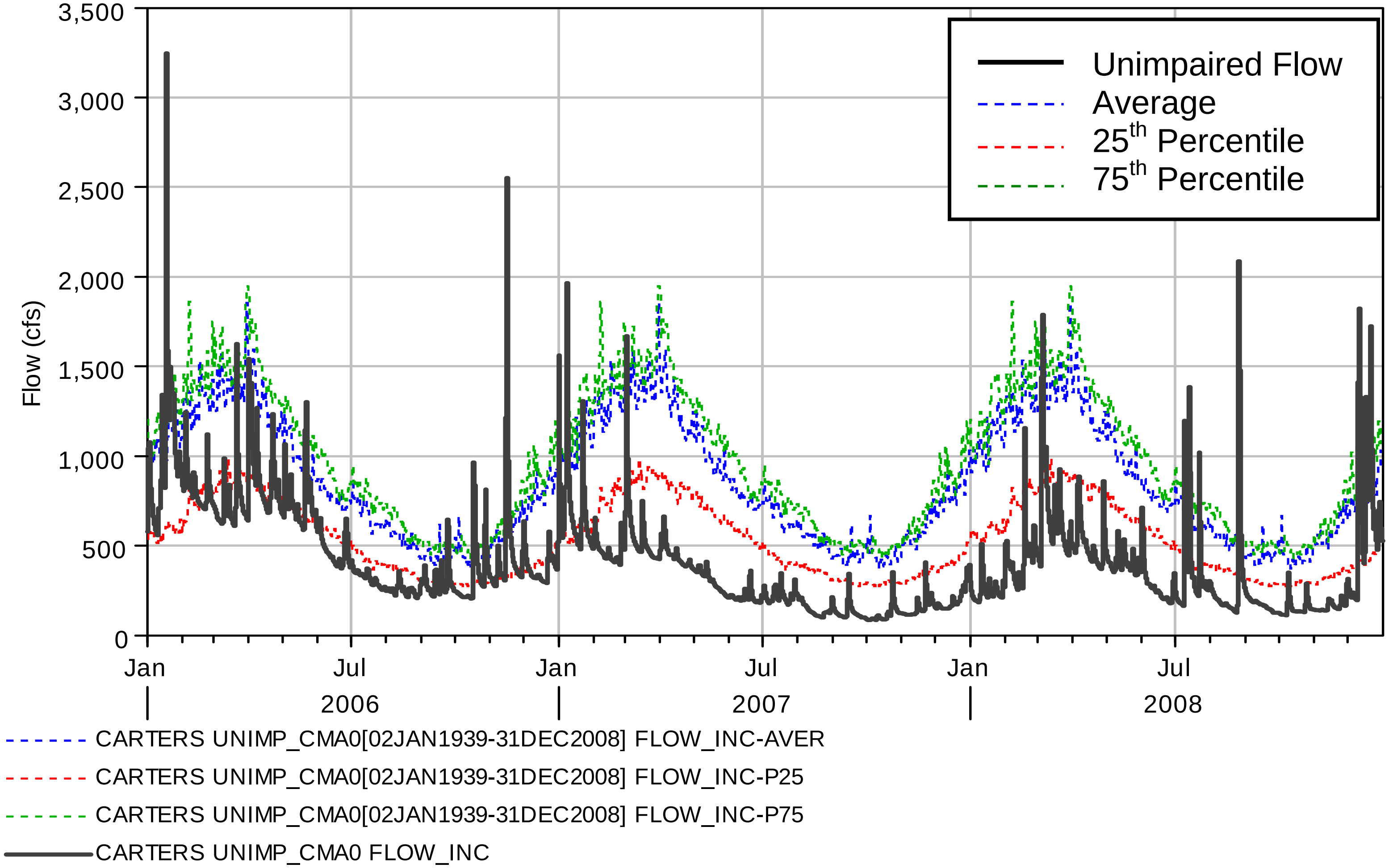


Figure B-28. Carters Unimpaired Inflow – 2007 Drought; 75th Percentile, Average and 25th Percentile Flow

1.5 ResSim MODELING

The ResSim model for the ACT Basin is shown below in Figure B-29.

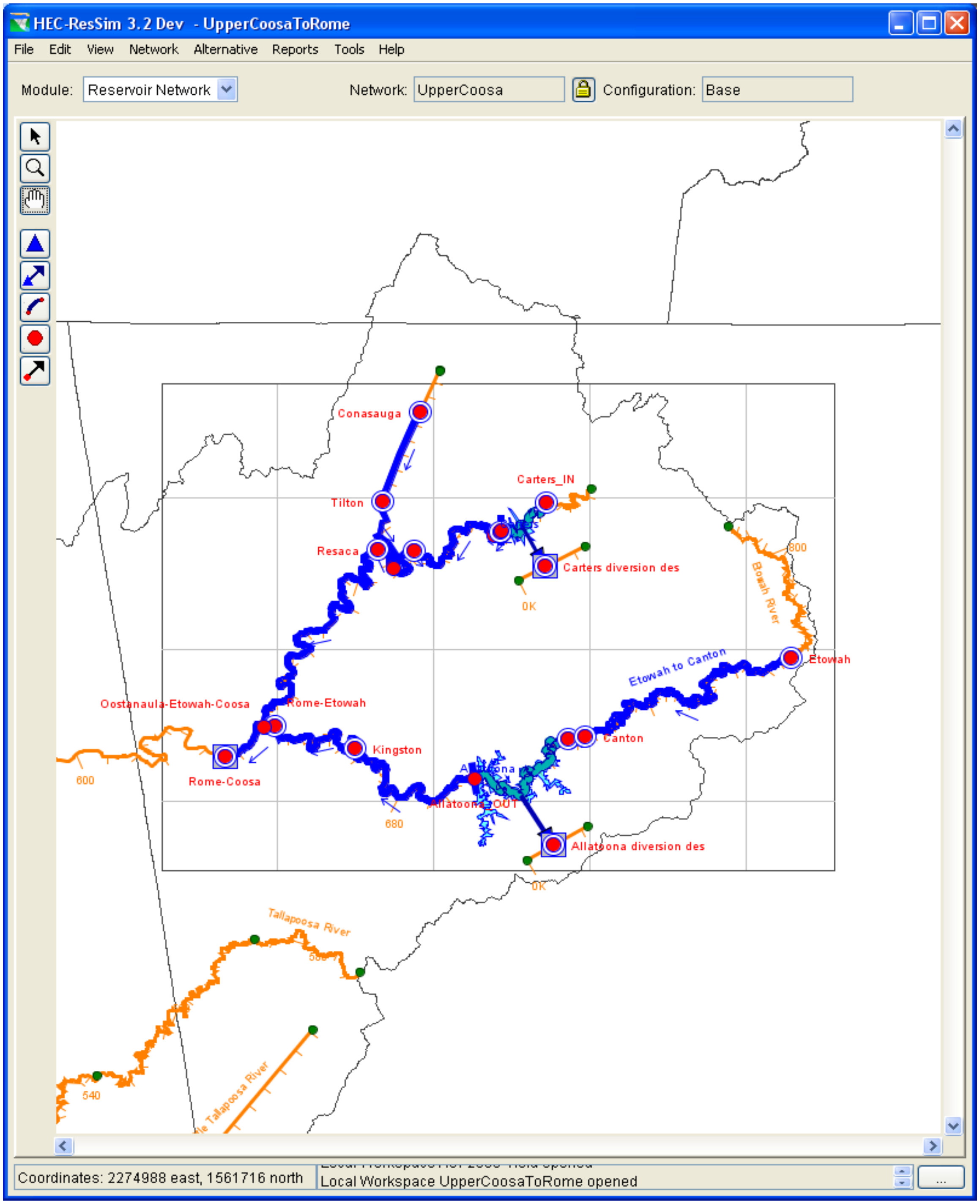


Figure B-29. ACT ResSim Model Schematic

ResSim version 3.2 Dev, November 2009 was utilized using the ResSim Watershed "UpperCoosaToRome" and the network "UpperCoosaYield" The ACT ResSim model includes two reservoirs, 12 non-reservoir locations and two diversion destinations. Since the ACT yield analysis is limited to the two headwater projects (Carters and Allatoona), only the upper portion, Etowah and Coosawattee Basins were included in the ACT model for yield. This includes the confluence of the Etowah and Coosawattee Rivers to the headwaters of Carters and Allatoona. Physical characteristics of each reservoir were incorporated into the model using the latest published reservoir operation manual. Yield computations are dependent on the conservation storage and hydrology. The regulation plan section for each reservoir above describes the conservation storage. The ResSim operation set only includes the diversion yield rules and the downstream flood control rules. Reservoir guidelines for determining releases are defined using the operation set.

Simulations were created for each of the five indentified drought periods. The beginning and end period were selected to capture the drawdown and refill of all projects. Since Allatoona has the greatest amount of storage, it determined the duration of the simulation period. Each yield method (A and B) includes five simulations for a total of 10 simulations. Each simulation determined the yield for a particular reservoir and drought period. Simulation naming, Method A - Year n Div, Method B - Year w Div.

Method A does not include the net river withdrawals and Method B does include the net river withdrawals in the yield determination. Each storage reservoir has a different operating set for the Method A and B alternatives, YieldNoDiv and YieldWDiv respectively.

For Methods A and B the upstream reservoir is the primary reservoir and the yield is met first before proceeding downstream. None of the yield is returned to the system. This assumes that the yield is diverted from the system and is consumptively used. For instance, on the ACT, this means that the critical yield computed at Carters was not counted as flow to meet a downstream flow target. This methodology determines the conservative individual project yield.

A diversion outlet is added to the each of the two reservoirs, Allatoona and Carters. Water from the reservoir is diverted through the outlet to a dummy location not connected to the system. None of the diverted water is returned to the system. The yield represents the maximum continuous flow of water through this outlet during one of the five drought periods, using all available conservation storage.

1.6 RESULTS

Method A (No Diversions) simulation results are presented in Table B-6, below. The graphical results for the pool elevations and critical yield flow values are presented in Figure B-30 and Figure B-31. The flow represents the total release from the reservoir. When the flow hydrograph rises above the constant yield value, flows are released through the reservoir.

Table B-6. ACT Project Yield Analysis without River Diversions, Method A

	Drought Period					
Project	**1940**	**1950**	**1980**	**2000**	**2007**	**Critical Yield (cfs)**
Allatoona	1100	1093	784	1035	729	729
Carters	578	675	458	558	390	390

Method A critical yield for Allatoona is 729 cfs and the critical period is the 2007 drought period.
Method A critical yield for Carters is 390 cfs and the critical period is the 2007 drought period.

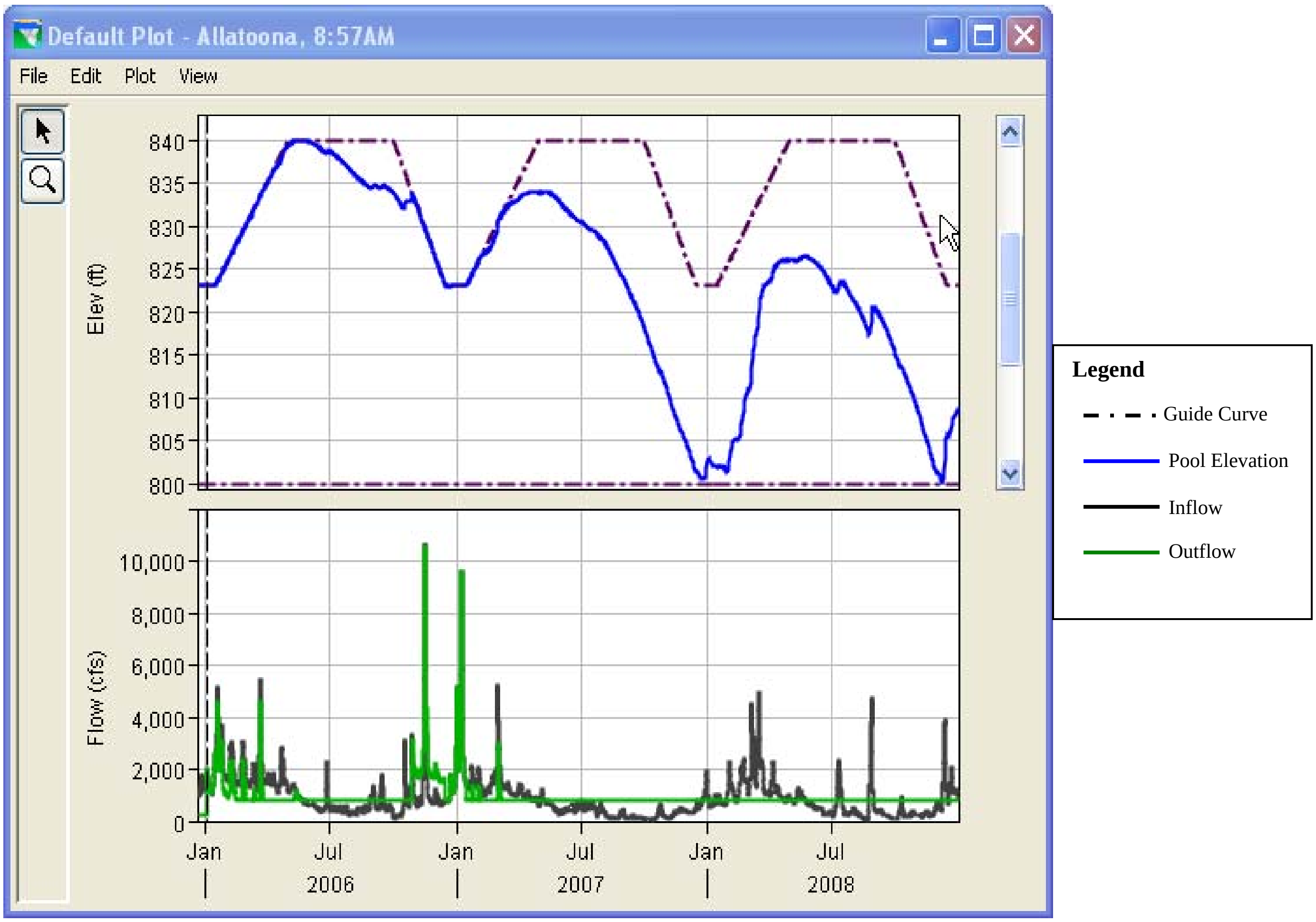


Figure B-30. Allatoona Critical Yield Result, Method A (No Diversions)

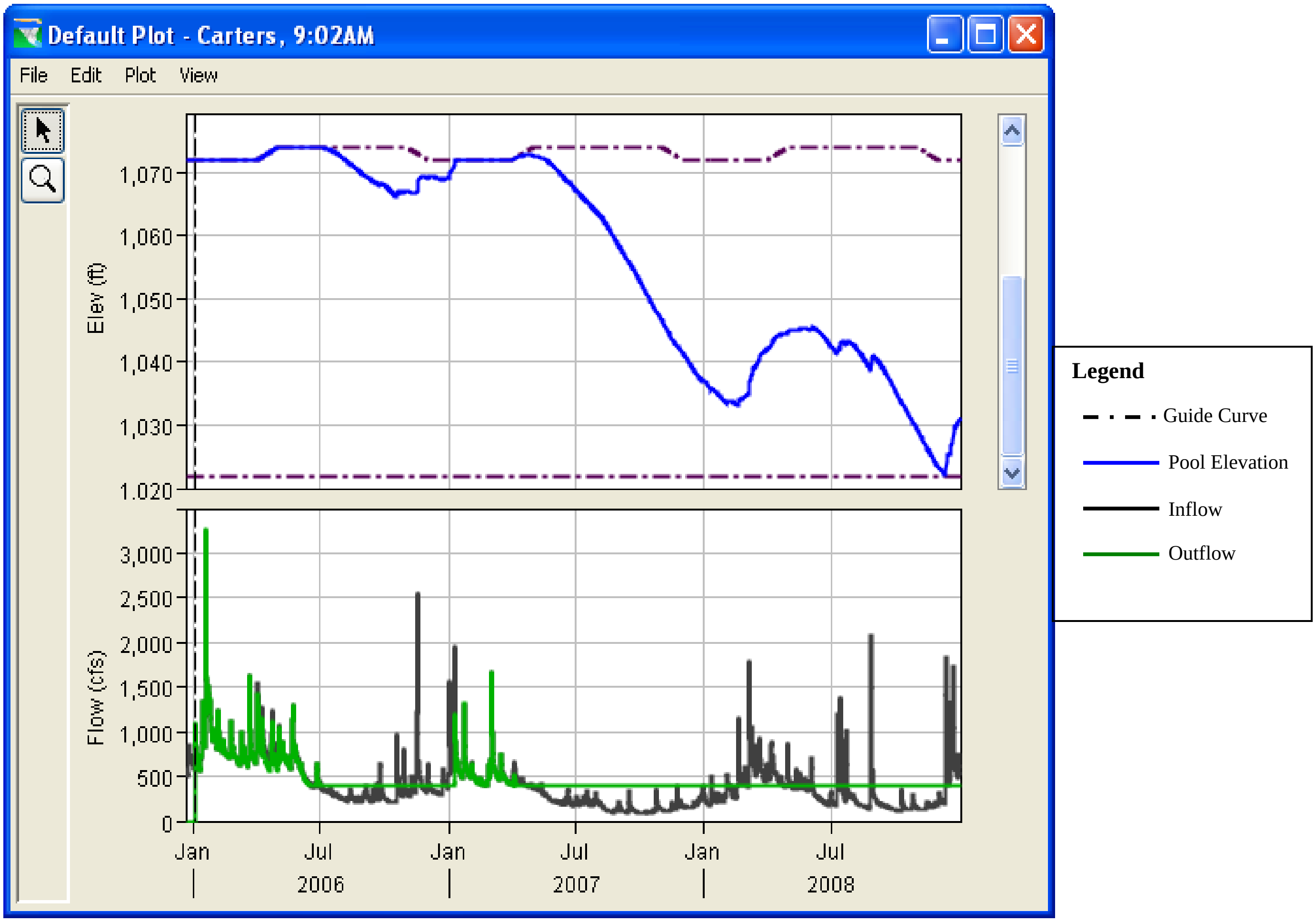


Figure B-31. Carters Critical Yield Result, Method A (No Diversions)

The drawdown period for each drought period is listed in Table B-7.

Table B-7. ACT Yield Drawdown Period

Drought Label	Allatoona	Carters
1940's	Jan 1941 - Mar 1942	Jul 1939 - Aug 1942
1950's	May 1954 - May 1956	Jun 1954 - Apr 1956
1980's	Dec 1985 - Jan 1987	Jul 1986 - Apr 1989
2000	Mar 1999 - Nov 2001	Jul 1999 - Mar 2003
2007	April 2007 – Sep 2009*	Mar 2007 – Sep 2009*

* Estimated based on 2009 hydrology

Method B (With Diversions) simulation results are presented below in Table B-8. The yield values listed capture the impact of net year 2006 river withdrawals above the Carters lakes from the Coosawattee River and tributaries, and above the Allatoona lakes from the Etowah River and tributaries. Graphical results of the pool elevation and yield flow values are presented in Figure B-32 and Figure B-33. As expected the yield values are reduced because the inflow into the reservoirs is reduced by the river withdrawal amounts. The critical yield reduction from Method A (729 cfs) to Method B (693 cfs) for Allatoona is 4.9% and for Carters the reduction from 390 cfs to 387 cfs is 0.8%.

Table B-8. ACT Projects Yield Analysis with River Diversions, Method B

	Drought Period					
Project	**1940**	**1950**	**1980**	**2000**	**2007**	**Critical Yield**
Allatoona	1064	1057	746	999	693	693
Carters	575	671	455	555	387	387

Method B critical yield for Allatoona is 693 cfs and the critical period is the 2007 drought period.
Method B critical yield for Carters is 387 cfs and the critical period is the 2007 drought period.

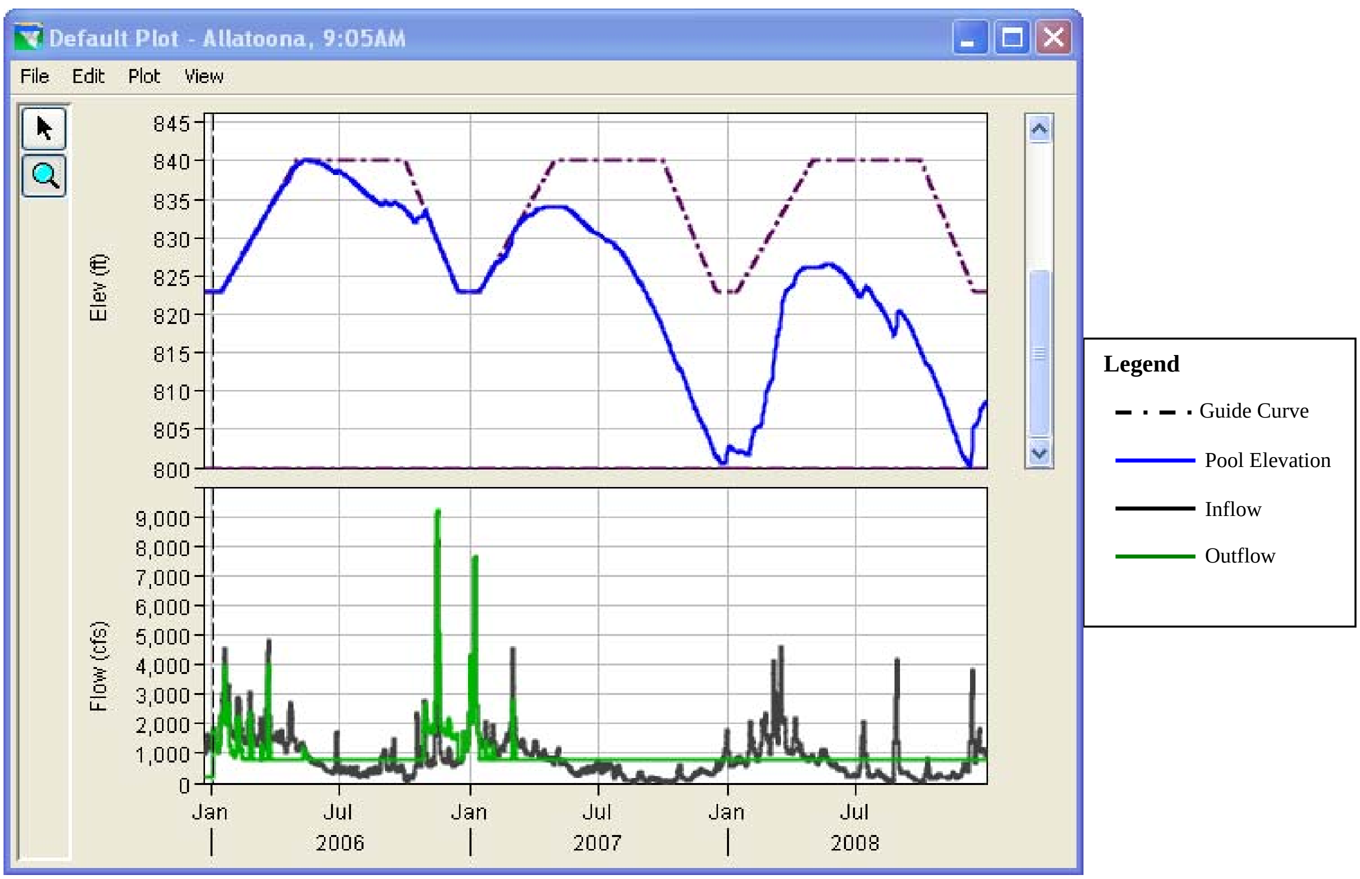


Figure B-32. Allatoona Critical Yield Result Method B (With Diversions)

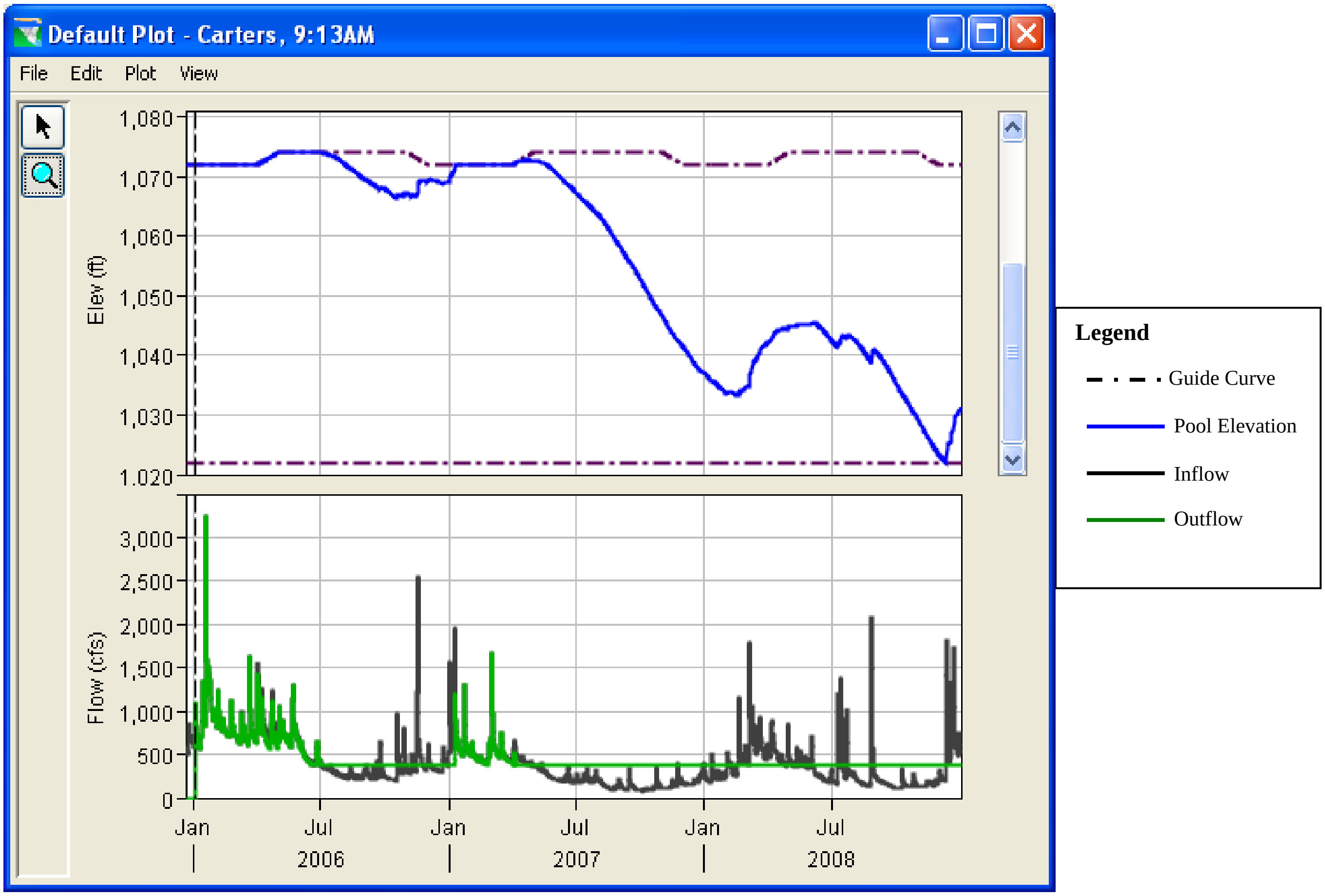


Figure B-33. Carters Critical Yield Result Method B (With Diversions)

Appendix C

Apalachicola-Chattahoochee-Flint (ACF) Basin Detailed Analysis

Appendix C - Apalachicola-Chattahoochee-Flint Basin Detailed Analysis

1 ACF BASIN

1.1 DESCRIPTION OF BASIN

Streams of the Apalachicola-Chattahoochee-Flint Rivers (ACF) Basin begin as small Appalachian springs in the Blue Ridge Mountains of North Georgia. The spring waters flow for over 400 miles until the Chattahoochee River combines with the Flint River, forming the Apalachicola River at the Georgia, Florida border. From the confluence the Apalachicola flows an additional 108 miles to the Gulf of Mexico. The ACF Basin extends about 385 miles from northeast Georgia to the Gulf of Mexico. The total drainage area of the ACF Basin is approximately 19,600 square miles.

The largest metropolitan area in the basin is Atlanta, Georgia, located in the northern section. Progressing downstream are the Cities of Columbus, Georgia and Phenix City, Alabama. Albany, Georgia is located in the eastern portion of the basin. At the Gulf of Mexico is the City of Apalachicola, Florida. Features are shown in Figure C-1.

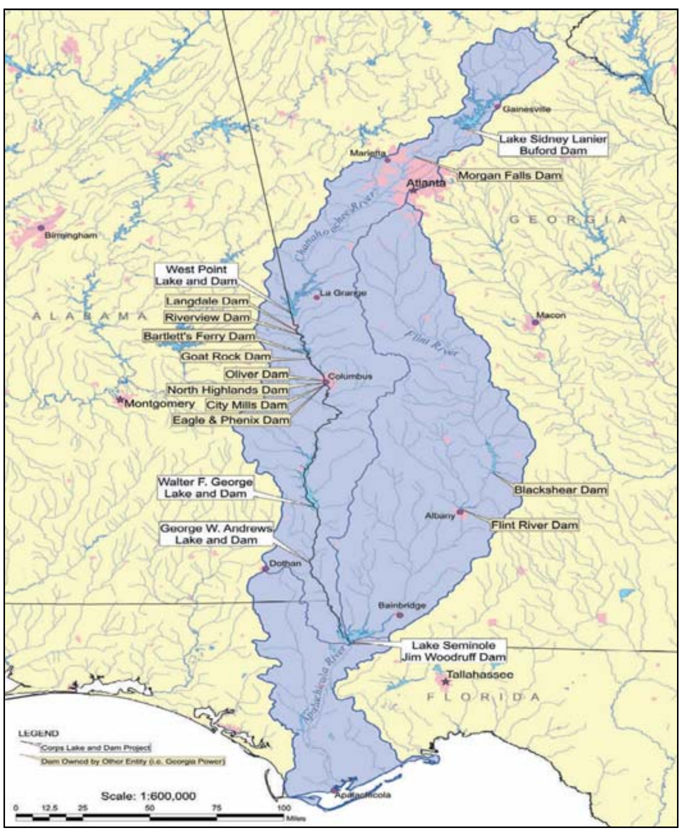


Figure C-1. ACF Basin

1.1.1 Physical Description

Chattahoochee Tributaries. The headwaters of the ACF System commence with spring-fed streams feeding Chattahoochee tributaries in northern Georgia mountains. The mountain slopes are steep, with rapid runoff during rainstorms. One of the most upstream tributaries is the Chestatee River that flows into Lake Lanier. In contrast to the mainstream of the Chattahoochee River, many tributaries remain free flowing. Flows in forested tributary basins and those in Metropolitan Atlanta retain similar runoff patterns. They have higher sustained flows during winter months, and relatively quick responses to storm events throughout the year. However, sharper peaks in the hydrographs of urban streams such as Peachtree Creek reflect the influence of impervious land cover in the urbanized parts of the basin.

Chattahoochee River. The Chattahoochee River has a drainage area of 8,770 square miles. The headwaters rise as cold-water mountain streams in the Blue Ridge Province at altitudes above 3,000 feet. From its beginning the river flows 430 miles to its confluence with the Flint River. The Chattahoochee River derives its name from Creek Indian words meaning painted rock. This river is one of the most heavily used water resources in Georgia.

Through most of its length, flows in the Chattahoochee River are controlled by hydroelectric plants releasing water for production of hydropower. These hydroelectric plants use peaking operations to augment power supply during peak periods of electric demand. Daily fluctuations below some reservoirs can be dramatic. Fluctuations are usually more pronounced during low flow periods when hydropower releases often cause daily fluctuations of several feet.

The Chattahoochee River includes five federal projects operated by the Corps of Engineers: Buford Dam (Lake Lanier), West Point Dam, Walter F. George Lock and Dam (Lake Eufaula), and George W. Andrews Lock and Dam. Of these, Lake Sidney Lanier (Buford Dam), West Point Lake, and Lake Eufaula (Walter F. George Dam) provide most water storage available to regulate flows in the basin. Lake Sidney Lanier alone provides 65 percent of conservation storage, although only five percent of the ACF River Basin drains into the lake. In addition, West Point Lake and Lake Walter F. George provide 18 and 14 percent, respectively, of the basin's conservation storage. Lake Seminole has some storage to regulate weekly flows, and the Georgia Power Lake at Morgan Falls provides daily regulation.

Georgia Power Company operates seven projects on the Chattahoochee River. One is north of Atlanta, Georgia and the remaining six are located along the Fall Line near Columbus, Georgia. These projects are Morgan Falls Dam, Langdale Dam, Riverview Dam, Bartletts Ferry Dam, Goat Rock Dam, Oliver Dam and North Highlands Dam.

The Chattahoochee River Basin also includes City Mills Dam owned by City Mills, and Eagle and Phenix Mills Dam owned by Uptown Columbus Inc. City Mills Dam is currently inoperative. Eagle and Phenix Mills Dam has an operable turbine with an expired Federal Energy Regulatory Commission (FERC) license. Habersham Mill Dam is located in the headwaters above Buford Dam.

Flint River. The Flint River Basin (8,460 square miles) includes Crisp County Dam and Lake (also known as Warwick or Blackshear Lake), and Albany Dam (also known as the Flint River Dam) that impounds Lake Worth. The river begins as a spring or groundwater seep underneath the runways of Hartsfield-Jackson International Airport. The flow is channeled off the airport by large drainage pipes. From the airport it meanders 350 miles in a basin that is approximately 212 miles in length. It has 220 miles of unimpeded flow, making it one of only 40 rivers in the U.S. with open flows of 200 miles or more of near natural stream. The Flint River remains relatively undeveloped, and for much of its length the river is free flowing.

Apalachicola River. The Flint River empties into Lake Seminole near Bainbridge, Georgia, where it joins the Chattahoochee River at the Florida state line near the Jim Woodruff Dam to form the Apalachicola River. The Apalachicola River Basin (2,370 square miles) includes Jim Woodruff Lock and Dam (Lake Seminole), which is operated by the Corps of Engineers. The river lies completely within the Coastal Plain and is 108 miles in length. The Apalachicola River then flows south across northwest Florida from the Georgia border to Apalachicola Bay in Florida.

1.1.2 Climate

The chief factors that control the climate of the ACF Basin are its geographical position in the southern end of the Temperate Zone, its proximity to the Gulf of Mexico and South Atlantic Ocean, and its range in altitude from almost sea level at the southern end to over 3,000 feet in the Blue Ridge Mountains to the north. The proximity of the warm South Atlantic and the semitropical Gulf of Mexico ensures a warm, moist climate. Extreme temperatures range from near 110 degrees in the summer to values near zero in the winter. Severe cold weather rarely lasts longer than a few days. The summers, while warm, are usually not oppressive. In the southern end of the basin the average maximum January temperature is 60 degrees and the average minimum January temperature is 37 degrees.

The maximum average July temperature is 91 degrees; in the southern end of the basin the corresponding minimum values value is 70 degrees. The frost-free season varies in length from about 200 days in the northern valleys to about 250 days in the southern part of the basin. Precipitation is mostly in the form of rain, but some snow falls in the mountainous northern region on an average of twice a year.

1.1.3 Precipitation

The entire ACF Watershed lies in a region which ordinarily receives an abundance of precipitation. The watershed receives a large amount of rainfall and it is well-distributed throughout the year. Winter and spring are the wettest periods and early fall, the driest. Light snow is not unusual in the northern part of the watershed, but constitutes only a very small fraction of the annual precipitation and has little effect on runoff. Intense flood producing storms occur mostly in the winter and spring. They are usually of the frontal-type, formed by the meeting of warm moist air masses from the Gulf of Mexico colliding with the cold, drier masses from the northern regions, and may cause heavy precipitation over large areas. The storms that occur in summer or early fall are usually of the thunderstorm type with high intensities over smaller areas. Tropical disturbances and hurricanes can occur producing high intensities of rainfall over large areas.

1.1.4 Storms and Floods

Major flood-producing storms over the ACF Watershed are usually of the frontal type, occurring in the winter and spring and lasting from 2 to 4 days, with their effect on the basin depending on their magnitude and orientation. The axes of the frontal-type storms generally cut across the long, narrow basin. Frequently a flood in the lower reaches is not accompanied by a flood in the upper reaches and vice versa. Occasionally, a summer storm of the hurricane type, such as the storms of July 1916 and July 1994, will cause major floods over practically the entire basin. However, summer storms are usually of the thunderstorm type with high intensities over small areas producing serious local floods. With normal runoff conditions, from 5 to 6 inches of intense rainfall are required to produce widespread flooding, but on many of the minor tributaries 3 to 4 inches are sufficient to produce local floods.

Principal Storms. During most years there are one or more flooding events within the ACF Basin. However on occasion there are significant storms that produce widespread flooding or unusually high river stages.

1.1.5 Runoff Characteristics

Within the ACF Basin rainfall occurs throughout the year but is less abundant during the August through November time frame. The amount of this rainfall that actually contributes to streamflow varies much more than the rainfall. Several factors such as plant growth and the seasonal rainfall patterns contribute to the volume of runoff.

Tables C-1, C-2, and C-3 present the average monthly runoff for the basin. These tables divide the basin at Atlanta, and Columbus, Georgia and Blountstown, Florida to show the different percentages of runoff verses rainfall for the various sections. The mountainous areas exhibit flashier runoff characteristics and somewhat higher percentages of runoff. Figures C-2, C-3, and C-4 present the same information in graphical form.

Table C-1. Basin Rainfall and Runoff above Atlanta

AVERAGE MONTHLY RUNOFF IN ACF BASIN MEASURED AT ATLANTA, GEORGIA												
MONTH	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
AVG MONTHLY FLOW (CFS) AT ATLANTA	3,455	3,887	4,353	3,749	2,913	2,350	2,108	1,891	1,603	1,621	1,947	2,598
AVG RUNOFF IN INCHES	2.75	2.79	3.46	2.88	2.32	1.81	1.68	1.50	1.23	1.29	1.50	2.07
AVG RAINFALL IN INCHES	4.83	4.95	5.66	4.09	3.61	4.75	5.78	4.83	3.83	2.50	3.36	4.25
PERCENT OF RAINFALL AS RUNOFF	57%	56%	61%	71%	64%	38%	29%	31%	32%	51%	45%	49%

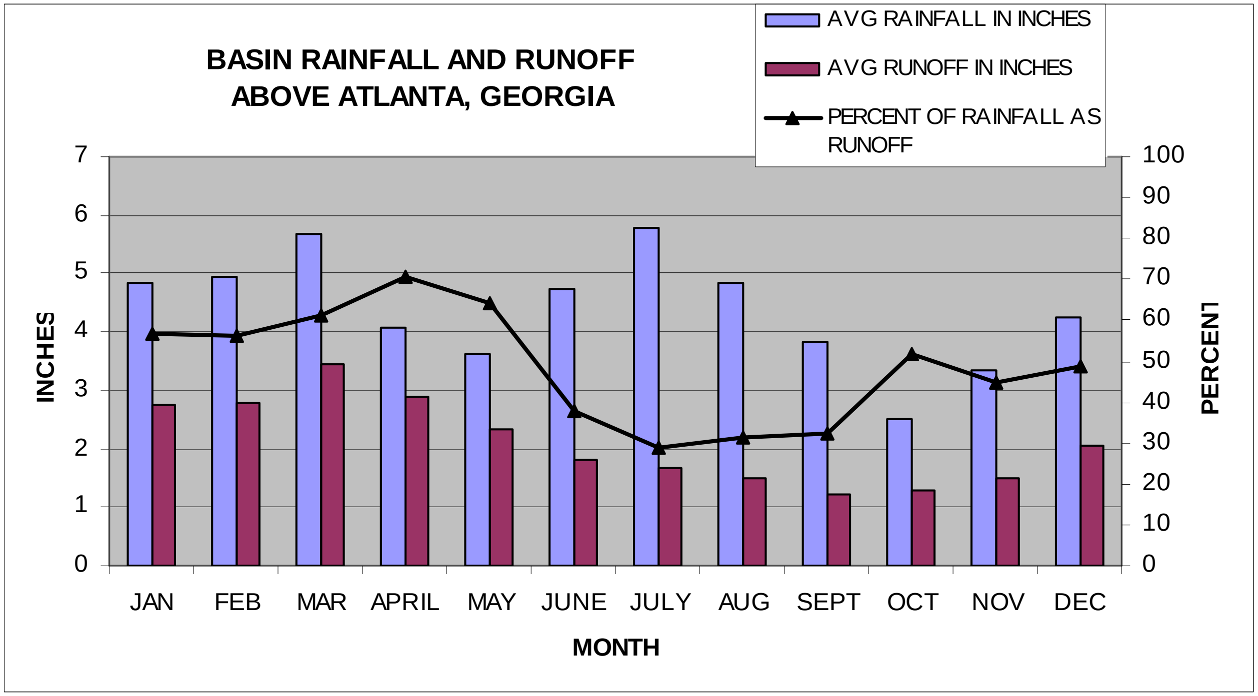


Figure C-2. Basin Rainfall and Runoff above Atlanta, Georgia

Table C-2. Basin Rainfall and Runoff between Columbus and Atlanta

AVERAGE MONTHLY RUNOFF IN ACF BASIN MEASURED AT COLUMBUS, GEORGIA												
MONTH	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
AVG MONTHLY FLOW (CFS) BETWEEN ATLANTA AND COLUMBUS	5,567	6,736	7,905	6,495	4,276	3,145	3,144	2,443	2,013	2,096	3,025	4,117
AVG RUNOFF IN INCHES	1.99	2.18	2.83	2.25	1.53	1.09	1.13	0.87	0.70	0.75	1.05	1.47
AVG RAINFALL IN INCHES	4.91	4.99	5.91	4.54	3.94	4.07	5.35	4.10	3.54	2.72	3.71	4.76
PERCENT OF RAINFALL AS RUNOFF	41%	44%	48%	50%	39%	27%	21%	21%	20%	28%	28%	31%

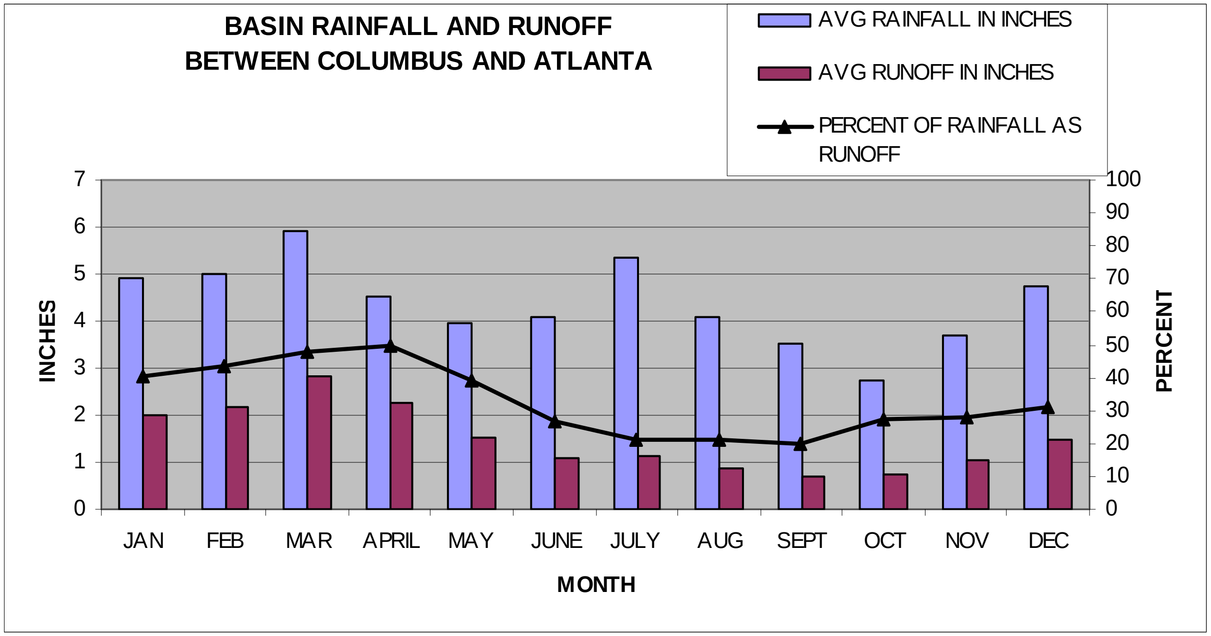


Figure C-3. Basin Rainfall and Runoff between Columbus and Atlanta, Georgia

Table C-3. Basin Rainfall and Runoff between Blountstown, FL and Columbus, GA

AVERAGE MONTHLY RUNOFF IN ACF BASIN MEASURED AT BLOUNTSTOWN, FLORIDA												
MONTHLY	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
AVG MONTHLY FLOW (CFS) BETWEEN COLUMBUS AND BLOUNTSTOWN	11,431	17,699	22,125	31,014	27,991	17,760	12,803	14,140	11,684	8,684	7,571	6,983
AVG RUNOFF IN INCHES AT BLOUNTSTOWN, FLORIDA	1.02	1.43	1.97	2.68	2.50	1.53	1.14	1.26	1.01	0.77	0.65	0.62
AVG RAINFALL IN INCHES	4.83	4.95	5.66	4.09	3.61	4.75	5.78	4.83	3.83	2.50	3.36	4.25
PERCENT OF RAINFALL AS RUNOFF	21%	29%	35%	65%	69%	32%	20%	26%	26%	31%	19%	15%

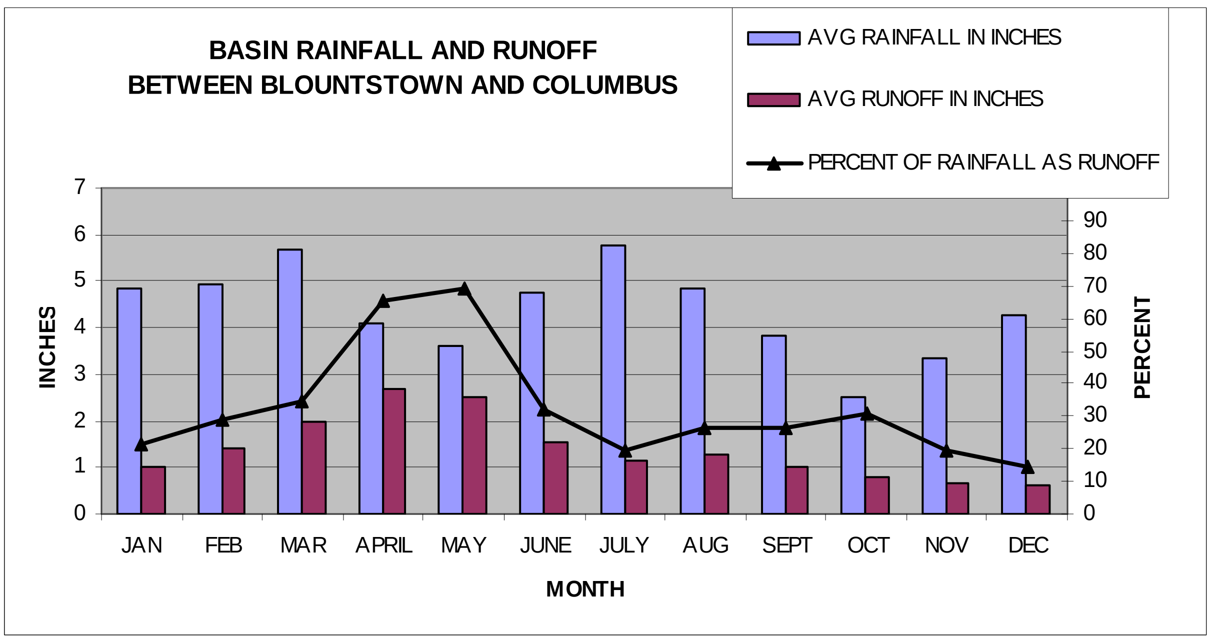


Figure C-4. Basin Rainfall and Runoff between Blountstown, FL and Columbus, GA

1.2 RESERVOIRS

1.2.1 Reservoir Storage

There are five (5) federally owned reservoir projects within the ACF Basin. These are Buford Dam (Lake Lanier), West Point Dam, Walter F. George Lock and Dam (Lake Eufaula), George W. Andrews Lock and Dam, and Jim Woodruff Lock and Dam (Lake Seminole). These projects were built and are operated by the Corps of Engineers, Mobile District Office. As mentioned above, Lake Sidney Lanier alone provides 63 percent of conservation storage, although only five percent of the ACF River Basin drains into the lake. In addition, West Point Lake and Lake Walter F. George provide 18 and 14 percent, respectively, of the basin's conservation storage. The conservation storages by reservoir are shown in Table C-4 and graphically in Figure C-5 below.

Table C-4. ACF Basin Conservation Storage by Project

Project	Conservation Storage (ac-ft)	Percentage
Lake Lanier	1,087,600	63%
West Point	306,127	18%
Walter F. George	244,400	14%
George Andrews	8,200	1%
Lake Seminole	66,847	4%
Total	**1,713,174**	

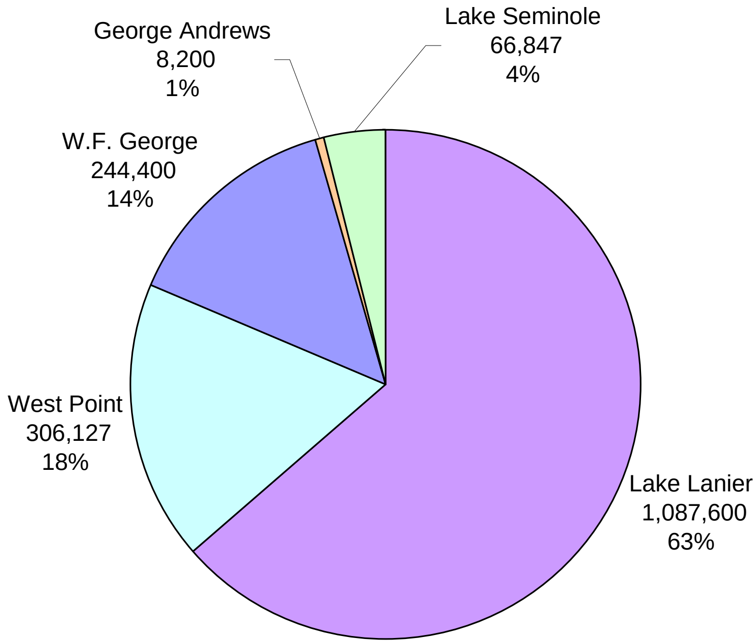


Figure C-5. ACF Basin Federal Reservoir Conservation Storage Percent by Acre-Feet

1.2.2 Reservoirs Selected for Yield

The only federal projects with significant storage are Buford Dam (Lake Lanier), West Point Dam, and Walter F. George Lock and Dam (Lake Eufaula). These three projects in the basin account for 95 percent of the total basin conservation storage. Therefore, yield analyses were done only on these three projects. These analyses are presented separately.

1.3 BUFORD DAM (LAKE SIDNEY LANIER)

Buford Dam (Lake Lanier) is the uppermost project in the basin. The site is located 50 miles northeast of central Atlanta, Georgia on the Chattahoochee River, 348.3 river miles above the Apalachicola River or 456 river miles from the Gulf Coast. Above Buford Dam, the Chattahoochee River Basin has a length of 52 miles, and an average width of 20 miles, with extreme widths ranging from a maximum of 36 miles in the headwater area to a minimum of 12 miles in the vicinity of the dam site. The drainage area above the dam is 1,040 square miles. The project was completed in June 1957.

Buford Dam is a multiple-purpose project with major project purposes including flood control, navigation, hydroelectric power, recreation, fish and wildlife development and water quality. An aerial photo of the main dam is shown on Figure C-6.

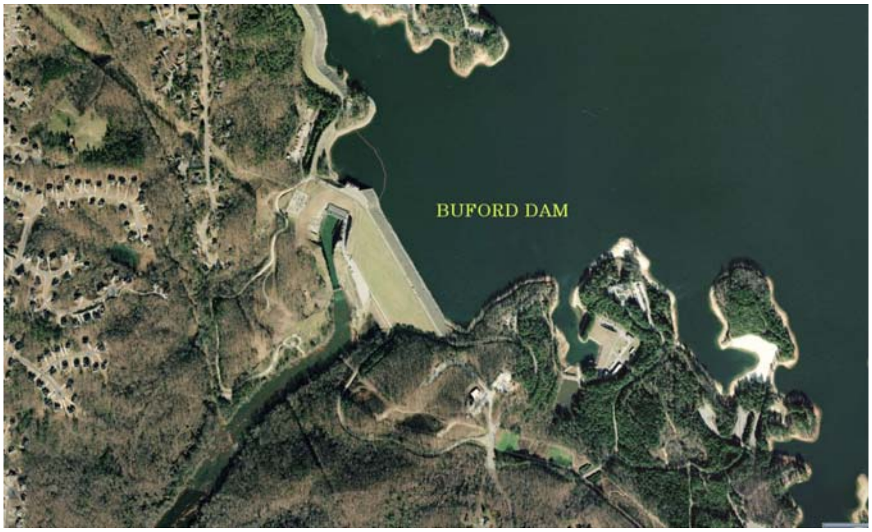


Figure C-6. Buford Dam

1.3.1 Drainage area

The Chattahoochee River and its upstream tributaries originate in the Blue Ridge Mountains of northern Georgia, near the western tip of South Carolina. The upper reaches of the basin streams are characterized by the steep slopes of mountain streams. The upper Chattahoochee River (157 square miles) is joined by the Soque River (166 square miles) about 60 miles northeast of Atlanta, Georgia and 11 miles upstream of the limits of the pool at elevation 1071 feet. The Chestatee River, a major tributary, formerly flowed into the Chattahoochee River above the dam site but now forms an arm of Lake Sidney Lanier, as shown on Figure C-7. Presently the Chattahoochee and Chestatee Rivers have drainage areas of 565 and 304 square miles and there is a drainage area of 115 square miles into the lake below their junction. The Chattahoochee and Chestatee Rivers comprise 84 percent of the dam site drainage, the reservoir pool comprises five percent and the remaining area is composed of minor streams which drain directly into the pool. The drainage area is shown on the following Figure C-7.

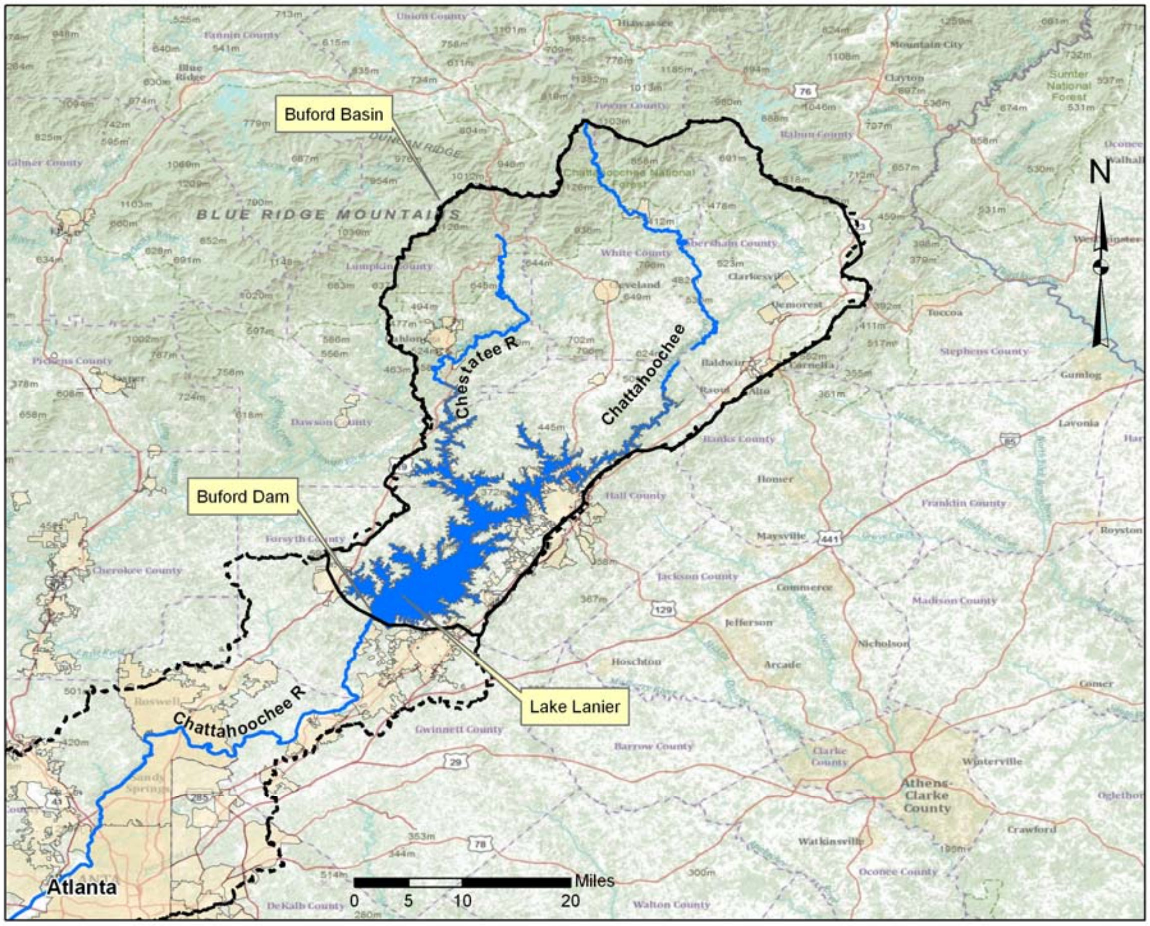


Figure C-7. Buford Basin Map

The drainage area is shown in relation to the rest of the basin in the following Figure C-8. This figure shows the local, or incremental area between projects. These areas will be used in the yield computations to determine local flows at the downstream project, rather than the whole basin above the project. For the Buford project, however, there is no upstream project, so the total area above Buford is used in the yield computations.

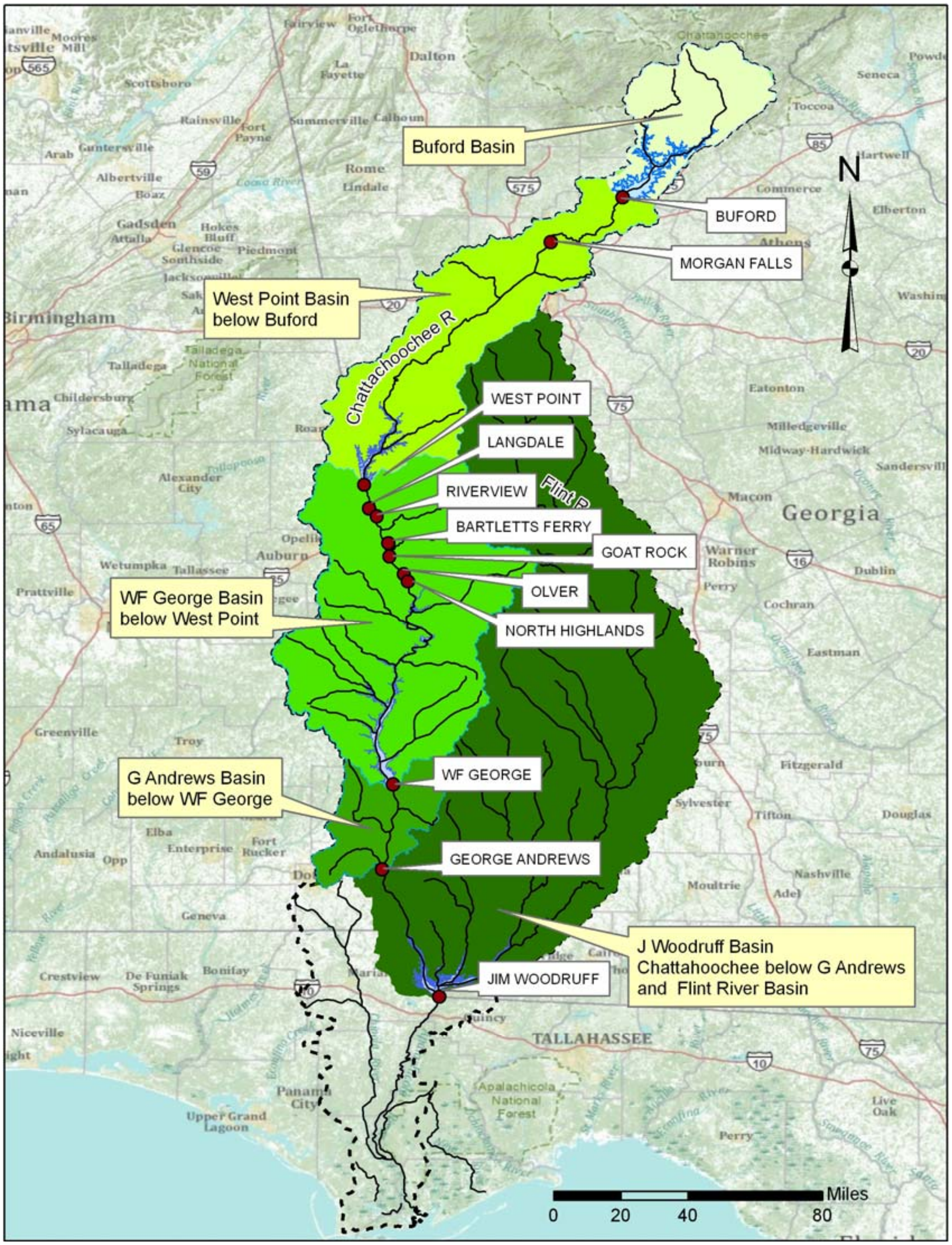


Figure C-8. Incremental Drainage Basin Map for Federal Projects on the ACF

1.3.2 Features

The project consists of an earth dam supplemented by earth saddle dikes and an unpaved chute spillway, an 86,000 kW power plant and appurtenances, and a reservoir extending about 44 miles up the Chattahoochee River and about 19 miles up the Chestatee River at full conservation pool. The main dam and reservoir are described below.

1.3.2.1 Dam

The main dam, 1,630 feet long and 192 feet high at maximum section, is an earth-fill structure with a rock section on the upstream side. The crest at elevation 1106 feet is 40 feet wide.

1.3.2.2 Reservoir

The reservoir has a total storage capacity of 2,554,000 acre-feet at full flood control pool, elevation 1085 feet, and covers an area of 47,182 acres. At full conservation pool, elevation 1071 feet, the reservoir covers 38,542 acres and has a total storage capacity of 1,955,200 acre-feet; at minimum conservation pool, elevation 1035 feet, the area covered is 22,442 acres with storage capacity of 867,600 acre-feet. Area-capacity curves are shown on Figure C-9 and Table C-5. Conservation storage varies seasonally from 1,049,400 acre-feet to 1,087,600 acre-feet between a minimum elevation of 1035 feet and a top of conservation pool elevation varying from 1070 to 1071 feet. However, another purpose of the project is flood control and a storage of 637,000 acre-feet between elevation 1070 and elevation 1085 feet has been reserved for the detention storage of flood water. The yield analysis will be based on the conservation storage as described above.

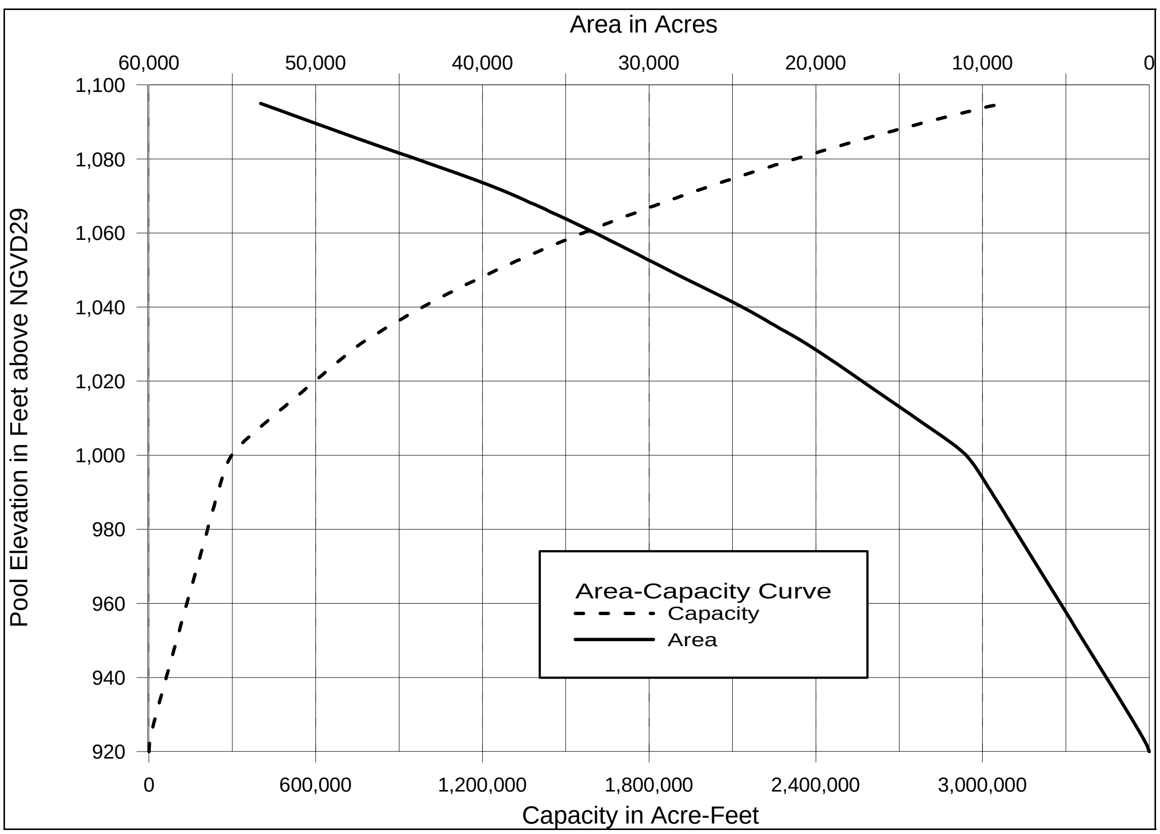


Figure C-9. Buford Area – Capacity Curves

Table C-5. Buford Reservoir Area and Capacity Data

Pool Elev	Total Area	Total Storage
(ft NGVD 29)	(ac)	(ac-ft)
920	0	0
940	1,090	5,000
960	3,100	37,000
980	6,450	121,000
1000	10,984	296,500
1010	13,819	420,200
1020	16,912	574,000
1030	20,508	760,100
1031	20,894	781,000
1032	21,281	802,000
1033	21,668	823,600
1034	22,055	845,600
* 1035	22,442	867,600
1036	22,829	890,300
1037	23,217	913,300
1038	23,609	936,500
1039	24,008	960,500
1040	24,416	984,500
1041	24,833	1,009,300
1042	25,257	1,034,300
1043	25,701	1,059,900
1044	26,159	1,085,900
1045	26,619	1,112,200
1046	27,079	1,139,200
1047	27,535	1,166,300
1048	27,983	1,194,300
1049	28,432	1,222,300
1050	28,861	1,250,900
1051	29,291	1,279,900
1052	29,721	1,309,500
1053	30,153	1,339,500
1054	30,587	1,369,800
1055	31,023	1,400,800
1056	31,461	1,431,800

Pool Elev	Total Area	Total Storage
(ft NGVD 29)	(ac)	(ac-ft)
1057	31,901	1,463,800
1058	32,343	1,495,800
1059	32,789	1,528,200
1060	33,238	1,56,1200
1061	33,690	1,594,700
1062	34,147	1,628,700
1063	34,610	1,663,000
1064	35,079	1,698,000
1065	35,555	1,733,100
1066	36,036	1,769,100
1067	36,522	1,805,200
1068	37,015	1,842,200
1069	37,515	1,879,200
** 1070	38,024	1,917,000
*** 1071	38,542	1,955,200
1072	39,078	1,994,200
1073	39,638	2,033,600
1074	40,226	2,073,600
1075	40,833	2,114,000
1076	41,458	2,155,000
1077	42,086	2,196,900
1078	42,716	2,239,300
1079	43,348	2,282,300
1080	43,982	2,326,000
1081	44,618	2,370,300
1082	45,256	2,415,300
1083	45,896	2,460,800
1084	46,538	2,507,000
1085	47,182	2,554,000
1090	50,250	2,800,000
1095	53,300	3,070,000
1100	56,500	3,330,000
1110	62,900	3,850,000

* Bottom of Conservation Pool
** Top of Winter Conservation Pool
*** Top of Summer Conservation Pool

1.3.3 Top of Conservation Pool

The top of conservation pool varies during the year from elevation 1070 to 1071 feet. Whenever surplus water is available the criteria is to hold the pool at elevation 1071 from 1 May through 1 October, then decrease to 1070 feet by 1 December, then hold 1070 feet unti1 15 April, and then increase to 1071 feet by 1 May. Figure C-10 presents the guide curve to be used. A constant top-of conservation pool level at elevation 1070 feet had been used until 1976. In February 1976 the extra storage was approved by the Division Engineer. A plot of the top of the conservation pool is shown on the following Figure C-10.

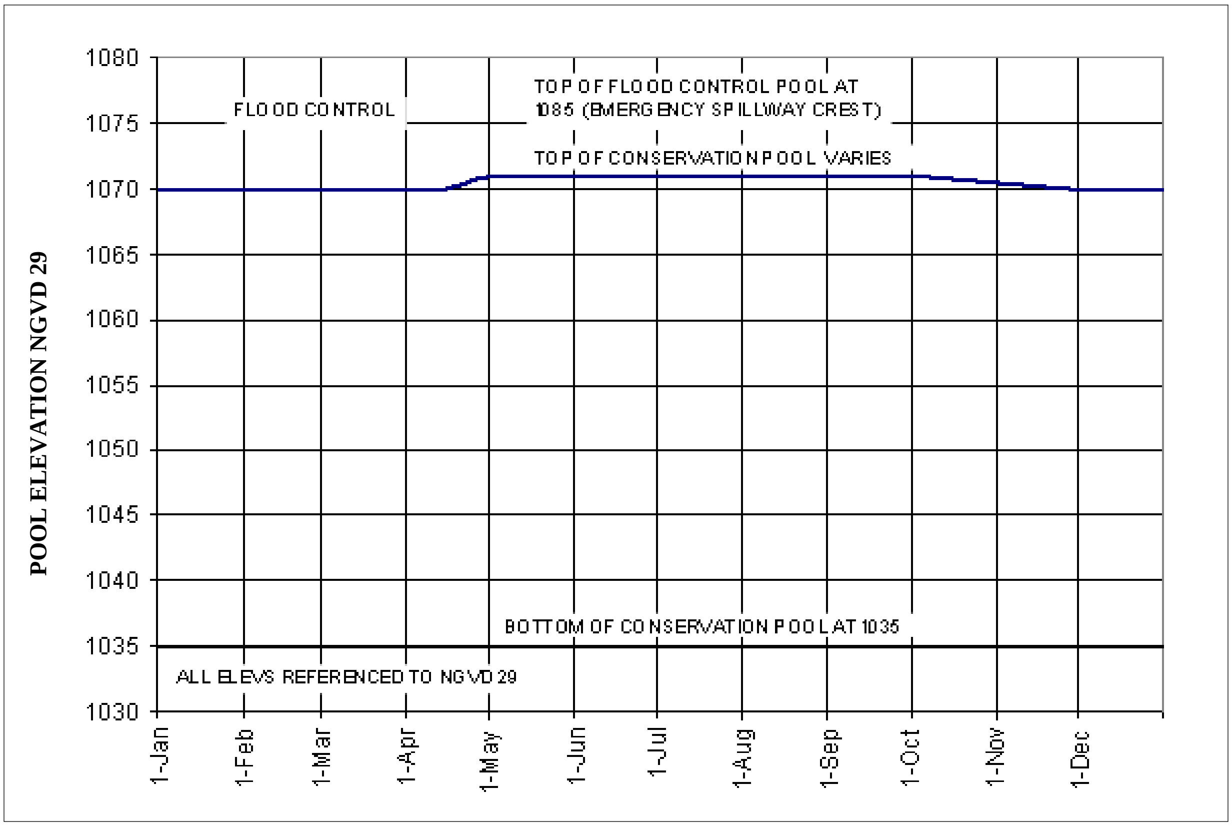


Figure C-10. Top and Bottom of Buford Conservation Pool

The storage for the yield analysis will be based on the storage in the conservation pool from elevation 1071 (or 1070 depending on the time of year) to 1035.

1.3.4 Regulation Plan

Normally the Buford project is operated as a peaking plant for the production of hydroelectric power and during off-peak periods maintains a continuous flow of approximately 650 cfs. Releases from Buford are re-regulated by Georgia Power Company's Morgan Falls Reservoir to insure the City of Atlanta has sufficient flow for water supply and wastewater assimilation. In addition, increased flows during low flow periods are utilized by Corps of Engineers projects at West Point, Walter F. George, and Jim Woodruff for hydropower, to aid navigation and meet the flow requirements of the Jim Woodruff Revised Interim Operating Plan (RIOP).

1.3.5 Surface Water Inflows

Observed daily inflow, outflow (discharge), and pool elevation data for the period of record starting in Jan 1958, just as the pool was filling through the present (Oct 2009) are available. The data are presented in the following Figure C-11.

1.3.6 Unimpaired Flow

The existing unimpaired flow data set was updated through 2008 for use in the yield analysis. The daily data was smoothed using 3-, 5-, or 7-day averaging to eliminate small negative values. Although this averaging affects the peak values, the volume is the same and the yield computations were done on the smoothed data. A plot of this smoothed unimpaired daily flow averaged over each year for the period of record 1939 – 2008 is shown in Figure C-12. Daily flows for critical drought periods are plotted in more detail in Figures C-13 – C-17.

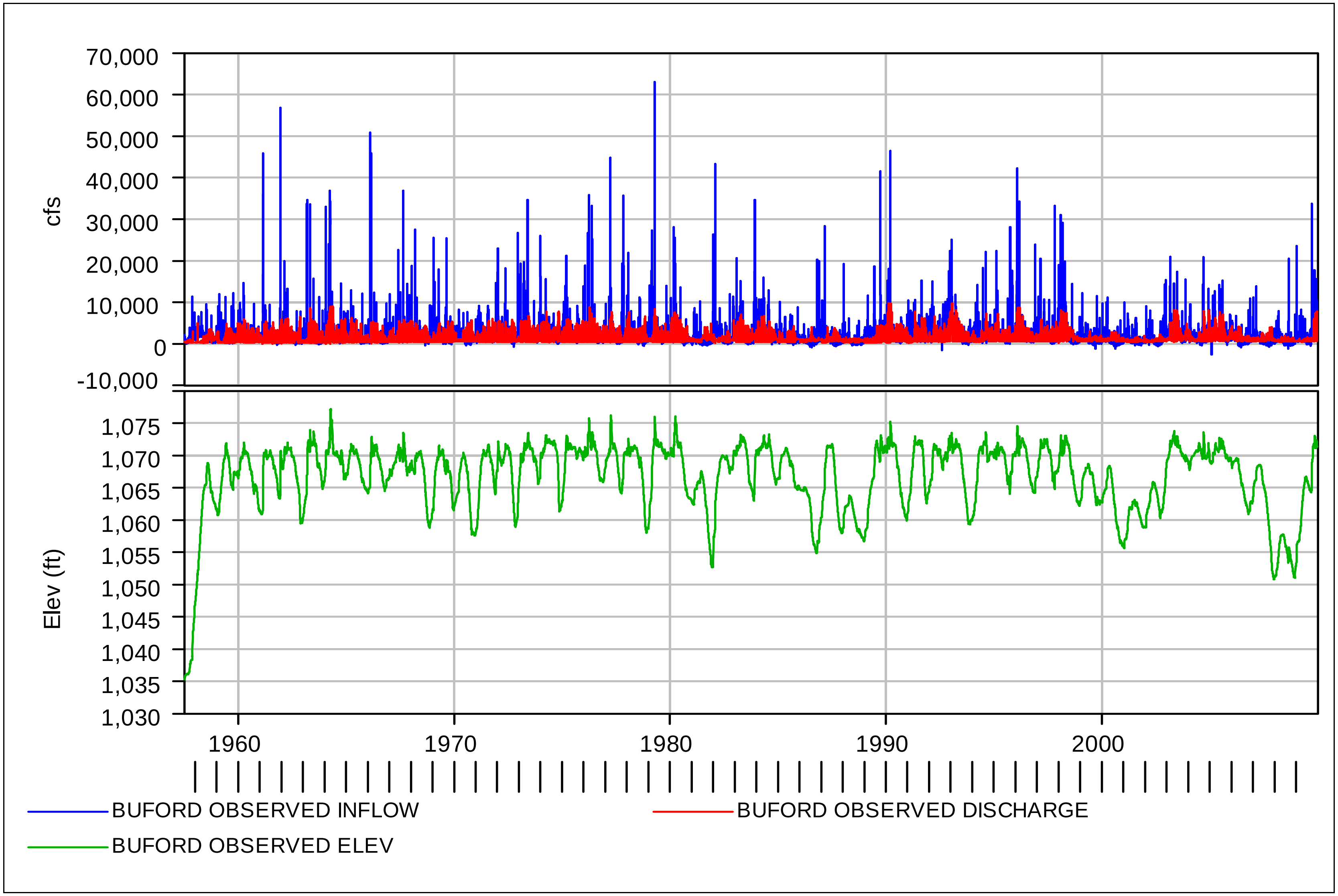


Figure C-11. Buford Inflow-Outflow-Pool Elevation (Jul 1957-Dec 2009)

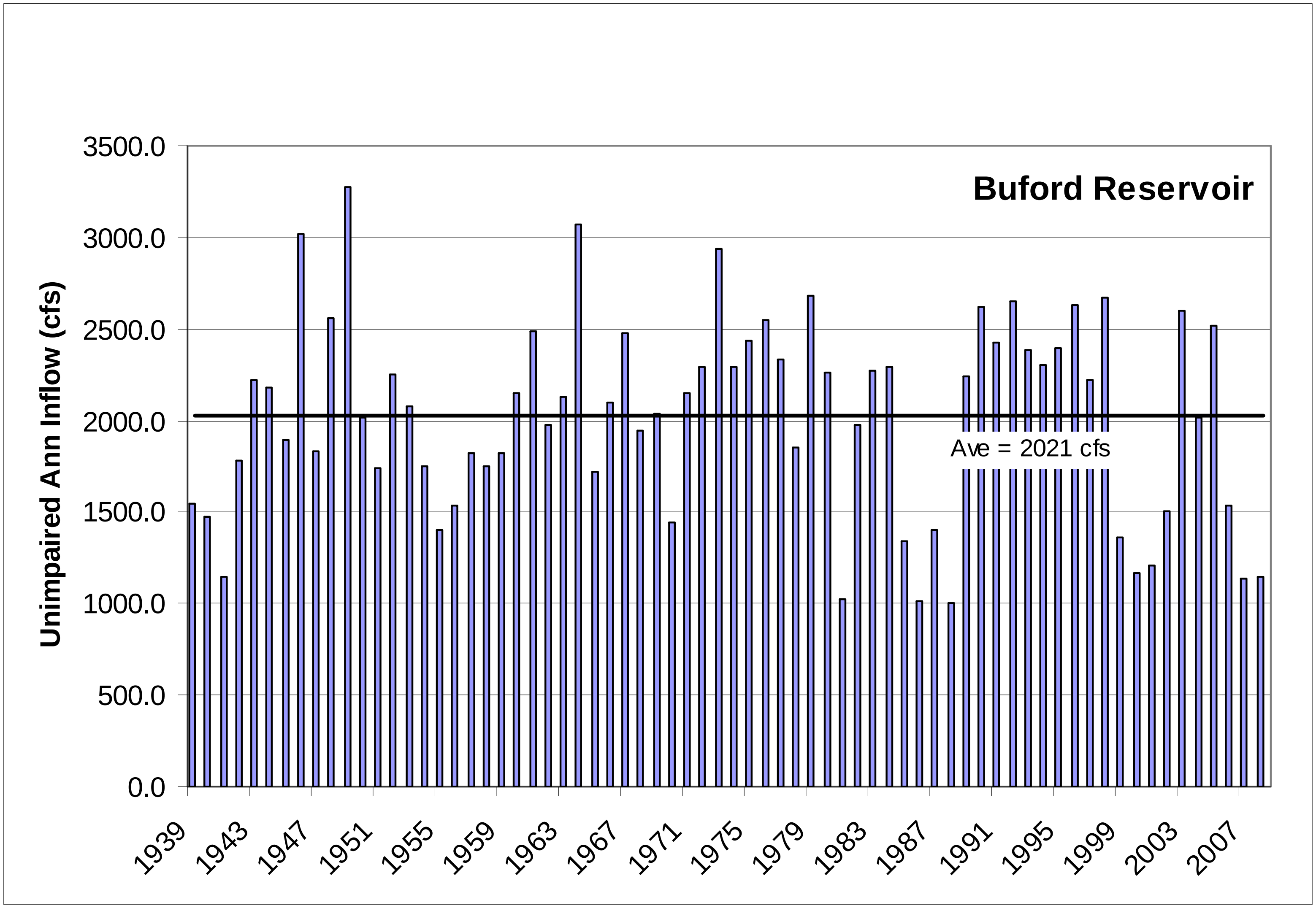


Figure C-12. Buford Unimpaired Annual Inflow Jan 1939 to Dec 2008

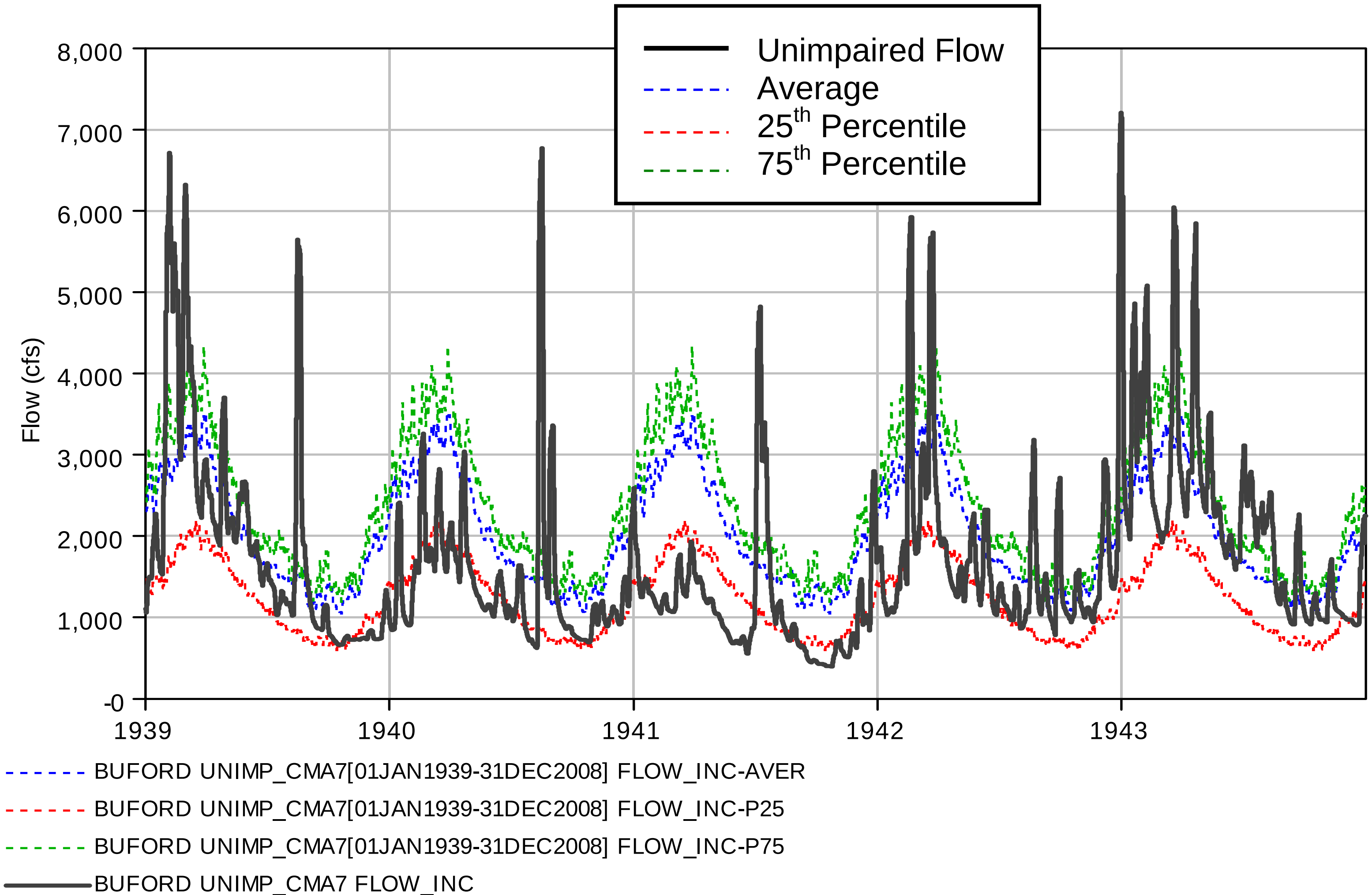
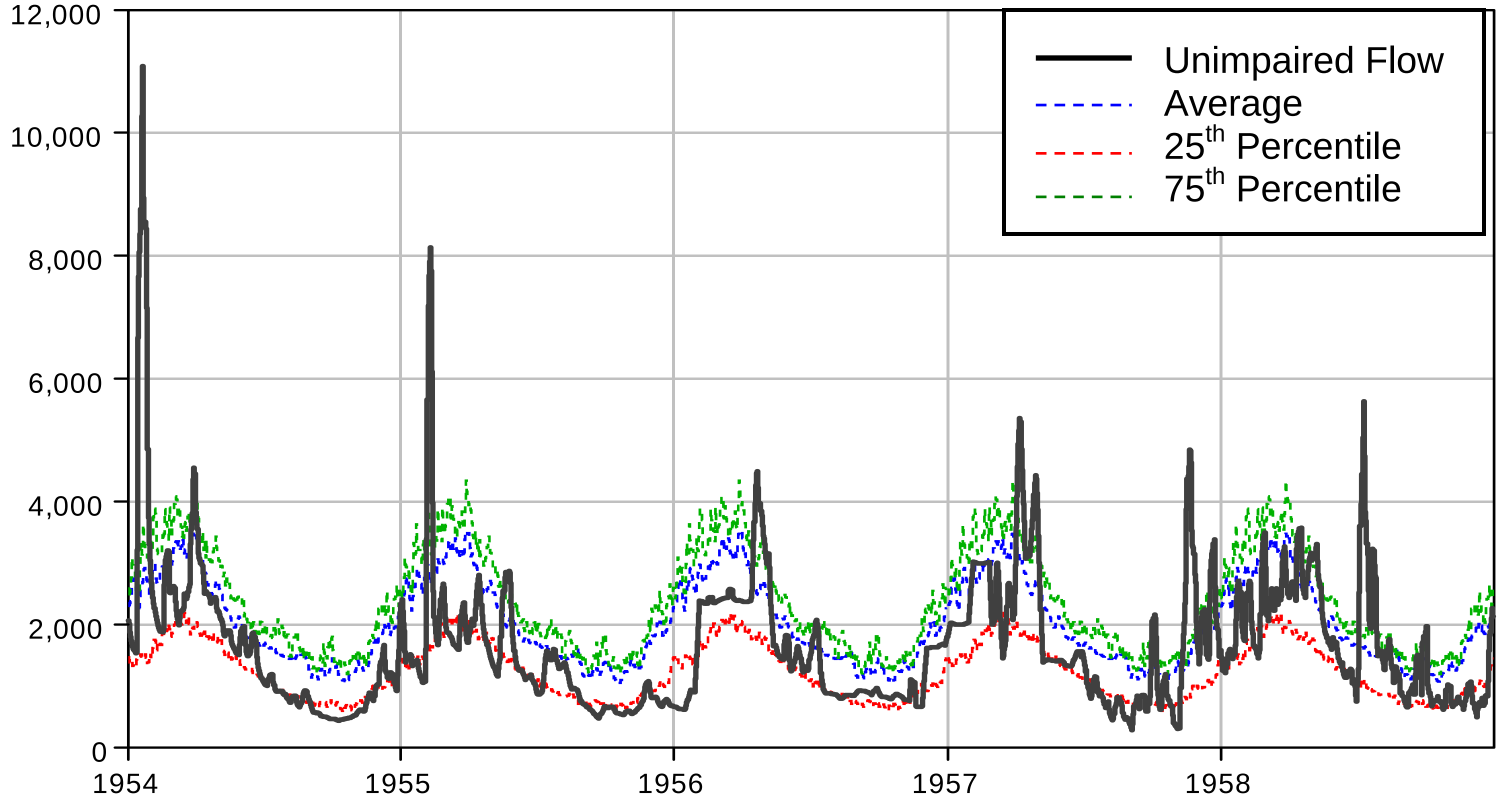


Figure C-13. Buford Unimpaired Inflow – 1940's Drought



BUFORD UNIMP_CMA7[01JAN1939-31DEC2008] FLOW_INC-AVER
BUFORD UNIMP_CMA7[01JAN1939-31DEC2008] FLOW_INC-P25
BUFORD UNIMP_CMA7[01JAN1939-31DEC2008] FLOW_INC-P75
BUFORD UNIMP_CMA7 FLOW_INC

Figure C-14. Buford Unimpaired Inflow – 1950's Drought

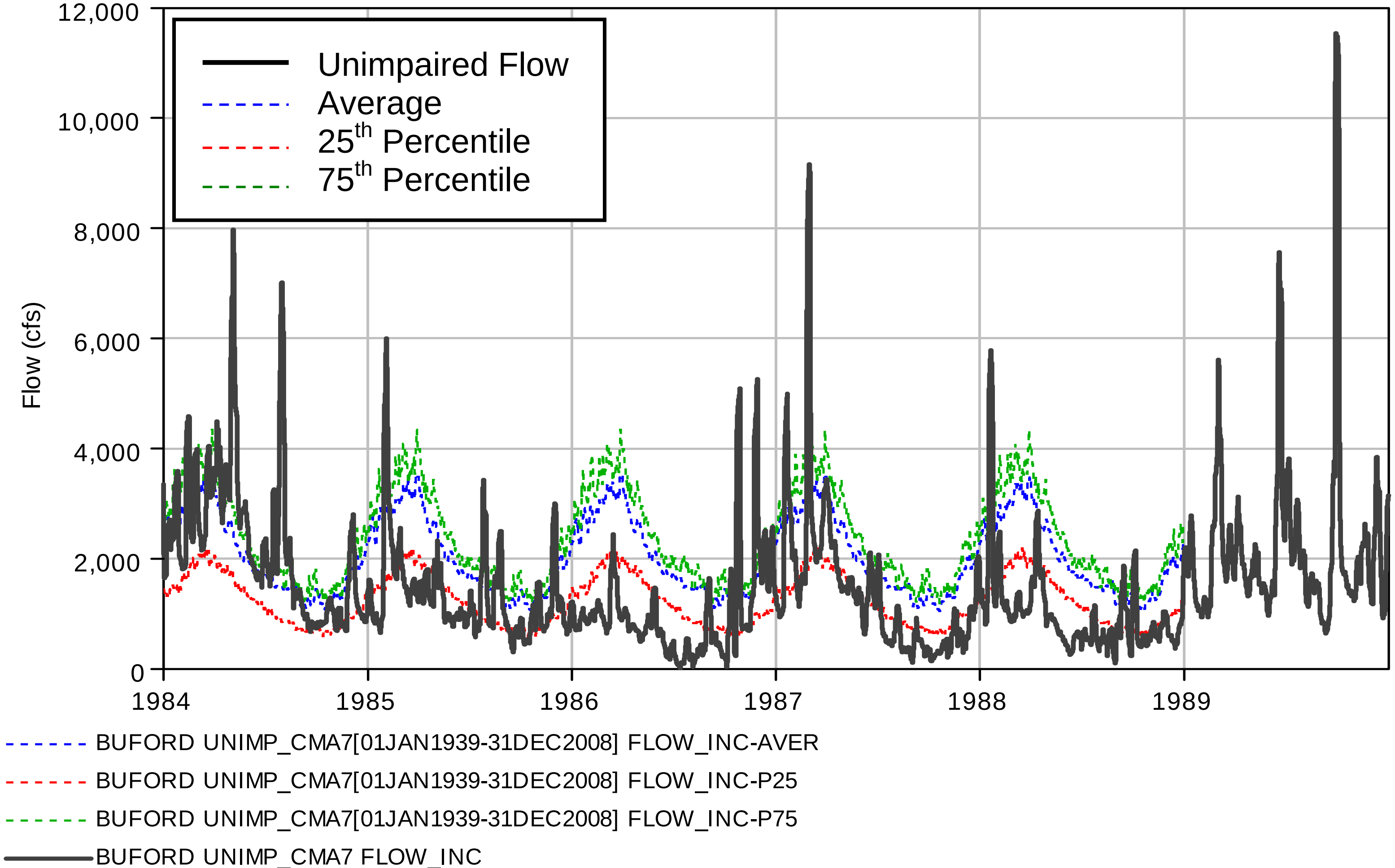


Figure C-15. Buford Unimpaired Inflow – 1980's Drought

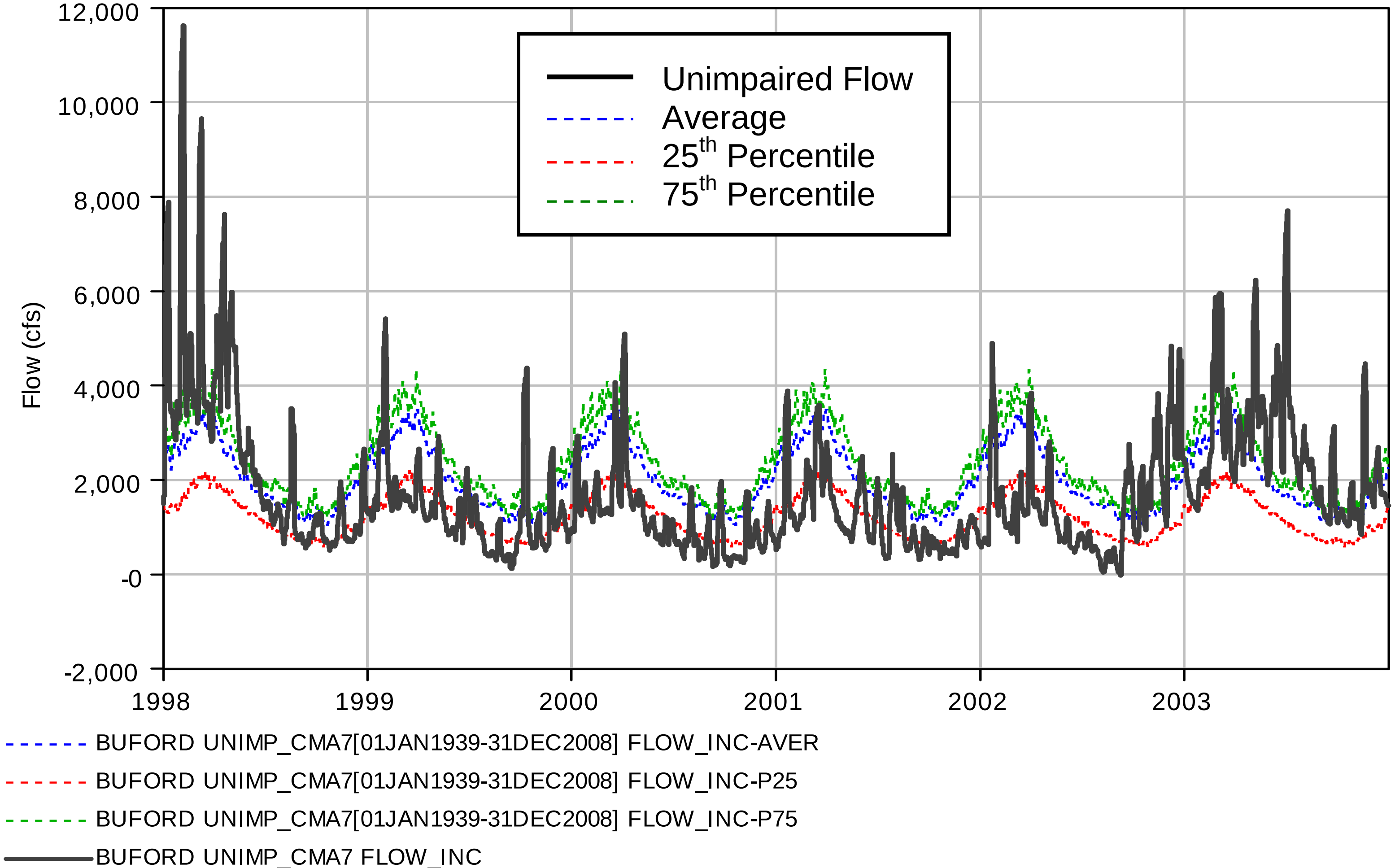


Figure C-16. Buford Unimpaired Inflow – 2000 Drought

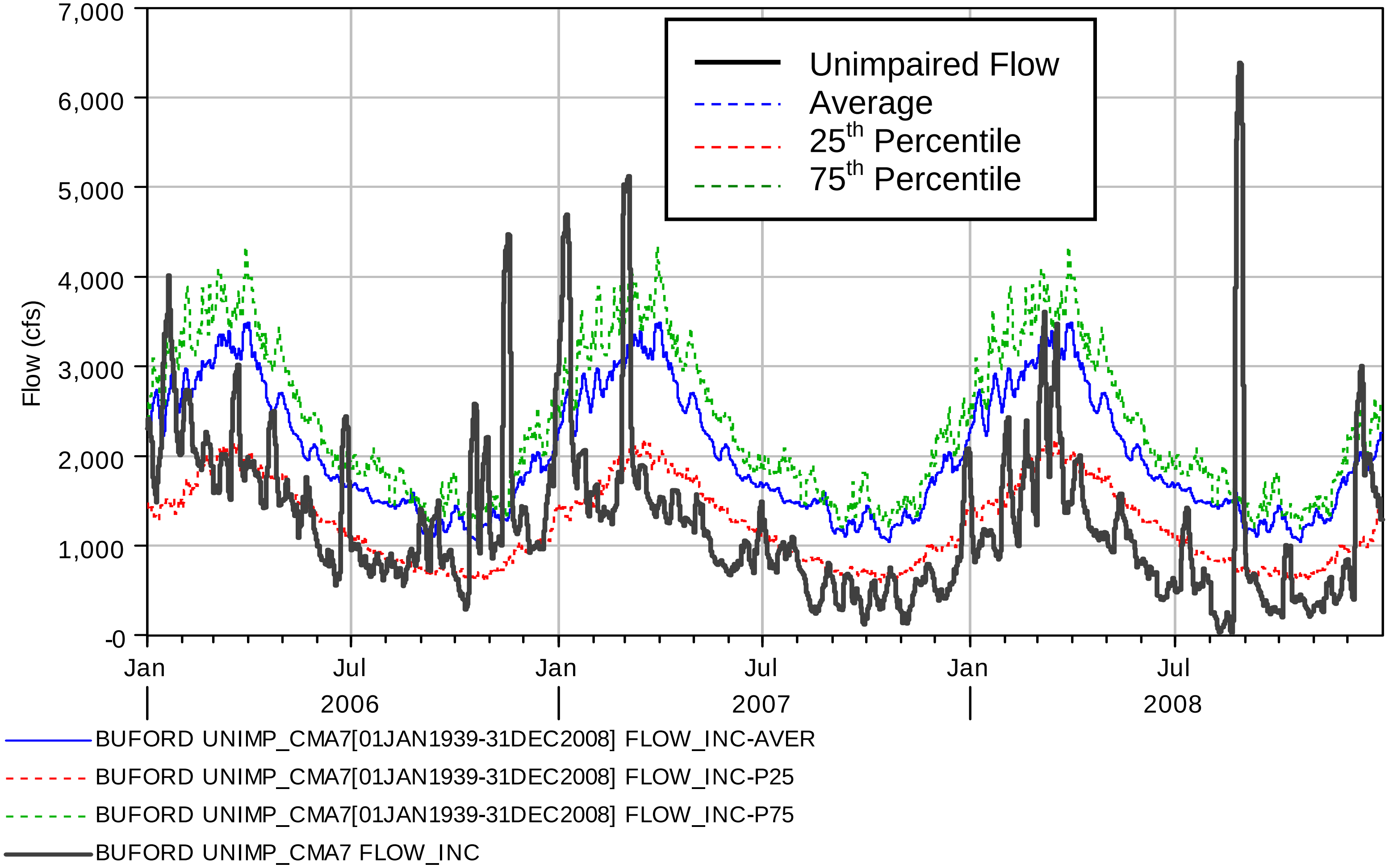


Figure C-17. Buford Unimpaired Inflow – 2007 Drought

1.4 WEST POINT DAM (WEST POINT LAKE)

West Point Dam is located on the Chattahoochee River at mile 201.4 above the mouth and 3.2 miles north of West Point, Georgia. It is 146.9 river miles below Buford Dam, and 126.2 miles above Walter F. George Lock and Dam. The project was completed in May 1975.

West Point Dam is a multiple-purpose project with major project purposes including flood control, hydroelectric power, navigation, recreation, fish and wildlife development and water quality. An aerial photo of the dam is shown in Figure C-18.

Figure C-18. West Point Dam

1.4.1 Drainage Area

The drainage area above the dam is 3,440 square miles. The area is shown on the following Figure C-19.

The operation of Buford Dam reduces peak stages about 10 feet to essentially non-damage stages at Morgan Falls Dam and for several miles downstream. The river bottoms are subject to some overbank flow during the infrequent floods at Vinings and in the northwest suburbs of Atlanta near Bolton. Between Bolton and West Point, a distance of about 100 river miles, there is no urban development in the floodplain.

The Town of Franklin, 37 miles above West Point, is on high ground well above the flood zone. However, the effect of Buford Dam on floods decreases progressively downstream so that at West Point, peak stages are only slightly reduced. The Cities of West Point and Columbus, Georgia, and Lanett, Langdale, Riverview and Phenix City, Alabama, are all subject to flooding. Bankfull channel capacities downstream are 40,000 cfs at West Point and 32,000 cfs at Columbus. The West Point project provides a maximum flood storage of 391,000 acre-feet including the 221,000 acre-feet between elevations 628 and 635 available on a seasonal basis, and the 170,300 acre-feet between elevations 635 and 641 for induced surcharge operations.

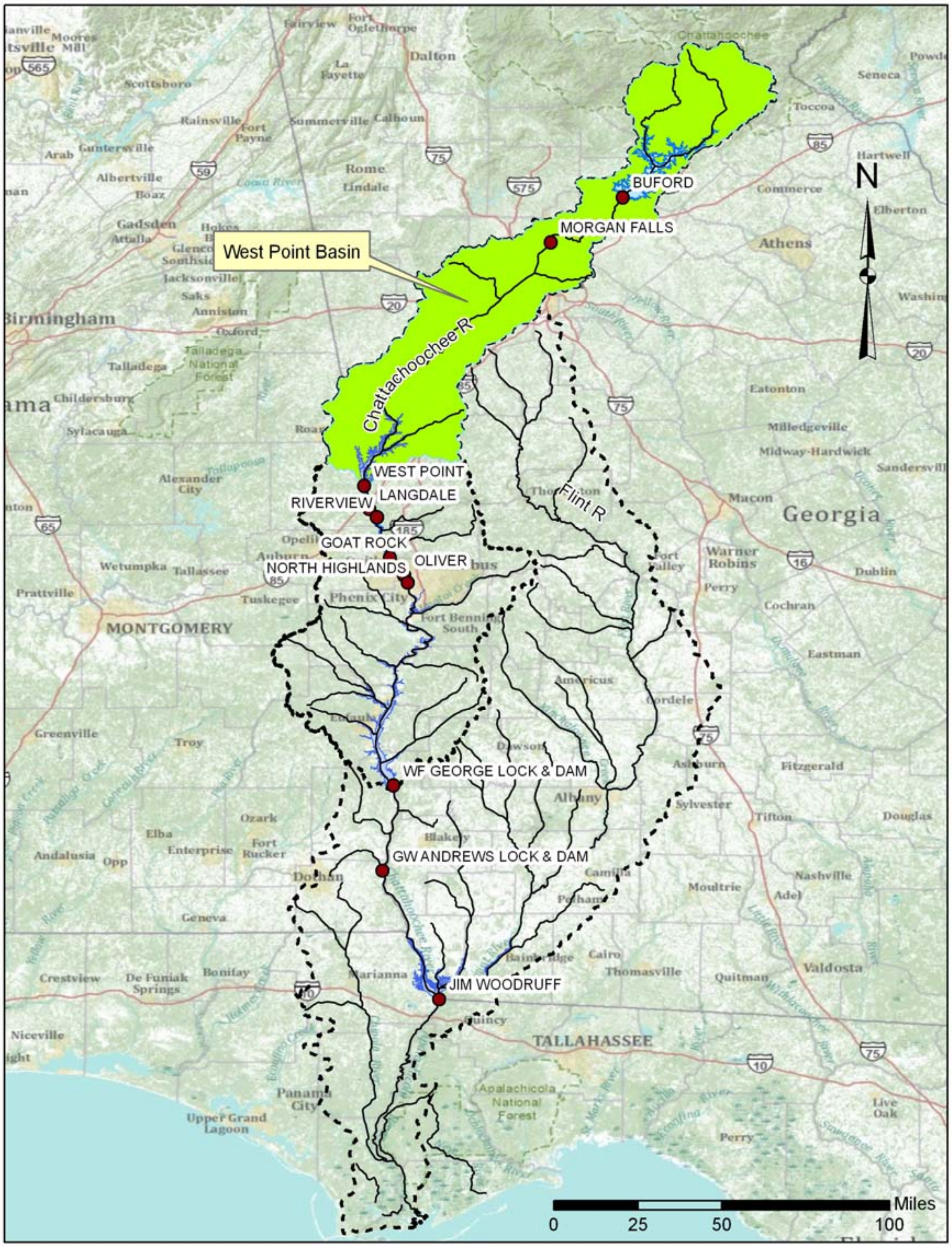


Figure C-19. West Point Basin Map

For the single reservoir yield analysis in this report, only the area below Buford will be used for local inflow to West Point. This drainage area is the difference in the Buford and West Point drainage areas and is equal to 2,400 square miles. This West Point Basin below Buford area is shown in the following Figure C-20.

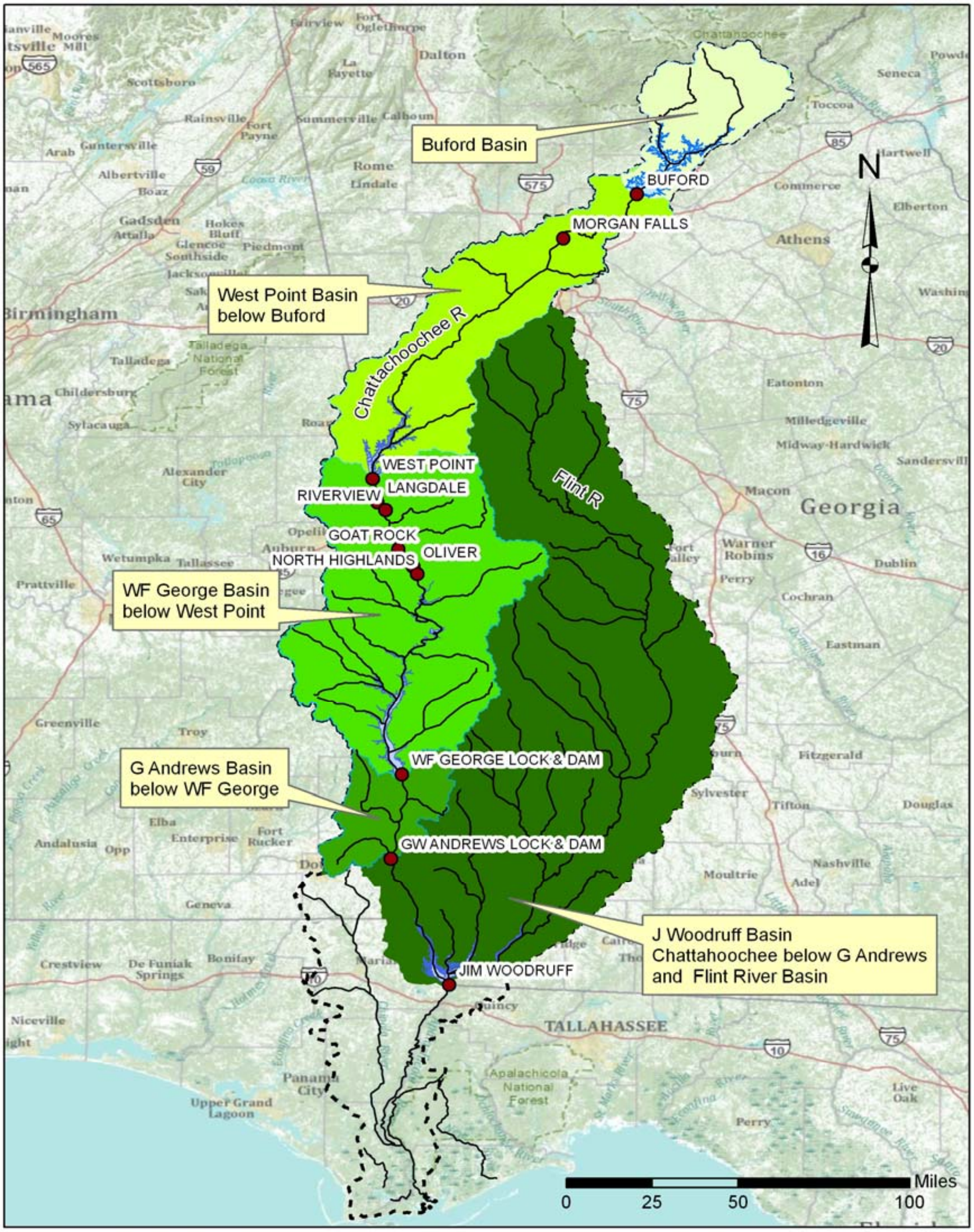


Figure C-20. Incremental Drainage Basin Map for Federal Projects on the ACF

1.4.2 Features

The West Point Dam is a concrete gravity type structure with rolled earthfill embankments joining the high ground on the east and west sides of the river. The total length of the concrete dam and earth embankments is 7,250 feet. At the top of the structures, elevation 652 feet above mean sea level, the length of the concrete portion of the dam is 896 feet. The principal structures that make up the concrete dam are an intake-powerhouse structure, a non-overflow section, a gated spillway located in the main river channel, and a left embankment retaining wall which supports the earth embankment on the east abutment.

1.4.2.1 Non-Overflow Section

The non-overflow section is 185 feet long and forms the tie between the earth embankment on the west side of the river and the powerhouse intake section. The length of the non-overflow is determined by the clearance required between the terminal cone slopes and the powerhouse intake.

1.4.2.2 Spillway Section

The spillway section is a gravity type ogee section 350 feet long with crest at elevation 597. The spillway contains six tainter gates, each 50 feet wide and 41 feet high, between 10-foot thick piers supported on the overflow section.

1.4.2.3 Powerhouse and Intake

The powerhouse and intake structure are integrated into a reinforced concrete unit which acts as a part of the dam. The structure is 321 feet in length and consists of five monoliths located between the spillway and non-overflow section. The intake structure provides waterway openings for three main generating units (two to be installed initially and one for a future unit) and one small generating unit to provide continuous minimum flow releases. The main turbines are propeller type with concrete semi-spiral cases. The small was selected to give maximum efficiency while discharging 675 cfs at any head.

1.4.2.4 Reservoir

The reservoir has a total storage capacity of 774,800 acre-feet at full flood control pool, elevation 641 feet, and covers an area of 31,800 acres. At full conservation pool, elevation 635 feet, the reservoir covers 25,900 acres and has a total storage capacity of 604,500 acre-feet; at minimum conservation pool, elevation 620 feet, the area covered is 15,500 acres with storage capacity of 298,400 acre-feet. Area-capacity curves are shown on Table C-6 and Figure C-21. Conservation storage varies seasonally from 143,900 acre-feet to 306,100 acre-feet between a minimum elevation of 620 feet and a top of conservation pool elevation varying from 628 to 635 feet. Although the top of the flood control pool is 641 feet, only the conservation pool will be used in the yield analysis.

Table C-6. West Point Reservoir Area and Capacity

Pool Elev (ft NGVD 29)	Total Area (ac)	Total Storage (ac-ft)
*620	15,512	298,396
621	16,100	314,202
622	16,702	330,602
623	17,318	347,612
624	17,949	365,245
625	18,593	383,515
626	19,252	402,437
627	19,926	422,025
**628	20,615	442,295
629	21,318	463,260
630	22,037	484,937
631	22,771	507,340
632	23,520	530,485
633	24,286	554,387
634	25,067	579,062
***635	25,864	604,527
636	26,677	630,796
637	27,507	657,887
638	28,353	685,816
639	29,216	714,600
640	30,096	744,254
****641	30,993	774,798
642	31,907	806,246
643	32,838	838,618
644	33,788	871,930
645	34,755	906,200

* Minimum power pool
** Top of power pool - December through April
*** Top of power pool - June through October
**** Top of flood control pool

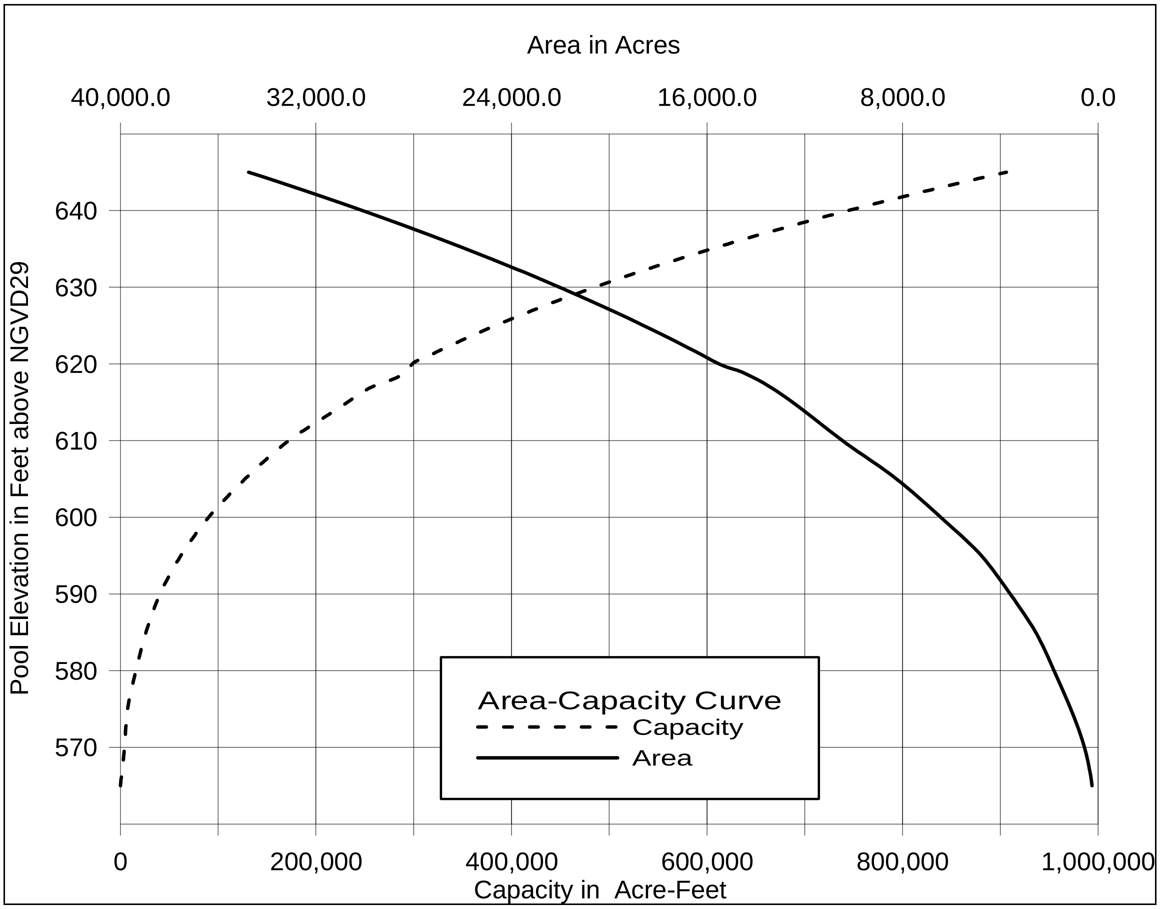


Figure C-21. West Point Area – Capacity Curves

1.4.3 Top of Conservation Pool

The top of conservation pool varies during the year from elevation 628 to 635 feet. Whenever surplus water is available the criteria is to hold the pool at elevation 635 from 1 June through 1 November, then decrease to 628 feet by 15 December, then hold 628 feet unti1 15 February, and then increase to 635 feet by 1 June, as shown in Figure C-22.

1.4.4 Regulation Plan

Normally the West Point project will be operated as a peaking plant for the production of hydroelectric power and during off-peak periods will maintain a continuous flow of 675 cfs. During low-water periods such regulation will provide increased flow downstream for navigation, water supply, water quality requirements and other purposes.

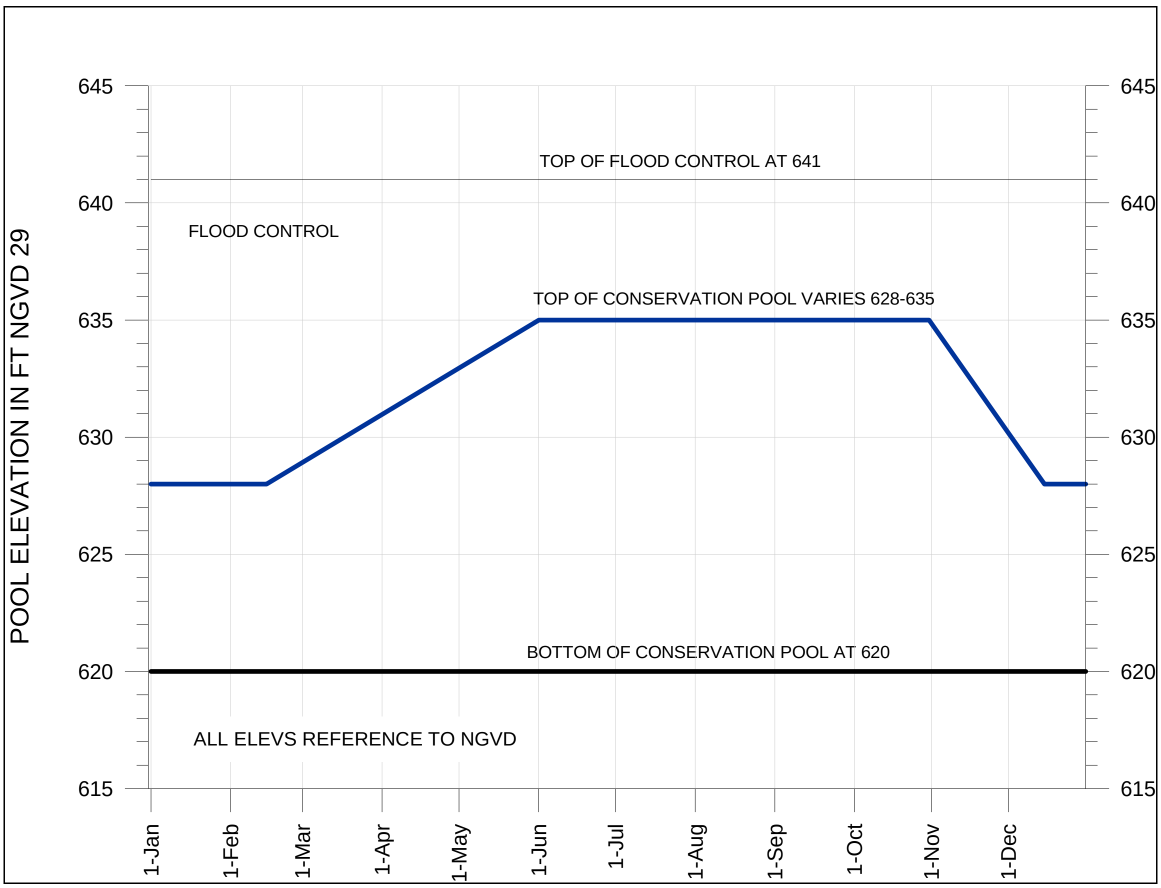


Figure C-22. Top and Bottom of West Point Conservation Pool

The storage for the yield analysis will be based on the storage in the conservation pool from elevation 635 (or 628 depending on the time of year) to 620.

1.4.5 Surface Water Inflows

Observed daily inflow, outflow (discharge), and pool elevation data for the period of record starting in May 1975, just as the pool was filling through the present (Oct 2009) are available. The data are presented in the following Figure C-23.

1.4.6 Unimpaired Flow

The existing unimpaired flow data set was updated through 2008 for use in the yield analysis. The daily data was smoothed using 3-, 5-, or 7-day averaging to eliminate small negative values. Although this averaging affects the peak values, the volume is the same and the yield computations were done on the smoothed data. A plot of this smoothed unimpaired daily flow averaged over each year for the period of record 1939 – 2008 is shown in Figure C-24. Daily flows for critical drought periods are plotted in more detail in Figures C-25 – C-29.

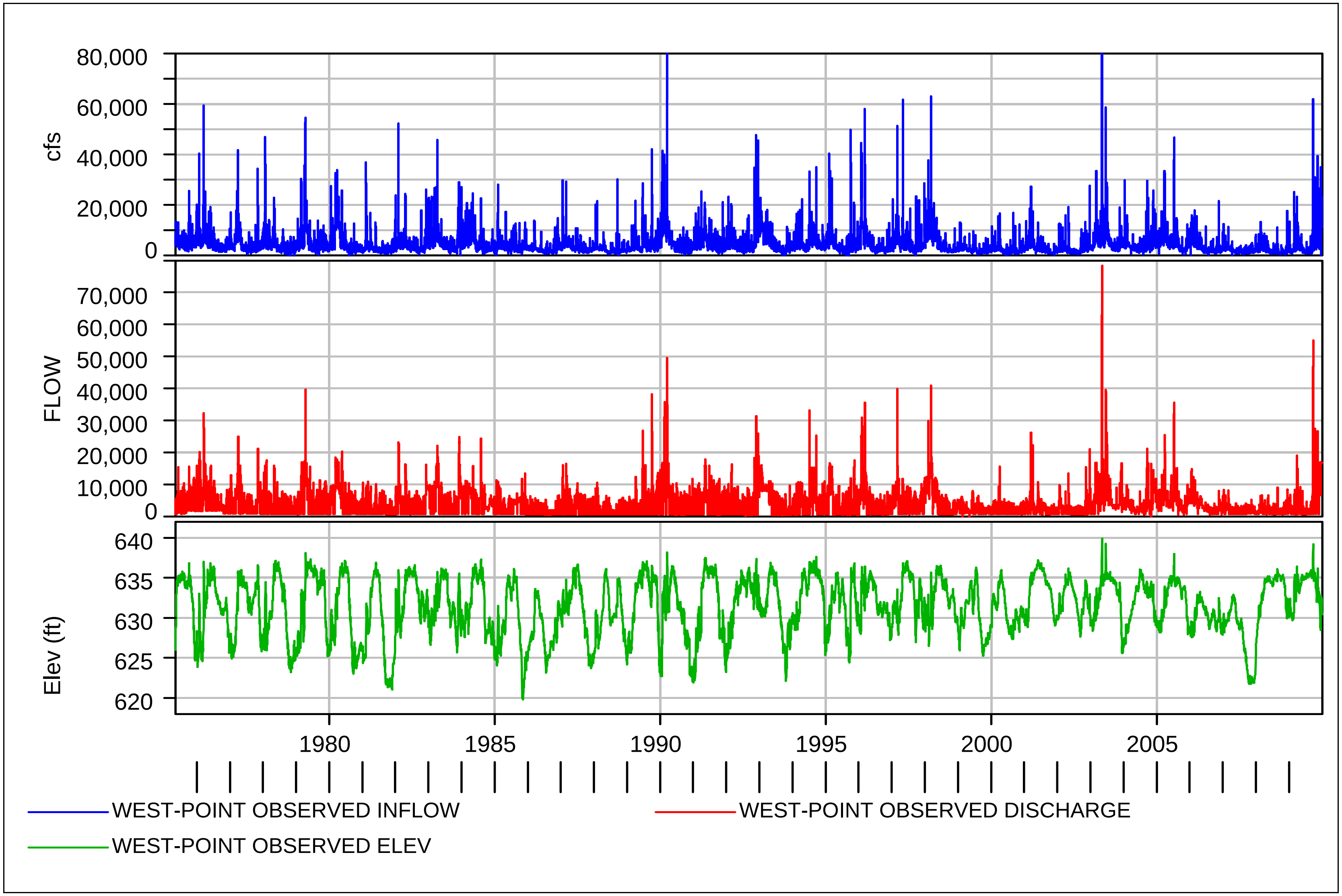


Figure C-23. West Point Inflow-Outflow-Pool Elevation (Jan 1975-Dec 2009)

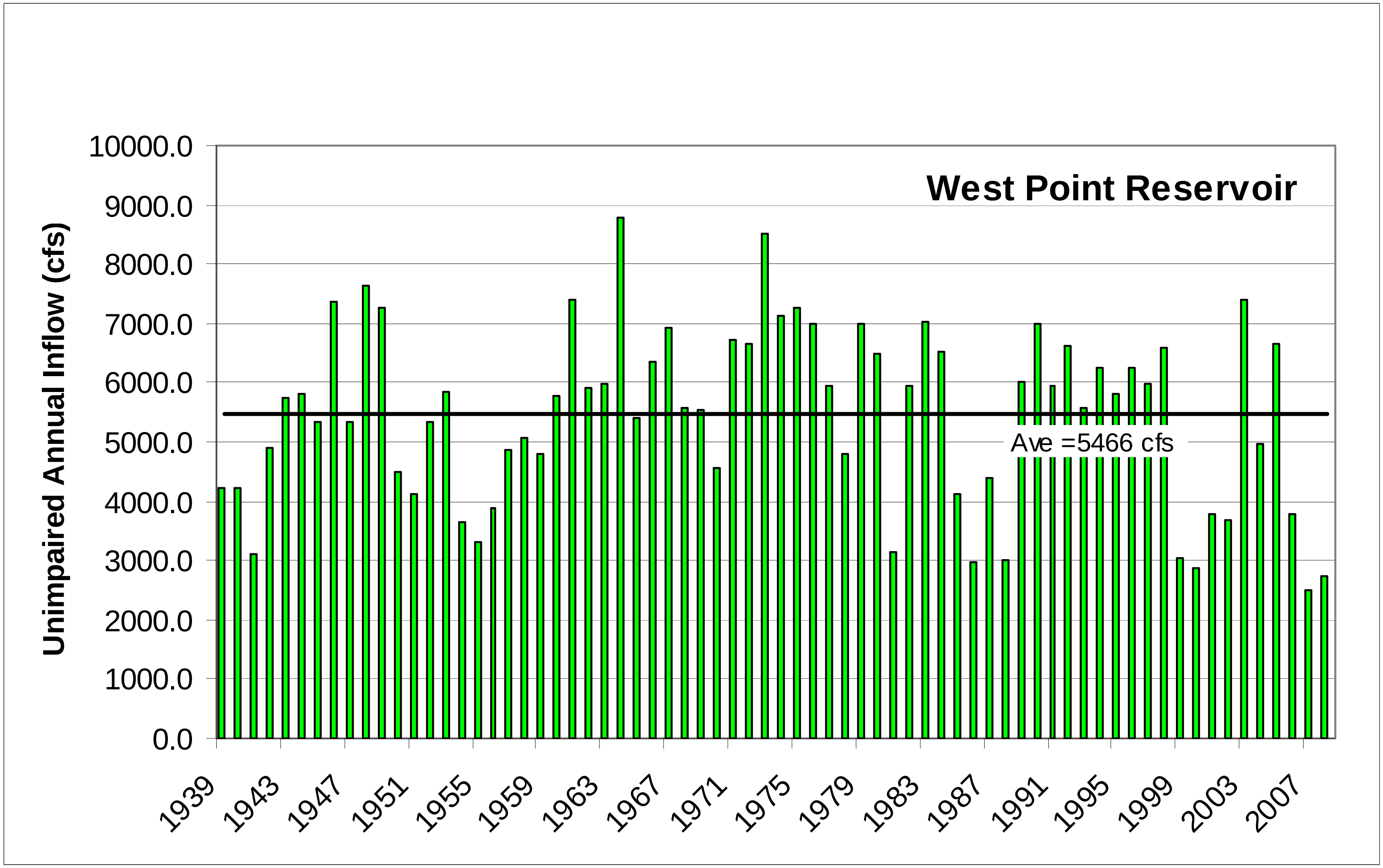


Figure C-24. West Point Unimpaired Annual Inflow Jan 1939 to Dec 2008

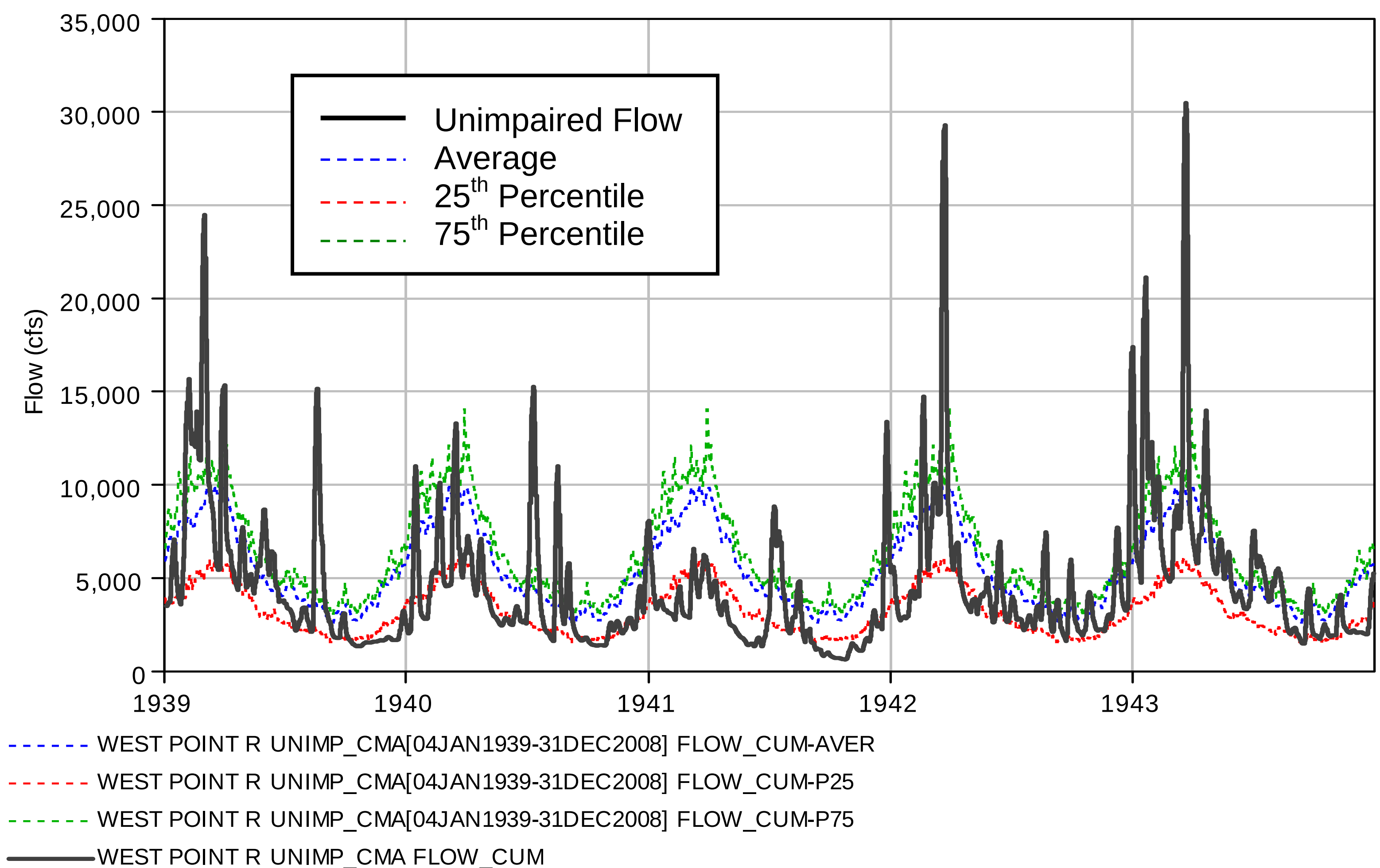


Figure C-25. West Point Unimpaired Inflow – 1940's Drought; 75th Percentile, Average and 25th Percentile Flow

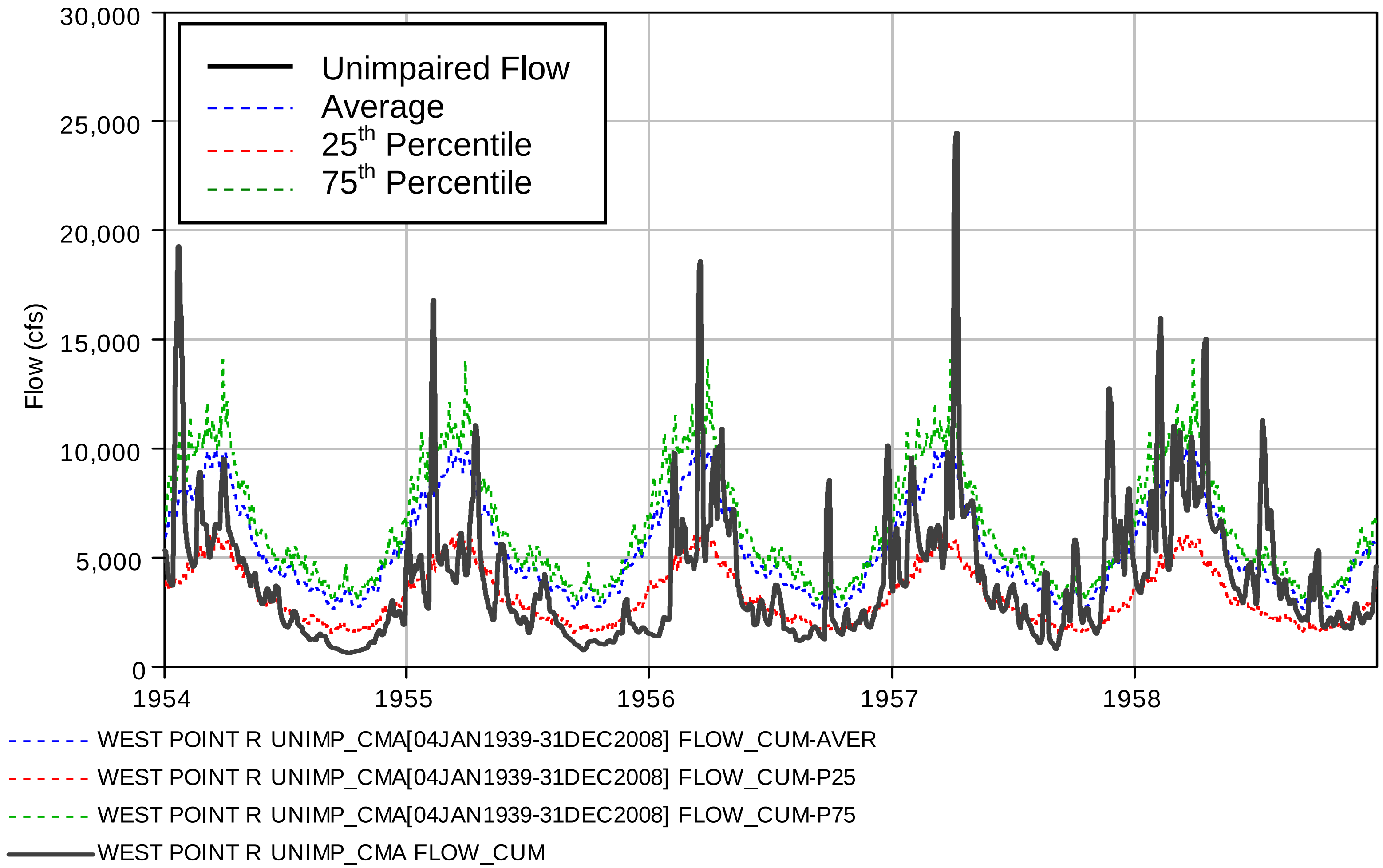


Figure C-26. West Point Unimpaired Inflow – 1950's Drought; 75th Percentile, Average and 25th Percentile Flow

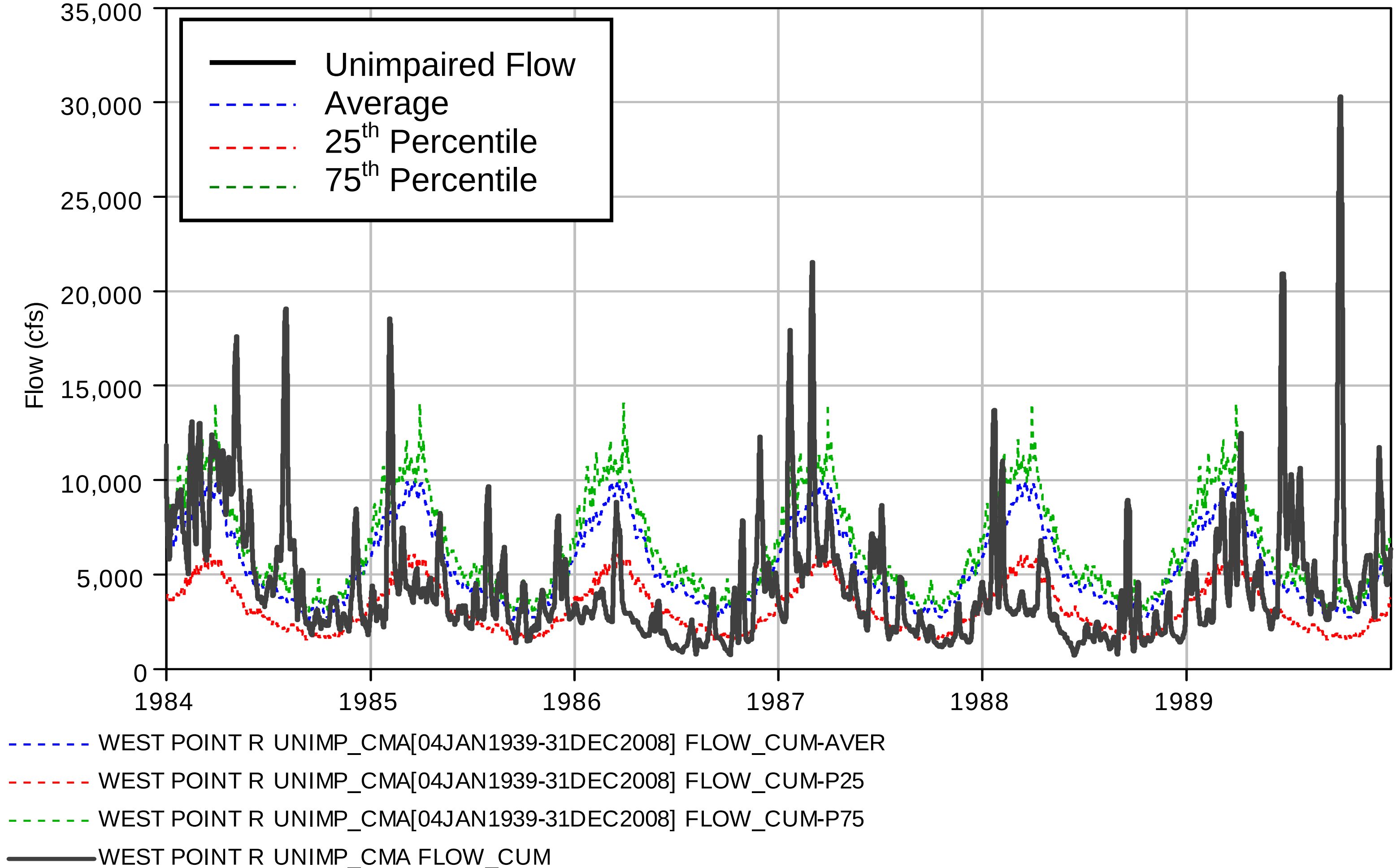


Figure C-27. West Point Unimpaired Inflow – 1980's Drought; 75th Percentile, Average and 25th Percentile Flow

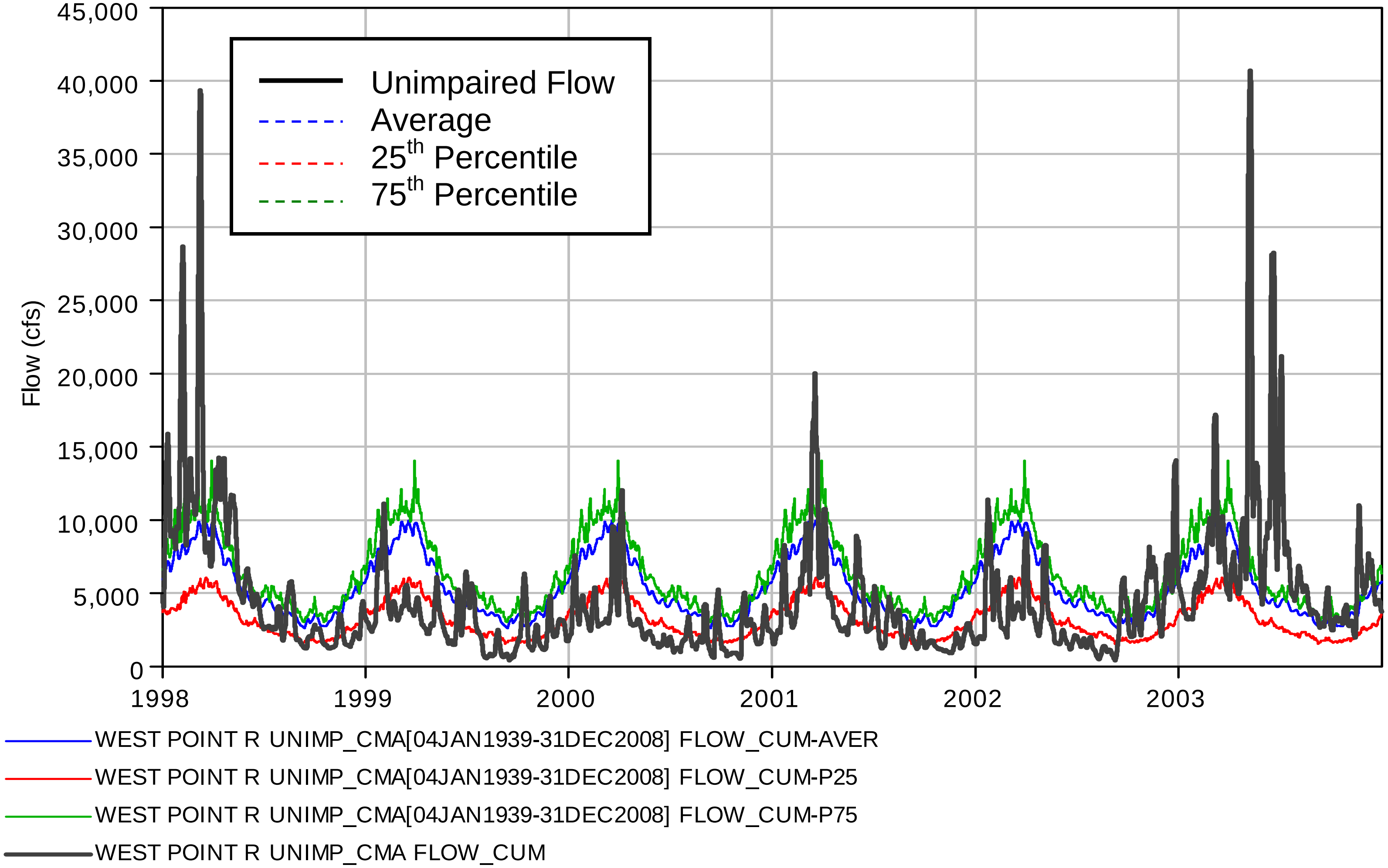


Figure C-28. West Point Unimpaired Inflow – 2000 Drought; 75th Percentile, Average and 25th Percentile Flow

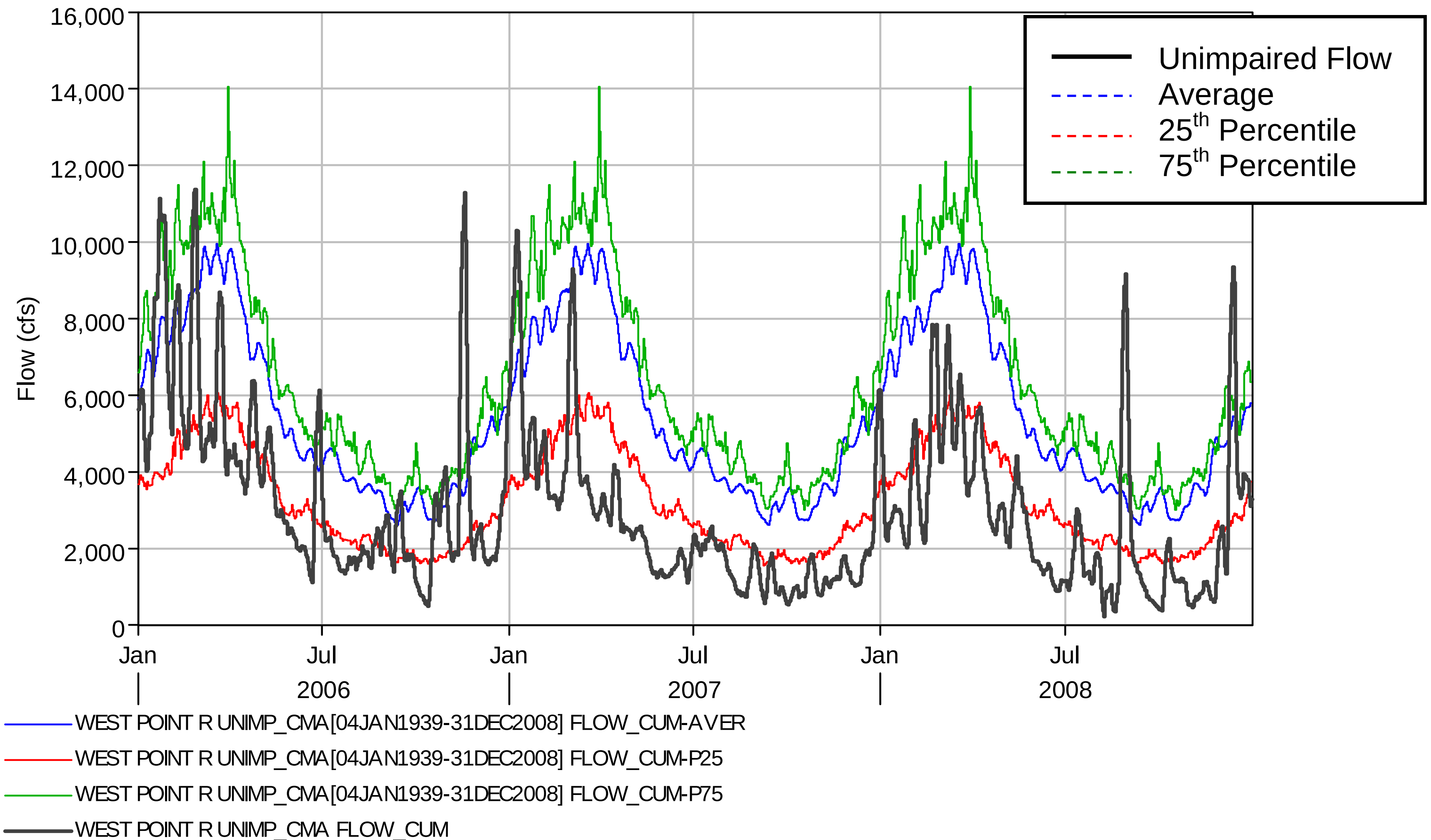


Figure C-29. West Point Unimpaired Inflow – 2007 Drought; 75th Percentile, Average and 25th Percentile Flow

1.5 WALTER F. GEORGE DAM (LAKE EUFAULA)

Walter F. George Lock and Dam is located on the Chattahoochee River at mile 75, approximately one mile north of Fort Gaines, Georgia and approximately 1.6 miles upstream from the Georgia State Highway 37 bridge. The dam crosses the Alabama-Georgia state line with the earth dike on the west bank entirely in Henry County, Alabama. The earth dike on the east is entirely in Clay County, Georgia. The project was completed in June 1963.

Walter F. George Dam is a multiple-purpose project with major project purposes including, hydroelectric power, navigation, recreation, fish and wildlife development and water quality. The project was not designed for flood control. An aerial photo of the dam is shown in Figure C-30.

Figure C-30. Walter F. George Dam

1.5.1 Drainage Area

The drainage area above Walter F. George Lock and Dam is 7,460 square miles. In the drainage area above Walter F. George Lock and Dam there are nine power developments and two multiple-purpose dams. Seven of the power projects are owned and operated by the Georgia Power Company. They are: Morgan Falls, Langdale, Riverview, Bartletts Ferry, Goat Rock, Oliver, and North Highlands. The City Mills Dam and Eagle and Phenix Mills Dam are independently owned and operated. These are very low head projects which have no effect on river hydraulics. Buford and West Point Dams are federal projects operated by the Corps of Engineers and are multiple-purpose dams that provide flood protection, production of hydroelectric power, water supply, recreation, instream flow, and increased flows for navigation during low-flow seasons. The drainage area and federal and Georgia Power Company dams are shown on the following Figure C-31.

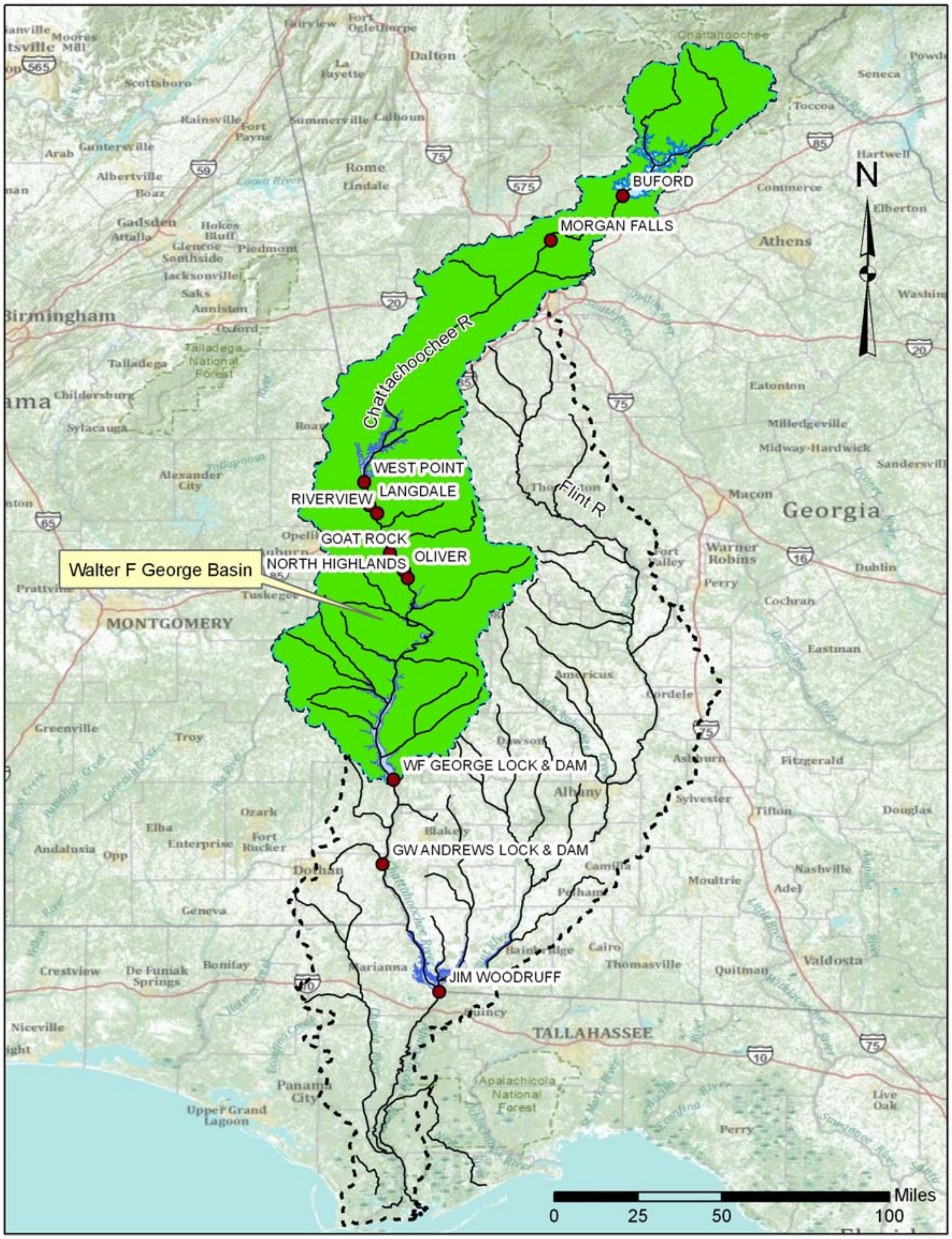


Figure C-31. Walter F. George Basin Map

For the single reservoir yield analysis in this report, only the area below West Point was used for local inflow to Walter F. George. This drainage area is the difference in the West Point and Walter F. George drainage areas and is equal to 4,020 square miles. This Walter F. George Basin below West Point area is shown in the following Figure C-32.

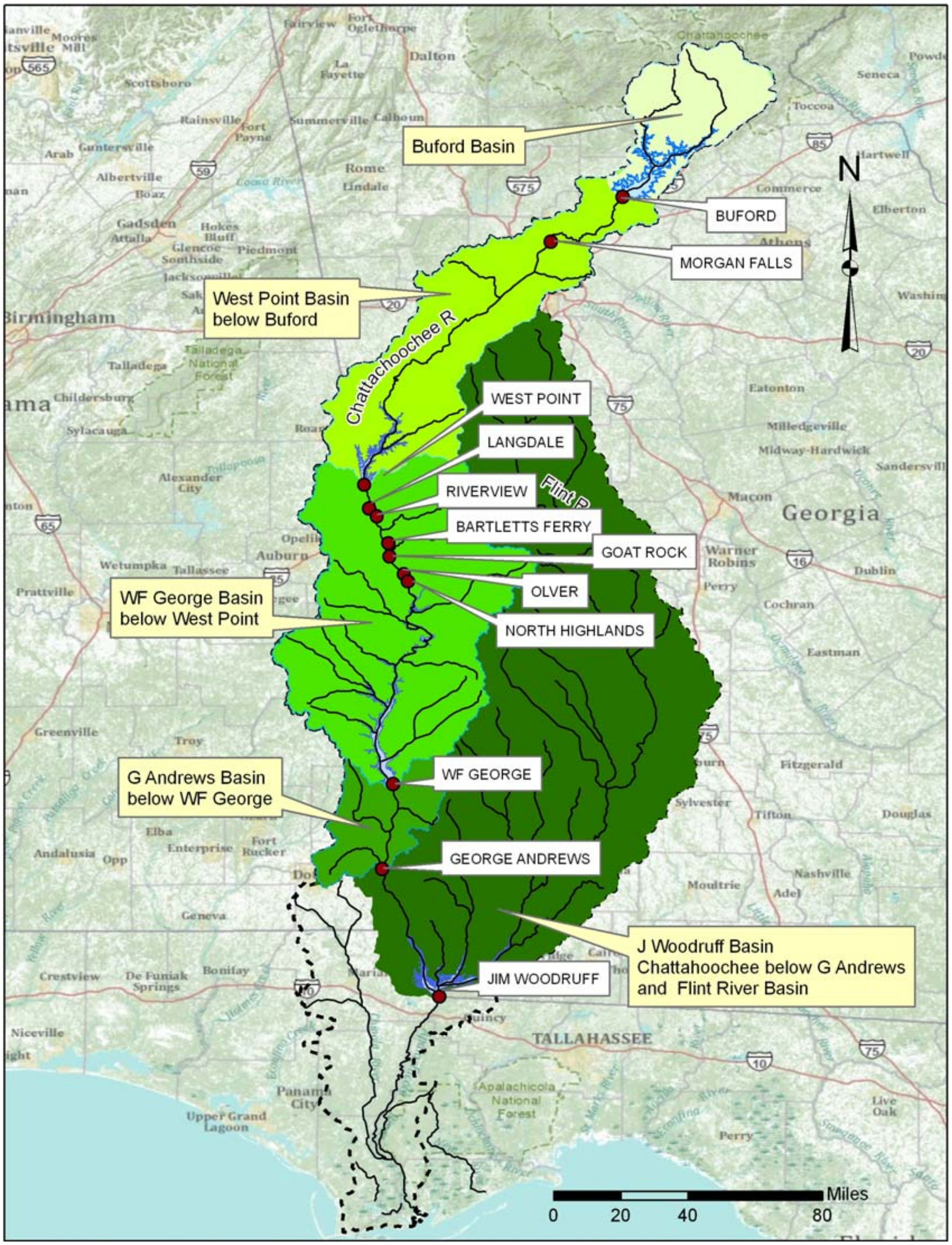


Figure C-32. Incremental Drainage Basin Map for Federal Projects on the ACF

1.5.2 General Features

The dam consists of a powerhouse, a gated spillway, a lock in and adjacent to the original river channel, and earth dikes extending to high ground on both banks. The lock is 82 by 450 feet with a maximum lift of 88 feet. The project has a 130,000 kW power plant with appurtenances, and a reservoir extending up the Chattahoochee River 85 miles to Columbus, Georgia and Phenix City, Alabama. The reservoir provides a nine-foot minimum depth for navigation from the dam to Columbus and Phenix City. The principal features of the structure are, from left to right bank, an earth dike, the navigation lock, the concrete gated spillway, the powerhouse with intake section constituting part of the dam, and an earth dike.

1.5.2.1 Dam

Overall length of the structure including the lock and powerhouse sections is 13,585 feet, or 2.6 miles.

1.5.2.2 Reservoir

The reservoir at maximum summer operating level (conservation pool) of elevation 190, covers an area of 45,180 acres and has a total storage of 934,400 acre-feet. The pool extends up the Chattahoochee River 85 miles to Columbus, Georgia. At the minimum operating level (conservation pool), elevation 184, the reservoir covers an area of 36,375 acres and has a total storage of 690,000 acre-feet. Area and capacity curves are shown on Figure C-33 and in Table C-7.

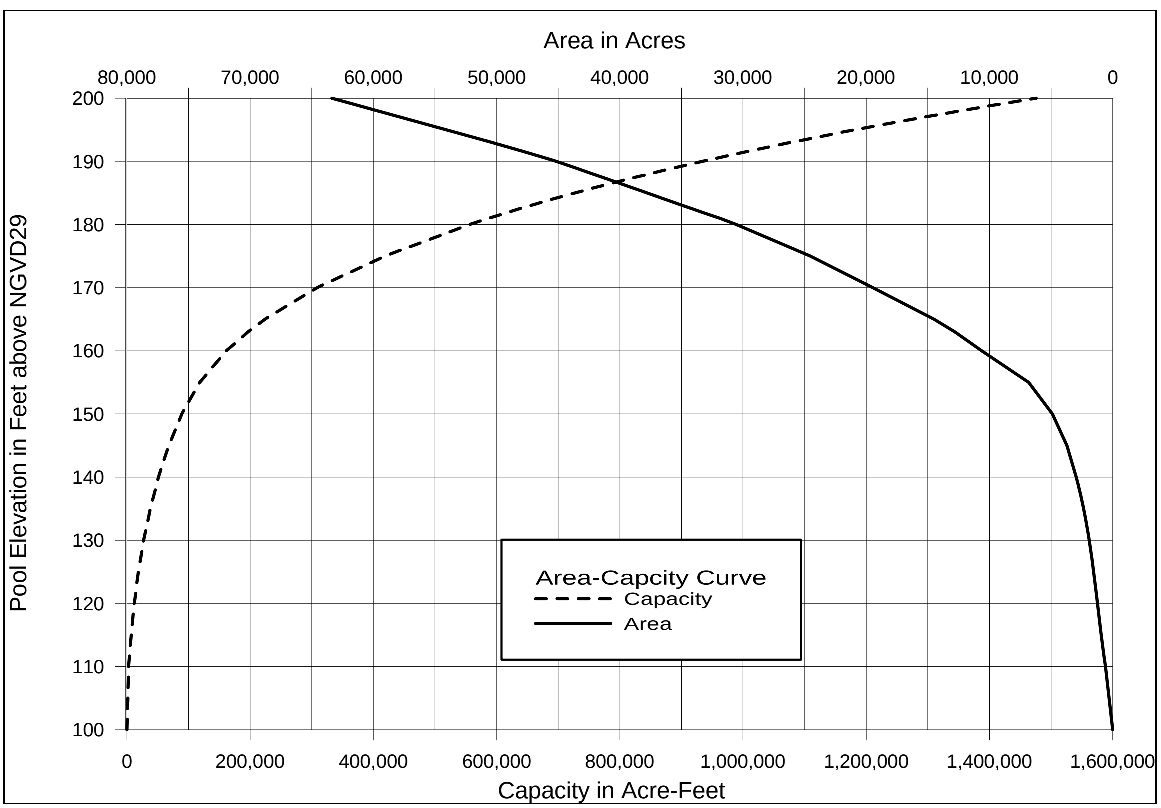


Figure C-33. Walter F. George Area – Capacity Curves

Table C-7. Walter F. George Reservoir Area and Capacity

Pool Elev (ft NGVD 29	Total Area (ac)	Total Storage (ac-ft)
100	8	10
105	248	550
110	587	2,610
115	902	6,340
120	1,248	11,680
125	1,550	18,670
130	1,894	27,240
135	2,375	37,920
140	2,966	51,210
145	3,720	67,830
150	4,895	89,100
155	6,815	118,140
160	10,624	161,500
*163	12,815	196,700
165	14,501	224,000
170	19,457	308,700
175	24,556	419,000
180	30,577	556,300
181	31,897	587,600
182	33,396	620,200
183	34,880	654,400
184	36,375	690,000
185	37,784	727,100
186	39,210	765,600
187	40,735	805,500
**188	42,210	847,100
189	43,665	890,000
***190	45,181	934,400
191	46,850	980,500
192	48,615	1,028,100
193	50,356	1,077,600
194	52,250	1,129,000
195	54,045	1,182,100
196	55,975	1,237,100
197	57,800	1,294,000
198	59,650	1,352,700
199	61,528	1,413,300
200	63,375	1,475,800

* Crest of gated spillway
** Top of power pool - December through April
*** Top of power pool - June through September

1.5.3 Top of Conservation Pool

The top of conservation pool varies during the year from elevation 188 to 190 feet. Whenever surplus water is available the criteria is to hold the pool at elevation 190 from 1 June through 31 October, then decrease to 188 feet by 1 December, then hold 188 feet unti1 1 May, and then increase to 190 feet by 1 June, as shown in Figure C-34.

1.5.4 Regulation Plan

The Walter F. George pool is regulated between the minimum pool elevation 184 and 190. The pool may rise above elevation 190 for short periods of time during high flow periods. A major operating constraint is the structural limitation that the difference between the headwater and tailwater must not exceed 88 feet at any time. In addition to reservoir constraints, downstream water needs will, at times, require outflow from Walter F. George to be fairly evenly distributed throughout each week.

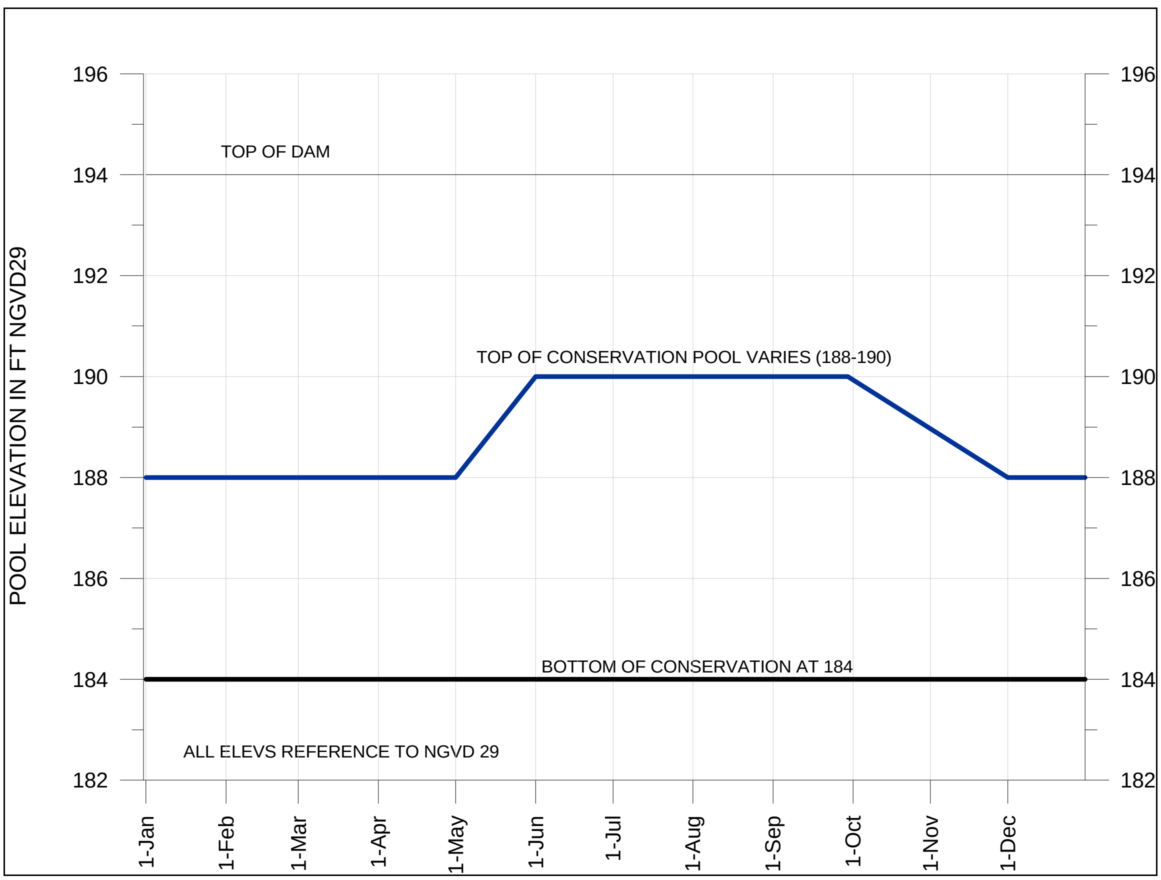


Figure C-34. Top and Bottom of Walter F. George Conservation Pool

The storage for the yield analysis will be based on the storage in the conservation pool from elevation 184 to 188 - 190 (depending on the time of year).

1.5.5 Surface Water Inflows

Observed daily inflow, outflow (discharge), and pool elevation data for the period of record starting in January 1964, just after the pool filled, through the present (Oct 2009) are available. The data are presented in the following Figure C-35.

1.5.6 Unimpaired Flow

The existing unimpaired flow data set was updated through 2008 for use in the yield analysis. The daily data was smoothed using 3-, 5-, or 7-day averaging to eliminate small negative values. Although this averaging affects the peak values, the volume is the same and the yield computations were done on the smoothed data. A plot of this smoothed unimpaired daily flow averaged over each year for the period of record 1939 – 2008 is shown in Figure C-36. Daily flows for critical drought periods are plotted in more detail in Figures C-37 – C-41.

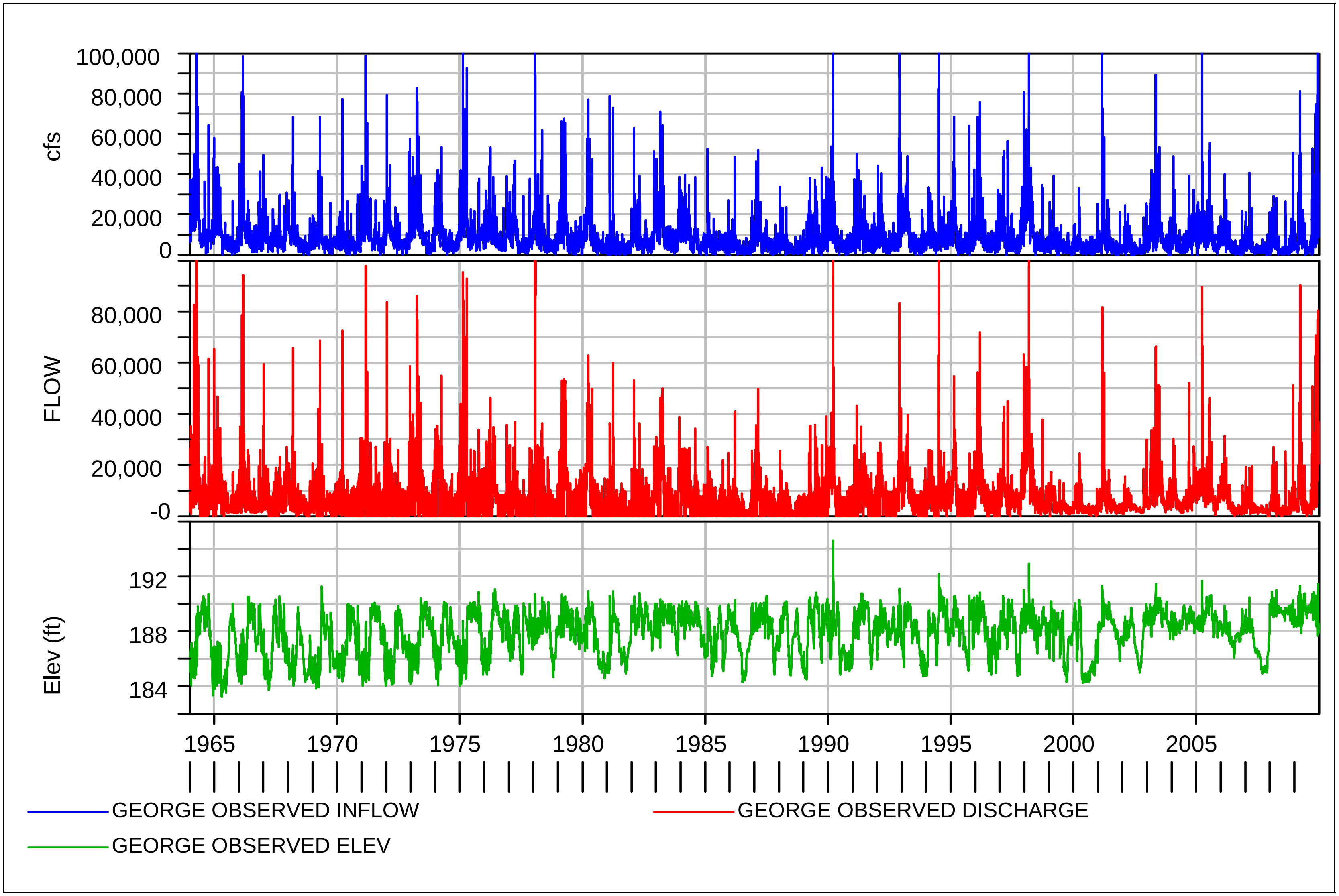


Figure C-35. Walter F. George Inflow-Outflow-Pool Elevation (Jan 1964-Dec 2009)

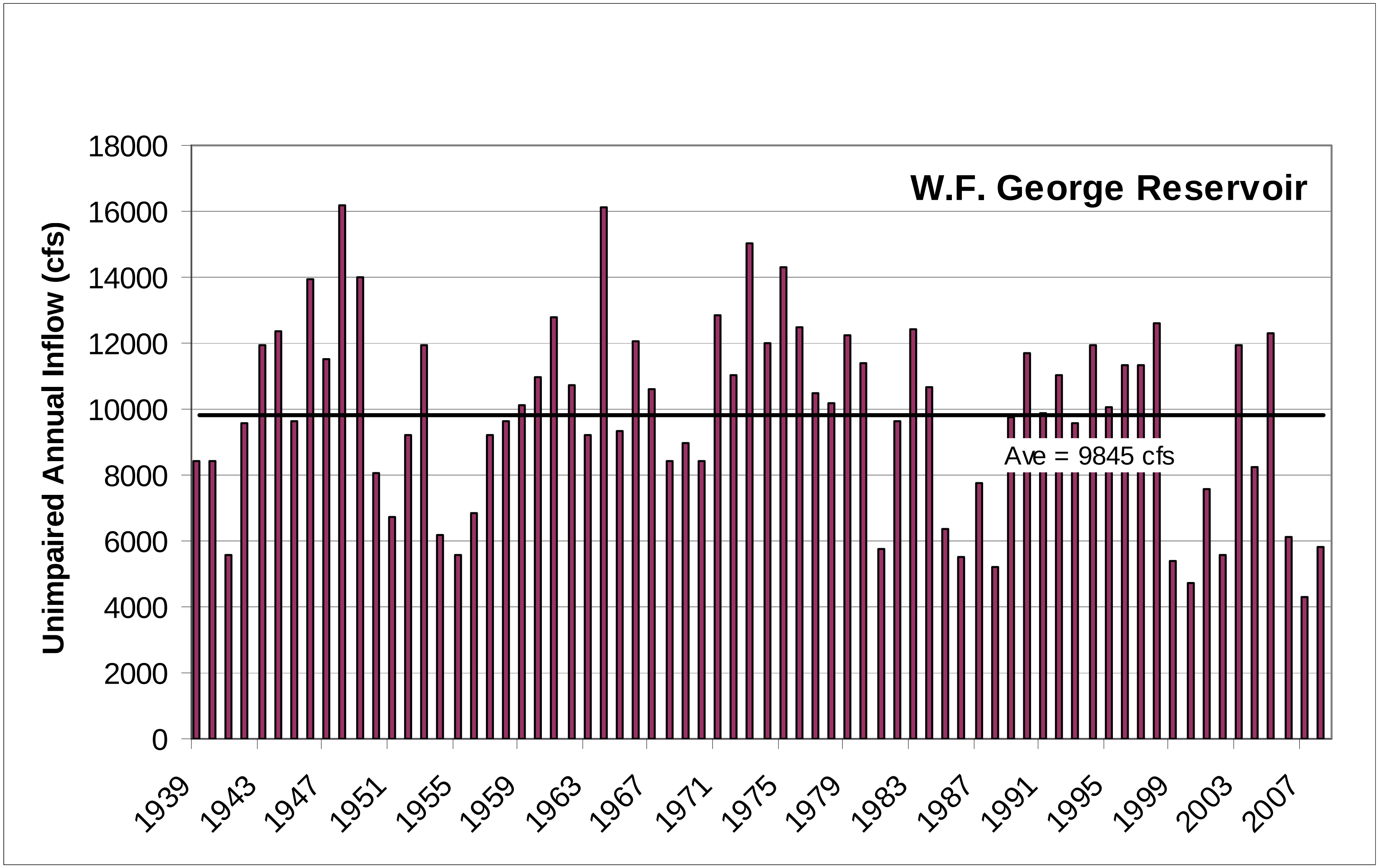


Figure C-36. Walter F. George Unimpaired Annual Inflow Jan 1939 to Dec 2008

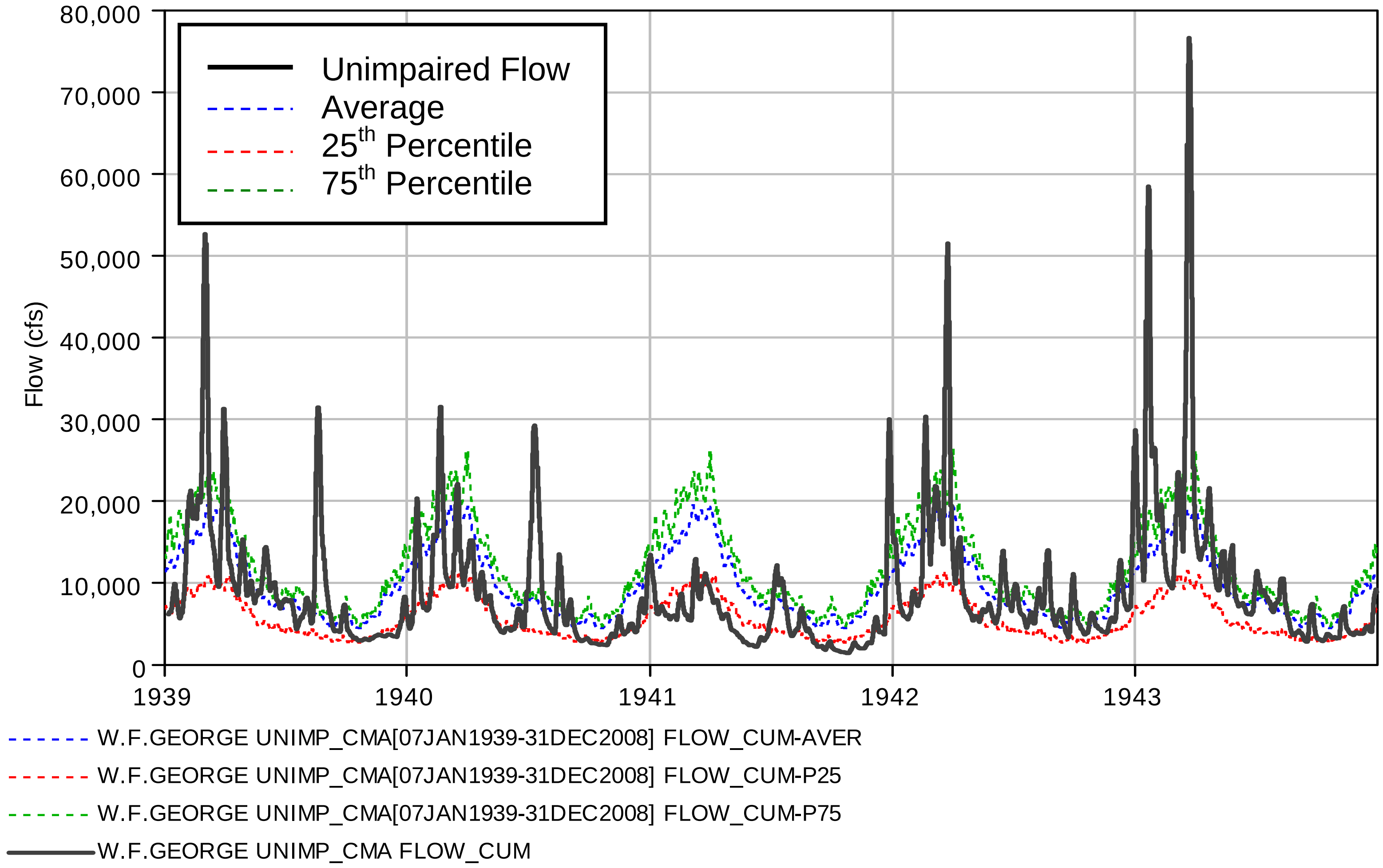


Figure C-37. Walter F. George Unimpaired Inflow – 1940's Drought; 75th Percentile, Average and 25th Percentile Flow

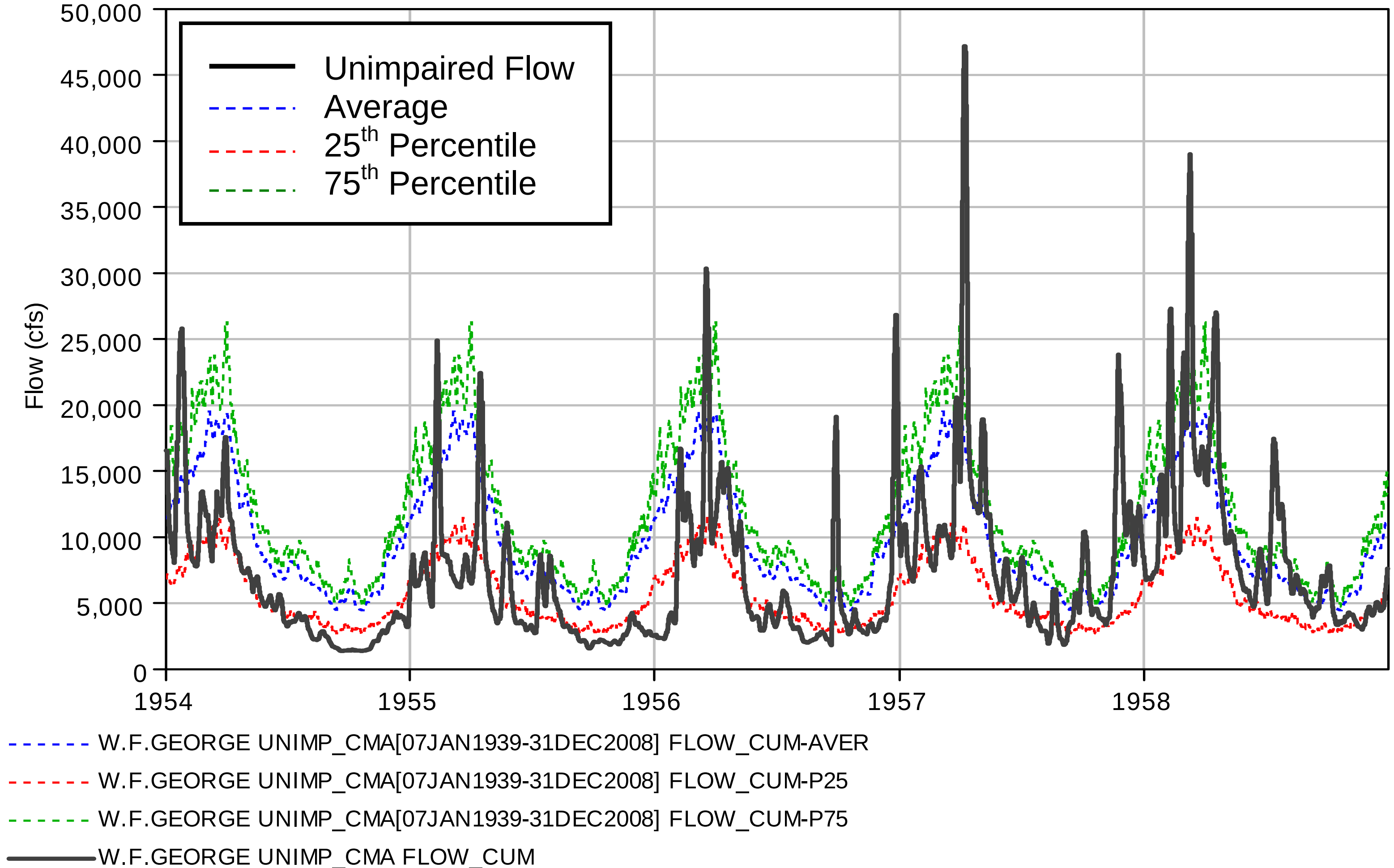


Figure C-38. Walter F. George Unimpaired Inflow – 1950's Drought; 75th Percentile, Average and 25th Percentile Flow

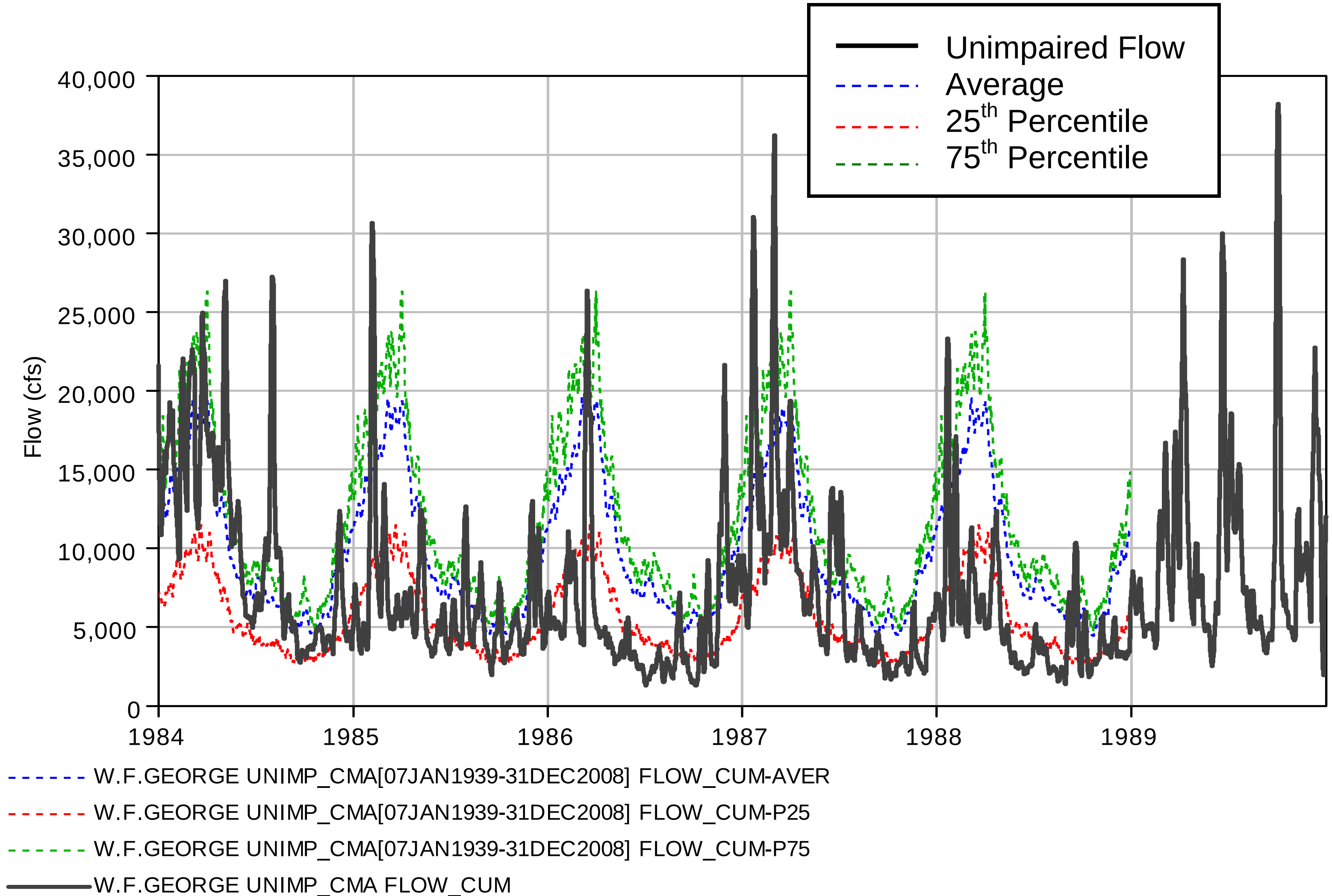


Figure C-39. Walter F. George Unimpaired Inflow – 1980's Drought; 75th Percentile, Average and 25th Percentile Flow

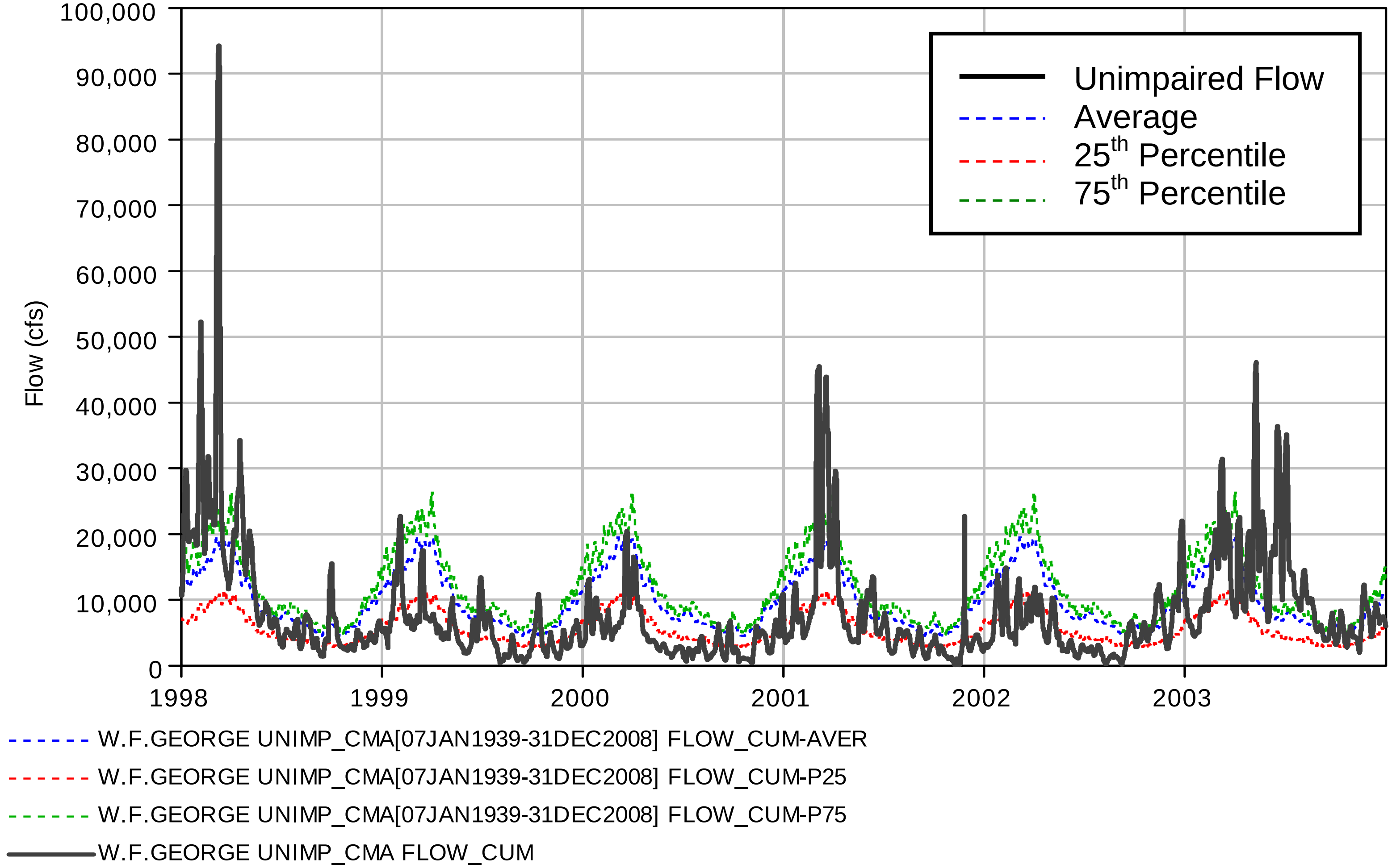


Figure C-40. Walter F. George Unimpaired Inflow – 2000 Drought; 75th Percentile, Average and 25th Percentile Flow

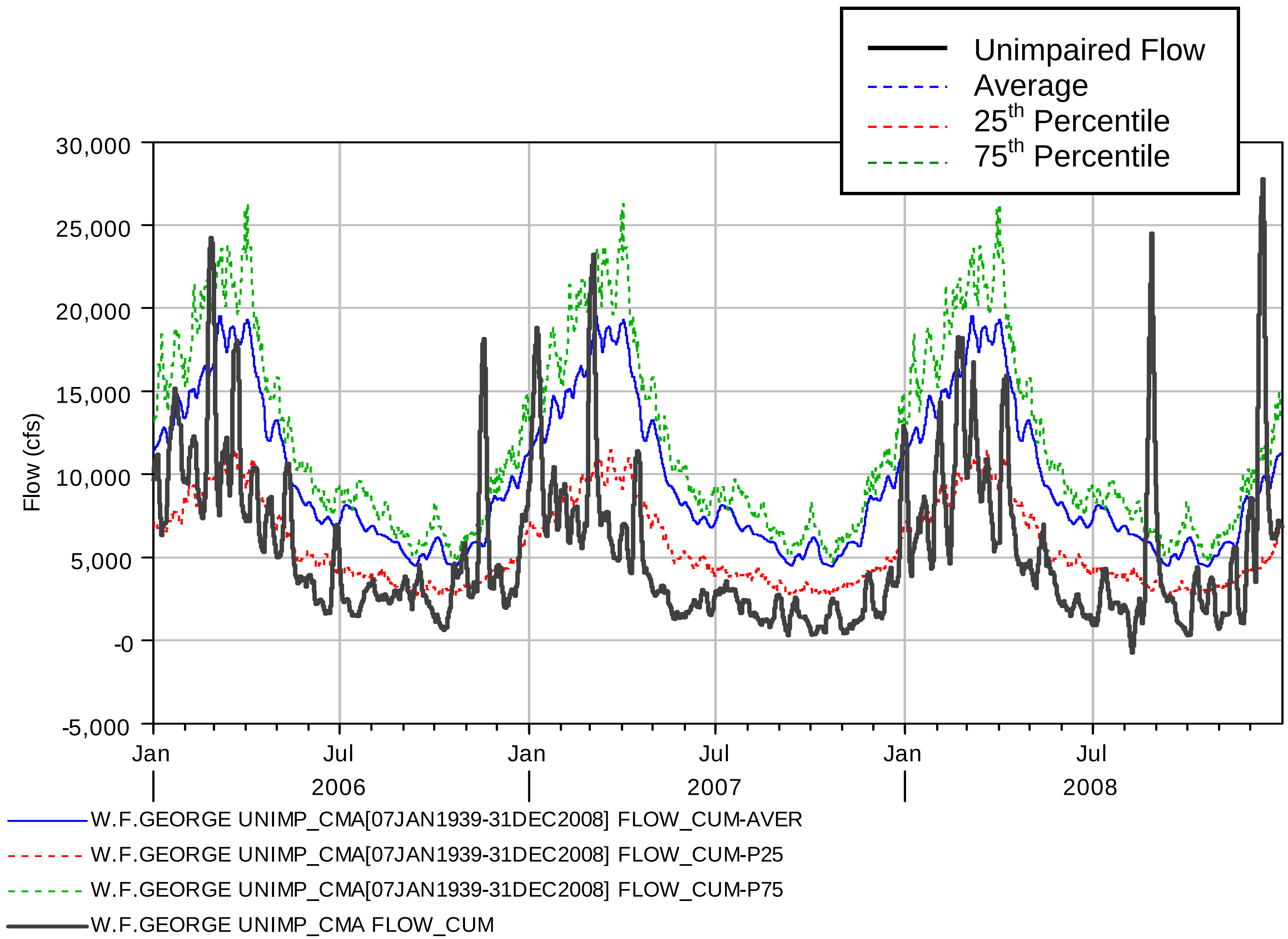


Figure C-41. Walter F. George Unimpaired Inflow – 2007 Drought; 75th Percentile, Average and 25th Percentile Flow

1.6 ResSim MODELING

The ResSim model for the ACF Basin is shown below in Figure C-42.

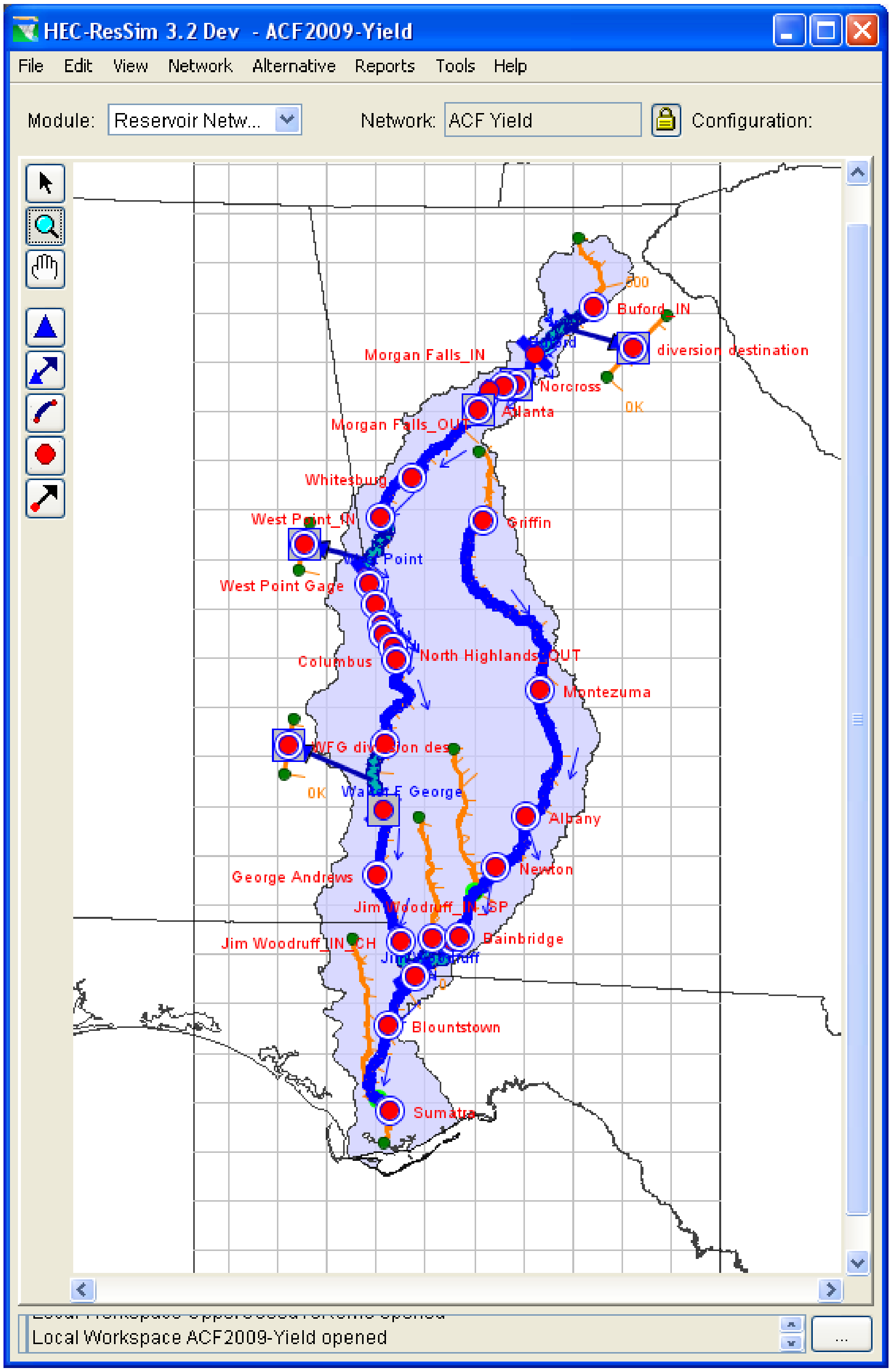


Figure C-42. ACF ResSim Model Schematic

ResSim version 3.2 Dev, November 2009 was utilized using the ResSim Watershed "ACF2009-Yield" and the network "ACF Yield". The ACF ResSim model includes four reservoirs, 19 non-reservoir locations and three diversion destinations. The fourth reservoir, Jim Woodruff, is run-of-river and not included in the yield analysis. Physical characteristics of each reservoir incorporated into the model using the latest published reservoir operation manual. Yield computations are dependent on the conservation storage and hydrology. The regulation plan section for each reservoir above describes the conservation storage. The ResSim operation set only includes the diversion yield rules and the downstream flood control rules. Reservoir guidelines for determining releases are defined using the operation set. Method C (System Yield) also includes tandem rules in the operation set for the system yield analysis from Walter F. George.

Simulations were created for each of the five indentified drought periods. The beginning and end period was selected to capture the drawdown and refill of all projects. Buford, having the greatest amount of storage and smallest drainage area, determined the duration of the simulation period. Each yield method (A, B and C) includes one simulation for each of five drought periods. A total of 40 simulations were run. This included 15 simulations under Method A, 15 simulations under Method B and 10 simulations under Method C (5 without diversion and 5 with diversions). Each simulation determined the yield for a particular reservoir and drought period. Simulation naming uses the drought label from Table C-8. For example Method A simulation name for the 1980 drought is “1980 wo Div”, Method B is “1980 w Div” and Method C is “1980 System Yield”.

Table C-8. Drought Periods

Drought Periods	Label
1940-1941	1940
1954-1958	1950
1984-1989	1980
1999-2003	2000
2006-2008	2007

Method A does not include the net river withdrawals and Method B does include the net river withdrawals in the yield determination. Each storage reservoir has a different operating set for the Method A and B alternatives, YieldNoDiv and YieldWDiv respectively.

For Methods A and B the upstream reservoir is the primary reservoir and the yield is met first before proceeding downstream. Projects are full at the beginning of the drought period simulation. None of the yield is returned to the system. This assumes that the yield is diverted from the system and is consumptively used. For instance, on the ACF, this means that the yield computed at Buford was not counted as inflow to West Point, downstream. This methodology determines the conservative individual project yield. As mentioned in the “Methods Employed in Critical Yield Analysis” section, for the Method C simulations the reservoirs are operated together to compute a system yield at Walter F. George.

A diversion outlet is added to each of the three reservoirs (Buford, West Point and Walter F. George). Water from the reservoir is diverted through the outlet to a dummy location not connected to the system. None of the diverted water is returned to the system. The yield represents the maximum continuous flow of water through this outlet during one of the five drought periods using all available conservation storage.

1.7 RESULTS

Table C-9 below presents the results from each of the simulations for Method A, and the pool elevations and yield flow values are presented graphically in Figures C-43 – C-45. The flow represents the total release from the reservoir. When the flow hydrograph rises above the constant yield value, flows are released through the reservoir.

Table C-9. ACF Project Yield Analysis without River Diversions, Method A

	Drought Period					
Project	**1940**	**1950**	**1980**	**2000**	**2007**	**Critical Yield**
Lanier	1,776	1,802	1,465	1,518	1,631	1,465
West Point	1,736	1,359	1,746	1,538	1,167	1,167
Walter F. George	1,903	1,589	1,424	785	572	572

Method A critical yield for Buford is 1,465 cfs and the critical period is the 1980's drought period
Method A critical yield for West Point is 1,167 cfs and the critical period is the 2007 drought period
Method A critical yield for Walter F. George is 572 cfs and the critical period is the 2007 drought period

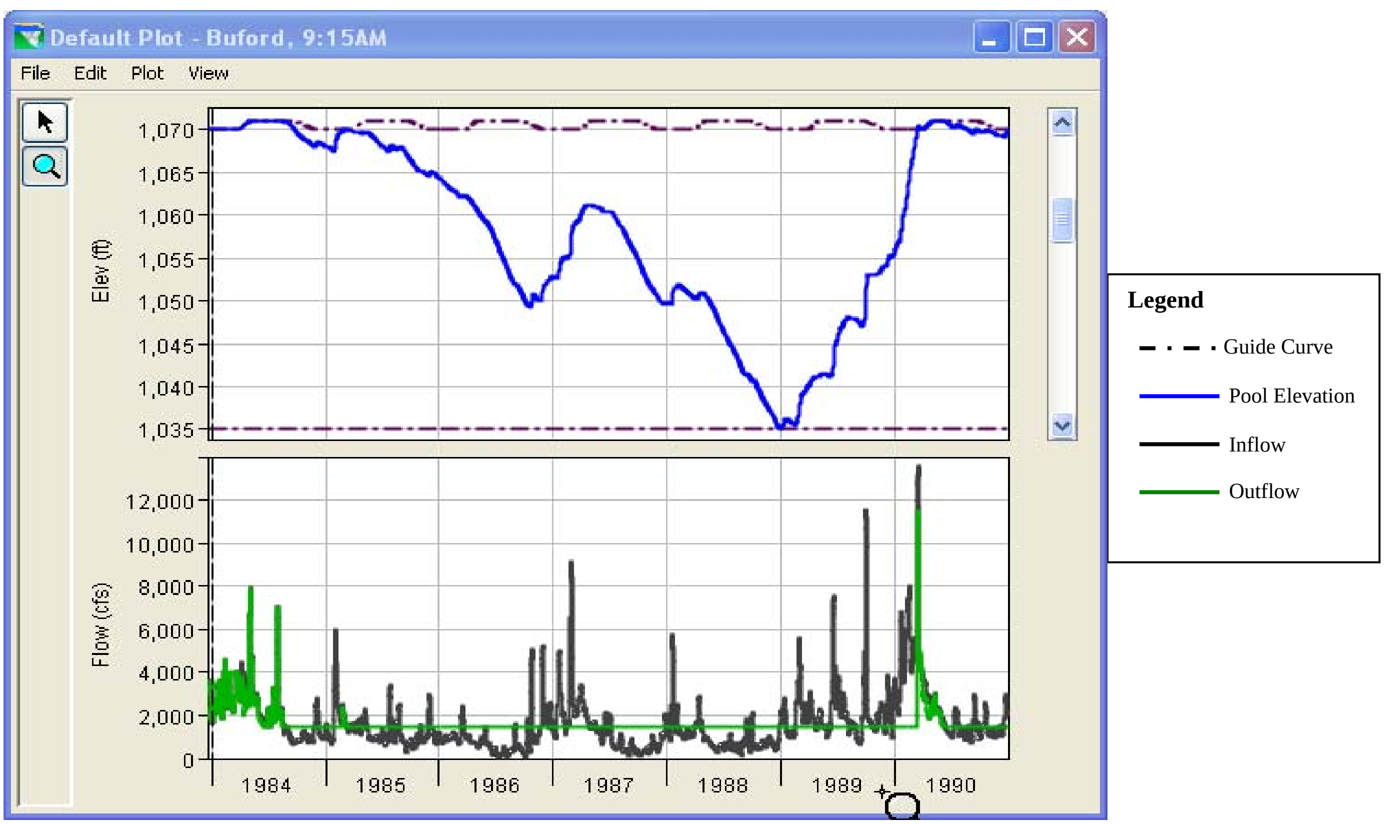


Figure C-43. Buford Critical Yield Result, Method A (No Diversions)

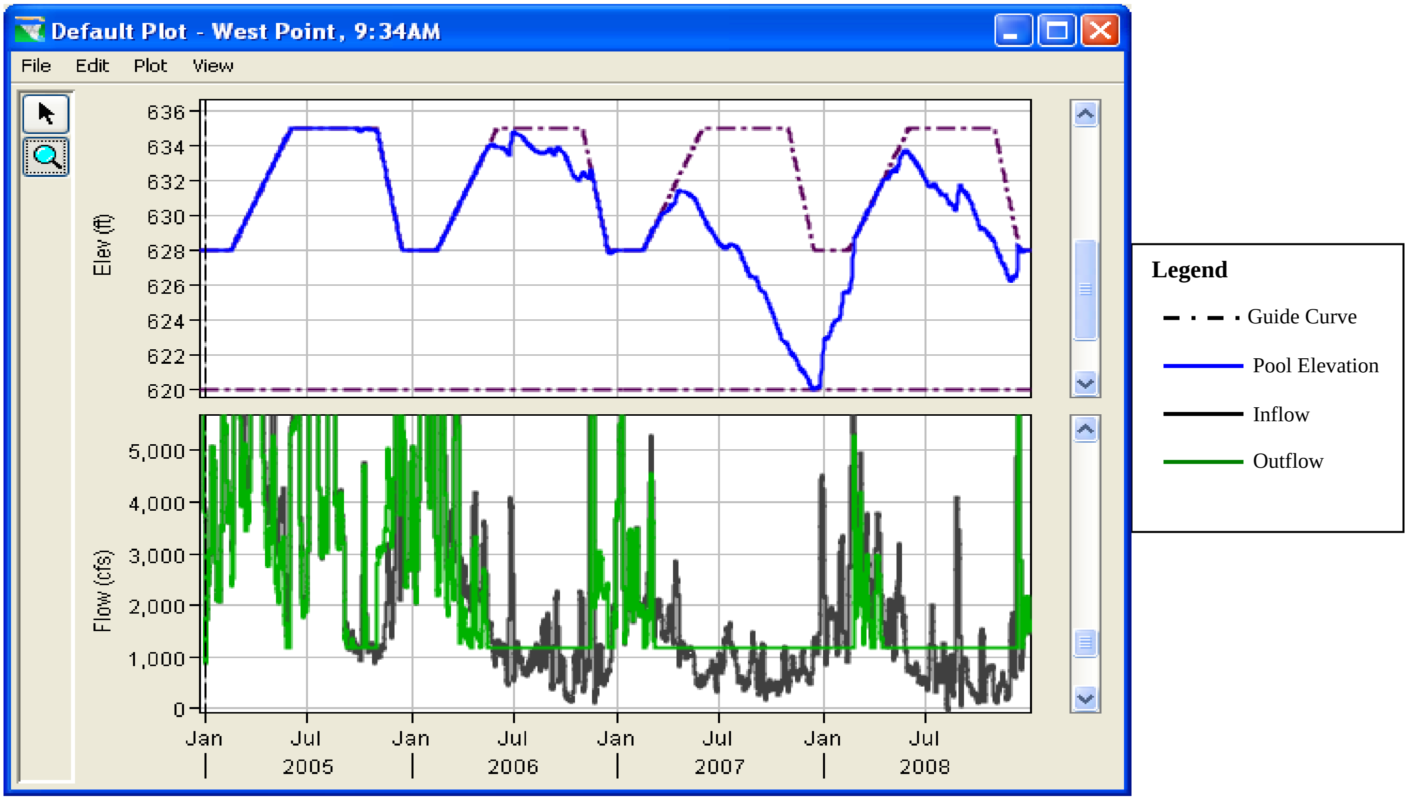


Figure C-44. West Point Critical Yield Result, Method A (No Diversions)

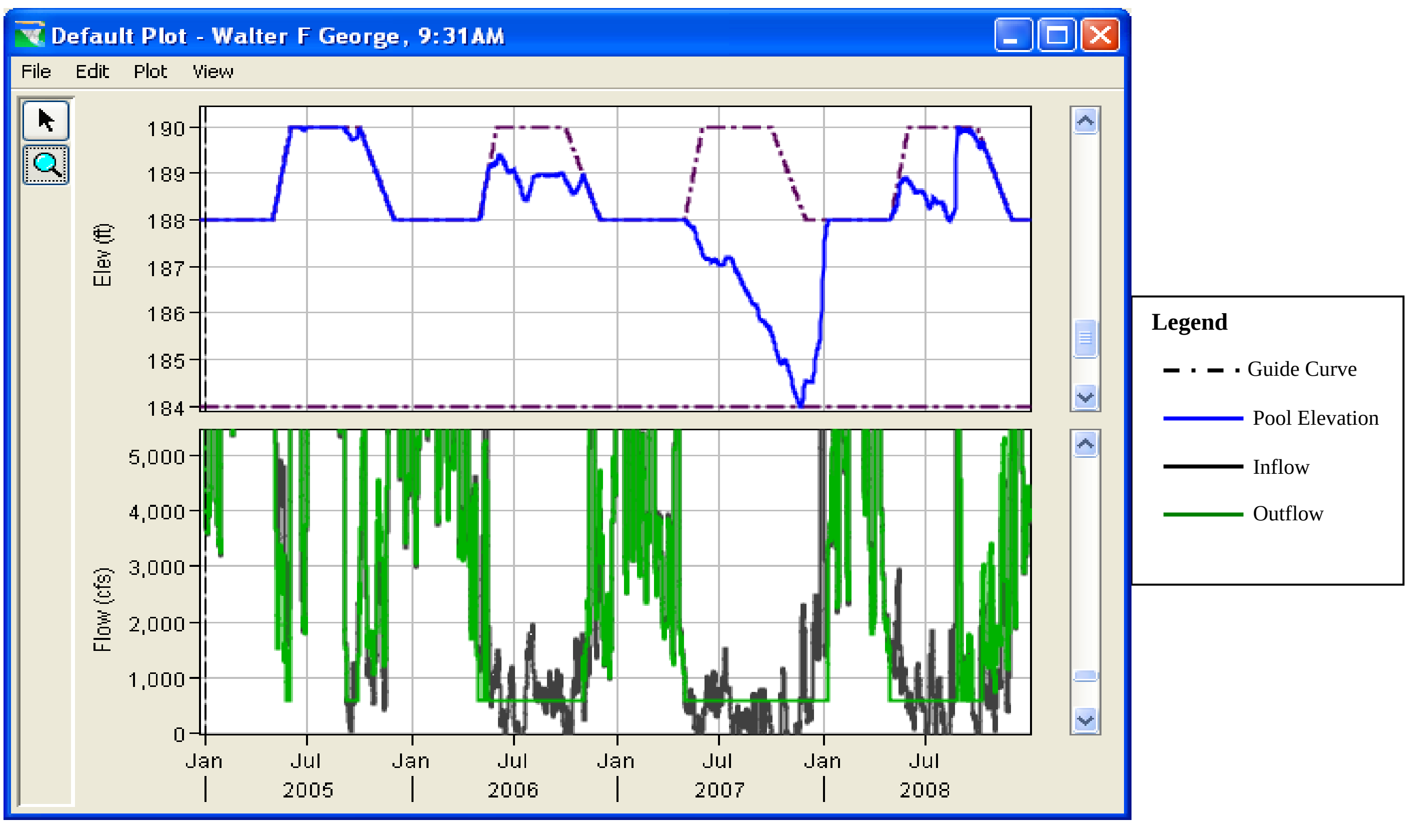


Figure C-45. Walter F. George Critical Yield Result, Method A (No Diversions)

The drawdown period for each drought period is listed in Table C-10.

Table C-10. ACF Yield Drawdown Period

Drought Label	Buford	West Point	Walter F. George
1940's	Jun 1939 - Feb 1946	Apr 1941 - Jan 1942	May 1941 - Dec 1941
1950's	Apr 1954 - Apr 1962	May 1954 - Feb 1955	May 1954 - Feb 1955
1980's	Mar 1985 - Mar 1990	Mar 1986 - Dec 1986	May 1986 - Nov 1986
2000	Jun 1998 - Sep 2004	Apr 2000 - Feb 2001	Apr 2000 - Dec 2000
2007	Mar 2006 – Oct 2009*	Mar 2007 - Feb 2008	Apr 2007 - Jan 2008

* Estimated based on actual refill

Table C-11 below captures the impact of net year 2007 river withdrawals above the lakes from the Chattahoochee River and tributaries. Graphical results of the pool elevation and yield are presented in Figures C-46, C-47, and C-48. As expected the yield values are reduced because the inflow into the reservoirs is reduced by the river withdrawal amounts. The critical yield reduction for Buford, West Point and Walter F. George is 0.4%, 23.7% and 17.9% respectfully.

Lake Lanier does not refill during the simulation period because unimpaired flow data through 2009 was not available at the time of analysis. The Corps will run the analysis through 2009 when flow data becomes available.

Table C-11. ACF Projects Yield Analysis with River Diversions, Method B

	Drought Period					
Project	**1940**	**1950**	**1980**	**2000**	**2007**	**Critical Yield**
Lanier	1,772	1,798	1,460	1,513	1,628	1,460
West Point	1,449	1,077	1,454	1,230	891	891
Walter F. George	1,763	1,496	1,317	682	470	470

Method B critical yield for Buford is 1,460 cfs and the critical period is the 1980’s drought period
Method B l yield for West Point is 891 cfs and the critical period is the 2007 drought period
Method B yield for Walter F. George is 470 cfs and the critical period is the 2007 drought period

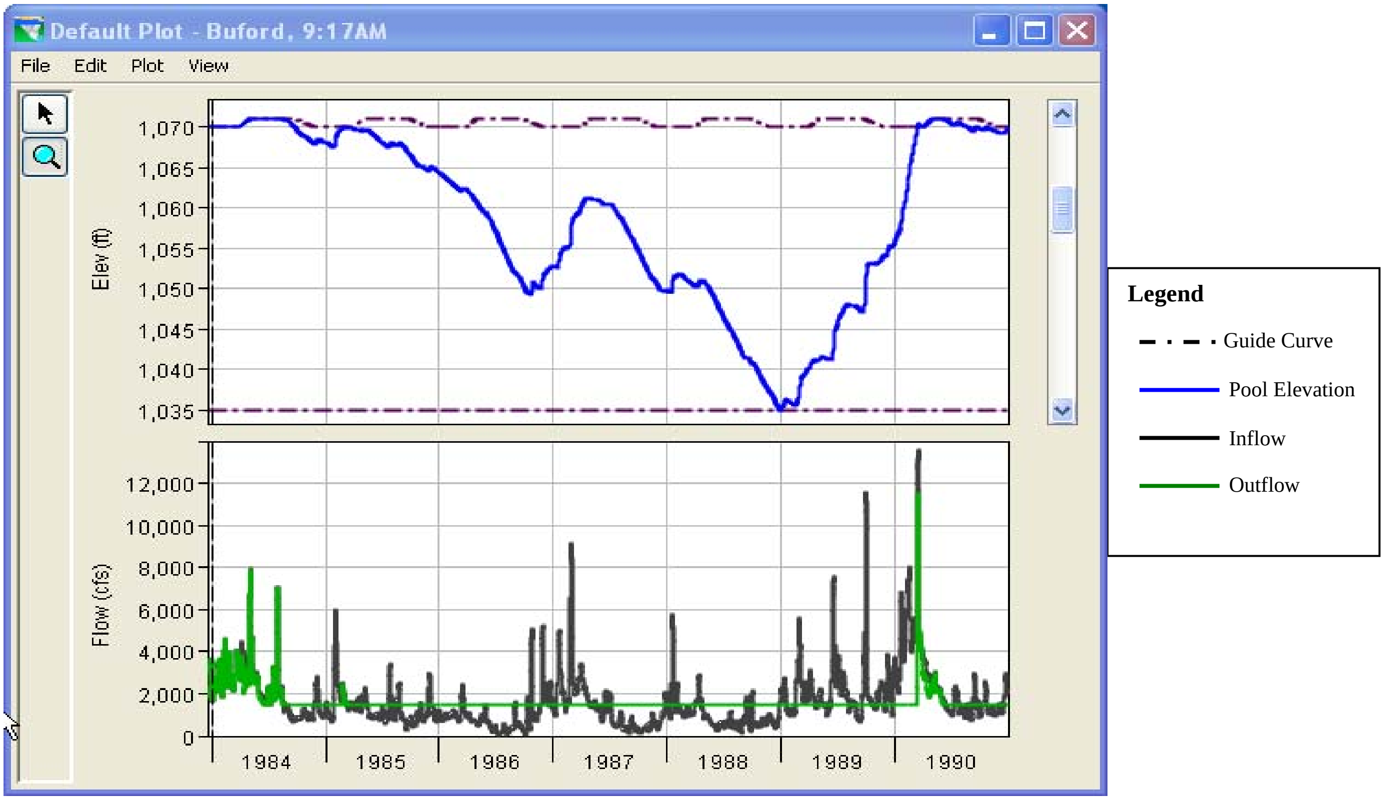


Figure C-46. Buford Critical Yield Result, Method B (With Diversions)

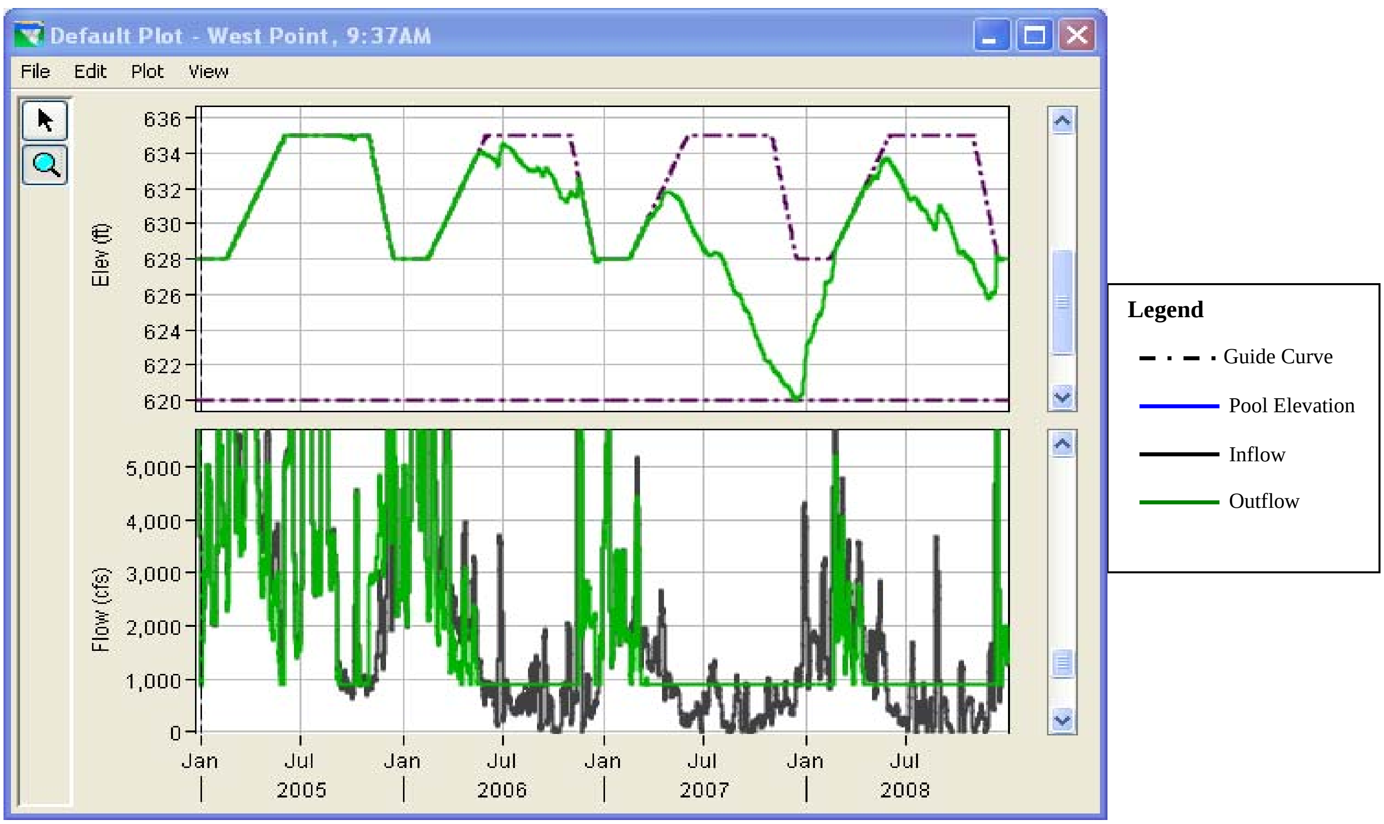


Figure C-47. West Point Critical Yield Result, Method B (With Diversions)

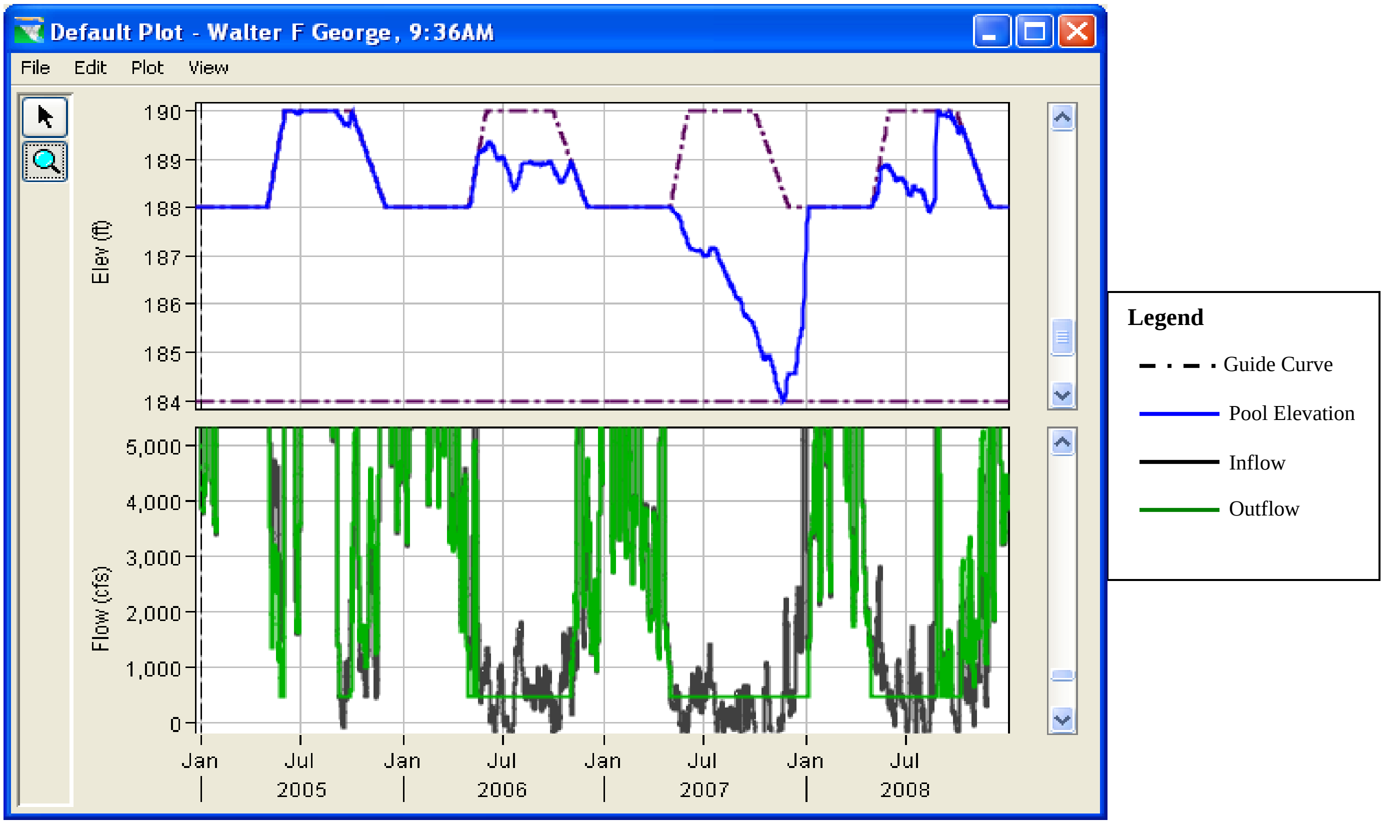


Figure C-48. Walter F. George Critical Yield Result, Method B (With Diversions)

Table C-12 presents the results from ACF system analysis, Method C. The table shows that, using the 2007 river diversions, the system yield is reduced 16%, from 4370 cfs to 3683 cfs. Graphical results are presented in Figure C-49 and Figure C-50.

Table C-12. ACF System Yield Analysis, Method C

	Drought Period					
Project	**1940**	**1950**	**1980**	**2000**	**2007**	**Critical Yield**
System with Diversions	5,471	4,616	4,671	4,019	3,683	**3,683**
System without Diversions	6,124	5,231	5,338	4,738	4,370	**4,370**

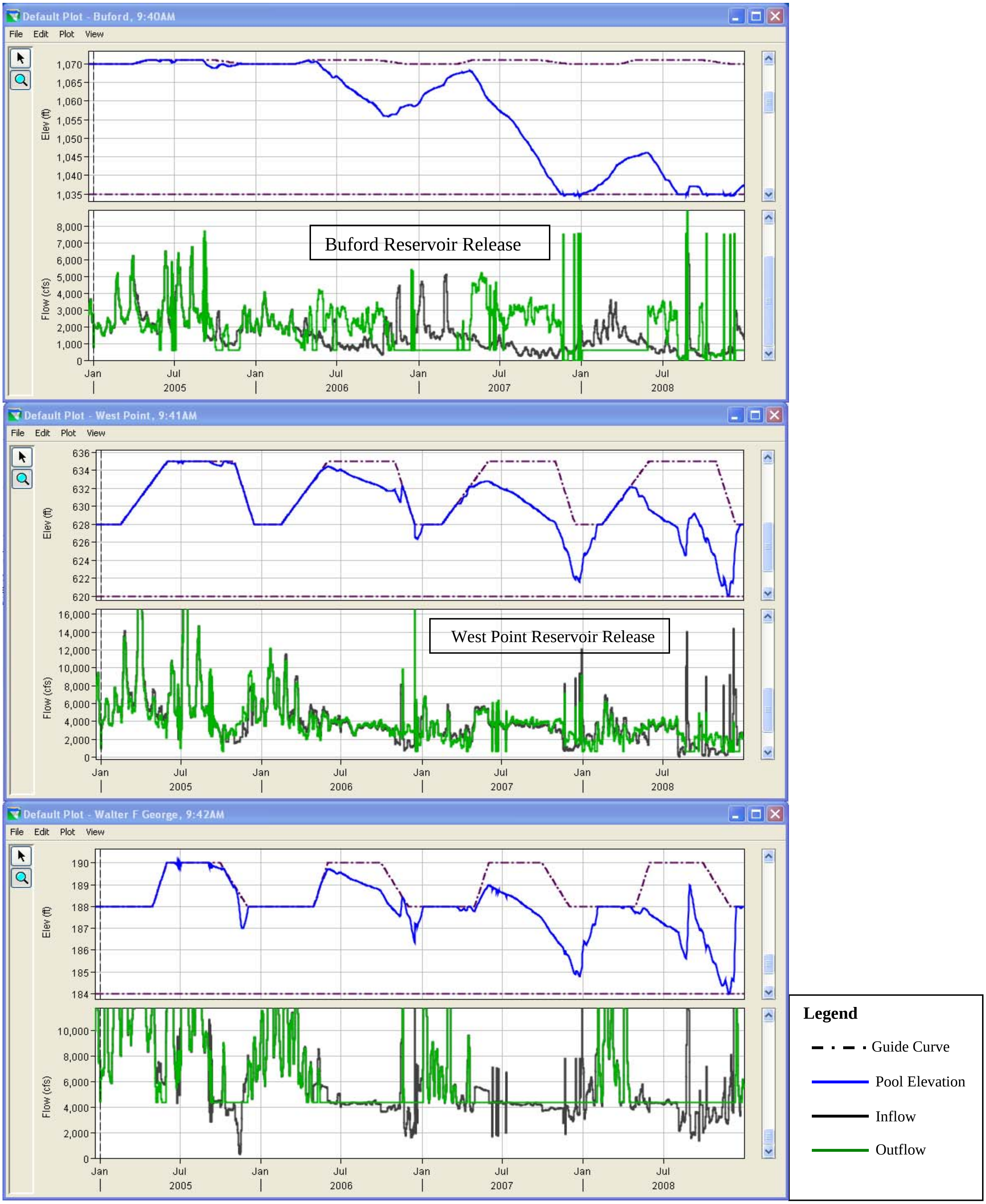


Figure C-49. System Critical Yield Result, Method C (No Diversions)

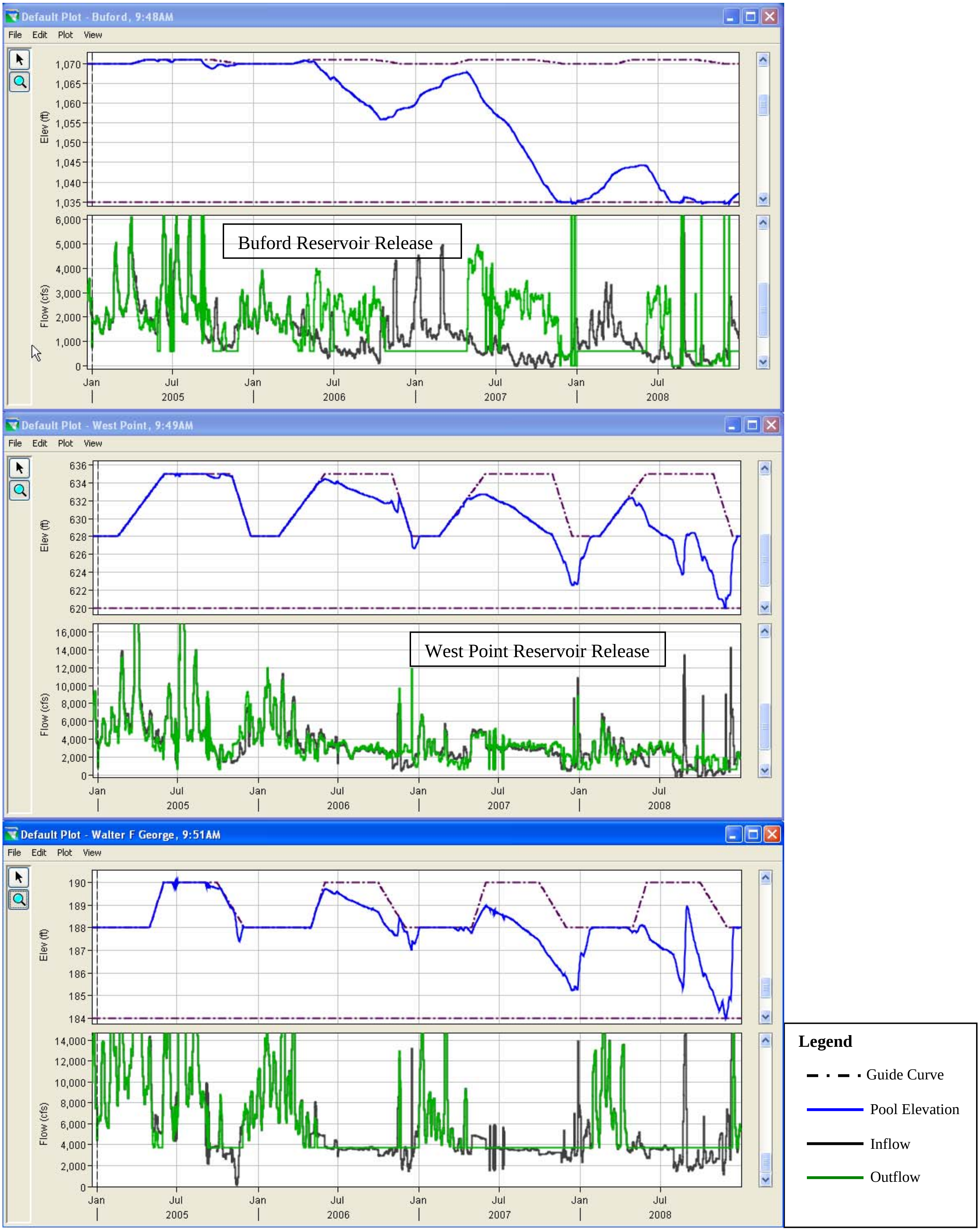


Figure C-50. System Critical Yield Result, Method C (With Diversions)

Appendix D

Prior Reports and References

1 PRIOR REPORTS AND REFERENCES

The Corps has calculated and published critical yield for the ACT and ACF federal projects many times throughout project lifespans. Yield values have been updated as more observed hydrologic data has become available. This information can be used to determine the severity of droughts throughout the period of record.

Reports printed prior to 1980 may employ the term prime flow. Prime flow, when used in these reports, is synonymous with critical yield or firm yield.

Table D-1. Prior Reports

Project	Critical Yield (cfs)	Critical Period	Source	Conservation Storage Pool (Elevation-Feet)	Conservation Storage (ac-ft)	Winter/ Summer Pool
Buford	1,600	Sep 1939- Nov 1942	1949, Buford Defined Report, Volume1	1065-1030	Unavailable	Unavailable
Buford	1,634	Unavailable	1947 House Document 300	1065-1025	1,033,000	Unavailable
Buford	1,600	Unavailable	1960, Cost Allocation Studies Report, (May 1959; revised 27 Oct 1960)	1070-1035	1,049,000	Unavailable
Buford	1,714	1939-42	1989 Lake Lanier Reregulation Dam Design Memorandum, Supplement No. 1	1070-1035	1,049,000	Unavailable
Buford	1,734 1,455*	1939-42 1980's	1989, Post Authorization Change Notification Report For The Reallocation of Storage from Hydropower to Water Supply at Lake Lanier, GA	1070-1035	1,049,000	Unavailable
Buford	1,600 1,485	1939-1942 1986-1988	1999, Letter form Mobile District to Federal Commissioner, ACT/ACF River Basins Commission	1070-1035	1,049,000	Unavailable
Buford	1,487	1985-1989	2003, Southeast Federal Power Customers Settlement Agreement	1070-1035	1,049,000	Unavailable

Table D-1 (Cont'd). Prior Reports

Project	Critical Yield (cfs)	Critical Period	Source	Conservation Storage Pool (Elevation-Feet)	Conservation Storage (ac-ft)	Winter/ Summer Pool
West Point	2,570**	1950	1962, West Point Project Authority, House Document 570, 87th Congress	635-620 (Winter) 625-620 (Summer)	284,000 (Winter) 78,000 (Summer)	635/625
W. F. George	6,750**	Unavailable	1960, Cost Allocation Studies Report (May 1959; Revised 27 Oct 1960)	190-184	Unavailable	185/190
Allatoona	1,220	1930-31	Definite Project Report for Allatoona Dam and Reservoir, 1941	848 - 788	456,000	Unavailable
Allatoona	1,160	1939-1942	1966, Cartersville, GA and 1963, Cobb County Marietta Storage Contracts	823-800 (Winter) 840-800 (Summer)	284,580 (Winter) 119,878 (Summer)	840/823
Allatoona	1,186 1,156 1,103 748	1942 1956 1981 1986	1999, Water Supply Reallocation Report	823-800 (Winter) 840-800 (Summer)	284,580 (Winter) 119,878 (Summer)	840/823
Allatoona	1159	Unavailable	Storage Contract	Unavailable	Unavailable	Unavailable
Carters	424	Unavailable	Carters Lake Water Supply Reallocation Report, June 1989	1074 - 1022	Unavailable	1072/1074
Carters	550	1939-1942	Carters Dam Design Memorandum No. 4, Hydroelectric Power Capacity, 25 April 1962	1072 - 998	Unavailable	1070/1072
Carters	510	Unavailable	1991, City of Chatsworth, Georgia Storage Contract	1072 - 1022	134,900	Unavailable

*This represents a preliminary critical yield value that was calculated before the 1980's drought ended.
**Yield based on system analysis similar to Method C.

Appendix E

Drought Description

1 DROUGHT DESCRIPTIONS

Five major, long-term (3 or more years) drought episodes have been identified during the period of record for the ACF and ACT River Basins in Alabama and Georgia. Each of these drought episodes displays differing spatial and temporal characteristics.

1.1 2006-2008

The 2006-08 drought was by far the most devastating drought 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 period of record. The drought reached peak intensity in 2007, resulting in a D-4 Exceptional Drought Intensity (the worst measured) throughout the Summer, 2007. Lakes and reservoirs dropped to the lowest levels ever recorded. Rainfall at Gainesville, Georgia (Lake Lanier) was only 20 inches for the entire year.

1.2 1998-2003

This period initiated the most recent multi-year drought "cycle". The drought reached peak severity in Summer, 2000, accompanied by all-time record high temperatures in many areas.

1.3 1984-1989

In the extreme northern portions of the ACF and ACT Basins, the 1984-89 drought was the worst drought known until that time. Precipitation from December 1985 through July 1986 was less than 40 percent of normal. Birmingham, Alabama and Chattanooga, Tennessee received only 17 inches of precipitation. The drought climaxed in July 1986, exacerbated by extremely high temperatures.

1.4 1954-1958

1954-58 was the most widespread, extreme and prolonged drought across the southern United States since the Dust Bowl of the 1930`s. The drought peaked in calendar year 1954; it was the driest of record statewide for Alabama since records began in 1895. Rainfall for 1954 was only 40 percent of normal across southeast Alabama.

1.5 1939-1943

Northwest Georgia experienced one of the driest springs of record in 1941. It was followed by drier than normal conditions across north Alabama during 1942-43.

LG-01

From: Shannon Ballard <sballard@mwwssb.com>
Sent: Wednesday, December 11, 2019 5:28 PM
To: ACT-ACR
Cc: hananricharde@aol.com; Bill Henderson; rsasser@sasserlawfirm.com; psefton@sasserlawfirm.com
Subject: [Non-DoD Source] Extension Request
Attachments: Extension Request Letter.pdf

Attn: Colonel Sebastien P. Joly,

Please see the letter attached. The original letter will be mailed to you as well.

Shannon Ballard
Executive Administrative Assistant
Montgomery Water Works & Sanitary Sewer Board
2000 Interstate Park Drive
Montgomery, AL 36109
Phone: (334) 206-1607
Fax: (334) 240-1616

WATER WORKS & SANITARY SEWER BOARD
of the City of Montgomery

P.O. Box 1631, Montgomery, Alabama 36102-1631 **(334) 206-1600**

December 11, 2019

Colonel Sebastien P. Joly
Commander and District Engineer
U.S. Army Corps of Engineers
Mobile District
Attn: PD-EI (ACT-ACR DSEIS)
Post Office Box 2288
Mobile, AL 36628-0001
ACT-ACR@usace.army.mil

Dear Colonel Joly:

The Water Works and Sanitary Sewer Board of the City of Montgomery ("MWWSSB") joins in the State of Alabama's request for extension of time through March 2, 2020, to offer comments on the Corps' Draft Feasibility Report and Supplemental Environmental Impact Statement (Draft FR/SEIS) for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to Weiss and Logan Martin Reservoir Project Water Control Manuals in the Alabama-Coosa-Tallapoosa River Basin.

A

The MWWSSB's intake and discharge points are located on the Tallapoosa and Alabama Rivers, respectively. The Alabama River originates at the confluence of the Coosa and Tallapoosa Rivers. The possible effect on these plants by a reduced flow of waters as advocated by the Corps' draft plan could result in severe and long-time consequences on the operation of these plants. Therefore, the MWWSSB needs this additional time to adequately respond.

Thank you for your consideration of this request.

Sincerely,

William R Henderson

William R. Henderson, P.E.
General Manager

/jlc

cc: Richard E. Hanan, Chairman
The Water Works and Sanitary Sewer Board of the City of Montgomery

Robert E. Sasser, Esq.
Patrick L. W. Sefton, Esq.

LG-02

From: Glen Davis <gdavis@cchrc.net>
Sent: Monday, December 23, 2019 4:21 PM
To: ACT-ACR
Subject: [Non-DoD Source] Weiss Lake Water Level

As a citizen of Cherokee County, I would greatly appreciate your consideration of raising the winter water level on Weiss Lake. This would have a great impact on the local economy and the fish and wildlife in our county. **A**

Thank you for your consideration

GLEN DAVIS
MAINTENANCE DIRECTOR
CHEROKEE CO. HEALTH & REHAB
256-927-5778 EXT. 276
CELL 256-557-0307
gdavis@cchrc.net

LG-03

From: mayor@rbcalabama.com
Sent: Thursday, January 23, 2020 10:39 AM
To: ACT-ACR
Subject: [Non-DoD Source] Allatoona Lake Water Supply
Attachments: 20200123094352758.pdf

-----Original Message-----
From: copier2_RBC@rbcalabama.com <copier2_RBC@rbcalabama.com>
Sent: Thursday, January 23, 2020 8:44 AM
To: Mayor <mayor@RBCalabama.com>
Subject: Message from "RNP002673B8A767"

This E-mail was sent from "RNP002673B8A767" (MP C3003).

Scan Date: 01.23.2020 09:43:52 (-0500)
Queries to: copier2_RBC@rbcalabama.com

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Date: 1/20/2020 **Comments Should Be Submitted by January 29, 2020**

Information About You

First Name: TERRY JOHN Last Name: CALHOUN

Title: MAYOR of RAINBOW CITY ALA.

Organization

☐ Agency (federal, state, or local) ☐ Congressional ☐ Company ☒ General Public

Organization: CITY of RAINBOW CITY ALA.

Preferred Method of Communication

☐ Phone: ☐ Email:

☒ Mailing Address: 3700 RAINBOW DRIVE RAINBOW CITY ALA. 35906

Comment Categories

☐ Water Supply
☒ Cultural Resources
☒ Threatened and Endangered Species
☒ Fisheries
☒ Water Quality
☐ Flood Storage
☐ Hydropower
☒ Navigation
☒ Environmental Resources
☒ Recreation
☐ Water Management
☒ Lake Levels
☒ Economic Resources
☒ Other
Boating Safety

Geographic Area of Interest

☒ Alabama-Coosa-Tallapoosa (ACT) River Basin
☐ Tallapoosa Drainage Area
☐ Mobile Bay
☒ Coosa Drainage Area
☐ Oostanaula Drainage Area
☐ Other
☒ Etowah Drainage Area
☐ Alabama River

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Comment

The Neely Henry Lake Association is concerned that the increased discharge of water from Weiss Lake during flood events (i.e. releasing more water sooner because of the higher lake elevation) will adversely impact Neely Henry Lake. Specifically, we are concerned about the possibility of increased flooding above a natural restriction in Neely Henry reservoir known as "Minnesota Bend," which significantly impacts the city of Gadsden, and the evacuation of water below "Minnesota Bend." The evacuation of water below "Minnesota Bend" leads to very low water conditions in the Rainbow City and Southside areas in Etowah County and various communities in St. Clair and Calhoun Counties. We are concerned that more drastic and frequent flooding and evacuation of water could occur and for longer periods of time if the proposed changes to the Water Control Manual are adopted. Should this be the case it could result in various environmental and safety-related issues. In addition, it could cause property damage and a decrease in property values in the impacted areas.

As a result of the proposed changes to the Water Control Manual, the full impact of increased frequent evacuation is unknown without a complete and comprehensive Environmental Impact Study regarding endangered species, fish spawning, marine vegetation, etc.

A recently-completed study revealed that the Neely Henry Reservoir has a $570 million annual positive economic impact to the local communities. Should the proposed changes be implemented, we would expect a significant reduction to the economies of the impacted communities.

☐ Attach additional sheets of paper if you need more space for comments

Specific questions may be directed to Mr. Mike Malsom, Inland Environment Team, U.S. Army Corps of Engineers, Mobile District, Planning and Environmental Division, (251) 690-2023

LG-03a

From: Beth Lee <cityclerk@rbcalabama.com>
Sent: Tuesday, January 28, 2020 10:50 AM
To: ACT-ACR
Cc: Karen Frost
Subject: [Non-DoD Source] FW: Message from "RNP002673B7DCD6"
Attachments: 20200128094051849.pdf

To Whom It May Concern:

Attached are 2 documents representing the City of Rainbow City, Alabama in regards to the Allatoona Lake Water Supply Storage Reallocation Study & Updates to the Weiss & Logan Martin Reservoirs Project Water Control Manuals.

If you have any questions please feel free to contact Mayor Calhoun at 256-413-1201.

Thank you,

Beth Lee, City Clerk
City of Rainbow City
3700 Rainbow Drive
Rainbow City, AL 35906
O-256-413-1217
F-256-442-2995

-----Original Message-----
From: copier1_RBC@rbcalabama.com <copier1_RBC@rbcalabama.com>
Sent: Tuesday, January 28, 2020 8:41 AM
To: Beth <cityclerk@rbcalabama.com>
Subject: Message from "RNP002673B7DCD6"

This E-mail was sent from "RNP002673B7DCD6" (MP C3503).

Scan Date: 01.28.2020 09:40:51 (-0500)
Queries to: copier1_RBC@rbcalabama.com

LG-03a

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Date: 1/20/2020 **Comments Should Be Submitted by** January 29, 2020

Information About You

First Name: Terry John Last Name: Calhoun

Title: Mayor Rainbow City, Alabama

Organization

[X] Agency (federal, state, or local) [ ] Congressional [ ] Company [ ] General Public

Organization: City of Rainbow City

Preferred Method of Communication

[X] Phone: 256-413-1201 [ ] Email:

[ ] Mailing Address:

Comment Categories

[ ] Water Supply
[ ] Flood Storage
[ ] Water Management
[X] Cultural Resources
[ ] Hydropower
[X] Lake Levels
[X] Threatened and Endangered Species
[X] Navigation
[X] Economic Resources
[X] Fisheries
[X] Environmental Resources
[X] Other
Boating Safety
[X] Water Quality
[X] Recreation

Geographic Area of Interest

[X] Alabama-Coosa-Tallapoosa (ACT) River Basin
[ ] Coosa Drainage Area
[ ] Etowah Drainage Area
[ ] Tallapoosa Drainage Area
[ ] Oostanaula Drainage Area
[ ] Alabama River
[ ] Mobile Bay
[ ] Other

Please see attached Resolution

RESOLUTION NO. 20-03

OPPOSITION TO THE 2019 USACE DRAFT FEASIBILITY AND SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS)

BE IT RESOLVED, that the City Council of the City of Rainbow City, Alabama is opposed to the adoption and approval of the new (2019) USACE Draft Feasibility Report (FR) and Supplemental Environmental Impact Statement (SEIS) unless and until the completion and release to the public for evaluation of a full and complete study of the following:

A

1. The impact of additional municipal and industrial (M&I) water that will be taken from the Allatoona Lake to supply the Cobb County Marietta Water Authority (CCMWA) and the City of Cartersville, GA; and
2. The impact of the new water accounting requests by the State of Georgia; and
3. Establishment of flowage easements to accommodate flood operations at Weiss and Logan Martin dams.

B

NOW, THEREFORE, BE IT RESOLVED by the City of Rainbow City that this official document shall be made a part of the public comments section and forwarded to the US Army Corps of Engineers, Mobile District.

PASSED AND ADOPTED this the 27th day of **January, 2020**.

Terry John Calhoun

Terry John Calhoun, Mayor
City of Rainbow City

Anita Bedwell

Anita Bedwell, Place 1

Bobby McCartney Jr.

Robert "Bobby" McCartney Jr., Place 2

Rodney Prickett, Place 3

Larry P. Keenum

Larry Keenum, Place 4

Rick Hill

Rick Hill, Place 5

Attest:

Beth Lee

Beth Lee, City Clerk

LG-04

From: Brian Muenger <bmuenger@cityofpellcity.net>
Sent: Sunday, January 26, 2020 2:45 PM
To: ACT-ACR
Subject: [Non-DoD Source] Public Comment - Logan Martin

Dear Col. Joly,

I am writing to submit comments on behalf of the City of Pell City regarding the proposed changes to the Water Control Manual that impact the Logan Martin Reservoir. The City has reviewed the draft documents and has participated in multiple public outreach meetings on the matter over the past 18 months. After careful consideration, it is the opinion of the City that the proposed changes would be beneficial to our area, and that the proposed winter elevation can be safely achieved, based on the addition of downstream easements that allow for the expedited discharge of water during flood events.

A

As the largest municipality within St. Clair County, the City is home to a large lakefront population, the overwhelming number of which are also in support of the proposed revisions. The higher winter pool will increase recreation opportunities for our residents, and expand the already substantial economic impact created by Lake Logan Martin.

The City would request that USACE consider implementing a scheduled maintenance period, to allow residents the opportunity to perform routine maintenance on their docks, seawalls, and other permitted structures located within the flood easement. If this maintenance period were implemented every 3-5 years for several weeks, it would allow residents to properly plan for necessary maintenance to occur.

B

Thank you for your consideration of these comments, and for the substantial public information/outreach efforts that have accompanied this process.

Sincerely,

Brian Muenger l City Manager
City of Pell City
1905 1st Avenue North
Pell City, AL 35125
(P) 205.338.2244 (F) 205.338.2320

LG-05

From: Lew Watson <mayorwatson@lincolnal.org>
Sent: Monday, January 27, 2020 5:38 PM
To: ACT-ACR
Subject: [Non-DoD Source] Logan Martin Lake Level change - Support

For years the City of Lincoln has supported the change in the lake levels.

Members of the City Council have met with groups asking for the changes to occur.

The changes will provide an opportunity for increased recreation on the lake.

Visitors will have greater opportunity to come to the lake. **A**

Our residents have requested this change, especially those who live by the lake.

The City of Lincoln is on record as supporting this change.

The proposed changes to the water levels for Logan Martin Lake represent one of the best actions that may be taken.

Carroll L. Watson
Mayor, City of Lincoln, Alabama
205-763-4000

LG-05a

From: Lew Watson <mayorwatson@lincolnal.org>
Sent: Wednesday, January 29, 2020 10:04 AM
To: ACT-ACR
Subject: [Non-DoD Source] positive comments for proposed changes to Logan Martin Lake

At the city council meeting held last night a discussion regarding the proposed changes was made with members of the audience.

The comments made by those in attendance were very positive. There were no negative comments.

As the proposed changes will benefit our residents and businesses the changes should be adopted. A

The tournament fishing park currently being planned by the city on the lake will benefit from the higher winter water levels and likely make the site a year round tournament site.

This tournament site will be the only public access to the lake on the Talladega side of Logan Martin.

Thank you,

Carroll L. Watson
Mayor, City of Lincoln

LG-06

From: Lesa Osborn <lesaosborn@gadsdencommercial.com>
Sent: Monday, January 27, 2020 2:49 PM
To: ACT-ACR
Subject: [Non-DoD Source] Comment Form
Attachments: copier@dowdys.net_20200127_132614.pdf

Lesa Osborn, Director
Gadsden Commercial Development Authority
635 Broad Street, Gadsden, AL 35901
(O) 256.547.1530 (C) 256.328.9548
Blockedwww.gadsdencommercial.com

GCDA Gadsden Commercial Development Authority

LG-06

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Date: 1/20/2020 **Comments Should Be Submitted by January 29, 2020**

Information About You

First Name: LesA Last Name: Osborn

Title:

Organization

☐ Agency (federal, state, or local) ☐ Congressional ☐ Company ☑ General Public

Organization:

Preferred Method of Communication

☐ Phone: ☑ Email: [redacted]

☐ Mailing Address:

Comment Categories

☐ Water Supply ☐ Flood Storage ☐ Water Management
☒ Cultural Resources ☐ Hydropower ☒ Lake Levels
☒ Threatened and Endangered Species ☒ Navigation ☒ Economic Resources
☒ Fisheries ☒ Environmental Resources ☒ Other
☒ Water Quality ☒ Recreation Boating Safety

Geographic Area of Interest

☒ Alabama-Coosa-Tallapoosa (ACT) River Basin ☐ Coosa Drainage Area ☐ Etowah Drainage Area
☐ Tallapoosa Drainage Area ☐ Oostanaula Drainage Area ☐ Alabama River
☐ Mobile Bay ☐ Other

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

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ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Comment

The Neely Henry Lake Association is concerned that the increased discharge of water from Weiss Lake during flood events (i.e. releasing more water sooner because of the higher lake elevation) will adversely impact Neely Henry Lake. Specifically, we are concerned about the possibility of increased flooding above a natural restriction in Neely Henry reservoir known as "Minnesota Bend," which significantly impacts the city of Gadsden, and the evacuation of water below "Minnesota Bend." The evacuation of water below "Minnesota Bend" leads to very low water conditions in the Rainbow City and Southside areas in Etowah County and various communities in St. Clair and Calhoun Counties. We are concerned that more drastic and frequent flooding and evacuation of water could occur and for longer periods of time if the proposed changes to the Water Control Manual are adopted. Should this be the case it could result in various environmental and safety-related issues. In addition, it could cause property damage and a decrease in property values in the impacted areas. A

As a result of the proposed changes to the Water Control Manual, the full impact of increased frequent evacuation is unknown without a complete and comprehensive Environmental Impact Study regarding endangered species, fish spawning, marine vegetation, etc.

A recently-completed study revealed that the Neely Henry Reservoir has a $570 million annual positive economic impact to the local communities. Should the proposed changes be implemented, we would expect a significant reduction to the economies of the impacted communities.

☐ Attach additional sheets of paper if you need more space for comments

Specific questions may be directed to Mr. Mike Malsom, Inland Environment Team, U.S. Army Corps of Engineers, Mobile District, Planning and Environmental Division, (251) 690-2023

LG-07

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Comments Should By Submitted by January 29, 2020

Information About You

First Name: Charles   Last Name: Gilchrist

Title: Mayor

Organization

☐ Agency (federal, state, or local) ☐ Congressional ☐ Company ☐ General Public

Organization: City OF GLENCOE

Preferred Method of Communication

☐ Phone: 256-492-1424 ☒ Email: mayor@cityofglencoe.net

☐ Mailing Address: 201 WEST Chestain Blvd. GLENCOE, AL. 35905

Comment Categories

- ☐ Water Supply
- ☒ Cultural Resources
- ☒ Threatened and Endangered Species
- ☒ Fisheries
- ☒ Water Quality
- ☐ Flood Storage
- ☐ Hydropower
- ☒ Navigation
- ☒ Environmental Resources
- ☒ Recreation
- ☐ Water Management
- ☒ Lake Levels
- ☒ Economic Resources
- ☒ Other

Boating Safety

Geographic Area of Interest

- ☒ Alabama-Coosa-Tallapoosa (ACT) River Basin
- ☐ Tallapoosa Drainage Area
- ☐ Mobile Bay
- ☐ Coosa Drainage Area
- ☐ Oostanaula Drainage Area
- ☐ Other
- ☒ Etowah Drainage Area
- ☐ Alabama River

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

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☐ Attach additional sheets of paper if you need more space for comments

Specific questions may be directed to Mr. Mike Malsom, Inland Environment Team, U.S. Army Corps of Engineers, Mobile District, Planning and Environmental Division, (251) 690-2023

LG-08

From: Wally Burns <wburns@cityofsouthside.com>
Sent: Tuesday, January 28, 2020 12:11 PM
To: ACT-ACR
Subject: [Non-DoD Source] USACE Draft Feasibility Report, Environmental Impact
Attachments: 20200128105407715.pdf

Please deliver attachment to appropriate office.

Wally Burns, Mayor
City of Southside, Al.

LG-08

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Comments Should By Submitted by January 29, 2020

Information About You

First Name: WALLY Last Name: BURNS

Title: MAYOR - City of Southside, AL.

Organization

- [x] Agency (federal, state, or local)
- [ ] Congressional
- [ ] Company
- [ ] General Public

Organization: City of Southside, AL.

Preferred Method of Communication

- [ ] Phone: 256-442-9766
- [ ] Email: wburns@cityofsouthside.com
- [ ] Mailing Address: 2255 Highway 77, Southside, AL. 35907

Comment Categories

- [ ] Water Supply
- [x] Cultural Resources
- [x] Threatened and Endangered Species
- [x] Fisheries
- [x] Water Quality
- [ ] Flood Storage
- [ ] Hydropower
- [x] Navigation
- [x] Environmental Resources
- [x] Recreation
- [ ] Water Management
- [x] Lake Levels
- [x] Economic Resources
- [x] Other

Boating Safety

Geographic Area of Interest

- [x] Alabama-Coosa-Tallapoosa (ACT) River Basin
- [ ] Tallapoosa Drainage Area
- [ ] Mobile Bay
- [ ] Coosa Drainage Area
- [ ] Oostanaula Drainage Area
- [ ] Other
- [ ] Etowah Drainage Area
- [ ] Alabama River

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Comment

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As a result of the proposed changes to the Water Control Manual, the full impact of increased frequent evacuation is unknown without a complete and comprehensive Environmental Impact Study regarding endangered species, fish spawning, marine vegetation, etc.

A recently-completed study revealed that the Neely Henry Reservoir has a $570 million annual positive economic impact to the local communities. Should the proposed changes be implemented, we would expect a significant reduction to the economies of the impacted communities.

☐ Attach additional sheets of paper if you need more space for comments

Specific questions may be directed to Mr. Mike Malsom, Inland Environment Team, U.S. Army Corps of Engineers, Mobile District, Planning and Environmental Division, (251) 690-2023

Wally Burns
Mayor
wburns@cityofsouthside.com
Office: 256-442-9775 Ext. 101
Fax: 256-442-9763

CITY OF SOUTHSIDE
INCORPORATED 1957

Cynthia B. Osborne
City Clerk
cityclerk@cityofsouthside.com
Office: 256-442-9775 Ext. 102
Fax: 256-442-9763

2255 Highway 77 • Southside, Alabama 35907
www.cityofsouthside.com

January 28, 2020

To Whom It May Concern:

This is a comment on the proposed changes by the US Army Corp of Engineers as described in the attachments.

The changes would be devastating to many citizens of my City who have water front property on the Coosa River with major loss of property values with unreliable lake levels. The City is developing six acres on the river with two boat ramps, boardwalk, 48 boat slips and a possible restaurant and the proposed changes could have an adverse effect on our development.

B

A recently completed study revealed that the Neely Henry Reservoir has a $570 million annual positive economic impact to the local communities. Should the proposed changes be implemented, we would expect a significant reduction to the economies of the impacted communities.

Our local communities do not need or want the proposed changes. Any help would be greatly appreciated.

Sincerely,

Wally Burns, Mayor
City of Southside

LG-08a

From:	Wally Burns <wburns@cityofsouthside.com>
Sent:	Wednesday, January 29, 2020 11:47 AM
To:	ACT-ACR
Subject:	[Non-DoD Source] FW: Resolution 0-003-2020 Opposition to the 2019 USACE Draft feasibility statement
Attachments:	RES 0-003-2020 OPPOSITION OF USACE DRAFT.pdf

Resolution enclosed from the City of Southside

LG-08a

RESOLUTION NO. 0-003-2020

OPPOSITION TO THE 2019 USACE DRAFT FEASIBILITY AND SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS)

BE IT RESOLVED, that the City Council of the City of Southside, Alabama is opposed to the adoption and approval of the new (2019) USACE Draft Feasibility Report (FR) and Supplemental Environmental Impact Statement (SEIS) unless and until the completion and release to the public for evaluation of a full and complete study of the following:

1. The impact of additional municipal and industrial (M&I) water that will be taken from the Allatoona Lake to supply the Cobb County Marietta Water Authority (CCMWA) and the City of Cartersville, GA; and
2. The impact of the new water accounting requests by the State of Georgia; and
3. Establishment of flowage easements to accommodate flood operations at Weiss and Logan Martin dams.

NOW, THEREFORE, BE IT RESOLVED by the City of Southside that this official document shall be made a part of the public comments section and forwarded to the US Army Corps of Engineers, Mobile District.

PASSED AND ADOPTED this the **27th** day of **January, 2020**.

Wally Burns

Wally Burns, Mayor
City of Southside, Alabama

D. Garnett
Danny Garnett, Councilmember Place 1

John Hatley
John Hatley, Councilmember Place 2

Joey Jones
Joey Jones, Councilmember Place 3

Don Steward
Don Steward, Councilmember Place 4

Dana Snyder
Dana Snyder, Councilmember Place 5

Attest:

Cynthia B. Osborne
Cynthia B. Osborne, City Clerk

I HEREBY CERTIFY THIS TO BE A TRUE AND CORRECT COPY OF THE ORIGINAL DOCUMENT ON FILE IN THE MUNICIPAL OFFICE OF THE CITY OF SOUTHSIDE, ALABAMA.
DATE 27 DAY OF Jan, 2020
CITY CLERK
Cynthia B. Osborne

LG-09

From: Shane Ellison <sellison@etowahcounty.org>
Sent: Tuesday, January 28, 2020 2:55 PM
To: ACT-ACR
Subject: [Non-DoD Source] Draft FR/SEIS - Comment Form - Etowah County
Attachments: Image.jpg; Image (2).jpg

Please see attached.

Shane Ellison
Chief Administrative Officer
Etowah County
Office 256-549-5300
Cell 256-328-2905

LG-09

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Comments Should By Submitted by January 29, 2020

Information About You

First Name: Shane   Last Name: Ellison
Title: Chief Administrative Officer

Organization

☐ Agency (federal, state, or local) ☐ Congressional ☐ Company ☐ General Public

Organization: Etowah County

Preferred Method of Communication

☐ Phone: ☑ Email: sellison@etowahcounty.org
☐ Mailing Address:

Comment Categories

☐ Water Supply	☐ Flood Storage	☐ Water Management
☒ Cultural Resources	☐ Hydropower	☒ Lake Levels
☒ Threatened and Endangered Species	☒ Navigation	☒ Economic Resources
☒ Fisheries	☒ Environmental Resources	☒ Other Boating Safety
☒ Water Quality	☒ Recreation	

Geographic Area of Interest

☒ Alabama-Coosa-Tallapoosa (ACT) River Basin	☐ Coosa Drainage Area	☐ Etowah Drainage Area
☐ Tallapoosa Drainage Area	☐ Oostanaula Drainage Area	☐ Alabama River
☐ Mobile Bay	☐ Other	

LG-09

PHONE (256) 549-5300

ETOWAH COUNTY COMMISSION

FAX (256) 549-5400

JOBE "JOEY" N. STATUM, IV, District 1
JOHNNY GRANT, District 2
LARRY V. PAYNE, District 3
TIM RAMSEY, District 4

JEFFERY WASHINGTON, District 5
CRAIG INZER, JR., District 6
SHANE ELLISON, Chief Administrative Officer
JAMES E. TURNBACH, County Attorney

January 28, 2020

To Whom It May Concern:

The Etowah County Commission is opposed to the adoption and approval of the new (2019) USACE Draft Feasibility Report (FR) and Supplemental Environmental Impact Statement (SEIS) unless and until the completion, and release to the public for evaluation, of a full and complete study of the following:

1. The impact of additional municipal and industrial (M&I) water that will be taken from Allatoona Lake to supply the Cobb County Marietta Water Authority (CCMWA) and the City of Cartersville, Ga.; **A**

2. The impact of new water accounting requests by the State of Georgia; and

3. Establishment of flowage easements to accommodate flood operations at Weiss and Logan Martin Dams. **B**

We respectfully request due consideration of these issues prior to any further action that might negatively impact the Coosa River in Etowah County.

Sincerely,

Shane Ellison
Chief Administrative Officer

LG-10

From: Kenny Wilbanks <cchdkw@tds.net>
Sent: Tuesday, January 28, 2020 2:55 PM
To: ACT-ACR
Cc: cchdcc@tds.net; larry.lwls@gmail.com; nowaklandsurveying@gmail.com
Subject: [Non-DoD Source] Flood Pool on Weiss Lake

Dear Commander,
We were just emailed this draft for the public comment period for the changes to the control manual for Weiss lake. We have the following concern;
The County engineer and I were wondering how this change in the top of the flood pool on Weiss lake from 574’ to 572’ will affect the existing FEMA flood zone maps. I understand that the upper Coosa is being studied by FEMA and is this part of this ongoing study? **A**

Thank you,

Kenny Wilbanks
Asst. County Engineer
Cherokee County Highway Dept.
(256) 927-5573 Office
(256) 927-7864 Fax

LG-11

From: lisa.johnson@cityofhokesbluff.com
Sent: Wednesday, January 29, 2020 11:18 AM
To: ACT-ACR
Subject: [Non-DoD Source] Resolution
Attachments: Scanned from a Xerox Multifunction Printer.pdf; Lisa C_ Johnson.vcf

-----Original Message-----
From: hbcity@cityofhokesbluff.com <hbcity@cityofhokesbluff.com>
Sent: Wednesday, January 29, 2020 9:33 AM
To: Johnson, Lisa <lisa.johnson@cityofhokesbluff.com>
Subject: Scanned from a Xerox Multifunction Printer

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Attachment File Type: pdf, Multi-Page

Have a nice day!

LG-11

US Army Corps of Engineers
Mobile District

ALLATOONA LAKE WATER SUPPLY STORAGE REALLOCATION STUDY AND UPDATES TO THE WEISS AND LOGAN MARTIN RESERVOIRS PROJECT WATER CONTROL MANUALS

Fax or email comments to:
(205) 930-5707 or
ACT-ACR@usace.army.mil

DRAFT FR/SEIS - COMMENT FORM

Date: 1/20/2020 **Comments Should Be Submitted by January 29, 2020**

Information About You

First Name: Scott Last Name: Reeves

Title: Mayor

Organization

[X] Agency (federal, state, or local) [ ] Congressional [ ] Company [ ] General Public

Organization: City of Hokes Bluff

Preferred Method of Communication

[X] Phone: (256) 312-2515 [ ] Email:

[ ] Mailing Address:

Comment Categories

[ ] Water Supply
[X] Cultural Resources
[X] Threatened and Endangered Species
[X] Fisheries
[X] Water Quality
[ ] Flood Storage
[ ] Hydropower
[X] Navigation
[X] Environmental Resources
[X] Recreation
[ ] Water Management
[X] Lake Levels
[X] Economic Resources
[X] Other Boating Safety

Geographic Area of Interest

[X] Alabama-Coosa-Tallapoosa (ACT) River Basin
[ ] Tallapoosa Drainage Area
[ ] Mobile Bay
[ ] Coosa Drainage Area
[ ] Oostanaula Drainage Area
[ ] Other
[ ] Etowah Drainage Area
[ ] Alabama River

State of Alabama}
County of Etowah}
City of Hokes Bluff}

RESOLUTION 2020-01-28

OPPOSITION TO THE 2019 USACE DRAFT FEASIBILITY AND SUPPLEMENTAL ENVIRONMENTAL IMPACT STTEMENT (SEIS)

BE IT RESOLVED, that the City Council of the City of Hokes Bluff, Alabama is opposed to the adoption and approval of the New (2019) USACE Draft Feasibility report (FR) and Supplemental Environmental Impact Statement (SEIS) unless and until the completion and release to the public for evaluation of a full and complete study of the following:

A

1. The impact of additional municipal and industrial (M&I) water that will be taken from the Allatoona Lake to supply the Cobb county Marietta Water Authority (CCMWA) and the City of Cartersville, GA; and
2. The impact of the new water accounting requests by the State of Georgia; and

---

3. Establishment of flowage easements to accommodate flood operations a Weiss and Logan Martin dams.

B

NOW, THEREFORE, BE IT RESOLVED by the City of Hokes Bluff that this official document shall be made a part of the public comments section and forwarded to the US Army Corps of Engineers, Mobile District.

Passed and adopted this the 28th day of January 2020.

Scott Reeves, Mayor

ATTEST:

Lisa C. Johnson, CMC
City Clerk

LG-12

From: Leila Brewer <lbrewer@sasserlawfirm.com>
Sent: Wednesday, January 29, 2020 4:47 PM
To: ACT-ACR
Cc: Pat Sefton
Subject: [Non-DoD Source] EMAIL FROM PAT SEFTON/WATER WORKS BOARD OF MONTGOMERY / Comments on FR-SEIS
Attachments: L Commander USACE re. Comments on FR-SEIS (00819368xA080B).pdf

Good afternoon,

Please see attached correspondence from Pat Sefton.

Thanks,
Leila

____

Leila Brewer
Legal Secretary to Patrick L.W. Sefton
Sasser, Sefton & Brown, P.C.
445 Dexter Avenue, Suite 8050 (36104)
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LG-12

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ROBERT E. SASSER
PATRICK L.W. SEFTON[†]
rsasser@sasserlawfirm.com
psefton@sasserlawfirm.com
Direct Dial: (334) 532-3430
Direct Dial: (334) 532-3421

[†] Also admitted in Georgia

January 29, 2020

VIA PDF EMAIL: ACT-ACR@usace.army.mil
and REGULAR MAIL

USACE, Mobile District
ATTN: Mike Malsom
P.O. Box 2288
Mobile, AL 36628-0001

Re: Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement—Allatoona Lake Water supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals

Dear Sir:

This law firm is legal counsel to the Water Works and Sanitary Sewer Board of the City of Montgomery ("the Montgomery Board"). The Montgomery Board is a public water utility in Montgomery, Alabama providing water and wastewater services to its customers. The Montgomery Board's service area is located within the watershed of the Alabama, Coosa and Tallapoosa Rivers. The Montgomery Board requires reliable water flows in the ACT River Basin – particularly the Tallapoosa and Alabama Rivers. The Montgomery Board obtains approximately 60% of its water supply from the Tallapoosa River. Furthermore, three of the Montgomery Board's wastewater facilities are located on and heavily dependent upon flows in the Alabama River, and the other is on the Tallapoosa River.

The Montgomery Board has long objected to actions taken by the Corps at Allatoona that impair the adequate flow of water within Alabama. The Montgomery Board has evaluated the Corps of Engineers' Draft feasibility Report and Integrated Supplemental Environmental Impact Statement (FR/SEIS") for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Controls Manuals. The A

Montgomery Board is concerned that the proposed reallocation of additional storage space in favor of Georgia interests will further reduce water flows in the ACT basin causing a variety of environmental concerns and impacts to the Montgomery Board and others in Alabama. This harm includes, without limitation, the degradation of water quality as well as impairment of the Montgomery Board's ability to conduct and rely upon long range planning and analysis. If the reallocation request is formally adopted as proposed in the FR/SEIS, then the Board is concerned that further reductions in water flow may occur that will further affect the Montgomery Board's cost to comply with its National Pollutant Discharge Elimination System ("NPDES") permits particularly during times of drought conditions which the FR/SEIS itself predicts will be increased by the additional withdrawals. See FR/SEIS at xxvi.

The Corps is required under the National Environmental Policy Act of 1969 ("NEPA") to conduct a thorough investigation and make a forthright acknowledgement of potential environmental concerns. Nat'l Audobon Society v. Department of Navy, 422 f.3d 174,187 (4th Cir. 2005). The Montgomery Board has previously lodged criticism towards the Corps for failing to conduct the requisite hard look at environmental concerns when it adopted the 2015 manuals. See generally, Intervenor-Plaintiff's Joint Motion For Summary judgment at 8-13, Alabama v. U.S. Army Corps of Eng'rs, No. 1:15-cv-00696-EGS (D.D.C. filed June 13, 2017) (Doc.85). It appears this error has been compounded in the FR/SEIS since the 2015 Manuals undisputedly provides for retaining more water in Georgia during the historically driest months of the year. Similar to the shortcomings with the 2015 Manuals, the draft FR/SEIS is not consistent with NEPA. B

Finally, in 2015, the Corps acknowledged that reduced flows caused by operations under the new manuals may necessitate changes in permit conditions and reevaluation of NPDES permits throughout the basin. As a matter of common sense, additional withdrawals of millions of gallons per day through 2050 will only serve to exacerbate these problems and further amplify the violation of the Corps statutory duty in the ACT basin to comply with states' requirements under the Clean Water Act, including state water quality standards. C

The Montgomery Board otherwise adopts and incorporates the comments of the State of Alabama and urges the Corps to allow the States to resolve these long running disputes without further empowering Georgia to withdraw water that should be flowing into Alabama. The Montgomery Board appreciates the opportunity to comment on the FR/SEIS.

Very truly yours,

Robert E. Sasser
Patrick L.W. Sefton
FOR THE FIRM

RES/PLWS/lwb

K:\DOCLIB\37037\30\00818171.DOCX

LG-13

From: Barnes, Tamanthia <TMANUEL@mawss.com>
Sent: Wednesday, January 29, 2020 3:52 PM
To: ACT-ACR
Cc: Hyland, Charles E.
Subject: [Non-DoD Source] Public Comments re: ACT River Basin Water Control Manual submitted on behalf of Mobile Area Water and Sewer System
Attachments: Public Comment for Corps of Engineers 29jan2020.pdf

Have a Great Day!

Ms. Barnes, Secretary to the Director
Mobile Area Water & Sewer System
4725 Moffett Rd, Mobile, AL 36618
P. O. Box 180249 Mobile, AL 36618
Tel: (251) 694-3150
tbarnes@mawss.com

LG-13

MOBILE AREA WATER & SEWER SYSTEM

January 29, 2020

<u>**Via Email ACT-ACR@usace.army.mil**</u>
Commander
U.S. Army Corps of Engineers
Mobile District
Attn: PD-EI (ACT-SEIS)
Post Office Box 2288
Mobile, AL 36628

RE: November 2019 Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement (FR/SEIS) for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals in the Alabama-Coosa-Tallapoosa (ACT) River Basin.

To Whom It May Concern:

On behalf of the Mobile Area Water & Sewer System ("MAWSS"), I submit these comments on the above referenced documents.

The Mobile Area Water & Sewer System is a public utility providing water and wastewater services to approximately 230,000 people in Mobile, Alabama and the surrounding area.

The Mobile River runs adjacent to our service area and in the past has provided water to some of our Industrial customers. We still have the ability to use it for that purpose in the future if the demand requires us to do so. In addition, the Mobile River is the potential source for a backup drinking water supply for our customers. **A**

If water is reallocated and withdrawn upstream of Mobile it could adversely impact our ability to use the Mobile River as a potential backup water supply for our customers and to provide raw water to industrial customers if demand warrants this use.

We appreciate the opportunity to provide comments and ask for your favorable consideration.

Sincerely,

Charles E. Hyland, Jr.

Charles E. Hyland, Jr., Director
CEH/jpy

LG-14

From: Jones, Lewis <lbjones@KSLAW.com>
Sent: Wednesday, January 29, 2020 10:06 PM
To: ACT-ACR
Cc: Andrew Morris; Katherine Zitsch; Glenn Page; Bob Jones; campg@bartowga.org; Lamont Kiser; Fortuna, John; Andrew Morris (AMorris@atlantaregional.org)
Subject: [Non-DoD Source] Comments on the Draft Reallocation Study for Allatoona Lake
Attachments: 20200129 GWSP Comments re Allatoona Reallocation DEIS w Exhibits.pdf

Attached please find comments on the Draft Feasibility Study / EIS for the Allatoona Lake Water Supply Storage Reallocation Study (EIS No. 20190272) submitted on behalf of the Cobb County-Marietta Water Authority, the City of Cartersville, Bartow County, and the rest of the Georgia Water Supply Providers. Please let me know if you have any questions. Best Regards,

Lewis B. Jones
Partner

T: +1 404 572 2742 | E: lbjones@kslaw.com | Blockedwww.kslaw.com

BIO | vCARD

King & Spalding LLP
1180 Peachtree Street, NE
Suite 1600
Atlanta, GA 30309

LG-14

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Direct Fax: +1 404 572 5100
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January 29, 2020

VIA email to ACT-ACR@usace.army.mil

Col. Sebastien P. Joly
Commander
U.S. Army Corps of Engineers
Mobile District
Attn: PD-EI (ACT-ACR DSEIS)
P.O. Box 2288, Mobile, AL 36628

Re: Georgia Water Supply Providers' Comments on the Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals

Dear. Col. Joly:

Thank you for the opportunity to submit comments on the U.S. Army Corps of Engineers' Draft Environmental Impact Statement for the proposed reallocation of storage at Allatoona Lake ("DEIS"). These comments are submitted on behalf of the two entities seeking water storage contracts in Allatoona Lake—Cobb County-Marietta Water Authority ("Cobb-Marietta") and the City of Cartersville—and also on behalf of larger group we call the "Georgia Water Supply Providers," which consists of those entities plus the Atlanta Regional Commission, Bartow County, the City of Atlanta, DeKalb County, Forsyth County, Fulton County, City of Gainesville, and Gwinnett County.

As always, we appreciate the Corps' hard work in conducting this analysis and producing this draft. Errors are inevitable in a project of this scope, but our technical team found remarkably few in this one. Issues requiring discussion are noted below.

The Georgia Water Supply Providers strongly support the proposed reallocation of storage in Allatoona Lake to meet the projected 2050 demands of Cobb-Marietta and the City of Cartersville, as requested by the State of Georgia ("Georgia's Storage Request"). By granting this request, the Corps will ensure that Cobb-Marietta, Cartersville, the Atlanta Regional Commission, and the Metropolitan North Georgia Water Planning District can develop plans and supply water to meet the needs of the millions they serve through the most effective, efficient, and environmentally sensitive means available. Reallocating storage in Allatoona Lake is the **A** best alternative by far, by any metric. If the request is denied, the Georgia Water Supply Providers will be forced to pursue alternative projects with much greater economic, social, and environmental impacts.

Georgia's Storage Request is discussed in the DEIS in conjunction with a separate proposal by the Corps to raise the pool at Allatoona Lake (the "Pool Rise"). The Georgia Water Supply Providers take no position regarding the merits of the Pool Rise, so long as it is evaluated as a discrete proposal independent of the Storage Request. **B**

In addition to granting Georgia's Storage Request, the Georgia Water Supply Providers urge the Corps to adopt "Georgia's Storage Accounting" in place of the "Corps' Storage Accounting," which is the system currently in use by the Corps to determine how much of the Conservation Pool in Allatoona Lake is being utilized to store water for each user at any given point in time. There are many reasons to adopt Georgia's Storage Accounting, both legal and prudential. Perhaps the best reason, however, is that the Corps' own analysis shows that Georgia's Storage Accounting performs better than the Corps' Storage Accounting for all federal purposes and objectives—including protection of the environment and downstream interests. Given this, there are many reasons to adopt, and no reason *not* to adopt, Georgia's Storage Accounting. It would be both arbitrary and capricious and contrary to law for the Corps to fail to do so. **C**

The Georgia Water Supply Providers have discussed storage accounting issues at length in other contexts, including comments submitted on the recently withdrawn Notice of Proposed Rulemaking, *Use of U.S. Army Corps of Engineers Reservoir Projects for Domestic, Municipal and Industrial Water Supply*, 81 Fed. Reg. 91556 (Dec. 16, 2016) (the "National Water Supply Rule"). The comments to that docket submitted on their behalf, on behalf of the State of Georgia, and on behalf of the National Water Supply Alliance, are attached and incorporated into these comments as Exhibits 1-3. In addition, given indications in the DEIS that the Corps' storage accounting decisions at Allatoona Lake were influenced by the Corps' consideration of the National Water Supply Rule before its demise, we respectfully request that the docket for that rulemaking be incorporated into the administrative record for the current study. I am providing electronic copies under separate cover. **D**

Regarding the withdrawal of the National Water Supply Rule, we note that President Trump directed the Corps to withdraw it specifically because it threatened to codify the Corps' current storage accounting practices in derogation of State water rights. The Corps' Storage Accounting at Allatoona Lake should be withdrawn, and Georgia's Storage Accounting adopted, for the same reason. **E**

TABLE OF CONTENTS

1. THE "POOL RISE" SHOULD BE EVALUATED AS A DISCRETE MEASURE INDEPENDENT OF THE STORAGE REQUEST

Georgia's Storage Request and the Pool Rise proposed by the Corps are discrete elements of the Tentatively Selected Plan that should be evaluated independently. The Water Supply Providers did not request the Pool Rise and should not be expected to pay for it, but otherwise take no position whether it should be adopted.

The Pool Rise is discussed in the DEIS as a proposal to reallocate storage "from the flood pool." Water supply storage could never be located in the Flood Pool,[1] however. Instead, the procedure is first to raise the Top of Conservation Pool—thus reallocating storage from the Flood Pool to the Conservation Pool—and then to reallocate an "undivided percentage" of the newly-raised Conservation Pool to water supply. **F**

Many stakeholders at Allatoona Lake have been asking for the first of these two steps—the Pool Rise—for many years, for reasons having nothing to do with water supply. Numerous proposals are described in the Draft EIS for the Water Control Manual Update completed in 2015. Then, as now, the motivation was to benefit recreation. These proposals were screened during the 2015 Water Control Manual Update. The Corps choose not to consider the Pool Rise as part of that process because it considered raising the pool it to be a "separate and distinct authority" that exceeded the scope of the update. Draft EIS for ACT WMC Update, p. 1-19 § 1.4.4.6. The Water Supply Providers have no objection to the Corps' using the present study as an opportunity to revisit this long-standing proposal, so long as it is recognized as a separate and distinct measure independent of the Storage Request that can and should be evaluated on its own merits.

When discrete elements are included in a single proposal, the Principles and Requirements provide that each discrete measure "should be evaluated as a discrete unit." *Principles and Requirements for Federal Investments in Water Resources,* Chapter III ("Interagency Guidelines"), p. 21. Therefore, the decision whether to grant the Storage Request should be made completely independent of the decision about the Pool Rise – and any costs or flood control impacts resulting from the Pool Rise should be viewed as impacts *of the Pool Rise* bearing no connection to the Storage Request. This is important because lumping the Storage Request and the Pool Rise together could have implications for both the cost and the acceptability of the Storage Request.

The only connection between the Pool Rise and the Storage Request is that they are being studied at the same time. There is no link between them in the sense of one's being proposed to mitigate impacts of the other. To the contrary, the DEIS demonstrates that the Storage Request can and should be granted without raising the pool, and that doing so will have no appreciable

---

[1] The "Conservation Pool" (or "Conservation Storage") is the portion of the reservoir available to meet authorized purposes other than flood control. *See* DEIS 12-1. The "Flood Pool" (or "Flood Storage") is the volume "between the elevation of the top of the conservation pool and the top of the flood storage pool, specifically for storing peak flows … until those flows can safely by passed through….). *See* DEIS, p. 12-3.

adverse effect on lake levels, recreation, hydropower, or any other purpose. DEIS, p. 5-1 Table 5.1.

Furthermore, the DEIS shows the benefits and costs of the Pool Rise are the same whether the Storage Request is granted or not, and vice versa. The lack of any interaction between the Storage Request and the Pool Rise confirms that they are discrete measures that can and should be evaluated independently, as required by the Principles and Requirements.

2. GEORGIA'S STORAGE REQUEST SHOULD BE GRANTED

The Georgia Water Supply Providers strongly support granting Georgia's Storage Request to meet critical, long-term water supply needs in an environmentally sensitive and cost-effective manner.

2.1 Storage Should Be Reallocated To Meet Georgia's Projected 2050 Demand

G

The DEIS shows that storage should be reallocated to meet Georgia's projected 2050 water demand. This conclusion holds whether Georgia's Storage Accounting is adopted or not. WS1 (Alternative 3) shows the impact of granting the Storage Request *and* adopting Georgia's Storage Accounting. WS2 (Alternative 4) shows the impact of granting the Storage Request *without* Georgia's Storage Accounting. The DEIS shows that neither alternative would have any appreciable adverse impact on any federal purpose or any downstream interest. DEIS, p. 5-1 Table 5.1.

2.2 Georgia's Storage Accounting Should Be Adopted

In addition to requesting storage to meet the projected needs of Cobb-Marietta and the City of Cartersville, the State has also requested that the Corps correct certain errors and omissions in the Corps' Storage Accounting. Three points are in dispute:

- *Made inflow:* Whether "made inflows" to Allatoona Lake should be "credited" to the persons to whom the State has granted the "exclusive right" to store such flows. The Corps' Storage Accounting fails to do so.

- *Full is full*: Whether all conservation storage accounts must be full when the Conservation Pool is full, as determined by the Top of Conservation Rule Curve established by the ACT Master Manual. The Corps' Storage Accounting allows conservation storage accounts to be "empty" or less than full even at times when the Conservation Pool is "full."

H

- *Proportional Distribution of Inflow*: Whether, when inflow is distributed in proportion to storage capacity, the Top of Conservation Rule Curve should be used to determine the capacity of the Conservation Pool. The Corps Storage Accounting erroneously assumes that the Top of Conservation is fixed year-round.

These three errors are corrected in Georgia's Storage Accounting. They are discussed below under two headings. The first—made inflow—is a basic question about water rights and the State's authority to allocate them. The second two—"full is full" and "proportional distribution of inflow"—both stem from a discrepancy between the Top of Conservation that is used in the Corps' Storage Accounting and the Top of Conservation established by the ACT Master Manual.

Before discussing these issues in detail, we note that Georgia's Storage Accounting, performs better than the Corps' Storage Accounting for all federal purposes and objectives—including environmental protection and downstream interests. To the extent the accounting has any impact, Georgia's Storage Accounting is beneficial in every case. Indeed, the only alternative that performs better than the Tentatively Selected Plan is Alternative 13, which is the Tentatively Selected Plan with the addition of Georgia's Storage Accounting. DEIS, p. 5-1 Table 5.1. The DEIS thus provides many reasons to adopt, and no reason *not* to adopt, Georgia's Storage Accounting. Given this, it would be arbitrary and capricious for the Corps to fail to do so.

2.2.1. Any Storage Accounting System at Allatoona Lake Should Credit Made Inflows to Those to Whom the State of Georgia Has Granted the Right to Store Them

Regarding made inflows, the question presented is whether States or the federal government should allocate the water right that is required to store and utilize this water. The question answers itself: As the granter of water rights within Georgia, it is the State of Georgia's prerogative to allocate the right to store and utilize made inflows. Acting through Georgia EPD, Georgia has granted an exclusive right to Cobb-Marietta to store and utilize made inflows to Allatoona Lake,[2] including both water delivered to Allatoona Lake from Hickory Log Creek Reservoir and engineered return flows to Allatoona Lake produced by Cobb County.[3] Any storage accounting system at Allatoona Lake must acknowledge the State's grant of this water right to Cobb-Marietta by "crediting" made inflows to Cobb-Marietta's storage account in Allatoona Lake.

Georgia's allocation of made inflows to Cobb-Marietta could be preempted by federal law only if Georgia's allocation "actually conflicted" with federal law. An "actual conflict" exists if it is "impossible to comply with both state and federal law," or if State law "stands as an obstacle to the accomplishment of the full purposes and objectives of Congress."[4] The DEIS establishes that no such conflict exists. Because the Corps itself has determined that Georgia's allocation of made inflows to Cobb-Marietta would not have any "appreciable" adverse effect on

[2] *See* Ga. Comp. R. & Regs. 391-3-6-.07(16). Under the Georgia regulations, "Made inflow to a reservoir" is defined as follows: "water that flows into a reservoir (1) after having been released from a storage project upstream of the reservoir as part of a plan approved by the Director; or (2) after having been discharged from a wastewater reclamation plant as part of a plan approved by the Director to increase flows into the reservoir." *Id.* (2)(o).

[3] *See* Ga. EPD Permit No. 008-1491-05 (Modified November 7, 2014) (giving Cobb-Marietta the "exclusive right to impound in Allatoona Lake and/or withdraw from Allatoona Lake any and all 'made inflows' ... to Allatoona Lake from the following sources: 1. The Cobb County-Northwest Water Reclamation Facility; 2. The Cobb County-Noonday Creek Water Reclamation Facility; and Hickory Log Creek Reservoir").

[4] *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238, 248 (1984) (citations omitted).

any federal purpose or objective, DEIS, p. 5-1 Table 5.1, there is no lawful reason for the Corps to seek to preempt it.

The Corps has asserted in the past that storage accounting does not implicate water rights, but it clearly does. The right to impound and withdraw water is undoubtedly a water right in Georgia, just as it is in other States. *See* O.C.G.A. § 12-5-31 (prohibiting any person from withdrawing, diverting, or impounding water without a permit issued by Georgia EPD). Based on this authority, the State of Georgia has explicitly granted to Cobb-Marietta the "exclusive right" to store any and all "made inflows" discharged into Allatoona Lake. Georgia EPD Permit No. 008-1491-05 (Modified November 7, 2014). The State of Georgia's grant of this water right to Cobb-Marietta can only be realized if made inflows are "credited" to Cobb-Marietta in the system that is used to account for the water that is stored in Allatoona Lake.

The Corps recently published an Engineering and Construction Bulletin that explains how water rights factor into storage accounting. It explains that, "[i]nflow credit may differ by region," based on the applicable water rights regime. U.S. Army Corps of Engineers, *Engineering and Construction Bulletin No. 2019-13: Methods of Storage / Yield Analysis* (27 Aug. 2019), p. A-30. It elaborates:

> b. Water Rights.
>
> (1) In the Western United States, reservoirs generally operate within the Prior Appropriation water rights system. The portion of the inflow belonging to a reservoir, and therefore available to develop yield, is determined by the individual water rights. For the historical period of record, these amounts (flow rates and volumes) can be determined and used in the yield analysis. Where operation of the reservoir would affect the downstream users to the point of affecting the call on the river (i.e., the most junior water right that can be satisfied), the amounts may need to be re-determined within the reservoir analysis, which is a much more difficult task.
>
> (2) In the Eastern United States, reservoirs generally operate within the Riparian water law system. Supply and shortages are proportionally shared by users on the river, upstream and downstream. For a given reservoir, the operation of an upstream reservoir affects the available inflow, and the needs of a downstream reservoir might be seen as a release requirement. The interaction between reservoirs is therefore important to capture, and in this document will be discussed in paragraph A-11.
>
> (3) It is important to note that water rights of either type are the purview of the States, and not the Federal Government. USACE reservoirs are operated pursuant to federal law and authorities. USACE does not have a

> national policy on how to manage water rights nor allocate shares of inflow.[5]

While recognizing that water rights regimes tend to differ in the East and West, the Bulletin also correctly acknowledges that the choice of law is a State prerogative. The power to control public uses of water is an "essential attribute" of States' sovereignty. *Tarrant Reg'l Water Dist. v. Hermann*, 569 U.S. 614 (2013), and each State is free to establish its own system of water law and to authorize the appropriation of waters "for such purposes as it may deem wise." *Connecticut v. Massachusetts*, 282 U.S. 660, 670 (1931). Therefore, any attempt by the Corps to discriminate between States based on their exercise of this authority would violate the fundamental constitutional principle of equal sovereignty. *See Shelby County v. Holder*, 570 U.S. 529 (2013).

The Bulletin thus establishes three critical points: (1) that the "crediting" of inflow is a question of water rights, and (2) that water rights are the purview of the States, and (3) that storage accounting systems can and should be adjusted to account for such rights.

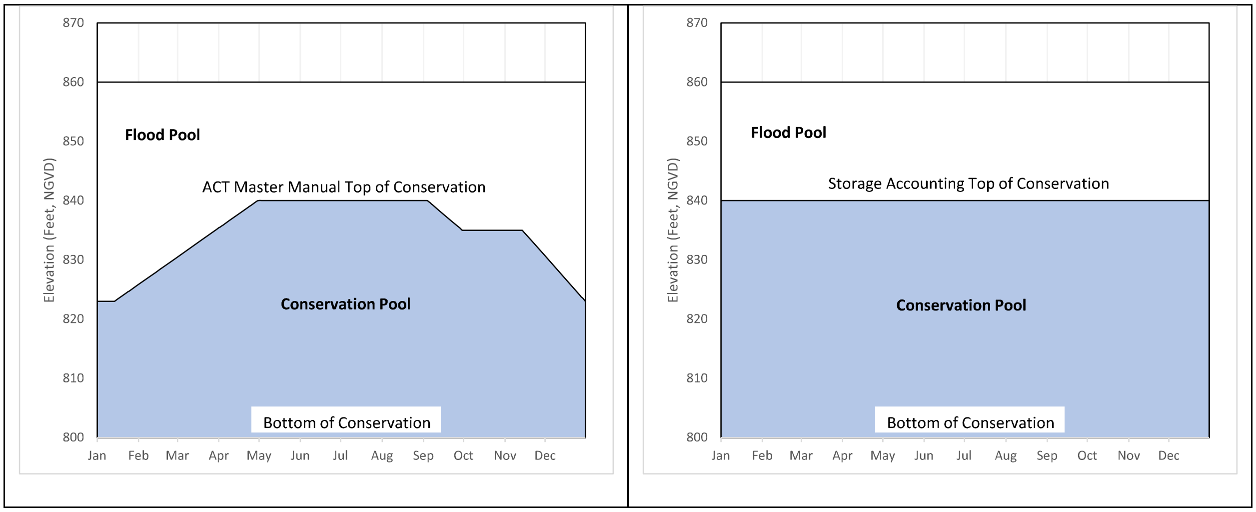
Here, as discussed above, Georgia has exercised its sovereign authority to allocate made inflows to Cobb-Marietta. It follows that the Corps' Storage Accounting must be amended to account for the water rights granted to Cobb-Marietta by the State of Georgia. The Corps' Storage Accounting is unlawful because it allocates made inflows in a manner contrary to Georgia law. The Corps' Storage Accounting thus unlawfully deprives water users of water to which they are legally entitled.

2.2.2. Any Storage Accounting System at Allatoona Lake Should Use the Top of Conservation Dictated by the ACT Master Manual

A second major flaw in the Corps' Storage Accounting is that it deems the Top of Conservation Pool to be elevation 840 at all times. As explained by the ACT Master Manual, the Top of Conservation at Allatoona Lake varies seasonally from elevation 823 in the winter to elevation 840 in the summer. This discrepancy (the "Top of Conservation Error") is depicted in Figure 4.2.2 below.

[5] *Id.* at A-19.

Figure 4.2.2: The Top of Conservation used in the Corps' Storage Accounting Is Not the Top of Conservation Established by the ACT Master Manual



One effect of the Top of Conservation Error is that that Corps' Storage Accounting shows water supply storage accounts being less than full—sometimes even "empty"—at times when the Conservation Pool is physically full and the reservoir is in flood stage. This has occurred several times in the recent past. It is clear proof that the Corps' Storage Accounting model is flawed.

At a practical level, the Top-of-Conservation Error deprives water supply users of water in two ways. The first is to deny them the benefits of "spillage" when the *federal* portion of the Conservation Pool is full. The second is to deny them their fair share of inflow when inflow is distributed proportionally based on storage capacity. These effects are described in parts (a) and (b) below.

a) *Full is Full*

When any storage account is full, water that would otherwise be credited to the account is redistributed to other storage accounts with room to store it. In concept, water "spills" from any storage accounts that are full to any that are not, until all are full, at which point the reservoir spills into the river below the dam. This concept of "spillage" is explained in the Engineering Bulletin and is implemented (imperfectly) in the Corps' Storage Accounting, the error being the threshold at which the federal storage account is deemed to be "full," and thus to spill.

Under the Corps' Storage Accounting, the federal storage account is never considered to be "full" during the draw-down period from September to May, even when the Conservation Pool is at or above the Top of Conservation elevation. Under the Corps' Storage Accounting, it is impossible for the federal storage account to be "full" during the drawdown period because the ACT Master Manual requires water to be released before the 840 level is ever reached. The practical effect of the Top of Conservation Rule Curve is to shift the Corps from one mode of operating to another—from storing water for conservation purposes to releasing it to create room to store flood waters. When the Top of Conservation is exceeded, the ACT Master Manual requires the Corps actively to release water to bring the level down. ACT WCM, p. 7-2. In other words, the Corps' Storage Accounting considers the Conservation Pool to be "not full" even at times when the ACT Master Manual requires it operate as if it were.

The Corps asserts that the Conservation Pool can be "full" for *operational* purposes even if it is not full for *storage accounting* purposes, but we can think of no rational basis to support such a distinction. The definitions that are used to operate the reservoir should also be used for storage accounting. When the Conservation Pool is full for operational purposes, all storage accounts should be full. The only reason to use a different definition of "full" for storage accounting purposes would be to limit how much water is available to water supply users, for example by denying them access to water that is spilled when the Conservation Pool is operationally full. The Corps' Storage Accounting is designed to ensure that spillage is wasted, rather than being stored by those who have contracted and paid for the right to store it.

b) *Proportional Allocation of Inflow*

The second effect of erroneously declaring the Top of Conservation to be elevation 840 at all times is to deprive water supply users of a substantial portion of the inflow to which they are entitled. Because the size of the Conservation Pool varies while water supply storage accounts remain constant, the portion of the Conservation Pool contracted to water supply users changes based on the Top of Conservation Rule Curve. The ratios are shown in Table 4.2.2b. below.

Table 4.2.2b: *Water Supply Storage Accounts Represent a Larger Percentage of Allatoona's Conservation Storage Capacity During the Winter than the Summer*

	Cobb-Marietta Storage Right: 12,485 acre-feet	Cartersville Storage Right: 6,054 acre-feet
Total Conservation Storage Capacity Summer: 270,747 acre-feet	4.61%	2.23%
Total Conservation Storage Capacity Winter: 113,637 acre-feet	10.99%	5.33%

By deeming the Top of Conservation elevation to be fixed at elevation 840 all year, the Corps' Storage Accounting fails to account for changes in relative storage capacities dictated by the ACT Master Manual. The result is to deprive Cobb-Marietta and Cartersville of more than 50% of the inflow to which they are entitled during the winter draw-down period.

c) *The Corps' Storage Accounting Accounts for Utilization of Water, Not Storage*

As stated above, the fact that the Corps' Storage Accounting shows water supply storage accounts being "empty" when the Conservation Pool is "full" is proof that the accounting is wrong. All waters supply storage accounts are located in the Conservation Pool, and the sum of all storage accounts must equal the volume of water in the Conservation Pool. If the accounts do not sum correctly, something needs to be fixed.

In this case, the error is symptomatic of a Storage Accounting system that is designed to track the utilization of water, as distinguished from storage space. The goal appears to be to limit how much water is available to the water supply providers over the course of a year, rather than ensuring they do not utilize more of the storage capacity of Allatoona Lake than they have contracted for the right to use.

If the goal is to account for the utilization of storage within the Conservation Pool at Allatoona Lake, as it should be, the following principles should be observed:

- The Conservation Pool should be defined for "storage accounting purposes" the same as it is defined for operational purposes, as determined by the ACT Master Manual.

- The entire Conservation Pool should be divided into storage accounts, with the storage capacity of each account being the maximum volume of water that it can hold. For water supply users, storage capacity is determined by contract; for the government, it is determined by the Top of Conservation.

- The sum of all storage account balances—that is, the water in each account—should equal the total volume of water in the Conservation Pool. (If the Conservation Pool is full, all conservation storage accounts must be full.)

- "Made inflows" should be allocated (or "credited") to the storage accounts of those to whom the water rights have been granted under State law.

- When any storage account is full, any "inflow" or "credits" to that account should be redistributed to other accounts that are not full, until all storage accounts—and thus the entire Conservation Pool—are full.

The Corps' Engineering Bulletin demonstrates how these principles can and should be implemented in a storage accounting system. It acknowledges that inflow should be credited in accordance with state water rights, as discussed above, and demonstrates the effect of a seasonally-varying Top of Conservation. The examples are consistent with Georgia's Storage Accounting—but not the Mobile District's—in every respect.

One example shows a reservoir like Allatoona Lake, where the Top of Conservation varies but water supply storage accounts remain fixed. It demonstrates that the firm yield of water supply storage accounts increases when a seasonal draw-down is implemented. *See, id.*, p. A-29. The bulletin acknowledges that this result is "at first quite surprising," but then explains that it is the result of water supply accounts receiving (1) more "spillage" during the draw-down period, due to the federal account's being full; and (2) a "larger share of inflow," due to the change in relative storage capacities.[6]

[6] See USACE Engineering and Construction Bulletin, Methods for Storage/Yield Analysis (ECB No. 2019-13, Aug. 27, 2019), p. A-29.

Other districts within the Corps follow the approach illustrated by the Bulletin. For example, the Georgia Water Supply Providers have previously provided documents showing that the Nashville District has implemented a variable rule curve in its storage accounting at J. Percy Priest Reservoir. Given that Corps' Storage Accounting at Allatoona Lake is unique, finding no support any literature or any precedent from any other Corps District, it is incumbent on the Corps, at a minimum, to explain its decisions.

2.2.3. Errors in the Modeling of Georgia's Storage Accounting Should Be Corrected

As described by the State of Georgia, the Corps' modeling of Georgia's Storage Accounting is marred by a unit conversion error that will need to be corrected.

2.3 Errors in the Cost Computation Should Be Corrected

We have identified three errors in the cost computation for the proposed reallocation. The first two are in the calculation of the Updated Cost of Storage, which is more than twice what it should be. The third is the proposal to charge the water providers "additional costs" to pay for the Pool Rise, which is not appropriate. **I**

2.3.1. Updated Cost of Storage

As explained in ER 1105-2-100, the Updated Cost of Storage is calculated by "first computing the costs at the time of construction by subtracting the specific costs from the total construction cost and multiplying the result by the ratio of storage reallocated (ac-ft) to total usable storage space (ac-ft)." *See id.*, p. E-217. "Specific costs" are "the costs of identifiable project features normally serving only one purpose, such as a powerhouse or switch yard." *Id.,* p. E-238. The cost calculated on this basis "is then escalated to present day price levels using the Corps of Engineers Civil Works Construction Cost Index System (CWCCIS)." *Id.* "Costs are to be indexed from the midpoint of the physical construction period to the beginning of the fiscal year in which the reallocated storage is approved." *Id.* **J**

a) *Specific Costs for the Power House Should Be Excluded*

The cost calculation is shown at Table B.9-4 and described in Section B.9.2.4, p. B-52. Table B.9-4 shows the breakdown of the original cost of construction. The table includes a line item of $965,000 for the power plant, which accounted for approximately 10% of the original construction cost. As explained above, costs of the power plant are "specific costs" that should be excluded from the Updated Cost of Storage.

b) *Joint-Use Costs Should Be Indexed from the Midpoint of Construction in 1948*

Table B.9-4 shows that costs were indexed from the "Midpoint of Construction 1939." This is clearly an error, because the project was not even authorized until 1941. Elsewhere the document identifies 1953 as the mid-point of construction. *See* DEIS, B-52 § B.9.2.4. Although the Water Provides would be happy to use that date, it also appears to be wrong. The 1962 Water Control Plan provides the following history:

> Actual construction was delayed because of World War II. Upon cessation of hostilities, steps were immediately taken to start

> construction and work was initiated 8 February 1946 using hired labor. The contract for construction of the main dam was awarded on 29 April 1946 to National Constructors, Inc. The main dam was essentially complete late in 1949, and filling the reservoir commenced 27 December 1949.[7]

Assuming the project was completed on or after 1949, the mid-point of physical construction would be on or after January 5, 1948. The ENR Construction Cost Annual Average Index for the year 1948 was 461—slightly more than twice the index (236) for the year 1939.

2.3.2. The Water Supply Providers Should Not Be Expected To Pay "Additional Costs" for the Pool Rise

The DEIS also proposes to charge the Water Supply Providers $802,000 for "additional costs" related to the Pool Rise. *See* DEIS, p. 5-52 & 7-21 Table 7-4. The document states that 160,000 linear feet of rip-rap would need to be added, that sixteen docks and 17 beaches would need to be modified, and that Aids to Navigation currently set at elevation 840 would need to be updated. The Water Supply Providers object to this charge. This charge is not appropriate because the items are not "specific costs" of the Storage Request, as discussed in Part 1 above, and because the applicable regulations do not call for such costs to be added, even if they were. **K**

The price formula does not provide for any "additional costs" to be added to the Updated Cost of Storage. The Planning Guidance Notebook "specifies the four pricing methods used to determine the cost of water supply storage to the user": (1) revenues forgone, (2) benefits forgone, (3) "replacement costs," and (4) the "updated cost of storage" determined by the "use of facilities method." *See* ER 1105-2-100, at B-50. The first three methods are different measures of the cost of granting the request. The fourth is the updated cost the government paid to construct the portion of the facility to be contracted to the user. Users are required to pay the *highest*—not the sum—of the values determined by these four methods.

In this case, the price will be based on the Updated Cost of Storage, because this cost is much higher than the impact of granting the Storage Request measured by any of the other three methods. It follows that users paying the Updated Cost of Storage will pay far more than the amount needed to compensate the federal government for any all direct impacts of the reallocation, including any costs to relocate recreation facilities. The Planning Guidance Notebook does not authorize any additional charges.

To be clear, additional charges such as those described in the DEIS might be appropriate if the Updated Cost of Storage were not so high. Direct costs resulting from the proposed allocation could be included in the formula as either a "benefit forgone" or a "replacement cost." For example, earlier manuals have explained "it may be appropriate to utilize the replacement cost of equivalent protection to adequately reflect monetary and non-monetary benefits forgone" when storage is reallocated from the Flood Pool. *See* EM 1165-2-100, p. 8 (revised 1971). If the

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[7] *Alabama-Coosa River Basin Reservoir Regulation Manual, Appendix A: Allatoona Reservoir, Etowah River, Georgia* (Revised Aug. 1962), p. A-5 ¶ 6.

sum of those costs exceeded the Updated Cost of Storage, water supply providers would be required to pay that higher sum. In this case, however, the Updated Cost of Storage is much higher than either figure, even when those additional costs are added.

The recent proposed reallocation at Aquilla Lake is a good example. The reallocation was not approved for reasons specific to that project, but the economic analysis for it is still informative. As in this case, the proposed flood pool reallocation would require certain recreation facilities to be relocated. These costs were noted, but they were not were added to the Updated Cost of Storage. *See Middle Brazos Systems Assessment, Phase II: Aquilla Water Supply Reallocation Report and Environmental Assessment* (Draft July 3, 2017), App. F, page 13.

2.4 <u>The No Action Alternative Should be Corrected</u>

It is a challenge to define the correct No Action Alternative for this Storage Request. At least three separate elements require consideration: (1) the projected 2050 water demand if the Storage Request is not granted, (2) the level at which Allatoona withdrawals will be capped, and (3) the non-federal response to fill the gap between projected 2050 demands and the supply available from Allatoona Lake. It is important to get all three elements right. Because the No Action Alternative is the baseline that is used to evaluate the effects of federal action, errors may distort the analysis of effects of the federal action.

The errors in the DEIS can be summarized as follows: **L**

- The No Action Alternative fails to account for the growth in water demand that is projected to occur whether the Storage Request is granted or not.

- The No Action Alternative fails to consider non-federal projects that will be implemented to meet the projected 2050 demand if the Storage Request is not granted.

- The No Action Alternative and the Future Without Project Alternative ("FWOP") should, but do not, make the same assumption about the supply available from Allatoona Lake if the Storage Request is not granted.

- The DEIS model of the Future Without Project Alternative does not match its description in text. The model depicts water shortages that will not occur under the scenario described in text.

Regarding the first three errors, the root of the problem in the DEIS is its failure to recognize that the No Action Alternative and the Future Without Project Alternative are different terms for the same concept. Most of these issues can be solved by redefining the Future Without Project Alternative as the No Action Alternative in the Final EIS. The fourth error involves correcting the model to be consistent with the text.

These errors and proposed solutions are discussed in detail below, after a discussion of the equivalence between the No Action Alternative and the Future Without Project Alternative. While it is important to get these concepts right, the effect of the errors in the DEIS is to *overstate* the impacts of granting the Storage Request by confusing the impact of reallocating storage in Allatoona Lake with the impact of the growth in water demand that will occur even if no federal action is taken. Because the impacts are "not appreciable" even when erroneously inflated, the errors would be considered harmless in the context of a challenge to a decision by the Corps to grant the Storage Request. We urge the Corps to correct them, anyway, because history has shown that harmless errors lead to confusion and can be blown out of proportion in litigation.

2.4.1. The "No Action Alternative" *Is* the "Future Without Project Alternative"

The purpose of the No Action Alternative is to provide a point of comparison to be used to identify impacts of the proposed federal action. To provide a valid comparison, the No Action Alternative should be constructed to control for any variables that are not expected to be affected by federal action. Thus, rather than merely reflecting "current conditions," the No Action Alternative should anticipate how current conditions will change if no federal action is taken. When this is not done—as in the DEIS—the result is to confuse, rather than clarify, the effects of federal action. In this case, the result is to confuse the impact of reallocating storage in Allatoona Lake with the impact of the growth in water demand that will occur even if no federal action is taken.

The Council on Environmental Quality ("CEQ") has explained that future, non-federal actions should be included in the No Action Alternative. "Where a choice of 'no action' by the agency would result in predictable actions by others, this consequence of the 'no action' alternative should be included in the analysis." CEQ, *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*, 46 Fed. Reg. 18026 (Mar. 23, 1981). "For example, if denial of permission to build a railroad to a facility would lead to construction of a road and increased truck traffic, the EIS should analyze this consequence of the 'no action' alternative." *Id.*

The "Future Without Project Alternative" is a different term to describe the exact same concept. The only difference is that one is stated in the language of economics, and the other in the "language of NEPA." *See* Charles Yee, *USACE Institute for Water Resources, Guide to Constructing the Without Project Scenario* (IWR 2012-R-03, May 2013) at 24 (stating the Future Without Project Scenario is "equivalent to the no action alternative"). Their equivalence is also clear from the definitions provided in the DEIS, which are functionally identical. *See* DEIS, p. 4-6.

Other reallocation studies have noted that the No Action Alternative and the Future Without Project Alternative are the same thing. Consider the following example from the Chatfield reallocation:

> The No Action Alternative, also known as the "without-project" condition, is the most likely condition expected to exist in the future in the absence of the proposed action, i.e., the Chatfield Reservoir storage reallocation project. In this case, the No Action Alternative means that flood storage space within Chatfield Reservoir would not be reallocated to conservation storage and the operation of the reservoir would remain

> the same. Since there would be no change in water levels or operations of the reservoir, there would be no observable impacts to users or resources within the immediate vicinity of Chatfield State Park. **But, since the water providers desiring Chatfield Reservoir storage space will continue to have their individual water supply needs as described in Chapter 1, the No Action Alternative needs to describe the most likely action or actions that would be taken to realize equivalent benefits to the proposed action.** The No Action Alternative constitutes the benchmark against which other alternative plans are evaluated for other than economic purposes.
>
> ***
>
> The main feature of the No Action Alternative is the development of other alternative surface storage units to contain surface water supplies of the same approximate yield of the Chatfield Reservoir storage reallocation project. In addition, it is important to also consider how the water providers' demand will be met until major surface storage features come online. For upstream water providers, primary supply in lieu of a reallocation at Chatfield Reservoir is NTGW until other surface storage is developed.[8]

At Allatoona Lake—as at Chatfield, and similar to the railroad example discussed in the CEQ Guidance—"no federal action" will result in the construction of alternative, non-federal projects to meet the projected 2050 water demands. These non-federal projects need to be identified and modeled as part of the No Action Alternative.

a) *Alternative "No Action Alternatives" Can Be Identified To Address Uncertainty*

Because the No Action Alternative requires projecting future conditions, reasonable people may disagree about its elements in any given case. It is important, however, to get the concepts and definitions right, and to be clear about any projections that are being made. It is extremely confusing to use the same words to define two different scenarios, and then to apply those concepts in the DEIS as if they were different. A better approach would be to adopt *alternative* "No Action Alternatives" to reflect alternative assumptions about the future, but to label them explicitly as such. The use of alternative baselines is encouraged by the Principles and Requirements and has been endorsed by courts.

The terminology is important because the No Action Alternative is the one required by NEPA, and is thus the focus of the NEPA analysis and of any legal challenge. This is illustrated by the fact that many figures in the DEIS show the "NAA" while omitting the "FWOP."

[8] *See Chatfield Reservoir Storage Reallocation: Final Feasibility Report and Environmental Impact Statement* (July 2013), p. 2-33 (emphasis added).

b) *The "No Action Alternative" in the DEIS Should Be Renamed the "Current Conditions Baseline" If It Is Retained in the Final EIS*

Because the "No Action Alternative" in the DEIS does not control for future conditions unrelated to the federal action, as discussed above, it is not the "No Action Alternative" required by NEPA and confuses, rather than helping to identify, the impact of federal action. It would be more accurate to describe it as the "Current Conditions Baseline." We have no objection to recognizing the Current Conditions Baseline as such, and including it on charts and figures as appropriate, so long as it is correctly identified, and so long as the correct No Action Alternative is also included.

2.4.2. Projected Water Demand—as Distinguished from Allatoona Withdrawals—Should Be the Same Across All Alternatives

One error in the No Action Alternative is in its handling of projected water demands, as distinguished from Allatoona withdrawals. The State of Georgia, the Metropolitan North Georgia Water Planning District, and the Georgia Water Supply Providers have all concluded that 2050 water demands will be the same whether the Storage Request is granted or not. The question is not whether the projected demand will develop; it is whether and how it will be met. If it is assumed the demand will *not* be met, the No Action Alternative should discuss the impact of future water shortages. If it is assumed that future demand *will* be met through non-federal projects, however, the No Action Alternative should describe *and model* those projects.

The DEIS distorts this picture by allowing projected water demand—not just future Allatoona withdrawals—to vary across alternatives. The No Action Alternative assumes that water demand in the year 2050 will be equal to the historical demand experienced in 2006.[9] All other alternatives assume that water demands will continue to grow as projected by the State of Georgia. These assumptions are summarized in the Table 2.4.2.

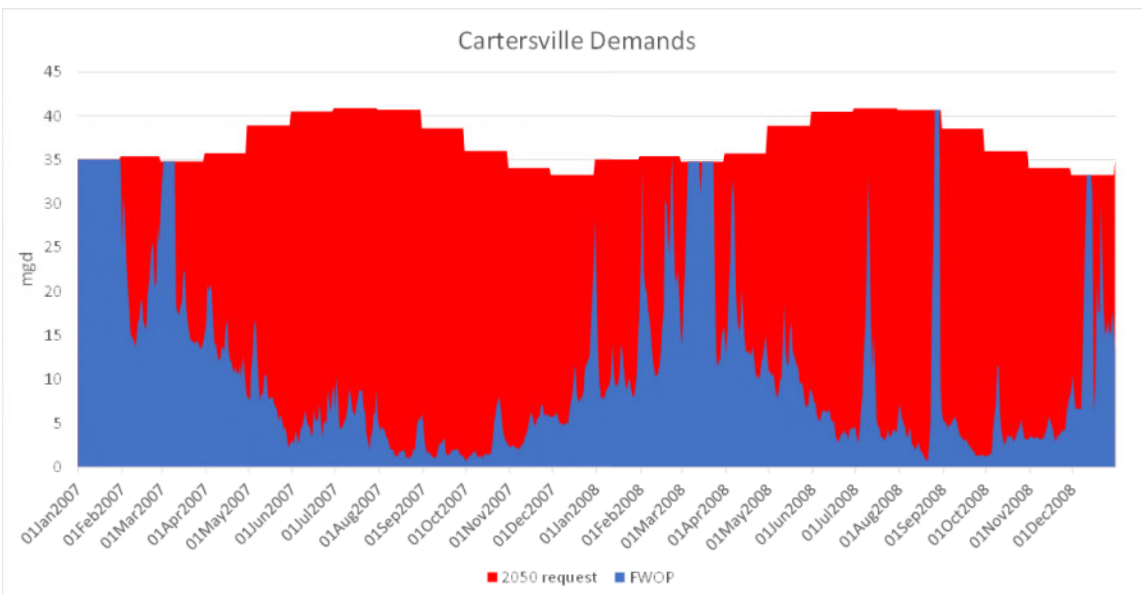
[9] The text of the DEIS states that 2007-level demands were used in the NAA, but the modeling appendix states that 2006-levels were used. This error should be corrected in the final draft.

Table 2.4.2: The DEIS Model Results Fail to Control for Water Demand, Making it Difficult to Distinguish the Effects of the Proposed Action from the Effects of Increasing Water Demand

	No Action Alternative (Alt. 1)	**Future Without Project Alternative (Alt. 2)**	**Proposed Action Alternatives (Atls 3-13)**
Projected 2050 Water Demand used in RESSIM Model	Historical demand experienced in 2006	2050 demand projected by Metro Water District (with shortages as modeled, but not as described in text)[10]	2050 demand projected by Metro Water District

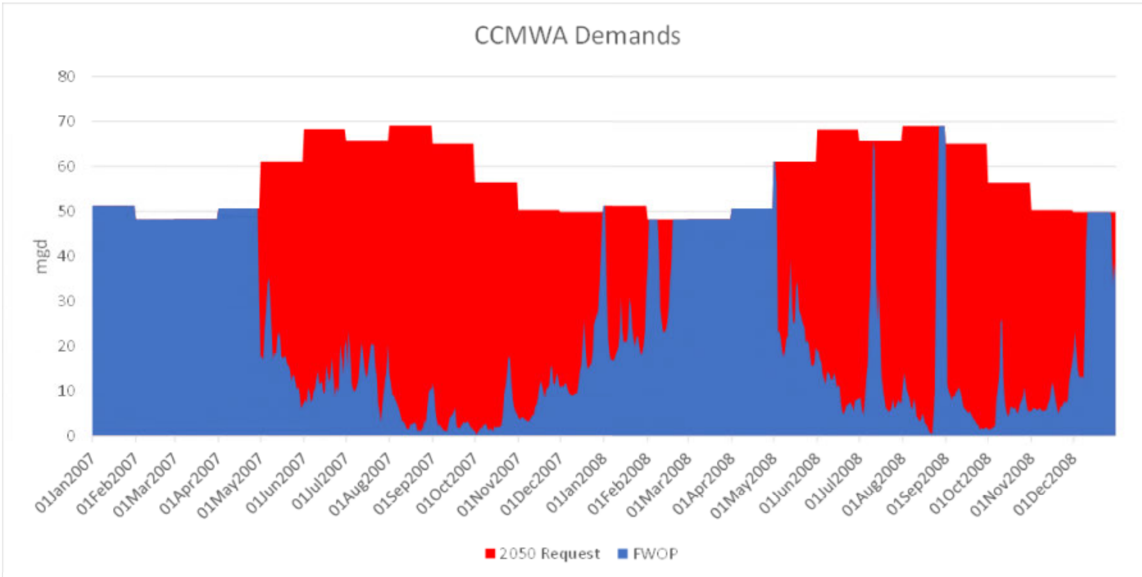
The effect of using 2006 water demand in the No Action Alternative is to ignore the impacts of water shortages if Allatoona withdrawals are capped and federal alternatives are not implemented. These shortages are depicted in Figure 2.4.2 below.

Figure 4.4.5: The Corps' Modeling of the FWOP is Flawed Because it Shows Shortages That Will Not Occur if the Projects Described in the FWOP Are Constructed.[11]



[10] *See* Figure 2.4.2.

[11] The shortages are apparent in the Corps' modeling of the Future Without Project Alternative. As discussed in Part 2.4.5, this is an error, because the Future Without Project Alternative should not result in shortages, but the model is still useful to show the extent of shortages that would result if no federal action were taken and nothing were done at the state or local level to meet the projected 2050 demand.



If water shortages result from taking no federal action, the impact of these shortages must be described in the No Action Alternative, and the benefit of avoiding them should be noted as a substantial benefit of any alternative that will eliminate them.

More generally, the effect of allowing projected water demand to vary between alternatives is to obscure, rather than clarify, the effects of federal action. Because a different projected water demand is used for the No Action Alternative, it is impossible to discern whether impacts shown in the DEIS are the result of the projected increase in water demand or of the federal actions proposed to meet that demand. To isolate the impact of federal action, and thus to provide a valid comparison, water demand should be the same across all alternatives.

2.4.3. The Cap on Allatoona Withdrawals If No Action Is Taken Should be Consistent

Another question—but not necessarily an error—is in the No Action Alternative's cap on Allatoona withdrawals. The DEIS contradicts itself by providing two, conflicting answers to the same question about the cap that will be imposed at Allatoona if the Storage Request is not granted. The No Action Alternative assumes that withdrawals will be capped at 2006 levels, but the Future Without Project Alternative assumes Allatoona withdrawals will be capped based on the Corps' Storage Accounting. Either answer is defensible, but the Final EIS needs to pick one and stick with it.

In scoping comments, the Water Supply Providers advocated the use of a cap (for purposes of modeling the No Action Alternative) based on 2006-level withdrawals, which is consistent with the cap adopted in the DEIS No Action Alternative. Specifically, we stated the No Action Alternative should "reflect 'no change' from current management direction or level of management intensity" and "continuing with the present course of action unchanged." WSP Scoping Comments at 9-10. We further observed that "the status quo does not include any cap on Cobb-Marietta's withdrawals based on the Corps' disputed storage accounting methods." *Id.* at

10. As such, "the uncapped withdrawals at current levels reflect the current level of management activity and a continuation of the present course of action." *Id*. (emphasis added).

We stand by that analysis but also believe it is reasonable for the Corps to assume in this study that future Allatoona withdrawals would be capped based on the Corps' Storage Accounting if the Storage Request is not granted. If the "No Action" and "Future Without" Alternatives are combined into a single "No Action Alternative" in the Final EIS, as they should be, either cap could reasonably be used in the No Action Alternative. If the Corps believes it is important to show both alternatives, it should make this clear by explicitly identifying two potential No Action Alternatives.

2.4.4. The Gap Between Allatoona Withdrawals and Projected 2050 Demand Will Be Met Through Non-Federal Alternatives If No Action Is Taken

The next question is whether and how future water demands will be met if the Storage Request is not granted. As discussed above, the No Action Alternative in the DEIS errs by ignoring the projected growth in water demand beyond the levels that can be taken from Allatoona Lake. By ignoring this future condition, the No Action Alternative fails to consider *either* possible impact—water shortages, on the one hand, or the construction of major new reservoirs, on the other—of taking no federal action.

The No Action Alternative in the Final EIS should include the two non-federal projects identified in the DEIS in the context of the Future Without Project Alternative. The DEIS concludes that two non-federal reservoirs would be constructed to provide a combined yield of 70 million gallons per day. Given this conclusion in the DEIS, these two projects must by definition be included in the No Action Alternative in the Final EIS.

2.4.5. However Defined, the Model of the No Action Alternative Must Conform to its Description in Text

Any model of any alternative should conform to its description in the text. In the DEIS, non-federal alternatives identified in the text description of the Future Without Project Alternative are omitted from the model. The Future Without Project Alternative model thus shows substantial water shortages occurring in the year 2050—even though no shortages will occur under the scenario described in text, in which non-federal projects are constructed to meet the projected need. The shortages in the model are shown in Table 2.4.2 above. The existence of shortages in the Future Without Project Alternative is a clear error that should be corrected in the Final EIS.

A corrected version of the No Action Alternative for the Final EIS (the scenario described as the FWOP in the DEIS) is provided in Exhibit 4.

2.4.6. The Selection of Non-Federal Projects Included in the "Future Without Project Alternative" Should Be Reconsidered

The Georgia Water Supply Providers agree that the non-federal projects will be constructed to meet future demand if the Storage Request is denied, but disagree with the specific projects identified as those most likely to be implemented. The DEIS considers three potential non-federal projects:

- A pipeline from the Etowah River near Canton to convey releases from Hickory Log Creek Reservoir to Cobb-Marietta's Wycoff Treatment Plant.

- A new reservoir with a projected 35 mgd yield at the Sharp Mountain site, which is owned by Cobb-Marietta.

- A new reservoir with a projected 35 mgd yield at the Stamp Creek site, which is not owned by either water providers but could be pursued by the City of Cartersville and/or Bartow County.

The DEIS concludes that the two reservoirs are the most likely to be constructed. As the parties that will be deciding which projects to pursue, the Water Supply Providers respectfully disagree. It is highly unlikely that Cobb-Marietta will choose to build a new reservoir *and* pipeline before constructing a pipeline to make use of the reservoir it has already constructed. Therefore, the most likely non-federal alternative is for Cartersville to pursue Stamp Creek Reservoir but for Cobb-Marietta to build the pipeline to Hickory Log Creek Reservoir.

The DEIS states that the pipeline alternative would be "efficient" but "ineffective." We disagree with both conclusions. Although obviously "inefficient," Cobb-Marietta will likely build this pipeline if the Storage Request is denied.

a) *The Hickory Log Creek Pipeline Would Be Effective*

The DEIS concludes that the pipeline alternative is not "effective" because it will not meet 100% of the need projected by the State of Georgia for Cobb-Marietta and the City of Cartersville. This assumes that any non-federal alternative will be selected and implemented by the State of Georgia. The analysis should be done from the perspective of each individual utility because any non-federal option will be implemented locally.

In the case of Cobb-Marietta, it is highly unlikely the Authority would choose to build a new reservoir before completing the one that it has already built. This becomes obvious when one considers that a pipeline would be needed in either case, the only difference being that a *longer* pipeline would be needed to reach Sharp Mountain.[12] It is also likely that Cobb-Marietta

[12] Based on information provided by the Water Supply Providers during the scoping process, the DEIS concludes that the entire Sharp Mountain Reservoir project—including both reservoir and pipeline—would cost about the same as building a pipeline to the Hickory Log Creek Reservoir. This is obviously not correct. The error arises from the use of different methods to project costs for these two projects, resulting in an apples-to-oranges comparison. The Hickory Log Creek Pipeline estimate was based on a detailed engineering analysis of the most likely route, whereas the Sharp Mountain estimate was based on a general "rule-of-thumb" for reservoir projects. To remedy this discrepancy, we asked Hazen and Sawyer to revise the Sharp Mountain projections to use similar methods. The resulting estimate, provided in Exhibit 5, is about $200 million to construct the Sharp Mountain Reservoir and intake and another $250 million for the pipeline, bringing the total for that project to approximately $450 million.

would pursue the Hickory Log Creek Pipeline option first, even if the resulting yield would not meet its full projected 2050 need, because it would still have the option to construct Sharp Mountain in the future when it is ultimately needed.

b) *The Hickory Log Creek Pipeline Would Not Be Efficient*

The conclusion in the DEIS that the pipeline alternative would be "efficient" is inexplicable. As defined in the Principles and Requirements "efficiency is the extent to which an alternative alleviates the specified problems and realizes the specified opportunities at the least cost." Principles and Requirements at 21. The pipeline is obviously not the "least cost" solution, however. In addition to the initial capital cost, constructing a 20-mile pipeline would have significant environmental impacts, including right-of-way clearing and numerous stream crossings, and would also have continuing environmental and financial impacts by requiring substantial ongoing investments in energy and money to pump water that could be moved by gravity by the Etowah River at no expense if the Corps' Storage Accounting were adjusted to credit that water to Cobb-Marietta when it reached Allatoona Lake. It would be far less costly—and far less damaging to the environment—to adopt Georgia's Storage Accounting. By allowing Cobb-Marietta to use the natural channel of the Etowah River to convey the water that would otherwise be pumped through a pipeline, adopting Georgia's Storage Accounting would achieve 100% of the benefits of a $220 million pipeline at 0% of its cost.

2.5 Hydropower Impacts Are Tallied Incorrectly

The DEIS erroneously states dependable capacity under Alternative 3 would be 135,777,856. *See* DEIS 5-50 Table 5-16. The correct number, as determined by summing the entries in the Table, is $138,504,436. **M**

2.6 The Final EIS Should Directly Address the Water Supply Act Criteria

The DEIS does not explicitly address the Water Supply Act criteria under 43 U.S.C. § 390b(d), but it should. The Final EIS should explicitly state that the proposed reallocation will not require a "major structural or operational change" or "seriously affect" the proposes for which Allatoona Lake was originally surveyed, authorized, and constructed. Given the absence of any appreciable adverse effect of granting the request, no other conclusion is possible. **N**

2.7 The Criteria Used to Classify Impacts as Either "Negligible" or "Measurable, But Not Appreciable" Should be Disclosed

For each performance measure, the DEIS labels the impact of the proposed action as either "negligible," "slightly adverse," "slightly beneficial," "beneficial" or "adverse," but it does not explain the basis for these labels. The difference between a "negligible" impact and one that is "measurable, but not appreciable" is unclear. If the distinction is important, the criteria should be disclosed. If it is not, the two categories should be treated as one. This is especially important given that, of all the measures studied, the only impact considered "appreciable" is the beneficial impact of granting the Storage Request. **O**

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3. ALABAMA POWER COMPANY'S REQUEST

Like the Pool Rise, Alabama Power's Request to reduce flood protection in the Coosa River Basin is a discrete measure that should be evaluated independently. The Georgia Water Supply Providers thus respectfully request that Alabama Power's request be addressed in a separate record of decision. **P**

The Georgia Water Supply Providers adopt and incorporate by reference the State of Georgia's comments regarding Alabama Power's request. The DEIS shows that the Storage Request can and should be granted whether Alabama Power's request is granted or not.

4. CONCLUSION

Thank you for considering these comments. Please do not hesitate to reach out if we can answer any questions, provide additional information, or assist in any way.

Best regards,

/s Lewis B. Jones

cc: The Georgia Water Supply Providers

EXHIBIT 1

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November 16, 2017

VIA REGULATIONS.GOV

Docket Number COE-2016-0016
U.S. Army Corps of Engineers
ATTN: Mr. Dan Inkelas and Mr. Jim Fredericks
ATTN: CECC-L, U.S. Army Corps of Engineers
441 G Street NW
Washington, DC 20314

RE: Use of U.S. Army Corps of Engineers Reservoir Projects for Domestic, Municipal and Industrial Water Supply, Docket No. COE-2016-0016

Dear Mr. Fredericks and Mr. Inkelas:

Thank you for the opportunity to submit comments on the U.S. Army Corps of Engineers' proposed water supply rule. These comments are submitted on behalf of the "Georgia Water Supply Providers." This group includes the Atlanta Regional Commission and the major water supply providers serving metropolitan Atlanta—the City of Atlanta, Cobb County-Marietta Water Authority, DeKalb County, Forsyth County, Fulton County, City of Gainesville, and Gwinnett County.

The Georgia Water Supply Providers support the Corps' efforts to clarify and establish regulations to govern its water supply program. Too often and for far too long, the lack of firm regulatory guidance and clear policy has hampered the development of water projects, delaying even routine decisions that can and should be made at the operational level of command to obtain guidance and one-off determinations from Headquarters that pertain only to the project in question. This has caused significant delays, politicized decisionmaking, and resulted in inconsistent and disparate treatment of water providers across different Corps districts. Clear regulatory guidance, if properly framed, would do much to address these problems.

It is critical, however, that the Corps get this right. The Georgia Water Supply Providers alone depend on storage in Corps reservoirs to meet the water needs of over 4.1 million people in the metropolitan Atlanta area. Nationally, over 9.8 million acre-feet of storage in Corps reservoirs has been allocated to water supply.[1] The importance of water supply storage in existing Corps reservoirs will only increase, as States and water providers across the United States work to meet the nation's growing needs.

There is much that is positive in the Corps' proposal. We support, for example, the Corps' efforts to clarify its authority to reallocate storage under the Water Supply Act of 1958 and to streamline the water supply approval process. That said, the Georgia Water Supply Providers are deeply concerned by other aspects of the Corps' proposal, in particular the provisions concerning "storage accounting" and the allocation of "made inflows." These proposals improperly conflate the management of physical storage in a reservoir with the allocation of water and water rights, which is a State function. They are contrary to the basic principles of federalism that have formed the bedrock of water policy in the United States for more than a century and that have governed the Corps' water supply program since its inception. These proposals exceed the Corps' authority and are unlawful.

These aspects of the proposal are also poor policy. These proposals would discourage sound water management practices that encourage returning water to the system and reducing consumptive losses. They would also impede the integration of existing federal reservoirs and infrastructure into regional water supply systems, instead creating strong incentives for water suppliers to construct new, duplicative and unnecessary infrastructure simply to avoid interaction with the federal projects. These proposals must be corrected in any final rule.

The Georgia Water Supply Providers are not alone in this view. Some members of the Georgia Water Supply Providers are also members of the National Water Supply Alliance ("NWSA"), a national organization consisting of State, regional and local governments and other governmental entities affected by the Corps' water supply program. The Georgia Water Supply Providers agree with NWSA's comments on the Corps' Proposed Rule, and they adopt them in their entirety here. These comments, therefore, will expand on NWSA's comments to focus on the particular effects of the Corps' proposal on the Georgia Water Supply Providers.

1. Identity and Interests of the Georgia Water Supply Providers

The Georgia Water Supply Providers group consists of all major water suppliers in the metropolitan Atlanta area. They depend on reservoir storage and flow regulation provided by the Corps to provide safe, reliable and affordable water supplies for millions of people and businesses in metropolitan Atlanta. For many of the Georgia Water Supply Providers, Corps reservoirs provide their only source of water supply.

Water supply in metropolitan Atlanta is limited, not by a lack of water, but by a lack of storage. The metro area receives almost 50 inches of rain a year—more than almost any other region of the country—but the rainfall is seasonal; groundwater is extremely limited; and surface drainages are dispersed across six basins. To meet its water needs, therefore, the region depends heavily on reservoirs to store the seasonal flows of small, headwater streams, the two largest of

[1] *See* U.S. Army Corps of Engineers, Institute for Water Resources, 2014 Municipal, Industrial and Irrigation Water Supply Database Report, 2015-R-02, at 5 (Aug. 2015).

which—the Chattahoochee River and the Etowah River—were impounded by the Corps in the 1950s. Reservoir sites being extremely limited, very few alternatives exist. The metro region is thus unusually dependent on the existing reservoirs operated by the Army Corps of Engineers. Integrating these federal projects into a sound and responsible basin-wide water management plan is thus critical to meeting the region's water supply needs.

Buford Dam impounds the Chattahoochee River to form Lake Sidney Lanier 40 miles north of Atlanta. Congress authorized this project in 1946, in part to provide water supply to Atlanta as the region developed. It now serves communities throughout North Georgia, including several that withdraw water directly from the lake and others that withdraw water from the Chattahoochee River below the dam. The Corps has recently completed a reallocation study and determined that it will reallocate storage in Lake Lanier to meet the long-term (year 2050) water supply needs of communities withdrawing water directly from the reservoir.[2] Users withdrawing water from the Chattahoochee River below Lake Lanier do not require storage contracts, but they rely on the Corps to regulate the flow of the river so there is sufficient water available to operate their intakes.

Allatoona Dam impounds the Etowah River near Cartersville, Georgia, approximately 30 miles northwest of Atlanta. The Cobb County-Marietta Water Authority ("Cobb-Marietta") relies on Allatoona Lake for approximately half of its water supply; the other half is drawn from the Chattahoochee River below Buford Dam. Cobb-Marietta owns 13,140 acre-feet of storage in Allatoona Lake under a Water Supply Act contract executed in 1963.[3]

Together, these two federal projects provide approximately 80 percent of the water supply for the greater metropolitan area. Thus, nearly 4.1 million people depend directly on the Corps projects. The vast majority of these have no other source of water supply beyond that provided by storage in the federal projects.

With these interests in mind, the Georgia Water Supply Providers offer the following comments on the Corps' proposal.

2. The Georgia Water Supply Providers Believe a Rulemaking is Critical

As explained above, the Georgia Water Supply Providers believe that a rulemaking is critical to providing clear guidance to Corps staff on important water supply policy and authority matters. It is also needed to establish nationwide consistency in Corps policy and practice.

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[2] *See* U.S. Army Corps of Engineers, Final Environmental Impact Statement: Update of the Water Control Manual for the Apalachicola-Chattahoochee-Flint River Basin in Alabama, Florida, and Georgia and a Water Supply Storage Assessment at ES-4 (Dec. 2016), available at www.sam.usace.army.mil /Missions/Planning-Environmental/ACF-Master-Water-Control-Manual-Update/ACF-Document-Library/.

[3] *See* Contract Between the United States of America and the Cobb County-Marietta Water Authority for Water Storage Space in Allatoona Reservoir, No. DA-01-076-CIVENG-64-116 (Negotiated) (Oct. 31, 1963) (Ex. 1).

Currently, these policies vary dramatically between districts, arbitrarily resulting in grossly disparate treatment of water supply users who happen to reside in different regions.

This is not to say the Georgia Water Supply Providers support the rule as proposed. They hope, however, that the comment process will lead the Corps to adopt a nationwide rule that is lawful, consistent with basic principles of federalism, and that all users can live with.

3. The Water Supply Providers Agree the Corps Should Clarify Its Authority to Reallocate Storage Under the Water Supply Act

A. "Storage May Be Included" for Water Supply In an Existing Project by Reallocating Storage to Make It Available for This Purpose

The Georgia Water Supply Providers agree with the proposed clarification that "storage may be included" for water supply in an existing project by reallocating storage to make it available for this purpose. Several commentators have noted that that the Comptroller General asserted a different view in 1990, opining that the authority provided by the Water Supply Act is limited to "what may be accomplished by through construction or expansion of reservoirs."[4] There is no support in the text of the statute or its legislative history for this argument, which contradicts contemporaneous understandings and longstanding practice. Presumably this explains why Congress and the Corps of Engineers both ignored it.

Relying primarily on an idiosyncratic interpretation of the Water Supply Act's legislative history, the Comptroller General asserted that Congress was primarily concerned with "with 'developing … water supplies,' " as opposed to reallocating supplies that were "already available." The legislative history is equivocal at best, however. The phrase "storage may be included" is not even discussed. Nor is there any suggestion that the new statutory authority for water supply would be limited to new construction. The Comptroller General relied, instead, on generalities about the need to develop the nation's water resources—sentiments perfectly consistent with reallocating storage to include storage for water supply in existing developments when doing so is in the national interest.

The Comptroller General also pointed to provisions requiring cost-sharing agreements to be in place before any "construction or modification" of a reservoir to include storage for water supply. He asserted these features of the statute confirm that the authority was limited to physical alterations of a reservoir. He failed to explain, however, why the term "modification" cannot also refer to modifications effected by reallocating storage—the commonsense interpretation adopted by the General Counsels of both the Army and the Corps.

The GAO echoed the Comptroller General's reasoning in a 1991 report, asserting that the term "modification" in the Water Supply Act could mean only "physical alteration (expansion) of a reservoir." The GAO report thus recommended that Congress amend the Water Supply Act to "clarify" the Corps' authority by "expressly prohibit[ing] the reallocation of existing water storage capacity under the act unless accompanied by the construction or expansion of reservoir

[4] Proposed Rule, 81 Fed. Reg. at 91575 to 91576.

storage capacity." Despite numerous opportunities to act on this suggestion—including through the Water Resources Development Acts of 1996, 2000, 2007, 2014, and 2016—Congress has declined to act on the suggestion.

B. The Corps' Proposed Test of Authority Correctly Disclaims Percentages as the Sole Metric and Focuses On the Project Congress Authorized

The Proposed Rule expressly rejects the use of the percentage of storage reallocated as the sole or appropriate metric of major operational change under the Water Supply Act. Instead, the Corps proposes to adopt the interpretation of the terms "seriously affect [authorized] purposes" and "major structural or operational changes" set forth in the 2012 Chief Counsel's opinion. This interpretation would evaluate the Corps' authority to reallocate storage on a project- or system-specific basis by comparing the benefits provided if storage were reallocated against those that Congress anticipated when it authorized the project. Congressional approval would be required only if those benefits fundamentally depart from congressional intent in authorizing the project. The Water Supply Providers support this proposal for three reasons.

First, the terms "major" and "seriously" are ambiguous statutory terms, implying a broad delegation of authority to the Corps to interpret and apply them at its reservoirs. These terms do not admit of only one meaning, and Congress cannot be said to have spoken clearly about their sole manner of interpretation.

Second, the percentage of storage reallocated says nothing about whether a reallocation would result in a major operational change or seriously affect the other authorized purposes of the project. This will depend instead on the specific changes to the actual project operations that would result from the reallocation—for instance, how would hydropower scheduling change, how would the Corps operate the project differently for navigation, etc. These are fact-bound inquiries that depend on the relationship between the specific operating rules for the project and the nature of the water supply reallocation under review.

Third, we agree that the appropriate measuring point is the project that Congress authorized. It would make no sense to require congressional approval for changes that provide benefits comparable to those Congress anticipated at the time of authorization just because the Corps has made discretionary operational changes since the project was authorized. Furthermore, where Congress authorized a system of development, it is appropriate for the Corps to examine the benefits provided and the effects of a proposed reallocation on a system-wide basis. This is especially true where, as is often the case, power is sold on a system basis and releases for other purposes are reregulated by other projects in the system.

C. The Proposed Rule Correctly Clarifies the Role of the Corps' 15 Percent / 50,000 AF Delegation of Approval Authority

The Water Supply Providers support the proposal to clarify that longstanding limitations on the Director of Civil Works to reallocate storage do not apply to the Assistant Secretary of the Army for Civil Works.

The Water Supply Act delegates authority to include storage for water supply to the Secretary of Army. Through Engineering Regulation 1105-2-100, the Secretary of the Army has delegated a portion of this authority to the Chief of Engineers—specifically, to reallocate storage up to the lesser of 15 percent of the total storage capacity of a reservoir or 50,000 acre-feet. Reallocations that do not exceed the *statutory* thresholds, but that do exceed the approval authority delegated to the Chief of Engineers, can still be effected, but they must be approved by the Assistant Secretary of the Army for Civil Works.

Some commentators have misinterpreted the limits on the Chief of Engineers' approval authority as applying to the Army itself. For example, some have asserted that the 15-percent or 50,000 acre-foot approval threshold should be interpreted as refinements to the statutory thresholds. Some even assert (notwithstanding the language of ER 1105-2-100) that the approval thresholds were always intended as such. These arguments should be rejected for the reasons discussed above. The Proposed Rule correctly clarifies the role and meaning of the thresholds in ER 1105-2-100.

4. The Corps' Proposal to Allocate Made Inflows Improperly Intrudes on the State of Georgia's Authority to Allocate Water and Grant Water Rights

The Corps proposes two alternatives to allocate "made inflows." The first would treat made inflows like any other water, allocating such flows to users based on their share of conservation storage. The rule proposes that *all* made inflows be subject to federal allocation in this manner, including made inflows belonging to specific users under State law. Alternatively, the Corps suggests allocating made inflows exclusively to the users who generate them in every case. As with the first proposal, this alternative federal allocation rule would override any conflicting State allocation and negate any State-granted water rights.

Neither alternative is acceptable. Both would usurp the States' authority to allocate water and water rights. The only lawful approach is to defer to States by allocating made inflows to the persons who have obtained the rights to them under State law.

It is both unlawful and unwise to adopt a federal allocation rule that conflicts with State allocation decisions. Because States are in the best position to determine how the water resources within their borders should be utilized, the federal government should strive to facilitate—not frustrate—those decisions. For example, the Georgia Water Supply Providers have spent billions to generate made inflows to federal reservoirs to expand their water supplies. If the water they generate will be taken from them and allocated to other users, they will abandon these projects. In addition to causing past investments to be wasted, this could also lead local water providers to undertake costly projects to achieve their objectives without utilizing existing federal infrastructure. Inevitably, the end result of forcing local governments to "plan around" the federal reservoirs, and avoid federal projects in order to preserve the water rights granted to them by their States, will be sup-optimal both economically and environmentally.

A. Made Inflows Are a Critical Component of Metropolitan Atlanta's Long-Term Water Supply Plan

As described above, the water supply challenge facing metropolitan Atlanta is not a lack of water, but a lack of places to store it. To address this challenge, the Metropolitan North Georgia Water Planning District ("District"), which is tasked with developing water supply and water conservation plans to meet the region's long-term water supply needs, and the Georgia Water Supply Providers have invested heavily in "made inflow" projects intended to increase the water supply yield of existing storage facilities.

There are two types of made inflow projects in Georgia. The first uses engineered "return flows" to enhance water supplies. These projects collect wastewater, treat it to very high standards, and then discharge it back into the drinking water reservoir from which it was withdrawn. The State of Georgia and the District have identified this strategy as an essential component of the region's long-term water supply plan.[5]

The marquee project is the F. Wayne Hill Water Resources Center, a $1 billion project constructed by Gwinnett County to return highly treated wastewater to Lake Lanier for indirect potable reuse. It stands as one of the most advanced water reclamation facilities in the world, and it was constructed specifically to recycle water to augment the region's water supply. The F. Wayne Hill facility is currently permitted to return 40 million gallons of water per day to Lake Lanier for reuse. This is projected to increase to 60 mgd in the future, an amount equivalent to the facility's existing treatment capacity.

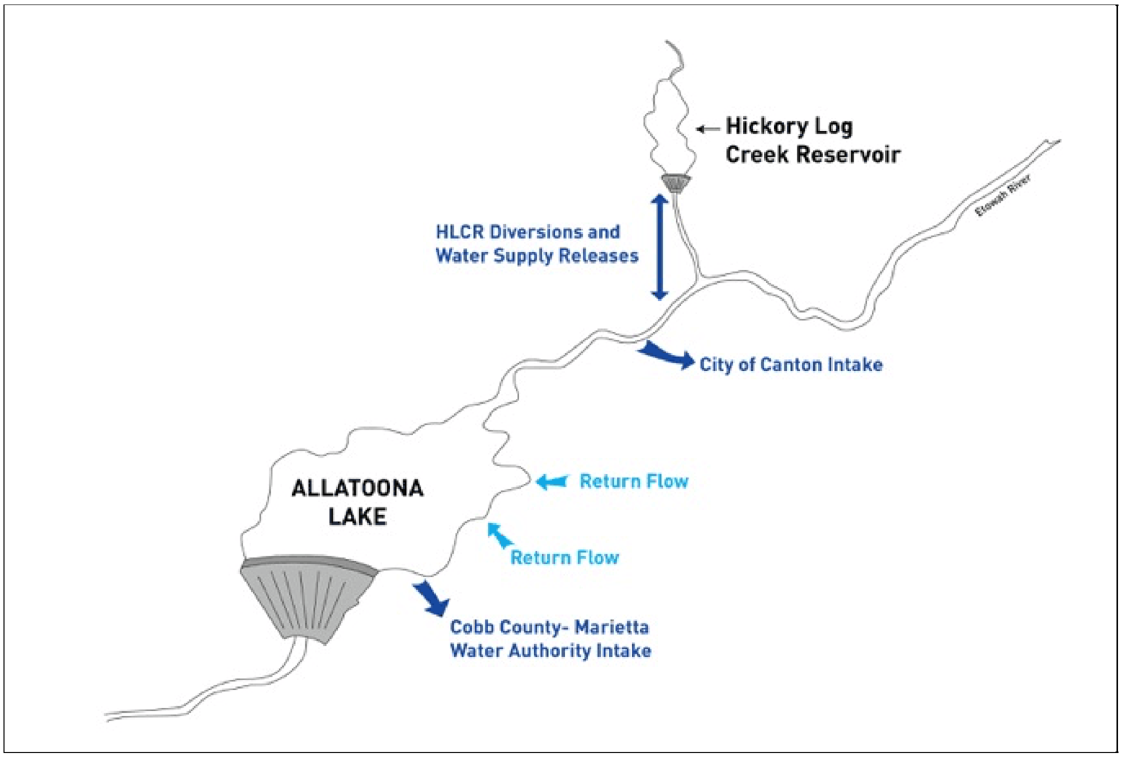
Gwinnett County is not the only water provider that depends on return flows and indirect potable reuse to meet its needs. Other return flow projects in the metro area include two water reclamation facilities operated by the City of Gainesville to return water to Lake Lanier, and two operated by Cobb County to return water to Allatoona Lake. Cobb County, for example, currently returns approximately 17 mgd on average to Allatoona Lake, with a permitted capacity of 25.6 mgd. These projects also significantly enhance water supplies through indirect potable reuse.

The second type of made inflows in Georgia are "delivery flows," which consist of water released from storage in one water supply project to be conveyed to another. The prime example is the Hickory Log Creek Reservoir, a $100 million water supply reservoir jointly developed by

[5] *See* Metropolitan North Georgia Water Planning District, Water Resource Management Plan at 2-2 (2017) (Ex. 2); *see also* Metropolitan North Georgia Water Planning District, Water Supply and Water Conservation Management Plan, 6-20 (2003) (Ex. 3) ("Based on the evaluation, indirect potable reuse is the preferred water reuse option. Indirect potable reuse is more cost effective, provides flexibility in meeting future water demands, and does not encourage consumptive use.... For indirect potable reuse, discharge of reclaimed water to a lake or reservoir is preferable to the discharge of water to a river or stream. The water withdrawal credit is 100 percent when the reclaimed water is discharged to a lake or reservoir, assuming that these water bodies are capable of storing the discharge.").

the Cobb County-Marietta Water Authority and the City of Canton and located upstream of Allatoona Lake on a tributary to the Etowah River.

For over two decades, Cobb-Marietta sought to purchase additional water supply storage in Allatoona Lake to provide additional yield from the reservoir. The Corps failed to act on Cobb-Marietta's requests, however, leaving Cobb-Marietta no choice but to develop alternative storage. Its solution was the Hickory Log Creek Reservoir. As shown in the figure below, Hickory Log Creek Reservoir is designed to release into the Etowah River for delivery to Cobb-Marietta's intake at Allatoona Lake. In this way, the project expands available supplies through the use of existing infrastructure while avoiding the need to construct duplicative treatment facilities or unnecessary pipelines—which would cost in excess of $200 million and have needless environmental impacts—merely to convey water to Cobb-Marietta's existing water treatment facilities.



B. The State of Georgia Has Exercised its Authority to Allocate Made Inflows to Water Supply Users

As the Proposed Rule recognizes, it is the sole prerogative of the States to allocate water and grant water rights. The State of Georgia has exercised this authority as it relates to made inflows, vesting the Director of the Georgia Environmental Protection Division ("Georgia EPD") with the power to allocate made inflows and to grant users the exclusive right to impound and use them. Under Georgia law:

> When a user has contracted for the right to utilize storage space within a reservoir that is owned or operated by an agency of the federal

> government, the Director [of the Environmental Protection Division] shall retain authority to allocate any State water rights subject to regulation under O.C.G.A § 12-5-31, including the right to withdraw State waters from the project as well as the right to impound made inflow to the reservoir. When the Director allocates to a specific user made inflows to a reservoir, pursuant to the permitting authority and procedure provided by O.C.G.A. § 12-5-31, that user will have the right to impound such flows in the storage space for which it has contracted, to the extent storage space is available.[6]

Under this authority, Georgia EPD has issued a permit to Cobb-Marietta granting it the exclusive right to store and use made inflows to Allatoona Lake.[7] This includes both water delivered to Allatoona Lake from Hickory Log Creek Reservoir and engineered return flows to Allatoona Lake produced by Cobb County.[8] The permit entitles Cobb-Marietta to store this water so long as it has the capacity to do so—that is, so long as space is available in the 13,140 acre-feet of storage that Cobb-Marietta purchased in Allatoona Lake. Any made inflows to Allatoona Lake that Cobb-Marietta lacks capacity to store are available to other users.[9]

C. The Proposed Rule for Allocating Made Inflows Directly Conflicts with Water Rights Granted by the State of Georgia

As explained in detail in the comments submitted by NWSA, the proposed federal rule would directly conflict with the authority of States to allocate made inflows. The Georgia examples detailed above illustrate this effect.

Under the permit issued to it by the State of Georgia, Cobb-Marietta is entitled to store and use one-hundred percent of its made inflows to Allatoona Lake. Under the proposed federal rule, however, Cobb-Marietta would get just a small fraction of this water. Because Cobb-Marietta owns just 4.61 percent of the conservation storage in Allatoona Lake, it would get just 4.61 percent of the made inflows it discharges into Allatoona Lake; the Corps would keep the

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[6] *See* Ga. Comp. R. & Regs. 391-3-6-.07(16)(a) (Ex. 4). Under the Georgia regulations, "Made inflow to a reservoir" is defined as follows: "water that flows into a reservoir (1) after having been released from a storage project upstream of the reservoir as part of a plan approved by the Director; or (2) after having been discharged from a wastewater reclamation plant as part of a plan approved by the Director to increase flows into the reservoir." *Id.* (2)(o).

[7] *See* Georgia EPD Permit No. 008-1491-05 (Modified November 7, 2014) (Ex. 5).

[8] *Id.* (giving Cobb-Marietta the "exclusive right to impound in Allatoona Lake and/or withdraw from Allatoona Lake any and all 'made inflows' ... to Allatoona Lake from the following sources: 1. The Cobb County-Northwest Water Reclamation Facility; 2. The Cobb County-Noonday Creek Water Reclamation Facility; and Hickory Log Creek Reservoir").

[9] *See id.*, Special Condition 3 (Granting Cobb-Marietta exclusive right to store made inflows in Allatoona Lake, but only "[t]o the extent that storage space is available in Allatoona Lake to the permit holder under the terms of its contract with the U.S. Army Corps of Engineers.").

rest—over 95 percent—to be allocated to itself and to other users. A clearer case of the federal government usurping the State's authority to allocate water rights is difficult to imagine.

D. The Corps Cannot Claim that the State of Georgia's Water Allocation Decision Interferes with the Other Purposes of the Federal Projects

Given the States' traditional power to control and regulate the use of water resources within their borders—and the Corps' agreement that it lacks the authority to allocate water and grant water rights because this authority has been reserved to the States—the reasons for the Corps to defer to State water allocation decisions are plain. Some have suggested, however, that deferring to State-law water rights granted to specific users could interfere with the Corps' ability to operate the projects to achieve the other federal purposes. In essence, they suggest that most or all inflows could be allocated to specific users under state law, leaving nothing for the federal government or the users who depend on operations to meet the federal objectives.

These concerns are misplaced, as the comments from NWSA make clear. Under traditional conflict preemption principles, federal law would preempt state-granted water rights if a State's allocation decision "actually conflicts" with federal law.[10] This would occur if it were "impossible to comply with both state and federal law" or if State law "stands as an obstacle to the accomplishment of the full purposes and objectives of Congress."[11] This determination requires a case-by-case analysis of the conditions actually imposed by the State.[12]

In the case of Cobb-Marietta, there is no plausible argument that the State's allocation of made inflows will interfere with federal objectives. This is clear because Cobb-Marietta is already entitled under both State law and its contract to take the water at issue ***without returning it***, and because the Corps has already determined that doing so will not interfere with any federal objective.

For example, the Corps has already executed a storage contract with Cobb-Marietta stating that Cobb-Marietta is entitled to utilize storage in Allatoona Lake to store such water as the State of Georgia may grant it. The contract does not anticipate, let alone require, that any water withdrawn from the reservoir will be returned.[13] Therefore any water that Cobb-Marietta chooses to return is truly a "made inflow" in the sense of being additional water the Corps has no right to expect.

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[10] Preemption can also occur where federal law occupies the field. This form of preemption is not relevant to water allocation decisions, as water law is a traditional area of State authority and all evidence supports Congress's intent to preserve these traditional State powers.

[11] *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238, 248 (1984) (citations omitted).

[12] *California v. United States*, 438 U.S. at 679; Rice v. Santa Fe Elevator Corp., 331 U.S. 218, 232 (1947) ("until it is known what the [State] will do, no conflict can be shown").

[13] *See* Contract Between the United States of America and the Cobb County-Marietta Water Authority for Water Storage Space in Allatoona Reservoir, No. DA-01-076-CIVENG-64-116 (Negotiated) (Oct. 31, 1963).

The Corps made a similar determination when it issued the Section 404 permit authorizing construction of the Hickory Log Creek Reservoir. At that time, the Corps specifically analyzed the effect on Allatoona Lake if all water stored in Hickory Log Creek Reservoir were diverted from the system, and it concluded this would not interfere with the Corps' ability to meet the other authorized purposes of Allatoona Lake.[14] Indeed, the Corps has always recognized Cobb-Marietta's right to withdraw any water released from storage in Hickory Log Creek Reservoir if it is withdrawn from the Etowah River above the boundary of Allatoona Lake.

Having already determined that the water in question—the made inflows the State of Georgia has allocated to Cobb-Marietta—are not needed for any project purpose, the Corps cannot now claim that the State's allocation conflicts with any federal objective. Because no such conflict exists, the Corps should and must defer to the State's allocation.

E. The Corps Has Previously Acknowledged that It Must Defer to the State of Georgia to Allocate Made Inflows

The Corps' prior treatment of made inflows in Georgia demonstrates the flaws in the Corps' Proposed Rule and why the Corps must defer to State allocations.

In 1989, Cobb-Marietta first requested credit for its return flows to Allatoona Lake. At the time, Cobb-Marietta had not secured the rights to these made inflows under State law, and the Corps appropriately denied this request, explaining that the Corps could not credit these made inflows to Cobb-Marietta because doing so would intrude on the State's authority to allocate water rights. Today the situation is different—Cobb-Marietta has secured the rights to made inflows under Georgia law and the State of Georgia has expressly allocated them to Cobb-Marietta. Having done so, the Corps must either defer to that allocation or explain why the State's water allocation decision is preempted by federal law. Any other rule would result in the Corps allocating water rights in a manner that is contrary to State law, which the Corps itself acknowledged would exceed its authority.

The following provides background on the Corps' prior determinations in Georgia. On July 27, 1989, the Commander of the Mobile District wrote to the Commander of the South Atlantic Division for guidance on the accounting for "made inflows," which he defined as inflows to the Corps' reservoirs originating with users of storage. He recommended that such inflows be allocated to the users that make them, stating:

> 1. The Water Supply Act of 1958, as amended, authorized the Corps to enter into contracts with states and other local interests for water storage space.
>
> 2. The storage required to provide a certain amount of water for withdrawal is determined by the storage-yield relationship of the

[14] *See* USACE, Environmental Assessment for Hickory Log Creek Reservoir (May 14, 2004) (Ex. 6).

> reservoir. The storage-yield relationship is determined in part by inflows to the reservoir.
>
> 3. Inflows may be of two types, those occurring naturally and those that are made. Made inflows are subject to change by those controlling the source. Inflows by users primarily originate at wastewater treatment plants, thus they are made. Made inflows normally are not used in determining the storage-yield relationship of a reservoir.
>
> 4. A user has a contractual right to utilize an undivided percent of the project for the storage and water and, in effect, becomes a co-owner of the project; thus, they have a reasonable right to expect their inflows to the reservoir to be used exclusively in determining the storage-yield relationship of the reservoir as it relates to them.
>
> 5. In determining the storage-yield relationship for a user providing flows into the reservoir, the net effect of those flows would be subject to the same criteria as naturally occurring flows such as evaporation and seepage. The user would be required to meter their inflows and provide the Corps with readings at predetermined intervals in the same manner as used under water withdrawal contracts.
>
> 6. From an administrative view, it would be in the interest of the Government to use inflows originating with a user exclusively in determining the storage-yield relationship of that user. If the inflow is used in determining the storage-yield relationship for the entire project, and the inflow diminishes at some time in the future, then the contracts of all users would have to be amended. If, however, the inflow is used exclusively in determining the storage-yield relationship for the user originating the inflow, then only that contract would have to be amended should the inflow diminish.[15]

The South Atlantic Division forwarded this memorandum to Headquarters with a recommendation that it be approved,[16] but Headquarters disagreed. While recognizing that return flows do increase yield, the Chief of the Policy and Planning Division stated:

> The Corps' authority to control water is limited to its presence within the Federal project. The Corps has no authority to grant rights to water that

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[15] *See* Memo from Mobile District Commander to South Atlantic Division Commander regarding Disposition of Inflows to Corps Reservoirs Originating with Users of Storage in Those Reservoirs (July 27, 1989) (Ex. 7).

[16] *See* Memo from South Atlantic Division Commander to Headquarters regarding Disposition of Inflows to Corps Reservoirs Originating with Users of Storage in Those Reservoirs (Aug. 11, 1989) (Ex. 8).

> has been withdrawn, used, and then released. The States grant water rights and regulate water use…. Control over return flows would place the Corps in the position of indirectly conferring property rights which is beyond its authorities.[17]

The same logic applies today. The only difference is that the State of Georgia has now exercised the authority to which the Corps recognized that it must defer. Therefore, "deference" in this case means honoring the State's authority by allocating made inflows in the manner directed by the State.

5. The Principles and Requirements Support Encouraging Made Inflows to the Extent Authorized by States

The Principles and Requirements provide guidelines to be considered by the Office of Management and Budget in its review of the proposed rule.[18] These congressionally-mandated requirements apply to all federal investments in water projects and provide strong support for the principles articulated above. Specific principles are highlighted below.

A. Recognition of Made Inflows Will Incentivize Projects that Maximize Public Benefits Provided by the Federal Investment at No Cost to the Federal Government

The Principles and Requirements direct federal agencies to strive to "maximize public benefits, with appropriate consideration of costs."[19] Made inflows should be encouraged and incentivized because they maximize public benefits at no cost to anybody but the user investing in projects to generate the water. In the case of Lake Lanier, return flows will increase the total yield of the federal project by 104.6 mgd at no additional cost to the Federal government. Additional benefits will be created by eliminating the need to construct stand-alone storage facilities that would cost millions and create needless environmental impacts.

B. Made Inflows Promote Reuse

The Principles and Requirements recognize the need to promote water reuse and reclamation. It is "critical to … promote water efficiency with all Federal investments in water

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[17] *See* Memo from Planning and Policy Division Chief to Commander to South Atlantic Division Commander (Oct. 17, 1989) (Ex. 9). Notwithstanding this direction, final action was never taken. Alabama filed suit (prematurely) before either document was finalized.

[18] *See* Principles and Requirements for Federal Investments in Water Resources (Mar. 2013) ("Principles and Requirements") (Ex. 10). The Principles and Requirements apply to Federal investments relating to water resources, including "operational plans for existing Federal water resources infrastructure." *See* Principles and Requirements, Final Interagency Implementation Guidelines at 4 (Dec. 2014) (Ex. 11).

[19] Principles and Requirements, *supra*, at 3 ("Federal investments in water resources as a whole should strive to maximize public benefits, with appropriate consideration of costs.").

resources."[20] "When efficiency alone will not suffice," they state that "reuse and reclamation of water should be promoted."[21] This is precisely why made inflows should be encouraged and incentivized.

C. Made Inflows Are the Best Solution When Considered from a "Watershed Approach"

The Principles and Requirements mandate a "watershed approach" that considers the best means to achieve multiple goals over an entire watershed, including the goal of providing water supply to the people and businesses that need it.[22] A guiding principle should be to avoid causing new environmental impacts from constructing new infrastructure by using existing infrastructure and non-structural alternatives.

These principles explain why users in Georgia should be permitted to use existing federal storage facilities to store made inflows to which they have rights under State law. If users are not permitted to store these flows in the existing federal reservoirs, they will construct new reservoirs to store them. The water will still be taken and used for the purposes authorized by State law; the only difference is that it will be stored or transported in new facilities that would not otherwise be needed.

Environmental impacts created by such a policy should not be under-estimated. As the U.S. Environmental Protection Agency has explained:

> Impoundments can fragment aquatic ecosystems, with impacts on many aspects of environmental integrity, particularly when the cumulative effects of multiple impoundments across a system are taken into account. Although the projects subject to the [water control manual] are already in place, the allocation and uses allowed and established through the [water control manual] revision can have a significant influence on overall [basin] health by preventing further fragmentation. If managed to make the best use of these existing resources, further impacts of additional supply infrastructure development could be avoided or at least minimized. . . .[23]

The impacts that would result from the construction of unneeded reservoirs and other infrastructure are not limited to habitat fragmentation. For instance, needlessly increasing the number of impoundments would likewise increase total water surface area and evaporation from the basin, thus reducing the total quantity of water available to all users. As EPA explained,

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[20] *Id.* at 10.

[21] *Id.* at 11.

[22] *Id.* at 5.

[23] USEPA, Comments on the Draft Environmental Impact Statement (DEIS) for the Update of the Water Control Manual for the Alabama-Coosa-Tallapoosa (ACT) River Basin; Alabama and Georgia at 2 (May 31, 2013) (Ex. 12).

where "allowing additional uses avoids impacts of new impoundments and additional infrastructure, overall impacts to the basin could be minimized with holistic management."[24]

D. Delivery Flows Should Be Embraced as a Non-Structural Alternative

The Principles and Requirements also establish a preference for non-structural alternatives, including "modifications to public policy, regulatory policy, and pricing policy, as well as management practices."[25] The Hickory Log Creek Reservoir Project is a perfect example. This new reservoir has already been constructed, and the water withdrawal has already been authorized by the State of Georgia. The only question is how the water will be transported from Point A (Hickory Log Creek Reservoir) to Point B (Cobb-Marietta's existing treatment facilities at Allatoona Lake).

There are two alternatives. The first is to use gravity and the natural channel of the Etowah River. This can be done at no cost, with no environmental impact, and with no new infrastructure. All that it requires is for the Corps to credit Cobb-Marietta's account with the flows that are released from Hickory Log Creek Reservoir.

The alternative is to build a new pump station and a 20-mile pipeline, and then pump the water through the pipeline. This would cost over $200 million, require 20 significant stream crossings, and cause over 2,000 linear feet of wetland impacts. This is in addition to the continuing energy and carbon footprint required to support unnecessary pumping, and the impacts to between 400 and 500 individual property owners. Ultimately, all this does is pump the water to the same exact location, a water treatment plant on Allatoona Lake. The difference is that with this alternative, the water is not appropriated by the Corps and distributed to other users' accounts. Clearly the nonstructural alternative of using the existing river channel and honoring Georgia's allocation of made inflows to Cobb-Marietta is preferable.

E. The Corps Should Defer to States to Allocate Made Inflows to Foster Collaboration with State and Local Entities

The Principles and Requirements also provide that "Federal agencies should collaborate fully on water resources related activities" with State and local agencies. "Collaboration may include … development and implementation of complementary projects and programs by others."[26] These guidelines are especially important given limitations on the public dollars available to confront daunting infrastructure challenges. It is critically important that the federal government finds ways to do more with less—which means working together with State and local interests to make the most of existing investments.

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[24] *Id.*

[25] Principles and Requirements, *supra* at 11.

[26] *See id.* at 8-9.

6. The Water Supply Act Mandates that Made Inflows Be Considered to Ensure Users Share Equitably in the Benefits of Multipurpose Construction

The Water Supply Act of 1958 provides that prices charged to water supply users must be set "on the basis that all authorized purposes served by the project shall share equitably in the benefits of multiple purpose construction."[27] The Corps has stated that the "benefits of multipurpose construction" refer to "the savings in costs of a multiple-purpose project over the combined costs of single-purpose projects serving the same purposes."[28] Denying water supply users the benefit of made inflows allocated to them under State law violates this mandate by making water supply users at multiple purpose Corps projects purchase more storage than they would need if they constructed a single-purpose water supply project in which to store their made inflows.

In essence, the proposed federal allocation rule would require users to forfeit their right to made inflows—that is, to water they produce, and to which they are entitled under State law—in exchange for the right to store their water in a multipurpose project. Because the premise of this discussion is that the user has already obtained rights to the water, in all cases the user would be entitled to retain possession of the water if the user had a different place to store it. In some cases the forfeit extracted by the Corps to share in the benefits of multipurpose construction would be small (when the user owns most of the conservation storage); in some cases it would be large (when the user owns a relatively small share); but in all cases it would be inequitable, inefficient, and without justification.

From another point of view, the effect of denying credit for return flows is to require users to purchase more storage than they actually need. If users are able to capture the yield generated by made inflows within the storage they purchase from the Corps, they might not need to purchase additional storage to obtain additional yield. If made inflows are forfeit to the federal government, however, users will be required to purchase additional storage to achieve the same yield. Again, this deprives water supply users of the right to share equitably in the benefits of multipurpose construction. Water supply users should not be forced to purchase more storage than they need—that is, to pay a "storage penalty"—or to cede water rights as a condition of contracting to utilize storage in a federal multipurpose project.

The effect of this "storage penalty" at Lake Lanier is significant. The Metro Water District projects that return flows to Lake Lanier by just three District counties will increase to 99 mgd by 2050, assuming appropriate policies are in place that credit and incentivize returns.[29] Given this level of return, only 174,136 acre-feet should be needed to meet Georgia's 2050 water

[27] 43 U.S.C. § 390b(b).

[28] *See* Letter from Major General William Cassidy, Asst. Chief of Eng'rs for Civil Works, to Major General Albrecht, Division Commander, South Atlantic Division at 2 (Dec. 29, 1959) (Ex. 13).

[29] Memorandum from Katherine Zitsch, Director, Metropolitan North Georgia Water Planning District, to Jud Turner, Director, Georgia Environmental Protection Division at 6 (Jan. 25, 2016) (Ex. 14).

supply needs from Lake Lanier of 242 mgd. In contrast, the Corps has stated that 254,170 acre-feet—or an additional 80,034 acre-feet of storage—is needed to provide the same yield, but this calculation assumes that no water is returned. The cost to public water supply providers (and thus, to rate payers) would be reduced by $19,336,288, or $1,119,467 per year.

Similarly, the Corps is conducting a study at Allatoona Lake to evaluate storage requirements for Cobb-Marietta and others. If Cobb-Marietta will be able to use the space it has already purchased to keep and store the made inflows it generates—which the State of Georgia has already granted to it—Cobb-Marietta will not need any additional storage space. If the Corps takes the made inflows away to benefit other users, however, Cobb-Marietta will be required to spend millions to acquire substantial additional storage space to achieve the same yield.

In either case, the effect of this penalty is to create benefits for other users they did not pay for, creating a windfall for everyone else while denying water supply users the benefits of the water they created.

7. Other Purposes Have No Legitimate Claim to Made Inflows

Other users, most notably Alabama Power and some in the hydropower lobby, have opposed crediting made inflows in the past, but these objections are based on nothing more than a desire to receive benefits they do not pay for. Mechanisms exist to ensure the hydropower purpose is compensated when storage is reallocated to water supply. If the storage requirement is inflated by ignoring return flows when the "updated cost of storage" is calculated, water supply users will be forced to pay additional compensation for impacts that will not occur.

Consider the situation at Allatoona Lake described above. Cobb-Marietta has a contract authorizing it to store a certain volume of water in the reservoir. It is under no obligation to return the water withdrawn, and no returns were projected when the contract was issued. The impact to hydropower has therefore already been evaluated, approved, and paid for based the assumption that Cobb-Marietta would use approximately 5 percent of the yield of the project. Through investments in made inflows, the yield of Cobb-Marietta's own storage has been increased without reducing the yield available to hydropower. There is no legitimate basis for hydropower customers (or anyone else) to complain about this.

Further, when water supply users purchase storage, the amount credited to the hydropower account is limited to the amount of "revenues forgone."[30] Because revenues forgone is a function of the net withdrawal, the credit will not increase even if water supply users are required to pay more, and hydropower customers will not benefit. Additional payments extracted from water suppliers will simply be deposited in the federal treasury.

If anything, hydropower customers stand to benefit from a policy incentivizing made inflows because this will lead to more water being stored in the Corps facility, producing greater

[30] *See* U.S. Army Corps of Engineers, Institute for Water Resources, Water Supply Handbook: A Handbook on Water Supply Planning and Resource Management, at 4-13 ¶ 6 (Dec. 1998) (Revised IWR Report 96-PS-4) (Ex. 15).

head (even if small) and by providing opportunities to capture and use made inflows generated and paid for by water supply users that the water supply users are unable to store, thus making them available for use by others.

8. Made Inflows Are More Predictable and Dependable than Natural Inflows

Some have suggested that a policy requiring water supply users to purchase storage based on their *gross* withdrawal might be preferred because it would provide more dependability. This is not an acceptable basis for charging users more than their fair share, for several reasons.

First, arguments that projections cannot be trusted are misplaced. In any storage accounting system, any "credit" for made inflows would be applied only after the made inflows are deposited in the reservoir. Therefore, if made inflows did not materialize for any reason, the user would not have access to the associated water. Credits would be based upon actual "made inflows" to the reservoir, not based upon any projections or anticipated amounts.

Second, because made inflows are engineered, they tend to be more consistent and reliable than natural flows. In the case of return flows, most are generated from indoor water use, which is far more reliable than precipitation. Therefore, it is entirely reasonable for users who undertake these projects to rely on the water they generate.

Finally, and more to the point, the risk that made inflows will not materialize is, and should be, the users' to bear. If made inflows do not materialize, they will not be credited to the users' accounts, and the users bear the risk of exhausting their storage. Users should be permitted to make their own decisions about risk based on their understanding of the availability of made inflows, their tolerance to risk, and their ability to manage demand to cope with shortages.

9. Storage Accounting Methods Can Easily Be Adjusted to Credit Made Inflows

There is no practical impediment to crediting made inflows consistent with State law. All that is required is to ensure they are metered, monitored and reported. So long as this is done, the accounting is simple. For example, the storage accounting spreadsheets developed by the Mobile District at Allatoona Lake already include a "switch" that can be flipped on or off depending on the policy that is applied.

Some have suggested that it is too complicated for the Corps to distinguish made inflows from natural inflows in its storage accounting system. It is a very simple matter, however, to require that made inflows be metered, monitored and reported on a transparent basis. Take the Cobb County-Marietta Water Authority, for example. Its State permit grants it the right to store and utilize "made inflows" from three sources—two water reclamation facilities and one storage reservoir located upstream of Allatoona Lake. In each case, the made inflow discharge must be continuously metered, and the data must be reported both to the State and to the Corps. Nothing about these flows is "projected," "uncertain," or "hypothetical."

It has also been suggested that distinguishing made inflows from natural flows would be "inconsistent" with the character of a multipurpose reservoir in which all water is stored together. This is not a sound argument. That inflows are stored together does not mean they cannot be allocated separately. This is precisely the function of storage accounting—and the storage accounting systems currently being used do, in fact, keep separate accounts, "charging" individual users separately for water that they withdraw from the common pool. The only question is whether the Corps chooses to allocate inflow based on the State allocation or based on a conflicting federal allocation system.

Finally, these distinctions are already made at multipurpose reservoirs owned by the Corps in States like Texas, Kansas and Oklahoma, where the Corps defers to States to manage storage accounts.

10. The Corps' Pricing Policies Should be Revised to Ensure Water Supply Shares Equitably in the Benefits of Multipurpose Construction

The Water Supply Act provides that, when water supply is added to a project, "the cost of any construction or modification [to reallocate storage for water supply] shall be determined on the basis that all authorized purposes served by the project share equitably in the benefits of multiple purpose construction."[31] The Corps has never explained how its current pricing policies[32] comport with this mandate. Before perpetuating these policies in a formal rule, the Corps should provide a reasoned explanation for them.

In addition to the general mandate under the Water Supply Act, Public Law 88-140[33] "caps" the price for water supply storage at the government's cost. This 1963 statute provides that users obtain "permanent rights" to any storage under contract upon payment to the government of the "the cost of providing that part of such dam and reservoir which is allocated to such use."[34] Any contract requiring payment in excess of the government's cost would thus be unenforceable; but even if that were not so, the Corps' policy should reflect the clear intention of Congress that the storage be sold at cost.

In conjunction with the requirement that all users share equitably in the benefits of multipurpose construction, Section 5 of the Flood Control Act of 1944 provides a similar cost-based approach for hydropower. Section 5 requires hydropower rates to be set at the lowest possible rates consistent with "sound business practices." This has been interpreted as requiring rates to be set "at cost." It follows that, to be treated equitably, water supply users must also be charged based on the government's cost.

Finally, the most problematic feature of the current pricing formula is the reference to "benefits forgone." The rationale for this component of the pricing formula has never been explained, but we presume it is to compensate the nation for any loss to National Economic Development ("NED") Benefits resulting from a reallocation. If so, the Corps should explain how it is authorized to charge for such impacts given the limitations described above. To the

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[31] 33 U.S.C. § 390b(b).

[32] *See* ER 1105–2–100, app. E at E–216 to E–218.

[33] 77 Stat. 249 (Oct. 16, 1963).

[34] 43 U.S.C. § 390d.

extent such charges are justified, they could only be justified if the calculation of NED Benefits forgone captures the ***net*** loss of benefits ***to the nation***,[35] considering all purposes. In practice, however, reallocations from hydropower storage usually compute NED Benefits forgone to hydropower without considering NED Benefits gained through other purposes. With a reallocation from hydropower to water supply, the net impact to NED Benefits is often positive.[36] In these cases, there are no "NED Benefits forgone."

CONCLUSION

In sum, made inflows are a critical component of Metropolitan Atlanta's water supply plan. Any rule that would intrude on the State of Georgia's authority to allocate these flows would be both unlawful and unsound policy. It would exceed the Corps' authority and result in the construction of unnecessary and costly infrastructure, made necessary only by the need for water utilities to protect their right to use water allocated to them by the State. We therefore urge you to move forward with this rule, but only after correcting it to defer to the States to allocate made inflows and water rights.

We appreciate your careful attention to these comments. Please let me know if I can answer any questions or provide additional information.

Best regards,

/s/ John L. Fortuna

[35] *See* 1958 Green Book ("Definition of Project Benefits") (Ex. 16).

[36] *See* David H. Moreau, *Relative Value of Water for Hydropower and Municipal Supply in Southeastern Reservoirs*, 50(1) J. Am. Water Res. Assoc. (Feb. 2014) 196-2014 (Ex. 17); George F. McMahon, Ph. D. et. al., *Lake Lanier Economic Development Update: Evaluation of Water Supply, Hydropower and Recreation Benefits* (Final Report February 2004) (Ex. 18).

EXHIBIT 2

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

EPD Director's Office
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Suite 1456, East Tower
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404-656-4713

November 16, 2017

VIA REGULATIONS.GOV
U.S. Army Corps of Engineers
ATTN: CECC-L
441 G Street, N.W.
Washington, D.C. 20314

Re: COE-2016-0016 – Use of U.S. Army Corps of Engineers Reservoir Projects for Domestic, Municipal & Industrial Water Supply

COMMENTS OF THE STATE OF GEORGIA

In response to the Federal Register Notice of December 16, 2016 (81 Fed. Reg. 91,556), the State of Georgia respectfully submits the following comments regarding the U.S. Army Corps of Engineers' ("Corps") proposed rule entitled Use of U.S. Army Corps of Engineers Reservoir Projects for Domestic, Municipal & Industrial Water Supply (the "Proposed Rule").

I. Introduction

Georgia applauds the Corps' efforts to address several outstanding water supply policies through the rulemaking process. As a State reliant on Corps reservoirs in two separate basins to supply millions of its citizens with water, Georgia has a unique interest in the Proposed Rule. Withdrawals from Lake Lanier and the Chattahoochee River in the Apalachicola-Chattahoochee-Flint ("ACF") River Basin and Allatoona Lake in the Alabama-Coosa-Tallapoosa ("ACT") River Basin collectively supply water to approximately 6.5 million Georgia citizens, including to almost all of the metro-Atlanta region.

The Corps operates or will operate projects in both the ACT and ACF Basins for water supply under contracts pursuant to the Water Supply Act of 1958, 43 U.S.C. 390b ("Water Supply Act"). In the ACT Basin, the Corps currently provides storage space in Allatoona Lake to water supply providers under Water Supply Act contracts, and Georgia has a water supply request pending with the Corps for additional storage space.[1] In the ACF Basin, the Corps is in the process of reallocating storage at Lake Lanier in response to a water supply request from the

[1] *See Georgia v. United States Army Corps of Engineers,* 1:14-cv-03593-RWS (Challenging the Corps' failure to respond to Georgia's request for, among other things, the reallocation of storage in Allattoona Lake to meet Georgia's water supply needs).

State, relying at least in part on its authority pursuant to the Water Supply Act. In a Water Supply Storage Assessment adopted by the Corps on March 30, 2017, the Corps determined it could reallocate 254,170 acre-feet of storage in Lake Lanier to Georgia for the purpose of water supply.

Given Georgia's reliance on Water Supply Act contracts, Georgia's comments are focused on certain Water Supply Act definitions and policies. Georgia's comments will also address the State's overarching concern that the Corps ignored "federalism implications" within the meaning of Executive Order 13132 of August 4, 1999 (64 Fed. Reg. 43,255) (the "Federalism E.O.").

Georgia first explains why the Corps should defer to individual states' laws on the question of how to account for return flows. The comments then address Georgia's federalism concern. Finally, the letter supports the Corps' proposed definition of its reallocation authority.

II. The Corps' Proposal to Allocate Return Flows Should be Revised

The Corps has long recognized that when it enters into a Water Supply Act contract, the Corps is contracting only for storage space in a federal reservoir. The Corps does not–because it cannot–contract for water rights to fill that storage space. Instead, the Corps has repeatedly stated that each user must obtain any required water rights from the State. The Corps cites to and confirms this policy several times throughout the Proposed Rule. "[T]he Corps does not issue, sell, adjudicate, or allocate water rights" as part of its Water Supply Act contracting. 81 Fed. Reg. at 91,559. Yet, the storage accounting procedures contained in the Proposed Rule effectively allocate water rights by disregarding allocations of water rights made by the States. Given this, the Proposed Rule is internally inconsistent. In order to reconcile decades of Corps policy maintaining that the Corps allocates storage and not water rights with the Proposed Rule's accounting for return flows, the Corps must re-draft the Proposed Rule so that it accounts for state allocations of water rights. This means that the Corps must credit a return flow to a user if a state has allocated a return flow to that user.

A. Corps Policy States That the Corps Does Not Allocate Water Rights

The Corps has long recognized that the purpose of constructing a reservoir is to provide storage space for water and not to allocate water when allocation is otherwise a state function. The Corps' long-stated policy has been that the Corps contracts for *storage space in a reservoir* but a state must *provide water rights* to a user. In 2013, the Corps' then-Chief Counsel wrote the following:

- "In exercising its authority under [the Water Supply Act], *the Corps does not allocate water rights*, or sell water; rather, … the Corps enables non-federal entities to benefit from the Corps' regulation and impoundment of navigable waters pursuant to the congressional power to regulate interstate commerce, *in order to exercise water rights that such non-federal entities may hold under state*, tribal, or other law."
- "Whenever it operates reservoir projects, the Corps impounds navigable waters for the purposes Congress has authorized. . . . These non-consumptive uses *do*

not interfere with States' power to allocate waters and dispense water rights; and because the Corps does not consume water when it operates reservoir projects for these purposes, the Corps does not secure water rights for its operations."

- *"The Corps recognizes that the States have the right and the primary responsibility to allocate the waters within their borders for consumptive use."*

Earl H. Stockdale & Daniel Inkelas, *Accommodation of State and Local Water Supply Needs through the Operation of Multipurpose Federal Reservoir Projects by the U.S. Army Corps of Engineers* (ABA, 31st Annual Water Law Conference, June 6, 2013) (emphasis added).

Prior to that, the Corps' then Chief Counsel issued a memorandum for the Corps' Chief of Engineers. In that memorandum, the Chief Counsel said:

> Under the Water Supply Act, *the Corps contracts for the use of storage, not for the sale of water or water rights*, and *because the Corps does not own or sell the water stored in its reservoirs*, it cannot guarantee, and specifically disclaims, any set yield, or the availability of water at all, from the storage it grants rights to in a Water Supply Act agreement.

Office of the Chief Counsel, *Memorandum for the Chief of Engineers* (June 25, 2012) at 36 (emphasis added).

And, the Corps' "Water Supply Handbook" discusses the role of the Corps in operating its reservoirs.

- "This policy is based on a recognition that states and local sponsors have the *primary responsibility in the development and management of their water supplies*."
- "A storage contract merely conveys the right to store a resource (water) in a Corps reservoir project without guaranteeing that the resource will be available. The *right to withdraw water from the storage space usually requires a separate agreement* (see following paragraph h on water rights)."
- "*Water rights necessary for use of stored water will not be acquired by the Corps. This acquisition of water rights is a responsibility of the water users*. The Corps will not become involved in resolving conflicts among water users concerning rights to use stored water, but will *look to responsible state agencies to resolve such conflicts*."

Institute for Water Management, *Water Supply Handbook: A Handbook on Water Supply Planning and Resource Management* (Dec. 1998) (Revised IWR Report 96-PS-4) (emphasis added).

At least one circuit has endorsed the Corps' view regarding its authority (storage space) and states' authority (water allocation). In a NEPA challenge, the Tenth Circuit stated that:

> Under the Water Supply Act, *the Corps contracts for the use of storage, not for the sale of water or water rights*, and because the Corps does not own or sell the water stored in its reservoirs, it cannot guarantee, and specifically disclaims, any

> set yield, or the availability of water at all, from the storage it grants rights to in a Water Supply Act agreement.

League of Women Voters of Tulsa, Inc. v. U.S. Corps of Engineers. 730 F.2d 579, 583 (10th Cir. 1984) (emphasis added). If the Corps does not allocate water rights, then it must defer to states, like Georgia, that do.

B. Georgia Has the Authority to Allocate Water Rights

Georgia is the protector and manager of its water resources, and the State acts through its agencies to protect its water and citizens. Georgia's Constitution provides for the State's control over its waters. "[T]he General Assembly shall have the power to provide by law for: (1) Restrictions upon land use in order to protect and preserve the natural resources, environment, and vital areas of this state." Section VI, Paragraph II. This constitutional mandate is codified in the Georgia Water Supply Act. The Act provides:

> The people of the State of Georgia are dependent upon the rivers, streams, lakes, and subsurface waters of the state for public and private water supply. . . . To achieve this end, the government of the state shall assume responsibility for the quality and *quantity of such water resources* and the establishment and maintenance of a . . . *water quantity control program* adequate for present needs and designed to care for the future needs of the state. . . .

O.C.G.A. § 12-5-21(a) (emphasis added). The Act explains how this will be done:

> The achievement of the purposes described in subsection (a) of this Code section requires that the Environmental Protection Division . . . have the *authority to regulate the withdrawal, diversion, or impoundment of the surface waters* of the state, ...

Id. at § 12-5-21(b) (emphasis added).

The State of Georgia manages large water withdrawals under a regulated riparian and reasonable use permit system. This means that the State issues permits to riparian users in a manner designed to allow riparian owners to fulfill their water needs while not unreasonably infringing on the use of water by other riparian owners. Georgia has a specific rule addressing how it permits water withdrawals, diversions, and impoundments from federal projects:

> When a user has contracted for the right to utilize storage space within a reservoir that is owned or operated by an agency of the federal government, the Director shall retain authority to allocate any State water rights subject to regulation under O.C.G.A §12-5-31, including the right to withdraw State waters from the project as well as the right to impound made inflow to the reservoir. When the Director allocates to a specific user made inflows to a reservoir, pursuant to the permitting authority and procedure provided by O.C.G.A. §12-5-31, that user will have the right to impound such flows in the storage space for which it has contracted, to the extent storage space is available.

Ga. Comp. R & Regs. 361-3-6-.07(16) ("Made Inflow Rule").

The State has exercised this authority by allocating return flows created by or for Cobb County-Marietta Water Authority (Cobb-Marietta) in Allatoona Lake to Cobb-Marietta. *See* Georgia EPD Permit No. 008-1491-05 (Modified November 7, 2014) (the "Cobb-Marietta Permit"). The Corps should recognize and account for allocations Georgia makes, including the Cobb-Marietta Permit, pursuant to the Made Inflow Rule.

C. The Proposed Rule's Accounting for Return Flows Upends Corps Policy and Ignores Georgia's Water Laws

The Corps' treatment of return flows in the Proposed Rule intrudes on Georgia's right to allocate water within its borders because the Proposed Rule ignores Georgia's Made Inflow Rule. For example, the Cobb-Marietta Permit allocates all return flows made by or for Cobb-Marietta into Allatoona Lake to Cobb-Marietta. Under the Proposed Rule, however, the Corps' storage accounting would allocate all return flows—regardless of source—proportionally to Cobb-Marietta. Because Cobb-Marietta's storage occupies 4.61% of the reservoir storage, the storage accounting under the Proposed Rule allocates only 4.61% of the return flows made by or for Cobb-Marietta to Cobb-Marietta. In effect, the Corps has taken 95.39% (100% of the State's allocation minus 4.61% of the Corps' allocation) of Cobb-Marietta's water rights and allocated these to other reservoir users, including downstream beneficiaries in other states. If the Corps promulgates this accounting, the Corps will be (1) allocating water rights in contravention of decades of Corps policy, and (2) disregarding Georgia's Made Inflow Rule and the Cobb-Marietta Permit by crediting Cobb-Marietta with only a fraction of the water rights Georgia has granted it.

Instead of placing itself in this seemingly indefensible position, the Corps should instead adopt an accounting methodology that credits any water entering a reservoir to the user possessing the right to impound or withdraw that water under state law. If a given state has no applicable permitting, then the Corps' proportional crediting could be the default accounting.

D. Crediting Return Flows is Sound Water Policy

Georgia's state-wide water plan favors and incentivizes return flows as a form of water reuse. Creating return flows can be costly for a user, but users spend this money because they see the benefit in creating flows that would not otherwise exist. As discussed above, in Georgia, one of the greatest benefits is that the State can, under specific circumstances, allocate those return flows to the user that created them. The Proposed Rule, however, contains the reverse incentive. If users receive only a small percentage of credit for return flows, then that lessens the incentive for users to build storage projects, construct water reclamation facilities, and otherwise engage in management practices that increase the sustainability of water supplies. Return flows to reservoirs increase the yield of the reservoir by reducing the net withdrawals. As a result, return flows keep reservoir levels higher and mitigate the impact of water supply withdrawals. The Corps cannot expect users to spend billions of dollars developing infrastructure to generate return flows if the Corps allocates those return flows to other users. Georgia requests that the Proposed Rule acknowledge the benefits of return flows to reservoirs and credit them, consistent with state law.

III. The Proposed Rule has Substantial Direct Effects on the States

A. The Proposed Rule is Inconsistent with the Federalism E.O.

The Corps has a responsibility under the Federalism E.O. to work with Georgia to ensure that the Corps' storage accounting procedures do not interfere with Georgia's ability to manage its water resources. As discussed above, instead of deferring to state laws to address the allocation of water resources, including return flows, the Proposed Rule usurps state law and allocates return flows to users based on a Corps-prescribed formula.[2]

The purpose of the Federalism E.O. is "to guarantee the division of governmental responsibilities between the national government and the States that was intended by the Framers of the Constitution." 64 Fed. Reg. at 43,255. The Federalism E.O. defines "policies that have federalism implications" to include "regulations, . . . that have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." *Id.* If a regulation has federalism implications, then the Federalism E.O. requires that the promulgating agency "*shall* have an accountable process to ensure meaningful and timely input by State and local officials." SECTION 6(a), 64 Fed. Reg. at 43,257 (emphasis added).

While the Corps states that it does not "believe" that the Proposed Rule will have any federalism implications (81 Fed. Reg. at 91,587), the text and overall purpose of the Corps' accounting of "return flows" demonstrates that the Proposed Rule does have substantial direct effects on Georgia's ability to allocate waters of the State. This tension in the Proposed Rule–a federal agency disregarding state laws regarding water allocation–is a quintessential example of "federalism implications," yet the Corps did not reach out to Georgia to request the State's "meaningful and timely input." Georgia, therefore, requests that the Corps amend the rule to defer to state law consistent with the return flow accounting discussion below or withdraw the portions of the Proposed Rule implicated by the Federalism E.O. until such time the Corps holds meaningful consultations with affected states.

B. The Proposed Rule is Inconsistent with Judicial Precedent

In addition to the text of the Proposed Rule contravening the Corps' "belief" that the Proposed Rule will not have any "federal implications," U.S. Supreme Court precedent underscores that the Corps' treatment of return flows contravenes existing law. There is a long history of judicial deference to state water laws on water allocation within a state's own borders that has been reaffirmed in recent Supreme Court jurisprudence. For example, in 2013, the Supreme Court stated "[w]e have long understood that as sovereign entities in our federal system, the States possess an 'absolute right to all their navigable waters and the soils under them for their own common use.'" (internal citations omitted). *Tarrant Regional Water Dist. v. Herrmann*, __ U.S. __, 133 S. Ct. 2120, 2132 (2013). In deciding *Tarrant*, the court was guided by "the well-established principle that States do not easily cede their sovereign powers, including their control over waters within their own territories." *Id.* In another case, the Supreme Court

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[2] The State of Georgia has reviewed the comments submitted by the National Water Supply Alliance and agrees that the Proposed Rule interferes with the right of a state to manage water resources within its own borders.

was asked to decide whether certain areas were wetlands requiring a federal Corps permit. The Supreme Court answered in the negative, and stated that asserting federal jurisdiction over the areas in question "would result in a significant impingement of the States' traditional and primary power over land and water use." *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers*, 531 U.S. 159, 174 (2001). Finally, in an earlier case, the Supreme Court acknowledged that "where Congress has expressly addressed the question of whether federal entities must abide by state water law, it has almost invariably deferred to the state law." *United States v. New Mexico*, 438 U.S. 696, 701 (1978).

The Proposed Rule disregards judicial precedent by prescribing a federally-mandated storage accounting for return flows that ignores and supersedes Georgia's and other states' laws. Thus, as drafted, the Proposed Rule will not withstand judicial scrutiny. The Corps therefore should amend the rule to defer to state laws on water allocation within a state's own borders consistent with Supreme Court precedent deferring to state water law.

IV. The Corps Appropriately Defines the Limits of it Reallocation Authority Under the Water Supply Act

The Water Supply Act allows the Corps to reallocate storage for water supply in its reservoirs (without additional Congressional authorization) so long as the reallocation would not "seriously affect the purposes for which the project was authorized, surveyed, planned, or constructed," or "involve major structural or operational changes." 43 U.S.C. §390b(e). Because the Water Supply Act does not define what it means to "seriously affect" project purposes or provide the Corps with guidance as to what constitutes "major structural or operational changes," Georgia supports the Corps' decision to establish a method for determining whether it has the authority to grant a proposed reallocation without obtaining Congressional approval.

Acting pursuant to remand instructions from a landmark Eleventh Circuit decision concerning the scope of the Corps' authority to provide storage in Lake Lanier for water supply purposes, *see In re MDL-1824 Tri-State Water Rights*, 644 F.3d 1160, the Corps outlined its authority to grant Georgia's Water Supply Request in a lengthy legal memo authored by the Corps' Office of the Chief Counsel which concluded that the Corps "has the legal authority under the relevant statutes to accommodate Georgia's request." Memo from Earl H. Stockdale, Chief Counsel, U.S. Army Corps of Engineers, to Chief of Engineers, at 5 (June 25, 2012) ("Stockdale 2012"). The Proposed Rule adopts the interpretation of the terms "seriously affect [authorized] purposes" and "major structural or operational changes" set out in Stockdale 2012. Instead of determining whether a given reallocation is "major" based on an arbitrary percentage established without any analysis, Stockdale 2012 recognized that the Corps must focus on how a reallocation might affect the other Congressionally authorized purposes for the project. Stockdale 2012 specifically determined that the Corps "has the legal authority under the relevant statutes to accommodate Georgia's [water supply] request" because doing so would not depart from Congress' intent for the ACF Basin.

The Proposed Rule follows the logic of Stockdale 2012. That is, the appropriate method for determining the limits of a proposed reallocation under the Water Supply Act is for the Corps to examine the impact of the proposed reallocation in the context of the original Congressional authorization for the project. "Seriously affect" project purposes is defined as "adversely affect[ing] the Congressionally-authorized purposes of a project or reservoir project in a manner that would fundamentally depart from Congressional intent, as expressed through the relevant authorizing legislation." The term "major structural or operational change" is defined as "a change, to the physical structure or operations of a project or reservoir project that would fundamentally depart from Congressional intent, as expressed through the relevant authorizing legislation." Both definitions also state, "[e]valuation of effects on authorized purposes requires both technical and legal analysis of the proposed action, in light of that Congressional intent." The State of Georgia fully supports these definitions in the Proposed Rule, especially the focus on Congressional expectations in light of the unique characteristics and authorization history of each project.

The Proposed Rule acknowledges that Congress "did not set specific, numerical limits on the Corps' discretion" to reallocate storage. And, if the Corps were to set percentage-based limits, those limits "could result in arbitrary limits on the authority Congress intended to confer under the [Water Supply Act]." Georgia would oppose any test based on the percentage of storage reallocation because federal reservoirs are not a one-size-fits-all proposition and percentage numbers are not a meaningful metric. As acknowledged in the Proposed Rule, a more thoughtful and reasoned approach is for the Corps to determine whether a particular reallocation fundamentally departs from Congressional intent.

V. The Proposed Rule Fails to Treat Storage for Water Supply in the Same Manner as Storage for Other Authorized Project Purposes

Several elements of the Proposal Rule treat water supply storage under the Water Supply Act as a second-tier purpose thus discriminating against water supply users relative to other project purpose users. These elements include requiring water supply storage users to pay premiums for storage not required of other users, potentially requiring water supply users to pay "new construction" costs in older projects that may soon need substantial repairs for which the user will also be charged, and "coordinating in advance" with hydropower interests but not water supply interests.

VI. The Rule Should Allow Users to Amortize Repair, Rehabilitation, and Replacement Costs

The Corps' current practice is to require users to agree to pay any future Repair, Rehabilitation, and Replacement ("RR&R") costs either in incremental installments during construction or in a lump sum upon completion of construction. This practice places an undue burden on users because it can be difficult to budget for unknown and potentially very large RR&R expenditures. Georgia therefore requests that Rule expressly allow RR&R costs to be amortized and repaid over a 30-year period.

VII. Conclusion

Although Georgia appreciates the Corps' attempt to address a number of long-standing issues concerning the Corps' water supply policies, the storage accounting procedures in the Proposed Rule will have substantial impacts on Georgia's ability to manage State water resources. Georgia therefore requests that the Corps initiate an official consultation with the affected States prior to finalizing any portions of the Proposed Rule affecting States' water rights. Georgia does, however, encourage the Corps to issue a final rule adopting the portions of the Proposed Rule defining the appropriate limitations on the Corps' ability to reallocation water to meet water supply needs under the Water Supply Act.

Thank you for your consideration of these comments submitted on behalf of the State of Georgia.

Respectfully submitted,

Richard E. Dunn
Director
Georgia Environmental Protection Division
On behalf of the State of Georgia

NATIONAL WATER SUPPLY ALLIANCE

November 16, 2017

VIA REGULATIONS.GOV

Docket Number COE-2016-0016
U.S. Army Corps of Engineers
ATTN: Mr. Dan Inkelas and Mr. Jim Fredericks
ATTN: CECC-L, U.S. Army Corps of Engineers
441 G Street NW
Washington, DC 20314

RE: Use of U.S. Army Corps of Engineers Reservoir Projects for Domestic, Municipal and Industrial Water Supply, Docket No. COE-2016-0016

Dear Mr. Fredericks and Mr. Inkelas:

Thank you for the opportunity to comment on the U.S. Army Corps of Engineers ("Corps") proposed rulemaking regarding the use of Corps reservoirs for municipal and industrial water supply. These comments are provided on behalf of the National Water Supply Alliance (NWSA), which is a newly-formed organization consisting of local, regional, State, and interstate agencies with an interest in the Corps' water supply program. Many of our members hold storage contracts, and all have a strong interest in integrating the storage service provided by the Corps into their water supply plans.

As described below, we strongly oppose the rule's intrusion on States' authority to allocate water and to manage water resources within their borders—especially the provisions relating to the definition of surplus water, storage accounting, and made inflows. We recognize the unique role the Corps serves in storage of water and management of reservoirs. However, water rights, allocation, and management are reserved powers of the States under federal law. The Corps' storage and operation of storage can have significant impact on the water supply of a State and individual citizens. As such, the Corps must engage state water right and water management agencies to ensure Corps actions do not impede a State's ability to carry out its duties.

The comments below are in seven parts but address four basic areas: (1) federalism concerns, including concerns about storage accounting and the treatment of made inflows (Parts 1, 2, and 5.1); (2) other issues relating to Water Supply Act (Parts 2 through 4); (3) other issues relating to surplus water contracts (Part 4); and (4) the role of power marketing agencies (Part 6).

There is not consensus among NWSA members as to whether the Corps should issue a water supply rule. There is however consensus that the current draft issued for comment is fundamentally flawed in many areas. There is also consensus on the substantive comments contained herein. Individual members of NWSA will, at their discretion, submit comments as to their position on a national water supply rule, but agree to the policy positions described in these comments.

We hope that these comments assist the Corps in administering the water storage in Corps reservoirs while adhering to the basic principles of federalism that govern the allocation of water and water rights across the nation.

Sincerely yours,

Earl Lewis
President
National Water Supply Alliance

COMMENTS OF THE NATIONAL WATER SUPPLY ALLIANCE ON THE PROPOSED WATER SUPPLY RULE

Use of U.S. Army Corps of Engineers Reservoir Projects for Domestic, Municipal and Industrial Water Supply, 81 Fed. Reg. 91,556 (Dec. 16, 2016)
Docket No. COE- 2016–0016

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1. **The Proposed Rule Has Substantial Federalism Implications**

Executive Order 13132 seeks "to guarantee the division of governmental responsibilities between the national government and the States that was intended by the Framers of the Constitution," and "to ensure that the principles of federalism" that they established "guide the executive departments and agencies in the formulation and implementation of policies."[1] The preamble to the proposed rule asserts that it does not have Federalism implications within the meaning of Executive Order 13132 because it "would not interfere with State allocations of water" or with "State prerogatives."[2] The preamble asserts that the proposed rule would merely "reinforce the Corps' current practice of recognizing the interests and rights of the States in the development of waters, as provided in existing law."[3] As explained below, however, several elements of the proposed rule—including but not limited to the proposed definition of "surplus water" and the proposed storage accounting methods—upset existing understandings and directly intrude on the State's authority to allocate water rights.

The Executive Order defines the term "federalism implications" to include regulations that have "substantial direct effects on the State, on the relationship between the national government and the State, or on the distribution of power and responsibilities among the various levels of government."[4] Any rule proposing to identify and distinguish federal and State responsibilities in relation to water unquestionably meets this test.

As sovereign entities in our federal system, States have "inherent authority ... to regulate the use of water" within their borders.[5] The Supreme Court has called this "power to control ... public uses of water … an essential attribute of sovereignty."[6] The rights of the State in this respect are absolute, "subject only to the rights since surrendered by the constitution to the general government."[7] And, as the Supreme Court has recognized, it is "well-established ... that States do not easily cede their sovereign powers, including their control over waters within their own territories."[8]

Given the importance of States' control over water, the proposed rule would have substantial "federalism implications" even if it accurately defined existing boundaries. The federalism implications are even clearer here, however, because the proposed rule ***does not***

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[1] Executive Order 13132, Federalism, 64 Fed. Reg. 43,255 (Aug. 10, 1999).

[2] 81 Fed. Reg. at 91,587.

[3] *Id*.

[4] 81 Fed. Reg. at 91,587.

[5] *Kansas v. Nebraska*, 135 S. Ct. 1042, 1066 (2015); *see also Tarrant Reg'l Water Dist. v. Hermann*, 133 S. Ct. 2120, 2132 (2013) (as sovereign entities, "States possess an 'absolute right to all their navigable waters and the soils under them for their own common use.' ") (quoting *Martin v. Waddell's Lessee*, 41 U.S. 367, 410 (1842)).

[6] *See, e.g., United States v. Alaska*, 521 U.S. 1, 5 (1997).

[7] *Martin v. Waddell's Lessee*, 41 U.S. at 410.

[8] *Tarrant Reg'l Water Dist.*, 133 S. Ct. at 2132.

__respect existing boundaries__, but changes them by encroaching on State authorities and responsibilities.

2. __Storage Contracts: Storage Accounting and Made Inflows__

NWSA objects to the proposal for storage accounting and the treatment of made inflows, including especially the proposed rule for allocating inflow to Corps reservoirs. The Corps' proposal states that "all inflow" to Corps reservoirs will be allocated by the Corps according to a federal formula, notwithstanding any water rights individual users may possess to the water under State law. This federal water allocation rule encroaches on States' authority to allocate water and illegally redistributes State-granted water rights. Instead of imposing a new federal water allocation rule, the federal policy should be to incorporate the State's allocation—and thus to "credit" any water entering a Corps reservoir to those to whom it has been allocated under State law.

Legal issues aside, the proposed federal water allocation rule will undermine State and local water supply plans by preventing users from using the space they purchase from the Corps most efficiently. From a water provider perspective, what the Corps provides is a facility in which to store water. It is important for the Corps to remember this. Once a contract is executed—that is, once the Corps has agreed that a certain portion of its facility can be used to store water for a certain provider—the local water provider should be free to integrate this storage capacity into their water supply plans however it makes sense. They should be free to use the space they purchase from the Corps to store any water available to them under State law.

In addition, many regional water supply plans call for water to be stored at multiple facilities within a single watershed, and it is often advantageous to move water from one facility to another to maximize the total volume that can be stored and used for beneficial purposes. The Corps should accommodate and facilitate these systems by allowing Corps reservoirs to be integrated into them when storage space can be made available, but the proposed water allocation rule will completely disrupt these systems. By laying claim to all water entering its reservoirs and then redistributing it according to the proposed federal allocation rule, the proposed storage accounting system would create a powerful incentive to users to keep their water out of Corps facilities whenever possible. Users needing to store water will find other places to store it, prompting many to construct new reservoirs that would not otherwise be needed; and users needing to pass water from points above a Corps facility to points below it will find ways to circumvent those facilities to avoid losing control of their water, including by constructing unnecessary pipelines.

Practical examples of existing arrangements that will be disrupted include the following:

- In Texas, the Tarrant Regional Water District (TRWD) supplies water to over 2 million people through a system of seven reservoirs, six of which are owned and/or operated by TRWD, and uses Benbrook Lake, a Corps reservoir, as a "terminal" facility to store water transported to it from other reservoirs. The flexibility to transfer water from one storage facility to another helps Tarrant Regional balance capacity and store water where it is needed. The flows that Tarrant Regional conveys to Benbrook from its other reservoirs are "made inflows" to which Tarrant Regional holds rights under State law. Because the proposed rule calls for all inflow be credited to all users proportionally, based on their share of the reservoir's conservation storage, the result would be to nullify Tarrant Regional's State-granted water rights and redistribute its made inflows to other users. Its practical effect would cause Tarrant Regional to redesign its water storage and delivery system to avoid using Benbrook as a terminal storage facility, and thus to maintain control over its water. This change would strand hundreds of millions of dollars in infrastructure, decrease the efficiency of more than $2 billion in pipelines currently being built, and increase the District's annual pumping costs by millions.

- In Texas, the Brazos River Authority owns two water supply reservoirs located upstream of Lake Whitney, a Corps reservoir. The Authority owns 22 percent of the conservation storage in Lake Whitney, with the remaining 78 percent being allocated to hydropower. Some of the Authority's largest water supply customers are downstream of Lake Whitney. The Authority currently manages its storage as a system, releasing water from its three storage reservoirs, as appropriate, for delivery to customers downstream. This will not be possible if releases from the top-most reservoirs into Lake Whitney are redistributed to the users of Lake Whitney in the manner the Corps has proposed. Under the proposed rule, 78 percent of the Authority's water would be reallocated to hydropower upon entering the federal reservoir.

- In Georgia, the Cobb County-Marietta Water Authority has contracted for the right to store water in Allatoona Lake, where it operates a raw water intake and treatment system to serve almost 1 million people. In 2005, Cobb-Marietta constructed a new storage reservoir upstream of Allatoona Lake to supplement the storage capacity available to it in the federal facility. The plan calls for Cobb-Marietta to convey water from its new reservoir to Allatoona Lake when water is needed at Allatoona Lake. By permit, the State of Georgia has granted to Cobb-Marietta "exclusive rights" to store and utilize the water released from its upstream reservoir as part of this plan. Because Cobb-Marietta owns just 4.6 percent of the conservation storage at Allatoona Lake, however, the proposed federal allocation rule would result in just 4.6 percent of the water conveyed to Allatoona Lake in this manner being "credited" to Cobb-Marietta's account. The rest would be redistributed by the Corps to other users.

- In Tennessee, the City of Murfreesboro and the Consolidated Utilities District ("CUD") of Rutherford County have purchased the right to store water in J. Percy Priest Reservoir. The City operates a wastewater reclamation facility that returns approximately thirty percent of the combined withdrawal. The City also operates a spray field that it can use to manage its waste more cost-effectively, but the Tennessee Department of Environmental Conservation and the Corps both prefer for the water to be returned to the system through surface water discharges when possible. To incentivize this practice, the State of Tennessee has passed legislation granting Murfreesboro and CUD exclusive rights to the water returned to J. Percy Priest in this manner. The proposed reallocation rule would nullify this State-granted water right, however, leaving Murfreesboro and CUD with less than 8 percent of the water granted to them by the State of Tennessee.

- In Georgia, Gwinnett County has invested over $1 billion to construct state-of the art facilities to return water to Lake Lanier, in Georgia. This project was undertaken at great cost, specifically to augment water supplies for Gwinnett County and metropolitan Atlanta. Because the proposed federal allocation rule would distribute water based on the ownership of ***storage***, as opposed to ownership of rights to the water under State law, the federal allocation rule would deprive the County of the vast majority of the benefits of its investment. Instead, the Corps would distribute the water Gwinnett County returns to the reservoir to other users and purposes like hydropower and navigation.

- In Washington, the City of Tacoma owns a storage reservoir upstream of a federal project on the Willamette River Basin. Sometimes it is necessary for the City to deliver water from its reservoir to points downstream of the federal project, requiring the water to pass through the federal reservoir. Because the proposed federal allocation rule would treat water delivered by the City of Tacoma like any other inflow to the federal project—and thus, allocate it proportionally to all users with storage in the reservoir—it would result in the City of Tacoma's water being intercepted and allocated to the users of the federal project instead of being passed downstream.

Each of these projects is a good project that ***should*** be pursued from a water management perspective. All promote good water management while minimizing environmental and economic costs, but none would be possible if the proposed federal water allocation rule were adopted. As explained below, this is an area in which the Corps can and should allow States to take the lead. The Corps should strive to support State and local planning efforts, rather than undermining them. The key is for the Corps to remember that its role is to provide "storage"—not to allocate water—and to let State and local planning agencies do their jobs.

2.1 *NWSA Urges the Corps to Distinguish "Storage" from "Water"*

The proposed rule acknowledges that "the Corps does not issue, sell, adjudicate, or allocate water rights" when it contracts for storage in its reservoirs, as these powers are reserved to the States.[9] This is indisputably correct: the Corps "has no water rights and no authority to allocate water among users as this is a state function, and it has no control over the water rights of others. *Thus the Corps' contract with [non-federal entities] must be very narrow in scope. It is for money and for storage space in the lake*."[10]

Given its significance, the distinction between allocating "storage space" and allocating water must be preserved in Corps policy. As explained below, the proposed rule crosses the line, especially in provisions relating to "storage accounting" and the allocation of made inflows. Contrary to the Corps' stated intent, these provisions directly "interfere with the prerogatives of the States to allocate waters within their borders."[11]

The distinction between storage and water is fundamental to the Corps' water supply program because it is the key understanding that led to the federal government's being authorized to develop water projects in the first place. In the beginning, States were reluctant to authorize the federal government to become involved in water projects because they did not want to cede control to the federal government. The solution was to draw a sharp line between the

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[9] *E.g.,*, 81 Fed. Reg. at 91,559.

[10] *League of Women Voters of Tulsa, Inc. v. U.S. Corps of Engineers*, 730 F.2d 579, 583 (10th Cir. 1984), overruled as to standard of review, *Village of Los Ranchos De Albuquerque v. Marsh*, 956 F.2d 970 (10th Cir. 1992) (emphasis added).

[11] 81 Fed. Reg. at 91,563.

facilities to be constructed and the water itself: the facilities would be owned and operated by the federal government, but the water to be stored in those facilities—including both its ownership and the right to allocate it—would be preserved to the States.

This distinction was emphasized in Congressional debates about the federal water programs from the earliest days. For example, in the debates in Congress that preceded the Reclamation Act of 1902, the Chairman of the House Committee on Public Lands and sponsor of the bill (Rep. Lacey) found it necessary to put members at ease by emphasizing the distinction between the control of a reservoir and the control of water rights:

> A reservoir site without water is entirely useless. The water is the particular thing in question, and the waters are controlled by the States through which they flow, and not by the United States of America. These are surface waters, the waters of small streams not navigable, and the States control them.
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> [T]he United States does not control the water. It controls only the reservoir sites in which the water may be collected. The water is under the control of the States.[12]

The United States Supreme Court recognized the significance of the distinction between storage and water in *Nebraska v. Wyoming,* an equitable apportionment between Nebraska and Wyoming in which the United States intervened to assert a claim to all unappropriated water in the North Platte River for use in a reclamation project. The Court rejected this claim based on the distinction between owning a reservoir and owning water. The Court explained that, "[a]lthough the government diverted, stored, and distributed the water," this did not mean that by doing so "ownership of the water or water rights became vested in the United States."[13] Rather, the Court explained that the "government was and remained simply a carrier and distributor of the water, with the right to receive the sums stipulated in the contracts as reimbursement for the cost of construction and annual charges for operation and maintenance of the works."[14] "The property right in the water right," however, "is separate and distinct from the property right in the reservoirs, ditches, or canals."[15]

These understandings were already well established in 1958 when the Water Supply Act was enacted. Thus, in discussing the Corps' implementation of the Water Supply Act immediately after it was passed, the Chief of Engineers wrote, "[I]t is important to emphasize that the Corps provides only a beneficial storage service under this legislation and that matters

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[12] 29 Cong. Rec. 1948-1949 (1897) (Cong. Lacey). *See California v. United States*, 438 U.S. 645 (1978) (noting the significance of this colloquoy).

[13] *Nebraska v. Wyoming*, 325 U.S. 589 (1945).

[14] *Id*.

[15] *Id*.

pertaining to the use and distribution of additional water made available from the storage have always been and should remain responsibilities of the State concerned."[16]

For this reason, Water Supply Act contracts always explicitly distinguish between the right to use physical storage space in a Corps reservoir and the water itself. As the Corps' Water Supply Handbook explains, "[w]ater supply agreements under the 1958 Water Supply Act *are for storage space only*."[17] Thus, a storage contract merely "conveys the right to store a resource (water) in a Corps reservoir project without guaranteeing that the resource will be available," while the "acquisition of water rights is a responsibility of water supply users."[18] This was true of the earliest Water Supply Act contracts,[19] and it is still true of the model contract today.[20]

2.2 *The Proposed Storage Accounting Method Allocates Water—Not Storage—and thus Encroaches on States' Authority to Allocate Water Storage Rights*

The proposed rule would require that storage contracts include "appropriate mechanisms for accounting for actual storage usage and available water supply storage on a continuing basis."[21] Any mechanism employed by the Corps today or in the future should track the use of *storage*—how much space in a reservoir is being used to store water for a particular user or use—as opposed to the uses of water itself. Such storage accounting should be based on actual measured reservoir levels, streamflow, withdrawals and return flows where possible. Additionally, both the accounting methods and results should be clear, transparent and readily available to all interested parties.

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[16] Letter from Maj. Gen. William F. Cassidy, Asst. Chief of Engineers for Civil Works, to Maj. Gen. Frank M. Albrecht, Chief, South Atlantic Division, *re: Administration of Water Supply Act of 1958* (29 Dec. 1959).

[17] Institute for Water Resources, *Water Supply Handbook: A Handbook on Water Supply Planning and Resource Management*, at 2-3, 2-5 (Dec. 1998) (Revised IWR Report 96-PS-4) (emphasis added).

[18] *Id*. *See also* U.S. Army Corps of Engineers, Digest of Policies and Authorities, EP 1165-2-1 at 18-7 (Jul. 1999) ("The Corps provides flow regulation service or storage space within the reservoir to water users as authorized and is not involved in adequacy or timing of the acquisition of water rights.")

[19] *See, e.g.*, Contract Between the United States of America and the Cobb County-Marietta Water Authority for Water Storage Space in Allatoona Reservoir, No. DA-01-076-CIVENG-64-116 (Negotiated) (Oct. 31, 1963) (granting water supplier the right to use an undivided percentage of the "storage space" in the reservoir, while specifying that the user has the right to "make such diversions as granted ... by the State of Georgia to the extent the storage space will yield" and that "regulation of the use of water stored in the aforesaid storage space shall be the responsibility of the [user] and not part of this contract.").

[20] *Model Format Water Supply Storage Agreements*, U.S. Army Corps of Engineers Institute for Water Resources, *Water Supply Handbook* (Revised IWR Report No. 96-PS-4, Dec. 1998), Appendix B, Article 2. *See also* Office of the Chief Counsel, Memorandum for the Chief of Engineers (June 25, 2012) ("Stockdale III") at 36 ("The Corps contracts for the use of storage, not for the sale of water or water rights.")

[21] Proposed Rule ¶ (d)(2).

Storage space in federal reservoirs is allocated through contracts that give users the right to utilize a certain volume of "storage space" in the reservoir to store water. The proposed rule goes too far by not only tracking how much storage space is being used by each user, but also creating a new, federal rule for allocating water to the storage space contracted to particular users. It does this by stating how water will be "credited" to the users' storage accounts: "storage accounting mechanisms shall be based on the principle that ***all inflows*** to … the Corps reservoir are ***credited*** … ***proportionally*** to each water supply storage account."[22] This federal mandate to allocate inflow "proportionally" based on the size of the users' contract encroaches on State' authority to allocate water. No federal water allocation rule should be imposed; State allocations must govern the rights of water supply users to store water entering Corps reservoirs.

(a) Water Storage Rights are "Water Rights"

The preamble asserts that a federal rule allocating water storage rights "would not deprive that user of any water rights under state law,"[23] apparently on the belief that storage rights are not "water rights" because they are "non-consumptive."[24] The basis for this argument is unclear. The right to impound or store water is a "water right" like any other,[25] and it creates a consumptive evaporation use that can be as significant as other consumptive uses. Indeed, the right to impound or store water is clearly recognized as such in both riparian[26] and appropriative jurisdictions.[27] For this reason, the Bureau of Reclamation specifically recognizes the right to store and impound water as an independent water right:

[22] *Id.*

[23] 81 Fed. Reg. at 91,581.

[24] 81 Fed. Reg. at 91,563 ("Unlike other federal reservoirs that are operated for different purposes under other authority, such as reservoirs operated by the Department of the Interior pursuant to the federal reclamation laws, Congress has typically authorized the Corps to operate projects, through River and Harbors Acts and Flood Control Acts, for nonconsumptive purposes such as navigation, flood control, and hydropower generation.")

[25] *See, e.g.*, Dan Tarlock, Law of Water Rights and Resources § 5:39, Storage Rights ("Appropriative rights are either direct flow or storage rights.... Separate rights for direct flow and storage must be obtained.").

[26] *See, e.g,* O.C.G.A. § 12-5-21(b) (authorizing Georgia regulatory agency "to regulate the withdrawal, diversion, ***or impoundment*** of the surface waters of the state") (emphasis added); Ga. Comp. R. & Regs. 391-3-6-07(1) (requiring state "permit to withdraw, divert ***or impound*** surface waters of the State") (emphasis added).

[27] *See, e.g.*, Tex. Water Code Ann. § 11.002(5) ("'Water right' means a right acquired under the laws of this state ***to impound***, divert, or use state water.") (emphasis added); Colo. Rev. Stat. § 37-87-101 ("The right to store water of a natural stream for later application to beneficial use is recognized as a right of appropriation in order of priority under the Colorado constitution."); Casey S. Funk, *Basic Storage 101*, 9 U. Denv. Water L. Rev. 519, 521 (2006) ("In 1879, the Colorado General Assembly recognized that storage rights are adjudicable water rights. The term 'storage' means 'the impoundment, possession, and control of water by means of a dam.'") (quoting Colo. Rev. Stat. § 37-92-103(10.7)); Wyo. Stat. Ann. § 41-3-301(a) ("Any person, corporation, association, or organization, of any nature whatsoever, hereafter intending to store or impound, for beneficial uses, any of the unappropriated waters of the state of

> **Water Storage Rights**. This is a water right obtained from the State to store water…. Water storage rights do not include the right to use the water being stored.[28]

Numerous States in both the East and the West specifically grant water users the right to store and use made inflows. This includes the right to use reclaimed water returned to a reservoir, as well as the right to use water that is released into a watercourse so that it may be withdrawn or used at another location. [29]

To be sure, users possessing a legal right to impound water under State law must also secure the right to use storage space in the federal facility to exercise those rights. These "facility storage rights," however, are granted and governed by the specific terms of the storage contract executed by the United States. They are separate and distinct from the "water storage right"—the right to impound and use the water itself—which is allocated by the States.

(b) The Corps Must Defer to States to Allocate Water Storage Rights Because the States' Authority to do so Has Not Been Preempted by Any Federal Law

To be sure, the Corps is not subject to the same statutory requirement as the Bureau of Reclamation, which is required to obtain water rights for its projects through the same process as other users. The reason the Corps is not required to obtain water rights to build dams, however, is not because water storage rights are "non-consumptive," as the preamble suggests. The reason is

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Wyoming, shall, before commencing construction of any works for such purpose, or performing any work in connection with said proposed construction, make an application to the state engineer, for a permit to construct a reservoir."); Kan. Admin. Regs. § 5-6-1 ("Any person intending to store water may make application to the chief engineer in the same manner as any other person making application for permit to appropriate water for beneficial use. The application shall set forth the same general information as any other application for permit to appropriate water for beneficial use....").

[28] U.S. Bureau of Reclamation, Reclamation Manual, Directives and Standards, FIN 07-22, 9 and Appx. A (rev. July 31, 2017).

[29] *See, e.g.*, Tenn. Code Ann. § 69-3-108 (granting water supply users the exclusive right to impound made inflows in purchased storage space); Ga. Comp. R. & Regs. 391-3-6-07(16)(a) (authorizing Georgia Environmental Protection Division to allocate made inflows to water supply users by permit); Colo. Rev. Stat. Ann. § 37-87-102(4) ("The owners of any reservoir may conduct the waters legally stored therein into and along any of the natural streams of the state … and may take the same out again at any point desired…"); *Hidden Hollow Ranch v. Fields*, 92 P.3d 1185, 1193 (Mont. 2004) ("This Court has long since held that where water is intentionally emptied into a natural watercourse for conduction to another point, an equivalent amount may be recaptured or diverted at a later point, so long as it does not diminish the rights of prior appropriators."); Tex. Water Code § 11.042 ("Under rules prescribed by the Commission, a person ... supplying stored water may use the bank and bed of any flowing natural stream in the state to convey the water from the place of storage to the place of use or to the diversion point of the appropriator.").

that any State laws requiring the Corps to obtain a permit to construct a dam would be preempted by the federal authorization.

The relevant question, therefore, is not whether the water rights at issue are "consumptive" or "non-consumptive," but whether the States' authority to allocate them has been preempted by some federal law. The fact that *some* State laws are preempted does not mean that *all* State laws are preempted. As explained below—and as the preamble essentially concedes—there is no colorable argument that States' authority to allocate water storage rights has been preempted by federal laws authorizing construction of water projects.

Preemption occurs in two forms: "field preemption," and "conflict preemption." The first—field preemption—is not relevant in the area of water law, because Congress manifestly has not "occupied" this field. To the contrary, water law is a classic example of an area of law that Congress has traditionally left to States.[30] Thus, the preamble recognizes that, in authorizing the construction of multipurpose reservoirs for purposes such as navigation, flood control, and hydropower generation, Congress did not intend to "interfere with the prerogatives of the States to allocate waters within their borders."[31]

Because Congress has not occupied the field of water law, preemption will be found only if a State's allocation decisions—including the allocation of water storage rights—"actually conflicts" with federal law. An "actual conflict" occurs only if it is "impossible to comply with both state and federal law" or if State law "stands as an obstacle to the accomplishment of the full purposes and objectives of Congress."[32] This determination requires a case-by-case analysis of the conditions actually imposed by the State.[33] Furthermore, it is not enough to show that a potential conflict exists; before declaring a State allocation to be preempted, the United States must "at a minimum … attempt to reconcile its interests with [State] law."[34] This requires that any regulation adopted by the Corps accommodate and defer to State water allocation decisions—including State water storage allocation decisions—to the maximum extent possible,

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[30] Far from experssing an intent to preempt State water law, Congress has repeatedly expressed its intention to defer to the States in the management of the waters within their borders. *Solid Waste Agency of Northern Cook County v. United States Army Corps of Eng'rs*, 531 U.S. 159, 174 (2001); *California v. United States*, 438 U.S. 645, 667 & 669 (1978). "Where Congress has expressly addressed the question of whether federal entities must abide by state water law, it has almost invariably deferred to the state law." *United States v. New Mexico*, 438 U.S. 696, 701 (1978).

[31] 81 Fed. Reg. 91.563 ("Indeed, Congress has expressed its intent, in several legislative provisions of general application, 'to recognize . . . the interests and rights of the States in determining the development of the watersheds within their borders and likewise their interests and rights in water utilization and control.' Flood Control Act of 1944, Public Law 78–534, 1, 58 Stat. 888 (Dec. 22, 1944), 33 U.S.C. 701–1.").

[32] *Silkwood v. Kerr-McGee Corp.*, 464 U.S. 238, 248 (1984) (citations omitted).

[33] *California v. United States*, 438 U.S. at 679*; Rice v. Santa Fe Elevator Corp*., 331 U.S. 218, 232 (1947) ("until it is known what the [State] will do, no conflict can be shown").

[34] *United States v. State of Cal., State Water Resources Control Bd.*, 694 F.2d 1171, 1178 (9th Cir. 1982); Executive Order 13132, Federalism, secs. 3 & 4.

and that any regulation impinging upon traditional State authority to allocate water rights "be restricted to the minimum level necessary to achieve the objectives of the statute pursuant to which the regulations are promulgated."[35]

In the case of water storage allocation decisions, there is no conflict between authorizing the Corps to build a dam while recognizing that States own the water that is stored in the dam and preserving the States' authority to allocate water rights, including water storage rights. Far from presenting a conflict, as discussed above, this is precisely how federal water projects have always been conceived.

Some have suggested that the Corps cannot defer to States to allocate storage rights, asserting that doing so would cede complete control of the federal facility because the States could allocate "all the water entering the reservoir" and thus interfere with the operation of the project for federal purposes. This strawman is easily rejected. No allocation of this sort has ever been made, and it would likely be preempted if it were. The point is that the preemption analysis must evaluate the specific State allocation and its specific effects on the federal project. The blanket rule proposed by the Corps that every allocation is preempted—even those that the Corps has already determined have no effect on project purposes—plainly overreaches and is unlawful.

The simple solution is for the Corps to require that any water entering a reservoir be "credited" to the storage account of users possessing the right to store it under State law. A federal allocation method should be used only as a default when the State has not allocated the water and has expressly declined to exercise its authority to do so. This situation is not likely to arise in any Western State, but it might in some riparian jurisdictions.

(c) The Arguments Given for Not Crediting Made Inflows Do Not Justify Nullifying State Allocations

The arguments in the proposal attempting to justify a decision to override State water rights and not credit made inflows consistent with State law are not persuasive. The preamble states the Corps has "refrained from adopting storage accounting systems that designate particular inflows for sole use by particular entities" because "the Corps does not determine or allocate water rights."[36] But this argues ***<u>against</u>*** the proposal, not for it.

When States have granted users rights to made inflows, any federal rule that would allocate made inflows in a manner contrary to the States' decisions would deny users the ability to exercise their State-granted water rights and would grant others the right to store that water instead. This is the very definition of granting water rights, which is a power the Corps agrees it does not have. In this circumstance, the only way to avoid usurping the States' authority and placing the Corps in a position of granting or denying water rights is to defer to the States' allocation decisions.

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[35] Executive Order 13132, Federalism, sec. 4(c); *id.* sec. 4(d) ("where possible," federal agencies must "defer to the States to establish standards").

[36] 81 Fed. Reg. at 91,580.

The preamble also states that it will refuse to credit made inflows and instead require storage to be purchased in an amount "sufficient to yield the gross amount of water to be withdrawn or released," regardless of any water users return or delivery to the project. The Corps claims that this is desirable because it helps to ensure (1) that anticipated supplies are "dependable," and (2) that the charge to the user "approximates the water supply benefit being afforded."[37] Both considerations misconceive the Corps' role, which is not to provide a "dependable" "water supply benefit."

The Corps role is to provide a discrete service—storage space—not water. It should be the users' responsibility to determine how much water they will need to meet demand and to secure all water rights necessary to do so. As part of that calculation, it should be the users' responsibility to determine the size of the storage reserve they will need.[38] Users should be permitted to make this decision based on their assessment of demand, and the full range of supplies available to them, including made inflows; their tolerance for risk; and/or their willingness and ability to adopt measures to constrain demand, if necessary. The function of the storage accounting system, in turn, should be to hold users accountable for the decisions they make by tracking the amount of water is actually contained within their storage space at any point in time.

If the accounting is done correctly, it is users that bear the risk if their decisions turn out to be wrong. The accounting is nothing more than a simple mass-balance equation. If anticipated flows do not materialize—e.g., if made inflows turn out to be less reliable than projected—the water will not be credited to users' accounts, and it will not be available in storage for them to use. This might result in the user running out of water, but it should not cause adverse impacts to the federal government or to other users.

To the extent the Corps is concerned about the reliability of made inflows, this concern is misplaced. Users are in a much better position than the Corps to evaluate the reliability of made inflows. But in any event, the truth is that made inflows tend to be more consistent and reliable than any other source. Most engineered return flows, for example, are generated from indoor water use, which is far more reliable than precipitation. Likewise, users with rights to water stored in other reservoirs are able to control releases from those other storage projects to ensure that water is available in their storage space in the federal project.

The second argument—that charging for storage based on the "gross" withdrawal "approximates the water supply benefit being provided"—also misconceives the Corps' role. As has been stated repeatedly in the Corps' own contracts and documents, the service the Corps provides is _*not*_ water supply. It is storage. Therefore, the charge to the user should be based on the use of the Corps facility to provide that service, which is determined by examining how

[37] 81 Fed. Reg. at 91,576.

[38] The "storage reserve" needed to provide a firm supply is the maximum volume of water that must be saved and set aside (stored) to ensure the desired yield can be delivered at all times. Like a savings account, it is the maximum cumulative difference beween inflow (income) and demand (expenses).

much of the facility is used to store water for the user, not by measuring the gross quantity of water withdrawn.

It is also incorrect that the Corps' proposal to require all users to purchase sufficient storage to yield their gross demands fairly reflects the "water supply benefit being provided." Consider, for example, two users who both have equal rights to inflow and who both require the same gross water supply demand. The first relies entirely on stored water to close a seasonal gap between supply and demand. The second relies in part on stored water and in part on recycled water (made inflows) to close the same gap. Both users achieve the same gross water supply benefit, but the first relies much more heavily on the federal storage facility to achieve that benefit. These two users should not be charged the same because they do not use or benefit from the federal storage service to the same degree.

If both users in this example are required to purchase the same volume of storage space, the user that has minimized the need for storage by recycling water will be forced to purchase much more storage space than is required, and that additional storage space will not be used. Both users will be forced to make the same payment to the Corps, but the first will use all of the space under contract and will thus have a much larger impact on other users and other purposes of the project. The other users' payments for excess storage will be used to pay for "benefits" the user will not receive and/or to compensate for impacts that will never occur.

2.3 *NWSA Also Opposes the Alternative of Mandating that Made Inflows Be Credited to the Users Who Make Them, Because this too Would Encroach on State Allocations*

While stating that the Corps' preferred alternative is to allocate all inflow according to a one-size-fits all federal formula, thus ignoring State-issued water rights, the Corps solicits comment on the following alternative:

> Specifically, the Corps solicits comment as to the merits of providing that return flows or other ''made inflows,'' defined as inflows provided by an entity that could choose whether or not to discharge such flows into a Corps reservoir, should be fully credited to the water supply storage account holder responsible for such flows, provided that the flows can be reliably measured. Under this alternative proposal…instead of receiving proportional credit for made inflows (in proportion to a user's share of storage allocated under a water supply agreement), the user would receive full credit for made inflows.[39]

NWSA opposes this alternative for the same reason it opposes the Corps' preferred alternative—it would create a federal water allocation rule that would conflict with State-granted water rights. The Corps should not mandate the allocation either way. To avoid encroaching on State authorities, the Corps must defer to State allocations unless the State allocation is preempted because it actually conflicts with federal law.

[39] 81 Fed. Reg. at 91,581.

2.4 *NWSA Opposes Expanding the Definition of "Municipal And Industrial Water Supply" to Include New Uses*

The proposed definition of "municipal and industrial water supply" expands the authority provided by the Water Supply Act. The proposed definition includes any "water that is or may be put to any beneficial use under an applicable water rights allocation system, other than irrigation uses as provided under 43 U.S.C. § 390.[40] In contrast, existing Corps guidance defines this phrase to mean "supply for uses customarily found in the operation of municipal water systems and for uses in industrial processes."[41] Because agricultural irrigation is not ordinarily found among the customers of a municipal system, existing guidance prohibits using the Water Supply Act of 1958 to provide storage for this purpose.[42] In a sharp reversal, the proposed rule would allow it in most cases, including all cases east of the 98th meridian. There is no basis in the statutory text or legislative history of the Water Supply Act to argue that Congress intended for the Water Supply Act to be used to store water for irrigation.

3. **Storage Contracts: Price Issues**

Consistent with current policy, the proposed rule would require users of water supply storage to pay three basic costs: (1) charges to reimburse the federal government for its investment in the project; (2) an annual charge to pay for annual "operations and maintenance"; and (3) an occasional charge to pay for any "repair, rehabilitation, and replacement" ("RR&R") costs as needed.[43]

The first charge—sometimes called the "project investment cost"—varies depending on the manner by which storage for water supply is included in a project. When storage is included in the original design of a project, through new construction, this charge is determined by the "Separable Costs-Remaining Benefits" method.[44] When it is added through structural modifications, the user must pay the entire cost of the modification plus an amount equal to fifty-percent of the savings to the user, as compared to the cost of the most likely alternative to using the federal project.[45] When storage is added through a reallocation, the price is based on the highest of three uses: (1) revenues forgone; (2) benefits forgone; or (3) the updated cost of storage. In practice, the updated cost of storage is almost always the highest of the three.[46]

The proposed rule proposes to carry these practices forward. The preamble solicits comments on this proposal to codify its existing pricing methodology. It also solicits comment

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[40] 81 Fed. Reg. at 91,568-70.

[41] U.S. Army Corps of Engineers Institute for Water Resources, *Water Supply Handbook* (Revised IWR Report No. 96-PS-4, Dec. 1998), at 2-3.

[42] *Id*.

[43] Proposed Rule ¶ (d)(3).

[44] *See* Proposed Rule ¶ (d)(3)(i) & 81 Fed. Reg. at 91,576.

[45] *Id.*

[46] *Id.*

> [W]hether the Corps should collect data related to the cost of providing water supply storage, including the market price as defined in OMB Circular A-25 Revised, or the opportunity cost of making storage available for water supply, and whether the Corps should include the market price of water supply storage as an alternative pricing metric.[47]

NWSA believes that prices should be based on the principle of recouping the governments costs as opposed to generating profit.

3.1 *NWSA Opposes Including the Market Price or Opportunity Cost Related To Water Supply Storage as an Alternative Pricing Metric*

Although the Corps proposes to maintain its basic pricing policies, the proposed rule requests comment on whether the Corps should collect data to support potential pricing policies based on the market price for storage and/or the opportunity cost of making storage available for water supply.

NWSA opposes this data collection effort because it opposes charging for storage based on the market price for storage and/or the opportunity cost to the federal government of making it available. Policies of this type would discriminate against water supply users relative to other users of multipurpose reservoirs. For example, hydropower rates are still based on the cost to the government to make the power available. Because the Water Supply Act states that prices should be set on the principle that all users share equitably in the benefits of multiple purpose construction, water supply users should not be denied this same benefit.

3.2 *NWSA Opposes Continuing the Practice of Requiring Users Who Pay for Structural Modifications to Include Water Supply Storage Also to Pay an Amount Equal to 50 Percent of the Savings Compared to the Cost of the Most Likely Alternative*

For similar reasons, NWSA opposes the requirement that water supply users—and water supply users alone—pay a premium to add storage to a project based on the next least cost alternative. Water supply storage is no different from any other storage. It costs no more or no less to add water supply storage to a project than it does to add storage for any other purpose. There is simply no basis to single out and discriminate against water supply users by requiring them to pay a premium unrelated to the cost to the federal government of providing the storage.

Moreover, after projects have been authorized, the Corps frequently modifies the design of projects and the amount of conservation storage to increase the volume of storage available for hydropower generation. Yet the cost of that storage and the amount of reimbursement due to the federal government does not depend on the costs to hydropower customers of alternative sources of electricity. The proposed rule provides no justification for this differential treatment.

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[47] 81 Fed. Reg. at 91,577.

Requiring users to pay an amount equal to 50 percent of the savings of the most likely alternative could disincentivize projects that would otherwise be feasible and lead to the construction of alternative projects that could result in greater environmental impacts.

3.3 *When Using the "Updated Cost of Storage", it Should Reflect Depreciation*

The "updated cost" of storage is the updated cost for new construction, which should not require repair, replacement or rehabilitation. Based on the current formula, users purchasing storage in an older project may have to pay "new construction" costs for a project that will soon require major expenditures in the form of RR&R. To eliminate this unfairness, the initial "new construction" cost should be depreciated to reflect current conditions and value.

3.4 *Corps Policy Should Allow Users To Amortize Repair, Rehabilitation, And Replacement Cost*

The Corps' current practice is to require users to agree in advance (as part of any storage contract) to pay any RR&R costs either in incremental installments during construction or in a lump sum upon completion of construction. This is a burden on local jurisdictions, as it is extremely challenging to budget for unknown but potentially very large expenditures.

There is no statutory basis for requiring RR&R to be paid in a lump sum. To the contrary, section 1203 of the Water Resources Development Act of 1986 provides that these and other costs can be repaid over a 30-year period. Nonetheless, the Corps chooses to require lump-sum payments as a matter of policy. According to a 2015 report by the GAO to Congress, Corps officials have stated that sponsors "may seek an exception to amortize their cost share payments over time following project completion."[48] In our experience, however, this has not been suggested as an alternative; and in any event the policy of allowing these costs to be amortized should be the standard, not an exception.

4. <u>Storage Contracts: Authority and Procedure</u>

4.1 *Water Supply Act Limits*

The Water Supply Act provides that the Corps may reallocate storage in its reservoirs so long as the reallocations would not "seriously affect the purposes for which the project was authorized, surveyed, planned, or constructed," or "involve major structural or operational changes."[49]

NWSA advocates that "seriously affect" project purposes should be interpreted to mean "adversely affect the Congressionally-authorized purposes of a project or reservoir project in a manner that would fundamentally depart from Congressional intent, as expressed through the relevant authorizing legislation."[50] The term "major structural or operational change" should be

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[48] *See* GAO Report to Congressional Requesters, *Army Corps of Engineers: Actions Need to Improve Cost Sharing for Dam Safety Repairs* (GAO-16-106, Dec. 15, 2015), at 9 & 10 (Table 1, n. a).

[49] 43 U.S.C. § 390b(e).

[50] Proposed Rule ¶ (a)(4), 81 Fed. Reg. 91,588.

interpreted to mean "a change, to the physical structure or operations of a project or reservoir project that would fundamentally depart from Congressional intent, as expressed through the relevant authorizing legislation."[51] Both interpretations should also recognize that the "[e]valuation of effects on authorized purposes requires both technical and legal analysis of the proposed action, in light of that Congressional intent."[52]

The Corps' should focus on Congressional expectations in light of the unique characteristics and authorization history of each project. NWSA would oppose any test based on the percentage of storage to be reallocated, because this is not a meaningful metric.

4.2 *The 15-Percent / 50,000 acre-foot Threshold should have no Bearing on the Need for Congressional Approval*

Current guidance used to determine when the Assistant Secretary's approval is required for a specific reallocation is set forth in ER 1105-2-100, which establishes three tiers of approval: (1) very small reallocations (less than 500 acre-feet), which may be approved by District Commanders; (2) mid-size reallocations (between 500 and 50,000 acre-feet, and less than 15 percent of total available storage), which must be approved by the Chief of Engineers; and (3) reallocations exceeding this threshold, which must be approved by the Assistant Secretary.[53]

Many have confused this internal policy for determining if the Assistant Secretary's approval is required with the statutory test for determining whether ***congressional*** approval is required. The existing guidance has no bearing on the question of whether a reallocation requires specific Congressional approval. The tiers are relevant only to reallocations that have already been authorized by Congress—that is, that do not exceed the Water Supply Act limits—and their only function is to determine who within the Army has been authorized to make the decision.[54]

4.3 *NWSA Opposes Requiring the Assistant Secretary to Approve Every Reallocation Report*

Despite the delegation of authority in ER 1105-2-100, the proposed rule appears to require the Assistant Secretary approve ***all*** reallocation reports.[55] It appears that authority to execute individual contracts may be delegated, but only after a reallocation report covering the contract has been approved by the Assistant Secretary.

Corps staff have suggested this interpretation might not have been intended, but this needs to be clarified. Clarification is needed because the draft expressly states that "contracts"

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[51] Proposed Rule ¶ (a)(5), 81 Fed. Reg. 91,588.

[52] *Id*.

[53] 81 Fed. Reg. at 91,578 to 91,579.

[54] *See* Thomas W. Waters, Chief, Policy and Policy Compliance Division, Directorate of Civil Works, Headquarters, U.S. Army Corps of Engineers, Memorandum, Subject: Water Supply Reallocation Policy (August 30, 2007) (responding to incorrect interpretation that "any reallocation above this amount requires congressional approval").

[55] Proposed Rule ¶ (c)(2).

and “agreements” can be signed “by the Assistant Secretary or his or her designee,” but the provision assigning authority to approve surplus water determinations and reports makes no mention of a designee. It is highly likely, therefore, that a court (and most people) reviewing the proposed rule would conclude that authority to approve a contract or agreement can be delegated, but that authority to approve a report or determination cannot.

If the Corps does intend to require the Assistant Secretary to approve every surplus water determination or reallocation report, NWSA would urge it to reconsider. This policy would result in substantial and unnecessary delays, preventing the use of water supply storage when it is plainly available and in the public interest. The Assistant Secretary should be allowed to delegate authority to the operational level of command while identifying factors to be considered in determining if a higher level of approval is required.

4.4 *The Water Supply Act should Authorize “Reallocations” from Existing Storage to Water Supply*

The Water Supply Act states that “storage may be included” for water supply at any federal project. The Corps should interpret this phrase to include reallocations of storage—that is, to authorize “including” storage for water supply by reallocating storage to water supply from other purposes.

5. Surplus Water Agreements

5.1 *Surplus Water Definition*

The Flood Control Act of 1944 does not define the term “surplus water.” Current Corps guidance defines it as follows:

> (1) water stored in a Department of the Army reservoir that is not required because the authorized use for the water never developed or the need was reduced by changes that occurred since authorization or construction; or
>
> (2) water that would be more beneficially used as municipal and industrial water than for the authorized purpose and which, when withdrawn, would not significantly affect authorized purposes over some specified time period.[56]

The Corps has proposed two major changes to this definition. The first is to eliminate reference in Paragraph (1) to “water stored … in a reservoir,” thus broadening the definition to include any water present in or flowing through a reservoir, whether it has been “stored” or not. The second is to eliminate reference in Paragraph (2) to water that could be “more beneficially used” for municipal and industrial water supply than for authorized purposes. The second change

[56] ER 1105–2–100 at E–214; 81 Fed. Reg. at 91,565.

is proposed in recognition that "the Corps does not make judgments about beneficial uses of water, as that is a prerogative of States."[57]

The result of these changes is a proposed definition that would define "surplus" water to mean:

> [W]ater, available at a reservoir …, that the Assistant Secretary of the Army (Civil Works) determines is not required during a specified period of time to accomplish an authorized federal purpose or purposes of that reservoir, for any of the following reasons—
>
> (i) Because the authorized purpose or purposes for which such water was originally intended have not fully developed; or
>
> (ii) Because the need for the water to accomplish such authorized purpose or purposes has lessened; or
>
> (iii) Because the amount of water to be withdrawn, in combination with other such withdrawals during the specified time period, would have virtually no effect on operations for authorized purposes.[58]

(a) NWSA Opposes Defining "Surplus Water" to Include any Water That Has Not Been Stored

NWSA opposes defining surplus water to include all water present in a reservoir, because this definition assumes that any water present in a reservoir is available *to the United States* to sell. The United States' role is more limited. It does not own the water flowing through its reservoirs. It owns the facilities, but not the water, which belongs to the States. What the United States sells is not water, but a service—primarily the operation and maintenance of the reservoir facility to store water and to regulate flow.

Because *stored water* might not be available to users if the United States had not stored it in the federal reservoir facility, there is no objection to the United States' charging for the service of having stored it and making it available to users on the basis of such charges. It is a completely different matter, however, for the United States to assert ownership and control over "natural flows" that would have been available to users even if the federal reservoir did not exist. By asserting control over natural flows that the United States did nothing to make available, the United States changes its role from facilitating the exercise of water rights by augmenting available supplies to monopolizing and preventing access to natural flows that would have been available if the United States had not taken them away.

[57] 81 Fed. Reg. at 91,565.

[58] Proposed Rule ¶ (b)(2).

The legislative history of the surplus water provision shows that the legislators who drafted and voted on the bill understood this distinction and understood, implicitly, that "surplus water" could refer only to "stored water":

> MR WHITE: Mr. President, I take it this provision is something new in our legislation. I may be greatly in error, but I have not known any previous legislation which authorized the Secretary of War to sell *stored waters*.
>
> MR. OVERTON. The Secretary … does not engage in the business of *selling stored water*.
>
> MR WHITE. It is provided in the bill that he is authorized to sell surplus water that may be available in the reservoir.
>
> MR. OVERTON. I beg pardon. I see that amendment. What I was going to say is that *all surplus waters stored in reservoirs* are turned over to the Department of Interior for distribution for irrigation purposes.[59]

To the extent the Corps is concerned that allowing States to access natural flows could potentially interfere with the Corps' ability to store water needed for project purposes, this concern is misplaced. The amount of water at stake is usually very small, so this is rarely if ever a practical concern. But in the event of an actual conflict—that is, if a State's allocation of rights to the natural flow feeding a federal reservoir actually conflicted with federal objectives—the State's allocation would be preempted under the doctrine discussed above, and thus void. This limiting principle is firmly established, but it should rarely be invoked. In the vast majority of cases, the State's allocation will not be preempted because no conflict will be presented, and the Corps' mission should be to facilitate, rather than preclude, the exercise of State-granted water rights.

(b) NWSA Supports Eliminating the Criterion that Surplus Water could be "More Beneficially Used" for Another Purpose.

NWSA applauds the Corps' acknowledgement that it is a State prerogative to make judgments about the relative value of beneficial uses.[60] Surplus water determinations should be based, not on the Corps' assessment of the value of any specific proposed use, but on whether it is needed "to accomplish an authorized purpose of the reservoir."[61] NWSA also supports the Corps' acknowledgement that water may not be "needed" to accomplish an authorized purpose even if its removal would result in "certain reductions in benefits" to certain authorized

[59] 90 Cong. Rec. 8231 (Nov. 21, 1944) (emphasis added). While this colloquoy refers to "selling" stored water, the discussion immediately following it discuss an amendment, which passed, to provide for the Secretary to "contract"—not "sell"—surplus water. *Id.*

[60] 81 Fed. Reg. at 91,565.

[61] *Id.*

purposes.[62] The preamble correctly suggests that Congressional expectations at the time of authorization are the touchstone for determining the level of output that is "needed" to achieve authorized purposes.[63]

(c) NWSA Disagrees that Expanding the Definition of Surplus Water to Include Natural Flows Will Result in More Water Being Available

The preamble asserts that limiting the definition of "surplus water" to "stored water" could "frustrate Congress' intent that the Corps should make surplus water available when doing so would not impair operations for authorized purposes."[64] This reasoning is circular. The effect of excluding "natural flows" from "surplus water" is not to prevent natural flows from being made available for beneficial use, as the preamble seems to contend, but rather to prevent the Corps from restricting access to such flows at all.

To the extent the Corps questions whether it can charge for real estate easements to access natural flows, it should revisit the Independent Offices Appropriation Act (IOAA), which formerly was used for this purpose.[65] As the preamble acknowledges, the use of the IOAA for water contracts was discontinued because the IOAA was not intended "to serve as a water marketing statute."[66] That is true, but it is the wrong frame. Because the Corps is not authorized to "sell" or otherwise "market" natural flows, it should not try to do so. What it should do, instead, is grant a real estate easement to allow users access to natural flows. The IOAA provides sufficient authority for this more limited purpose of recovering costs associated with such easements.

5.2 *NWSA Supports Allowing Surplus Water Agreements to be Entered for a Shorter or Longer Term Consistent with the Surplus Water Determination*

Neither the Flood Control Act of 1944 nor the current policy limit the duration of surplus water agreements, but current policy does provide that they should be used only on a "provisional or short-term basis, normally limited to five-year periods."[67] Greater flexibility should be afforded to make surplus water agreements for shorter or longer periods of time. This should be determined on a case-by-case basis by providing that each surplus water determination must "specify the time period in which surplus water is determined to be available."[68]

There is no reason that the term of surplus water contracts cannot be extended or shortened, as appropriate, based on the specific circumstances and characteristics of the reservoir in question.

[62] *Id.*

[63] *Id.*

[64] 81 Fed. Reg. at 91,565.

[65] 81 Fed. Reg. at 91, 567.

[66] *Id.*

[67] 81 Fed. Reg. at 91, 574 (citing ER 1105–2–100, app. E at E–214 to 215).

[68] Proposed Rule ¶ (c)(4).

5.3 *NWSA Supports Using a Single Instrument Instead of Two*

NWSA supports streamlining the current requirement to execute two separate instruments—one authorizing the withdrawal of surplus water, and a separate real estate easement to provide access to the reservoir to make the withdrawal.[69] Combining these two approvals into a single document will "potentially avoid[] delays and some transactional costs," while also ensuring greater consistency between them.[70]

Subject to discussion above about the circumstances in which federal approval should be required to access natural flows, NWSA supports using a single instrument to capture any approvals or agreements that are necessary.

5.4 *NWSA Supports New Pricing for Surplus Water Contracts*

The Flood Control Act of 1944 states that the Secretary may charge such prices for surplus water "as [the Secretary] may deem reasonable." The statute does not define the term "reasonable." Current Corps policy bases the price for a surplus water agreement on the price a user would have to pay to get the same yield from a storage contract—including the amortized project investment cost, an annual charge for operations and maintenance, and additional changes for repair, rehabilitation, and replacement, as needed.

The proposed rule would set the price for any new surplus water agreement to include "only the full, separable costs incurred by the Government in making the surplus water available during the term of the surplus water agreement," as measured by estimating the "full, separable costs the Government may incur by accommodating the surplus water withdrawals, such as expenses associated with administering and monitoring the contract, or by making temporary changes to reservoir operations."[71] This reflects the Corps' recognition that "charging for Section 6 agreements on the same basis as Water Supply Act storage agreements is neither required by the statute, nor the best approach in all circumstances."[72] It is also based on the Corps acknowledgment that many water withdrawals "do not rely on reservoir storage, and could be satisfied by … natural flow"; and that "users should not be required to pay for benefits they do not receive."[73]

As an alternative to the favorable pricing policy that is actually proposed, the preamble states that it is federal policy to charge users based on market prices when the Government is leasing or selling goods or resources, or is providing a service.[74] The Corps thus solicits comments on the following:

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69 81 Fed. Reg. at 91,573.

70 *Id.*

71 Proposed Rule ¶ (e)(2) & 81 Fed. Reg. at 91,572.

72 81 Fed. Reg. 91,571.

73 *Id.*

74 *See* 81 Fed. Reg. at 91,573.

> "[W]hether the price of surplus water contracts should include the economic value of the water supply storage benefit these contracts provide (e.g., greater reliability in withdrawing water from a reservoir), or reimbursement of indirect costs such as forgone hydropower revenue.[75]

NWSA's comments are as follows:

(a) NWSA Supports a New Pricing Policy for Surplus Water Contracts

NWSA supports a pricing policy for surplus water contracts that does not force users to pay for storage benefits they do not receive. NWSA urges the Corps to apply this same principle to storage contracts.

(b) NWSA Opposes Including a Charge Based on the Economic Value of Perceived "Water Supply Storage Benefits."

NWSA opposes charging for surplus water based on perceived "water storage benefits," as opposed to the cost to the federal government of providing the storage service.

(c) NWSA Opposes Requiring Surplus Water Users to Reimburse the Government for Indirect Costs Such as Forgone Hydropower Revenue

The Corps solicits comments on whether surplus water users should be required to pay "indirect costs," such as hydropower revenues foregone. Requiring payment for these indirect costs is inconsistent, however, with the notion that the water made available is "surplus." As the Corps explains in the draft rule, "surplus water by definition is water not needed for [any] federal purposes, and typically would not require any operational changes."[76] Given this determination, it may be appropriate to require users to pay the actual costs the government incurs for administering the surplus water contract, but it is not appropriate to require surplus water users to compensate the federal treasury for revenues foregone as a result of making availalble water that is not needed for any federal purpose.

5.5 *The Assistant Secretary Should Not Be Required to Approve All Surplus Water Determinations*

As with storage contracts, the proposed rule states that each and every surplus water determination must be approved by the Assistant Secretary.[77] Such a rule would be even worse for surplus water determinations than for storage contracts, because surplus water agreements are often both minor and temporary.

Furthermore, the proposed rule would end the practice of using surplus water contracts to address water supply emergencies. According to the Water Supply Handbook, Section 6 of the

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[75] *Id.*

[76] *Id.* at 91,560.

[77] Proposed Rule ¶ (c)(3).

Flood Control Act of 1944 (the surplus water authority) "provides adequate authority to permit temporary withdrawal of water from Corps projects to supplement normal supplies" when drought situations occur.[78] The handbook further states that the "Drought Contingency Plan appendix of the Water Control Manual for each Corps reservoir should address the availability of surplus water (storage) for emergency water supply withdrawals."[79]

Requiring the Assistant Secretary to approve every surplus water determination will prevent this authority from being used in true emergencies. It could only be used in situations where the emergency was foreseen and the Assistant Secretary had the foresight to make an "emergency surplus water determination" well in advance. Although the handbook does state that the availability of surplus water in drought emergencies should be discussed in the water control plan for each reservoir, the discussions in existing manuals would not appear to qualify as a surplus water determination meeting the requirements of the proposed rule.

An alternative policy would be to allow short-term (one year maximum) emergency surplus water determinations to be made at the operational level of command, as determined by the Division Commander, provided the Division Commander determines that emergency conditions exist and that requiring a higher level of review would cause undue delay. If a higher level of review would ordinarily be required, the contract could be made contingent upon receiving the necessary approvals within some appropriate period of time.

6. <u>Power Marketing Agencies</u>

6.1 *Power Marketing Agencies Should Not Be Given Greater Procedural Rights than Other Stakeholders*

The proposed rule states that, before reallocating storage or determining that surplus water is available at any Corps reservoir that includes hydropower, the Corps will "coordinate in advance" with the appropriate federal power marketing administration.[80] The rule also states that the Corps "will utilize in its determinations" any information provided by the power marketing administrations through this advance coordination, including its evaluation of impacts to hydropower (and thus the determination that storage can be reallocated or that surplus water is available) and its calculation of the cost of any storage that is reallocated.[81]

Power marketing agencies should not be given greater level of access and consideration than State and regional planning agencies and entities requesting a storage contract or surplus water agreement. "Advance coordination" with power marketing agencies contrasts with the level of access provided to other partners, including "interested Federal, State, and Tribal water resource agencies." The rule states any report or determination will be "coordinated" with those

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[78] U.S. Army Corps of Engineers Institute for Water Resources, *Water Supply Handbook* (Revised IWR Report No. 96-PS-4, Dec. 1998), at 2-19.

[79] *Id*.

[80] Proposed Rule ¶ (c)(4).

[81] *Id*.

agencies,[82] but not in advance. Power marketing agencies should have no greater procedural rights than competing stakeholders.

Additionally, the method that the power marketing agencies will utilize in determining the impacts to hydropower due to any proposed reallocation of storage and contract for water supply storage is unclear. Corps policy should require that actual information used and calculations made by power marketing agencies be clear, easily understood, and made readily available to any interested party. And power marketing agencies and all other stakeholders should be given equal procedural rights.

The federal government should adequately credit hydropower customers remaining debt to the Treasury such that they will not see increased electric rates as a result of a reallocation and water supply contract. No cost in excess of that calculated under the options listed in section 3 above should be assessed to the potential water supply contract holder to meet this change in remaining debt.

6.2 *The Corps Should "Consider"—But Not Necessarily "Utilize"— Information Provided by Power Marketing Agencies*

NWSA opposes requiring the Corps to "utilize in its determinations" any information provided by power marketing administrations about the impact of a proposed reallocation or surplus water determination to hydropower. The calculation of "hydropower benefits forgone" is most problematic because it is highly subjective, but can determine both the availability and price of storage. This calculation should not be entrusted to a competing interest that has historically discouraged the use of federal projects for water supply, and water supply interests must be given an opportunity to evaluate and critique any calculations the power marketing agencies produce.

The Corps should "consider"—but not necessarily utilize—any information submitted by the power marketing agencies or other stakeholders. In this way, all stakeholders would have equal access to the Corps and equal ability to advocate for appropriate costs calculations.

[82] Proposed Rule ¶ (c)(1).

Description of Proposed FWOP

Megan Wiley Rivera
Hazen and Sawyer
January 29, 2020

The ACR Draft Study Future Without Project (FWOP) scenario does not meet the 2050 projected demands for CCMWA and Cartersville once their Allatoona accounts are emptied. This is not an accurate representation of a FWOP, as these water providers would find alternatives to meet the water demand. While all the potential non-federal alternatives have much lower cost-benefit ratios than reallocation, the most likely alternative would be a pipe on the Etowah River for CCMWA and Stamp Creek Reservoir for Cartersville.

A rough implementation of the two were added to HEC-ResSim. A pipe was inserted at the Canton node to deliver needed water to CCMWA. Because details have not been developed for Stamp Creek, it was modeled as a node rather than a reservoir. Inflow data to the reservoir emulates reservoir drawdown/refill, while preserving the total inflow to Lake Allatoona. While the rough implementation is limited, it is a more realistic representation of a Future Without Project than the one currently used in the study, which leaves water in the system during drought that will be used by CCMWA and Cartersville.

Modeling Details

A more elegant implementation could be done using state variables and scripts in HEC-ResSim. Given the very short review period and some initial runs, it was decided to do most of the calculations outside of HEC-ResSim and feed the results in as timeseries. This approach required two runs: an initial run (FWOP_03) to produce needed timeseries and a final run (FWOP_04) that used those timeseries. Given the large uncertainties associated with the non-federal alternatives, small imperfections resulting from this approach are well within modeling error.

Etowah Pipeline

The CCMWA Etowah pipeline was implemented as a diversion at the Canton node (see Figure 1). The withdrawal to the pipeline is a timeseries created as follows:

1) Using the reach flow from Canton to Allatoona_IN from the original FWOP, the amount of water available (above the 250 cfs flow requirement) was calculated.[1]
2) The water diverted to the pipeline is the minimum of the available water or the 2050 projected demand for CCMWA.[2]

[1] This calculation is in column F of the CCMWA tab, spreadsheet FWOP_timeseries_12-30-201
[2] This calculation is in column G of the CCMWA tab, spreadsheet FWOP_timeseries_12-30-2019 and saved in ACT_FWOP.dss file as //ETOWAH_CCM_ANNUAL7Q10_ORIG/FLOW/05Jan1939 - 31Dec2011/1DAY//.

Next, the diversions from the CCMWA Allatoona account are calculated as the difference between the 2050 demand and the amount diverted by the pipeline.[3]

Preliminary run (FWOP_03)

A preliminary HEC-RESSIM run is done to see how much water will be needed from HLCR to supplement CCMWA diversions once the Allatoona account is exhausted. This run is called FWOP_03[4] (in FWOP_12-31-19 simulation). It is the FWOP run provided with the ACR model documentation with the following changes:

1) Initial implementation of Stamp Creek (see next section for details)

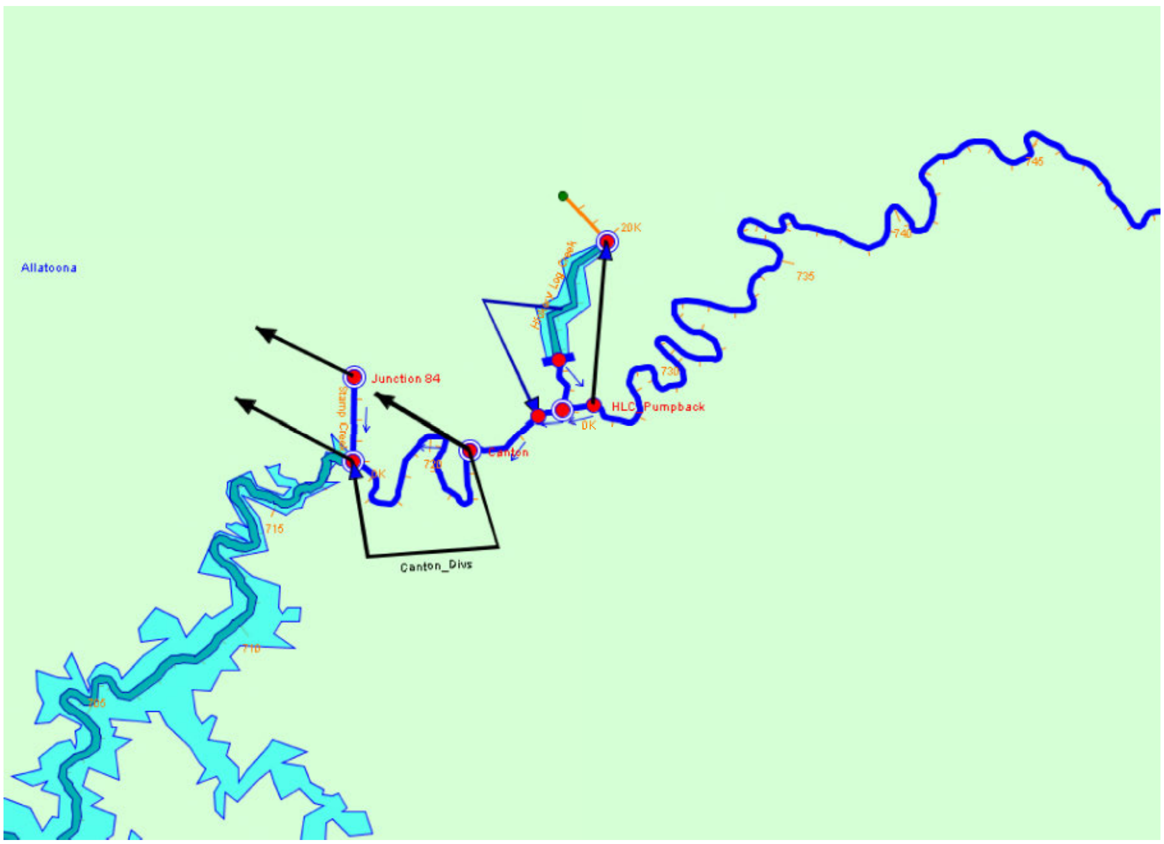


Figure 1. Proposed FWOP schematic showing the Etowah pipeline (at Canton node) and Stamp Creek Reservoir (Junction 84)

2) Add a CCMWA Etowah diversion to the Canton node (see Figure 1) and set source to timeseries (see Figure 2). Set the timeseries to the Etowah pipeline withdrawal calculated in excel and stored in ACT_FWOP.dss (see Figure 3).
3) Set the CCMWA Allatoona withdrawals equal to the shortfall from the Etowah pipe withdrawal.

[3] This calculation is in column H of the CCMWA tab, spreadsheet FWOP_timeseries_12-30-2019.xls and saved in ACT_FWOP.dss as //ALLATOONA_CCM_ANNUAL7Q10/FLOW/05Jan1939 - 31Dec2011/1DAY//.
[4] FWOP_01 and _02 were used in model development but are not part of the final version.

4) Set the return flows equal to a timeseries (see Figure 5 and Figure 6). In the ACR Draft Report FWOP, the return flows are reduced when the CCMWA demand is not met by the Allatoona account. By setting the returns to a timeseries, the full returns are made. On line 716 of the script for the state variable Accounting_HLCmain, set QCCMfrac = 1 to prevent reductions in return flows (see Figure 7). The CCM_ReturnQ_dummy variable can also be set to the same timeseries (multiplied by negative 1).

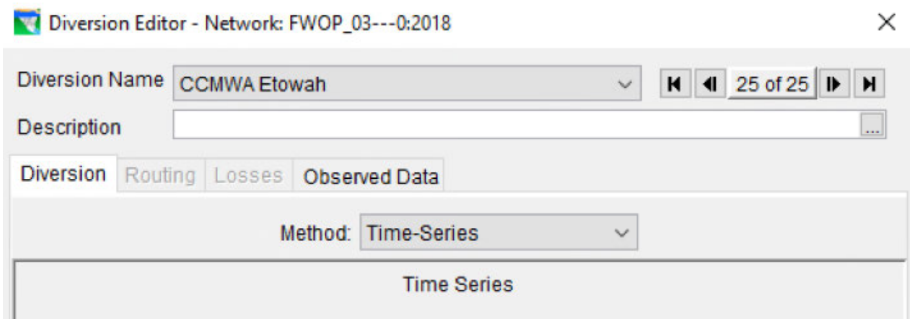
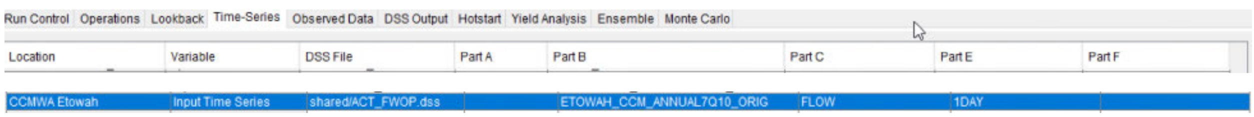
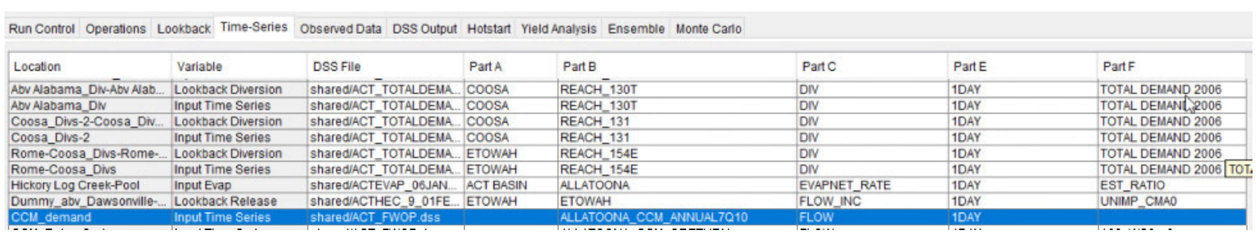


Figure 2. CCMWA Etowah diversion settings



Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
CCMWA Etowah	Input Time Series	shared/ACT_FWOP.dss		ETOWAH_CCM_ANNUAL7Q10_ORIG	FLOW	1DAY	

Figure 3. CCMWA Etowah withdrawal timeseries settings initial run



Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Abv Alabama_Div-Abv Alab...	Lookback Diversion	shared/ACT_TOTALDEMA...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Abv Alabama_Div	Input Time Series	shared/ACT_TOTALDEMA...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2-Coosa_Div...	Lookback Diversion	shared/ACT_TOTALDEMA...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2	Input Time Series	shared/ACT_TOTALDEMA...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs-Rome-...	Lookback Diversion	shared/ACT_TOTALDEMA...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs	Input Time Series	shared/ACT_TOTALDEMA...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Hickory Log Creek-Pool	Input Evap	shared/ACTEVAP_06JAN...	ACT BASIN	ALLATOONA	EVAPNET_RATE	1DAY	EST_RATIO
Dummy_abv_Dawsonville-...	Lookback Release	shared/ACTHEC_9_01FE...	ETOWAH	ETOWAH	FLOW_INC	1DAY	UNIMP_CMA0
CCM_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_ANNUAL7Q10	FLOW	1DAY	

Figure 4. CCMWA Allatoona account withdrawal timeseries settings

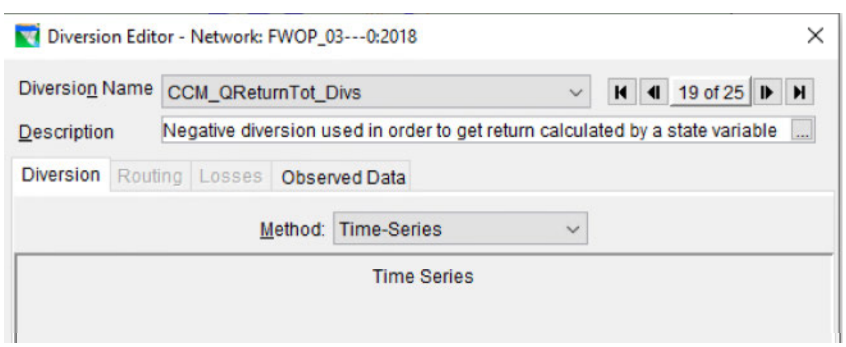


Figure 5. CCMWA Return settings

Run Control | Operations | Lookback | Time-Series | Observed Data | DSS Output | Hotstart | Yield Analysis | Ensemble | Monte Carlo

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Abv Alabama_Div-Abv Alab...	Lookback Diversion	shared/ACT_TOTALDEMA...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Abv Alabama_Div	Input Time Series	shared/ACT_TOTALDEMA...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2-Coosa_Div...	Lookback Diversion	shared/ACT_TOTALDEMA...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2	Input Time Series	shared/ACT_TOTALDEMA...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs-Rome-...	Lookback Diversion	shared/ACT_TOTALDEMA...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs	Input Time Series	shared/ACT_TOTALDEMA...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Hickory Log Creek-Pool	Input Evap	shared/ACTEVAP_06JAN...	ACT BASIN	ALLATOONA	EVAPNET_RATE	1DAY	EST_RATIO
Dummy_abv_Dawsonville-...	Lookback Release	shared/ACTHEC_9_01FE...	ETOWAH	ETOWAH	FLOW_INC	1DAY	UNIMP_CMA0
CCM_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_ANNUAL7Q10	FLOW	1DAY	
CCM_ReturnQ_dummy	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_QRETURN	FLOW	1DAY	A08_WS6---0
Allatoona_Cartersville_de...	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CARTERSVILLE_Q	FLOW	1DAY	FWOP_03---0
Cartv_ReturnQ_dummy	Input Time Series	shared/GA_2018_WaterS...	ETOWAH	CARTERSVILLE_RT_VARMONTHLY	FLOW	1DAY	GA2018_REQUEST
Canton_demand	Input Time Series	shared/ACT_TOTALDEMA...	ETOWAH	CANTON_WD	DIV	1DAY	TOTAL DEMAND 2006
Canton_LOC_dummy	Input Time Series	shared/ACTHEC_9_01FE...	ETOWAH	CANTON	FLOW_INC	1DAY	UNIMP_CMA0
Hackneyville_dummy	Input Time Series	shared/Hackneyville.dss	HILLABEE CR...	HACKNEYVILLE	FLOW	1DAY	USGS 02415000_EXTE...
HLC_Confl_WD_dummy	Input Time Series	shared/ACT_TOTALDEMA...	ETOWAH	HLC_CONFLUENCE_WD	DIV	1DAY	TOTAL DEMAND 2006
Jasper_ReturnQ_dummy	Input Time Series	shared/ACT_TOTALDEMA...	ETOWAH	CANTON_RT	DIV	1DAY	TOTAL DEMAND 2006
CCM_QReturnTot_Divs-Cntrl	Lookback Diversion	shared/GA_2018_WaterS...	ETOWAH	CC_RT_VARMONTHLY	FLOW	1DAY	GA2018_REQUEST
CCM_QReturnTot_Divs	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_QRETURN_NEG	FLOW	1DAY	A08_WS6---0
Cartersville_Qreturn_Divs-...	Lookback Diversion	shared/GA_2018_WaterS...	ETOWAH	CARTERSVILLE_RT_VARMONTHLY	FLOW	1DAY	GA2018_REQUEST
Richland Creek Reservoir-...	Input Evap	shared/ACTEVAP_06JAN...	ACT BASIN	ALLATOONA	EVAPNET_RATE	1DAY	EST_RATIO
Cartersville Divs	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CARTERSVILLE_SHORT	FLOW	1DAY	
CCMWA Etowah	Input Time Series	shared/ACT_FWOP.dss		ETOWAH_CCM_ANNUAL7Q10_ORIG	FLOW	1DAY	
Allatoona_Cartersville_Q	Lookback State Variab...	shared/GA_2018_WaterS...	ETOWAH	CARTERVILLE_WD	FLOW	1DAY	GA2018_REQUEST
Allatoona_CCM_Q	Lookback State Variab...	shared/GA_2018_WaterS...	ETOWAH	CCMWA_WD	FLOW	1DAY	GA2018_REQUEST

Figure 6. CCMWA return flow timeseries settings

```
#QCCMfrac = (QAlla_CCM + QHLC_CCM + QEtowah_CCM)/QCCMdemand   # NO  HLC not part of release at allatoona
QCCMfrac = 1 #(QAlla_CCM  + QEtowah_CCM)/QCCMdemand
QAlla_CCM_Qreturn = -QCCMfrac*QRT_CCM_cur
```

Figure 7. Portion of script for the state variable Accounting_HLCmain changed to prevent reductions in CCMWA return flows.

Final Run (FWOP_04)

The results of run FWOP_03 produce a timeseries of diversions from the CCMWA Allatoona account.[5] The desired withdrawals[6] minus the diversions are the shortages[7] (which occur when the Allatoona account is empty) that must made up from HLCR releases.

These "shortages" are used in two ways: the timeseries is used directly as releases from HLC reservoir and also added to the Etowah pipe diversions[8] so that the water released from HLCR is withdrawn at the pipe.

The final FWOP (FWOP_04) is the same as FWOP_03 with the following changes:

1) Final implementation of Stamp Creek (see next section for details)
2) Set the releases from HLCR as follows:
    a. Create a dummy variable of HLCR releases for use in the script for the state variable Accounting_HLCmain (see Figure 8) and set the variable equal to the appropriate timeseries (see Figure 9).
    b. Set HLCops = 2 on line 163 of the script for the state variable Accounting_HLCmain so that the HLCR release will be made.

---

[5] //ALLATOONA_CCM_Q/FLOW/05Jan1939 - 31Dec2011/1DAY/FWOP_03---0/

[6] //ALLATOONA_CCM_ANNUAL7Q10/FLOW/05Jan1939 - 31Dec2011/1DAY//

[7] This timeseries of shortages is calculated in column X of the Check FWOP03 tab, spreadsheet FWOP_timeseries_12-30-2019 and saved in ACT_FWOP.dss as //ALLATOONA_CCM_Q/SHORTAGE/05Jan1939 - 31Dec2011/1DAY/FWOP_03---0/.

[8] This calculation is done in column Z of the Check FWOP03 tab, spreadsheet FWOP_timeseries_12-30-2019 and saved in ACT_FWOP.dss as //ETOWAH_CCM_ANNUAL7Q10_FINAL/FLOW/05Jan1939 - 31Dec2011/1DAY//.

c. Remove HLCR releases from the CCMWA Allatoona accounting because the releases are diverted at the Etowah pipe rather than being added to the Allatoona account (see Figure 10).
d. Replace the calculation for HLCR releases with code that sets the release equal to the desired timeseries (see Figure 11).

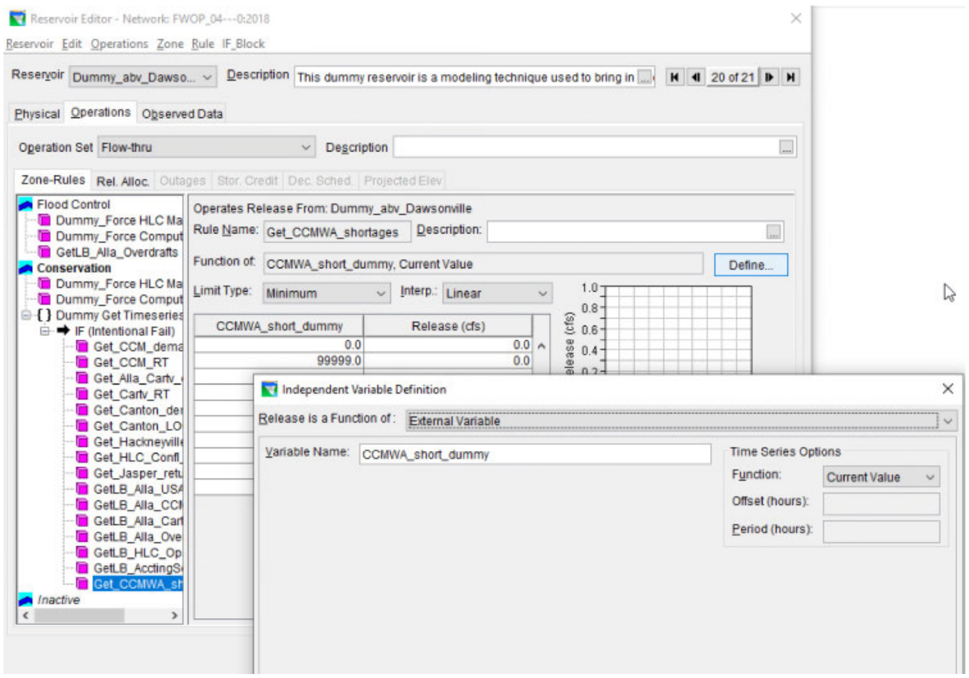
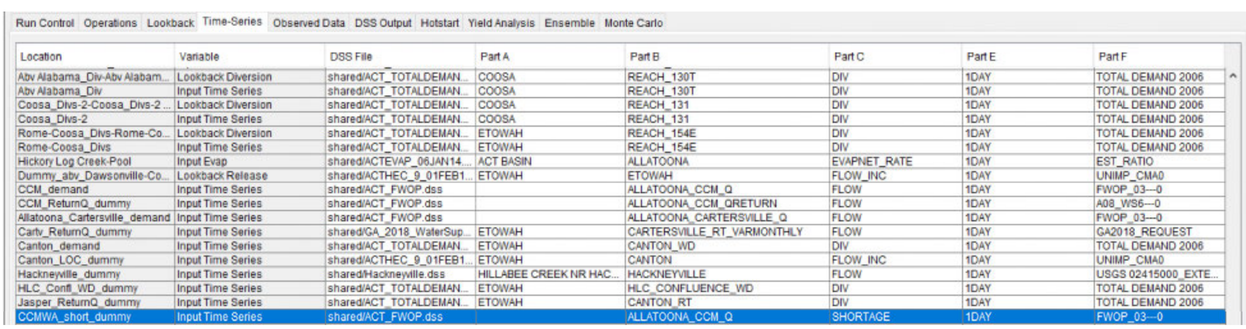


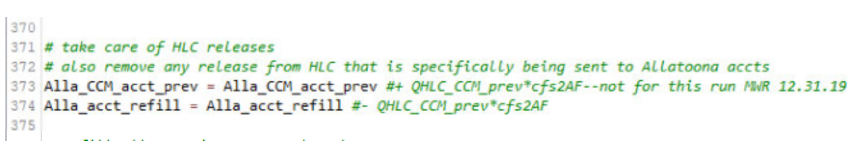
Figure 8. Creating variable CCMWA_short_dummy to set HLCR releases



Run Control | Operations | Lookback | Time-Series | Observed Data | DSS Output | Hotstart | Yield Analysis | Ensemble | Monte Carlo

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Abv Alabama_Div-Abv Alabam...	Lookback Diversion	shared/ACT_TOTALDEMAN...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Abv Alabama_Div	Input Time Series	shared/ACT_TOTALDEMAN...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2-Coosa_Divs-2 ...	Lookback Diversion	shared/ACT_TOTALDEMAN...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2	Input Time Series	shared/ACT_TOTALDEMAN...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs-Rome-Co...	Lookback Diversion	shared/ACT_TOTALDEMAN...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs	Input Time Series	shared/ACT_TOTALDEMAN...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Hickory Log Creek-Pool	Input Evap	shared/ACTEVAP_06JAN14....	ACT BASIN	ALLATOONA	EVAPNET_RATE	1DAY	EST_RATIO
Dummy_abv_Dawsonville-Co...	Lookback Release	shared/ACTHEC_9_01FEB1...	ETOWAH	ETOWAH	FLOW_INC	1DAY	UNIMP_CMA0
CCM_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_Q	FLOW	1DAY	FWOP_03---0
CCM_ReturnQ_dummy	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_QRETURN	FLOW	1DAY	A08_WS6---0
Allatoona_Cartersville_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CARTERSVILLE_Q	FLOW	1DAY	FWOP_03---0
Cartv_ReturnQ_dummy	Input Time Series	shared/GA_2018_WaterSup...	ETOWAH	CARTERSVILLE_RT_VARMONTHLY	FLOW	1DAY	GA2018_REQUEST
Canton_demand	Input Time Series	shared/ACT_TOTALDEMAN...	ETOWAH	CANTON_WD	DIV	1DAY	TOTAL DEMAND 2006
Canton_LOC_dummy	Input Time Series	shared/ACTHEC_9_01FEB1...	ETOWAH	CANTON	FLOW_INC	1DAY	UNIMP_CMA0
Hackneyville_dummy	Input Time Series	shared/Hackneyville.dss	HILLABEE CREEK NR HAC...	HACKNEYVILLE	FLOW	1DAY	USGS 02415000_EXTE...
HLC_Confl_WD_dummy	Input Time Series	shared/ACT_TOTALDEMAN...	ETOWAH	HLC_CONFLUENCE_WD	DIV	1DAY	TOTAL DEMAND 2006
Jasper_ReturnQ_dummy	Input Time Series	shared/ACT_TOTALDEMAN...	ETOWAH	CANTON_RT	DIV	1DAY	TOTAL DEMAND 2006
CCMWA_short_dummy	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_Q	SHORTAGE	1DAY	FWOP_03---0

Figure 9. HLCR release timeseries settings



```
# take care of HLC releases
# also remove any release from HLC that is specifically being sent to Allatoona accts
Alla_CCM_acct_prev = Alla_CCM_acct_prev #+ QHLC_CCM_prev*cfs2AF--not for this run MWR 12.31.19
Alla_acct_refill = Alla_acct_refill #- QHLC_CCM_prev*cfs2AF
```

Figure 10. Portion of script for the state variable Accounting_HLCmain that prevents HLCR releases from being credited to CCMWA's Allatoona account

```
# --------------------------------
# (6b) ~~~~ calculate HLC's release for CCMWA ~~~~
# --------------------------------
# if HLC operates to supply water for CCM, it is passed through Allatoona
#if HLCops == 2 :
#    #QAlla_CCM = min(QCCMdemand, Alla_CCM_acct_prev/1.983)
#    if (HLC_CCM_acct >= HLC_CCM_acct95) :
#        # release enough to keep Allatoona's acct at 95%, but do not release a negative #.
#        QHLC_CCMdemand = max(0, (Alla_CCM_acct95 - Alla_CCM_acct)/cfs2AF + QAlla_CCM)
#        #print "~~~~", Alla_CCM_acct
#    else :
        # when HLC's account is less than 95% full,
        # will need to keep Alla_CCM_acct with enough water for 3 days
        # if there is more than 3 days storage in the acct, HLC send nothing.
#       QHLC_CCMdemand = max(0, 3*QAlla_CCMdemand - Alla_CCM_acct/cfs2AF + QAlla_CCM)
        # ***

#else : QHLC_CCMdemand = 0
CCMWA_Short_ts=network.getTimeSeries("Reservoir","Dummy_abv_Dawsonville", "CCMWA_short_dummy", "",1)
CCMWA_Short=CCMWA_Short_ts.getCurrentValue(currentRuntimestep)

QHLC_CCMdemand = CCMWA_Short
```

Figure 11. Portion of script for the state variable Accounting_HLCmain that sets HLCR releases equal to the timeseries of "shortages" from the CCMWA Allatoona account

3) Hardwire the withdrawal from the CCMWA Allatoona account to those in FWOP_03 (see Figure 12) to avoid potential disconnects between FWOP_03 and FWOP_04.
4) Update the CCMWA withdrawal timeseries to the final version (see Figure 13).

Run Control | Operations | Lookback | Time-Series | Observed Data | DSS Output | Hotstart | Yield Analysis | Ensemble | Monte Carlo

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Abv Alabama_Div-Abv Alabam...	Lookback Diversion	shared/ACT_TOTALDEMAN...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Abv Alabama_Div	Input Time Series	shared/ACT_TOTALDEMAN...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2-Coosa_Divs-2 ...	Lookback Diversion	shared/ACT_TOTALDEMAN...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2	Input Time Series	shared/ACT_TOTALDEMAN...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs-Rome-Co...	Lookback Diversion	shared/ACT_TOTALDEMAN...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs	Input Time Series	shared/ACT_TOTALDEMAN...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Hickory Log Creek-Pool	Input Evap	shared/ACTEVAP_06JAN14....	ACT BASIN	ALLATOONA	EVAPNET_RATE	1DAY	EST_RATIO
Dummy_abv_Dawsonville-Co...	Lookback Release	shared/ACTHEC_9_01FEB1...	ETOWAH	ETOWAH	FLOW_INC	1DAY	UNIMP_CMA0
CCM_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_Q	FLOW	1DAY	FWOP_03---0

Figure 12. CCMWA diversion timeseries setting for final FWOP

Run Control | Operations | Lookback | Time-Series | Observed Data | DSS Output | Hotstart | Yield Analysis | Ensemble | Monte Carlo

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Abv Alabama_Div-Abv Alabam...	Lookback Diversion	shared/ACT_TOTALDEMAN...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Abv Alabama_Div	Input Time Series	shared/ACT_TOTALDEMAN...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2-Coosa_Divs-2 ...	Lookback Diversion	shared/ACT_TOTALDEMAN...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2	Input Time Series	shared/ACT_TOTALDEMAN...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs-Rome-Co...	Lookback Diversion	shared/ACT_TOTALDEMAN...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs	Input Time Series	shared/ACT_TOTALDEMAN...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Hickory Log Creek-Pool	Input Evap	shared/ACTEVAP_06JAN14....	ACT BASIN	ALLATOONA	EVAPNET_RATE	1DAY	EST_RATIO
Dummy_abv_Dawsonville-Co...	Lookback Release	shared/ACTHEC_9_01FEB1...	ETOWAH	ETOWAH	FLOW_INC	1DAY	UNIMP_CMA0
CCM_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_Q	FLOW	1DAY	FWOP_03---0
CCM_ReturnQ_dummy	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_QRETURN	FLOW	1DAY	A08_WS6---0
Allatoona_Cartersville_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CARTERSVILLE_Q	FLOW	1DAY	FWOP_03---0
Carty_ReturnQ_dummy	Input Time Series	shared/GA_2018_WaterSup...	ETOWAH	CARTERSVILLE_RT_VARMONTHLY	FLOW	1DAY	GA2018_REQUEST
Canton_demand	Input Time Series	shared/ACT_TOTALDEMAN...	ETOWAH	CANTON_WD	DIV	1DAY	TOTAL DEMAND 2006
Canton_LOC_dummy	Input Time Series	shared/ACTHEC_9_01FEB1...	ETOWAH	CANTON	FLOW_INC	1DAY	UNIMP_CMA0
Hackneyville_dummy	Input Time Series	shared/Hackneyville.dss	HILLABEE CREEK NR HAC...	HACKNEYVILLE	FLOW	1DAY	USGS 02415000_EXTE...
HLC_Confl_WD_dummy	Input Time Series	shared/ACT_TOTALDEMAN...	ETOWAH	HLC_CONFLUENCE_WD	DIV	1DAY	TOTAL DEMAND 2006
Jasper_ReturnQ_dummy	Input Time Series	shared/ACT_TOTALDEMAN...	ETOWAH	CANTON_RT	DIV	1DAY	TOTAL DEMAND 2006
CCMWA_short_dummy	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_Q	SHORTAGE	1DAY	FWOP_03---0
CCM_QReturnTot_Divs-Cntrl	Lookback Diversion	shared/GA_2018_WaterSup...	ETOWAH	CC_RT_VARMONTHLY	FLOW	1DAY	GA2018_REQUEST
CCM_QReturnTot_Divs	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_QRETURN_NEG	FLOW	1DAY	A08_WS6---0
Cartersville_Qreturn_Divs-Cntrl	Lookback Diversion	shared/GA_2018_WaterSup...	ETOWAH	CARTERSVILLE_RT_VARMONTHLY	FLOW	1DAY	GA2018_REQUEST
Richland Creek Reservoir-Pool	Input Evap	shared/ACTEVAP_06JAN14....	ACT BASIN	ALLATOONA	EVAPNET_RATE	1DAY	EST_RATIO
Cartersville Divs	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CARTERSVILLE_SHORT	FLOW	1DAY	
CCMWA Etowah	Input Time Series	shared/ACT_FWOP.dss		ETOWAH_CCM_ANNUAL7Q10_FINAL	FLOW	1DAY	

Figure 13. CCMWA Etowah withdrawal timeseries settings final run

CCMWA Withdrawals

The resulting CCMWA withdrawals for a portion of 2007 hydrology are shown in Figure 14, In May, all of the water is taken from the Etowah pipe (orange line, below solid blue line). In June and July, the demand is met by a combination of the Etowah pipe and Allatoona account (gray line), summing to the total demand each day (solid blue line). For contrast, the delivery in the ACR Draft study FWOP is also shown (dashed blue line). In August, there is no longer any Etowah water available, so CCMWA shifts to the Allatoona account only (gray line, below solid blue line for most of August). In October, CCMWA shifts over to HLCR (not shown). Figure 15 shows that the Etowah pipe withdrawals water down to 250 cfs and no lower. Monthly average withdrawals for all of 2007 and 2008 are shown in Figure 16.

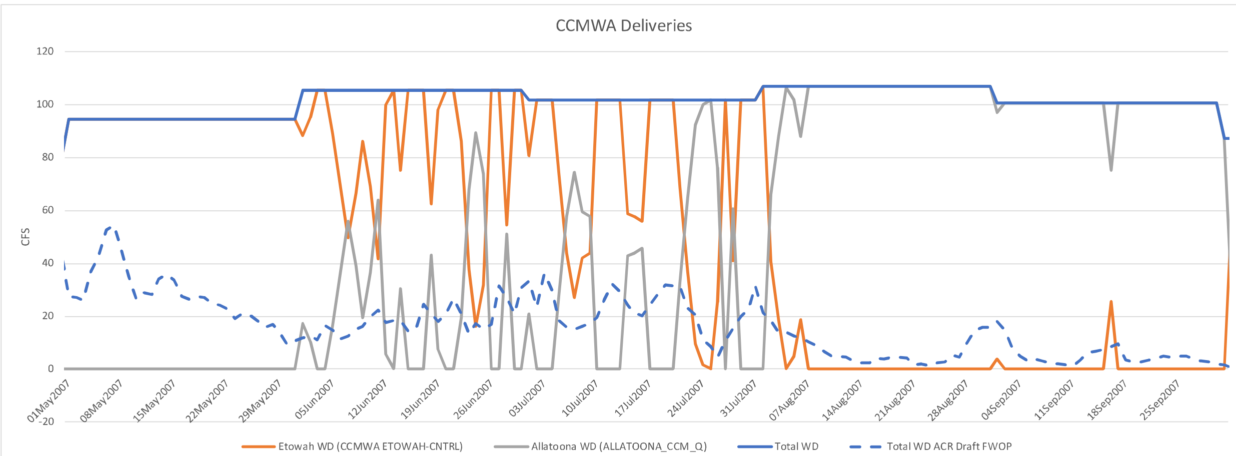


Figure 14. CCMWA Withdrawals, May through September 2007 hydrology, FWOP_04 simulation

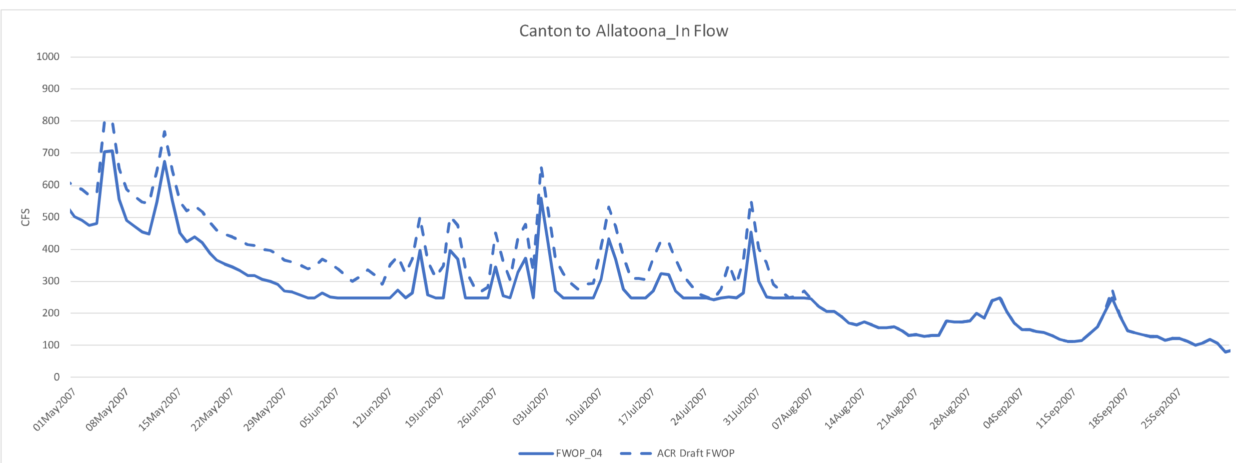


Figure 15. Flows between the Canton and Allatoona_In nodes, May through September 2007 hydrology

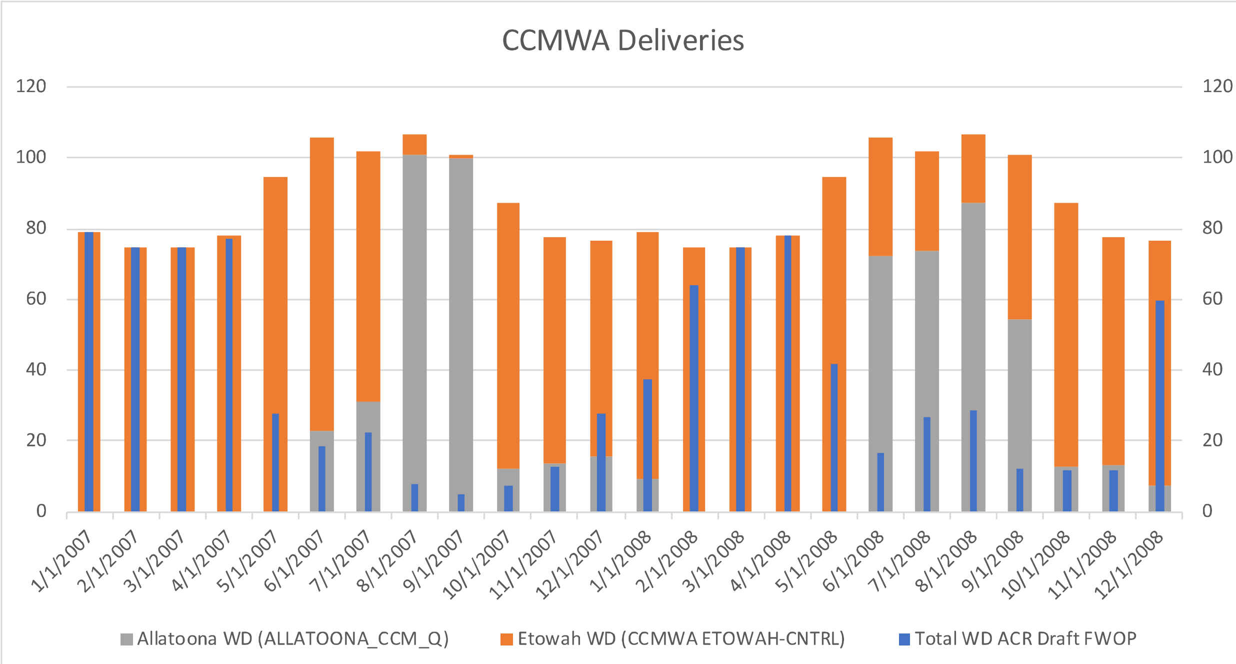


Figure 16. Average monthly CCMWA Withdrawals, 2007 through 2008 hydrology, FWOP_04 simulation

Stamp Creek Reservoir

Based on an initial analysis showing Stamp Creek Reservoir's yield is very sensitive to modeling assumptions, we chose to model Stamp Creek Reservoir as a simple node: water needed to cover Cartersville shortages are input to the model as inflows to this node and then extracted as a diversion at the same node (Junction 84 in Figure 1). Stamp Creek was located just upstream of Allatoona for simplicity.

To emulate the refill period following a drawdown, the accumulated volume of supplemental Stamp Creek diversions is subtracted from the Allatoona inflows up to 200 cfs per day.[9] Figure 17 illustrates the inflow adjustment for a period of the simulation. In October and November 2007, most of Cartersville demand is being met by Stamp Creek—the inflow to Allatoona has not been changed (yellow and black lines overplotted), and Stamp Creek is used to meet the demand (increment between the blue and yellow lines is Stamp Creek Reservoir withdrawals). In December and January, Stamp Creek is used when flows are low, the Allatoona account when flows are higher; the blue line comes down to meet the yellow during high flows. The refill period begins at the end of February: the adjusted inflow (yellow and blue lines) falls below the original inflow (black line) by up to 200 cfs until the cumulative volume is the same as the Stamp Creek diversions for the previous months.

[9] This calculation is in column K of the Cartersville and Cartersville_inital_try tab, spreadsheet FWOP_timeseries_12-30-2019.xls and saved in ACT_FWOP.dss file as /ETOWAH/ALLATOONA_ADJUSTED/FLOW_INC/01Jan1939 - 31Dec2012/1DAY/UNIMP_CMA5/.

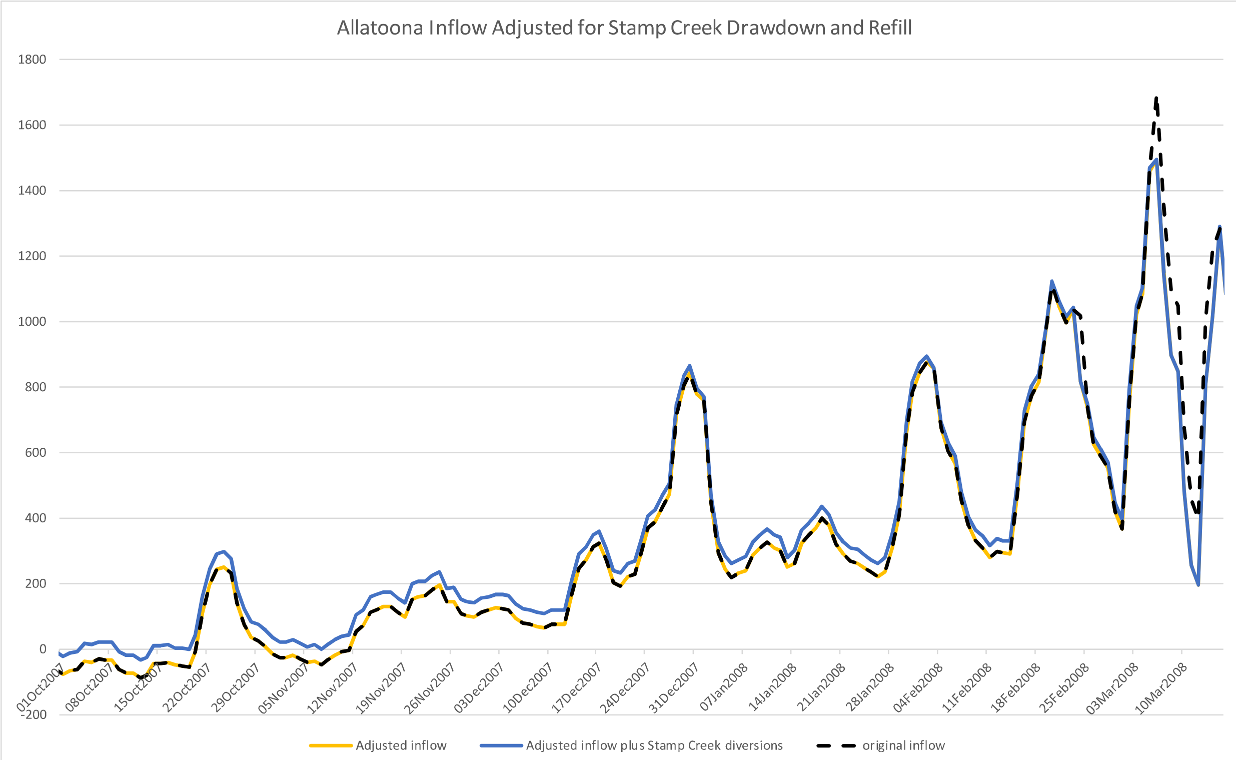


Figure 17. Adjusted Allatoona inflow, October 1, 2007 to March 15, 2008

The Allatoona account shortage, which needs to be made up by Stamp Creek withdrawals, is determined using the preliminary FWOP run, FWOP_03, described below.

Preliminary run (FWOP_03)

A preliminary HEC-RESSIM run was done assuming Cartersville shortages from the ACR Draft Report FWOP. Because the Etowah pipe implementation changes inflow to Allatoona, the shortages were adjusted in the final run based on those in the preliminary run, FWOP_03[10] (in FWOP_12-31-19 simulation). This run is the FWOP provided with the ACR Draft Study model documentation with the following changes:

1) The initial implementation of the Etowah pipe for CCMWA (see previous section for details).
2) Set both the Stamp Creek inflows and withdrawals equal to the Cartersville Allatoona shortages[11] (see Figure 18 to Figure 21).
3) Set the Allatoon_IN timerseries to the adjusted values (see Figure 22).

---

[10] FWOP_01 and _02 were used in model development but are not part of the final version.
[11] Cartersville's Allatoona withdrawals from the ACR Draft Study FWOP are provided in Column D of the Cartersville_inital_try tab, spreadsheet FWOP_timeseries_12-30-2019.xls. The difference between these withdrawals and the full 2050 request is calculated in Column E and saved in ACT_FWOP.dss file as //ALLATOONA_CARTERSVILLE_SHORT/FLOW/05Jan1939 - 31Dec2011/1DAY//. These are the Stamp Creek withdrawals.

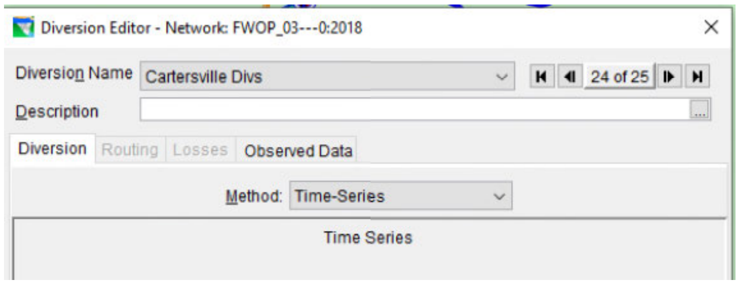
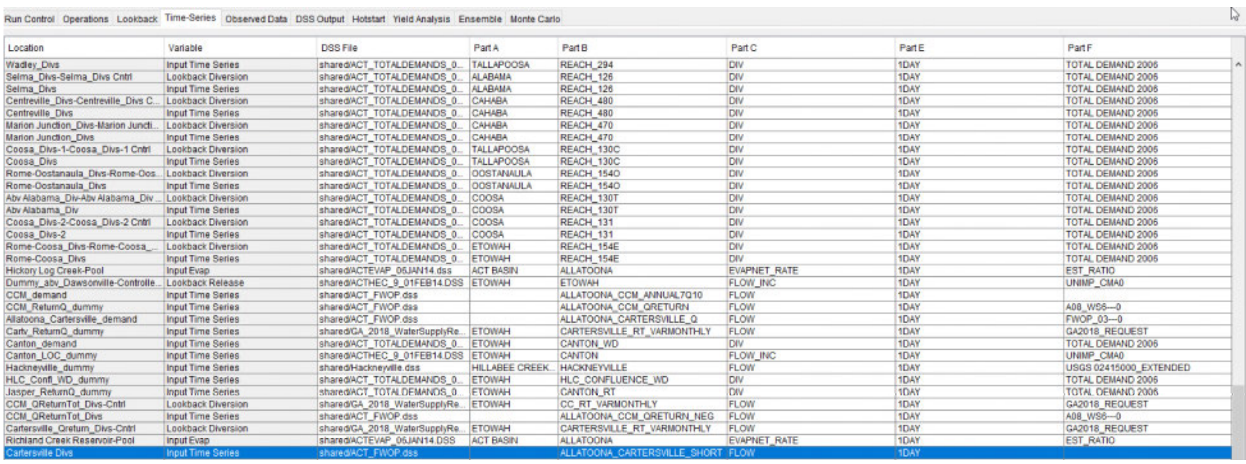


Figure 18. Creating Cartersville diversion at Stamp Creek



Run Control | Operations | Lookback | Time-Series | Observed Data | DSS Output | Hotstart | Yield Analysis | Ensemble | Monte Carlo

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Wadley_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	TALLAPOOSA	REACH_294	DIV	1DAY	TOTAL DEMAND 2006
Selma_Divs-Selma_Divs Cntrl	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	ALABAMA	REACH_126	DIV	1DAY	TOTAL DEMAND 2006
Selma_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	ALABAMA	REACH_126	DIV	1DAY	TOTAL DEMAND 2006
Centreville_Divs-Centreville_Divs C...	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	CAHABA	REACH_480	DIV	1DAY	TOTAL DEMAND 2006
Centreville_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	CAHABA	REACH_480	DIV	1DAY	TOTAL DEMAND 2006
Marion Junction_Divs-Marion Juncti...	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	CAHABA	REACH_470	DIV	1DAY	TOTAL DEMAND 2006
Marion Junction_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	CAHABA	REACH_470	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-1-Coosa_Divs-1 Cntrl	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	TALLAPOOSA	REACH_130C	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	TALLAPOOSA	REACH_130C	DIV	1DAY	TOTAL DEMAND 2006
Rome-Oostanaula_Divs-Rome-Oos...	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	OOSTANAULA	REACH_154O	DIV	1DAY	TOTAL DEMAND 2006
Rome-Oostanaula_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	OOSTANAULA	REACH_154O	DIV	1DAY	TOTAL DEMAND 2006
Abv Alabama_Div-Abv Alabama_Div ...	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Abv Alabama_Div	Input Time Series	shared/ACT_TOTALDEMANDS_0...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2-Coosa_Divs-2 Cntrl	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2	Input Time Series	shared/ACT_TOTALDEMANDS_0...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs-Rome-Coosa_...	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Hickory Log Creek-Pool	Input Evap	shared/ACTEVAP_06JAN14.dss	ACT BASIN	ALLATOONA	EVAPNET_RATE	1DAY	EST_RATIO
Dummy_abv_Dawsonville-Controlle...	Lookback Release	shared/ACTHEC_9_01FEB14.DSS	ETOWAH	ETOWAH	FLOW_INC	1DAY	UNIMP_CMA0
CCM_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_ANNUAL7Q10	FLOW	1DAY	
CCM_ReturnQ_dummy	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_QRETURN	FLOW	1DAY	A08_WS6---0
Allatoona_Cartersville_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CARTERSVILLE_Q	FLOW	1DAY	FWOP_03---0
Cartv_ReturnQ_dummy	Input Time Series	shared/GA_2018_WaterSupplyRe...	ETOWAH	CARTERSVILLE_RT_VARMONTHLY	FLOW	1DAY	GA2018_REQUEST
Canton_demand	Input Time Series	shared/ACT_TOTALDEMANDS_0...	ETOWAH	CANTON_WD	DIV	1DAY	TOTAL DEMAND 2006
Canton_LOC_dummy	Input Time Series	shared/ACTHEC_9_01FEB14.DSS	ETOWAH	CANTON	FLOW_INC	1DAY	UNIMP_CMA0
Hackneyville_dummy	Input Time Series	shared/Hackneyville.dss	HILLABEE CREEK...	HACKNEYVILLE	FLOW	1DAY	USGS 02415000_EXTENDED
HLC_Confl_WD_dummy	Input Time Series	shared/ACT_TOTALDEMANDS_0...	ETOWAH	HLC_CONFLUENCE_WD	DIV	1DAY	TOTAL DEMAND 2006
Jasper_ReturnQ_dummy	Input Time Series	shared/ACT_TOTALDEMANDS_0...	ETOWAH	CANTON_RT	DIV	1DAY	TOTAL DEMAND 2006
CCM_QReturnTot_Divs-Cntrl	Lookback Diversion	shared/GA_2018_WaterSupplyRe...	ETOWAH	CC_RT_VARMONTHLY	FLOW	1DAY	GA2018_REQUEST
CCM_QReturnTot_Divs	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_QRETURN_NEG	FLOW	1DAY	A08_WS6---0
Cartersville_Qreturn_Divs-Cntrl	Lookback Diversion	shared/GA_2018_WaterSupplyRe...	ETOWAH	CARTERSVILLE_RT_VARMONTHLY	FLOW	1DAY	GA2018_REQUEST
Richland Creek Reservoir-Pool	Input Evap	shared/ACTEVAP_06JAN14.DSS	ACT BASIN	ALLATOONA	EVAPNET_RATE	1DAY	EST_RATIO
Cartersville Divs	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CARTERSVILLE_SHORT	FLOW	1DAY	

Figure 19. Setting timeseries for Cartersville diversion at Stamp Creek

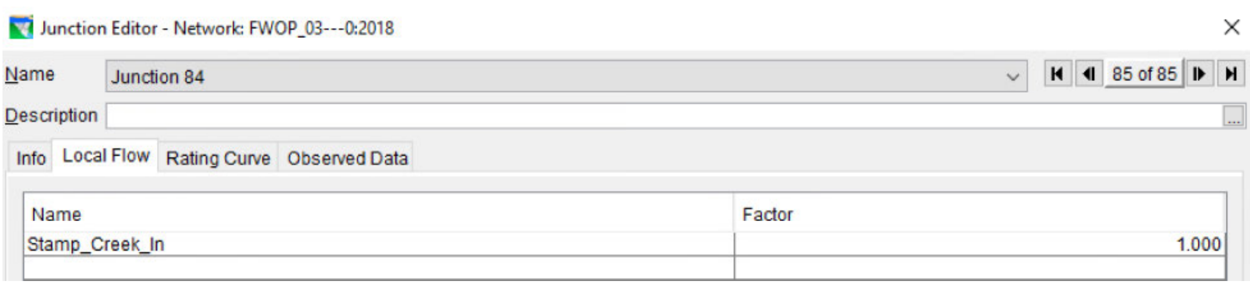
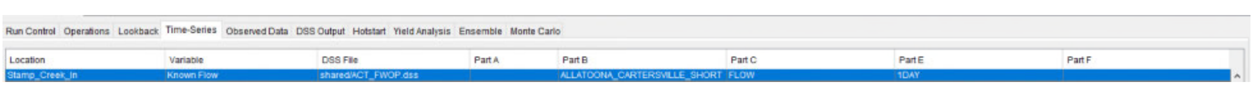


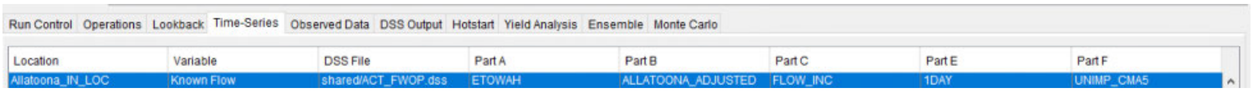
Figure 20. Creating inflow for Stamp Creek



Run Control | Operations | Lookback | Time-Series | Observed Data | DSS Output | Hotstart | Yield Analysis | Ensemble | Monte Carlo

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Stamp_Creek_In	Known Flow	shared/ACT_FWOP.dss		ALLATOONA_CARTERSVILLE_SHORT	FLOW	1DAY	

Figure 21. Setting timeseries for inflow to Stamp Creek



Run Control | Operations | Lookback | Time-Series | Observed Data | DSS Output | Hotstart | Yield Analysis | Ensemble | Monte Carlo

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Allatoona_IN_LOC	Known Flow	shared/ACT_FWOP.dss	ETOWAH	ALLATOONA_ADJUSTED	FLOW_INC	1DAY	UNIMP_CMA5

Figure 22. Setting timeseries for adjusted inflow to Allatoona_IN node

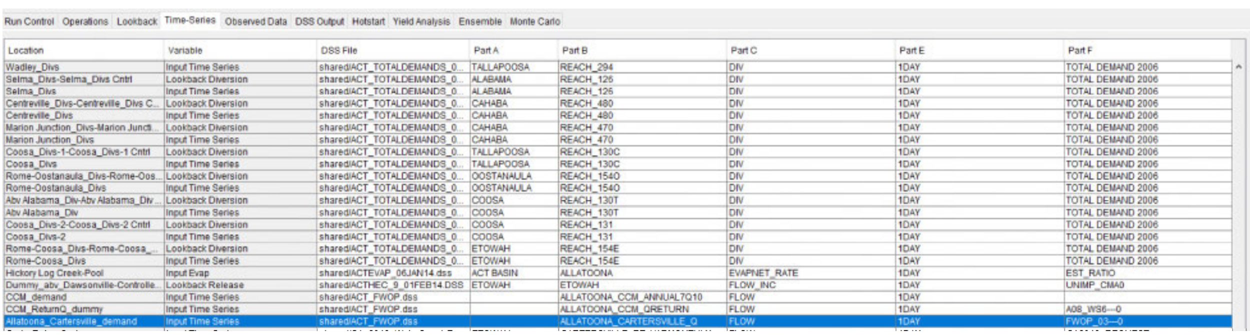
Final Run (FWOP_04)

The Carterville Allatoona shortages[12] from the preliminary run are input into the Final Run by updating the timeseries for Stamp Creek inflows and diversions and Allatoona adjusted inflow. The final FWOP (FWOP_04) is the same as FWOP_03 with the following changes:

1) Final implementation of the Etowah pipe for CCMWA (see previous section for details)
2) Update the following timeseries in ACT_FWOP.dss:

   ACT_FWOP.dss://ALLATOONA_CARTERSVILLE_SHORT/FLOW/05Jan1939 - 31Dec2011/1DAY//
   ACT_FWOP.dss:/ETOWAH/ALLATOONA_ADJUSTED/FLOW_INC/01Jan1939 - 31Dec2012/1DAY/UNIMP_CMA5/

3) Hardwire the withdrawal from the CCMWA Allatoona account to those in FWOP_03 (see Figure 23) to avoid potential disconnects between FWOP_03 and FWOP_04.



Run Control | Operations | Lookback | Time-Series | Observed Data | DSS Output | Hotstart | Yield Analysis | Ensemble | Monte Carlo

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Wadley_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	TALLAPOOSA	REACH_294	DIV	1DAY	TOTAL DEMAND 2006
Selma_Divs-Selma_Divs Cntrl	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	ALABAMA	REACH_126	DIV	1DAY	TOTAL DEMAND 2006
Selma_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	ALABAMA	REACH_126	DIV	1DAY	TOTAL DEMAND 2006
Centreville_Divs-Centreville_Divs C...	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	CAHABA	REACH_480	DIV	1DAY	TOTAL DEMAND 2006
Centreville_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	CAHABA	REACH_480	DIV	1DAY	TOTAL DEMAND 2006
Marion Junction_Divs-Marion Juncti...	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	CAHABA	REACH_470	DIV	1DAY	TOTAL DEMAND 2006
Marion Junction_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	CAHABA	REACH_470	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-1-Coosa_Divs-1 Cntrl	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	TALLAPOOSA	REACH_130C	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	TALLAPOOSA	REACH_130C	DIV	1DAY	TOTAL DEMAND 2006
Rome-Oostanaula_Divs-Rome-Oos...	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	OOSTANAULA	REACH_154O	DIV	1DAY	TOTAL DEMAND 2006
Rome-Oostanaula_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	OOSTANAULA	REACH_154O	DIV	1DAY	TOTAL DEMAND 2006
Abv Alabama_Div-Abv Alabama_Div...	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Abv Alabama_Div	Input Time Series	shared/ACT_TOTALDEMANDS_0...	COOSA	REACH_130T	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2-Coosa_Divs-2 Cntrl	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Coosa_Divs-2	Input Time Series	shared/ACT_TOTALDEMANDS_0...	COOSA	REACH_131	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs-Rome-Coosa_...	Lookback Diversion	shared/ACT_TOTALDEMANDS_0...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Rome-Coosa_Divs	Input Time Series	shared/ACT_TOTALDEMANDS_0...	ETOWAH	REACH_154E	DIV	1DAY	TOTAL DEMAND 2006
Hickory Log Creek-Pool	Input Evap	shared/ACTEVAP_06JAN14.dss	ACT BASIN	ALLATOONA	EVAPNET_RATE	1DAY	EST_RATIO
Dummy_abv_Dawsonville-Controlle...	Lookback Release	shared/ACTHEC_9_01FEB14.DSS	ETOWAH	ETOWAH	FLOW_INC	1DAY	UNIMP_CMA0
CCM_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_ANNUAL7Q10	FLOW	1DAY	
CCM_ReturnQ_dummy	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CCM_QRETURN	FLOW	1DAY	A08_WS6---0
Allatoona_Cartersville_demand	Input Time Series	shared/ACT_FWOP.dss		ALLATOONA_CARTERSVILLE_Q	FLOW	1DAY	FWOP_03---0

Figure 23. Setting timeseries for Cartersville Allatoona demand

Cartersville Withdrawals

The resulting Cartersville withdrawals for 2007 through 2009 hydrology are shown in Figure 24. With the exception of winter, most of the demand is met by Stamp Creek. There are a handful of shortages including March 2007 and July 2009, but none during the critical period.

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[12] Cartersville's Allatoona withdrawals from this run are provided in Column D of the Cartersville tab, spreadsheet FWOP_timeseries_12-30-2019.xls. The difference between these withdrawals and the full 2050 request is calculated in Column E and saved in ACT_FWOP.dss file as //ALLATOONA_CARTERSVILLE_SHORT/FLOW/05Jan1939 - 31Dec2011/1DAY//.

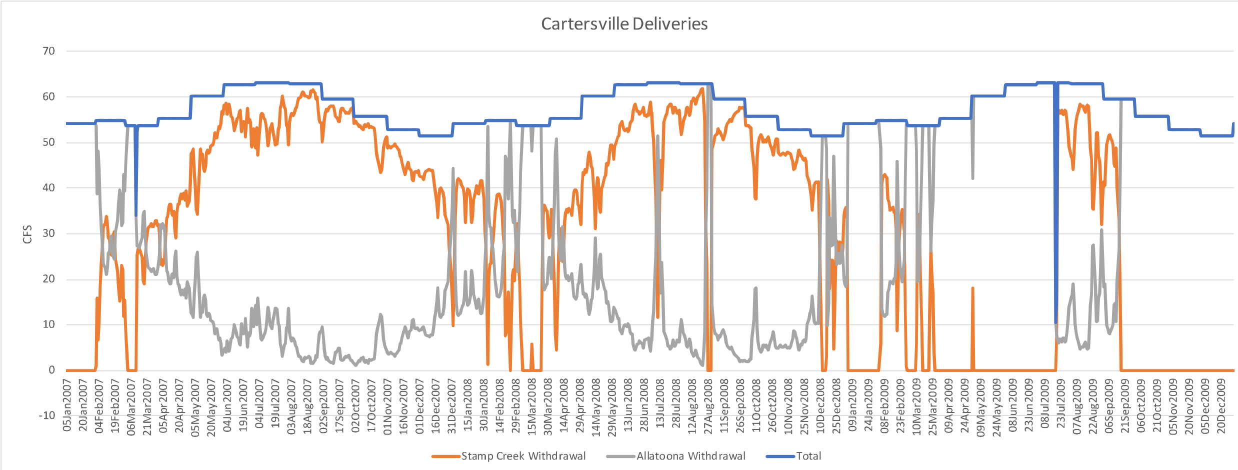

Figure 24. Cartersville Withdrawals, 2007 through 2009 hydrology, FWOP_04 simulation

Results

Allatoona stages, releases, and hydropower generation are shown below for the proposed FWOP (FWOP w/ non-fed alts). For comparison, the following alternatives are also shown: ACR Draft Report FWOP, Alternative 10, Alternative 11, and Alternative 12.

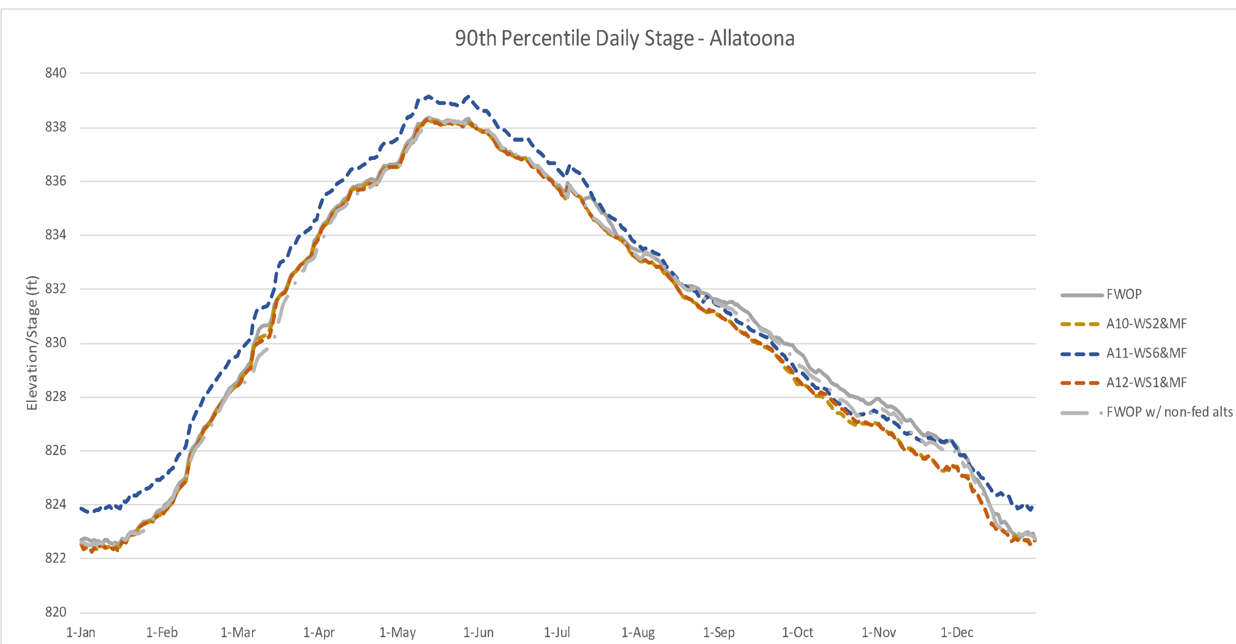

Figure 25. 90th percentile stages, Allatoona

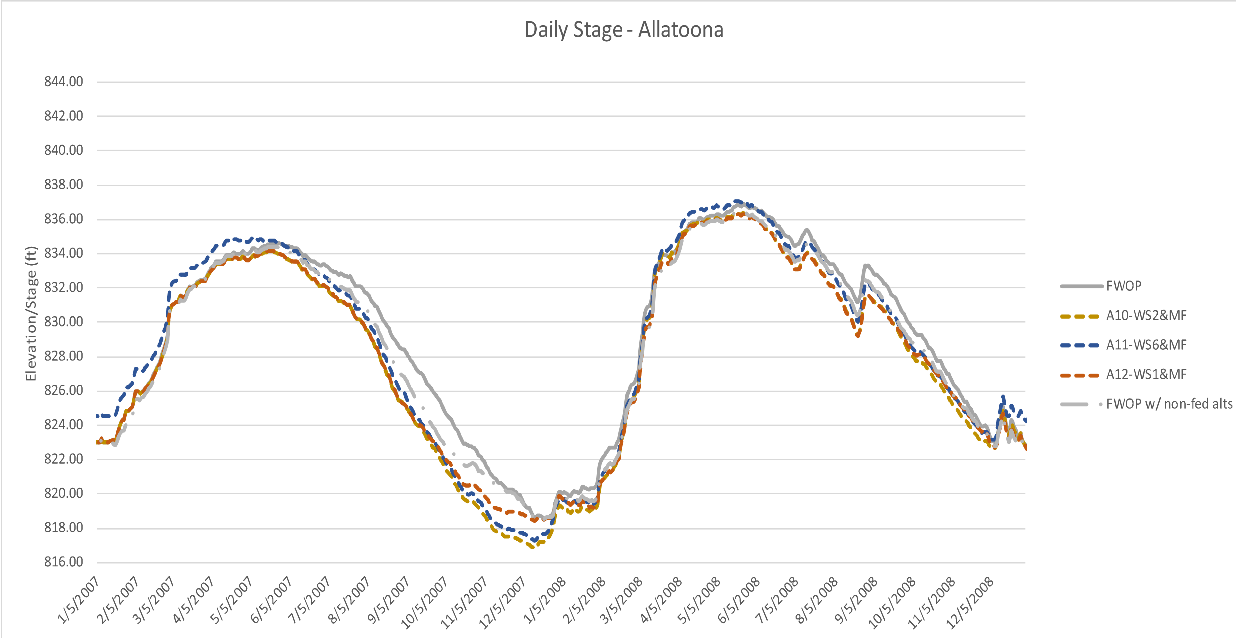

Figure 26. Allatoona stages 2007 and 2008

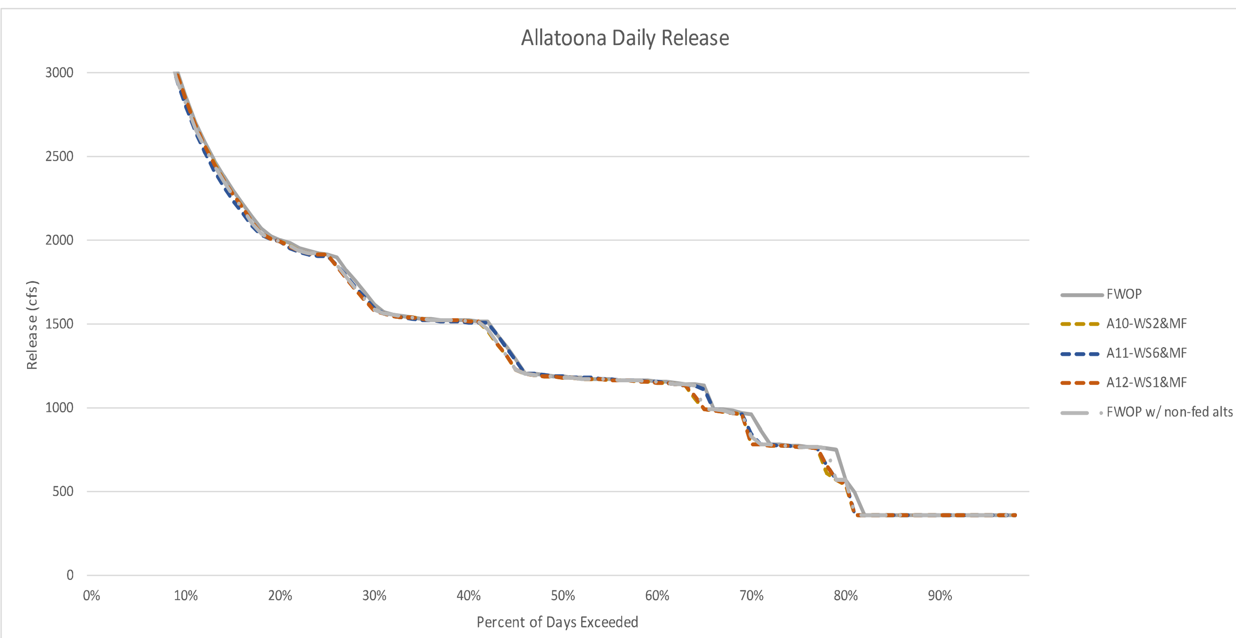

Figure 27. Allatoona releases

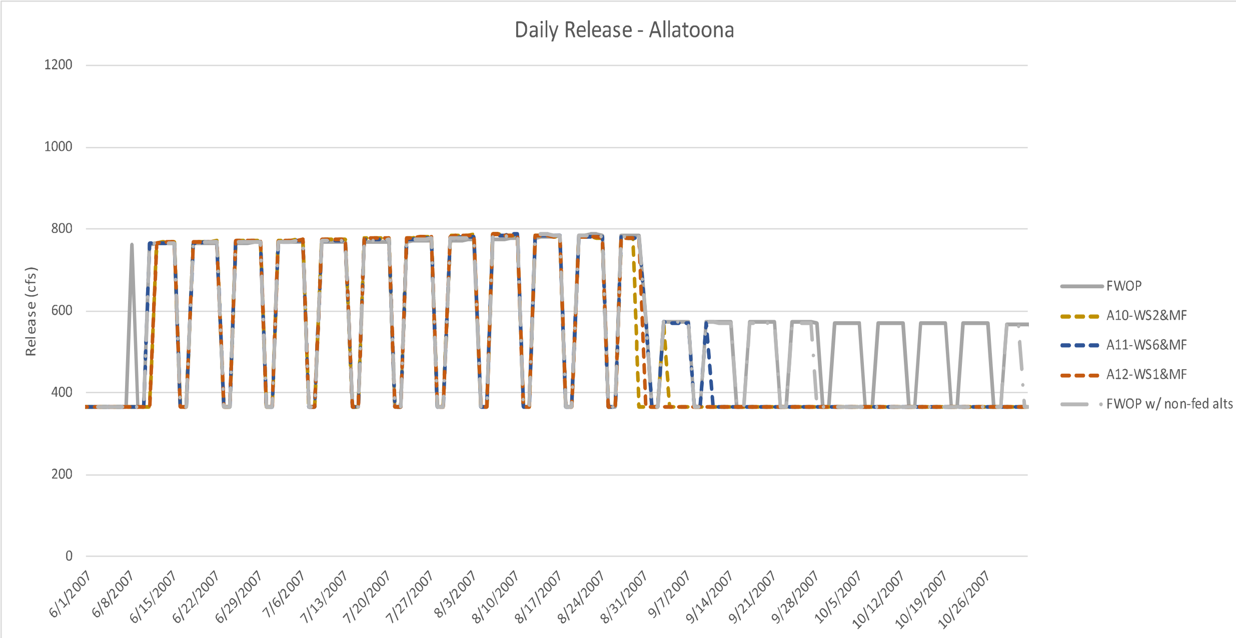

Figure 28. Allatoona releases, June through October 2007

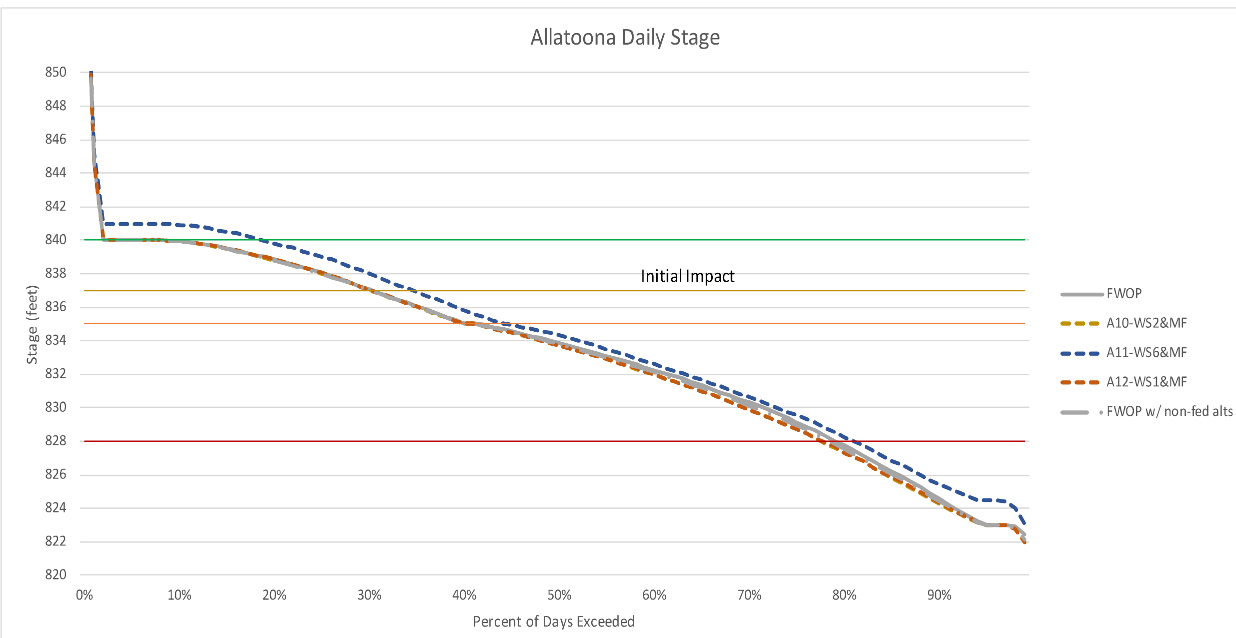

Figure 29. Allatoona stages with recreation impact levels

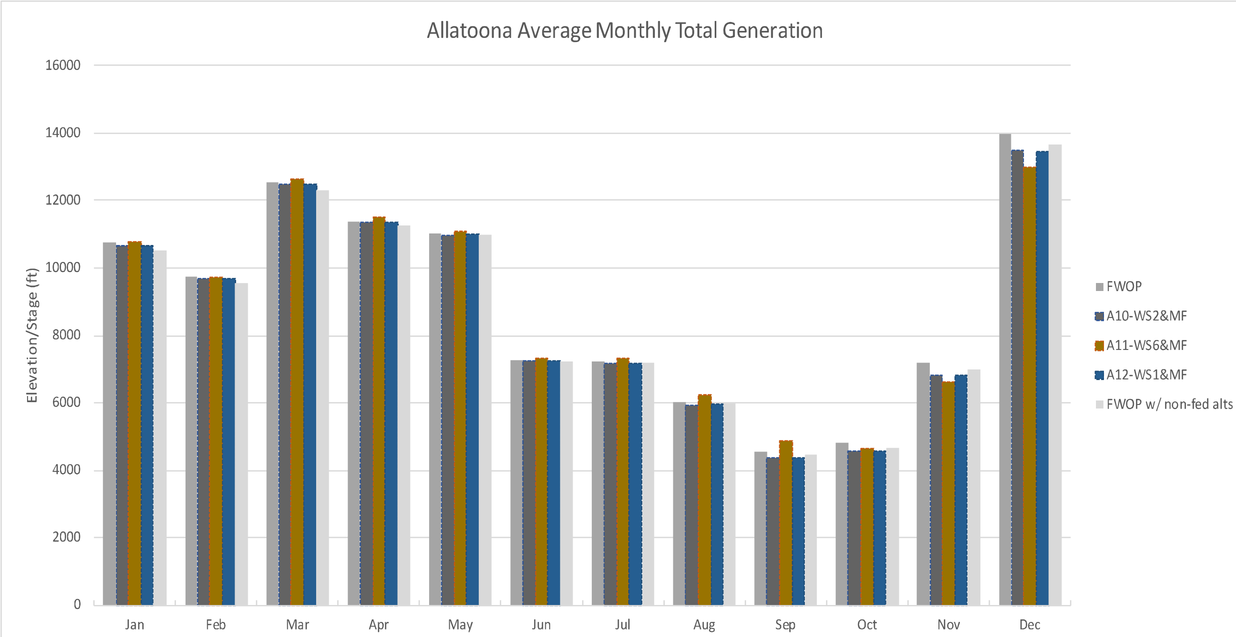

Figure 30. Allatoona average monthly energy generation

EXHIBIT 5

Hazen *Technical Memorandum*

January 23, 2020

To: Lewis Jones, King & Spalding
John Fortuna, King & Spalding

From: Doug Baughman, Hazen
Megan Rivera, Hazen
Meron Wolde-Tensae, Hazen

Hickory Log Creek Pipeline Versus Sharp Mountain Reservoir Construction Costs

Introduction

In August 2018, Hazen conducted an evaluation of potential alternatives to Allatoona Lake reallocation, which was included as Attachment 2 of Appendix B of the Allatoona Lake Draft Feasibility Report and Environmental Impact Statement (Draft EIS)[1]. Two non-federal alternatives that were included in Hazen's alternatives analysis were chosen for consideration as possible alternatives to Allatoona Lake storage reallocation, as described in Table 4-4, Table 4-5, and Section B.5.3.2 of the Draft EIS. One of these alternatives is to construct a pipeline to convey water from Hickory Log Creek (HLC) Reservoir to Wycoff WTP to address Cobb County-Marietta Water Authority's (CCWMA) unmet water supply need. The other alternative is to construct a new reservoir, specifically at a CCMWA identified site on Sharp Mountain Creek. This reservoir, Sharp Mountain Reservoir, would be designed to meet the unmet need from both CCMWA and the City of Cartersville. After analyzing the screening process and subsequent economic evaluation done in the Draft EIS, Hazen completed a reassessment of the cost estimate developed for both of the chosen non-federal action alternatives, which is presented in this memorandum. This re-evaluation of the cost difference between the two projects (presented in Table 1), clearly shows that the HLC pipeline alternative is a much less expensive option than the Sharp Mountain Reservoir project alternative.

[1] USACE, 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.

Project Construction Costs Comparison

Table 1 below shows the comparison of the estimated construction costs estimated for the two chosen non-federal alternatives in the Draft EIS, the HLC pipeline and Sharp Mountain Reservoir.

Table 1: Hickory Log Creek Pipeline Versus Sharp Mountain Reservoir Construction Costs

Cost Component	Hickory Log Creek Pipeline (2020$)	Sharp Mountain Reservoir (2020$)	Cost Difference
Reservoir		198,078,038	
Intake and Pump Station	36,556,953		
Pipeline	180,905,745	246,767,860	
Pre-sedimentation Facility	15,777,966		
Total	**233,240,664**	**444,845,899**	**211,605,234**

Sharp Mountain Reservoir Construction Costs

Using the USACE's cost metric for new reservoir construction of $8.1 million/MGD (Table 19, USACE, 2016)[2], the total project costs for Sharp Mountain Reservoir, with a safe yield of approximately 36 MGD, are $291.6 million dollars (2016$). The cost escalation for the reservoir construction estimate and all other costs mentioned in this analysis are shown in Table 2. The USACE new reservoir construction cost estimate was developed based on total project costs of water supply reservoirs built in Georgia over the last 20 years. According to the section of the ACF EIS where this cost estimate was developed, "These costs were likely very conservative due to the unknown costs of potential environmental impacts, site specific costs, etc. (p. 35, USACE, 2016)." Given the unknown conditions at Sharp Mountain Reservoir, the actual reservoir construction, including mitigation and other costs, could be much more expensive.

The $8.1 million/MGD figure includes pipeline costs, which had to be removed for the purposes of the Table 1 comparison. It is assumed that the cost metric accounts for only one pipeline instead of the double redundancy required by CCMWA standards. Therefore, half the estimated Sharp Mountain pipeline costs were subtracted from the USACE total construction costs to calculate the Sharp Mountain "reservoir plus intake and pump station" figure in Table 1.

[2] USACE, 2016. Final Environmental Impact Statement, Update of the Water Control Manual for the Apalachicola-Chattahoochee-Flint River in Alabama, Florida, and Georgia and A Water Supply Storage Assessment, Volume 3: Appendix B.

Pipeline Construction Costs

Hickory Log Creek Pipeline

The costs listed in Table 1 for the HLC pipeline were pulled directly from a report done by ESI in 2013 for CCMWA that reviewed siting, construction material, and costing for the proposed pipeline.[3] The cost escalation for this pipeline is shown in Table 2.

Sharp Mountain Reservoir Pipeline

The pipeline costs for Sharp Mountain Reservoir were estimated using the same pipeline cost estimate for the HLC pipeline but adjusted for a different pipe length. As with the HLC Pipeline, the Sharp Mountain pipe route would most likely cross key assets like Interstate 75 and Lake Acworth, but the Sharp Mountain Reservoir site is further northeast from Wycoff WTP. Using the assumption that the total construction costs for the Hickory Log Creek pipeline would be comparable to Sharp Mountain Reservoir's pipeline costs, the cost per linear foot for the Hickory Log Creek Pipeline, $742.64/ln-ft (2013$), can be applied to Sharp Mountain to get a total pipeline cost.

To estimate the Sharp Mountain pipeline length, first the "as the crow flies" or direct straight-line distance from the Sharp Mountain reservoir site to Wycoff WTP was measured to be 26 miles. In order to estimate the actual pipeline length, the ratio of the "as the crow flies" pipe route distance to the actual estimated pipeline length for HLC was used. This ratio for the HLC pipeline is equal to 0.92 to 1 (19 miles to 20.6 miles). Applying that ratio to the Sharp Mountain reservoir yields an actual estimated pipeline length of 28.1 miles. Multiplying that pipeline length by $742.64/ln-ft (2013$) gives an estimated Sharp Mountain pipeline cost of $215,662,656 (2013$). The cost escalation for this pipeline is shown in Table 2.

Hickory Log Creek Intake, Pump Station, and Additional Pre-Sedimentation Facility Construction Costs

The costs listed in Table 1 for the HLC intake, pump station, and additional pre-sedimentation facility, like in the Sharp Mountain Reservoir Pipeline section above, were pulled directly from a report done by ESI in 2013 for CCMWA that reviewed siting, construction material, and costing for the proposed pipeline.[4] The cost escalation for these components are shown in Table 2. It should be noted that while the HLC pipeline project will require a pre-sedimentation facility since the pipeline intake would be on the Etowah River, it was assumed that the Sharp Mountain reservoir pipeline will not require a pre-sedimentation facility since the pipeline intake would be directly from the proposed reservoir.

[3] ESI, 2013. Hickory Log Creek Pipeline Review.
[4] ESI, 2013. Hickory Log Creek Pipeline Review.

Cost Escalation Calculations

Table 2: Cost Escalation Calculations

	Original Cost	Year	Escalator to 2020 dollars[5]	New Cost
Sharp Mountain Reservoir, Intake, Pipeline, Pump Station	$291,600,000	2016	1.1024	$321,461,969
HLC Pipeline	$161,552,000	2013	1.1198	$180,905,745
Sharp Mountain Pipeline	$215,662,656	2013	1.1198	$241,498,796
HLC Intake and Pump Station	$32,646,000	2013	1.1198	$36,556,953
HLC Pre-Sed Facility	$14,090,000	2013	1.1198	$15,777,966

Summary

The two non-federal alternatives in the Allatoona Lake storage reallocation Draft EIS were re-evaluated to address inconsistencies in the cost analysis and comparison of alternatives. Based on the re-evaluation presented here, the implementation of the HLC pipeline would be approximately $212 million less expensive than implementation of the Sharp Mountain Creek alternative. This cost difference should be more clearly documented in the Final EIS.

[5] Office of Management and Budget, The White House. 2020. Table 10.1 – Gross Domestic Product and Deflators Used in the Historical Tables: 1940-2024.

LG-15

From: Mike Hackett <MHackett@romega.us>
Sent: Friday, January 31, 2020 1:28 PM
To: ACT-ACR
Cc: Sammy Rich; John Boyd; Mike Hackett
Subject: [Non-DoD Source] City of Rome - Altoona Lake Draft FR/SEIS Weiss Logan Martin Water Control Response

Sammy Rich, *City Manager*
Water and Sewer Division
Mike Hackett, ***Director***
John Boyd, ***Asst.***
Director

LG-15

Commander, USACE Mobile District
Attn: PD-EI (ACT – ACR DSEIS)
PO Box 2288
Mobile, Alabama 36628
ACT-ACR@usace.army.mil

RE: Altoona Lake Draft FR/SEIS Weiss Logan Martin Water Control
Altoona Lake Water Supply Storage Allocation
Response / Concerns

Dear Commander:

First let me start with water is our greatest resource to help sustain human life. The City of Rome wishes all people to have abundant supply of high quality drinking water. With that, let me begin by stating that it appears a significant amount of modeling and studies have been performed regarding the reservoirs. There are notes on projections of water use and water conservation indicating probable decreases due to these studies contained within the report. We understand that some of the models are utilizing 20 +/- years of data. We are pleased to see this level of research go into the thought process and hope that all the models are accurate.

There are several items we noted reading the supplied information that appear to be questionable or at least lacking background but these items are not of our main concern. However, speaking from a standpoint of a system and City that is well in excess of 100 years old we have a different perspective. As you are aware, the starting point of the Coosa River is created by the convergence of the Oostanaula and Etowah Rivers in downtown Rome. History set the path, work, and future for ROME's infrastructure, levee system, and growth.

Through out history more severe droughts have been experienced than the 2006 and 2011 droughts. We do understand that is the best data available for the models to have an accurate reading with some reasonable review of projections. From this standpoint, we do not see any information or see where it has been addressed on how this low water flow / release will affect the minimum flows traversing the Etowah River through the City of Rome.

The City of Rome has an intake on both the Oostanaula and the Etowah Rivers. These intakes are meant to provide not only a redundant source but also a reliable source from each location. Over the past few years it has been noted that the river levels have been fluctuating more often daily than what was previously seen for years. After looking into this anomaly, we have received information verbally from members of the Corps of Engineers as well as other sources that the release schedule has been modified at the Altoona Reservoir. This is one of the items that concerns us greatly. Several years back during a drought session a mere 6" of water was all that could enter the intake structure. Reduced water levels along this River would be detrimental to this source and the City of Rome. This would be a significant impact to the public health and safety of the City of Rome's water customers. A

The next concern is that the current release levels and schedules appear to be causing higher velocities along the river through out the City of Rome. We have noted over the past year visual scouring not only along the river banks but also along the bridges and other items being impacted by the operations of the release schedule if this has indeed been modified. We have noted sand bars within the river bed moving as much as 50 to 100 feet within a two week span from the locations that they have been visually observed for years. We did not notice information within the documentation provided that covered any velocities, impacts, notes, etc. along the river system traversing Rome. The only item we noted that pertained to a portion of this section was at the state line B with Alabama.   Any damages to this could lead to issues for public health, and safety to anyone crossing a bridge, with property adjacent to the river, and or anyone who uses the river(s) as recreation.

This leads us to our third concern, the impact to the City of Rome's Levee system, which is over 80 +\- years old, and protects a large amount of the City and its surroundings. The Levee system parallels the banks of the rivers and will be impacted not only by erosion but also by any lost storage and extended releases during flood stages. From the City of Rome's data and visual observations over the past few years, the City has been held in flood stage more often and for longer periods of time. This places great stress on the levee system, flood gates, and infrastructure that maintains this protection during flood events.   Any impacts on this could lead to danger to the public health, and safety for anyone behind these levees during these events. C

With all the information in hand, we did not see any information pertaining to the areas that affect Rome. With that stated, it is very important not only as the reviewing agency but all parties involved to ask…"What about Rome?" Was Rome's water needs, intake elevations, withdrawal growth, river impacts, flood impacts, quality of life, quality of recreation, required upgrades, etc. taken into account? As stated earlier, we believe that water is a valuable asset and want all parties to have safe and reliable drinking water, however, we do not wish for that to be at The City of Rome's or our Citizens Expense.

Please feel free to contact me at your convenience to discuss this and any other matter. We would love to have any other information and know if any of these items have been reviewed and considered.

Sincerely,

Mike Hackett, Division Director
Rome Water and Sewer Division

LG-16

From: Riverside Mayor <riversidemayor@gmail.com> on behalf of Mayor Rusty Jessup <mayor@riverside-al.com>
Sent: Monday, February 03, 2020 12:16 PM
To: ACT-ACR
Subject: [Non-DoD Source] Logan Martin Lake - Alabama

I would like to render my support for the Lake Level Changes currently proposed for Logan Martin Lake in Alabama. **A**

The higher lake levels in the winter months will make for a needed increase in commerce, recreational activity, and tourism traffic on this lake.

Thank you,

Mayor Rusty Jessup
Riverside, Alabama
office 205 338-7692
cell - 205 753-6258

LG-17

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February 7, 2020

VIA USPS Certified Mail

Colonel Sebastien P. Joly
Commander
U.S. Army Corps of Engineers
Mobile District
Attn: PD-EI (ACT-ACR DSEIS)
P.O. Box 2288, Mobile, AL 36628

Re: Georgia Water Supply Providers' Comments on the Draft Feasibility Report and Integrated Supplemental Environmental Impact Statement for the Allatoona Lake Water Supply Storage Reallocation Study and Updates to the Weiss and Logan Martin Reservoirs Project Water Control Manuals

Dear Colonel Joly:

Last Thursday I provided comments on the Draft Feasibility Report for the Allatoona Lake Water Supply Reallocation Study on behalf of the Georgia Water Supply Providers. In that letter, I requested that the docket for the Water Supply Rule be included in the Administrative Record for this action. *See* Notice of Proposed Rulemaking, *Use of U.S. Army Corps of Engineers Reservoir Projects for Domestic, Municipal and Industrial Water Supply*, 81 Fed. Reg. 91556 (Dec. 16, 2016) (the "National Water Supply Rule"). My intention is not to elicit any direct response to the comments submitted to that docket, but rather to ensure that entire record is available in the event issues originally considered by the Corps in the context of the Water Supply Rule are eventually decided in the context of the proposed reallocation at Allatoona Lake. **A**

Digital copies of the comments submitted on the Water Supply Rule are available on the enclosed thumb drive, along with duplicate versions of the comments submitted by the Georgia Water Supply Providers and the National Water Supply Alliance. I have also included a copy of the Army Corps of Engineers' Engineering and Construction Bulletin No. 2019-13, *Methods for Storage/Yield Analysis* (CECW-EC, 27 Aug. 19), which we cited in our comments.

Because all of these documents were either generated by or have already been provided to the Corps, I am providing them solely for the convenience of your staff. If it becomes necessary actually to compile an Administrative Record for the Allatoona reallocation, I would anticipate requesting inclusion of other documents related to the Water Supply Rule that I do not possess.

Please let me know if you have any difficulty using the thumb drive, and do not hesitate to ask if I can answer any questions or assist in any other way.

Best regards,

Lewis B. Jones

Lewis B. Jones