

ENVIRONMENTAL ASSESSMENT

GEORGIA ENVIRONMENTAL PROTECTION DIVISION PROPOSAL FOR A TEMPORARY REDUCED MINIMUM WATER QUALITY FLOW REQUIREMENT IN THE CHATTAHOOCHEE RIVER AT PEACHTREE CREEK FOR DROUGHT CONTINGENCY WATER MANAGEMENT OPERATION IN THE ACF RIVER BASIN AND TEMPORARY WAIVER FROM ACF WATER CONTROL PLAN

Prepared by

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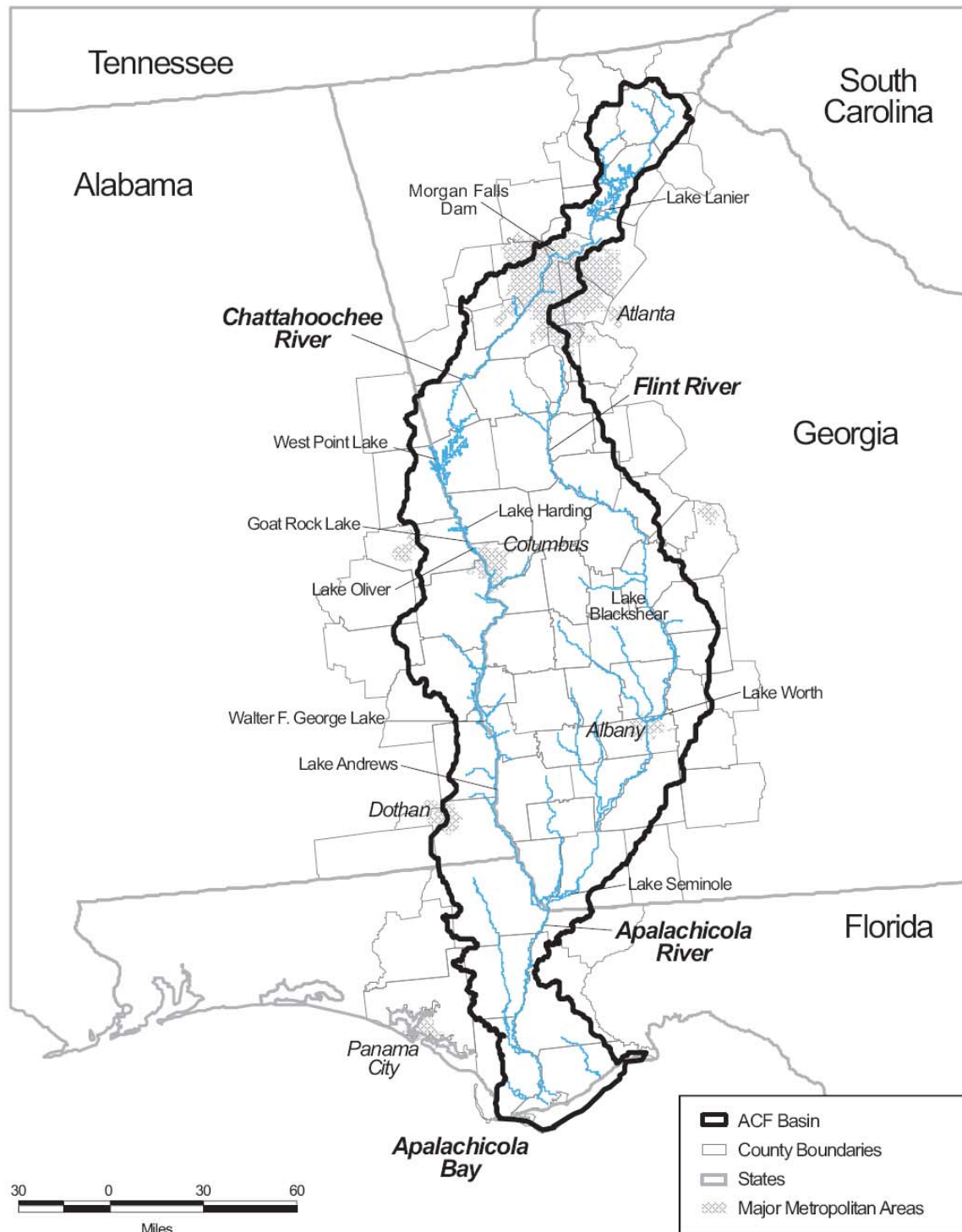
1. INTRODUCTION

This Environmental Assessment was prepared in response to a request by the Georgia Environmental Protection Division (EPD) to the U.S. Army Corps of Engineers, Mobile District (Corps) to temporarily modify water management operations to meet a reduced water quality requirement in the Chattahoochee River at Peachtree Creek. The current minimum water quality flow requirement (750 cubic feet per second [cfs]) is incorporated into the Apalachicola Basin Reservoir Regulation Manual-Appendix B - Buford Dam (1991). The EPD request is in response to record low elevation levels at Lake Lanier and associated low Apalachicola-Chattahoochee-Flint (ACF) River Basin composite storage levels due to the extended drought conditions experienced since 2006 and projected to continue in 2009. The proposed action would require a temporary waiver from the existing ACF Water Control Plan to allow a reduction in the minimum water quality flow requirement under the current water control plan operations.

a. Location: Buford Dam is located at the headwaters of the Apalachicola-Chattahoochee-Flint (ACF) River basin. Buford Dam is at river mile 348.3 on the Chattahoochee River in Gwinnett and Forsyth Counties, Georgia, about 35 miles northeast of Atlanta and 4.5 miles northwest of the town of Buford, Georgia. Lake Lanier extends up the Chattahoochee and Chestatee Rivers and lies within Gwinnett, Forsyth, Hall, Dawson, and Lumpkin Counties. The dam controls an area of 1,040 square miles on the southern slope of the Blue Ridge Mountains.

The proposed action directly impacts flows in the Chattahoochee River downstream of the dam. The five Federal projects (Buford, West Point, Walter F. George, George W. Andrews, and Jim Woodruff) within the ACF Basin are operated as a system, and reduced flows could impact downstream users of the Chattahoochee River, who may have certain minimum flow or water level requirements. Therefore the project area includes the ACF Basin, the Apalachicola River and tributaries, and Apalachicola Bay.

The location of the ACF River basin and Federal projects is shown in Figure 1.

Figure 1. ACF Basin and Reservoirs

b. Proposed Action: The proposed action was initiated in the form of a letter dated 10 October 2008 addressed to the Corps Mobile District Commander Colonel Byron Jorns, from Dr. Carol Couch, Director, EPD. The letter stated that a similar request granted during the months of March – May 2008 conserved storage in Lake Lanier and did not result in adverse effects to water quality or water intakes below the dam. Based on the results of EPD water quality monitoring during the previous reduction and updated water quality modeling and analysis, the EPD requested that releases from Buford Dam be reduced to achieve a minimum water quality flow of 650 cfs at Peachtree Creek beginning 01 November 2008 and continuing until 30 April 2009. The EPD further proposed to continue to use water quality monitoring and an adaptive management approach regarding the minimum flow to ensure that the water quality standards are being maintained during this period. A more detailed description of the monitoring and adaptive management plan is provided in the DESCRIPTION OF THE RECOMMENDED PLAN SECTION below. The proposed action would also require a temporary waiver from the existing ACF Water Control Plan to allow a reduction in the minimum water quality flow requirement under the current water control plan operations.

This request is consistent with previous requests by EPD to conserve storage during the cooler water months during extended drought conditions in 2001-2002 and 2008. By letter dated 23 February 2001, EPD requested a temporary reduction to the minimum flow requirement at Peachtree Creek through 30 April 2002. At that time, the Corps reviewed the project authorization and the 1974 Buford Dam EIS, and found that both reports referenced a minimum flow of 650 cfs at Atlanta at all times. Therefore, in 2001 the Corps determined that it was within our project authority to reduce the minimum flow at Peachtree Creek as long as the minimum flow requirement of 650 cfs at Atlanta and water quality standards was met. The Corps also determined that there would not be a requirement to prepare additional NEPA documentation since the 1974 EIS addressed the minimum flow of 650 cfs. The reduced minimum flow agreement (650 cfs) was implemented for a short period in the spring of 2001 and then the minimum flow of 750 cfs was re-instated. By letter dated 20 September 2001, the EPD again requested to reduce the minimum flow agreement below 750 cfs during the upcoming cool water months. The reduced minimum flow agreement (650 cfs) was again implemented in winter 2001-02 until dissolved oxygen (DO) monitoring data indicated the need to re-instate the 750 cfs minimum in spring 2002.

By letter dated 11 February 2008, the EPD stated that in order to conserve valuable storage in Lake Lanier for future use during the exceptional drought, they had evaluated the use of a lower minimum water quality flow requirement in the Chattahoochee River at Peachtree Creek. Their request proposed a reduction in the required minimum water quality flow measured at Peachtree Creek from an instantaneous daily value of 750 cfs to a minimum as low as 550 cfs beginning immediately and continuing until 30 April 2008. The EPD further proposed to use water quality monitoring and an adaptive management approach regarding the minimum flow as actual water quality data is collected and as other actual data and information becomes clear. During discussions following receipt of the letter, the Corps notified EPD staff that there may be authority limitations that would prevent releases that result in flows below 650 cfs at Atlanta due

to language in the project authorization contained in 80th Congress, 1st Session, House Document 300, South Atlantic Division report, 20 March 1946 (reference paragraph 80). Therefore, by letter dated 3 March 2008, Dr. Couch modified the EPD request to provide for an intermediate reduced water quality flow requirement of 650 cfs at the confluence of Peachtree Creek until 30 April 2008, if authority limitations are applied. The February request was implemented by the Corps during the months of March and April, and on 25 April 2008 EPD requested an extension of the reduction in minimum flow measured at Peachtree Creek from an instantaneous daily value of 750 cfs to 650 cfs until 31 May 2008. The April request was implemented by the Corps on 13 May 2008 and the 750 cfs minimum flow requirement was re-instated on 1 June 2008.

c. Purpose and Need for the Proposed Action: The purpose of the proposed action is to conserve storage in Lake Lanier by making allowances for increased storage opportunities and/or reductions in the demand of storage in order to provide continued support to the multiple project purposes; minimize impacts to municipal and industrial water supply, water quality, and fish and wildlife conservation; and provide greater assurance of future sustained flows for species and other users during a severe multi-year drought, currently being experienced in the ACF basin.

Lake Lanier is currently experiencing record low lake levels due to the extended drought conditions experienced since 2006 and projected to continue in 2009. Due to the relatively small drainage basin that feeds Lake Lanier and the continuing drought conditions, refill of the lake to the operating rule curve will take an extended amount of time. The lake is currently in Action Zone 4 and is predicted to remain there throughout the remainder of the year. Preservation of storage during the normal refill period will benefit conditions at the lake itself, as well as downstream areas, by accommodating future augmentation flow during the hot and dry conditions anticipated to persist during the upcoming 2009 critical summer-fall months.

d. Authority: A Federal interest in the ACF River basin dates to the 1800's when river improvements for navigation were authorized under the River and Harbor Act of 1874. The River and Harbor Acts of 1945 and 1946 provided for the initiation of construction of the Apalachicola River navigation project and a series of multipurpose reservoirs on the system. Modifications of this plan have resulted in the completion of five Corps dams in the basin, four on the Chattahoochee River, and one at the confluence of the Chattahoochee and Flint Rivers. The Buford project was completed in 1956, the Jim Woodruff project in 1957, the Walter F. George and George W. Andrews projects in 1963. The West Point project was completed in 1974, pursuant to authorization by the River and Harbor Act of 1962 (Title I) and the Flood Control Act of 1962 (Title II). These projects are operated as a system to provide the authorized project purposes of flood control, fish and wildlife conservation, navigation, hydroelectric power, water supply, water quality, and recreation.

The Corps is given discretion to manage its reservoirs by the Flood Control Act of 1944. The procedures for water management actions at Corps projects are set out in Engineer Regulation 1110-2-240 (33 C.F.R. Part 222.5), which states as follows in regard to droughts:

"Continuous examination should be made of regulations schedules, possible need for storage reallocation (within existing authority and constraints) and to identify needed changes in normal regulation. Emphasis should be placed on evaluating conditions that could require deviation from normal release schedules as part of drought contingency plans (ER 1110-2-1941)."

Engineering Regulation 1110-2-1941 requires water managers to reexamine procedures and reservoirs to determine whether improvement can be made during low water periods within current authorities. Under this regulation, the Mobile District developed the "Interim Drought Management Plan for the Apalachicola-Chattahoochee-Flint River Basin" (IDMP) in April 1985. The IDMP called for the establishment of a Drought Management Committee (DMC) to coordinate drought management actions and develop management recommendations. However, because the DMC was not operating fully in accordance with the requirements of the Federal Advisory Committee Act (Public Law 92-463) it ceased to operate as a formally constituted body. Since that time, the Corps has coordinated water management during drought with other Federal agencies, private power companies and navigation interests, the three States, other interested parties, and local parties as necessary.

80th Congress, 1st Session, House Document 300, South Atlantic Division report, 20 March 1946 – adopted in 1946 by the U.S. Congress as the basis of project authorization – provided that the completed project release "varying flows up to a maximum of 600 second-feet... from Buford so as to insure at all times a flow at Atlanta not less than 650 second-feet" (H.D. 300, p 34, par. 80).

Subsequent to the project authorization and about the time Buford became operational, the City of Atlanta and Georgia Power Company jointly financed the addition of 8 foot high tainter gates to Morgan Falls Dam to raise the water surface. The addition of these gates increased the storage at Morgan Falls and allowed the project to a limited degree to re-regulate the releases from Buford. The addition of gates at Morgan Falls physically modified the water control mechanisms so that the Corps alone would not be responsible to operate to provide the 650 cfs at Atlanta. In 1976 the State of Georgia evaluated the need for instream flow in the Chattahoochee River and determined that a minimum flow of 750 cfs in the Chattahoochee River just upstream of the confluence with Peachtree Creek (all metro-Atlanta water supply withdrawals are made above this point), would be necessary for the assimilation of wastewater return flows to the river.

An operating procedure designated the "Modified Interim Plan" was agreed to, which committed the Georgia Power Company to schedule a portion of the weekly power generation on the weekend and committed the Corps to provide certain minimum summer weekly flows from Buford Dam. These two commitments allowed for increased water supply withdrawals while maintaining the 750 cfs minimum flow. This plan was replaced by the "Short Term Plan" in 1986 which established the "River Management System" agreement under which the Corps when possible and practical would endeavor to make only those releases specifically required for water supply and maintaining the 750 cfs minimum instream flow at Peachtree Creek. Georgia Power Company agreed to continue to use Morgan Falls reservoir to re-regulate Buford releases.

The Endangered Species Act of 1973 (P.L. 93-205) requires consultation with the Department of the Interior, Fish and Wildlife Service or the National Oceanic and Atmospheric Administration, National Marine Fisheries Service and provides authority for operating federal projects to protect endangered and threatened species. The Fish and Wildlife Coordination Act (P.L. 85-624) requires consultation with the Fish and Wildlife Service and State fisheries management agencies regarding project impacts on other fish and wildlife.

Per the authority under the Clean Water Act amendments of 1977, the Corps may modify operations at Federal reservoir projects to meet water quality standards.

2. AFFECTED ENVIRONMENT

a. General Environmental Setting. The ACF basin drains 19,800 square miles in parts of southeastern Alabama, northwest Florida, and central and western Georgia. About 74 percent of the ACF basin lies in Georgia, 15 percent in Alabama, and the remaining 11 percent in Florida. The basin extends approximately 385 miles from the Blue Ridge Mountains to the Gulf of Mexico and has an average width of approximately 50 miles. The basin covers 50 counties in Georgia, 8 counties in Florida, and 10 counties in Alabama.

The ACF system empties into the Gulf of Mexico. The main tributaries of the basin are the Chattahoochee and Flint Rivers. These tributaries merge at Lake Seminole to form the Apalachicola River near the State lines of Florida and Georgia. The Apalachicola River flows into the Gulf of Mexico at Apalachicola Bay.

The ACF basin is characterized by a warm and humid, temperate climate due to its latitude, altitude, and proximity to the Gulf of Mexico. Average annual temperature ranges from about 60° Fahrenheit (F) in the north to 70°F in the south. Average daily temperatures in the ACF basin range from about 40 to 50°F in January to 75 to 80°F in July. Summer temperatures are typically in the 70s to the 90s. Freezing temperatures in winter occur for only short periods (USGS, 1996).

Precipitation is typically highest at the north end of the basin in the mountains and at the south end of the basin near the Gulf of Mexico. Average annual precipitation is about 60 inches per year at both the north and south ends of the basin. The east-central part of the basin receives less precipitation, with an annual average of 45 inches (USGS, 1996). Precipitation varies substantially on an annual basis, however. Precipitation is generally highest in late winter and early spring, and then again in mid- to late summer, when tropical depressions and tropical storms occasionally track up the basin.

Over half the water that falls as precipitation in the ACF basin is returned to the atmosphere as evapotranspiration (direct evaporation plus transpiration by plants). Evapotranspiration ranges from about 32 to 42 inches of water per year in the ACF basin, generally increasing from north

to south (USGS, 1996). Average annual runoff basinwide ranges from 12 to 40 inches (or about 25 to 65 percent of average annual precipitation). Runoff is greatest in the Blue Ridge Mountains and near the Gulf coast (USGS, 1996).

The Corps operates five dams in the ACF River Basin: (in downstream order) Buford Dam (Lake Lanier), West Point Dam and Lake, Walter F. George Dam and Lake (also known as Lake Eufaula), W. C. Andrews Dam and Lake, and Jim Woodruff Dam (Lake Seminole). All are located wholly on the Chattahoochee River arm of the basin except the downstream-most dam, Woodruff, which is located immediately below the confluence of the Chattahoochee and Flint rivers and marks the upstream extent of the Apalachicola River. Andrews is a lock and dam without any appreciable water storage behind it, but Buford, West Point, George, and Woodruff dams are larger impoundments with extensive overbank water surface areas, with a combined conservation storage capacity (relative to the top of each reservoirs' full summer pool) of about 1.6 million acre-feet (1,049,400 acre-feet at Lanier; 306,100 acre-feet at West Point, and 244,000 acre-feet at W.F. George). Because Jim Woodruff Dam/Lake Seminole is operated as a run-of-river project, only very limited storage is available for support of project purposes. For about half of its length, the Chattahoochee River forms the boundary between Georgia and Alabama. Lake Seminole straddles the boundary between Florida and the southwest corner of Georgia and a very small area in the southeast corner of Alabama.

The ACF system of reservoirs are operated to provide for the authorized purposes of flood control, fish/wildlife, navigation, hydroelectric power, water supply, water quality, and recreation. In order to provide the authorized project purposes of navigation, certain fish and wildlife needs, hydroelectric power, certain water supply needs, recreation, and water quality; flow must be stored during wetter times of each year, and released from storage during drier periods of each year. Traditionally this means that water is stored in the lakes during the spring, and released for authorized project purposes in the summer and fall months. In contrast, some authorized project purposes such as lakeside recreation, water supply, and lake fish spawn are achieved by retaining water in the lakes, either throughout the year or during specified periods of each year. The flood control purposes at certain reservoirs requires drawing down reservoirs in the fall through winter months to store possible flood waters and refilling of pools in the spring months to be used for multiple project purposes throughout the remainder of the year. The conflicting water demands on the system require that the Corps operate the system in a balanced operation in an attempt to meet all authorized purposes, while continuously monitoring the total system water availability to insure that minimum project purposes can be achieved during critical drought periods. In order to help do this, the Corps has defined four (4) Action Zones in each of the major ACF storage projects of Buford, West Point, and Walter F. George. Action Zone 1 is the highest in each lake, and defines a reservoir condition where all authorized project purposes should be met. As lake levels decline, Action Zones 2 through 4 define increasingly critical system water shortages, and guide the Corps in reducing flow releases as pool levels drop as a result of drier than normal or drought conditions. The Action Zones also provide a guide to the Corps to help balance the remaining storage in each of the three major storage reservoirs. The following describe each of the authorized project purposes in more detail:

1. Flood Control. Flood control is achieved by storing damaging flood waters, thus reducing downstream river levels below that which would have occurred without the dams in place. Of the five (5) Corps reservoirs, only the Buford (Lake Lanier) and West Point projects were designed with space to store flood waters. In addition to providing for space above the conservation pool to hold flood waters throughout the year, the Buford project is drawn down one (1) additional foot, and the West Point project is drawn down at least seven (7) additional feet beginning in the fall season, through winter and into the early spring season to provide additional capacity to protect life and property within the basin. In the past, the Mobile District has requested and been granted a temporary variance from the draft 1989 ACF Water Control Plan at the West Point and Walter F. George Dams to allow for refill of the reservoirs above the Top of Conservation level in the event that adequate rainfall occurs and that meteorological forecasts continue to call for drought conditions in the basin. The Mobile District may again exercise this option in the winter/spring of 2009 should meteorological forecasts continue to call for drought conditions in the basin. However, in the event, that forecast conditions indicate that severe flooding could occur in the basins above these projects and it would be prudent to evacuate some of this storage, the Mobile District will follow the normal flood operations.

2. Fish and Wildlife. In addition to providing for minimum flow and water quality releases, the Corps operates the system to provide favorable conditions for annual fish spawning, both in the reservoirs and the Apalachicola River. In most water years (1 October – 30 September) it is not possible to hold both lake levels and river stages at a steady or rising level for the entire spawning period, especially when upstream lakes and/or the Apalachicola River spawning periods overlap. During the fish spawning period for each specific water body, the goal of the Corps is to operate for a generally stable or rising lake level and a generally stable or gradually declining river stage on the Apalachicola River for approximately 4 to 6 weeks during the designated spawning period. When climatic conditions preclude a favorable operation for fish spawn, the Corps consults with the State fishery agencies and the U.S. Fish and Wildlife Service (USFWS) on balancing needs within the system and minimizing the impacts of fluctuating lake or river levels. These fish spawn operations were incorporated into a draft Mobile District Standard Operating Procedure (CESAM SOP 1130-2-9) in February 2005, following consultation since 2002 with USFWS and State fishery management agencies from Alabama, Florida and Georgia.

In addition to fish spawn, the Corps was in Informal Consultation with the USFWS from 2000 until 7 March 2006, when the Corps and USFWS entered into Formal Consultation regarding releases from Jim Woodruff Dam and the federally-listed Gulf sturgeon (*Acipenser oxyrinchus desotoi*); (the endangered fat threeridge mussel (*Amblema neislerii*); the threatened purple bankclimber mussel (*Elliptioideus sloatianus*); and the Chipola slabshell mussel (*Elliptio chipolaensis*) in the Apalachicola River. A final Biological Opinion (BO) for the Jim Woodruff Dam Interim Operations Plan (IOP) was issued by the U.S. Fish and Wildlife Service, Panama City Field Office on 5 September 2006. The persistent and severe drought conditions experienced in the basin since that time have resulted in several modifications to the IOP

including the Exceptional Drought Operations (EDO) implemented between 16 November 2007 and 1 June 2008. Releases from Jim Woodruff Dam in support of threatened and endangered species are currently made in compliance with the provisions of the Revised Interim Operations Plan (RIOP). A final BO for the RIOP was issued by the USFWS, Panama City Field Office on 1 June 2008.

3. Navigation. The existing project authorizes a 9-foot deep by 100-foot wide waterway from Apalachicola, Florida to Columbus, Georgia, on the Chattahoochee River, and to Bainbridge, Georgia on the Flint River. Conditions on the Apalachicola River have been such in recent years that a 9-foot deep channel has not been available for much of the year. Due to deteriorating channel conditions and limited channel availability during the low flow months, navigation windows were routinely scheduled during the low flow months in the 1990s. Navigation windows were comprised of storing water in the upstream reservoirs for several weeks, and then making increased releases for a 10-day to 2-week period to allow commercial barge navigation to make a round-trip up river for scheduled delivery of commodities. Concerns were raised regarding the fluctuations of both reservoir and river stages associated with navigation window releases, and the continued use of navigation windows became increasingly controversial, especially during sustained low flow periods when observed fluctuations were more extreme. As a result of fluctuating river stages during navigation windows, gradual ramping rates were developed in coordination with the USFWS and Florida Fish and Wildlife Conservation Commission, with the goal to provide for ramping down rates of not more than ½ foot per day during fish spawn activities, and no more than one foot per day during other periods of the year, whenever flows were below 20,000 cfs. The last navigation window was provided in the Spring of 2000, and precipitated complaints that the navigation window was scheduled during the period of fish spawn and had adversely impacted both reservoir and riverine fish spawn activities. No navigation windows have been scheduled since that time, and none are planned in the foreseeable future. Dredging on the Apalachicola River also was reduced since the 1980s due to a lack of adequate disposal area capacity in certain reaches of the river. No dredging was conducted in 2000 or 2002 due to sustained drought conditions in the basin, and only very limited dredging was conducted in 2001 and then shutdown due to sustained low flow conditions. No dredging has been conducted since that time, for a variety of reasons related to flow or funding levels, and currently has been indefinitely deferred due to denial of a Section 401 water quality certificate from the State of Florida and restricted congressional funding for dredging operations in the ACF basin. The lack of dredging and routine maintenance has led to inadequate depths in the Apalachicola River navigation channel, and commercial navigation has only been possible on a seasonal basis when flows in the river are naturally high, with flow support for navigation suspended during drier times of the year. On a case-by-case basis, limited releases for navigation have been made for special shipments when a determination can be made that other project purposes will not be significantly impacted and any fluctuations in reservoir levels or river stages would be minimal.

4. Hydroelectric Power. The Buford, West Point, Walter F. George, and Jim Woodruff projects include hydroelectric power plants as part of those projects. The total generation

capacity of these four (4) ACF plants is 336 megawatts. Through the Department of Energy's Southeastern Power Administration (SEPA), these power plants provide power to over 300 preference customers throughout the Southeastern United States. In 2006, the ACF hydroelectric power plants generated nearly 1.1 million megawatt-hours, enough electricity to supply approximately 110,000 households. In 2007 the same power plants generated approximately 717,178 megawatt-hours. This supplied approximately 70,000 households. During 2008 these plants generated 548,238 megawatt-hours, which supplied approximately 53,000 households. The decrease in generation was due to a combination of equipment outages and sustained drought conditions during 2006 and 2007. The decrease in 2008 was a result of the persisting drought conditions. Hydroelectric power generation is achieved by passing flow releases to the maximum extent possible through the turbines at each project, even when making releases to support other project purposes. The Buford, West Point, and Walter F. George projects are operated as "peaking plants", and provide electricity during the peak demand periods of each day and week. Hydropower peaking involves increasing the discharge for a few hours each day to near the full capacity of one or more of the turbines. During dry periods, as the lake levels drop below Zone 1, hydroelectric power generation is reduced proportionally as pool levels decline to as low as 2 hours per day generation at each "peaking plant" project during extreme low flow conditions. Peak generation may be eliminated or limited to conjunctive releases during severe drought conditions.

The main hydropower units and small unit intakes at Buford Dam/Lake Lanier have a bottom elevation of 919 feet above mean sea level (msl). However, severe cavitation occurs to the main hydropower turbines when the water surface falls to 1035 feet msl or below, at which time the units are taken out of service and generation ceases. The small unit goes off line when water elevations reach approximately 1020 feet msl.

Because it does not have the ability to store appreciable amounts of flow, the Jim Woodruff plant is operated as a "run-of-the-river" plant where inflows are passed continuously and electricity is generated around the clock. The current RIOP includes a limited hydropower peaking operation at Jim Woodruff Dam when daily average releases are less than the combined capacity of the powerhouse turbines (about 16,000 cfs) in order to deliver extra power during hours of peak demand for electricity. These peaking releases are included in the daily average discharge computations for the minimum flow provisions. The peaks are also included in the stage computations for the RIOP maximum fall rate schedule; however, the maximum fall rate schedule addresses the difference between the average river stage of consecutive calendar days, not the shorter-term differences that result from peaking operations within a calendar day. The relative drop in river stage from the peak to the base release will vary with different flows, but becomes more pronounced as flows decline, typically not more than 2.5 foot fluctuation per day above the base flow. The current RIOP includes a provision that discontinues peaking operations at the Jim Woodruff plant as average daily releases approach 6,000 cfs, in order to maintain instantaneous releases greater than or equal to the 5,000 cfs minimum flow requirement.

5. Water Supply. Various municipal and industrial (M&I) entities withdraw water directly from Lake Lanier and others withdraw directly from the Chattahoochee River downstream of Lake Lanier. To a lesser degree, M&I entities also withdraw water directly from West Point Lake and the Chattahoochee River downstream of West Point. Water management in the ACF basin is also impacted by agricultural water withdrawals on the Flint River. Agricultural demands vary depending on the climatic conditions, but are generally 1.5 to 2 times the withdrawals for M&I (USFWS 2006). These Flint River agricultural water withdrawals can result in the need to augment flows from storage in the Federal reservoirs on the Chattahoochee River in order to maintain the minimum flow requirement at Jim Woodruff Dam. Water withdrawals within the State of Georgia are made pursuant to water withdrawal permits issued by the Georgia Department of Natural Resources. Previous water supply contracts issued by the Corps for withdrawals from Lake Lanier expired by 1990 and have not been re-issued. The Water Supply Act of 1958 provides authority for reallocation or addition of storage within Corps reservoirs for water supply, with the cost of storage and associated facilities to be reimbursed by a non-Federal entity via water storage contracts. No storage within the ACF projects is currently allocated to water supply, although there was a proposal being considered by the Corps to enter into interim water storage contracts at Lake Lanier for several municipalities and local governments, pursuant to the Southeastern Federal Power Customers, Inc. settlement agreement (1:00CV02954–TPJ), with the potential for the interim water storage contracts to roll over to permanent reallocation storage contracts in the future. This settlement agreement has since been invalidated by the U.S. Court of Appeals for the District of Columbia Circuit (No. 06-5080), in its 5 February 2008 decision. The Mobile District has also recently published a notice of intent to initiate updates to the existing water control manuals, published in the Federal Register on 22 February 2008, with public scoping meetings conducted in October 2008.

As a result of significantly reduced inflows to the ACF Basin and continued releases necessary to meet minimum flow requirements downstream during the projected sustained drought conditions, there is concern that Lake Lanier may deplete its conservation storage if severe drought conditions continue into 2009. Even if conservation storage is depleted, over 40% of Lake Lanier's water is located in the "inactive" storage zone (below elevation 1035 feet msl) and could support limited water supply and certain other critical water requirements in the system, although most other project purposes would be severely impacted or eliminated.

Gwinnett County has multiple elevation intakes ranging from 1062, 1045, and 1025 feet, and has withdrawn from the 1025-foot intake (within the inactive storage zone) for many years.

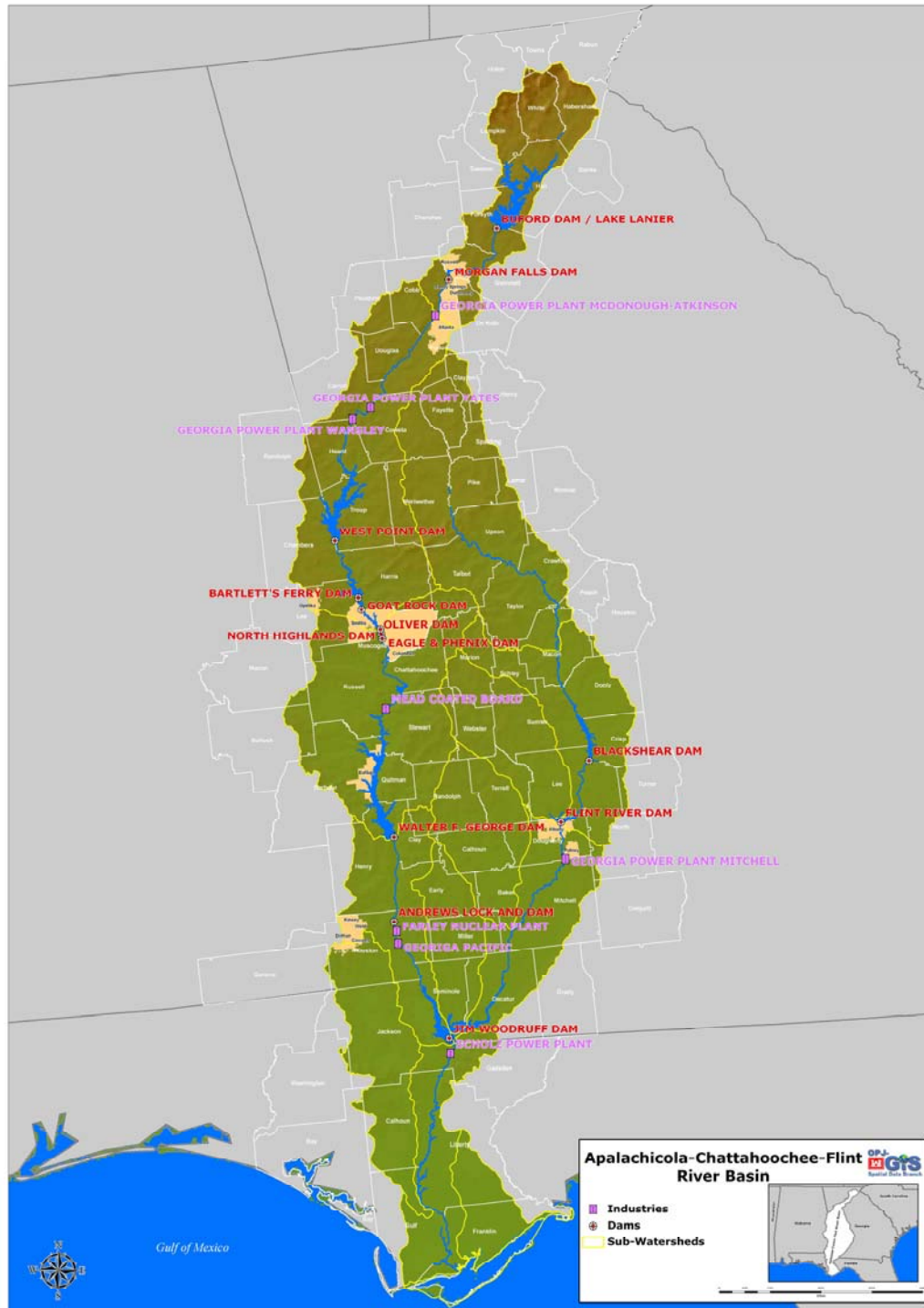
City of Cumming intakes range from elevation 1053 down to 1032 feet, but the lowest intake is in a "hole" surrounded by lake bottom at elevation 1045 feet. They are currently making adjustments to that intake that should allow withdrawals down to elevation 1032 feet.

City of Buford intakes are at elevations 1062, 1052, 1042, and 1032 feet. The 1032-foot intake did have some sediment buildup around it, but that has been removed so that the intake is functional if needed.

City of Gainesville has three intake structures, each with multiple intake ports ranging from elevation 1063 down to 1025 feet (within the inactive storage zone).

Releases through Buford Dam to the Chattahoochee River currently draw from the inactive storage zone (releases from the hydropower units and the sluice gates), and these release waters make up the Chattahoochee River that flows downstream to the Atlanta area municipal water intakes downstream. Releases from Lake Lanier also support a number of other downstream M&I water supply needs including City of LaGrange, City of West Point, and the City of Columbus, as well as a number of industries shown in Figure 2.

Flow releases also support Georgia Power Company hydropower facilities (Plant McDonough, Plant Yates, and Plant Wansley) downstream. The Southern Nuclear Operating Company withdraws cooling water for the Joseph M. Farley Nuclear Plant, located near Dothan in southeast Alabama. Southern Nuclear defines a flow of 2,000 cfs and a minimum river elevation of 74.5 feet msl as the minimum conditions necessary for long term operation. Although the plant can, and does, operate for short periods at flows below 2,000 cfs. The flow releases also support other industrial plants in the vicinity, including those operated by MeadWestvaco and Georgia Pacific. Another important thermal power plant, the Plant Scholz (Gulf Power Company) located immediately downstream of Jim Woodruff Dam, requires a minimum flow of 5,000 cfs but can temporarily operate at water elevation of 37.5 feet msl (equivalent to flows of 4,200 cfs).

Figure 2 – Municipal and Industries in the ACF basin

6. Water Quality. Buford, West Point, and Jim Woodruff dams all provide continuous flow releases. Walter F. George has no such minimum flow provision; however, when low dissolved oxygen (DO) values are observed below the dam, spillway gates are opened until the DO readings return to an acceptable level. Occasional special releases are also made at Buford to insure adequate DO and water temperature at the Buford Fish Hatchery located downstream of the dam. Additionally, self-aspirating turbines were recently installed at Buford to improve DO levels downstream. At Buford Dam the small turbine-generator is run continuously to provide a minimum flow from the dam which ranges up to approximately 600 cfs. In the event of outages for the small turbine, releases are made through sluice gates to provide the required minimum continuous flows into the Chattahoochee River. In addition to these flows, Buford Dam is operated in conjunction with the downstream Georgia Power Dam at Morgan Falls to insure a minimum instream flow of 750 cfs on the Chattahoochee River at Peachtree Creek to meet State water quality commitments. The EPD has classified the Chattahoochee River from Buford Dam to the I-285 West Bridge in Atlanta as a secondary trout stream. The water quality standards for secondary trout streams require a DO daily average value of 6.0 mg/l and a value of 5.0 mg/l at all times. The Chattahoochee River from Atlanta (Peachtree Creek) to Cedar Creek is classified as "fishing". The water quality standards for this classification require a dissolved oxygen daily average value of 5.0 mg/l and a value of 4.0 mg/l at all times. At West Point Dam, a similar small generating unit to that at Buford provides a continuous release of approximately 675 cfs.

Although there is no Corps requirement to maintain minimum flows for assimilative capacity at Columbus, GA, the Georgia Power Projects above Columbus are required in their Federal Energy Regulatory Commission (FERC) licenses to provide 1,850 cfs weekly average, 1,350 cfs daily average, and 800 cfs instantaneous minimum flow at Columbus. Releases from the Georgia Power Projects are dependent to some degree on upstream releases from West Point Dam. However, the FERC license minimum flow requirements are ultimately the responsibility of Georgia Power. As conditions allow the Corps works closely with the power company to provide additional flow support to assist in meeting the FERC minimum flow requirements. Georgia Pacific and Farley Nuclear Plant located below George W. Andrews Dam have stated a requirement of 2,000 cfs for assimilative capacity needs.

Generally a 5,000 cfs minimum flow is maintained as a release from the Jim Woodruff Dam to the Apalachicola River, which assures an adequate water supply for downstream industrial use. Due to the exceptional drought conditions experienced during most of 2007, the Corps implemented the EDO operations at Jim Woodruff Dam which provided for flows as low as 4,500 cfs. However, flows below 4,750 cfs have not occurred to date. The current RIOP also has provisions for minimum flows as low as 4,500 cfs if conditions warrant. No water quality problems below Jim Woodruff Dam have been identified in the Apalachicola River in association with project operations. However, the extraordinary drought conditions experienced during much of the last three years, resulted in salinity changes in Apalachicola Bay and increased water temperatures and associated localized DO changes in the river due to extended periods of low flow (approximately 5,000 cfs).

The 10 October 2008 letter from EPD states that no adverse water quality impacts would be expected if these reductions were in effect. It should be noted that when flows less than 750 cfs occur, the numeric standards no longer apply and the EPD has narrative standards to protect water quality. However, EPD modeling indicates that both the numeric and narrative standards can typically be met with a reduced flow during the cooler water months in the winter and early spring. The requirement for a minimum water quality flow at Peachtree Creek has been relaxed in previous drought years (2001-2002; 2008), and could also be implemented in future drought conditions if determined necessary and if there are assurances that State water quality standards can be met. Monitoring and adaptive management would continue to be a necessary component of any future drought contingency plan.

7. Recreation. The ACF basin contains approximately 2 million acres of public lands and resource protection areas including heavily used federal reservoirs, national forests, national and state parks, and resort communities. The five Corps projects in the basin account for 235,291 total acres of land and water. A wide variety of recreational opportunities are provided at these lakes including boating, fishing, picnicking, sightseeing, water skiing, and camping. These reservoirs support popular sport fisheries, some of which have achieved national acclaim for trophy-size catches of largemouth bass.

All of the Corps lakes have become important recreational resources on the ACF system. Of these projects, Lake Lanier (Buford Dam) is one of the most visited Corps lakes in the entire United States. The West Point and Walter F. George lakes also rank among the top ten most visited Corps lakes in the United States. Park attendance has been relatively stable at most lakes until Fiscal Year (FY) 2008 (Table 1). Lake Lanier experienced an approximately 30 percent decline in attendance in FY2008. This is likely attributable to the continuing drought and record low lake levels. West Point Lake experienced an approximately 38 percent decline in attendance in FY2008. This is somewhat surprising since the project remained at full pool throughout the primary recreation season (1 May through 8 September). It appears that the lower visitation numbers are most likely attributable to a combination of very low lake elevation in the beginning of the FY (October – January) and a change to the method of tracking visitation as compared to previous years. In past years, visitation at West Point was estimated based on periodic visitor counts, which may have over estimated visitation numbers. The current tracking method utilizes traffic counters and gate counts to more accurately estimate visitation. Jim Woodruff and the Apalachicola River experienced a slight decline in FY2008. Walter F. George has experienced alternating years of increase and decline since FY2002. Also, it is likely that higher fuel prices during FY08 contributed to reduced boater recreation at the projects.

Table 1. Annual Park Visitation on the Four Reservoirs

	FY2002	FY2003	FY2004	FY2005	FY2006	FY2007	FY2008
BUFORD DAM -	7,359,181	7,697,482	7,698,005	7,725,328	7,552,119	7,738,041	5,274,766
WEST POINT LAKE	2,620,642	2,691,920	2,947,170	3,199,052	3,300,836	3,200,083	1,966,049
WALTER F GEORGE LOCK AND DAM	4,397,237	4,384,766	4,423,694	3,693,899	4,340,890	3,792,794	3,486,755
APALACHICOLA CHATTAHOOCHEE AND FLINT RIVERS	252,967	253,289	304,412	269,801	241,980	231,869	217,430

Note: Apalachicola Chattahoochee and Flint Rivers denotes visitation at Woodruff and the Apalachicola River
FY = 1 October – 30 September

In 2007, virtually all marinas on Corps projects experienced some degree of recreational reductions due to declining water levels. However, in 2008 the lower basin projects refilled and recreational opportunities were restored. Lake Lanier has not recovered and spent most of FY2008 at record low levels. Only two of the forty Corps owned boat launches at Lake Lanier are currently available and there has been a noticeable reduction in accessibility throughout the year (Table 2). Nearly all swimming areas at the Corps projects were closed in 2007. Swimming areas at the lower projects were open in 2008; however, most remained closed for much of 2008 at Lake Lanier.

Table 2. Boat Ramp Availability at the Four Reservoirs (as of 14 November 2008).

Boat Ramp Availability			
	Total Number of Ramps	Ramps Open	Marginal Ramps
Buford Dam	40	2	1
West Point Lake	29	29	0
ACF (Walter F George, ACF, Seminole)	25	25	0

A wide variety of recreational opportunities are provided at the lakes including boating, fishing, picnicking, sightseeing, water skiing, and camping. The economic benefits of recreation at the lakes is significant resulting in visitor spending in 2005 of over \$125 million at Lake Lanier, \$36 million at West Point, and \$111 million at Walter F. George. Maximum recreation benefits are realized at the lakes when the projects are maintained at full or nearly full pools during the primary recreation season of 1 May through 8 September. However, in response to meeting other authorized project purposes, lake levels can and do decline during the primary recreation period, particularly during drier than normal years. Recreation impact levels have been identified for various lake elevations at each of the reservoir projects (Table 3). The first impact level is generally characterized by marginal impacts to designated swimming areas, increased safety awareness regarding navigation hazards, minimal impacts to Corps boat ramps, and minimal impacts to private marina and dock owners. More substantial impacts begin to occur at

the second impact level and continue as lake elevations drop due to drought conditions.

Table 3. Recreation Impact Levels

Corps Project	First Impact Level (Feet)	Second Impact Level (Feet)
Lake Lanier (msl)	1066	1063
West Pont (NGVD)	632.5	629
Walter F. George (NGVD)	187	185
Lake Seminole (msl)	76	NA

The National Park Service (NPS) manages, via the Chattahoochee River National Recreational Area (CRNRA), 48 miles of the Chattahoochee River from Buford Dam to Peachtree Creek. Studies suggest that instantaneous flows of 1,000 to 1,500 cfs in the Chattahoochee River reach from Buford Dam to Peachtree Creek are advantageous for recreational opportunities and resources supported by the river as it flows through the CRNRA (Nestler, et al. 1986). However, it should be noted that although Lake Lanier visitation experienced an approximately 25 percent decrease, visitation numbers along the river immediately downstream of Buford Dam increased by approximately 25 percent (Mark Williams, Corps Ranger, pers. com.). This suggests that river flows significantly less than 1,500 cfs, as commonly experienced during the ongoing drought, still offer significant recreational opportunities.

Recreation in the Apalachicola River is based primarily on its warm water fishery. Bass, sunfish and catfish are the preferred game species. Public and private land holdings are located throughout the Apalachicola River basin. Significant portions of the Apalachicola River floodplain are owned and managed as natural resource areas by the Northwest Florida Water Management District (NFWFMD); the Florida Fish and Wildlife Conservation Commission (FWCC) (Lower Apalachicola River Basin Environmentally Endangered Lands); U.S. Forest Service (Apalachicola National Forest); Florida Department of Environmental Protection (Three Rivers State Recreation Area, Torreya State Park and the Apalachicola National Estuarine Research Reserve); and The Nature Conservancy (Apalachicola Bluffs and Ravines Preserve, "Garden of Eden"). These publicly held lands include wildlife management areas, reserves, refuges, forests, state parks, recreation areas, conservation lands and special feature sites that are used for hunting, as well as non-consumptive recreational uses such as hiking, nature study, and picnicking.

Apalachicola Bay is part of the Apalachicola National Estuarine Research Reserve and thus provides educational and recreational opportunities as well.

b. Significant Resource Description. As described above, the Corps operates the five federal reservoirs on the ACF as a system and releases from Buford could have impacts throughout the basin. However, modeling results from EPD and the Corps, described in detail below, suggest that impacts to reservoir and river levels associated with the proposed action are limited to the

portion of the basin above West Point Dam. Therefore, the significant resource description and associated impacts to significant resources sections will primarily focus on the resources in the Chattahoochee River above West Point Dam, West Point Lake, and Lake Lanier. However, a general discussion of the resources in the lower part of the basin (specifically those related to authorized project purposes) is included also.

1. Hydrology. The ACF basin is a dynamic hydrologic system containing interactions between aquifers, streams, reservoirs, floodplains, and estuaries. Water resources in the ACF basin have been managed to serve a variety of purposes, including navigation, hydroelectric power, flood control, water quality, fish and wildlife conservation, water supply, and recreation. There are 16 reservoirs on the mainstems of the Apalachicola, Chattahoochee, and Flint Rivers (5 Federal and 11 non-Federal projects), which have altered the natural streamflow and provided potential for water supply improvements and recreational opportunities for the public in addition to other project purposes in these resource areas. These reservoirs attenuate high river flows during wet periods and augment low flows during dry weather periods. The interrelationship between operation of the dams and the resulting river flows has resulted in a highly regulated system over much of the basin. Water resources in the ACF basin include both surface water and groundwater. There is significant interaction in the basin between the surface water and groundwater, particularly in the lower half of the basin (Comprehensive Water Resources Study Partners, 1995).

In the southeast U.S., rain falls nearly every month. However, seasonal trends generally include a wetter period between December and March and a notably drier period in the fall (September – November). The summer months can be dry also, but vary due to the influences of thunderstorms and tropical storms. Differences in monthly river flows are generally attributable to a combination of climatic differences, higher consumptive uses, and reservoir operations. However, hydrologic patterns within the basin vary from year to year and may not conform to the seasonal trends during any given year. The basin is currently in the third year of a particularly extreme drought and forecasts suggest that the remainder of 2008 could likely see below normal precipitation.

2. Fishery Resources. The ACF reservoirs support popular sport fisheries, some of which have achieved national acclaim for trophy-size catches of largemouth bass. Important game species in the Federal reservoirs include crappie, largemouth bass, spotted bass, striped bass, walleye, white bass, gizzard shad, hybrid bass (striped bass-white bass hybrid), threadfin shad, bluegill, and redear sunfish.

The Chattahoochee River downstream of Buford Dam includes three regulated, isolated, unimpounded reaches totaling 115 river miles: Buford Dam to upstream end of Morgan Falls Lake (32 river miles); Morgan Falls Dam to the upstream end of West Point Lake (77 river miles); and West Point Dam to the upstream end of Langdale Lake (6 river miles). The reach from Buford Dam to the confluence of Peachtree Creek supports a valued stocked trout fishery and has been classified by the EPD as secondary trout waters. This classification includes

regulatory criteria for water quality specifying limits to elevations of natural stream temperatures and minimum dissolved oxygen standards (5.0 mg/l and 6.0 mg/l daily average). The Chattahoochee River system between Morgan Falls Dam and West Point Lake includes an extensive reach of riverine habitat with shoals (near Franklin, GA) that provide spawning habitat for white bass migrating upstream from West Point Lake. However, degraded water quality may impact faunal integrity in this reach (USFWS 1998). The low diversity and abundance of native fishes in the Chattahoochee River downstream of Atlanta may be largely attributable to decades of industrial and municipal wastewater discharge, and sedimentation and other nonpoint source run-off from the rapidly growing metropolitan area (USFWS 1998).

Nine dams impound nearly the entire reach of the Chattahoochee River between West Point Dam and Walter F. George Lock and Dam. Riverine habitat exists as short fragments isolated between an upstream dam and the backwaters of the next downstream impoundment.

The upper Flint River system supports a large fraction of the native ACF fish assemblage, including five endemic species. Important habitat for fishes and mussels occurs in mainstem and tributary habitats. This reach is particularly unique in retaining the connectivity of riverine habitat from the Piedmont to the Coastal Plain physiographic province. This connectivity between the distinct habitats above and below the Fall Line facilitates the natural flow of water, energy, and nutrients to downstream habitats, and allows the potential exchange of individuals among populations experiencing different habitat regimes. The lower Flint River system is regulated by two upstream impoundments and supports sport fisheries as well as summer refuge and spawning habitat for Gulf striped bass (USACE 1998).

The Apalachicola River flows freely from Jim Woodruff Lock and Dam, and represents the only unimpounded large-river habitat remaining in the ACF basin. The Apalachicola River system comprises, in addition to the mainstem, tributaries (including the Chipola River) and distributaries in a matrix of forested wetlands of exceptional extent. Flow is regulated by Woodruff Dam and upstream dams, and the channel was maintained for navigation until 2001. Diverse fish assemblages persist in the natural channel habitats and anadromous species such as the Gulf sturgeon, striped bass, and Alabama shad ascend the river to potential spawning habitat in the upper portion of the river (USFWS 1998).

3. Essential Fish Habitat. The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) mandates designation and protection of essential fish habitat (EFH). EFH is defined as ... "those waters and substrates necessary to fish for spawning, breeding, feeding or growth to maturity." The designation and conservation of EFH seeks to minimize adverse effects on habitat caused by fishing and non-fishing activities. The National Marine Fisheries Service (NMFS) has identified EFH habitats for the Gulf of Mexico in its Fishery Management Plan Amendments. These habitats include estuarine areas such as estuarine emergent wetlands, seagrass beds, algal flats, mud, sand, shell and rock substrates, and the estuarine water column. EFH in the project area includes the Apalachicola River/Bay system up to the limit of permanent fresh water. Species managed by NMFS under the Fishery Management Plan that occur in the

area of influence for the project include red drum; gray snapper; brown, white, and pink shrimp; and Gulf stone crab.

4. Floodplain/Wetlands. Most of the wetland area within the ACF basin is represented by forested palustrine wetlands located within the floodplains of rivers. These riparian (river-associated) forested systems are often referred to as bottomland hardwoods. Riparian palustrine systems within the ACF basin also include small areas of non-forested wetlands such as marsh or shrub wetlands. Riparian systems depend on the natural flooding regime of rivers and, in turn, influence the water and habitat quality of riverine ecosystems. The remaining wetland area within the ACF basin consists of estuarine wetlands, and palustrine wetlands that occur along reservoirs (reservoir-associated). Estuarine wetlands constitute a relatively small percentage of the total wetland area within the basin (USACE 1998).

Estimates of wetland acreage within the ACF basin as a whole vary because of differences in methods used to classify and inventory wetlands. However, approximately 5 percent (633,600 acres) of the basin was wetlands in the 1970's (USGS, 1996). Because of hilly topography, wetlands in the Blue Ridge and Piedmont provinces are small and scattered. Most wetlands of significant size are in the Coastal Plain province in the Flint River and the Apalachicola River basins. Approximately 90,000 acres are in the forested floodplain of the Flint River basin and in the floodplain and swamps associated with the Chickasawhatchee and Spring Creeks (USFWS, 1998). The Apalachicola River basin contains about 27,000 acres of wetlands in the Chipola River floodplain, and 130,000 acres of wetlands in the floodplain and tidal marshes of the Apalachicola River (Wharton et al., 1977; Leitman, 1984).

5. Wildlife Resources. The wildlife resources found in the ACF basin vary greatly with the vegetative community, although some generalist species, such as white-tail deer, raccoon, Virginia opossum, and grey squirrel are found throughout the basin in a number of habitat types. Habitat types within the basin include mixed hardwood forests, rock outcrops, grasslands, longleaf pine-turkey oak sandhill communities, bottomland hardwood forests, and maritime communities.

Because the proposed action would most directly affect wildlife resources occurring in or directly associated with flow or water levels on the Apalachicola, Chattahoochee and Flint Rivers this section will focus on wildlife associated with aquatic and riparian habitats.

a. Aquatic Fauna: The ACF basin supports a wide variety of aquatic vertebrates requiring freshwater to complete their lifecycles, including aquatic turtles, salamanders, frogs, snakes, lizards and the American alligator in the Apalachicola River. Invertebrates also comprise a significant percentage of the biomass in the basin. Aquatic insects probably constitute the largest and most diverse group of aquatic invertebrates in the basin. However, research into the aquatic insects is limited and comprehensive data regarding taxa and habitat throughout the ACF basin is not available. The Apalachicola and Flint Rivers also support a

large number of endemic freshwater gastropods and bivalves including several federally listed threatened and endangered species.

The Apalachicola Bay supports an important commercial fishery for American oyster, penaeid shrimp (brown, white, and pink shrimp), and blue crab. The bay accounts for approximately 90 percent of the oysters harvested in Florida. In addition to the commercial value of the oyster itself, the oyster reefs of the Apalachicola Bay estuary support numerous fish and aquatic invertebrates that are important components of the estuarine foodweb.

b. Terrestrial Fauna: As described above, the basin exhibits a range of habitats and conditions and thus supports a commensurate variety of terrestrial vertebrates and invertebrates. Generally, the floodplain can be divided into a detritus-dominated aquatic area that graduates to drier, upland areas as elevation and distance from the aquatic community increases. The near-upland areas of floodplain forests typically support a greater diversity of animals than the wetter areas because they provide greater amounts of food for herbivorous and omnivorous species.

6. Threatened and Endangered Species. In the June 2008 BO on the RIOP, the USFWS identified 37 threatened and endangered species (including critical habitat if designated or proposed) that occur in the ACF River Basin. In the BO, it was determined that due to the nature of proposed action (RIOP operations), only those species that depend primarily on riverine habitat are likely to be effected and there should be no effect or an insignificant effect (*i.e.*, any impacts should never reach the scale where take occurs) on all but the riverine- and estuarine-dependent species occurring in the project area. Only the federally threatened Gulf sturgeon and federally endangered fat threeridge, federally threatened purple bankclimber, and federally threatened Chipola slabshell mussels and designated Gulf sturgeon critical habitat and designated critical habitat for the mussels were identified to possibly be effected by the proposed action. The BO provides a detailed and current description of the status and distribution of these species in the project area, and thus they are incorporated by reference here. The temporary minimum flow reduction at Peachtree Creek is also likely to only affect those species that depend primarily on riverine habitat. By email dated 27 October 2008, the USFWS stated that no Federal threatened or endangered species are known to occur in the project area above West Point Dam.

7. Historic and Archeological Resources. During preparation of the 1998 draft Water Allocation for the ACF River Basin EIS, the Mobile District completed a basinwide evaluation of cultural resources to summarize the existing conditions and to estimate the potential impacts on the resources from a change in water management. No site-specific surveys were completed. Instead, the Corps used an extensive literature search and predictive modeling based on information provided by the Alabama, Georgia, and Florida State Historic Preservation Office site files to evaluate cultural resources at a programmatic level. The area of cultural resources in the ACF basin encompasses a wide range of phenomena, including:

- Archaeological sites — artifact concentrations, features, or structural remains

- Standing structures — commercial or residential dwellings, schools, bridges, or other facilities
- Landscapes and multiple resources — battlefields, rural or residential districts, and associated groups of buildings, facilities, or communities
- Traditional cultural properties — places of particular traditional importance to Native Americans
- American communities or tribes

The Corps identified three types of effects that would be expected to occur in association with water management activities. These effects include erosion that removes soil or other material that protects or supports a resource, deposition of sediment or other materials to a resource, and any effect that allows access to a resource. Coordination conducted during previous EPD requests for reduced minimum flows has not identified any historic and archeological resources with potential to be impacted in the project area.

8. Soils/Sediments. Soils of the ACF basin are divided into six major land-resource areas, formerly called soil provinces. Four of these, the Southern Piedmont, Georgia Sand Hills, Southern Coastal Plain, and Eastern Gulf Coast Flatwoods land-resource areas, cover 97 percent of the basin. The Southern Piedmont is dominated by ultisols, which are acid and low in nitrogen and phosphorous. These soils generally lack the original topsoil because of erosion that began with intensive cultivation of cotton in the 1800s (Wharton, 1978).

Soils in the Southern Coastal Plain and the Georgia Sand Hills land-resource areas are derived from marine and fluvial sediments eroded from the Appalachian and Piedmont Plateaus. Ultisols are found throughout Southern Coastal Plain, with the exception of some areas in the Georgia Sand Hills and Dougherty Plain where entisols are locally present.

The Eastern Gulf Coast Flatwoods land-resource area, which comprises much of the Apalachicola River basin, is dominated by spodosols, which are poorly to very-poorly drained (Couch et al., 1996).

The two most significant ongoing processes that can impact the stability of soils in the area of the ACF basin are erosion and sedimentation. In river environments, erosional areas occur along unstable slopes, on the cut banks in stream bends, along reservoir banks, and in other areas where waters travel at velocities high enough to pick up the soil or rocks. Also, rapid water level fluctuation can contribute to increased bank erosion. While erosion is a natural process, variations in flow rates can seriously affect localized areas in which stream banks are cut further back, structural features are undermined, or slopes become unstable and dangerous. Similar patterns of induced erosion are also associated with increased fluctuations in reservoir levels. In contrast, deposition, sedimentation, or siltation occurs when the velocities of flowing water are reduced and can no longer carry the suspended load of soil and rock. Deposition can occur under a variety of conditions, such as when a stream enters a larger water body or shallower

environment, or floods onto a broader flood plain, or when flows are reduced as a result of surface water withdrawal from the channel or surface water losses to groundwater (USACE, 1998).

9. Hazardous and Toxic Materials. Predominant land uses in the ACF basin include forest land (66.0 percent), agricultural production land (24 percent), and residential (6.0 percent). A USEPA review of published accounts of abandoned contaminated waste sites on the USEPA National Priorities List (NPL) identified four contaminated sites of sufficient concern to apply Superfund Criteria and warrant listing on the NPL. However, none of these four sites is situated along main river channels that may be affected by the recommended plan or alternatives. There are no anticipated environmental consequences to surface water quality due to the presence of the Superfund sites (USACE, 1998).

3. DESCRIPTION OF THE RECOMMENDED ACTION

The recommended action is to temporarily reduce the water quality flow requirement at Peachtree Creek, which would allow the immediate reduction in water quality releases from Buford Dam in order to meet a reduced minimum flow measured at Peachtree Creek from an instantaneous daily flow value from 750 cfs to 650 cfs and continue to operate for this value during the cooler water months until as late as 30 April 2009. Beginning 1 May (or earlier if monitoring data determines higher flows are necessary to meet water quality standards), releases for water quality from Buford Dam would be made to meet a minimum instantaneous daily flow value of 750 cfs. The proposed action also includes a temporary waiver from the existing ACF Water Control Plan to allow a reduction in the minimum flow agreement which specifies maintenance of a minimum instantaneous daily flow value of 750 cfs in the Chattahoochee River measured just upstream of the confluence with Peachtree Creek.

Consistent with previous requests, the Georgia EPD has agreed to use a monitoring and adaptive management approach regarding the minimum water quality flow requirement as actual water quality data is collected and as other actual data and information become clear. In addition, the Corps will coordinate closely with the Atlanta Regional Commission (ARC) regarding daily withdrawals for the City of Atlanta intake in order to ensure that we are making releases that provide at least the minimum flow at Peachtree Creek at all times. A detailed description of the EPD monitoring program and adaptive management approach is provided below. The information provided in the description is based on the supplemental information included in the 10 October request and a meeting between the Corps, EPD, and U.S. Environmental Protection Agency (EPA) staff on 6 November 2008).

DO Monitoring - The EPD will continue to monitor DO at Capps Ferry, near the Dog River, a location that the EPDRIV 1 model consistently predicts the occurrence of the minimum DO concentration. Monitoring activities at this site during the spring of 2008 utilized membrane sondes in order to measure and record DO. However, field observation and analysis of data from the membrane sondes at the time of retrieval each week indicated that siltation of the sonde

membranes was resulting in false low DO readings. Therefore, in August 2008, EPD began deploying luminescent dissolved oxygen (LDO) sondes which are less prone to siltation effects than membrane sondes. Subsequent analysis indicates that the accuracy and quality of data collected by the LDO sondes is improved compared to the membrane sondes and the data demonstrates a high degree of correlation with the U.S. Geological Survey (USGS) Fairburn gage data at Highway 92 approximately 10 miles upstream from Capps Ferry. Additionally, in order to minimize the effects of siltation on the sondes, and obtain more representative samples of water flowing past Capps Ferry, EPD has move the monitoring location closer to the main channel. EPD will continue the DO monitoring at Capps Ferry with weekly data retrieval and review. The data will be posted to the EPD website the week following retrieval with DO results plotted against the 2008 model predictions. Data from the USGS Fairburn gage will also be plotted against the model predictions and posted. Prior to posting, each data set will be reviewed for anomalies and examined with respect to events in the watershed such as precipitation, spills or combined sewer overflow events that may have contributed to or be indicators of significant drops in DO concentrations.

In addition to the weekly review of DO data collected a Capps Ferry, the EPD will also monitor the discharges recorded at the USGS Vinings gage daily. Whenever flows are less than 900 cfs (a discharge value at this gage generally equivalent to a 750 cfs flow at Peachtree Creek downstream), then EPD staff will monitor the realtime water quality data at the USGS Fairburn gage at Highway 92. If DO concentrations less than the standard are observed at this gage, then EPD will retrieve the Capps Ferry data and notify the Corps. If upon review of the data it is determined that additional releases from Buford are needed to protect the water quality standard, then the 750 cfs minimum flow requirement at Peachtree Creek will be reinstated until EPD determines that the 650 cfs minimum flow can again be temporarily implemented.

Temperature Monitoring – The EPD will continue to coordinate with the Wildlife Resources Division (WRD) to monitor water temperature as needed and provide for timely opportunity to intervene in the event that temperatures rise to levels of concern for the fishery. Because adverse temperatures generally do not begin to occur below Morgan Falls Dam until mid-March, EPD will consult with WRD regarding an appropriate strategy for temperature monitoring and reporting prior to that time. In addition, EPD will also continue to communicate with WRD and the Corps regarding maintenance of adequate river elevations at the intake for the Buford Hatchery.

Nutrient Monitoring in West Point Lake – The EPD will continue to coordinate with the City of LaGrange in their continuing efforts to monitor nutrients in West Point Lake including coordination of sampling events, data sharing and sampling and laboratory assistance. All data will be evaluated by EPD to determine if there is any indication of increases in nutrient loading that could result in a violation of the lake standards. EPD will also continue monitoring Chlorophyll a concentrations in West Point Lake at the LaGrange intake. This monitoring will serve as a validation to some of the recently reported increased Total Nitrogen concentrations in the upper third of the lake. Although it appears that these high readings are due to a relatively

high acceptable bias (15-20%) for the probe method utilized and that they are not representative of the ambient quality of the lake, the Chlorophyll a monitoring can be used as an additional indicator of increased Nitrogen levels as Chlorophyll a levels increase as more Nitrogen is available.

In addition to the sampling in the lake, EPD will also continue monthly monitoring of Nitrogen levels in the Chattahoochee River upstream of West Point Lake at McGinnis Ferry, DeKalb intake, Cobb intake, Atlanta intake, Bankhead Highway, and Highway 92.

NPDES Permitted Discharges – Within 1 business day of Corps approval of the request for reduced flows, all permittees will be advised by EPD that reduced flows are in effect and they will be reminded of the importance of complying with permit conditions that require timely notification to EPD and other parties of conditions at their facilities and in their service areas that could result in water quality impairments.

Water Supply Intakes - Within 1 business day of Corps approval of the request for reduced flows, all permittees will be advised that reduced flows are in effect, that they should monitor their intakes as needed, and that any indication of problems associated with reduced flows should be reported to EPD immediately.

EPD Notice to Corps – The EPD would inform the Corps as soon as possible upon the discovery of any conditions related to the above actions that indicates the need for resumption of minimum flows at Peachtree Creek to 750 cfs.

4. ALTERNATIVES TO THE RECOMMENDED ACTION

“No Action” Alternative (Alternative 1)

The CEQ regulations require analysis of the “no action” alternative 40 C.F.R. § 1502.14. Based on the nature of the proposed action, “no action” represents “no change” from the current water management practices at Buford Dam, and no change from the existing minimum flow requirements described in the Apalachicola Basin Reservoir Regulation Manual-Appendix B - Buford Dam (1991) would be made. Therefore, under the “no action” alternative, the Corps would continue to make releases from Buford Dam in order to meet the 750 cfs instantaneous minimum daily flow value at Peachtree Creek while operating consistent with the existing water control plan and the RIOP operations. This alternative fails to take advantage of the cool weather months allowing for a potential reduction on the demand of valuable stored water in Lake Lanier. Therefore, additional alternatives were considered.

Additional Conservation (Alternative 2)

This alternative represents the implementation of additional water conservation requirements by EPD on water suppliers and users. The EPD provided information regarding three currently ongoing major initiatives aimed at reducing water demand in the Chattahoochee and Flint River Basins in Georgia. Two of these initiatives primarily focus on implementing longer-term

conservation water management planning, 1) water planning by the Metropolitan North Georgia Water Planning District, and 2) implementation of the State-wide Water Management Plan. The third initiative, the Level IV Drought Response Measures currently in effect in 55 North Georgia counties, has successfully reduced short-term water demands. In response to extreme drought conditions throughout the northern one-third of Georgia, the Director of EPD, in consultation with the State Drought Response Committee and the State Climatologist, imposed Level IV outdoor watering restrictions throughout the 55 county Level IV Drought Response Area beginning in September 2007. Under Level IV most outdoor water use is banned or severely restricted. In addition to imposing Level IV watering restrictions, from November 2007 through March 2008, EPD also ordered all permitted water supply systems in the Level IV area to reduce their water use by at least 10% when compared to the same period for the previous year. Since November 2007 water use in the Level IV area has been reduced by an average of 16% when compared to the same period for the previous year. Metro-Atlanta water systems that get their water from the Chattahoochee River or Lake Lanier have been under the most stringent outdoor water use restrictions. As a result, during the period of May 2008 through September 2008, metro water users reduced water use by an average of 23% when compared to the same period for the previous year. Monthly water use data and other information related to the state's drought response efforts can be found on EPD's website at:

<http://www.gaepd.org/Documents/outdoorwater.html>

The additional improvements to water conservation and lower demand envisioned in the other two initiatives are not immediately implementable and do not address the urgent need to conserve storage in Lake Lanier now. EPD has also determined that imposing additional restrictions and/or lowered demands within the Level IV Drought Response Measures is not feasible at this time. Therefore, additional alternatives were considered.

Refine River Management System (Alternative 3)

This alternative represents a refinement of the current "River Management System" agreement established in 1986 in order to avoid over releases and conserve storage. Under the agreement, the Corps whenever possible and practical would endeavor to make only those releases specifically required for water supply and maintaining the 750 cfs minimum instream flow at Peachtree Creek. Georgia Power Company agreed to continue to use Morgan Falls reservoir to re-regulate Buford releases. Corps staff has identified two refinements that could improve our ability to meet the intention of the agreement and conserve storage. The first refinement requires the Atlanta Regional Commission (ARC) to provide water supply projections more frequently than the current 7-day time step. The current time step locks Georgia Power Company, per FERC license requirements, into minimum daily releases that do not account for precipitation events and intervening tributary inflows that were unanticipated at the time the projection was made. A 2-3 day time step would allow for more updated projections and a subsequent savings in storage at Morgan Falls and accordingly Lake Lanier. The second refinement requires real-time water withdrawal data from the City of Atlanta intake located immediately upstream of the confluence with Peachtree Creek. Currently the Corps receives the water withdrawal data as a daily average for the previous day. If the data were available real-time it could be used in conjunction with the discharge values reported real-time at the USGS Vinings gage located

immediately upstream of the City of Atlanta intake to monitor the flow at Peachtree Creek and ensure the 750 cfs minimum instream flow and water supply needs are being maintained without superfluous releases from storage. These refinements in operations to meet flow targets could save significant storage in Lake Lanier; however, they would require a long term commitment of resources and management in order to work effectively. Currently the other parties to the agreement lack the resources and/or commitment to implement these refinements. Therefore, this alternative was not considered further.

5. ENVIRONMENTAL IMPACTS OF THE RECOMMENDED PLAN

The recommended action was designed to allow conservation of water stored at Lake Lanier in anticipation of continuing drought conditions this year and next, while minimizing or avoiding adverse effects to other water resource users in the basin, endangered and threatened species and the overall aquatic environment. To determine the future environmental impacts of the recommended plan, we compare the environmental conditions expected to occur under it to those expected to occur if no action were taken. The recommended plan represents a temporary modification of the “no action” alternative. Since the future hydrologic conditions are unknown, we analyze a range of river flow conditions and reservoir elevations that could occur as a result of three simulated drought conditions under the two Chattahoochee River at Peachtree Creek minimum flow scenarios (650 cfs and 750 cfs). For the purposes of this analysis, we assume that drought conditions will continue throughout 30 April 2009 and have synthesized three flow regime scenarios to represent a range of possible conditions that could be experienced under the recommended plan and “no action”. It should be noted that these synthesized flow regimes are based on continuing drought conditions and thus the hydrological data input into the model represents reasonable “worst case scenario” hydrological conditions. HEC-5 model simulations were run for the “no action” and 650 cfs minimum flow scenarios under the three simulated flow regimes and graphical representations of the results were generated for various analyses (reservoir elevations and river flows). These figures are provided in Appendix A. A detailed description of how this hydrological input data for the model was developed is provided below.

Basin inflow is the amount of water that would flow by Jim Woodruff Dam during a given time period if all of the Corps reservoirs maintained a constant water surface elevation during that period, such that the reservoirs would only release the net inflow into the dam. Basin inflow is not the natural flow of the basin at the site of Jim Woodruff Dam, because it reflects the influences of reservoir evaporative losses, inter-basin water transfers, and consumptive water uses, such as municipal water supply and agricultural irrigation. The “no action” and recommended plan minimum flow scenarios include these influences, and use the same estimates of reservoir evaporation and current water demands; therefore, the difference between these actions is the net effect of continued operation under each alternative including the effect of influences that are unrelated to project operations.

The consumptive water demands used in the models represent an estimate of year 2000 levels of the net depletion due to municipal, industrial, and agricultural water uses and evaporative losses

from the four largest reservoirs, Lanier, George, West Point, and Seminole. These depletions vary by month and in the case of agricultural demands and reservoir evaporation, also by year (wet, normal, dry). These consumptive demand estimates and the other model settings and techniques are consistent with those utilized during the development of the RIOP.

To provide a potential range of flows and reservoir elevations that might be experienced under continuing drought conditions while the recommended plan is in effect, we have utilized three flow scenarios. The HEC-5 model simulates the current Water Control Plan and RIOP reservoir operation using a daily time series of synthesized flow data for a certain period of record and outputs river flow and reservoir levels. For the purposes of this analysis we selected hydrological conditions that represent 1) an unprecedented, exceptional drought applied across the entire ACF basin and continuing without relief throughout the simulated period (referred to as the 10 percent hydrology); 2) an extreme drought that reflects very low incremental flow for inflow into the upper Chattahoochee reaches (between Buford Dam and Whitesburg gage) which is more severe than observed during the critical period (2000-01) prior to the current drought (referred to as the 7Q10 hydrology); and 3) a continuation of the recent trend in hydrology (referred to as the 1988-89 hydrology).

The unimpaired flow data set is a product of the Alabama, Coosa, Tallapoosa (ACT) and ACF River Basins Comprehensive Study, and has been extended to include water years through 2001. Whereas basin inflow is computed to remove the effects of reservoir operations from observed flow, unimpaired flow is computed to remove the effects of both reservoir operations and consumptive demands from observed flow.

The model simulation period is 10 November 2008 to 30 April 2009. The observed elevation for 9 November 2008 is used as the initial elevation for the four ACF reservoirs; Lake Lanier, West Point Lake, Walter F. George Lake and Lake Seminole. The HEC-5 reservoir simulation model uses unimpaired local flow at 25 control points (nodes) as the flow data input for the ACF Model. The Corps' HEC-DSS Vue tool is used to compute the daily 10th percentile local flows at every control point. This synthetic flow data set assumes a uniform distribution of flow throughout the basin based on the local percentile flow. In other words the daily local 10th percentile flow occurs at every location on the same day. The result is a daily time series of the local 10th percentile flows throughout the simulated period. To represent a less severe drought, but still test the system with extreme stress, the 7Q10 level flow was input as inflow to the system for the upper Chattahoochee reaches. The 7Q10 streamflow occurs over 7 consecutive days and has a 10-year recurrence interval period, or a 1 in 10 chance of occurring in any one year. The year 2000 observed data was used for the remainder of the basin in this simulated hydrology. The October and early November 2008 hydrology compares very similarly to the hydrology observed during the fall 1988 and thus the 1988-89 hydrology was selected to represent below normal conditions that could reasonably occur. It is unlikely that the actual hydrology occurring during the simulated period will exactly match these hydrological conditions. However, with the continuing threat of below normal rainfall conditions this fall and winter, it is likely that whatever hydrology occurs could result in a continuation of considerable

depletion of storage at Lake Lanier.

In addition to the Corps models, EPD provided graphical representations of three HEC-5 model simulations run for the “no action” and 650 cfs minimum flow scenarios under two other simulated flow regimes. The first simulated flow regime used the 2007-2008 recorded hydrology reflecting actual withdrawal/return data and the second simulated flow regime used the 2007-2008 recorded hydrology for the Lake Lanier drainage basin, 7Q10 incremental flow hydrology between Buford Dam and Whitesburg, and the actual 2007 withdrawal/return data. The first simulated flow regime was used for two different model runs, one of which included an additional minimum flow requirement at Columbus, GA of 1,850 cfs (1,200 cfs when West Point Lake is below elevation 621.6 feet msl). The other two model runs did not include this additional minimum flow requirement. These figures are provided in Appendix B. Despite the use of different hydrological conditions and consumptive water demands, the EPD model sets show similar results to the Corps models.

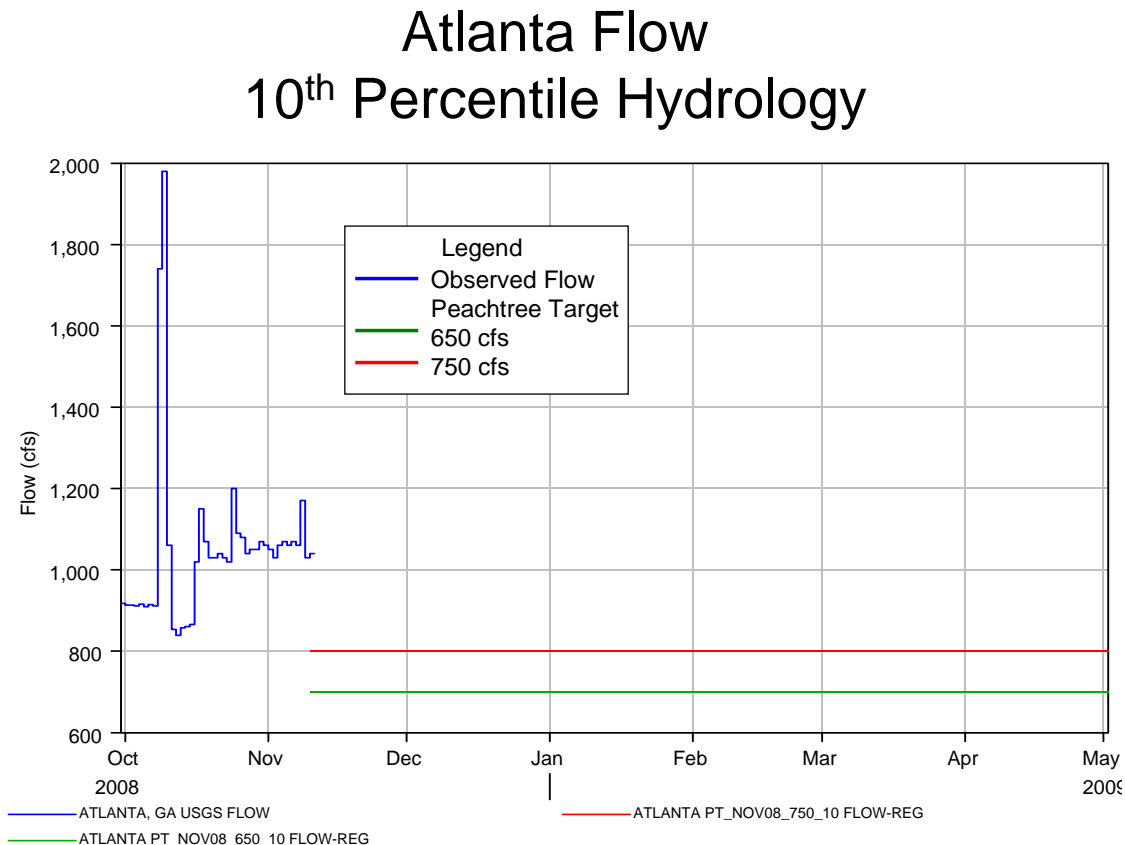
The following describes the range of potential environmental impacts associated with implementation of the recommended plan based on the Corps model results.

1. Hydrology. The purpose of the recommended plan is to conserve storage at Lake Lanier while avoiding or minimizing impacts to downstream reservoirs and water resources. The HEC-5 model results provided in Appendix A and Appendix B illustrate that implementation of the recommended plan could result in a considerable conservation of storage at Lake Lanier without resulting in significantly different reservoir levels at the projects downstream. Under the 10 percent, 7Q10, and 1988-89 hydrological scenarios, the recommended plan results in increases in composite storage of 30,117 ac-ft; 31,391 ac-ft; and 24,452 ac-ft respectively. The changes in storage occur at Lake Lanier and West Point, and essentially no changes occur in the lower reservoirs. The net gain in storage occurs by conserving storage in Lake Lanier, although the recommended plan does result in slightly less storage in West Point Lake. However, most of the differences in storage at West Point Lake occur January-February and while the lake is at or just below the rule curve. The short term loss of storage at West Point during the draw down period is outweighed by the long term benefit of increasing the storage at Lake Lanier for use in augmenting flows below Buford Dam during the critical summer and fall months in 2009.

In order to assess the hydrological impacts of the minimum flow scenarios in the Chattahoochee and Apalachicola Rivers, we compare the simulated flows at three gage locations that roughly represent the upper, middle, and lower basin. The upper basin location is the USGS gage located on the Chattahoochee River approximately 2 ½ miles upstream of the Peachtree Creek confluence near Atlanta, GA. The middle basin location is the USGS gage located on the Chattahoochee River near Columbus, GA, approximately 84 miles upstream from W.F George Dam. The lower basin location is the USGS gage located on the Apalachicola River near Chattahoochee, FL. The HEC-5 model results for these locations are provided in Figure 3 below. Reduction of the minimum flow requirement at Peachtree Creek results in essentially no change to river flows in the middle and lower basin under all hydrological scenarios. Changes in

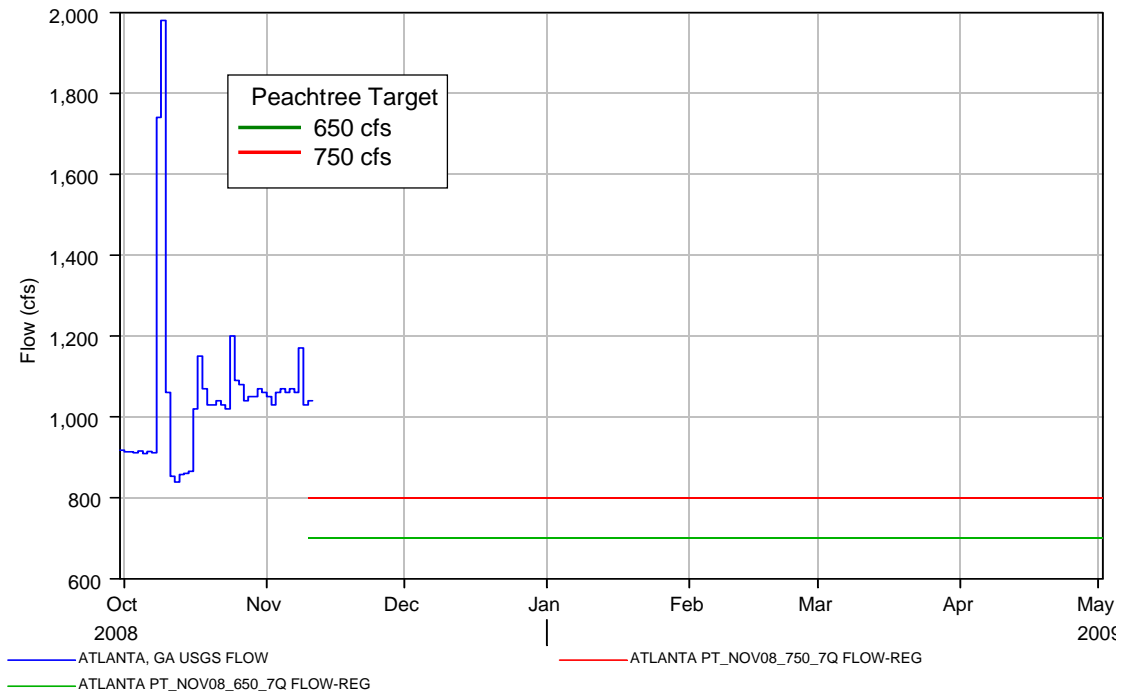
Chattahoochee River flow at the Atlanta gage are generally dependent on the minimum flow requirement in place. Implementation of the recommended plan will not significantly impact the hydrology of the Chattahoochee River, Apalachicola River and bay system, or the reservoirs downstream of Lake Lanier.

Figure 3. HEC-5 Simulated River Flow at Atlanta, Columbus, and Chattahoochee Gages.



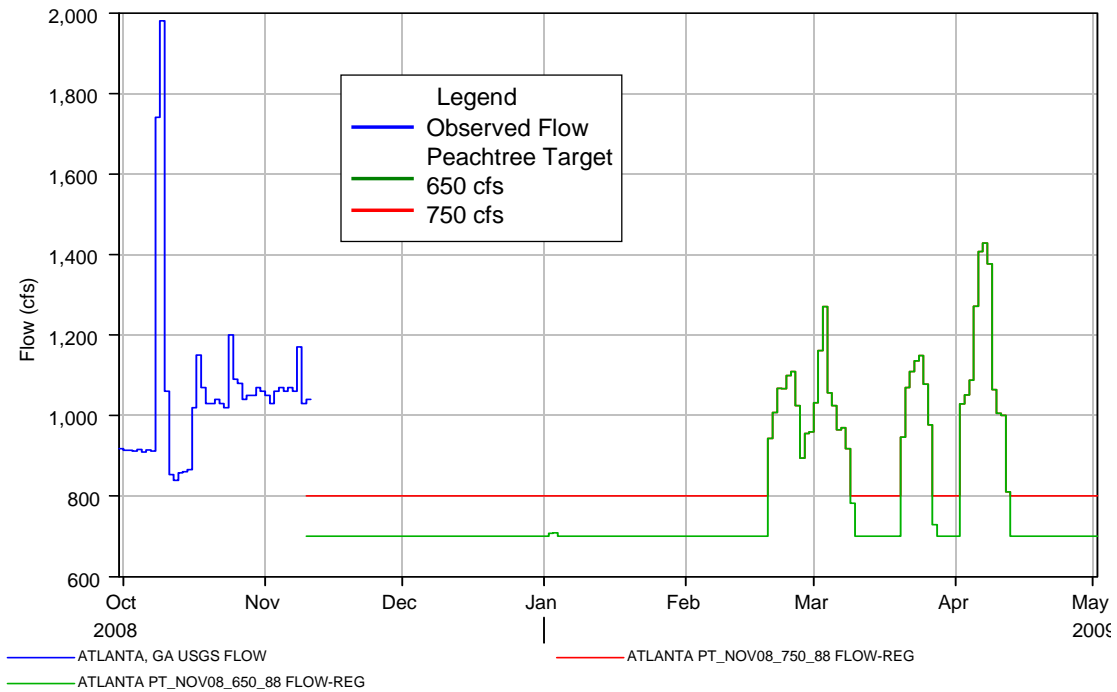
Note: The observed flow does not include the river withdrawal between the Atlanta gage and Peachtree Creek confluence. However, the modeled results are inclusive of that river withdrawal.

Atlanta Flow 7Q10 Hydrology



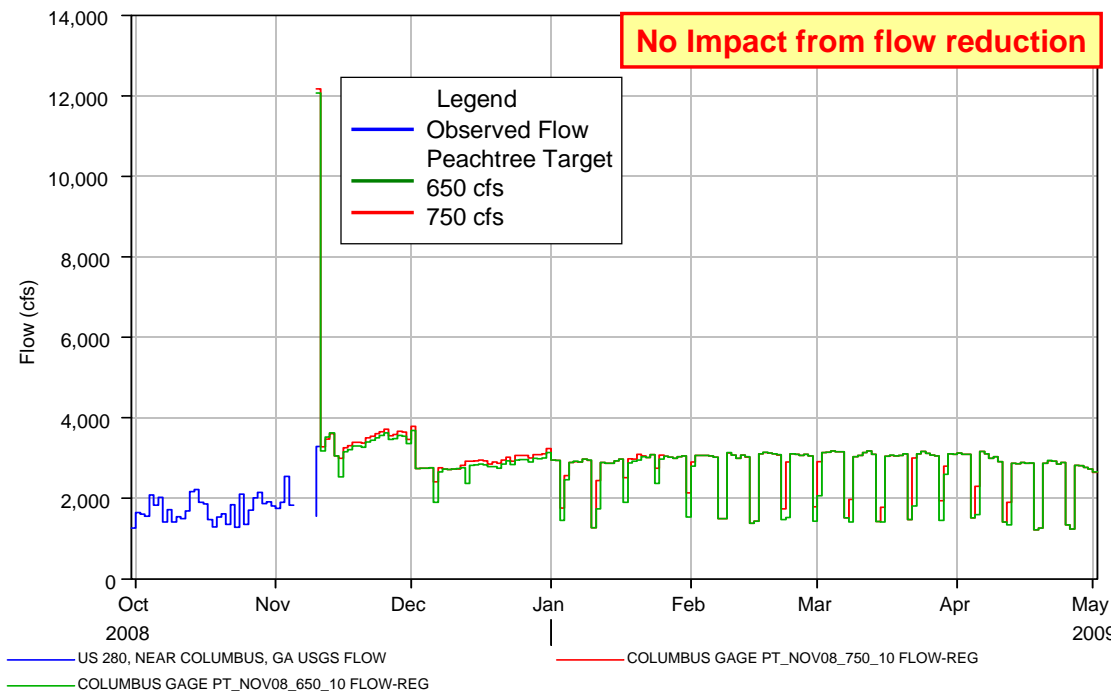
Note: The observed flow does not include the river withdrawal between the Atlanta gage and Peachtree Creek confluence. However, the modeled results are inclusive of that river withdrawal.

Atlanta Flow 1988-89 Hydrology

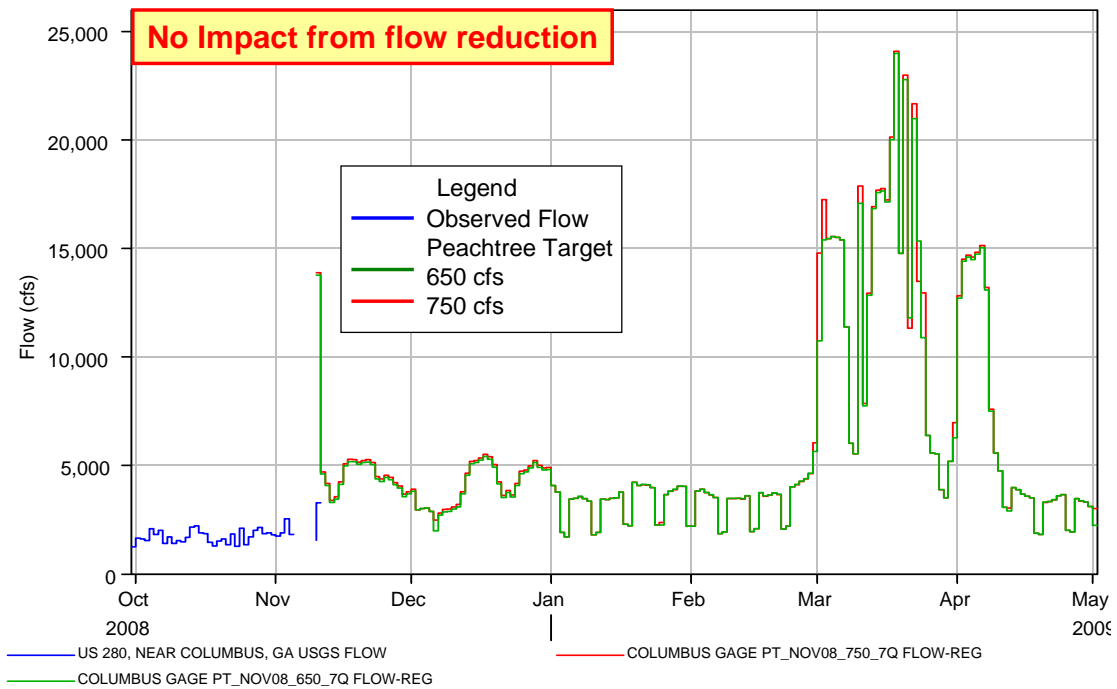


Note: The observed flow does not include the river withdrawal between the Atlanta gage and Peachtree Creek confluence. However, the modeled results are inclusive of that river withdrawal.

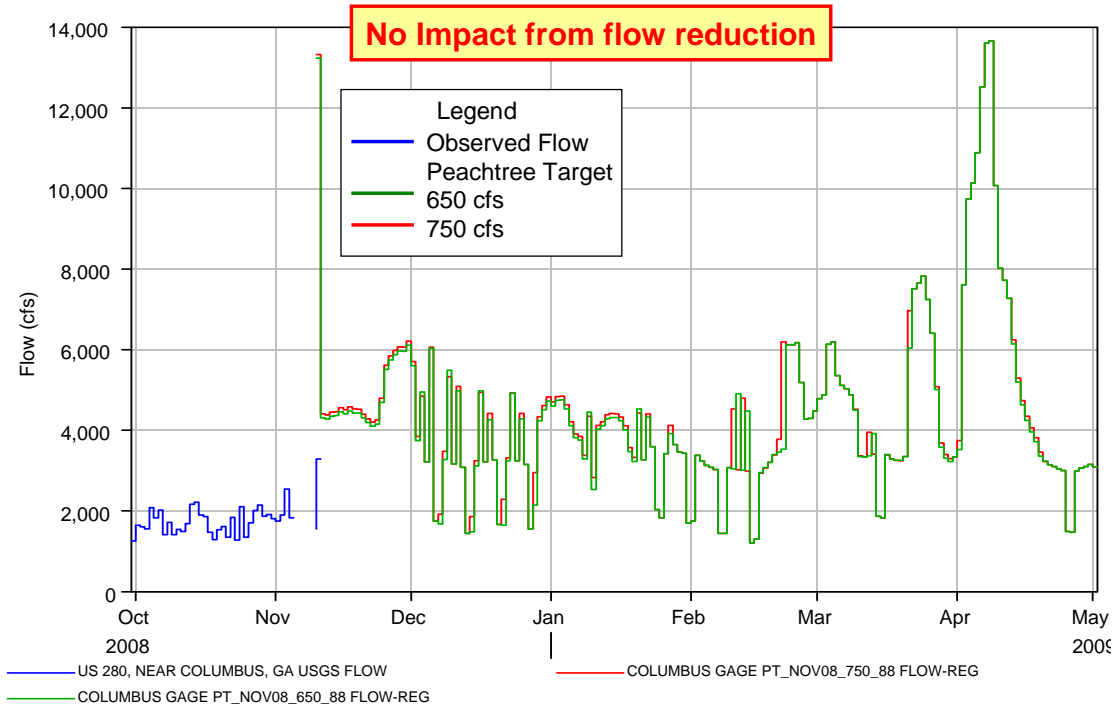
Columbus Flow 10th Percentile Hydrology



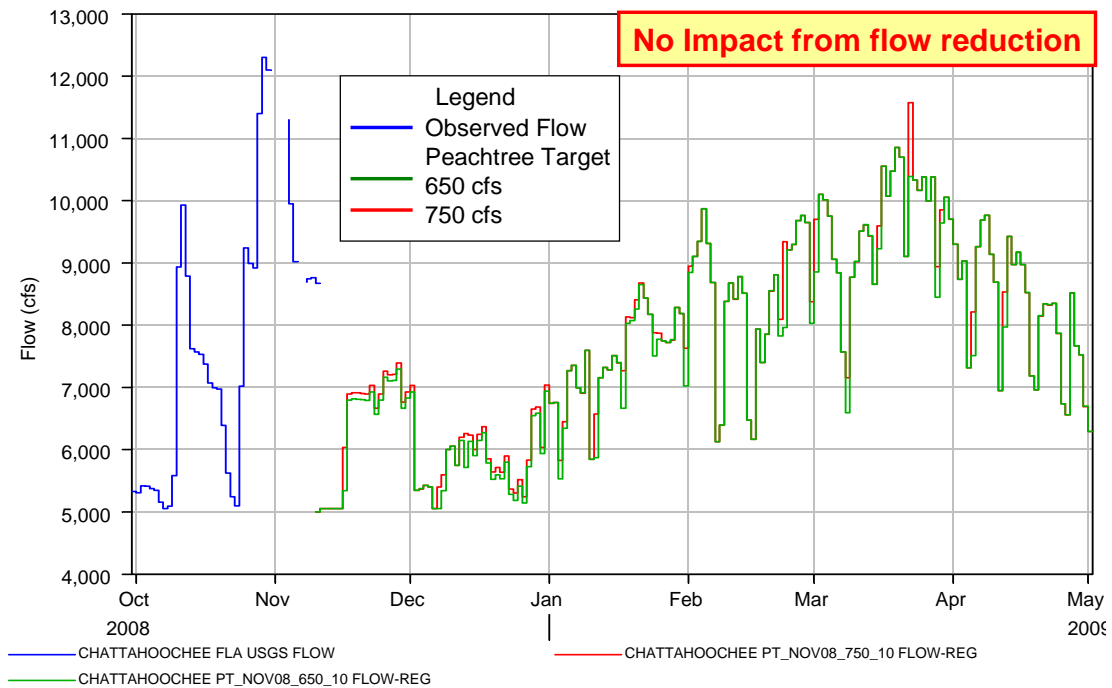
Columbus Flow 7Q10 Hydrology



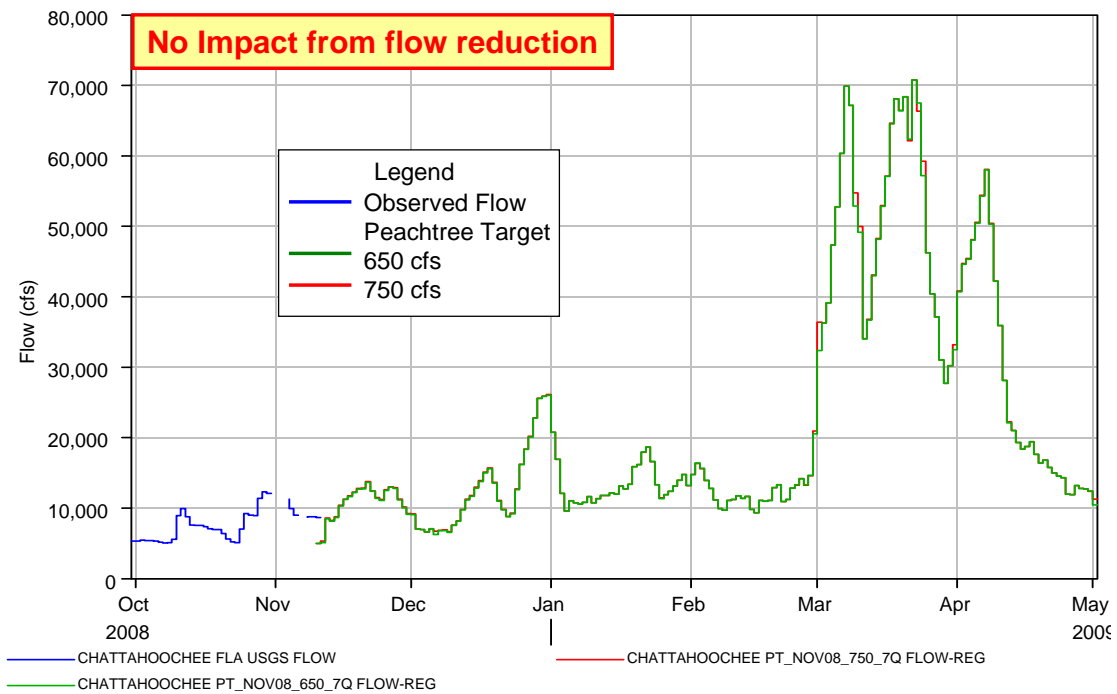
Columbus Flow 1988-89 Hydrology



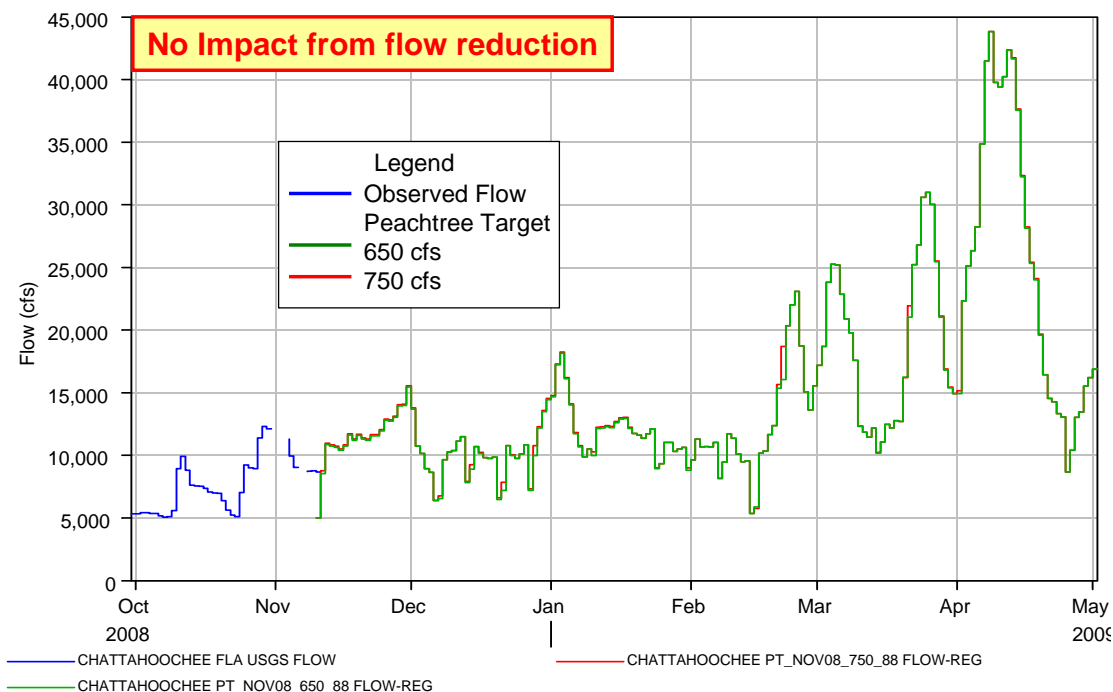
Chattahoochee Flow 10th Percentile Hydrology



Chattahoochee Flow 7Q10 Hydrology



Chattahoochee Flow 1988-89 Hydrology

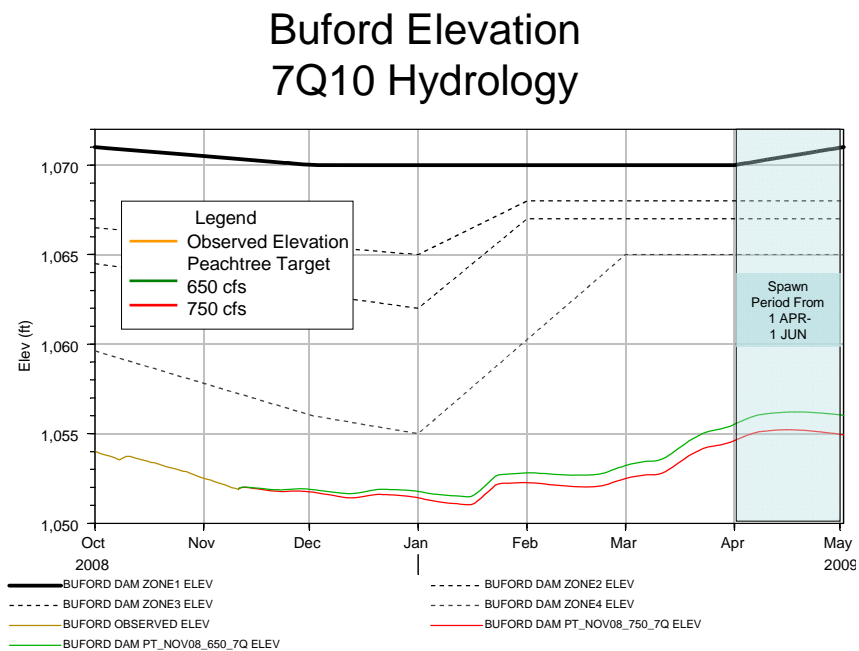
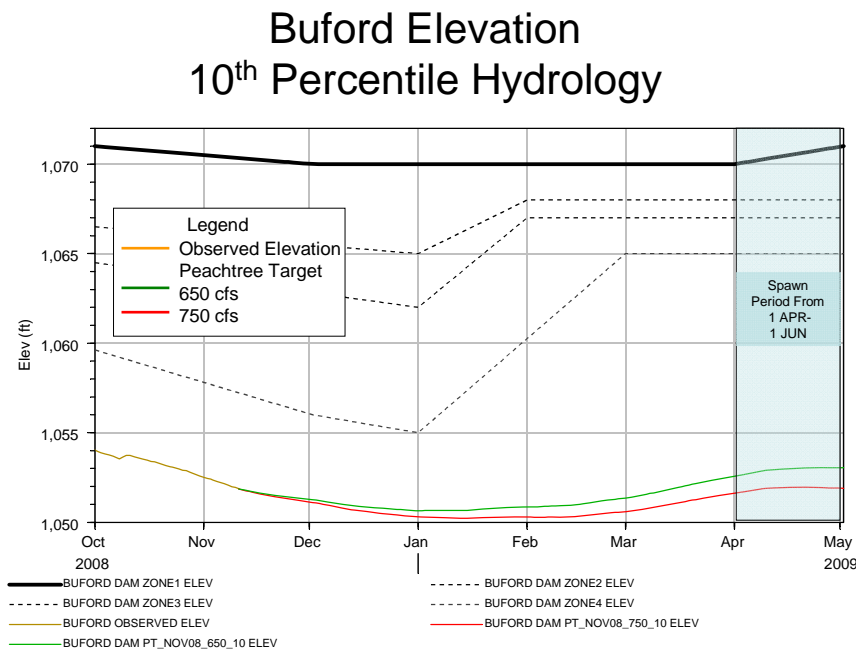


2. Physical Impacts. Physical habitat conditions in the project area are largely determined by flow regime. As described in the Hydrology section above, implementation of the recommended plan will not significantly alter the flow regime in the basin. It is unlikely that erosion rates will increase in the upper basin in response to the relatively minor short term reduction in flows. Increased erosion is generally attributable to significant changes of the flow regime or reduction in sediment supply, which are not likely to occur as a result of the recommended plan. We have no ability at this time to predict specific effects on channel morphology due to the influence of the recommended plan on the flow regime. However, generally channel morphology alterations are more closely associated with increased duration and frequency of high flow events rather than low flow events associated with the recommended plan. Moreover, the recommended plan is not expected to adversely impact stream channel stability; nor alter bottom substrates or result in significantly altered erosion or sedimentation rates. Therefore, the recommended plan will not significantly impact physical habitat conditions in the project area including conditions within critical habitat areas.

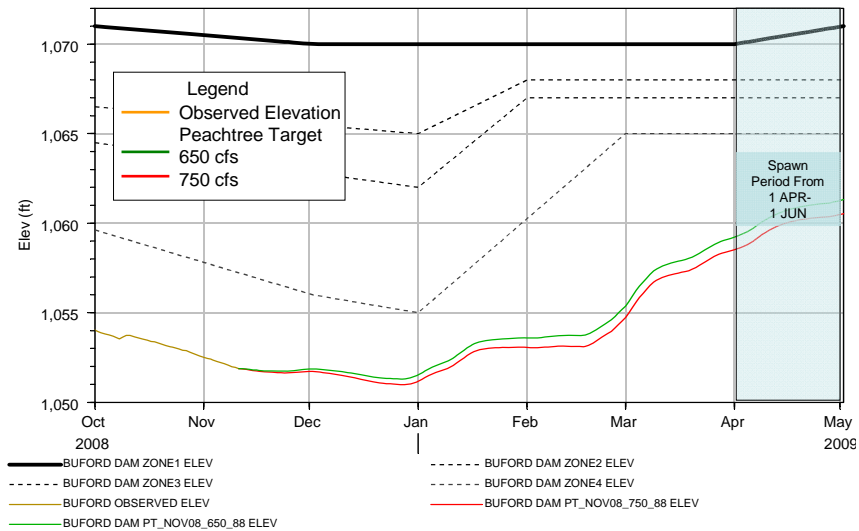
3. Fisheries. The recommended plan is consistent with the Division Regulation DR 1130-2-16 and draft CESAM SOP 1130-2-9 regarding project operations in support of reservoir fish management. The goal of the SOP is to manage the reservoir conditions such that they are relatively stable or rising for a minimum 4-6 week period within the principal fish spawning period for each project site; while also providing for relatively stable or gradually declining Apalachicola River stages for a minimum designated period (Table 4). A review of Figure 4 indicates that the 4-6 week goal for holding steady or rising levels at the reservoirs and steady or declining river levels is not impacted by implementation of the recommended plan or alternatives.

Table 4. Project Specific Principal Fish Spawning Period for Operational Considerations.

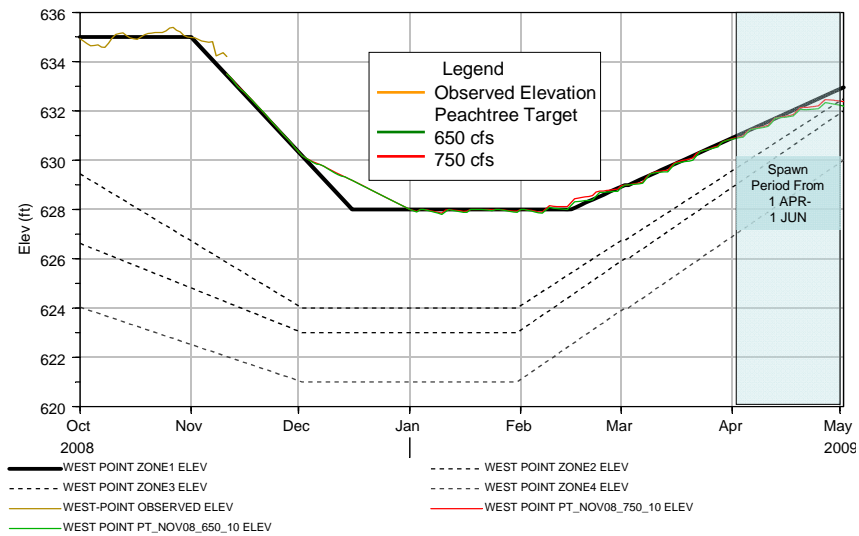
Project	Fish Spawn Period
Lake Lanier	01 Apr – 01 Jun
West Point	01 Apr – 01 Jun
Walter F. George	15 Mar – 15 May
Lake Seminole	01 Mar – 01 May
Apalachicola River	01 Apr – 01 Jun

Figure 4 – Fish Spawn Analysis for the Simulated Reservoir Elevations and River Flows.

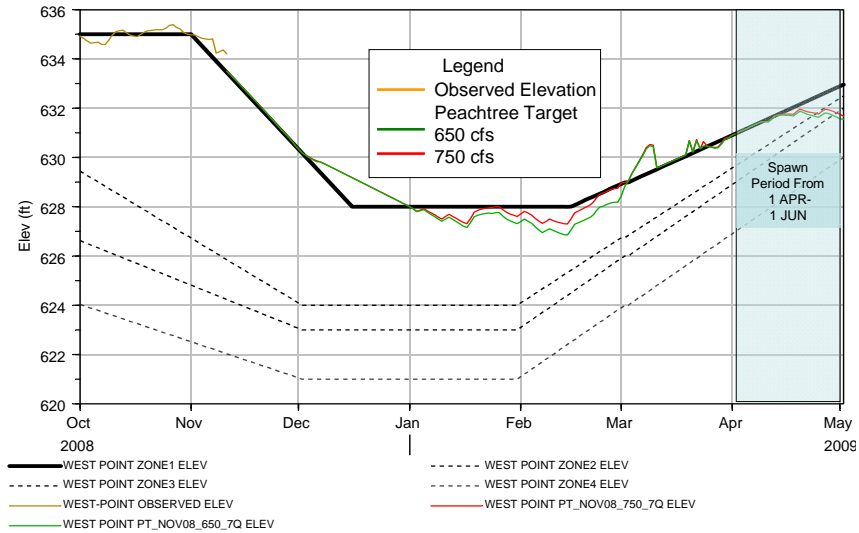
Buford Elevation 1988-89 Hydrology



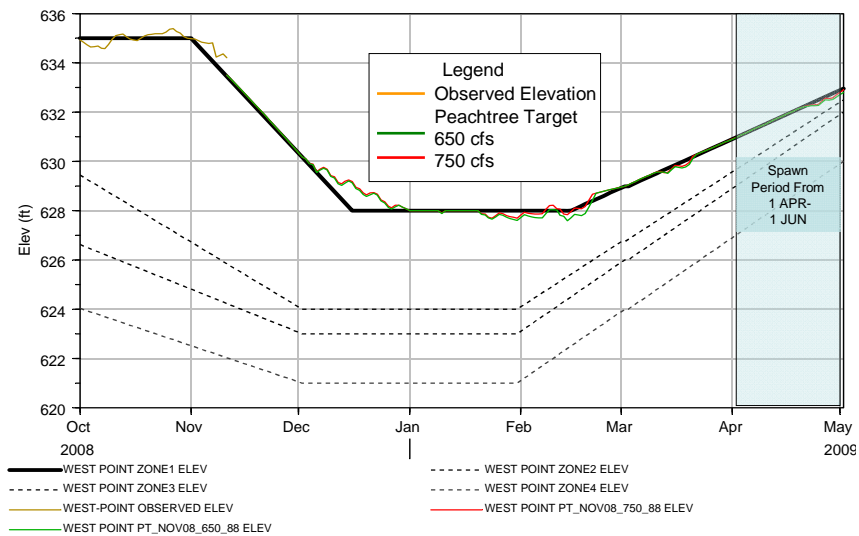
West Point Elevation 10th Percentile Hydrology



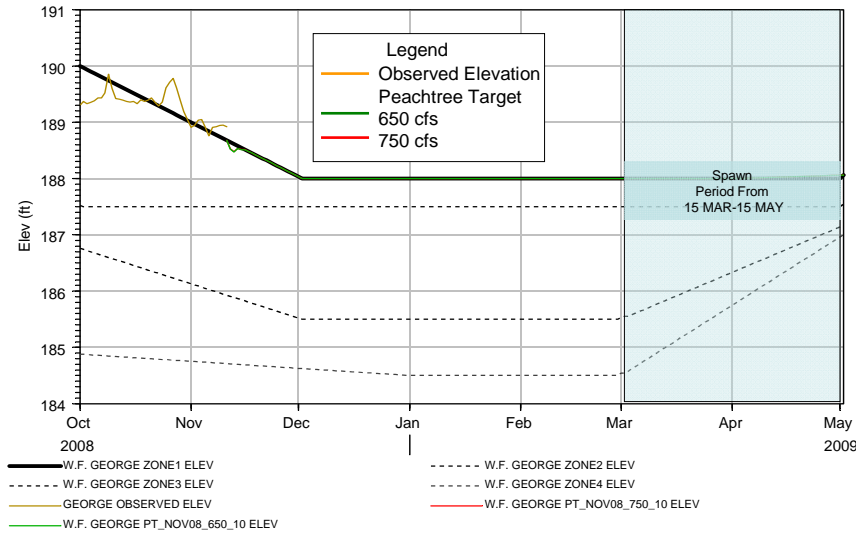
West Point Elevation 7Q10 Hydrology



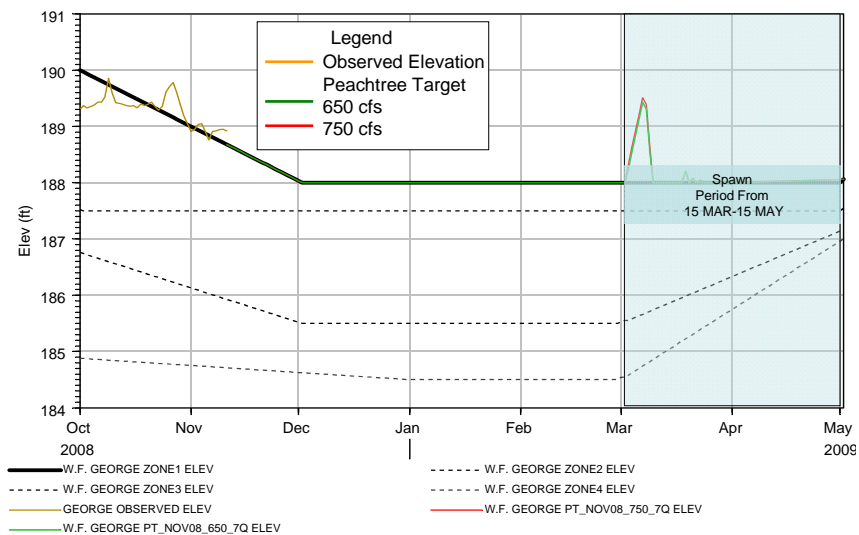
West Point Elevation 1988-89 Hydrology



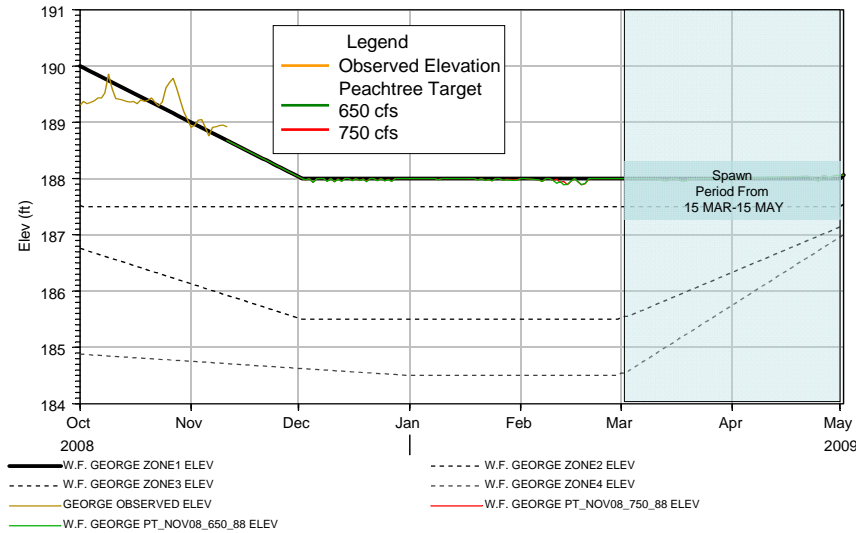
W.F. George Elevation 10th Percentile Hydrology



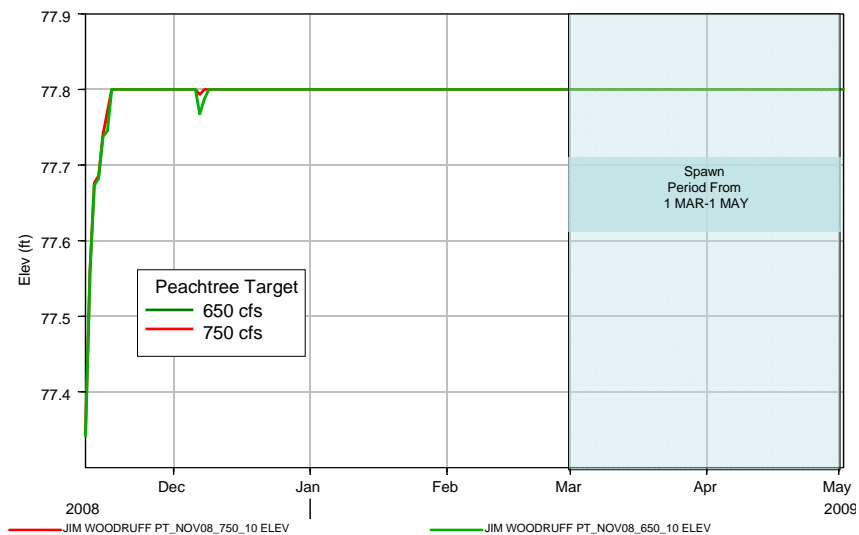
W.F. George Elevation 7Q10 Hydrology



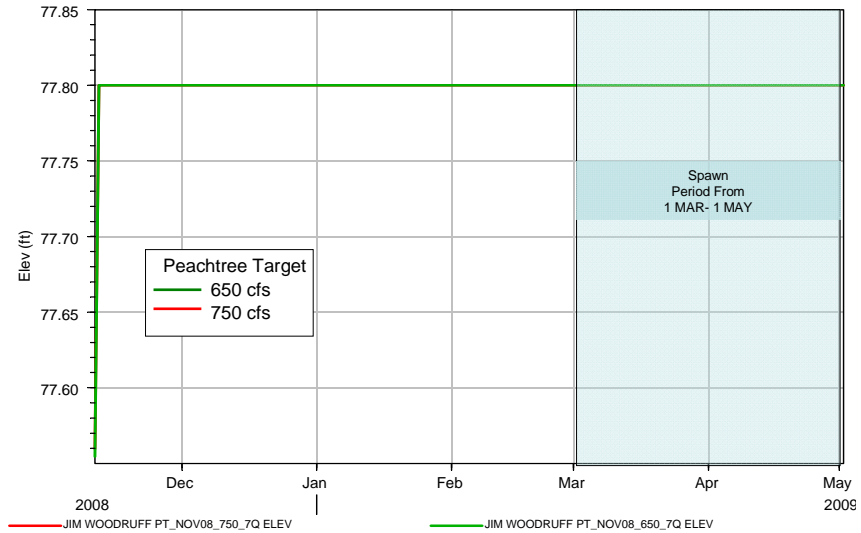
W.F. George Elevation 1988-89 Hydrology



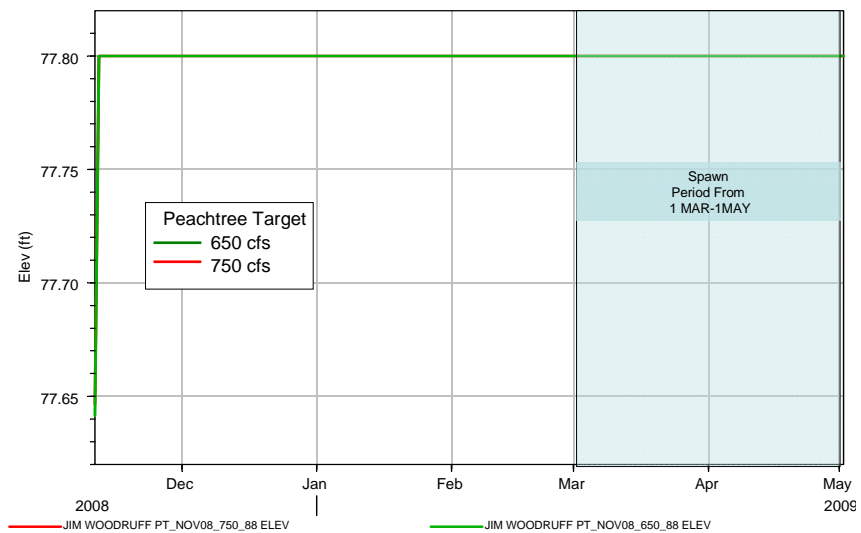
Jim Woodruff Elevation 10th Percentile Hydrology



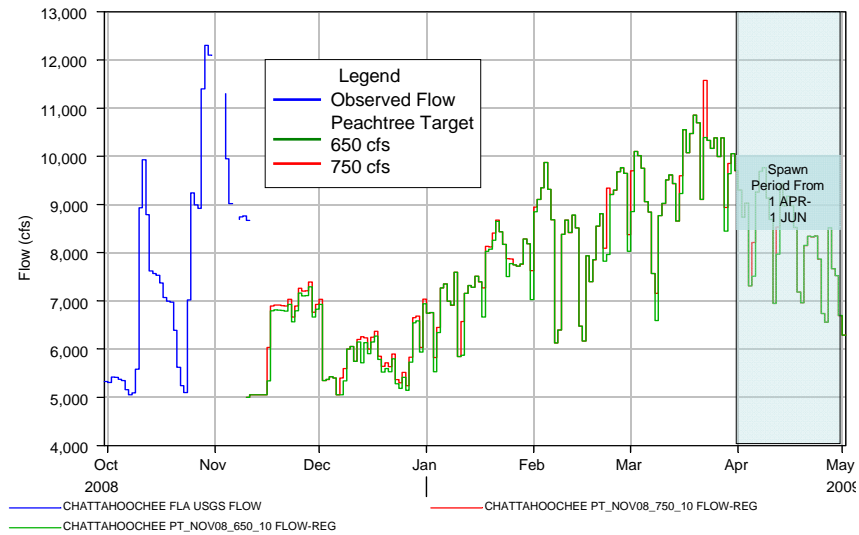
Jim Woodruff Elevation 7Q10 Hydrology



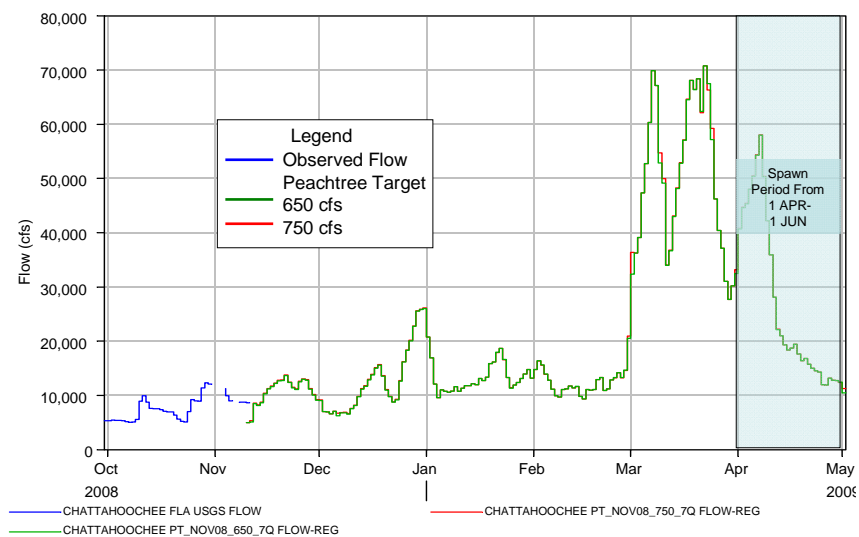
Jim Woodruff Elevation 1988-89 Hydrology



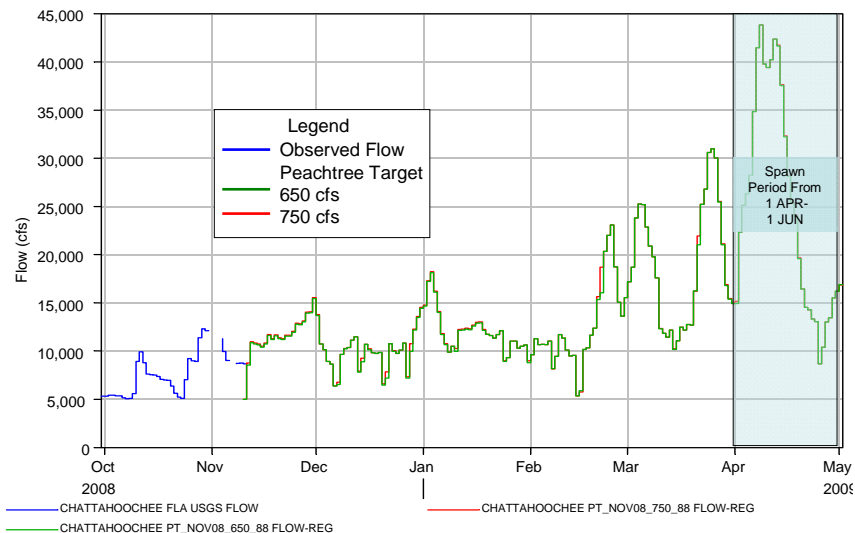
Chattahoochee Flow 10th Percentile Hydrology



Chattahoochee Flow 7Q10 Hydrology



Chattahoochee Flow 1988-89 Hydrology



As described above, the Chattahoochee River between Buford Dam and I-285 West has been classified by EPD as a secondary trout stream and thus is regulated by certain water quality criteria. In a letter dated 23 October 2008, WRD re-stated previous issues of concern regarding a reduction in the minimum flow at Peachtree Creek: 1) maintenance of adequate river flows at the intake of the Buford Trout Hatchery and 2) protection of the trout fishery downstream of Buford Dam. EPD and the Corps are aware of these concerns and per the adaptive management provisions of the recommended plan, during implementation, the Corps will coordinate closely with EPD and WDR regarding releases from Buford Dam and will adjust releases accordingly should any unanticipated impacts to the trout hatchery or fishery resources occur. Previous reductions to the minimum flow at Peachtree Creek, including those earlier this year, have not resulted in adverse impacts to the trout hatchery or fishery. It should be noted that in the past, releases as low as 450 cfs have been made from Buford Dam while still maintaining the minimum flow provision at Peachtree Creek due to intervening flows from tributaries and water returns between the dam and Peachtree Creek. We are not aware of any impacts to fishery resources associated with releases from Buford in this range. In order to realize the maximum benefit to storage of this short term operational change, flexibility in the minimum releases from Buford Dam is required. However, releases less than 450 cfs would not occur, as the impact to fishery resources associated with flows less than this value are not known.

As described in the Hydrology section above, river flows and reservoir levels below West Point Dam are essentially the same under the two minimum flow scenarios and thus the impacts to fishery resources in these areas are the same also. Implementation of the recommended plan is

not anticipated to result in any significant impact to fisheries in the ACF basin.

4. Essential Fish Habitat. Implementation of the recommended plan will not significantly impact hydrology or water quality in the Apalachicola River or Bay. As demonstrated in the Hydrology section above, neither of the minimum flow scenarios result in significantly different flows on the Apalachicola River. Therefore, the EFH in the Apalachicola Bay system will not be significantly impacted by the recommended plan.

5. Floodplain/Wetlands. As described in the Hydrology section above, implementation of the recommended plan will not significantly alter the flow regime in the basin. Frequency and timing of inundation are major factors regulating riparian and reservoir wetlands ecology and estuarine wetland ecology in Apalachicola Bay. Implementation of the recommended plan will not significantly impact the frequency and timing of inundation as compared to the no action alternative and therefore will not significantly impact floodplain and wetland habitats in the ACF basin. Low flows or low reservoir elevation conditions that impact floodplain and wetland communities around Lake Lanier are attributable to the continuing drought conditions and not discretionary operations on the part of the Corps.

6. Wildlife. Due to the nature of the recommended plan, the evaluation of potential impacts focused on those species associated with aquatic and riparian communities. Implementation of the recommended plan will not significantly impact hydrology or water quality in the project area and impacts if any will be minor and temporary. Therefore, aquatic and riparian habitats supporting wildlife species in the ACF basin should not be adversely impacted. The aquatic and terrestrial wildlife resources occurring in the project area will not be significantly impacted by the recommended plan.

7. Threatened and Endangered Species. By email dated 27 October 2008, the USFWS stated that no Federal threatened or endangered species are known to occur in the project area above West Point Dam. As described in the Hydrology section above, this is the portion of the basin with potential to be impacted through implementation of the recommended plan. Due to the potential for very minor, but measurable reductions in flow in the Apalachicola River, we have determined that implementation of the recommended plan may effect, but is not likely to adversely affect, listed species in the Apalachicola River and will not result in the adverse modification or destruction of designated critical habitat. The listed species potentially impacted by implementation of the recommended plan occur only in the Apalachicola River and bay system. As described above, only minor differences in Apalachicola River flows are expected to occur as compared to the No Action alternative. Implementation of the recommended plan will not result in an inability to operate Jim Woodruff Dam according to the RIOP provisions agreed to in Formal Section 7 Consultation with the USFWS. By email dated 12 November 2008 the Corps requested from the USFWS concurrence with this determination. By email dated 13 November 2008 the USFWS concurred that implementation of the recommended plan may affect, but is not likely to adversely affect listed species in the project area and will not result in the adverse modification or destruction of designated critical habitat.

Therefore, listed species and critical habitat will not be significantly impacted by the recommended plan.

8. Recreation. Implementation of the recommended plan will not significantly impact recreational opportunities at the Federal reservoirs. Changes in lake elevations associated with implementation of the recommended plan occur at Lake Lanier and to a smaller extent at West Point, and essentially no changes occur in the lower reservoirs. The persistent and severe drought has resulted in a reservoir level well below the second recreation impact level (1063). Virtually all of the boat ramps in the reservoir are not being utilized due to current low water conditions. The HEC-5 model results suggest that Lake Lanier could rise an additional 0.79 to 1.15 ft if the recommended plan is implemented; however, if drought conditions continue, as simulated, the reservoir will not refill to above recreation impact levels next year regardless of whether or not the recommended plan is implemented. The HEC-5 model results suggest that West Point Lake could experience a 0.10 to 0.17 ft decrease in elevation if the recommended plan is implemented. However, most of the differences in elevation at West Point occur during January-February, outside of the primary recreational season, while the lake is being held at a lower elevation for flood storage capacity. The differences in elevation also occur while the lake is at or just below the rule curve. Therefore, regardless of which minimum flow requirement is in place, the lake can be managed per the operational rules of a “normal” year. The short term loss of storage at West Point during the draw down period is outweighed by the long term benefit of increasing the storage at Lake Lanier for use in augmenting flows below Buford Dam during the critical summer and fall months in 2009. We anticipate, and the model results suggest, that West Point Lake will refill above the recreation impact levels during the 2009 refill period, just as it did in 2008, regardless of whether or not the recommended plan is implemented. As described above, the lower reservoirs elevations are not impacted by implementation of reduced minimum flow and the modeling suggests that Walter F. George Lake and Lake Seminole will refill above the recreational impact levels. The recommended plan is also consistent with support of reservoir fish spawning and Apalachicola fish spawn during spring months, and could benefit sport fish accordingly.

In a letter dated 4 November 2008, the NPS again stated that instantaneous flows of 750cfs in the river at Peachtree Creek, although not optimal, provide better support for recreation and resources than would lower flows. NPS also noted that aquatic plant growth potentially associated with the previous implementation of the 650 cfs minimum flow requirement at Peachtree Creek impacted a number of recreational paddlers in Bull Sluice Lake. However, as noted, increased visitation numbers along the river immediately downstream of Buford Dam during FY08 suggest that lower river flows, as commonly experienced during the ongoing drought, still offer recreational opportunities. Based on the relatively minor reduction of the minimum flow and the season (winter), it is unlikely that recreation and resources within the CRNRA will be significantly impacted as compared to the No Action alternative.

Implementation of the recommended plan will not significantly impact recreational opportunities

on the Apalachicola River or Apalachicola Bay. In general, impacts to any component of the National Wild and Scenic Rivers System; and any park, parklands, ecologically critical areas or other areas of ecological, recreational, scenic or aesthetic importance are attributable to the continuing severe drought conditions and not the recommended plan. This is further supported by the hydrology analysis provided above. Therefore, implementation of the recommended plan will not significantly impact water resource recreational opportunities in the ACF basin.

9. Water Quality. Under the recommended plan, releases from Buford Dam will be reduced in order to meet a reduced minimum water quality flow requirement on the Chattahoochee River near Peachtree Creek. Buford, West Point, and Jim Woodruff dams all provide minimum continuous flow releases to meet State water quality commitments. Walter F. George provides occasional releases, as needed, to maintain acceptable DO values below the dam. Occasional special releases are also made at Buford to insure adequate DO and water temperature at the Buford Fish Hatchery located downstream of the dam. In a letter dated 14 May 2008, the Corps notified EPD that future requests to reduce the minimum water quality flow at Peachtree Creek would need to include updated EPDRIV 1 hydrodynamic and water quality modeling. The updated modeling is needed to compare to the continuous water quality data collected at Capps Ferry in order to verify that the model assumptions are appropriate and that outputs are appropriate for estimating impacts and predicting potential problem areas. In the 10 October 2008 letter requesting the reduction, the EPD provided a comparison of the updated EPDRIV 1 model (using 2007 meteorological, withdrawal and discharge information) results to DO data collected at Capps Ferry Bridge and the USGS Fairburn gage at Highway 92 in 2008. The EPD determined that there is good correlation between both locations and the model results, particularly since deployment of improved sampling devices beginning in August 2008. In early November 2008 the EPD provided additional model results comparing the most current EPDRIV 1 model (using 2008 meteorological information) results the DO data collected at Capps Ferry Bridge and the USGS Fairburn gage at Highway 92 in 2008. A copy of the 10 October letter and the updated model results are provided in Appendix C. The updated model also demonstrated a strong correlation between the EPD monitoring data and the model results. This verifies that the current model assumptions are appropriate and that the outputs are appropriate for estimating impacts and predicting potential problem areas. Furthermore the model results suggest that the 650 cfs minimum water quality flow requirement is protective of both the numeric and narrative water quality standards. This has also been confirmed by monitoring during previous reductions in the minimum water quality flow requirement. Therefore, implementation of the recommended plan is not anticipated to significantly impact DO concentrations in the river.

In addition to the DO analysis, the EPD also provided an analysis of the minimum flow reduction on ammonia toxicity. The updated model results were used to evaluate predicted ammonia toxicity. The model predicts that ammonia concentrations will peak approximately ten miles downstream of Peachtree Creek at the Interstate 20 crossing of the Chattahoochee River. Ammonia toxicity is computed based on water temperature and pH. Ammonia concentration results from the water quality model were compared to computed toxicity levels according to predicted river water temperatures and pH. The predicted ammonia concentrations are less than

the toxic concentrations for pH values as high as 8.0, which are not expected to occur in the River. The analysis demonstrated that ammonia concentrations associated with the 650 cfs minimum water quality flow will be substantially below allowable limits and not significantly impact the water quality.

The EPD also evaluated the impact that reduced flows of 650 cfs at Peachtree Creek would have upon water temperature and the potential effects on the trout fishery between Buford Dam and Peachtree Creek. The assessment included temperature modeling using the EPDRiv1 model from Buford Dam to Peachtree Creek and consultation with the WRD. The temperature modeling results provided in the letter illustrate that water temperatures at State Road 400, just upstream from Bull Sluice Lake, remain well within a range that would protect long-term trout survival if flows were reduced to 650 cfs at Peachtree Creek from November through April. However, the model predicts that temperature excursions at Peachtree Creek become more frequent and of longer duration beginning in mid-March. Since these excursions are potentially indicative of a lower likelihood of trout survival, EPD will coordinate closely with WRD to ensure an adaptive management strategy is in place by mid-March that protects critical priorities for the fishery. Based on the model results and the implementation of an adaptive management strategy, the recommended plan is not anticipated to significantly impact water temperatures in the river.

Implementation of the recommended plan will not affect water quality releases at the reservoirs below Buford and will not result in reservoir levels that limit the ability to support water quality releases. During the comment period the Office of Water Resources for the State of Alabama, the TriRivers Waterway Development Association, and the Columbus Water Works expressed concern over the impact of the reduced minimum water quality flow requirement on minimum flows at the Columbus gage. The Georgia Power Company FERC licenses require minimum daily and weekly average flows at this location. As described in the hydrology section above, flows on the Chattahoochee River near Columbus, Georgia are identical under both the no action and recommended plan. Therefore, implementation of the recommended plan will not interfere with Georgia Power Company's ability to meet FERC license minimum flow requirements to provide adequate flows for the estimated assimilative capacity needs. Failure to meet these minimum flow requirements is likely due to the continuing drought or other factors outside of the control of the Corps.

In a letter dated 15 October 2008, Mayor Lukken of the City of LaGrange notified the Corps of Total Nitrogen (TN) levels at the Franklin and North Intake sampling locations in West Point Lake higher than the EPD Nitrogen water quality standard of 4.0 mg/l. The samples were taken during the months of July, August, and September and the data was subsequently shared with EPD to evaluate. The city expressed concern that the elevated TN levels may be further elevated through implementation of the EPD 650 cfs minimum water quality flow request. In a statement given during the 23 October 2008 ACF Basin Drought Teleconference, EPD acknowledged that they were evaluating the TN data and described how the Nitrogen levels are monitored for compliance with the state standards in West Point Lake. EPD also noted that preliminary review

of the data had not resulted in any evidence of any condition that would lead them to believe that conditions exist that could result in a violation of the Nitrogen standard in West Point Lake.

In a meeting between EPD, EPA, and Corps staff on 6 November 2008 the EPD provided the results of their evaluation of the TN issues at West Point Lake. The EPD evaluation included comparing the water quality data collected by the City of LaGrange to other West Point Lake water quality data collected during the same period of time by EPD and USGS (Table 5). EPD established that the City of LaGrange sampling protocol was acceptable; however, they noted that the city's results for TN were consistently higher than those of EPD. Of particular interest were Total Kjeldahl Nitrogen (TKN) results that were consistently 2 to 4 times higher than the EPD results. The TKN values are used in conjunction with Nitrate-nitrite values to determine TN. The EPD conducted a comparability study between their lab, and the two labs used by the City of LaGrange in order to evaluate these higher results. The study involved providing samples collected at the same time from each sampling location to each lab for independent analysis. The EPD lab and one of the city labs utilize the colorimetric method to determine TKN and TN values. The other city lab utilizes the probe method to determine TKN and TN values. This lab is the one that was utilized by the city during the period that elevated TN results were reported. Table 6 illustrates the results of this comparability study. The Nitrate-nitrite values between the three labs are very similar. The TKN and TN values reported by the lab utilizing the probe method were consistently higher than those reported by the labs utilizing the colorimetric method. The EPD determined that the differences were attributable to a much higher acceptable bias range (15-20%) for the probe method as compared to the colorimetric method and that TN levels in the lake do not violate the Nitrogen standard in West Point Lake. It should also be noted that Table 5 illustrates that samples collected by the USGS at the Franklin gage in West Point Lake during March, April and May when Buford Dam was being operated to maintain flows of 650 cfs at Peachtree Creek show that Nitrogen levels remained below 4.0 mg/l.

In addition to the TN evaluation, the EPD also evaluated Chlorophyll-a data from the LaGrange Intake and Forebay sampling locations to determine if a corresponding increase in Chlorophyll-a levels took place during the period of elevated TN reports. Chlorophyll-a values are generally positively correlated with TN values as Chlorophyll-a breeding requires TN supplies and thus can be influenced by elevated TN values. In the 6 November meeting, EPD reported that a corresponding increase in Chlorophyll-a levels was not evident, as illustrated in Figures 5 and 6. This lends further support to the elevated TN reports being more appropriately explained by sample analysis methodology.

Table 5. Total Nitrogen Data Collected in 2008

	Franklin				N. of Intake				Water Intake				Yellow Jacket				Wehadkee				Forebay Dam			
	TN	TKN	NO3NO2	NH3	TN	TKN	NO3NO2	NH3	TN	TKN	NO3NO2	NH3	TN	TKN	NO3NO2	NH3	TN	TKN	NO3-NO2	NH3	TN	TKN	NO3NO2	NH3
	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
1/15/08	2.1	0.4	1.7																					
2/12/08	2.5	0.32	2.2																					
3/11/08	1.3	0.27	1																					
4/10/08	1.5	0.32	1.2						1.9	0.48	1.40										1.4	0.40	0.96	
4/14/08	3.6	1.8	1.8																					
5/14/08									1.8	0.43	1.40										1.0	0.24	0.73	
6/3/08	2.9	0.43	2.5																					
6/18/08									1.9	0.45	1.40										0.9	0.37	0.56	
7/8/08	4.3	1.3	3.0	0.01	2.9	1.7	1.2	0.01	2.4	1.2	1.2	0.01	2.0	1.3	0.7	0.01					1.7	1.2	0.5	0.01
7/16/08	2.4	1.1	1.3	0.05	3.1	1.4	1.7	0.01	3.1	1.4	1.7	0.01	2.0	1.1	0.9	0.01	2.0	1.1	0.9	0.01	1.8	1.1	0.7	0.01
7/30/08									1.7	0.6	1.1										0.87	0.47	0.4	
8/4/08	2.7	1.3	1.4	0.02	3.1	1.9	1.2	0.03	2.9	1.7	1.2	0.02	1.9	1.2	0.7	0.01	2.6	2.1	0.5	0.01	1.4	1.4	ND	0.01
8/12/08	3.4	0.5	2.9																					
8/18/08	4.6	1.7	2.9	0.01	4.3	3.1	1.2	0.01	3.7	2.5	1.2	0.01	2.8	2.2	0.6	0.02	3.3	2.7	0.6	0.02	3.7	3.3	0.4	0.01
8/27/08									2.1	0.53	1.6										0.77	0.48	0.29	
9/2/08	4.0	1.6	2.4	0.01	4.8	3.6	1.2	0.01	3.3	2.1	1.2	0.01	2.4	1.8	0.6	0.02	2.7	2.1	0.6	0.01	3.3	2.9	0.4	0.02
9/16/08	4.2	0.9	3.3	0.02	2.5	1.3	1.2	0.03	2.2	1.2	1.0	0.03	2.0	1.1	0.9	0.02	1.6	1.1	0.5	0.02	1.6	1.2	0.4	0.02
9/25/08									1.6	0.35	1.2										0.78	0.35	0.43	
10/2/08	6.0	2.5	3.5	0.01	1.9	0.5	1.4	0.03	2.6	1.3	1.3	0.01	2.0	1.4	0.6	0.06	1.4	1.0	0.4	0.03	1.0	0.6	0.4	0.01
AVERAGE	3.2				3.5				2.4				2.2				2.4				1.6			
ST. DEV	1.3				0.9				0.7				0.3				0.7				1.0			
%RSD	0.40				0.26				0.29				0.16				0.27				0.63			
*WQS = 4 mg/l																								

Total Nitrogen (TN) data is sum of TKN and Nitrate-nitrite

USGS
EPD
LaGrange

Source: EPD 2008

Table 6. 2008 West Point Lake Sample Analysis Comparability Study

Site	EPD NO2/NO3	ASI NO2/NO3	AES NO2/NO3	EPD TKN	ASI TKN	AES TKN	EPD Total N	ASI Total N	AES Total N
Yellow Jacket Creek	1.1	1.1		0.27	2.6		1.37	3.7	
West Point North of Intake	2			0.41	1.6	0.6	2.41		
Chatt. @ Hwy 27 (Franklin station)	2.1	2.2	2.2	0.53	3.7	0.6	2.63	5.9	
West Point @ Wedhakee	0.38	0.4		ND	1.5		0.38	1.9	
Chatt River @ LaGrange Intake	1.9	2	1.99	0.44	1.4	0.6	2.34	3.4	
West Point @ Dam Forebay	0.47	0.5		ND	1.1		0.47	1.6	

Probe Method

Colorametric Method

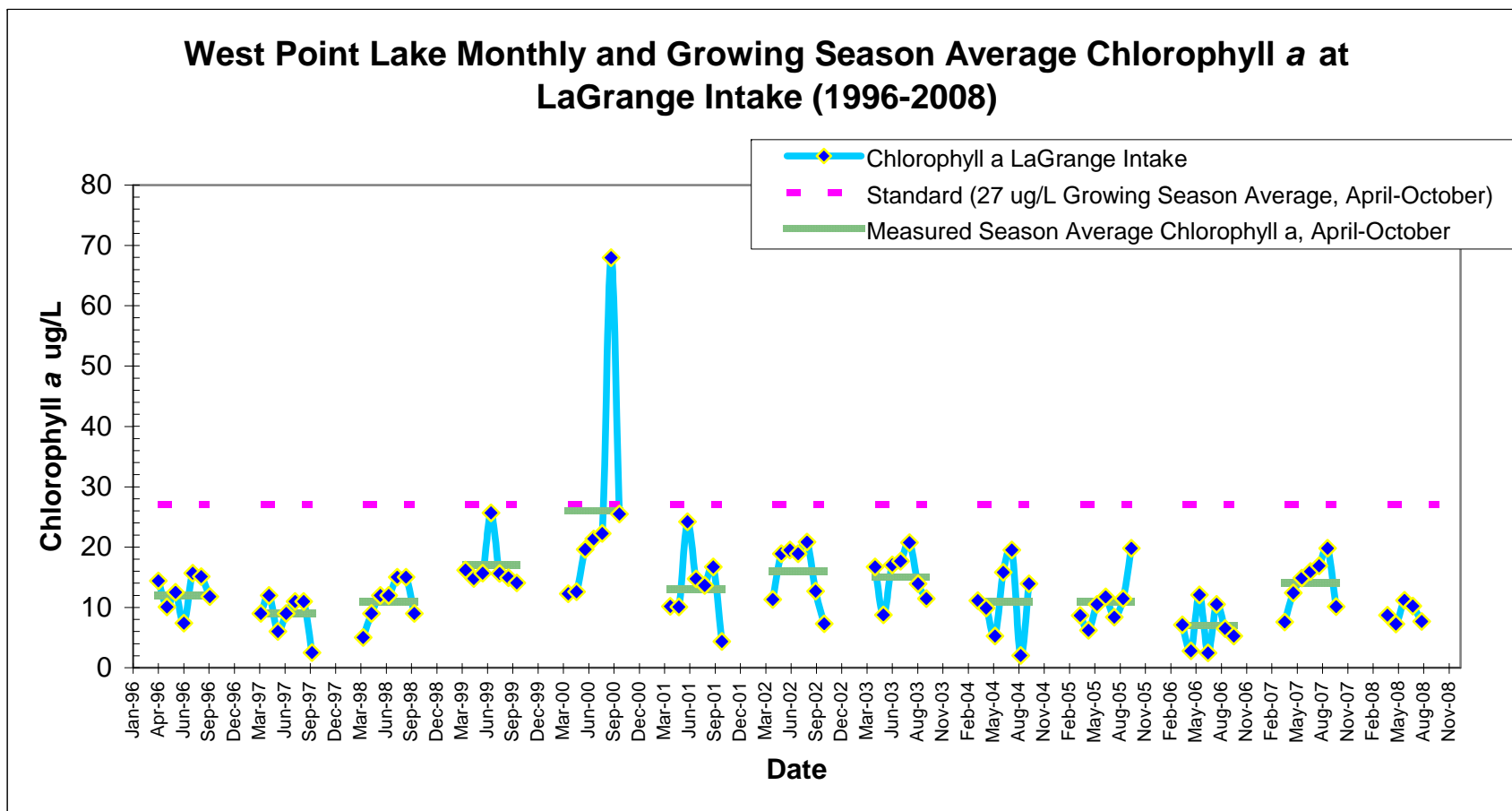
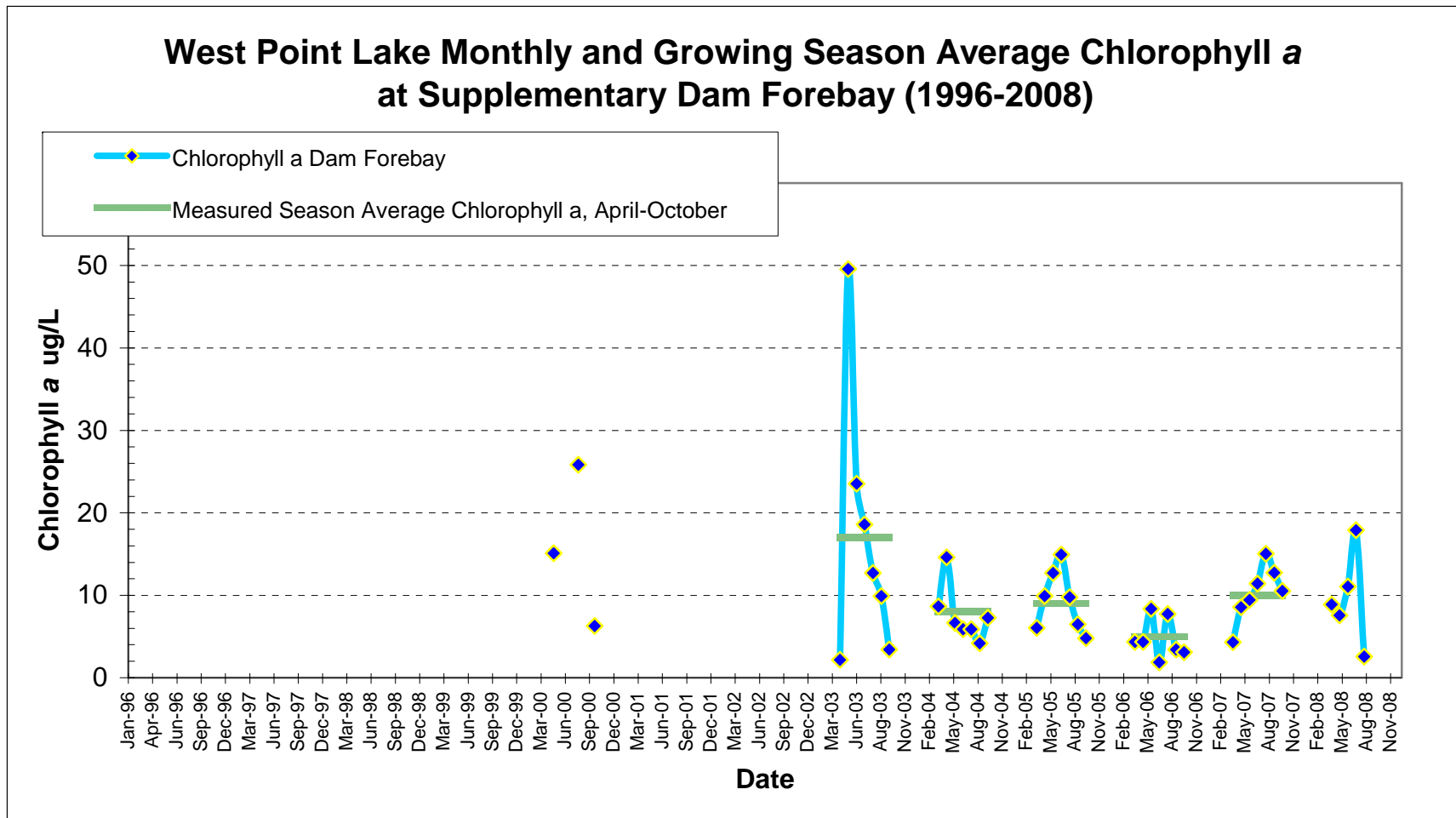
Figure 5. LaGrange Intake Chlorophyll a Sampling

Figure 6. Forebay Chlorophyll a Sampling



In a letter to the EPA, dated 17 October 2008, and in a letter to the Corps, dated 27 October 2008, the Upper Chattahoochee River Keeper expressed concern over the assimilative capacity of a 650 cfs flow in the river since the 750 cfs minimum flow target forms the basis for the pollution limits in the National Pollutant Discharge Elimination System (NPDES) permits the EPD grants the metro-Atlanta wastewater dischargers which currently do not operate at the full capacity allowed by these permits. EPD is aware of these concerns and has implemented increased monitoring and additional evaluation regarding waste loads in the river. In a statement given during the 23 October 2008 ACF Basin Drought Teleconference, EPD noted that 19 NPDES permitted wastewater treatment plants in the Chattahoochee Basin from Buford Dam to West Point Lake that discharge more than 1 MGD were requested to monitor their effluents for Nitrogen on a daily basis and report that data back to EPD on a weekly basis. This data for the period 13-28 October 2008 is provided in Appendix D. During the 6 November meeting with the Corps and EPA, EPD also provided data to support their statement that dischargers are doing a good job of returning relatively clean water with low loading to the river. This data is also provided in Appendix D. Despite discharges (MGD) of approximately 65-85% of the permitted limit the maximum monthly average, monthly average, and maximum daily loads in 2007 are 89%, 94%, and 78% below the permitted limits respectively (i.e. 11%, 6%, and 22% of the permitted loads).

Based on their updated water quality assessment and assimilative capacity evaluation, the EPD has determined that instream water quality and NPDES discharges will not be impacted by the proposed reduction in flow. The U.S. Environmental Protection Agency (EPA), Region 4, indicated approval of the updated modeling, Total Nitrogen analysis at West Point Lake, and NPDES permit evaluation during the meeting with Corps and EPD staff on 6 November 2008. Therefore, we believe that implementation of the recommended plan will not significantly impact water quality in the ACF basin. Furthermore, water quality monitoring by EPD and adaptive management during the implementation period will ensure that water quality standards are not violated.

10. Water Supply. In 2007, concerns were expressed by the public that drought conditions could restrict water supply withdrawals from the Corps reservoirs to deeper waters within the inactive storage zone which could potentially present water quality problems to the public drinking supply. However, investigations have confirmed that the quality of water in inactive storage is suitable for consumers. In fact, several water supply users already withdraw from this part of the lake. In order to address the public concerns, several water samples were collected from the inactive storage zone in the fall of 2007, and subjected to independent water quality testing by the City of Gainesville. City of Gainesville, City of Buford and Gwinnett County currently withdraw and treat water from the inactive zone using standard water treatment methods for possible increased levels of manganese, iron, or other chemical parameters affecting odor or taste. Dr. Soballe (water quality expert from the Corps Engineering Research and Development Center) has stated very clearly that upon analysis of the field data taken from various locations and depths within the inactive storage zone that even at the very bottom of the

lake the physical/chemical makeup "could easily be reduced to acceptable drinking water levels....by conventional treatment [methods]". If Lake Lanier continues to decline, there may be additional costs for water treatment, but safe water will still be available for water supply and other critical water needs in the ACF system. Implementation of the recommended plan results in increased elevation at Lake Lanier and will not adversely impact entities withdrawing water from the lake or river downstream of the dam.

In response to previous requests by EPD to reduce the minimum water quality flow, the City of West Point stated that their current water intake is located on the Chattahoochee River just below West Point Dam and it requires flows greater than 550 cfs for proper operation. Implementation of the recommended plan will not result in river flows less than 550 cfs at this location.

In previous requests for reductions in minimum flow to 650 cfs, the EPD provided an analysis of the river stage as compared to necessary operating levels for water withdrawals between Buford Dam and the USGS Whitesburg gage. The modeled river flows and associated surface elevations indicated that implementation of the 650 cfs minimum flow does not result in river stages less than the necessary operating levels for water withdrawers. As described in the Coordination section below, municipal water users from Lake Lanier and the river, including the City of Atlanta, City of Buford, City of Berkeley Lake, City of Duluth, Town of Braselton, City of Norcross, City of Auburn, City of Loganville, City of Lilburn, City of Sugar Hill, City of Grayson, City of Dacula, City of Suwanee, Gwinnett County, and the Atlanta Regional Commission (ARC) have all provided support for implementation of the recommended plan. In addition the WRD has agreed to work closely with the EPD during the reduced minimum flow implementation period regarding the maintenance of adequate river elevations at the intake of Buford Hatchery.

Implementation of the recommended plan will not affect water supply for M&I use in the ACF basin. The recommended plan will not result in reservoir levels or river levels that limit the ability to support water supply, and its intent is to conserve storage as much as possible in order to support water supply, water quality, and fish and wildlife needs. EPD has previously determined that drinking water supplies and all water intakes between Buford Dam and the USGS Whitesburg gage will not be impacted by implementation of the 650 cfs minimum flow. The recommended plan does not result in significantly different river flows or stages below the USGS Whitesburg gage. Therefore, implementation of the recommended plan will not significantly impact water supply.

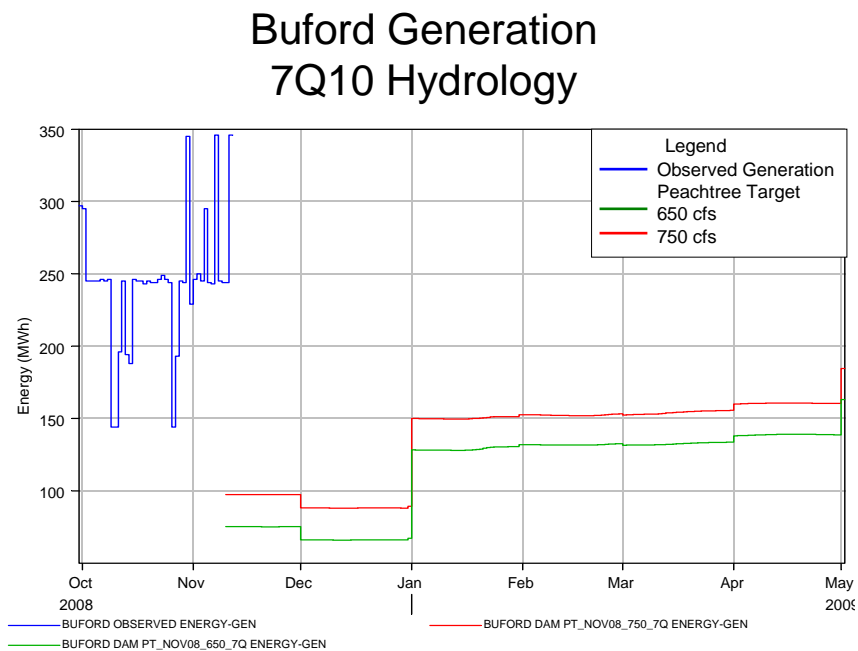
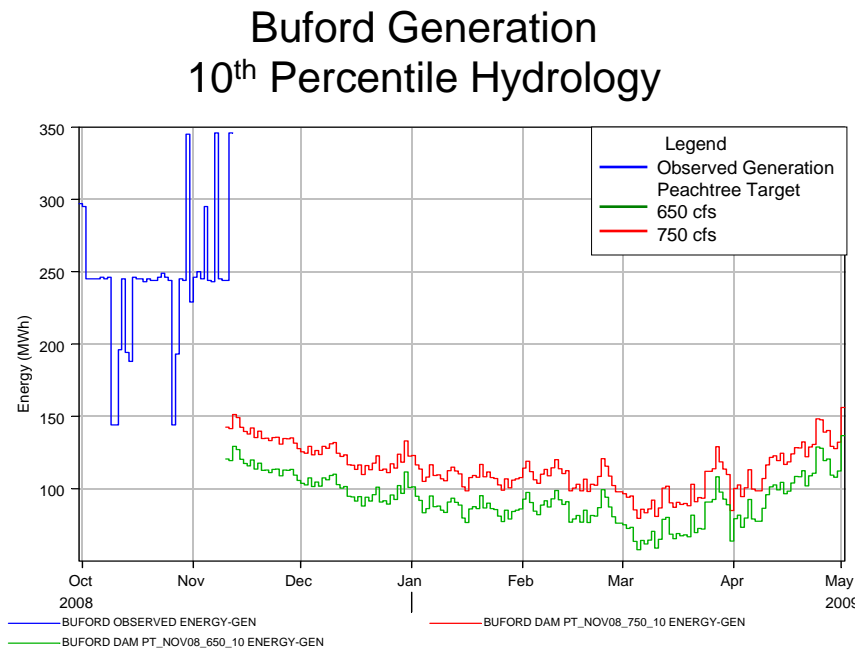
11. Flood Control. The purpose of the proposed action is to conserve storage in Lake Lanier, if possible, due to the continuing drought. Lake Lanier is currently at a record low for this time of year and could potentially continue to set record lows throughout the year. Implementation of the recommended plan would not result in reservoir levels that limit the ability to manage flood waters and will not significantly impact flood control at Lake Lanier or the downstream projects.

12. Navigation. The lack of dredging and routine maintenance since the late 1990's has led to inadequate depths in the Apalachicola River navigation channel, and commercial navigation has only been possible on a seasonal basis when flows in the river are naturally high, with flow support for navigation suspended during drier times of the year. On a case-by-case basis, limited releases for navigation have been made for special shipments when a determination can be made that other project purposes will not be significantly impacted and any fluctuations in reservoir levels or river stages would be minimal. During sustained drought or low flow periods, as reservoir elevations fall below Zone 1 and lower, navigation support is reduced and eventually eliminated in accordance with the water control plan, since navigation support typically requires such large volumes of flow support. Since releases for navigation support have already been eliminated due to the severe drought conditions, implementation of the recommended plan is not expected to affect commercial navigation. Therefore, implementation of the recommended plan will not significantly impact navigation.

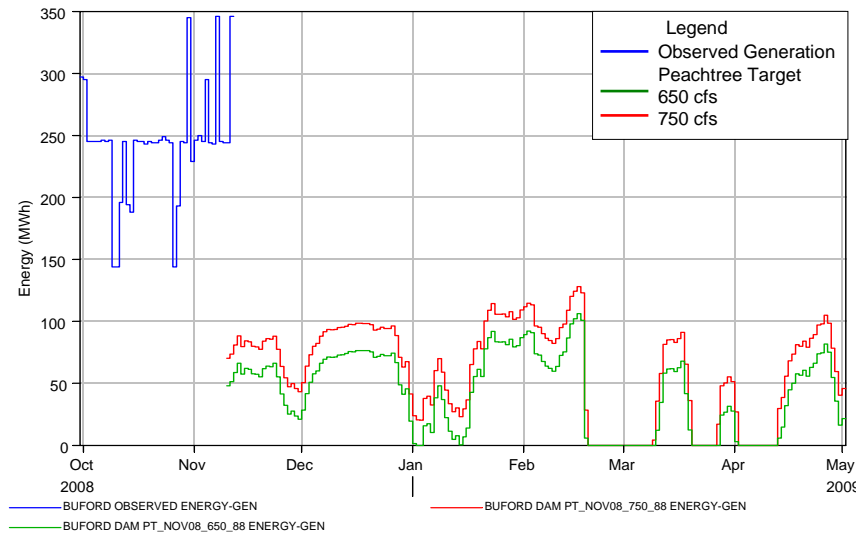
13. Hydropower. Figure 7 illustrates average generation at the four Federal reservoirs under the simulated no action and recommended plan. Under all the hydrology scenarios, average hydropower generation at the four reservoirs is quite similar regardless of whether the 650 cfs or 750 cfs minimum flow requirement is in place. The largest differences in generation are limited to Buford during implementation of the recommended plan, which is to be expected given the reduced minimum flow requiring reduced releases from the dam. June to September represents the critical demand period for hydropower generation. The recommended plan will not impact hydropower generation during the critical demand period. Hydropower generation during the critical period may benefit from additional storage at Buford. Implementation of the recommended plan will not significantly impact hydropower generation at the four Federal reservoirs as compared to the No Action Alternative.

As described above, non-Federal hydropower facilities occur in the ACF basin as well. Previous analysis by EPD found that water intakes for Georgia Power Company projects on the Chattahoochee River, downstream of Buford Dam, are not impacted by implementation of the 650 cfs minimum water quality flow. By letter dated 27 October 2008, the Southern Nuclear Operating Company, which operates the Farley Nuclear Plant near Dothan, AL, requested that the Corps analyze the recommended plan to determine if adequate storage remains in the West Point and Walter F. George projects to ensure flow support on the middle and lower Chattahoochee River until inflows increase later this fall or winter. As described in the Hydrology section above, implementation of the recommended plan does not significantly alter the storage in these projects as compared to the no action. We believe the recommended plan meets the needs of the non-Federal power generating facilities and that they will not be significantly impacted by the recommended plan as compared to the No Action Alternative.

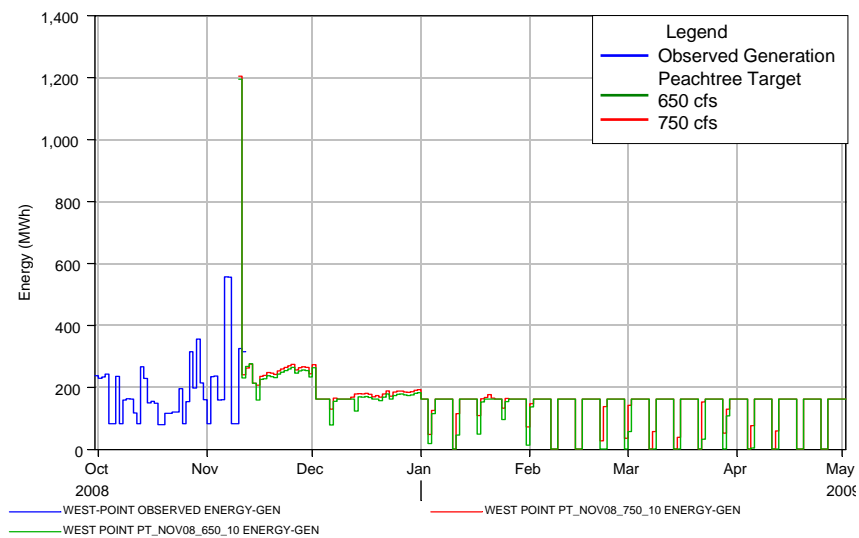
Figure 7. Average generation at the four Federal reservoirs under the 750cfs and 650 cfs minimum flow scenarios (10 percent hydrology, 7Q10 hydrology, and 1988-89 hydrology).



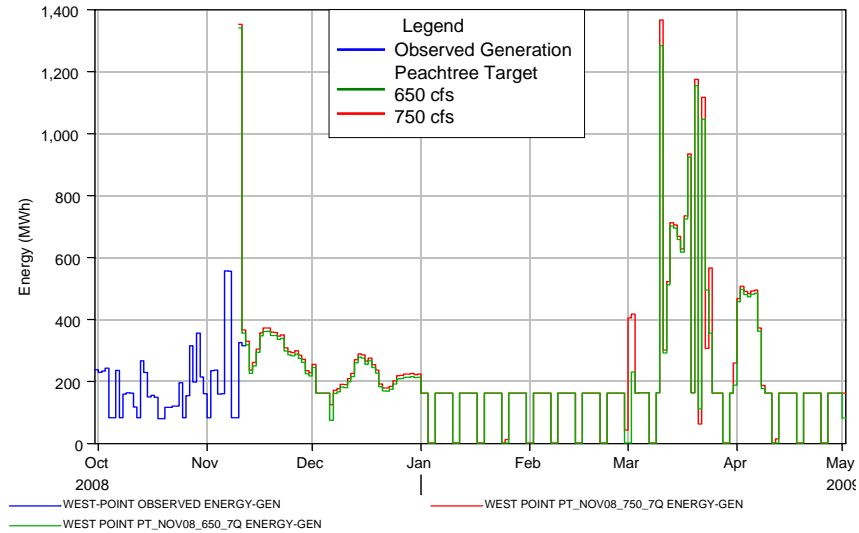
Buford Generation 1988-89 Hydrology



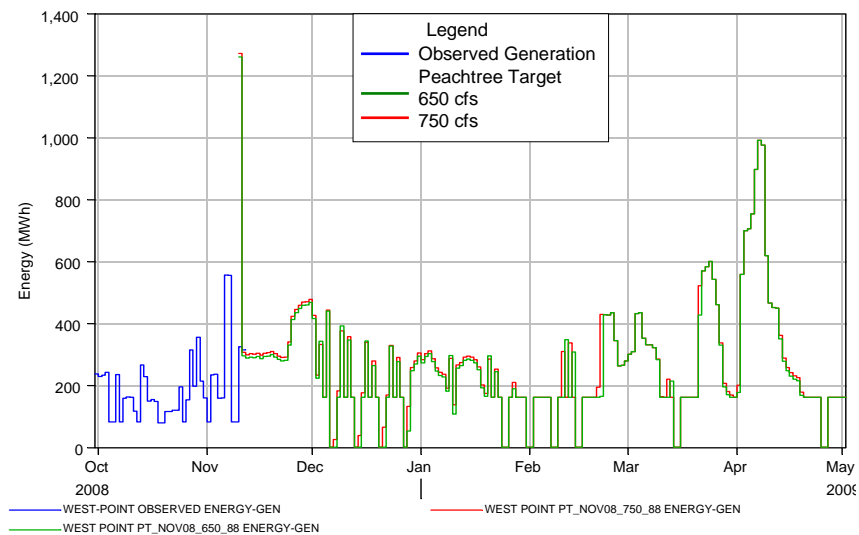
West Point Generation 10th Percentile Hydrology



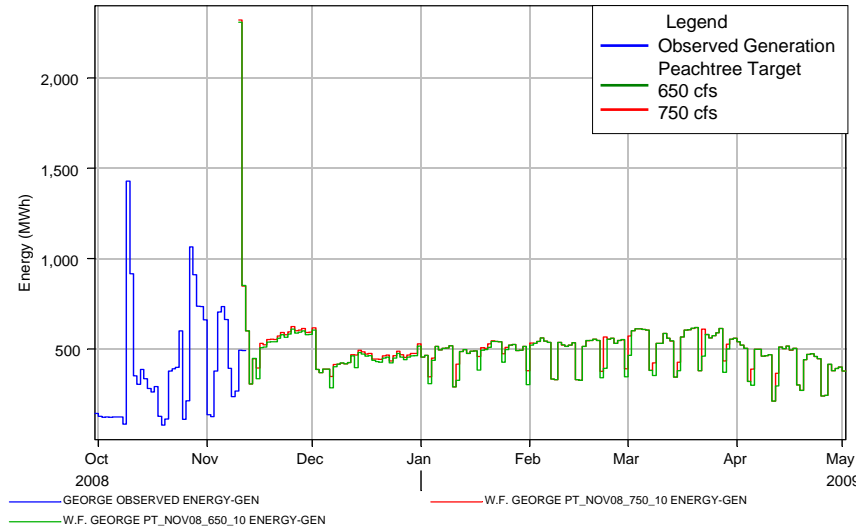
West Point Generation 7Q10 Hydrology



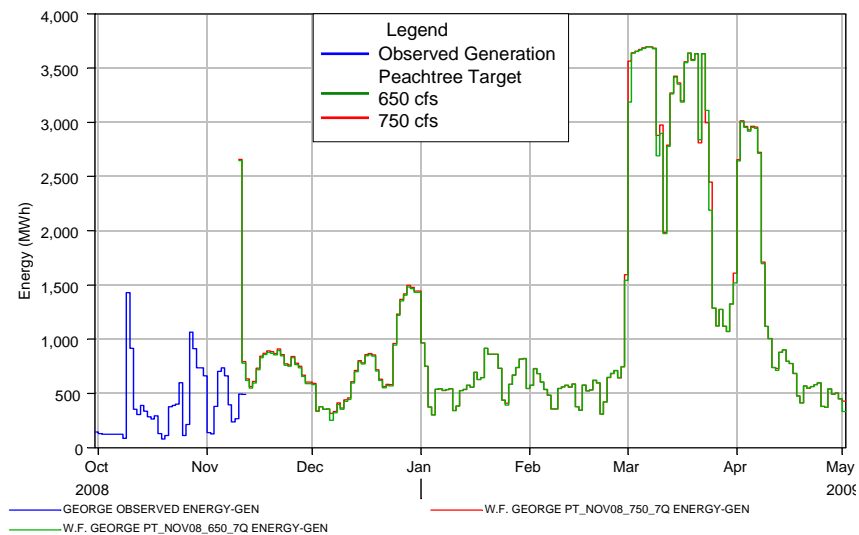
West Point Generation 1988-89 Hydrology



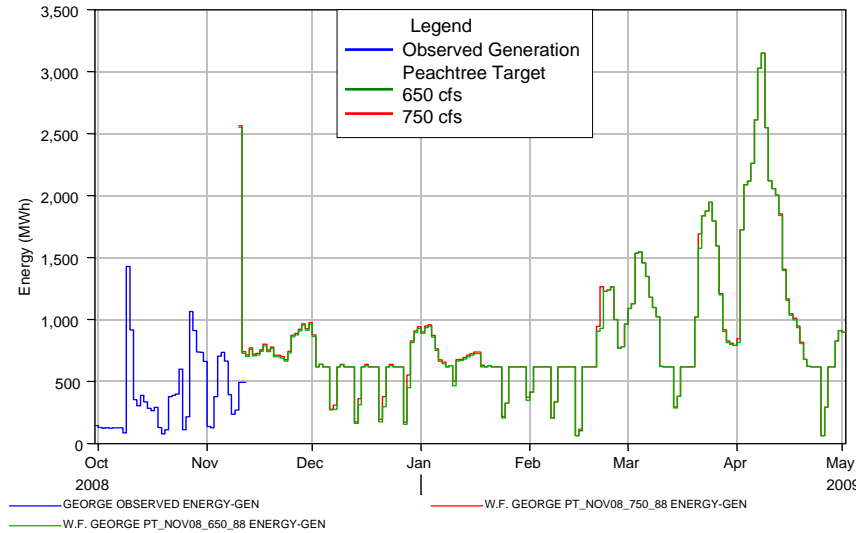
WF George Generation 10th Percentile Hydrology



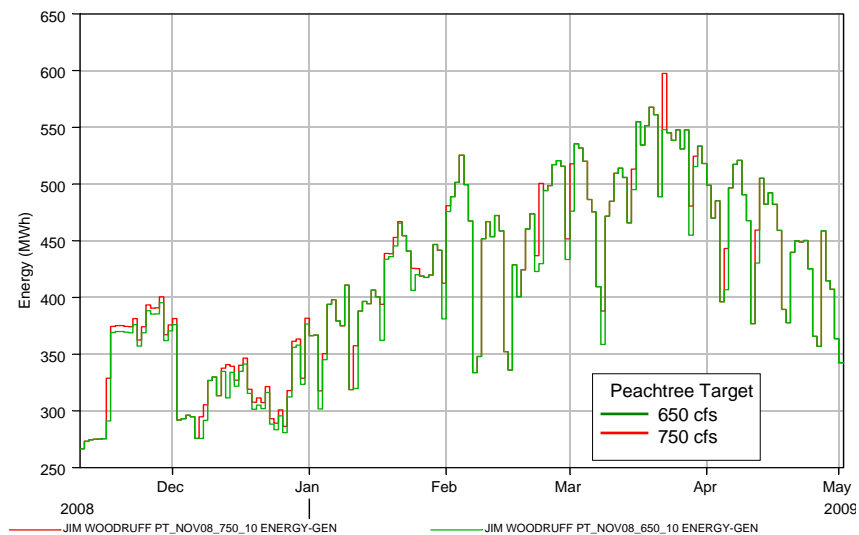
WF George Generation 7Q10 Hydrology



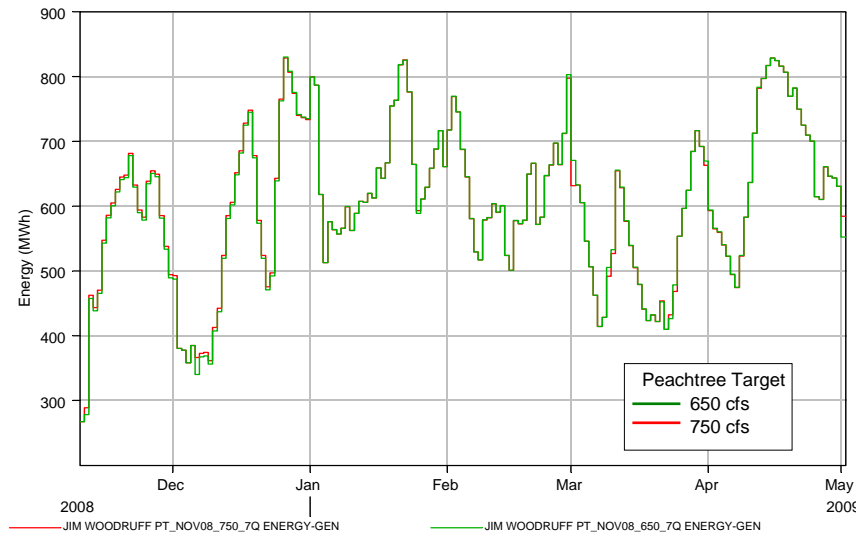
WF George Generation 1988-89 Hydrology



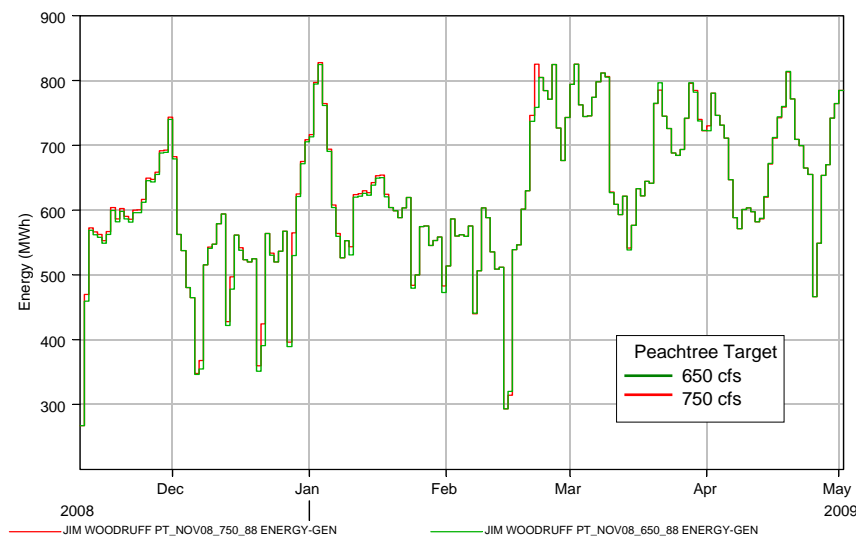
Jim Woodruff Generation 10th Percentile Hydrology



Jim Woodruff Generation 7Q10 Hydrology



Jim Woodruff Generation 1988-89 Hydrology



14. Historic and Archaeological Resources. As described above, implementation of the recommended plan is not expected to impact stream channel stability or alter channel substrates. Therefore, potentially adverse effects to cultural resources, such as increased erosion, increased deposition, and increased access to historic and archaeological sites will not significantly change through implementation of the recommended plan.

By letter dated 26 February 2008, the Historic Preservation Division of the GADNR stated that no historic properties or archaeological resources that are listed in or eligible for listing in the National Register of Historic Places will be affected by implementing the temporary reduction in minimum flow. The recommended plan is consistent with minimum flow reduction evaluated at that time. Therefore, implementation of the recommended plan will not significantly impact historic and archaeological resources in the ACF basin.

15. Land Use Changes. The 1998 draft ACF Water Allocation EIS categorizes the major land cover uses in the ACF basin as residential (6.0 percent), commercial and industrial (2.0 percent), agricultural production land (24 percent), confined feeding operations (0.1 percent), forest land (66.0 percent), barren land (0.1 percent), and water (2.0 percent). The recommended plan does not change land use within the project area and will not impact State, area-wide and local plans and programs for land use in the area.

16. Prime and Unique Farmland. The recommended plan will have no effect on prime farmlands or unique agricultural lands.

17. Aesthetics. The recommended plan will not permanently affect the aesthetics in the project area. Lake Lanier will likely continue to sustain below normal pool elevations during implementation of the recommended plan and still be in low water conditions during the prime recreational season. Exposed shoreline and bottom areas could continue, and boat docks could still be exposed, which could affect property values along the lake shore areas. Although the recommended plan will temporarily reduce flows on the Chattahoochee River between Buford Dam and West Point Lake, it is unlikely that a 100 cfs reduction will result in significant discernable differences in appearance. These impacts are generally attributable to the regional drought conditions, and not the recommended plan, which should mitigate some of these drought impacts.

18. Environmental Justice. Executive Order (EO) 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (11 February 1994) requires that Federal agencies conduct their programs, policies, and activities that substantially affect human health or the environment in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under such programs, policies, and activities because of their race, color, or national origin.

The recommended plan is not designed to create a benefit for any group or individual, nor does it create disproportionately high or adverse human health or environmental impacts on any low-income populations of the surrounding area. Review and evaluation of the recommended plan have not disclosed the existence of any identifiable minority or low-income communities that would be adversely affected by its implementation.

19. Protection of Children. The EO 13045, Protection of Children from Environmental Health Risks and Safety Risks (21 April 1997), recognizes a growing body of scientific knowledge that demonstrates that children may suffer disproportionately from environmental health risks and safety risks. These risks arise because children's bodily systems are not fully developed; because children eat, drink, and breathe more in proportion to their body weight; because their behavior patterns may make them more susceptible to accidents. Based on these factors, the President directed each Federal agency to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. The President also directed each Federal agency to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

Implementation of the recommended plan does not involve activities that would pose any disproportionate environmental health risk or safety risk to children.

20. Cumulative Impacts. The CEQ regulations define cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other action." 40 C.F.R. § 1508.7. Actions considered in the cumulative impacts analysis include implementation of the recommended plan and other Federal, State, Tribal, local or private actions that impact the resources affected by the recommended plan. The resources affected are described above and are generally limited to habitat conditions and species closely linked to the flow regime and reservoir conditions in the ACF basin.

Within the project area, various past Federal, State, and private actions have impacted the ACF basin riverine habitat and natural flow regime including construction of the Corps' dams, urban development, agricultural activities, navigation channel maintenance dredging and disposal, water withdrawals, and small impoundments. The five Corps' dams continue to affect the Chattahoochee and Apalachicola Rivers by trapping sediment in reservoirs that would otherwise move as bed load through the system. The interruption of this bed load movement and past navigation channel maintenance dredging and disposal activities have contributed to the altered channel morphology in portions of the project area. Channel morphology sets the context for the flow regime. Urban development and agricultural activities have adversely affected water

quality and riverine and floodplain habitat. The associated water withdrawals have also impacted the flow regime.

Adverse effects to riverine habitat from continued urbanization and agricultural activities in the ACF basin are reasonably certain to occur. However, state and local governments have regulations in place to minimize these effects, including regulations regarding construction best management practices, storm water control, and treatment of wastewater.

Additionally, an increase in net consumptive depletions due to water supply are reasonably certain to occur based on increased M&I demands in the ACF basin (particularly in the upper basin) and agricultural withdrawals. The EPD has determined that the most acres in the basin for which irrigation is economically feasible are already irrigated, and that agricultural demand has likely “plateaued” at close to the year 2000 demands. However, increases in the amount of water applied per acre would occur if the current crops are converted to more water intensive crops. Implementation of the recommended plan would not contribute to cumulative impacts affecting resources on the Flint River since there are no Corps projects controlling water releases in this system. However, increases in consumptive depletions in the ACF basin could adversely affect habitat throughout the basin by further altering the natural flow regime.

Accordingly, due to the short duration and intensity of the recommended plan, the cumulative adverse effects associated with this action on the ACF River Basin resources (including fish and wildlife, water supply, and water quality) are considered minor. The implementation of the recommended plan could include potential beneficial cumulative impacts, as it provides a method to store water, which might be essential to augment flow for these resources if the severe drought conditions continue or worsen. In addition, we are unaware of any adverse effects to the ACF River Basin resources associated with previous temporary implementations of the 650 cfs minimum flow requirement at Peachtree Creek.

In order to ensure that the combined effects of the ongoing drought and the reductions in minimum flow at Peachtree Creek do not result in more than minor impacts as discussed in this and other sections, conditions relating to the drought, climate and weather forecasts, drought impacts and impacts of reduced flows will be closely monitored. As described above, the EPD will implement a detailed monitoring and adaptive management plan during the period of reduced flow in order to ensure that water quality criteria are not violated. The Corps, Georgia Power Company, and the ARC will closely coordinate regarding the River Management System in order to ensure that the reduced minimum flow is met at all times to the extent practicable. The Corps, EPD, and WRD will closely coordinate regarding unanticipated impacts to the Buford Trout Hatchery and fishery resources between Buford Dam and Peachtree Creek. All lake levels and flow rates previously discussed will continue to be monitored. The majority of this type information is readily available on websites such as the Corps Water Management homepage and USGS website. Likewise key parameters including hydropower production/demand, dissolved oxygen, water temperatures, water supply intake levels, and issues relating to industry capacity to discharge effluent/maintain current production etc. should be

monitored by the appropriate entities and coordinated with the Corps as needed. Use of such data and adaptive management of the ACF system water resources will further ensure that unanticipated impacts are avoided or minimized to an insignificant level.

6. ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS WHICH WOULD BE INVOLVED SHOULD THE RECOMMENDED PLAN BE IMPLEMENTED

Any irreversible or irretrievable commitments of resources involved in the proposed action have been considered and are either unanticipated at this time, or have been considered and determined to present minor impacts.

7. ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

Any adverse environmental effects, which cannot be avoided during implementation of the recommended plan, are expected to be minor both individually and cumulatively. Furthermore, monitoring and adaptive management should ensure that they are minor.

8. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The proposed action constitutes a short-term use of man's environment. The proposed action is a temporary waiver to the water control plan which will allow reduced releases to meet a lower minimum water quality flow requirement in response to extreme and ongoing drought conditions. It will be implemented for only a short period of time during the cooler water months (not later than 30 April) and will be managed by the Corps through monitoring and adaptive management in a manner that optimizes storage preservation at Lake Lanier while still balancing the needs of water users throughout the ACF system in accordance with existing Water Control Manuals. The modeling results included in this environmental assessment demonstrate the benefits of conserving storage during a limited time during the cooler water months (November through April).

9. COORDINATION

During the 9 October 2008 ACF Basin Drought Teleconference it was announced that EPD was requesting a reduction in the minimum water quality flow requirement at Peachtree Creek from 750 cfs to 650 cfs between 1 November 2008 and 30 April 2009. The Corps published a press release announcing the EPD request and providing an electronic comment form and electronic mail account for submitting comments on 10 October 2008. The Corps provided electronic mail notice of the EPD request to the ACF basin stakeholder group on 13 October 2008, and asked for written comments by 27 October 2008. Appendix E contains a copy of the press release and stakeholder notification; as well as, copies of comments received in response to the proposed action. An overview of the comments received is summarized below.

Tribal Consultation:

The proposed action was coordinated via electronic mail with the tribes which had previously been identified as having an interest in activities at Lake Lanier and the ACF River Basin. A copy of this e-mail is also provided in Appendix E.

National Park Service, letter dated 4 November 2008:

The National Park Service offered the following comments regarding implementation the EPD request. 1) The decision to reduce the minimum flow should be accompanied by an effort to accurately gage the instantaneous flow at Peachtree Creek since past research and experience indicate a 750 cfs flow provides better support for recreation and resources than lower flows; 2) concerned that continuing the 650 cfs flow through April 2009 could have the potential for increased water temperatures and reductions in DO threatening components of the fishery; and 3) potential that lower flow contributed to aquatic weed growth in Bull Sluice Lake and subsequent difficulties for recreational paddlers.

U.S. Fish and Wildlife Service – Athens Field Office, Email dated 27 October 2008:

USFWS – Athens stated that no Federal threatened and endangered species occur in the stretch of river below Buford Dam and above Peachtree Creek. They also provided questions/suggestions regarding the EPD water quality modeling, the need for real-time withdrawal data at the City of Atlanta intake, and the need to continue the monitoring and adaptive management throughout the implementation period.

U.S. Fish and Wildlife Service – Panama City Field Office, Email dated 13 November 2008:

USFWS - Panama City provided concurrence with Corps determination that the proposed temporary deviation from water control plan to meet a reduced water quality flow requirement at Peachtree Creek through 30 April 2009 is not likely to adversely affect the Federally listed species or adversely modify or destroy designated critical habitat in the Apalachicola River system.

Georgia Department of Natural Resources, Georgia Environmental Protection Division, letter dated 10 October 2008:

EPD requested temporary reduction of water quality minimum flow requirement at Peachtree Creek from 750 cfs to 650 cfs until 30 April 2009. EPD determined that the water quality standards can be met with reduced flows and that reservoir levels and water withdrawal structures are protected.

Georgia Department of Natural Resources, Wildlife Resources Division, letter dated 23 October 2008:

The Wildlife Resources Division stated that they have coordinated with EPD regarding maintenance of adequate river flows at the intake of the Buford Trout Hatchery and will work closely with EPD to further refine an adaptive management strategy by mid-March to monitor river temperatures for the protection of the downstream trout fishery.

State of Alabama, Office of the Governor, letter dated 24 October 2008:

The State of Alabama stated that based upon review of the EPD information submitted and the basis for the minimum flow established for the Chattahoochee River at Peachtree Creek, that the request to reduce the minimum flow from 750 cfs to 650 cfs should be denied. Further support for this position, provided in the letter, includes questions regarding violation of the Georgia anti-degradation policy, need for additional consideration of other water quality parameters, and NEPA study regarding impacts to downstream areas including West Point Lake. Furthermore, the State of Alabama requested that if the EPD request was granted in whole or in part, that it be terminated if 1) the flow at Columbus, GA falls below 1,850 cfs weekly average; 2) the flow at Columbia, AL falls below 2,000 cfs at any time; 3) the DO content at Peachtree Creek is measured at less than 5.0 mg/l at any time; 4) nutrient measures at West Point Lake indicate that flow reductions have caused nutrient levels to increase in a manner that will impact the development of algae blooms in West Point; and 5) the temporary reduction in minimum flow should be terminated on 30 April 2009 and that the 750 cfs flow should be restored on 1 May regardless of the storage remaining in Lake Lanier.

Florida Department of Environmental Protection (FDEP), letter dated 28 October 2008:

FDEP stated that it does not object to implementation of the proposal, provided the measure does not encroach upon the Gulf sturgeon spawning season and the Corps' analysis concludes it will have no impact on flows in the Apalachicola River during the interim. Furthermore, FDEP noted that Georgia and the water supply providers in metro-Atlanta are best situated to conserve water in Lake Lanier.

The City of LaGrange, GA, letter dated 15 October 2008

The City of LaGrange expressed support for the EPD request and concern of recent possible water quality standard violations for TN. They suggested that maintaining an elevation of 633 msl in West Point Lake during the winter would resolve the TN standards concerns, assure good water quality, and provide more storage in the northern projects.

City of Norcross, letter dated 21 October 2008:

The City of Norcross stated support for the EPD request. They also stated that their drinking

water is supplied by Gwinnett County Water System and that this water system receives its water directly from Lake Lanier.

The City of Auburn, Georgia, letter dated 21 October, 2008:

The City of Auburn stated support for the EPD request. They also stated that their drinking water is supplied by Gwinnett County Water System and that this water system receives its water directly from Lake Lanier.

The City of Buford, letter dated 27 October 2008:

The City of Buford stated support for the EPD request. They also stated that preserving water stored in Lake Lanier is a high priority for its citizens and that these conditions should be expected to deteriorate in the coming months and next year.

The City of Loganville, letter dated 24 October 2008:

The City of Loganville stated support for the EPD request. They also stated that their drinking water is supplied by Gwinnett County Water System and that this water system receives its water directly from Lake Lanier.

The City of Lilburn, letter dated 20 October 2008:

The City of Lilburn stated support for the EPD request. They also stated that their drinking water is supplied by Gwinnett County Water System and that this water system receives its water directly from Lake Lanier.

The City of Sugar Hill, letter dated 22 October 2008:

The City of Sugar Hill stated support for the EPD request. They also stated that their drinking water is supplied by Gwinnett County Water System and that this water system receives its water directly from Lake Lanier.

The City of Grayson, letter dated 22 October 2008:

The City of Grayson stated support for the EPD request. They also stated that their drinking water is supplied by Gwinnett County Water System and that this water system receives its water directly from Lake Lanier.

The City of Dacula, letter dated 20 October 2008:

The City of Dacula stated support for the EPD request. They also stated that their drinking water is supplied by Gwinnett County Water System and that this water system receives its water

directly from Lake Lanier.

The City of Berkeley Lake, letter dated 23 October 2008:

The City of Berkeley Lake stated support for the EPD request. They also stated that their drinking water is supplied by Gwinnett County Water System and that this water system receives its water directly from Lake Lanier.

The City of Suwanee, Georgia, letter dated 22 October 2008:

The City of Suwanee, Georgia stated support for the EPD request. They also stated that their drinking water is supplied by Gwinnett County Water System and that this water system receives its water directly from Lake Lanier.

The Town of Braselton, letter dated 24 October 2008:

The Town of Braselton stated support for the EPD request. They also stated that their drinking water is supplied by Gwinnett County Water System and that this water system receives its water directly from Lake Lanier.

The City of Duluth, letter dated 24 October 2008:

The City of Duluth stated support for the EPD request. They also stated that their drinking water is supplied by Gwinnett County Water System and that this water system receives its water directly from Lake Lanier.

Gwinnett County, letter dated 13 October 2008:

Gwinnett County stated support for the EPD request based on review of the EPD evaluation. They also stated that emergency measures to lower the raw water intakes would create extraordinary costs to the water consumers in order to ensure continuous water service.

Metropolitan North Georgia Water Planning District, letter dated 27 October 2008:

The Metropolitan North Georgia Water Planning District stated support for the EPD request. They also mentioned concern that if the drought continues into the next year that the Atlanta area will continue to be harmed and that the main source of their water supply will be threatened.

Columbus Water Works, letter dated 22 October 2008

The Columbus Water Works noted that Columbus FERC approved flows were consistently met during the previous March-May reduction. However they expressed concerns that since 24 June 2008, FERC licensed flows at Columbus have been shorted 60% of the time for weekly averages

and 10% of the time for daily averages. They stated support for the EPD request provided that there will be no impact from flow reduction at Columbus.

LaGrange-Troup County Chamber of Commerce, letter dated 16 October 2008:

The LaGrange-Troup County Chamber of Commerce stated support of the EPD request. They also stated that they supported the state's efforts to work to restore the levels in Lake Lanier however any compromise of water quality at the West Point project is unacceptable.

Atlanta Regional Commission, letter dated 27 October 2008:

The ARC stated support for the EPD request and stated that the action will conserve enough water in Lake Lanier to supply over 700,000 people for more than half a year.

Southern Nuclear Operating Company, Inc., letter dated 27 October 2008:

Southern Nuclear Operating Company, Inc. provided several comments on the EPD request including concerns over impacts to reservoir elevations at West Point and Walter F George. Southern Nuclear also stated opposition to any departure from the required flows if they prevent the lower reservoirs from storing all necessary water prior to the onset of the dry months.

Athens Boat Club, letter dated 14 October 2008:

The Athens Boat Club stated support of the EPD request. They also stated that the reduction in flow will allow a better chance for adding to the storage in Lake Lanier.

Tri Rivers Waterway Development Association, letter dated 24 October 2008:

The Tri Rivers Waterway Development Association stated that they do not support the EPD request unless the Corps can clearly demonstrate that the reductions will not adversely impact the middle and lower reaches of the Chattahoochee River.

Apalachicola Riverkeeper, email dated 27 October 2008:

The Apalachicola Riverkeeper provided the following comments in regards to the EPD request. They commented that the efforts of water users in the drainage basin which contributes flow to Lake Lanier should have a requirement to demonstrate their uses are not impacting the Corps' ability to meet its authorized purposes and that this would see to be a requirement of the request to keep water in Lake Lanier at the expense of the downstream users.

Upper Chattahoochee Riverkeeper (UCR), letters dated 17 and 27 October 2008:

The UCR submitted comments on the EPD request and stated opposition to the EPD request

based on 1) recurring requests to temporarily reduce the minimum water quality flow; 2) requirement under NEPA for the Corps to take a “hard look” at the effects of the proposed action on the human environment; 3) EPD’s ongoing reluctance to address outstanding issues including inadequate monitoring; 4) the need has not been justified; 5) failure to consider other alternatives; 6) failure to consider cumulative impacts; and 7) failure to demonstrate that the assimilative capacity of downstream waters can tolerate a reduced flow.

Middle Chattahoochee Water Coalition, email dated 24 October 2008:

The Middle Chattahoochee Water Coalition submitted comments on the EPD request expressing concerns about negative water quality impacts downstream, and stating that water users and consumers are negatively impacted when established minimum standards are reduced resulting in poor water quality and implementation of costly operating modes by major water consumers.

Property owners, other public comments:

There were approximately 805 comments submitted in regards to the EPD request. Approximately 701 comments were received from members of the public that generally supported the EPD request, 25 comments in opposition of the EPD request, and 24 were unclear on their position. In addition to these comments there were 55 electronic comments submitted that had no comments filled out. Members of the public with property near Lake Lanier were supportive of the EPD request based on needs ranging from boating access, dock and pier access, fishing, economic impacts to small businesses, recreation, and water supply. Members of the public opposed to the EPD request were generally concerned about negative impacts to water quality. Other comments ranged from questions regarding water management decisions to inquiry regarding flows in support of endangered species in the Apalachicola River.

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