APPENDIX O

Technical Memorandum – Instream Flow Protection Threshold Analysis for the Proposed Water Intake on the Chattahoochee River

Executive Summary

Part 1 – Hydrological and Water Quality

Part 2 – Flow Impacts to Fish Community and Recreational Use

October 2015

DRAFT Memorandum

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To	Richard Morgan, Katherine Freas (U.S. Army Corps of Engineers)	Pages	6
CC			
Subject	Glades Reservoir Environmental Impact Statement – Instream Flow Protection Threshold Analysis for the Proposed Water Intake On the Chattahoochee River: Executive Summary		
From	AECOM		
Date	July 24, 2014		

INTRODUCTION

This technical memorandum provides a summary of the following analyses performed to determine the appropriate the instream flow protection threshold (IFPT) below the proposed Glades Reservoir intake on the Chattahoochee River:

1. *Instream Flow Protection Threshold Analysis for the Proposed Water Intake on the Chattahoochee River: Part 1-Hydrological and Water Quality* (AECOM, 2014)
2. *Instream Flow Protection Threshold Analysis for the Proposed Water Intake on the Chattahoochee River: Part 2-Flow Impacts to Fish Community and Recreational Use* (AECOM, 2014)

Instream Flow Protection Threshold (IFPT)

The term IFPT is used throughout this technical memorandum to better convey the purpose of instream flow management for the protection of water quality and a healthy aquatic environment during low flow conditions. The Applicant had used the more conventional term "minimum instream flow (MIF)" in its surface water withdrawal application submitted to Georgia EPD. EPD currently prefers the use of the term IFPT.

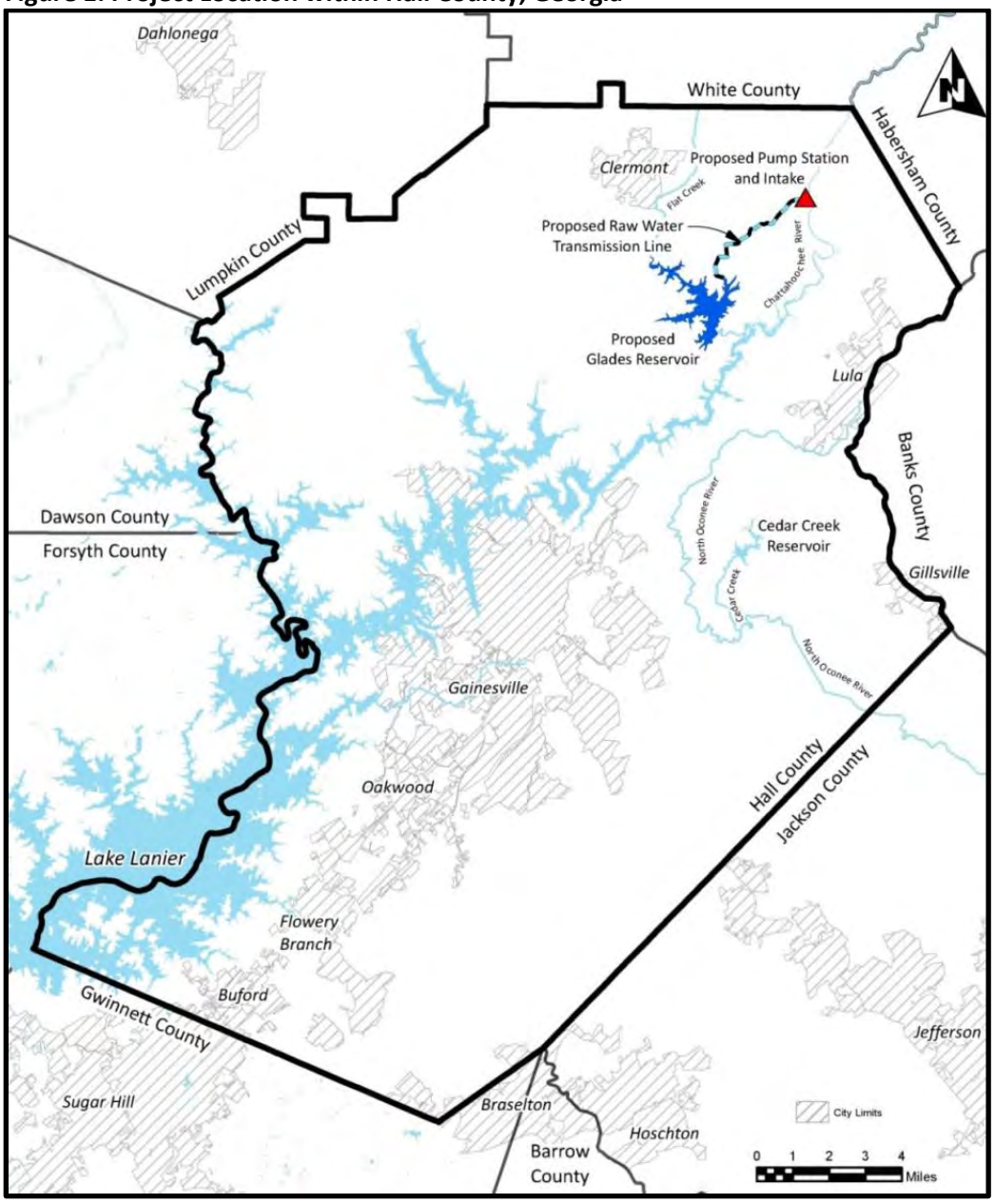
The results from these studies found that a 2-Stage IFPT approach is appropriate for the Chattahoochee River at the proposed intake location. Under this IFPT, the minimum flow to be released below the proposed intake would be 30% average annual daily flow (AADF), or 276 cubic feet per second (cfs), for the months of February through May, and the annual 7-day, 10-year flow (A7Q10), or 154 cfs, for the months of June through January. At all times either the 2-stage IFPT or the natural streamflow should be passed below the proposed intake. Based on this 2-stage IFPT regime, the proposed pumping is estimated

to reduce the AADF (922 cfs) in the Chattahoochee River by approximately 9% for the Applicant's proposed project.

BACKGROUND

Hall County, the Applicant for the proposed Glades Reservoir project, identified a pumped-storage reservoir located on Flat Creek and a raw water intake on the Chattahoochee River located approximately 3 miles upstream from Belton Bridge (or approximately 0.5 mile north of the Corps property boundary for Lake Lanier) as their preferred alternative. Glades Reservoir is a proposed pumped-storage reservoir with an annual average yield of 50 million gallons per day (mgd). The reservoir will store the water naturally drained from the Flat Creek watershed and water pumped from the Chattahoochee River from a proposed pump station. This analysis assumes the pump station will have a maximum daily pumping capacity of 40 mgd. The DEIS alternatives will simulate the actual maximum daily pumping capacity which varies with each alternative. **Figure 1** shows the study area.

Figure 1. Project Location within Hall County, Georgia

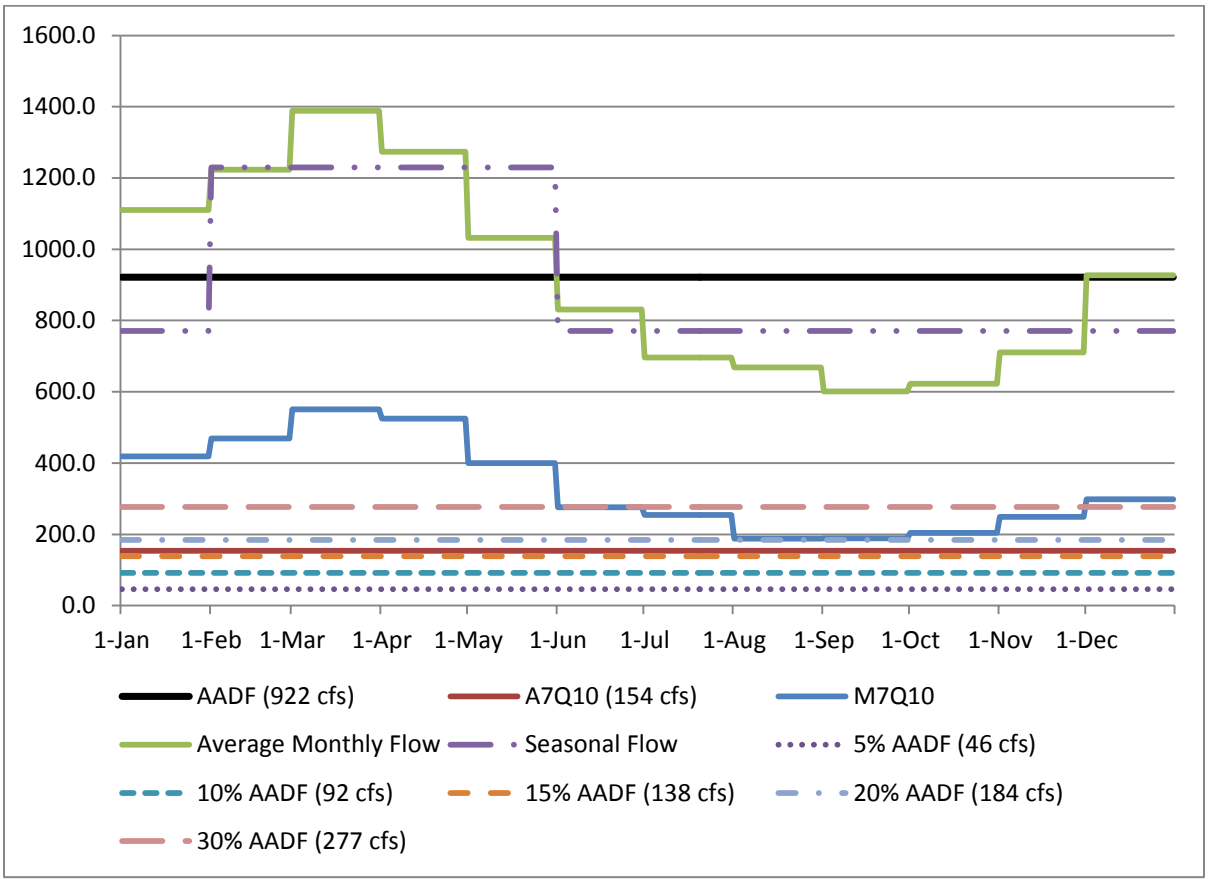


Flow Scenarios Evaluated

A range of flow scenarios were assessed to represent conditions ranging from extremely low to the normal high flows that occur in the study area. The AADF at the proposed intake site on the Chattahoochee River is 922 cfs for the period of record analyzed (1957 through 2012). The 7Q10 statistics are based on the lowest values of average flow computed over seven consecutive days for each year for the period of streamflow record analyzed. 7Q10 frequency can be computed on a seasonal or monthly basis by limiting the 7-day average flow data used to only the season or month of interest for each year.

The flow scenarios selected for analysis represented a range of flows including 5% AADF, 30% AADF, average monthly flows (AMF) for January through December, monthly 7Q10 (M7Q10) flows for January through December, the spring seasonal flow (from February through May), and the AADF. The highest flow scenario that was modeled was the AMF for March (1,388 cfs). The flow scenarios in **Figure 2** provide reference points that cover the expected extremes of potential flows within the study area.

Figure 2. Flow Scenarios Evaluated at the Chattahoochee River Intake (8/21/1957-12/31/2012)



Protection of Water Quality

The evaluation of potential water quality impacts is reviewed in the *Instream Flow Protection Threshold Analysis for the Proposed Water Intake on the Chattahoochee River: Part 1 – Hydrological and Water Quality Draft Technical Memorandum (*AECOM 2014). This technical memorandum assesses the section of Chattahoochee River between the proposed raw water intake and the Lake Lanier boundary. Parameters evaluated were limited to the water quality parameters that are potentially affected by the change in available flow in the Chattahoochee River: DO, temperature, and biota.

For water quality impacts, the most critical period for evaluation is under critical low flows (drought conditions) and high temperatures. However, during low flow periods, if the natural streamflow is

lower than the proposed IFPT, no pumping from the Chattahoochee River will be allowed. Because of this, the proposed project will not change the available streamflow below the proposed intake and will not cause a change in water quality in the segment of the river below the proposed intake.

Protection of Aquatic Species

The aquatic habitat impacts were assessed for each of the major habitat types, using Habitat Suitability Curves for representative fish species and age classes appropriate to the locale. The analysis presented in *the Instream Flow Protection Threshold Analysis for the Proposed Water Intake on the Chattahoochee River: Part 2 - Flow Impacts to Fish Community and Recreational Use* Draft Technical Memorandum (AECOM 2014) showed that year-round resident game and non-game fish species generally are predicted to experience increases in habitat quality and quantity under flow conditions as low as 10% AADF (92 cfs). This result can be understood as conversion of deep habitat to shallow habitat (i.e., suitable habitat for resident fish species) as flow decreases. Within the study area, the estimated optimal ecological flow for the broadest assemblage of year-round resident fish (including game fish and non-game fish) is generally between 10% (92 cfs) and 30% AADF (276 cfs).

The 10% AADF (92 cfs) flow scenario generally appears to meet the habitat needs of the representative year-round resident fish community within the study area with only limited impacts. At 5% (46 cfs) AADF, some species are predicted to experience a reduction in habitat quality/volume.

Protection of Recreation

To ensure the designated use of the Chattahoochee River, recreation (fishing) is maintained, simulations were run to predict the critical flow scenario (or the depth of key shallow zones in the river) that may prevent the spawning fish from migrating upstream from Lake Lanier, or negatively impact river navigability for recreational purposes.

The *Instream Flow Protection Threshold Analysis for the Proposed Water Intake on the Chattahoochee River: Part 2 - Flow Impacts to Fish Community and Recreational Use Draft Technical Memorandum (*AECOM 2014) concluded that the A7Q10 (154 cfs) is sufficient to support year-round resident game fish species in habitat quality and quantity and in springtime spawning migration of transient game fish species. However, at A7Q10, transient game fish species would experience moderate losses of suitable habitat area at this flow.

The estimated minimum safe boating depth for small motor boats appears to occur at about 30% AADF (276 cfs), which is estimated to be sufficient for fishing boats with small outboard engines to navigate upstream during the spring spawning period to fish for striped bass, walleyes, and white bass. Below this flow scenario, the model indicates that navigation channels through the shallow shoals would be too shallow or narrow. For recreational paddlers using canoes or kayaks, flows as low as 10% AADF (92 cfs) appear to be sufficient to maintain sufficient channel depths for downstream navigation from the location of the Applicant's proposed intake to Lake Lanier.

Based on the above factors, A7Q10 was deemed insufficient to support access by recreational anglers to the upper reaches of the Upper Chattahoochee River during the spring spawning run. A flow of 30% AADF during the spring months of February through May would mitigate the moderate losses of suitable habitat for transient game fish species and limitations on angler access during this period.

Based on the detailed habitat analysis for the protection of aquatic communities using the USGS PHABSIM model, a 2-stage IFPT scenario was recommended for further evaluation to determine its impact on reservoir safe yield, lake levels, and downstream releases.

Protection of the Stream under Low Flow Conditions

To assess the potential flow alteration caused by the proposed pumping activities, pumping during several historical periods was assessed and is summarized in **Table 1**. For the period of record analyzed (1957 through 2012), the average flow alteration that would result from the proposed pumping activities ranged from 0 to 28.6% and averaged approximately 9.7% based on the maximum pumping scenario (for a reservoir with a 50-mgd yield) and the 2-stage IFPT. During the most critical drought (2007-2008), the average % difference ranged from 0 to 28.6% and averaged approximately 13.4%. The analysis shows that during a severe drought with streamflow lower than the IFPT (summer 2007), no pumping is allowed and therefore no flow alteration occurred.

Table 1. Percent (%) of Time the Daily Flow Alteration Caused by Pumping (2-stage IFPT)

	Flow Altered	Flow Decrease ≤ 5%	Flow Decrease 5 10%	Flow Decrease 10 15%	Flow Decrease 15 20%	Flow Decrease 20 25%	Flow Decrease > 25%
POR: 1957-2012	96.8%	19.7%	39.8%	21.5%	9.2%	4.5%	2.1%
1997 Avg Year Conditions	98.4%	19.2%	44.9%	19.5%	12.6%	2.2%	0.0%
2005 Wet Year Conditions	93.4%	31.8%	53.2%	8.5%	0.0%	0.0%	0.0%
1986-1989 Drought	38.4%	10.3%	34.8%	24.4%	14.4%	9.5%	5.0%
2001 Drought	100.0%	2.5%	15.6%	27.4%	22.2%	20.5%	11.8%
2007-2008 Drought	90.0%	5.3%	24.8%	19.0%	15.3%	14.8%	10.8%

SUMMARY

Scientific studies on streamflow alteration show that a high level of ecological protection occurs when flow alteration is within zero to 10% of natural conditions, and that a moderate level of ecological protection occurs when flow alteration is within 11 to 20% of natural conditions. Based on the above flow alteration projections, we believe that a high level of ecological protection can be maintained during average operations (9.7% flow alteration). Even during the worst historical drought period, a moderate level of ecological protection can still be maintained with a 2-Stage IFPT.

LIST OF REFERENCES

- AECOM (2014). *Draft Technical Memorandum Part 1 - Instream Flow Protection Threshold Analysis for the Proposed Water Intake on the Chattahoochee River: Hydrological and Water Quality Analysis*
- AECOM (2014). *Draft Technical Memorandum Part 2 - Instream Flow Protection Threshold Analysis for the Proposed Water Intake on the Chattahoochee River: Flow Impacts to Fish Community and Recreational Use*

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To	Richard Morgan, Katherine Freas (U.S. Army Corps of Engineers)	Pages	62
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Subject	Glades Reservoir Environmental Impact Statement – Instream Flow Protection Threshold Analysis for the Proposed Water Intake On the Chattahoochee River: Part 1 - Hydrological and Water Quality		
From	AECOM		
Date	July 15, 2014		

INTRODUCTION

This technical memorandum documents the evaluation of hydrological and water quality impacts resulting from the instream flow protection threshold (IFPT) scenarios below the proposed Glades Reservoir intake on the Chattahoochee River. Although this is presented as Part 1 of a site specific study, this evaluation was completed in parallel with the Part 2 study of the Flow Impacts to Fish Community and Recreational Use (AECOM, 2014).

PROJECT BACKGROUND

Hall County, the Applicant for the proposed Glades Reservoir project, identified as their preferred alternative, a pumped-storage reservoir located on Flat Creek and a raw water intake/pump station on the Chattahoochee River (**Figure 1**). The Applicant submitted their plans for the proposed Glades Reservoir in a Section 404 permit application (Permit Number SAS-2007-00388) to the Department of the Army.

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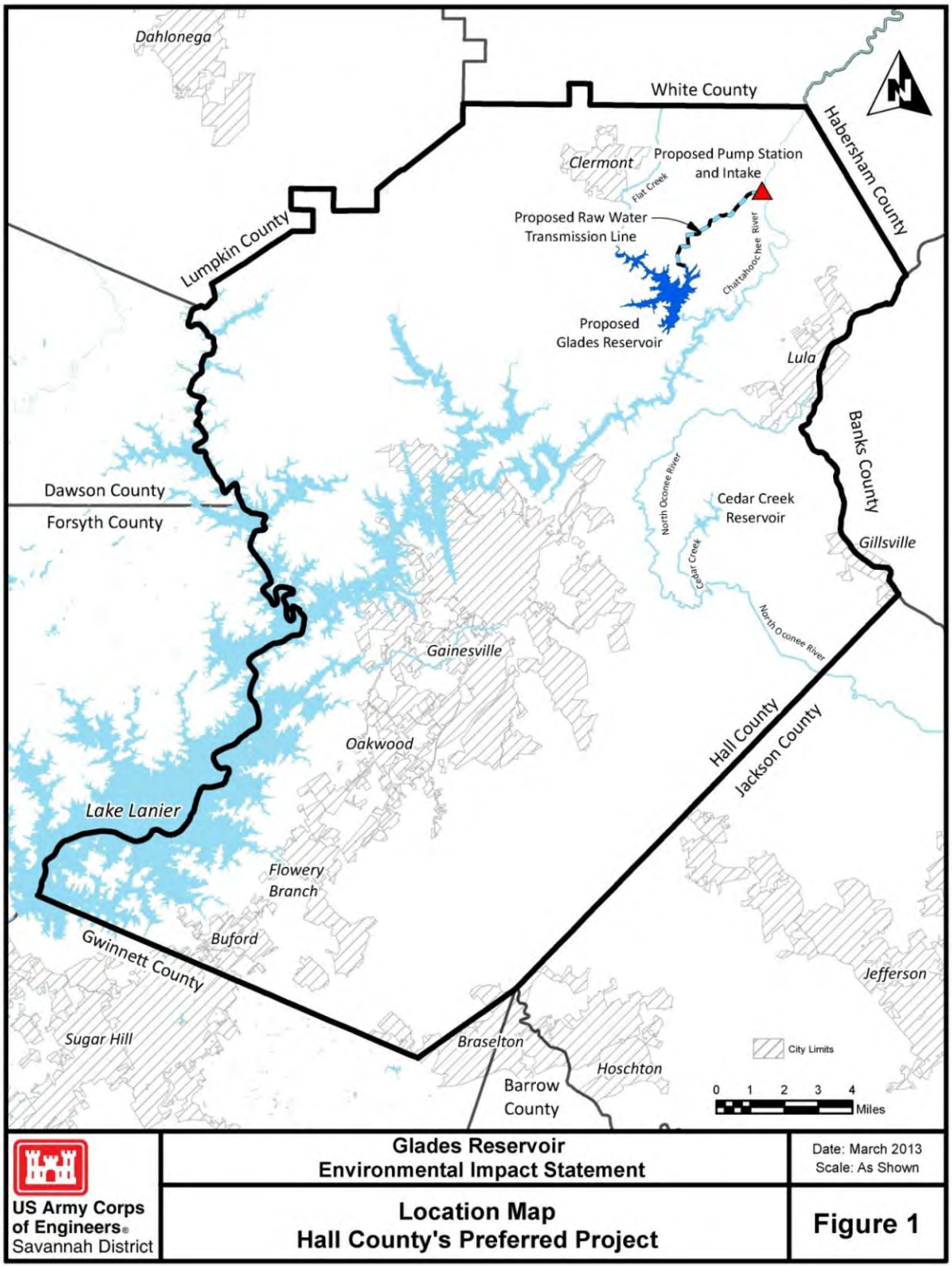
Figure 1. Project Location within Hall County, Georgia



The proposed Glades reservoir would be operated as a pumped-storage reservoir (pumping water from the Chattahoochee River when available and storing the pumped water in the proposed reservoir for water supply purpose). In order to pump water from the Chattahoochee River to fill or refill the proposed Glades Reservoir the Applicant submitted a water withdrawal permit application to the Georgia Environmental Protection Division (EPD) in 2011.

INSTREAM FLOW PROTECTION THRESHOLD

The term IFPT is used throughout this TM to better convey the purpose of instream flow management for the protection of water quality and a healthy aquatic environment during low flow conditions. The Applicant had used the more conventional term "minimum instream flow (MIF)" in its surface water withdrawal application submitted to Georgia EPD. EPD currently prefers the use of the term IFPT.

Georgia Instream Flow Policy

Instream flow is needed to protect aquatic habitat and downstream users such as fish, wildlife, recreation, public water supply and water quality. The Georgia Environmental Protection Division (EPD) regulates the instream flow and implements its instream flow protection policy through provisions inserted in surface water withdrawal permits.

The State of Georgia adopted its "Interim Instream Flow Policy" on April 1, 2001, (Water Issues White Paper, Georgia's Interim Instream Flow Policy, Board of Natural Resources, State of Georgia, May 2001). Prior to 2001, the lowest annual 7-day average flow that occurs once in 10 years (A7Q10) flow statistics have been used as the basis to calculate stream design flows for water quality standards or wasteload assimilation purposes. A stream's 7Q10 is a statistical figure that reflects the lowest seven-day running average of a stream's flow with a recurrence frequency of once in ten years. The A7Q10 is the annual 7-day, 10-year minimum flow that is computed using the single lowest 7-day average flow from each year of record. Monthly 7Q10 is a statistical figure that reflects the lowest seven-day running average of a stream's flow for each calendar month with a recurrence frequency of once in ten years. Since the adoption of the Interim Instream Flow Policy, applicants seeking water withdrawal permit can select one of the following three options for determining the instream flow protection threshold (IFPT):

1. Monthly 7Q10 (M7Q10) flow
2. Site-specific instream flow study
3. Mean annual flow
    - 30% mean annual average flow (direct withdrawal; no impoundment)
    - 30/60/40% mean annual flow (water supply reservoir)

These options are thought to provide generally better protection of aquatic life than the A7Q10 flow used before the adoption of the Interim Instream Flow Policy. These options provide seasonal variations (such as M7Q10 or the 30/60/40%) that mimic the natural variations in streams, or site-specific conditions for the habitat or aquatic life of interests. Applicants for water withdrawal can

choose to conduct a site-specific instream flow study if the study design and scope is pre-approved by Georgia Department of Natural Resources (GDNR). The mean annual flow option allows for 30% of the mean annual average flow to be used as an IFPT for direct withdrawal (no impoundment). If the IFPT is being calculated for a water supply reservoir, then 30/60/40% mean annual flow is to be used (30% July through November, 60% January through April and 40% May, June and December).

Applicant's Request

Based on a site-specific study submitted with the water withdrawal permit (December 2010, CCR Environmental, Inc.), the Applicant requested that the A7Q10 (184 cubic foot per second (cfs)) flow be approved as the IFPT below the proposed Glades Reservoir raw water intake on the Chattahoochee River. The basis of the Applicant's request was as follows:

1. The Chattahoochee River is a highly regulated stream; in such streams, the IFPT is determined on a case-by-case basis by Georgia EPD and the GDNR Wildlife Resources Division (WRD).
2. Applicant conducted a site-specific study in 2010 and concluded, based on the findings of the study, that the A7Q10 is the appropriate IFPT below the proposed intake for the Glades Reservoir project. (CCR Environmental, Inc. 2010).
3. The requested IFPT will allow the proposed project to produce a very high safe yield at an economical cost.

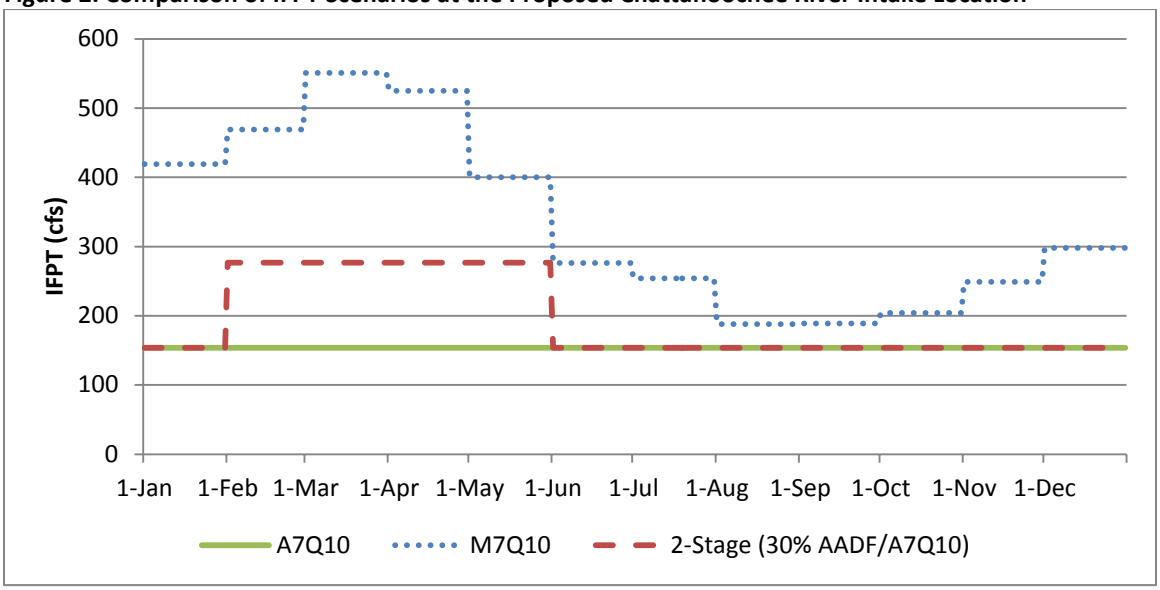
The Applicant used 50-year Chattahoochee River streamflow data (period of analysis 1958 to 2008) for estimating the A7Q10 flow of 184 cfs in the 2010 study and for its reservoir safe yield analysis. In 2013, AECOM updated the A7Q10 and M7Q10 instream flow estimates for the Chattahoochee River at the proposed intake location with the most recent data available at the time by extending the period of analysis to December 31, 2012 (**Attachment 1**). The revised A7Q10 based on updated streamflow record for the period of 1958 to 2012 is 154 cfs. EPD has reviewed the data and accepted the updated A7Q10 and M7Q10 values based on streamflow record from 1/1/1958 to 12/31/2012 (**Attachment 2**, email confirmation from EPD, March 6, 2013). However, the A7Q10 values were not accepted as the IFPT below the proposed Glades Reservoir raw water intake on the Chattahoochee River, and further analysis was recommended.

HYDROLOGICAL IMPACTS OF INSTREAM FLOW PROTECTION THRESHOLD

The hydrological impacts on the Chattahoochee River were evaluated using three different IFPT scenarios (A7Q10, M7Q10, and 2-stage) as shown in **Figure 2.** The A7Q10 scenario is the updated value of 154 cfs, while the 2-Stage scenario is the 30% average annual daily flow (AADF) (276 cfs) for the months of February through May and the A7Q10 (154 cfs) for the months of June through January. The M7Q10 values range from 188 cfs in August to 551 cfs in March. Each IFPT scenario was assessed using the Glades Reservoir Safe Yield Analysis spreadsheet models to determine the impact

on reservoir safe yield and streamflow assuming the same maximum daily pumping capacity at the intake (40 mgd).

Figure 2. Comparison of IFPT Scenarios at the Proposed Chattahoochee River Intake Location

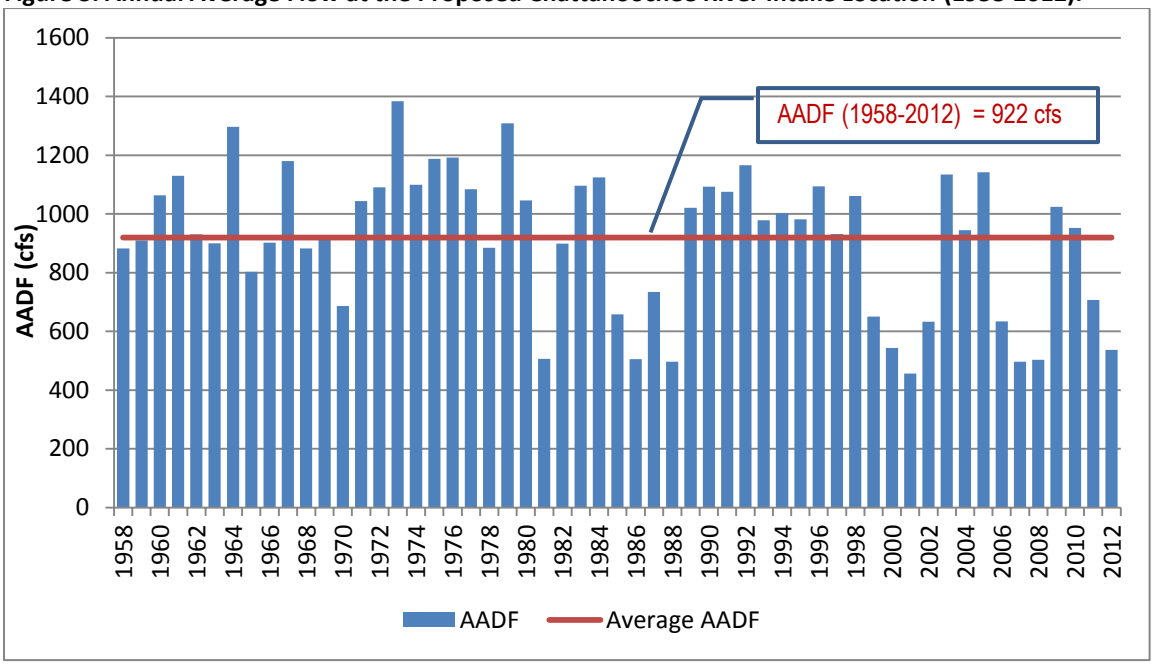


Notes:

1. The flows in the Chattahoochee River at the proposed intake location were calculated using a drainage area ratio conversion using U.S. Geological Survey (USGS) gage 02331600 Chattahoochee River near Cornelia, GA.
2. Period of record: January 1, 1958 through December 31, 2012.
3. The AADF at the proposed intake site on the Chattahoochee River is 922 cfs, and 30% of the AADF is 276 cfs.

The annual average flow at the proposed Chattahoochee River intake for each year from 1958-2012 is shown in **Figure 3**. The AADF at the proposed intake site on the Chattahoochee River is 922 cfs. Typical average and wet year conditions are selected from this figure to demonstrate the effects of the three IFPT scenarios on streamflow available for pumping to the proposed Glades Reservoir. Several drought periods were identified, including the 1986-1989 drought, the 2001 drought, and the 2007-2008 drought. Based on our analysis, the 2007-2008 drought is the critical drought for the proposed Glades Reservoir. The 1986-1989 drought period is known as an extended drought with low streamflow in the springtime and could be critical for instream flow management. These drought periods were analyzed to evaluate the frequency of natural streamflow exceeding the three IFPT scenarios.

Figure 3. Annual Average Flow at the Proposed Chattahoochee River Intake Location (1958-2012).



Notes:
1. Period of record analyzed: 1958-2012
2. AADF = 922 cfs based on the flow at the proposed intake location, which was calculated using a drainage area ratio conversion on USGS gage 02331600 Chattahoochee River near Cornelia, GA.

Impacts to Streamflow

The three IFPT scenarios (A7Q10, M7Q10, and 2-stage) were assessed using the Glades Reservoir Safe Yield Analysis spreadsheet model to determine the impact on streamflow assuming the same maximum daily pumping capacity at the intake (40 mgd). Pumping from the Chattahoochee River only occurs when the Glades Reservoir storage drops below the normal pool operation level (1,180 feet MSL), and when the flow in the Chattahoochee River is greater than the IFPT value. More information about the operation of the safe yield analysis model can be found in the *Glades Reservoir Environmental Impact Statement— Alternative Reservoir Safe Yield Analysis Technical Memorandum* (AECOM, 2015).

This section presents the impact of the 2-Stage IFPT on the streamflow at the Chattahoochee River intake location. The focus on the 2-Stage IFPT was guided by the recommendation from the detailed habitat analysis using the USGS PHABSIM model (Glades Reservoir Environmental Impact Statement – Instream Flow Protection Threshold Analysis for the Proposed Water Intake On the Chattahoochee River: Part 2 - Flow Impacts to Fish Community and Recreational Use, AECOM 2014). **Figure 4** through **Figure 7** present the daily flow in the Chattahoochee River below the proposed intake under existing conditions (pre-project) and the projected flow after implementation of the proposed pump station (post-project). The hydrologic analysis for the other IFPT scenarios (A7Q10 and M7Q10) can be found in **Attachment 3**.

Figure 4 shows a close-up of the pre- and post-project Chattahoochee River flow for 1997 (representing average year conditions). During average year conditions, the post-project flow is reduced, but the flow is well above the 2-Stage IFPT.

Figure 4. (Close-up) Chattahoochee River Pre and Post Project Flow, IFPT=2-Stage (30% AADF/A7Q10) (Average Year, 1997)

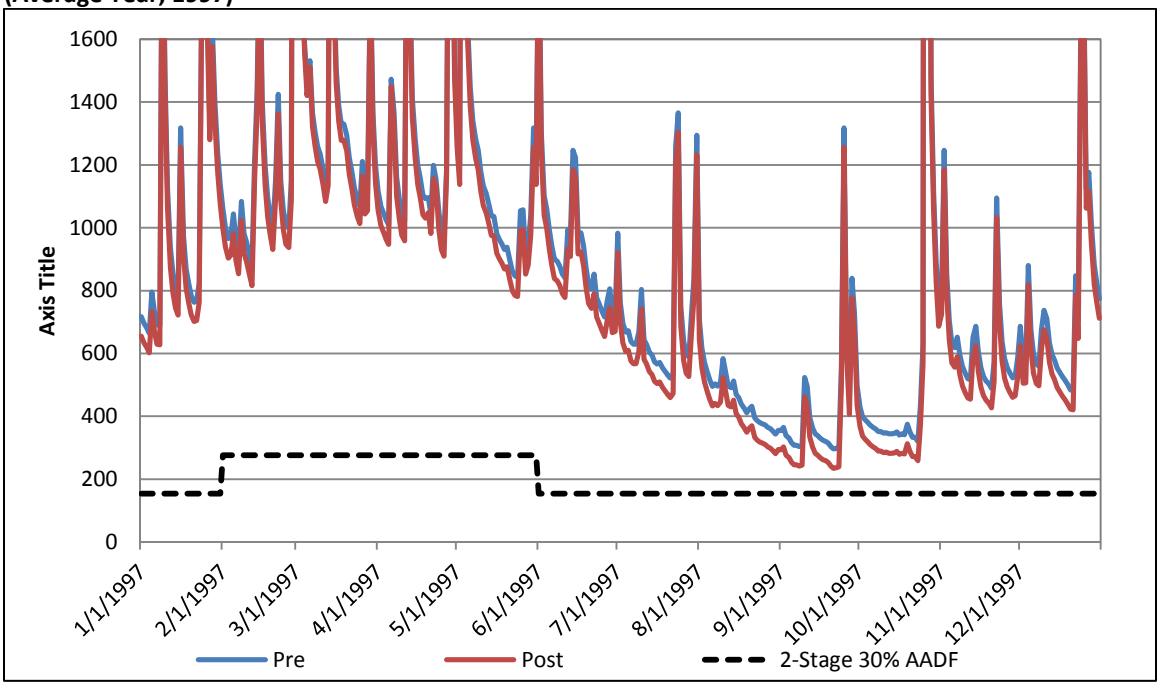


Figure 5 shows a close-up of the pre- and post-project Chattahoochee River flow for 2005 (representing wet year conditions). During wet year conditions, the post-project flow is reduced, but the flow is well above the 2-Stage IFPT.

Figure 5. (Close-Up) Chattahoochee River Pre and Post Project Flow, IFPT=2-Stage (30% AADF/A7Q10) (Wet Year, 2005)

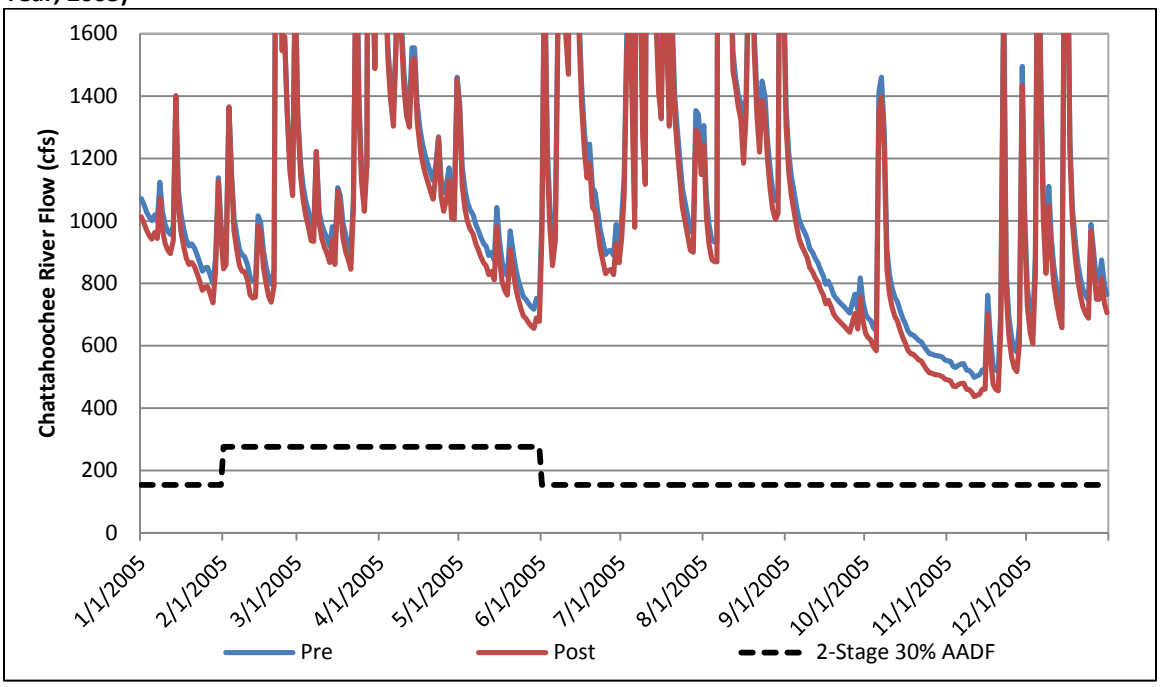


Figure 6 shows a close-up of the pre- and post-project Chattahoochee River flow for 1986-1989 (representing drought conditions). During drought conditions, the post-project flow is reduced, often to the IFPT level. The natural flow does occasionally drop below the IFPT during this period, and pumping does not occur when the natural flow is below the IFPT level.

Figure 6. (Close-up) Chattahoochee River Pre and Post Project Flow, IFPT=2-Stage (30% AADF/A7Q10) (Drought, 1986-1989)

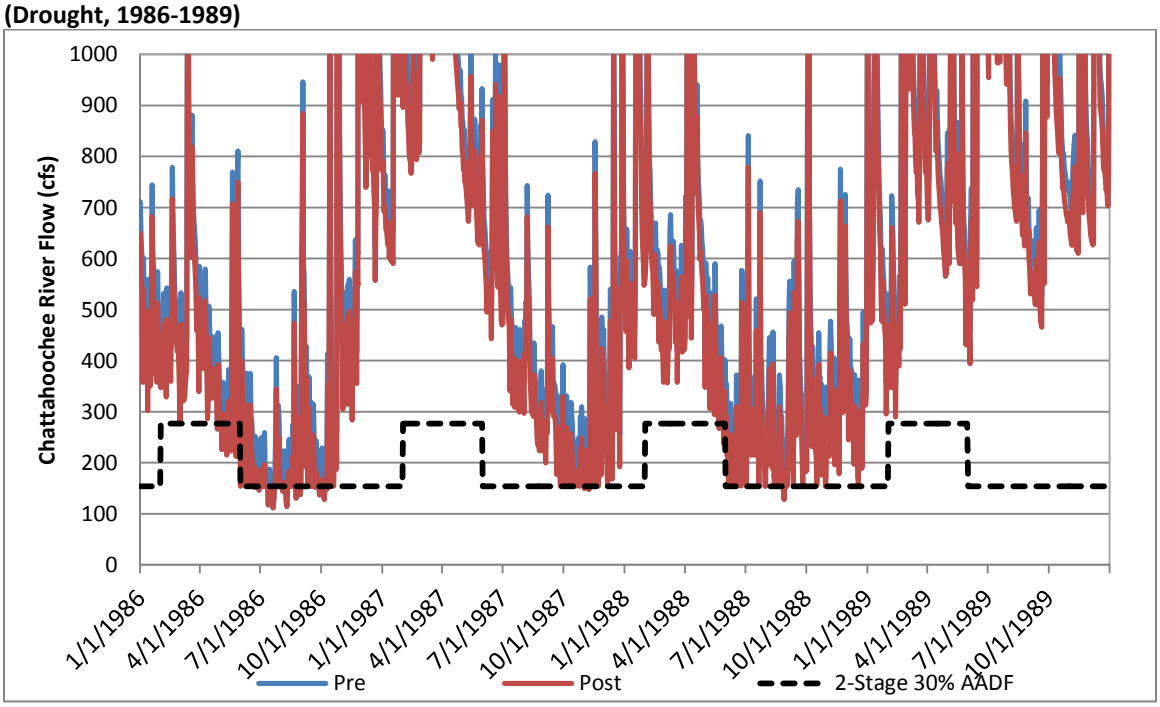


Figure 7 shows a close-up of the pre- and post-project Chattahoochee River flow for 2007-2008 (critical historical drought conditions). During critical drought conditions, the pre-project flow is often already naturally below the IFPT. When the pre-project flow is above the IFPT, pumping from the Chattahoochee is allowed, and the post-project flow is reduced.

Figure 7. Chattahoochee River Pre and Post Project Flow, IFPT=2-Stage (30% AADF/A7Q10) (Critical Drought, 2007-2008)

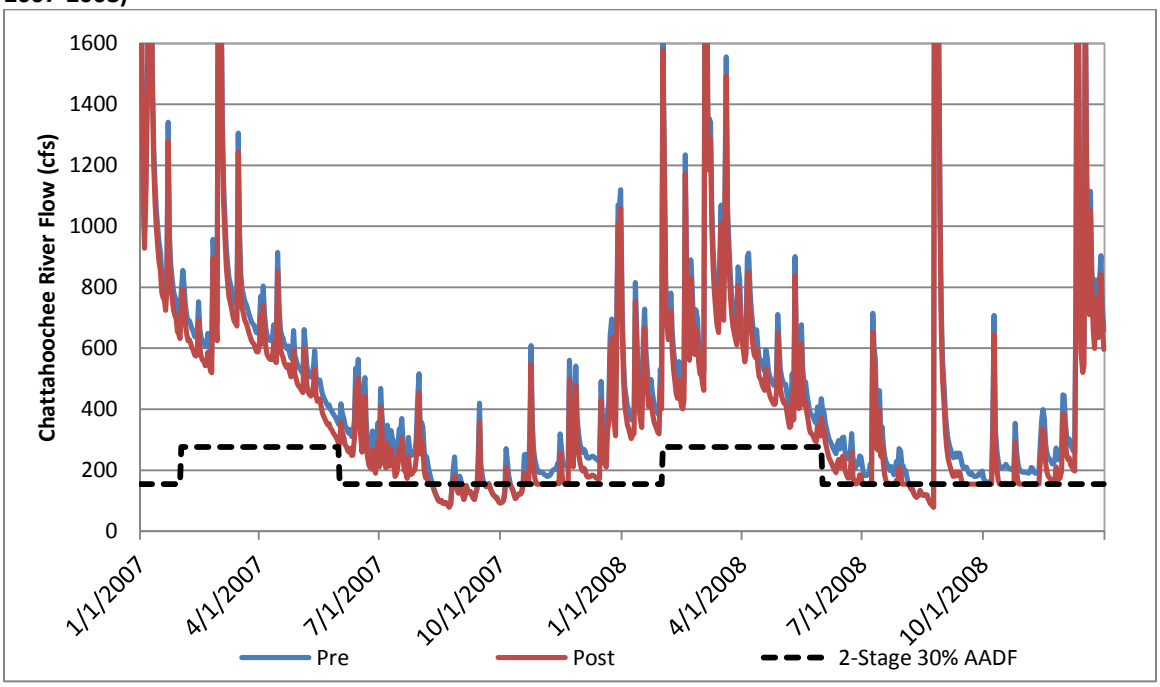


Table 1 summarizes streamflow availability statistics for the three IFPT scenarios evaluated for the entire period of analysis (1958 to 2012). In general, the A7Q10 and 2-stage IFPT scenarios can be met during most of the flow/weather conditions. The analysis shows that approximately 12 days across the entire period of analysis (1958-2012) when the 2-stage IFPT cannot be met. The number of days the natural streamflow is lower than M7Q10 (pumping is not available) increases significantly if M7Q10 is selected to be the IFPT.

Table 1. Number of Days Spring Streamflow is Less Than the IFPT Scenario Condition (1958-2012)[1]

	No. of Days Pre Project Streamflow < IFPT (Pumping is not Available)			% of Time Pre Project Streamflow > IFPT		
	A7Q10	M7Q10	2 Stage[2]	A7Q10	M7Q10	2 Stage[2]
February	0	57	2	100%	96%	100%
March	0	68	0	100%	96%	100%
April	0	65	1	100%	96%	100%
May	0	67	9	100%	96%	99%

Notes:
1. Period of record analyzed (1958-2012) with the total number of days equal to 20089 days.
2. 2-stage IFPT requires passing a minimum of 30% AADF in February through May and A7Q10 from June to January below the proposed intake.

The average spring flow (February through May) is important for fish spawning and related angler activities. **Figure 8** shows the average spring flow at the proposed Chattahoochee River intake for each year from 1958-2012. Calendar year 1986 had the lowest average streamflow during the springtime (484 cfs).

Figure 8. Annual Spring (February to May) Flow at the Proposed Chattahoochee River Intake 1958-2012

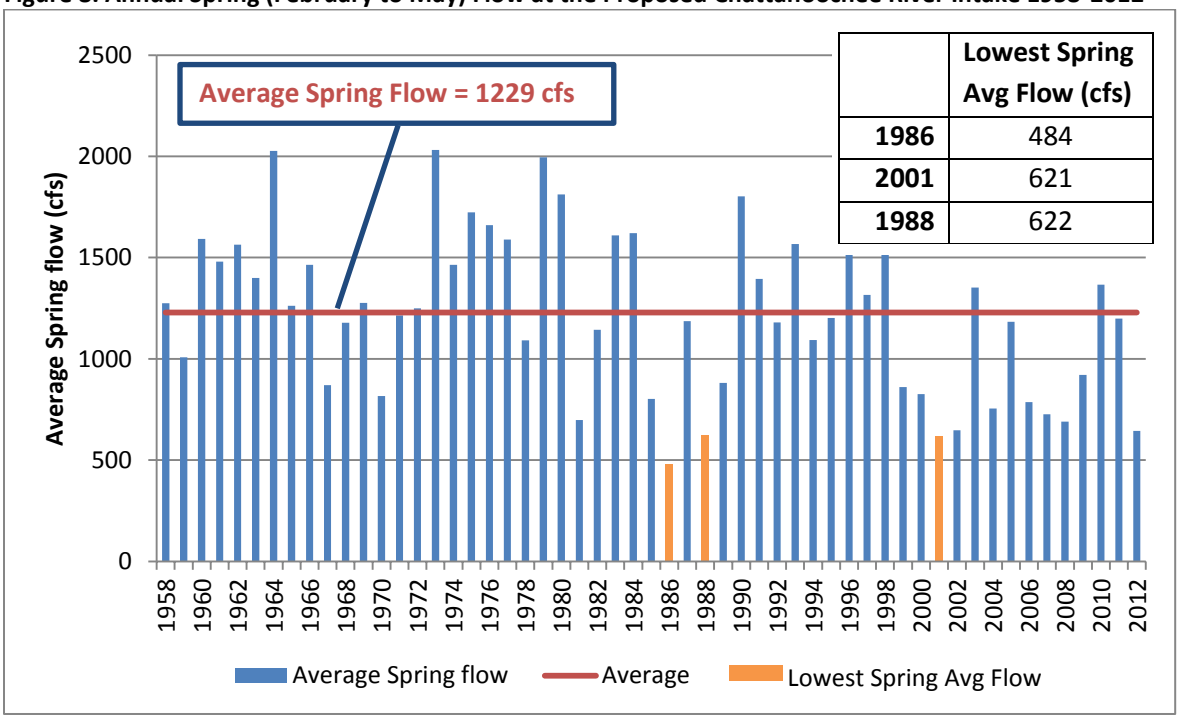


Table 2 summarizes streamflow availability statistics for the three IFPT scenarios evaluated for the year 1986. The daily streamflow can meet the A7Q10 or the 2-stage IFPT 100% of the time during February and March of 1986, but the percent of time daily streamflow meets the 2-stage IFPT drops to 97% in April and 87% in May, respectively. If the M7Q10 is selected, pumping from the river would be significantly limited in April and May because the natural streamflow is less than the M7Q10 values.

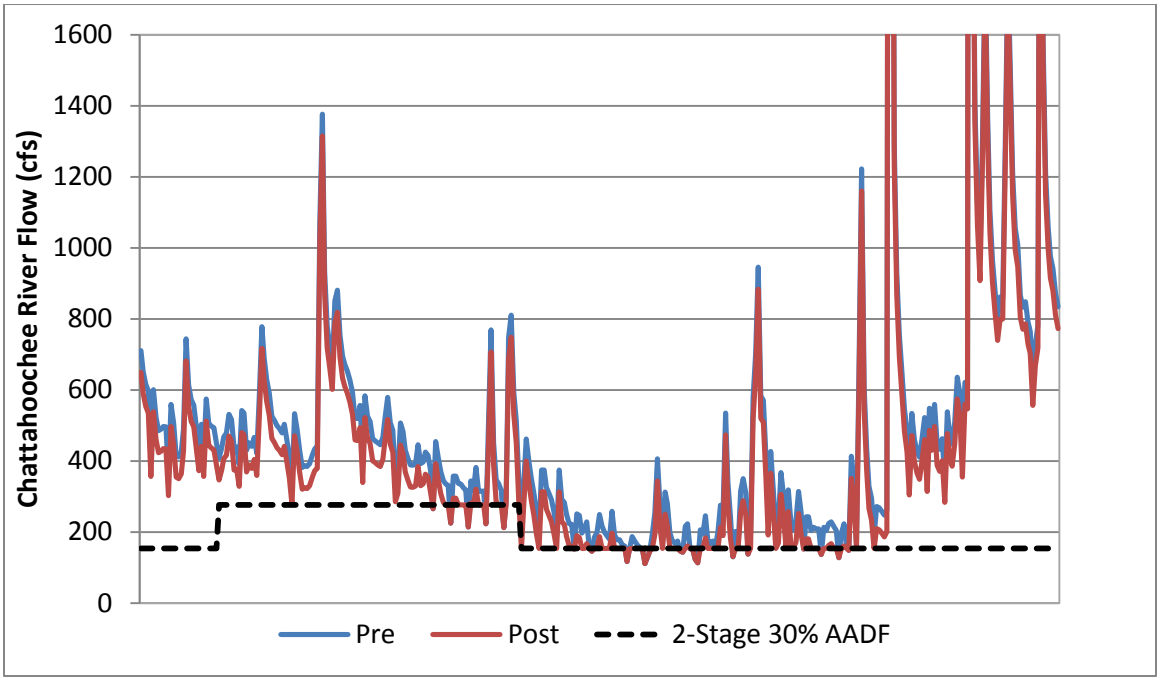
Table 2. Number of Days Spring Streamflow is Less Than the IFPT Scenario Condition[1] (1986)

	No. of Days Streamflow < IFPT (Pumping is not Available)			% of Time Streamflow > IFPT		
	A7Q10	M7Q10	2 Stage[2]	A7Q10	M7Q10	2 Stage[2]
February	0	12	0	100%	57%	100%
March	0	15	0	100%	52%	100%
April	0	28	1	100%	7%	97%
May	0	24	4	100%	23%	87%

Notes:
1. Period of record analyzed (1958-2012) with the total number of days equal to 20089 days.
2. 2-stage IFPT requires passing a minimum of 30% AADF in February through May and A7Q10 from June to January below the proposed intake.

Figure 9 shows a closer look at the pre- and post-project streamflow during 1986 for the 2-stage IFPT scenario. The streamflow is greater than the 30% AADF IFPT during the majority of the spring time in 1986. However, during the unusually dry summer and fall of 1986, the streamflow is frequently lower than the A7Q10. **Attachment 4** presents additional comparisons of streamflow impacts of IFPT scenarios on pumping availability.

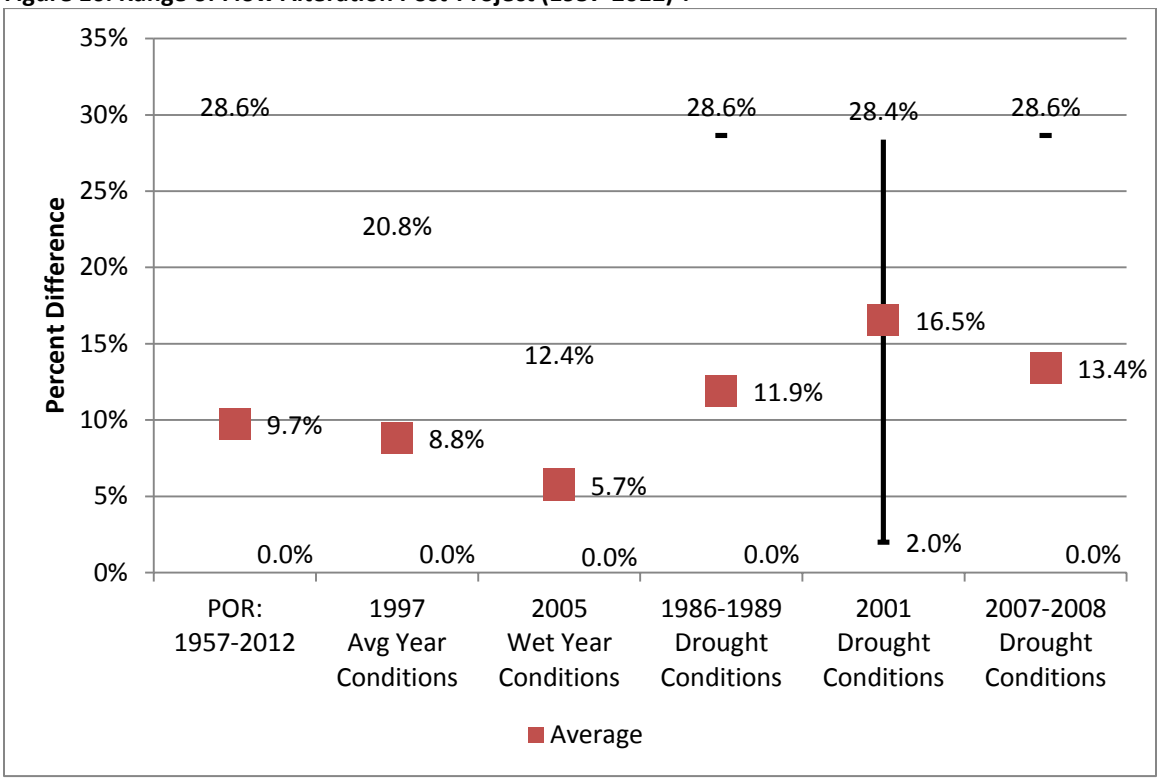
Figure 9. (Close-up) Chattahoochee River Pre and Post Project Flow, IFPT=2-Stage (1986)



Summary of Hydrological Impacts

To assess the potential flow alteration due to the proposed pumping activities, pumping during each of the historical periods was assessed. **Figure 10** shows the range of flow alterations that occurred during various flow conditions. For the period of record analyzed, the average flow alteration ranged from 0 to 28.6% and averaged approximately 9.7% based on the maximum pumping scenario (for a reservoir with a 50-MGD yield) and the 2-stage IFPT. During the most critical drought (2007-2008), the average % difference ranged from 0 to 28.6% and averaged approximately 13.4%. The analysis shows that during a severe drought with streamflow lower than the IFPT (summer 2007), no pumping is allowed and therefore no flow alteration occurred. Additional details on natural flow variations and the impact of pumping can be found in **Attachment 5**.

Figure 10. Range of Flow Alteration Post-Project (1957-2012)[1].



1. Period of Record September 1, 1957 – December 31, 2012.

WATER QUALITY IMPACTS

This section provides a review of existing water quality standards and potential impacts caused by the proposed pumping from the Chattahoochee River for the purpose of filling and operating the Glades Reservoir. The evaluation in this technical memorandum is limited to the section of the Chattahoochee River directly below the proposed raw water intake and above the Lake Lanier boundary. The parameters evaluated are limited to water quality parameters that are affected by flow, including dissolved oxygen (DO) and temperature.

Additional evaluation will be conducted as part of the DEIS effort to assess potential water quality impacts to downstream users, including the potential water quality impacts on Lake Lanier. Evaluation of impacts on site-specific nutrient criteria for Lake Lanier, include limits on chlorophyll-a, phosphorus, total nitrogen, and DO will be discussed as part of the DEIS based on the results of hydrological (HEC-ResSim) modeling.

Water Use Classification

Upstream of the intake location, the length of the Chattahoochee River that runs from the confluence of White Creek to the confluence of Mud Creek has a designated use of “recreation.” The recreational use is defined in Chapter 391-3-6-.03 of the Rules and Regulations for Water Quality Control, Section 14 as, “[g]eneral recreational activities such as waterskiing, boating, and

swimming, or for any other use requiring water of a lower quality, such as recreational fishing." The designated use for the Chattahoochee River below the Mud Creek confluence to Buford Dam (including Lake Lanier) is classified as "recreation" and "drinking water." **Table 3** summarizes the specific water use classification for the segments of Chattahoochee River evaluated in this technical memorandum.

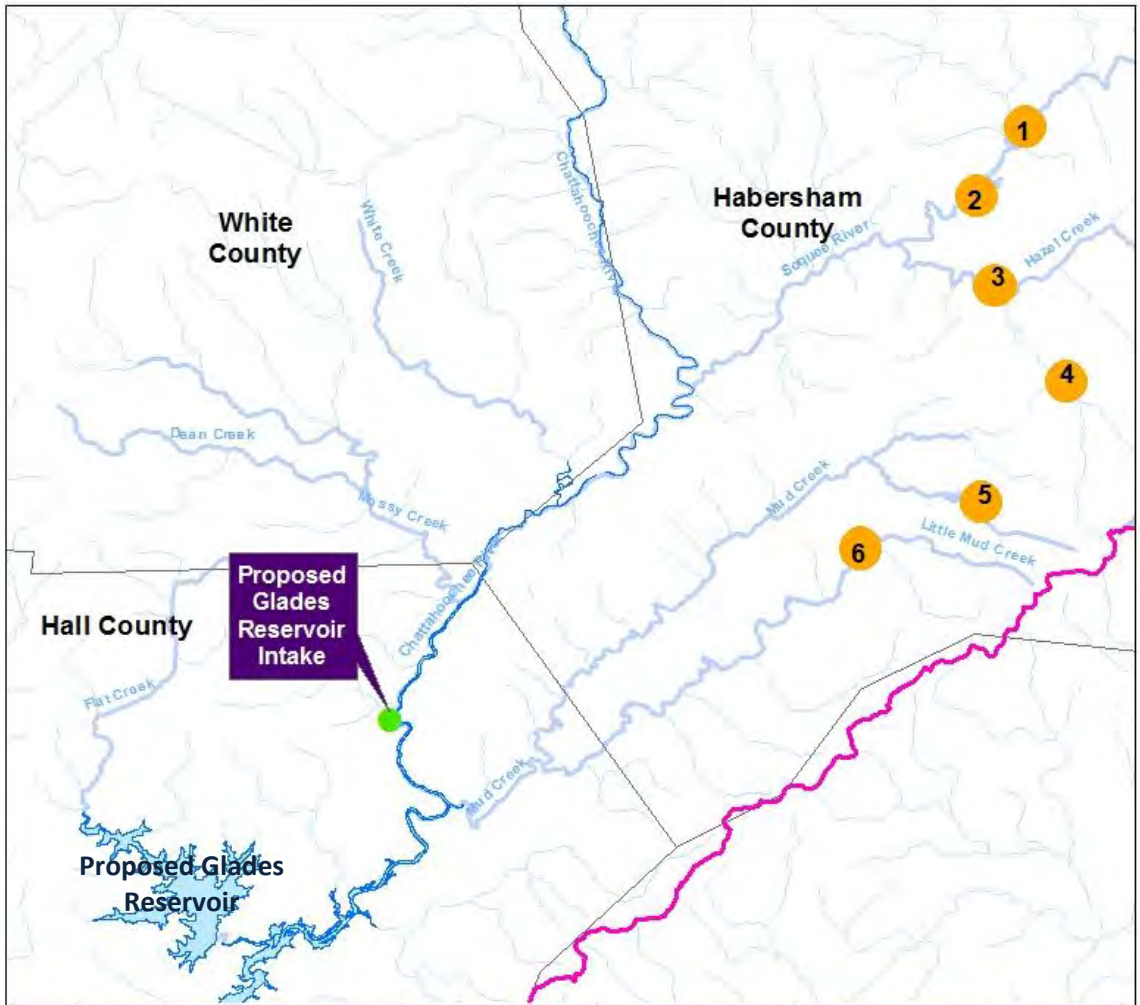
Table 3. Water Use Classification – Upper Chattahoochee River (Headwater to Lake Lanier)

River	River Segment	Classification
Chattahoochee River	White Creek to Mud Creek	Recreation
Chattahoochee River/Lake Lanier	Mud Creek to Buford Dam	Recreation and Drinking Water

Source: Chapter 391-3-6-.03 of the Rules and Regulations for Water Quality Control, Section 14, see Attachment 7 for Upper Chattahoochee Trout Streams

There are six permitted wastewater facilities upstream of the proposed raw water intake location. **Figure 11** shows the existing permitted discharge facilities and their permitted flow limits. Maintaining the IFPT around these discharges is important as instream flows serve to dilute the discharge from each of these facilities, and the permitted flow limits were set in consideration of existing instream flows.

Figure 11. Existing Permitted Discharges



	Facility Name	NPDES ID	Permitted Flow (mgd)	Receiving Stream
1	Clarkesville WPCP	GA0032514	0.75	Soquee River
2	Scovill Fasteners Inc.	GA0001112	0.1893	Soquee River
3	Demorest WPCP	GA0032506	0.4	Hazel Cr Tributary
4	Habersham Central High School	GA0033952	0.018	Hazel Cr Tributary
5	Cornelia WPCP	GA0021504	3	S. Fork Little Mud Cr
6	Baldwin WPCP	GA0033243	0.3	Little Mud Cr

Note: These are the only discharges in the upper Chattahoochee basin (above proposed intake), per Georgia EPD Permit records.

Water Quality Standards

Table 4 summarizes the water quality criteria adopted by Georgia for supporting the recreational designated use. **Table 5** summarizes the criteria adopted to support the designated use as drinking water supplies. Waterbodies that do not meet the water quality criteria are identified by states as impaired under section 303(d) of the Clean Water Act.

Table 4. Water Quality Criteria for Recreation Designated Use[1, 2]

Parameter	Criteria
Fecal Coliform	< 200 colonies/100 mL as a geometric mean (geometric means based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours). Should water quality and sanitary studies show natural fecal coliform levels exceed 200/100 mL (geometric mean) occasionally in high quality recreational waters, then the allowable geometric mean fecal coliform level shall not exceed 300 per 100 mL in lakes and reservoirs and 500 per 100 mL in free flowing fresh water streams.
DO	For waters supporting warm water species of fish[2]: 5 mg/L daily average, and no less than 4 mg/L at all times
pH	6.0 - 8.5
Temperature	< 90 °F. At no time is the temperature of the receiving waters to be increased more than 5°F above intake temperature except that in estuarine waters the increase will not be more than 1.5°F.

1. Source: Georgia Rule 391-3-6-.03 Water Use Classifications and Water Quality Standards
2. No streams in Hall County are designated as trout streams (based on Rule 391-3-6-.03).

Table 5. Water Quality Criteria for Drinking Water Supply Designated Use[1, 2]

Parameter	Criteria
Fecal Coliform	For the months of May through October, when water contact recreation activities are expected to occur, fecal coliform not to exceed a geometric mean of 200 per 100 mL based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours. Should water quality and sanitary studies show fecal coliform levels from non-human sources exceed 200/100 mL (geometric mean) occasionally, then the allowable geometric mean fecal coliform shall not exceed 300 per 100 mL in lakes and reservoirs and 500 per 100 mL in free flowing freshwater streams. For the months of November through April, fecal coliform not to exceed a geometric mean of 1,000 per 100 mL based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours and not to exceed a maximum of 4,000 per 100 mL for any sample. The State does not encourage swimming in surface waters since a number of factors which are beyond the control of any State regulatory agency contribute to elevated levels of fecal coliform.
DO	For waters supporting warm water species of fish[2]: 5 mg/L daily average, and no less than 4 mg/L at all times
pH	6.0 - 8.5
Temperature	< 90 °F. At no time is the temperature of the receiving waters to be increased more than 5°F above intake temperature except that in estuarine waters the increase will not be more than 1.5°F.

1. Source: Georgia Rule 391-3-6-.03 Water Use Classifications and Water Quality Standards
2. No streams in Hall County are designated as trout streams (based on Rule 391-3-6-.03)

Georgia 2012 305(b)/303(d) List of Waters

Section 305(b) of the Clean Water Act requires States to assess and describe the quality of its waters every two years in a report called the 305(b) report. Section 303(d) of the Clean Water Act requires States to submit a list of all of the waters that are not meeting their designated uses and requires the development of a total maximum daily load (TMDL). The 303(d) list is also to be submitted every two years. Georgia submits a combined 305(b)/303(d) report called an Integrated Report (also referred to as "Water Quality in Georgia"). One section of the Integrated Report is the 305(b)/303(d) list of waters, which contains a list of all of the waters that the State has assessed. The most recent list was published in 2012 by Georgia and was approved by EPA in May 2013. Additional information on the 305(b)/303(d) list of waters and the EPA approval letter can be found on http://epd.georgia.gov/georgia-305b303d-list-documents.

The Georgia EPD determines whether a waterbody is supporting its designated uses by collecting water quality data and comparing this data against the water quality criteria. If it is determined that a waterbody is not supporting its designated use, then GA EPD will typically develop a TMDL as the start of the process of restoring the water. A TMDL determines how much of a particular pollutant a waterbody can contain and still support its designated use. The TMDL will state how much the pollutant load to the water needs to be reduced in order for the water to support its designated use.

The proposed raw water intake is located just below the Mud Creek confluence with the Chattahoochee River. Based on the 2012 Integrated Report, the section of Chattahoochee River below the proposed intake and above Lake Lanier supports its current designated use. However the Chattahoochee River is listed for fecal coliform impairments upstream of the proposed intake. Additionally, fecal coliform and occasional biota impairments have been observed in segments of the tributaries to the Chattahoochee River: Flat Creek, Little Mud Creek, Mud Creek, and White Creek. A summary of listing status for the 187 miles of streams monitored in the Upper Chattahoochee River watershed above Lake Lanier is provided in **Table 6**. The stream segments monitored are most commonly evaluated for DO, Temperature, Biota, and Fecal Coliform. All segments may not be actively monitored for all constituents.

Table 6. Summary of 2012 305(b)/303(d) Listing Status for Streams in the Upper Chattahoochee River Watershed[1, 2]

Parameter	Summary
DO	0 reaches (0 miles) is listed as impaired
Temperature	0 reaches (0 miles) is listed as impaired
Biota Fish	7 reaches (74 miles) are listed as impaired due to non-point source pollution
Biota Macroinvertibrates	2 reaches (11 miles) are listed as impaired due to non-point source pollution
Fecal Coliform	9 reaches (70 miles) are listed as impaired due to non-point source pollution
TCA[2]	1 reach (1 mile) is listed as impaired due to an industrial contributor

1. Source: Georgia EPD 305(b)/303(d) List (2012) for Upper Chattahoochee watershed (Hall, Habersham, and White Counties).
2. TCA (1,1,2 – Trichloroethane) is a constituent not typically monitored, but data provided from EPD's Hazardous Waste Branch led to this stream listing.

Many of the permitted discharges in the Upper Chattahoochee River Watershed are into the tributaries of the Chattahoochee River and significant dilution is provided as the tributaries enter the main stem of the river. In general, point sources are not the cause of most fecal coliform and biota impacted impairments. Non-point sources or urban runoff have been identified as the potential sources for the fecal coliform or biota impairments.

Summary of Potential Water Quality Impacts

The evaluation of potential water quality impacts in this technical memorandum is limited to the section of Chattahoochee River directly below the proposed raw water intake and above the Lake Lanier boundary. Parameters evaluated are limited to the water quality parameters that are potentially affected by the change in available flow in the Chattahoochee River (DO, temperature, and biota). Additional evaluation will be included in the DEIS for the proposed project's downstream effects on water quality.

For water quality impacts, the most critical period for evaluation is under critical low flows (drought conditions) and high temperatures. During low flow periods, if the natural streamflow is lower than the proposed IFPT, no pumping from the Chattahoochee River will be allowed. Because of this, the proposed project will not change the available streamflow below the proposed intake and will not cause a change in water quality in the segment of the river below the proposed intake.

The permit limits for five existing point source discharges were developed based on the A7Q10. Because the proposed IFPT to protect low flow conditions meets and/or exceeds the A7Q10 (30% AADF for February through May and A7Q10 for June through January), the water quality due to the permitted parameters addressed in the discharge permits including pH, biological oxygen demand, ammonia, DO, and total suspended solids is expected to remain the same. A modeling analysis using Georgia's DOSAG Model indicated that the DO standards will be met at the critical low flow IFPTs evaluated in this technical memorandum. The simulated DO level below the proposed intake is well above the 6.0 mg/L, as long as the proposed A7Q10 (154 cfs) is maintained in the Chattahoochee River below the proposed intake.

It is important to note that point sources are not the cause of listings for the impaired streams in the upper Chattahoochee River Basin. Non-point source pollution (caused by rain events/stormwater pollution) or Urban Runoff has been identified as the potential sources for the fecal coliform or occasional biota violations; instream fecal coliform levels will not be affected by the change in river flow resulting from the proposed filling or operation of the reservoir during critical low flow conditions under any IFPT scenario (A7Q10, M7Q10, and 2 stage), as these are dry weather periods and the source of the impairment has been identified as stormwater pollution.

The biologic integrity of the Chattahoochee River stream could be affected by several factors including legacy sediment that impacts the habitat or changes in stream flow which may cause bank erosion if there is too much flow or loss of wetted perimeter if there is too little flow. The biota impaired stream segments in the upper Chattahoochee are upstream of the intake and would not

be impacted by the proposed intake. Flat Creek, a Chattahoochee River tributary located just south of the proposed intake is listed for biota impairment, however the elevation of Flat Creek in this area is controlled by backwater from the Chattahoochee River, and is not anticipated to be affected by this project.

The Upper Chattahoochee River currently meets the specified water quality criteria for pH, DO and temperature. The compliance status for these parameters is expected to remain "supporting" after the operation of the project under any IFPT scenario (A7Q10, M7Q10, and 2 stage). Other parameters, such as chlorophyll a and nutrient loadings (for phosphorus and total nitrogen in Lake Lanier and its tributaries) will be evaluated after the hydrological impacts downstream can be determined. In order to complete the hydrological impact evaluation, a preliminary determination of the IFPT downstream of the proposed intake is needed. The water quality impacts in Lake Lanier (associated with changes in hydrological conditions) will be evaluated and discussed in the DEIS.

RESERVOIR SAFE YIELD IMPACTS

"Reservoir Yield" means the quantity of water that can be withdrawn from storage in the reservoir. Reservoir yield is determined by the rate of flow of the stream into the reservoir, losses due to evapotranspiration from the reservoir surface, and the volume of water impounded in the reservoir. "Safe yield" is defined as the maximum (annual average) withdrawal rate available during the most critical drought (worst drought of record). Safe yield is expressed on an annual average basis, but seasonal fluctuations using monthly factors have been accounted for in the safe yield analysis for this EIS. In the 404 permit application, Hall County (the Applicant) defined the safe yield as:

> "[T]he reliable withdrawal rate of water with acceptable quality that can be provided by a combination of streamflows and reservoir storage through a defined critical drought period. Safe yield is dependent upon the storage and hydrologic (rainfall/runoff/evaporation) characteristics of the source, the source facilities, the selected critical drought, upstream and downstream permitted withdrawals, and minimum instream flow requirements." (Schnabel 2010)

Pump intakes are typically sized based on the maximum daily pumping quantity, while the reservoir safe yield is expressed on an annual average basis. For this analysis, the maximum daily pumping quantity is held constant (at 40 mgd) while the IFPT was varied to compare the impacts of different IFPT scenarios on safe yield and streamflow. The DEIS alternatives will simulate the actual maximum daily pumping capacity which varies with each alternative.

Table 7 summarizes the estimated reservoir safe yields under the three IFPT scenarios. At a pumping capacity of 40 mgd, there is no difference in safe yield between the A7Q10 and 2-stage IFPT scenarios - the natural streamflow is generally significantly higher than the IFPT during the months of February through May and the availability for pumping is not affected by raising the IFPT to 30% AADF (276 cfs) from A7Q10 (154 cfs). However, a 26% reduction in safe yield from 50.4 mgd to 37.4 mgd is estimated when the M7Q10 is used as the IFPT release below the intake.

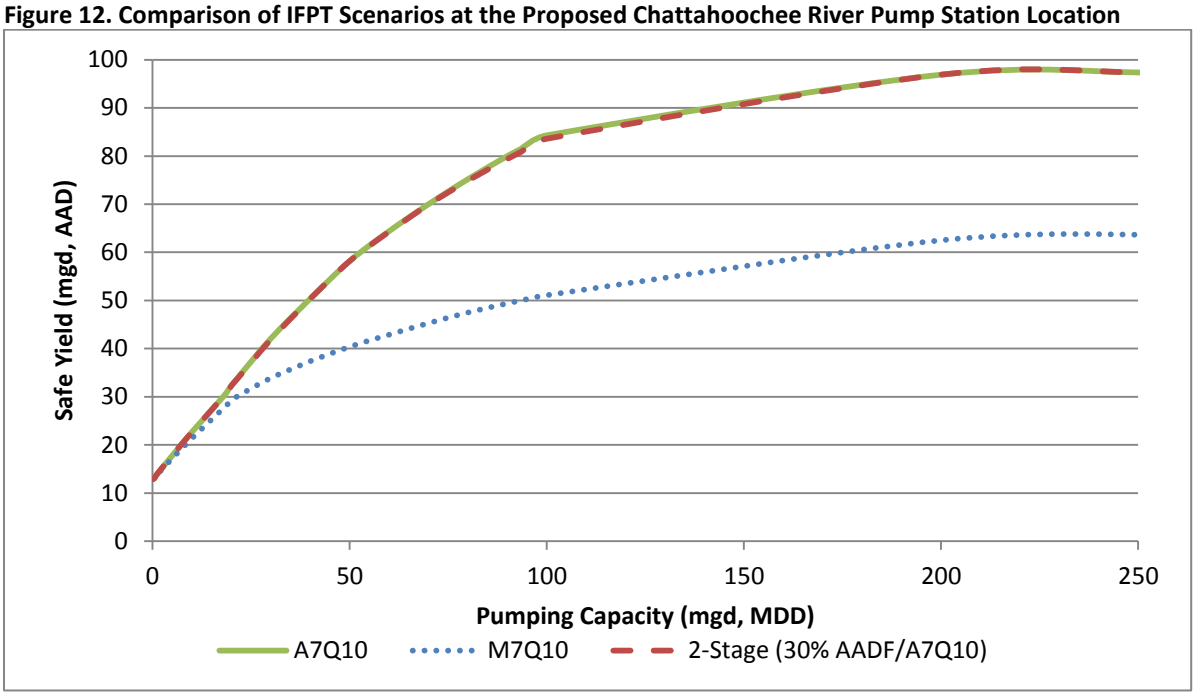
Table 7. Comparison of Proposed Glades Reservoir Safe Yield with a 40-mgd Pumping Capacity at the Proposed Intake

IFPT Scenarios	Reservoir Safe Yield (mgd, AAD[1])	% reduction from A7Q10 Scenario
A7Q10	50.4	N/A
2-stage (Feb to May: 30%AADF, June to Jan: A7Q10)	50.4	0%
M7Q10	37.4	26%

Note: The maximum daily pumping capacity of 40 mgd was used in this analysis because it results in a reservoir safe yield of approximately 50 mgd (annual average) with the current transmission configuration.
[1] Annual average day

The yield-pumping capacity curves for each IFPT scenario are shown in **Figure 12.** Additional detail is provided in **Attachment 6**, which plots the reservoir storage versus time for each modeled scenario. The modeling results show that using the M7Q10 as the IFPT would result in sizable decrease in reservoir safe yield once the maximum pumping capacity exceeds approximately 20 mgd at the proposed raw water intake on the Chattahoochee River. The difference in safe yield between the A7Q10, 2-stage IFPT, and the M7Q10 scenarios widens as the pumping capacity increases.

Figure 12. Comparison of IFPT Scenarios at the Proposed Chattahoochee River Pump Station Location



Summary of Safe Yield Impacts

Our simulations show that the reservoir safe yield and the pumping availability from the Chattahoochee River would not be significantly affected by raising the IFPT requirement from A7Q10 (154 cfs) to a 2-Stage seasonal IFPT where 30% AADF (276 cfs) is required for the months of February through May and A7Q10 for the remaining months of June through January.

The M7Q10 IFPT would reduce the safe yield of the proposed Glades Reservoir by 26% from 50.4 mgd to 37.4 mgd based on a maximum daily pumping capacity of 40 mgd. In a dry year condition similar to the critical drought of 2007-2008, pumping will not be available for approximately 251 days because the natural streamflow would be lower than the M7Q10 IFPT. If the required IFPT release below the proposed intake is equal to the M7Q10, the annual average pumping rate would be reduced by 32% in average year condition and by 23-42% in historical drought condition.

LIST OF REFERENCES

- AECOM (2014). *Draft Technical Memorandum for Supplemental Impacts Analysis: Flow Impacts to Fish Community and Recreational Use Downstream of the Proposed Raw Water Intake in the Chattahoochee River*.
- Carter, R.F., and Fanning, J.D. (1982). *Monthly Low-Flow Characteristics of Georgia Streams*, U.S. Geological Survey Open-File Report 82-560, Doraville, GA.
- CCR Environmental, Inc. (2010). *Study of Flow Impacts on Fish Community in the Chattahoochee River Downstream of Proposed Water Intake*.
- Georgia EPD (2012). *Water Quality in Georgia*
- Schnabel (2010). Safe Yield Analysis, 404 permit application.
- *Glades Reservoir Environmental Impact Statement— Alternative Reservoir Safe Yield Analysis Technical Memorandum* (AECOM, 2015).

ATTACHMENT 1

Update of A7Q10 and M7Q10 Values

DRAFT Memorandum

AECOM
One Midtown Plaza, Suite 500
1360 Peachtree Street, NE
Atlanta, GA 30309
www.aecom.com

404.965.9600 tel
404.965.9605 fax

To	Richard Morgan, Kathrine Freas (U.S. Army Corps of Engineers, Savannah District)	Pages	13
CC			
Subject	Glades Reservoir Environmental Impact Statement—Update of Instream Flow Estimates at Chattahoochee River Intake		
From	AECOM		
Date	November 8, 2013		

BACKGROUND

Based on a site-specific study submitted with the water withdrawal permit (December 2010, CCR Environmental, Inc.), the Applicant requested that the A7Q10 (184 cubic foot per second (cfs)) flow be approved as the IFPT below the proposed Glades Reservoir raw water intake on the Chattahoochee River. The Applicant used 50-year Chattahoochee River streamflow data (period of analysis 1958 to 2008) for estimating the A7Q10 flow of 184 cfs in the 2010 study and for its reservoir safe yield analysis. In 2013, AECOM updated the A7Q10 and M7Q10 instream flow estimates for the Chattahoochee River at the proposed intake location with the most recent data available at the time by extending the period of analysis to December 31, 2012.

APPLICANT'S INSTREAM FLOW ESTIMATES

According to correspondences provided by the Applicant (CCR Environmental, Inc. 2010), the A7Q10 of 184 cubic foot per second (cfs) proposed by the Applicant and the M7Q10 values evaluated in the 2010 study were estimated based on the same period of streamflow record (1958 to 2008) that was used in the Applicant's safe yield analysis (2010). **Table 1** shows the A7Q10 and M7Q10 values evaluated in the 2010 study.

Table 1. Applicant's proposed A7Q10 and M7Q10 values (cfs)

Month	Applicant A7Q10 (1958 2008)	Applicant M7Q10 (1958 2008)
January		447
February		521
March		610
April		576
May		455
June	184	334
July		278
August		205
September		209
October		231
November		277
December		330

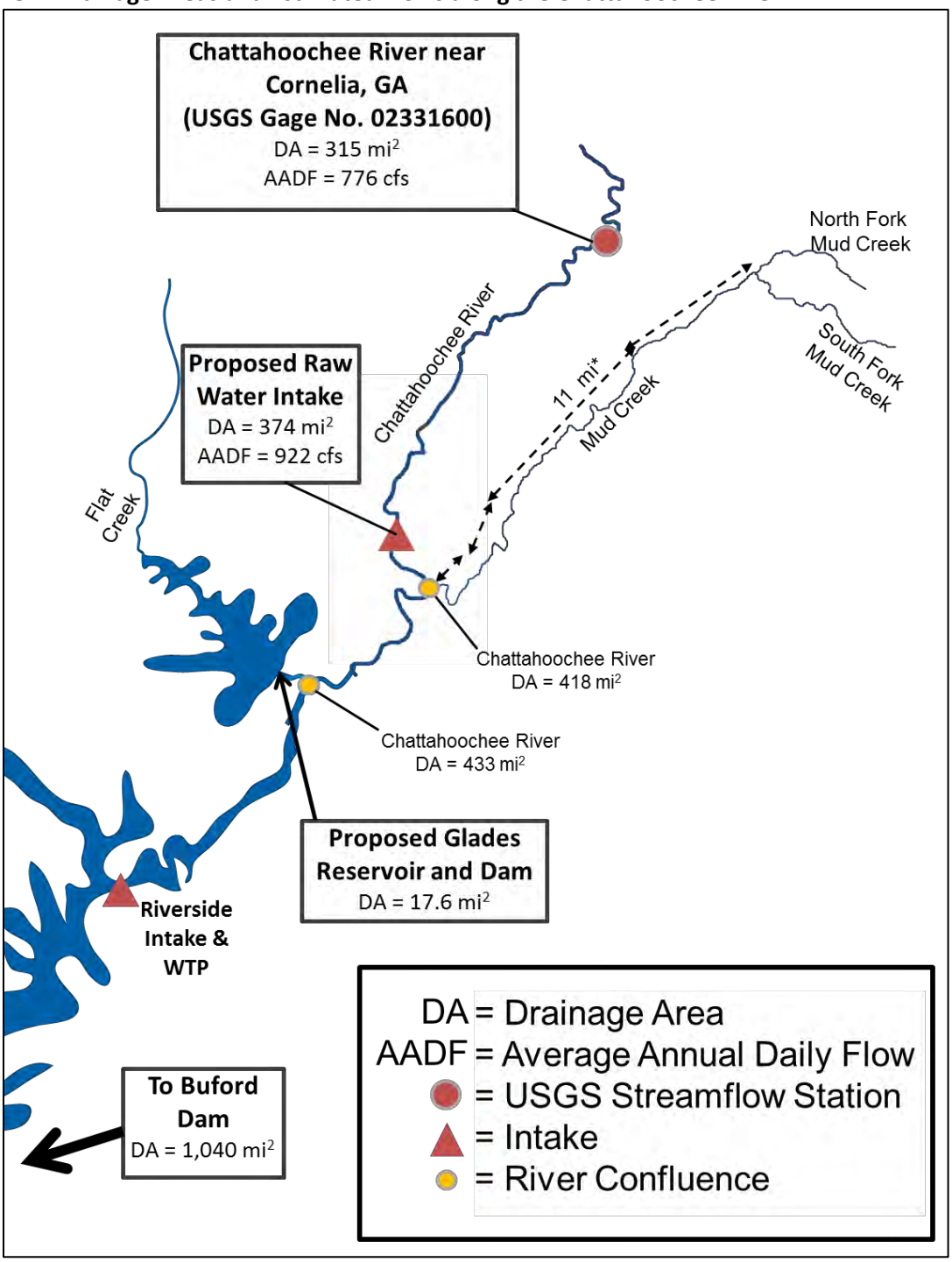
Source: *Study of Flow Impacts on Fish Community in the Chattahoochee River Downstream of Proposed Water Intake,* CCR Environmental, Inc. 2010

UPDATED INSTREAM FLOW ESTIMATES

In 2013, AECOM updated the instream flow estimates for the Chattahoochee River at the proposed intake location with the most recent data available at the time by extending the period of analysis to December 31, 2012. The flows in the Chattahoochee River at the proposed intake location (drainage area = 374 mi^2) were calculated using a drainage area ratio conversion that suitably estimates the streamflow at the proposed intake from the USGS Cornelia gage (gage # 02331600) (drainage area = 315 mi^2)[1]. The drainage area ratio used to estimate the flow at the proposed pump station from the USGS gage at Cornelia was 1.187. **Figure 1** shows the location of the USGS gage used to estimate the instream flow at the proposed intake location.

[1] Data from USGS gage 02331600 Chattahoochee River near Cornelia, GA were downloaded from USGS Streamstats. Data from 10/1/1957- 12/31/2012 have been approved for publication.

Figure 1. Drainage Areas and Estimated Flows along the Chattahoochee River



The year 2012 had the 12th lowest annual 7-day average flow (out of 55 years of flow records); therefore it is important to include it in the dataset. The streamflow data from 2013 has not been officially published by the USGS and is considered provisional at the time this analysis was being conducted (in 2014), therefore AECOM and EPD have agreed that 2012 will be the end of the period for the analysis.

Methodology

The U.S. Geological Survey (USGS) methodology determines the M7Q10 frequency distributions based on the lowest 7-day average flow for the flows observed at a gaging station for the calendar month (Carter 1982). This methodology includes using a 7-day "backward" looking average for both A7Q10 and M7Q10 calculations. A 7-day backward looking average calculates the average of the previous 7-days of the flow record. However, the USGS method does not include flows from the previous month when calculating the 7-day average at the beginning of the month. For example, the 7-day average flow for April 1 will be calculated based on flow values from April 1 only and does not include any March flow values.

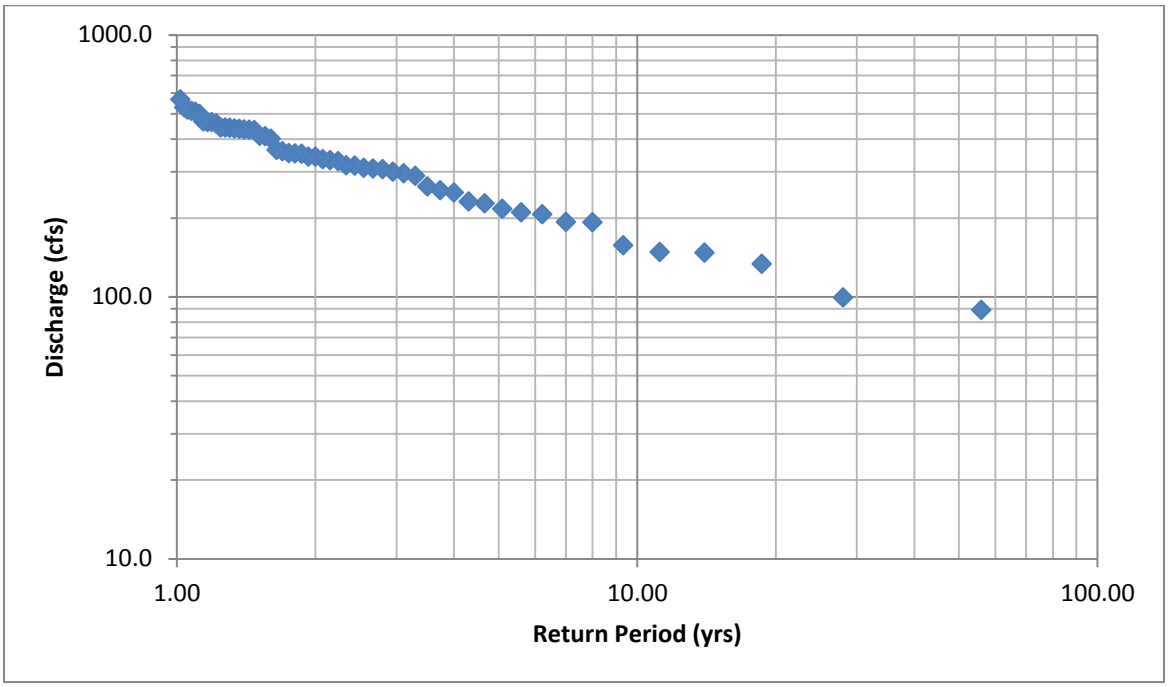
EPD and AECOM discussed the methodology extensively and agreed that the current USGS method does not generate true 7-day averages for the first 6 days of the month. Representatives from AECOM and EPD have agreed upon the following modifications to calculate the 7-day average flow for the Glades Reservoir EIS:

1. The 7-day backward looking average is calculated *on a continuous basis* for both the A7Q10 and M7Q10 calculations. For monthly 7-day average values, the 7-day average will be calculated continuously and not be interrupted by the beginning or end of a month. For example, the 7-day average flow for April 1 will be calculated based on flow values from April 1 and the last 6 days in March.
2. The minimum value for each year is based on the calendar year (January 1st to December 31st) instead of a climatic year (April 1st to March 31st) or water year (October 1st to September 30th).
3. The 10th percentile value (the value with a 10-year recurrence interval) will be estimated based on the "observed" 7-day average minimum values from the flow-return period curve (see **Figure 2**) instead of using a log-Pearson Type III distribution to fit a curve (used by USGS).

A7Q10

The updated A7Q10, based on the streamflow record of 1958 to 2012, is 153.9 cfs. **Figure 2** shows the A7Q10 values plotted against the probability (return period in years).

Figure 2. Annual "Observed" Minimum 7-day Average Values versus the Return Period at the Proposed Intake



M7Q10

Table 2 shows the M7Q10 comparison. The differences between the various sets of calculations are due to the different period of analysis.

Table 2. Comparison of M7Q10 flows (cfs) at the Proposed Chattahoochee River Intake Location

Month	Applicant M7Q10[1] (1958 2008)	Updated AECOM M7Q10 (1957 2012)[2]
January	447	419
February	521	469
March	610	551
April	576	525
May	455	400
June	334	276
July	278	254
August	205	188
September	209	189
October	231	204
November	277	249
December	330	298

1. *Study of Flow Impacts on Fish Community in the Chattahoochee River Downstream of Proposed Water Intake* (CCR Environmental, Inc. 2010). The AADF used for the Applicant's previous study was 845.5 cfs.
2. Period of Record September 1, 1957 – December 31, 2012

SUMMARY

The revised A7Q10 based on updated streamflow record for the period of 1958 to 2012 is 154 cfs. EPD has reviewed the data and accepted the updated A7Q10 and M7Q10 values based on streamflow record from 1/1/1958 to 12/31/2012.

ATTACHMENT 2

Email Confirmation from EPD

March 6, 2013

From: Clay Burdette [mailto:Clay.Burdette@dnr.state.ga.us]
Sent: Wednesday, March 06, 2013 3:54 AM
To: Su, Tai Yi; Paul Lamarre
Cc: Minihan, Anne S.; O'Neill, Courtney; Blanton, Stephen; Kevin Farrell; Kathrine M SAS Freas; Richard W SAS Morgan
Subject: Re: Glades EIS - Agency Coordination - 7Q10 values below proposed intake on the Chattahoochee River

Tai Yi,
thanks for sending these final values. EPD accepts these calculations for annual 7Q10 and M7Q10's in the Chattahoochee River at the applicants proposed withdrawal site.

From: Su, Tai Yi
Sent: Monday, March 04, 2013 9:07 AM
To: 'Clay Burdette'; Paul Lamarre
Cc: Kevin Farrell; Morgan, Richard W SAS; Minihan, Anne S.; O'Neill, Courtney; Blanton, Stephen; Freas, Kathrine M SAS
Subject: Glades EIS - Agency Coordination - 7Q10 values below proposed intake on the Chattahoochee River

Hi, Clay:
This was our final values based on the discussions we had in Nov and Dec of 2012. Please let me know if you have any questions. Sorry it took me so long to get back to you.

A7Q10 – 153.4 cfs

The M7Q10s are below.

Month	7Q10 (cfs)
Jan	416.6
Feb	468.9
Mar	569.1
Apr	525.8
May	397.9
Jun	281.9
Jul	259.0
Aug	184.8
Sep	189.0
Oct	203.7
Nov	248.2
Dec	299.5

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ATTACHMENT 3

Daily Flow and Pumping Quantity at the Proposed Chattahoochee River Intake

Pre and Post Project for Representative Conditions

Average Year – 1997

Wet Year – 2005

Drought – 1986-1989

Drought – 2001

Critical Drought – 2007-2008

REPRESENTATIVE CONDITIONS

Figure 1. Chattahoochee River Pre-Project Flow vs Time (Average Year, 1997)

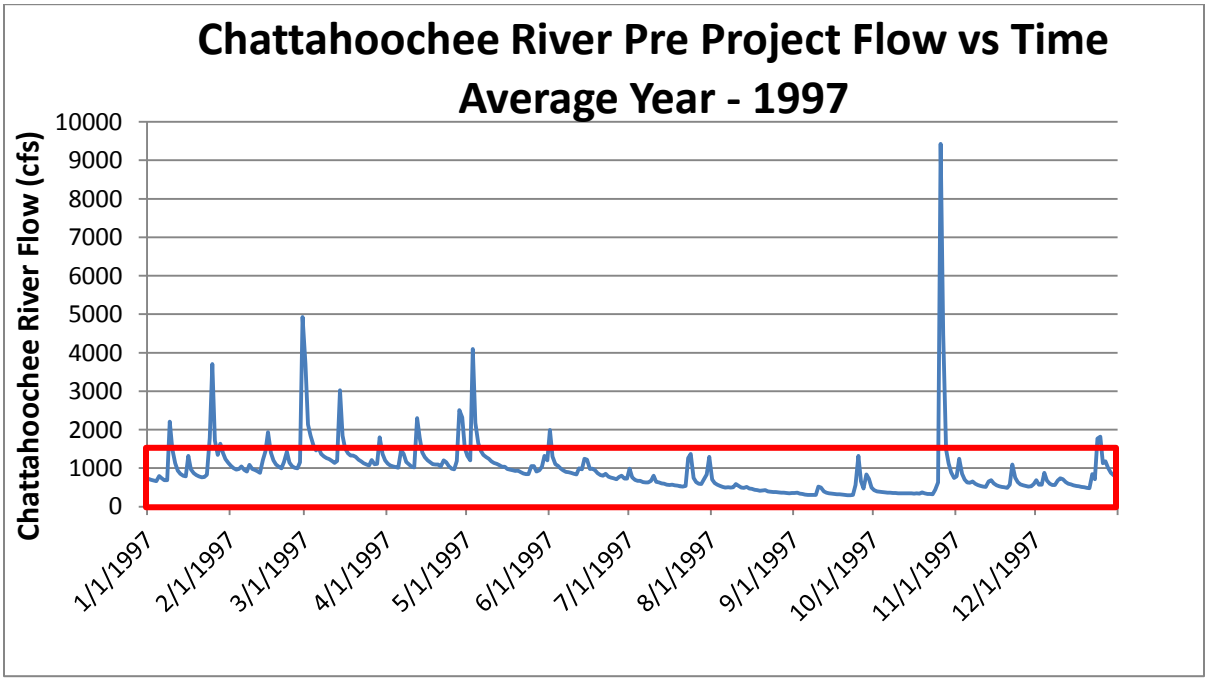


Figure 2. Chattahoochee River Pre-Project Flow vs Time (Wet Year, 2005)

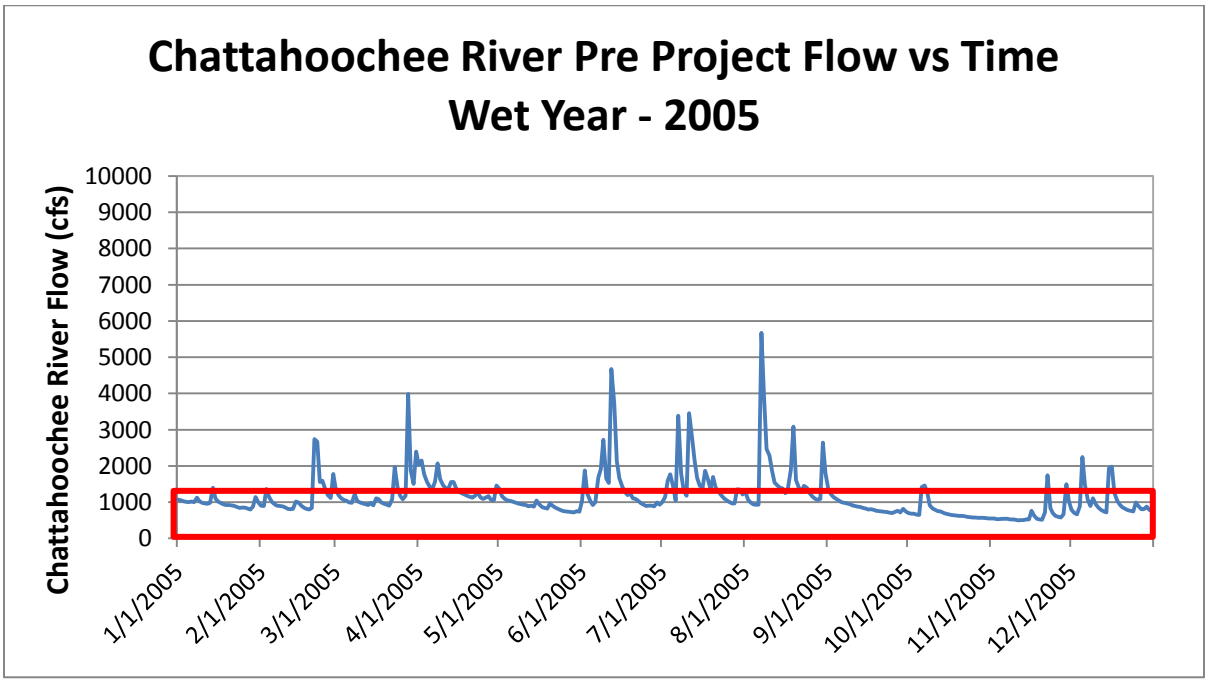


Figure 3. Chattahoochee River Pre-Project Flow vs Time (Drought, 1986-1989)

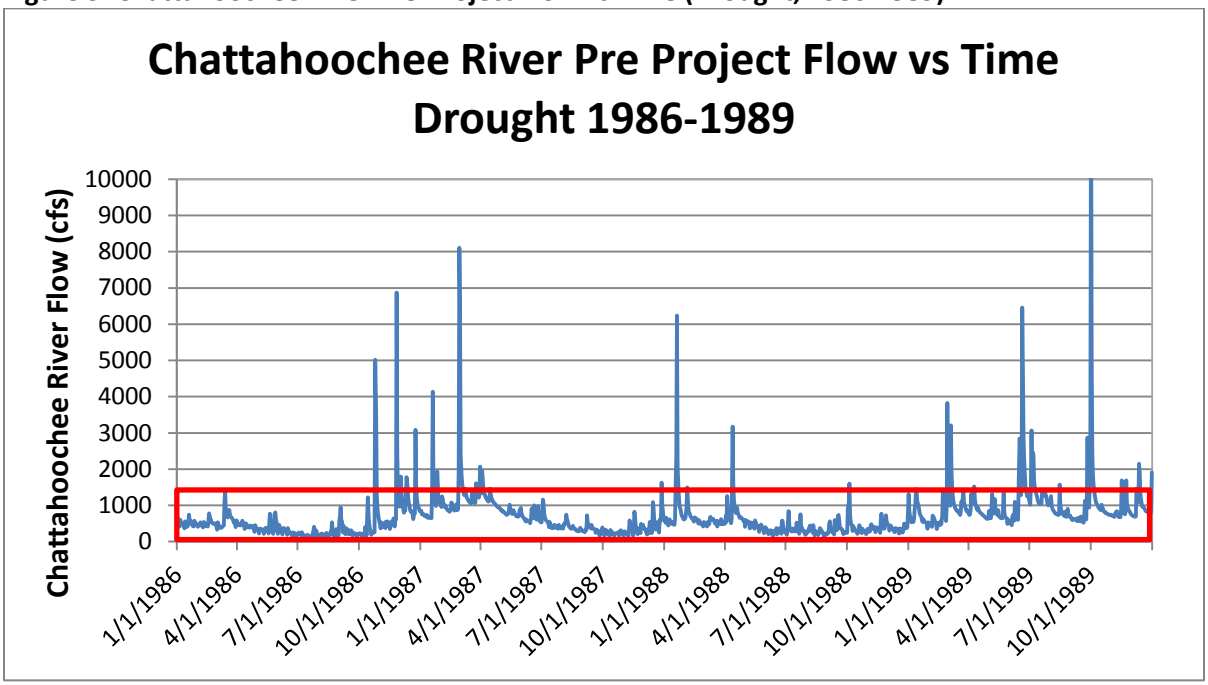


Figure 4. Chattahoochee River Pre-Project Flow vs Time (Drought, 2001)

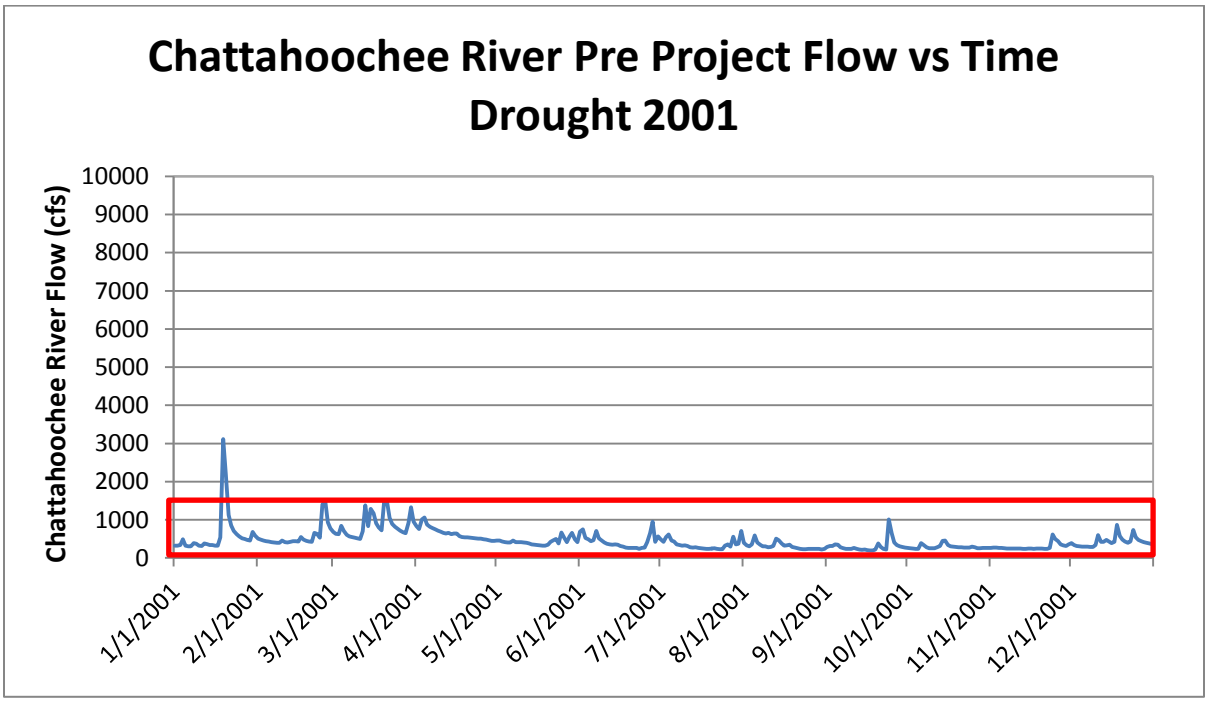
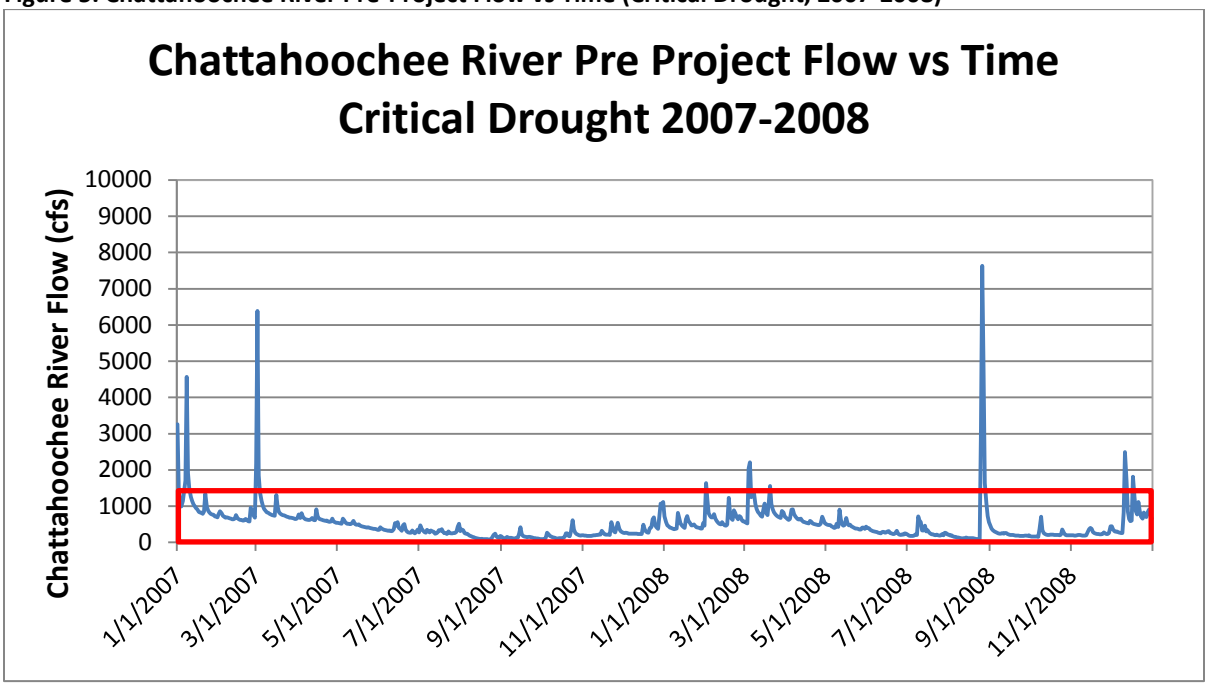


Figure 5. Chattahoochee River Pre-Project Flow vs Time (Critical Drought, 2007-2008)

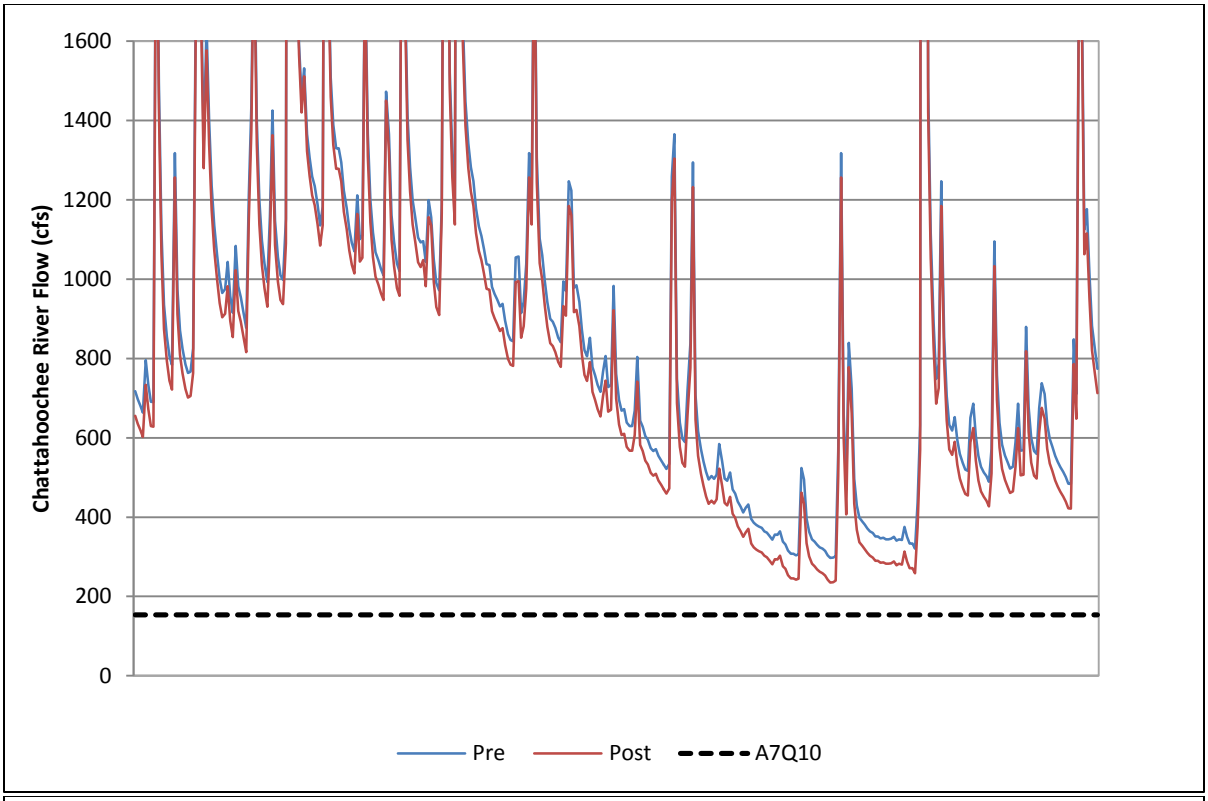


PRE AND POST PROJECT FLOW ANALYSIS

The following figures show the daily flow and pumping quantity at the proposed Chattahoochee River intake, along with the elevation of Glades Reservoir for the following representative conditions:

- Average Year – 1997
- Wet Year – 2005
- Drought – 1986-1989
- Drought – 2001
- Critical Drought – 2007-2008

Figure 6. Chattahoochee River Pre and Post Project Flow, IFPT=A7Q10 (Average Year, 1997)



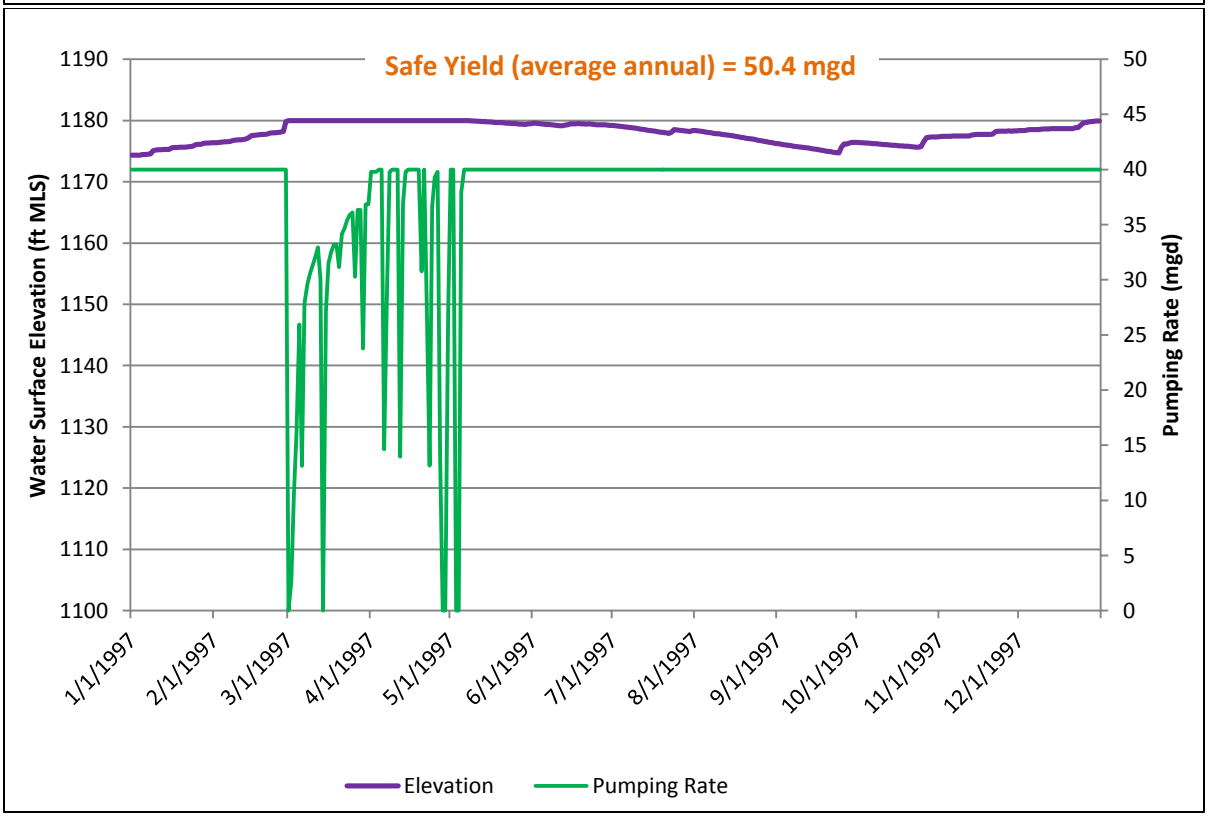
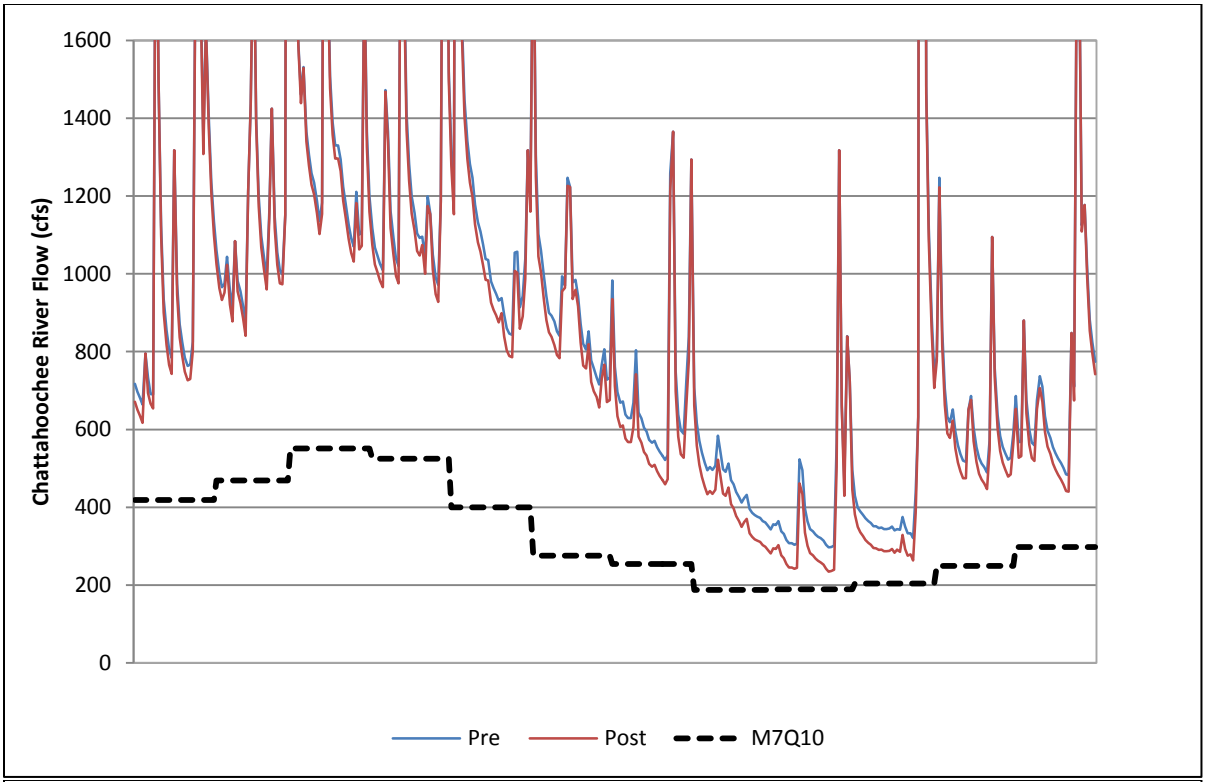


Figure 7. Chattahoochee River Pre and Post Project Flow, IFPT=M7Q10 (Average Year, 1997)



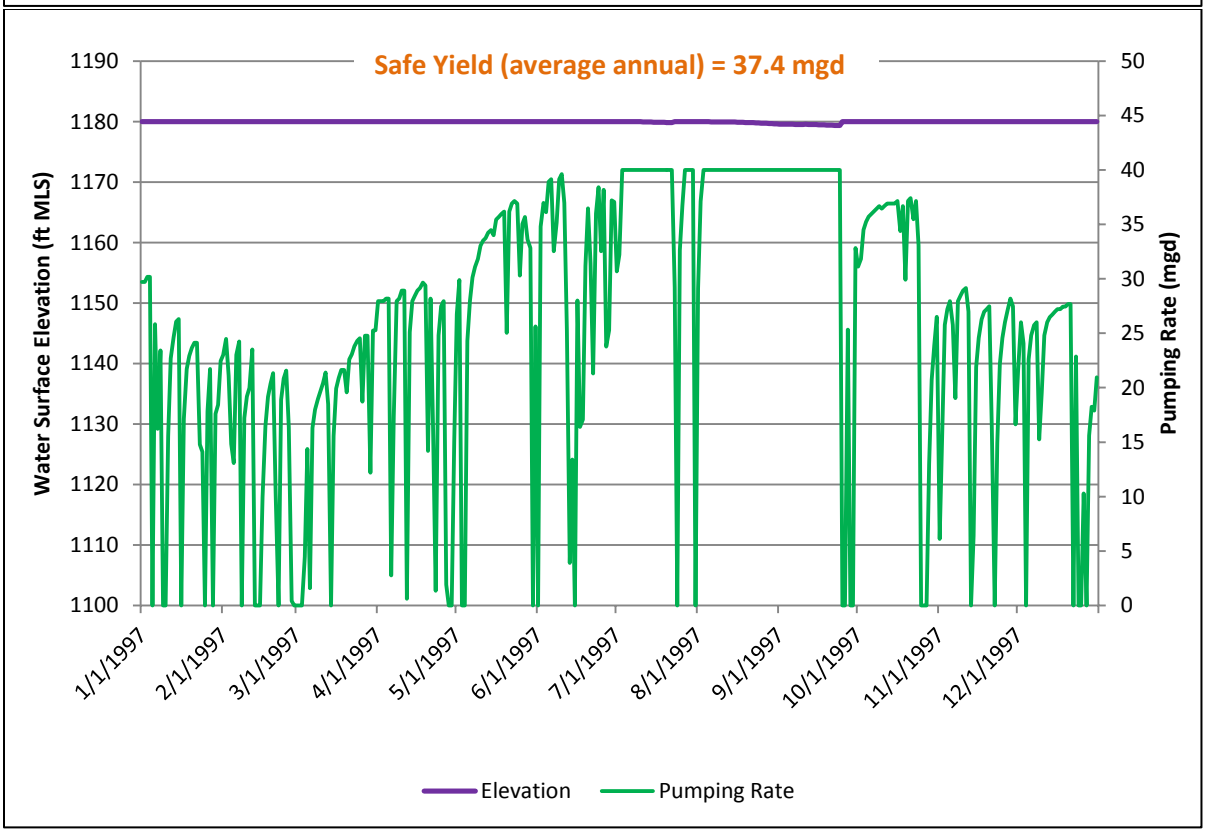
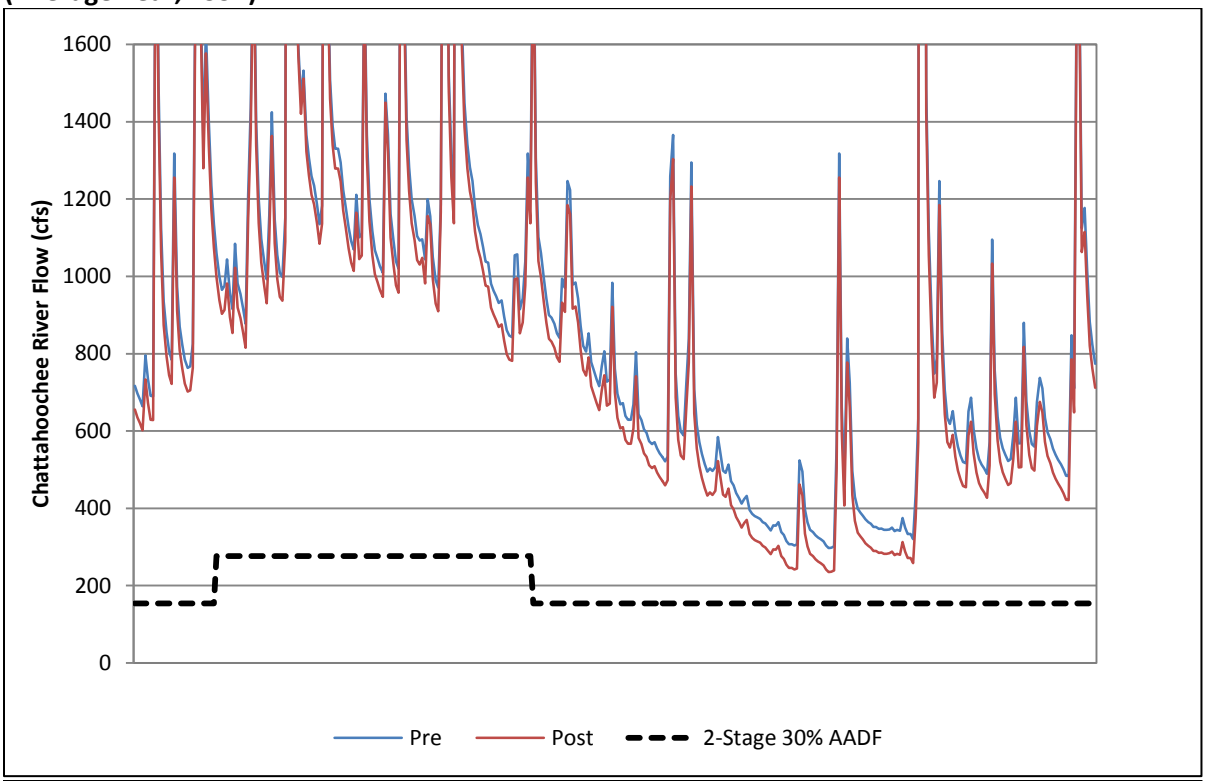


Figure 8. Chattahoochee River Pre and Post Project Flow, IFPT=2-Stage (30% AADF/A7Q10) (Average Year, 1997)



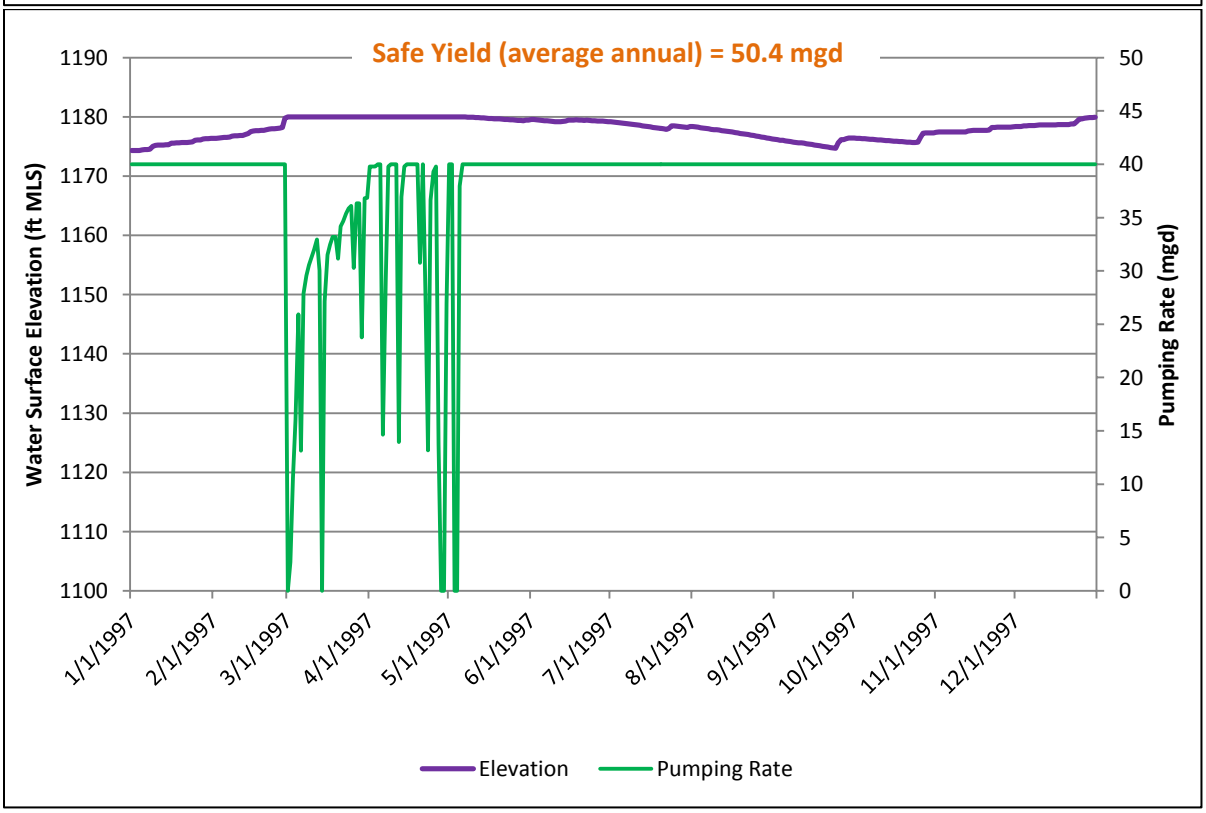
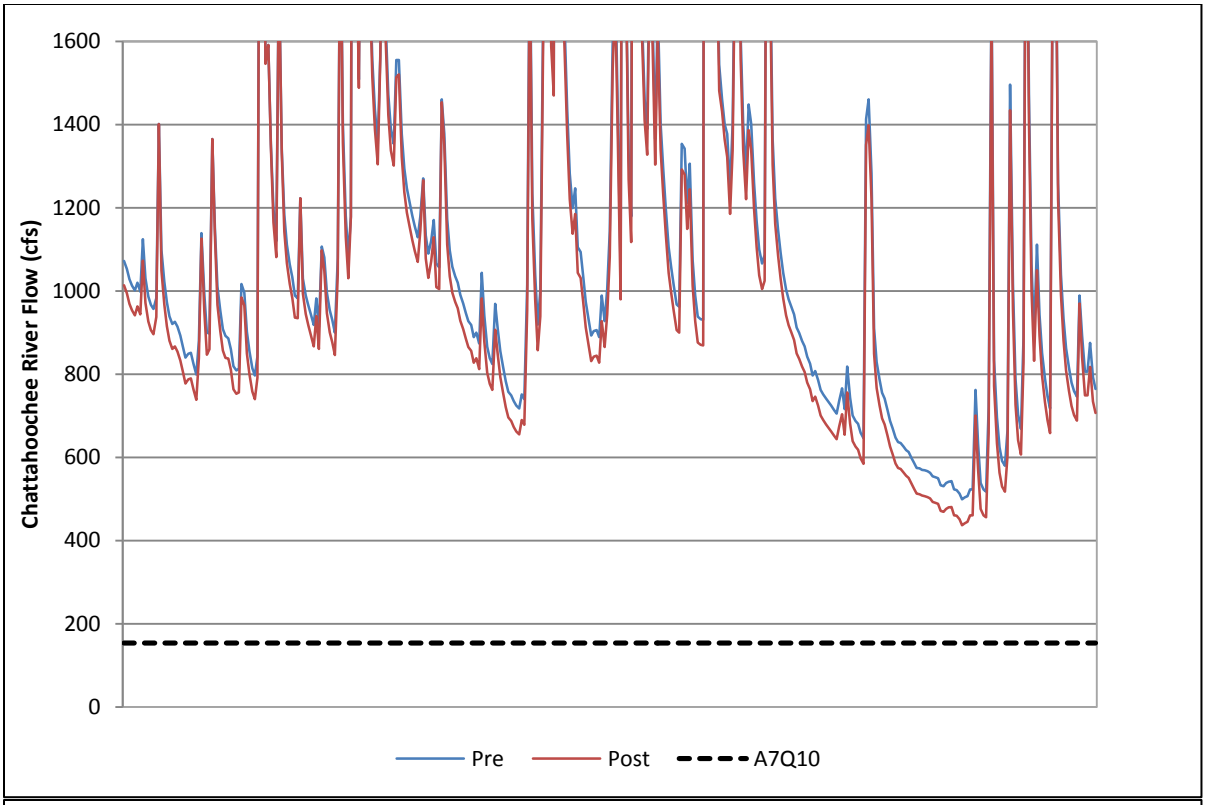


Figure 9. Chattahoochee River Pre and Post Project Flow, IFPT=A7Q10 (Wet Year, 2005)



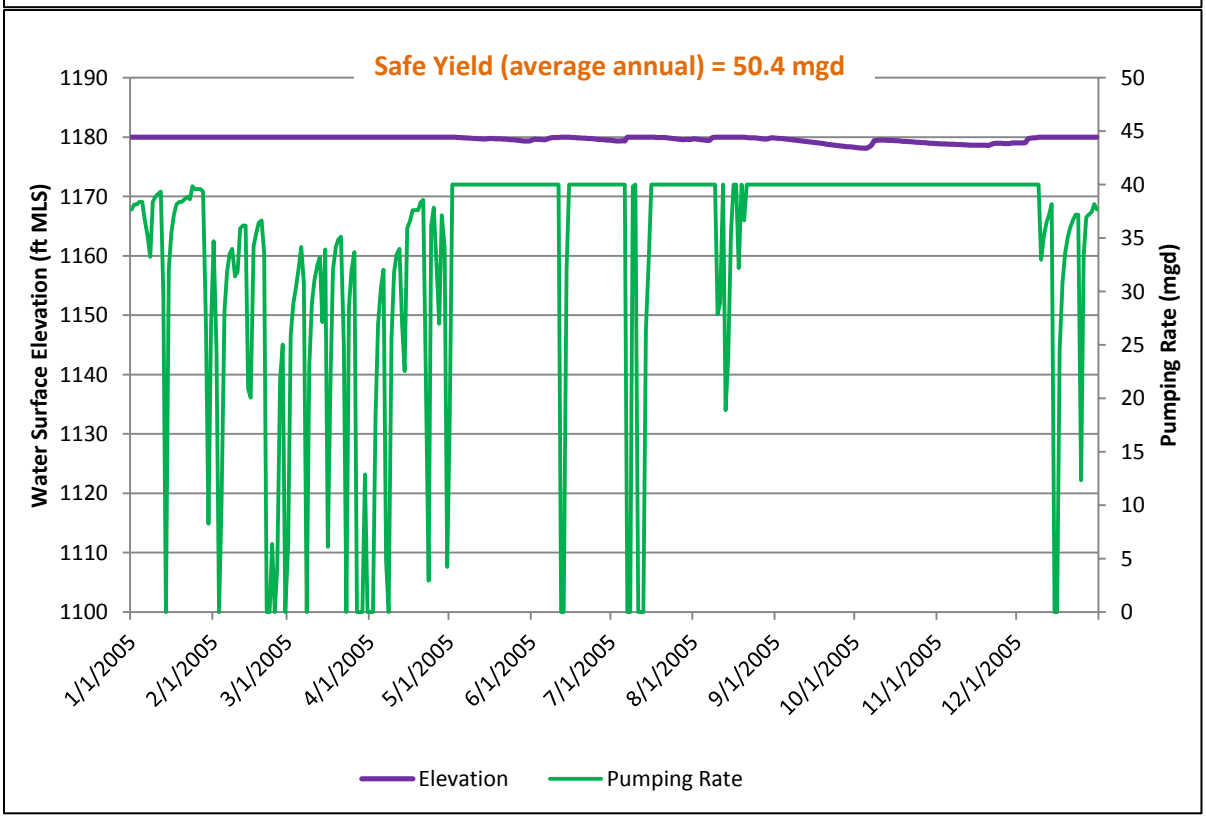
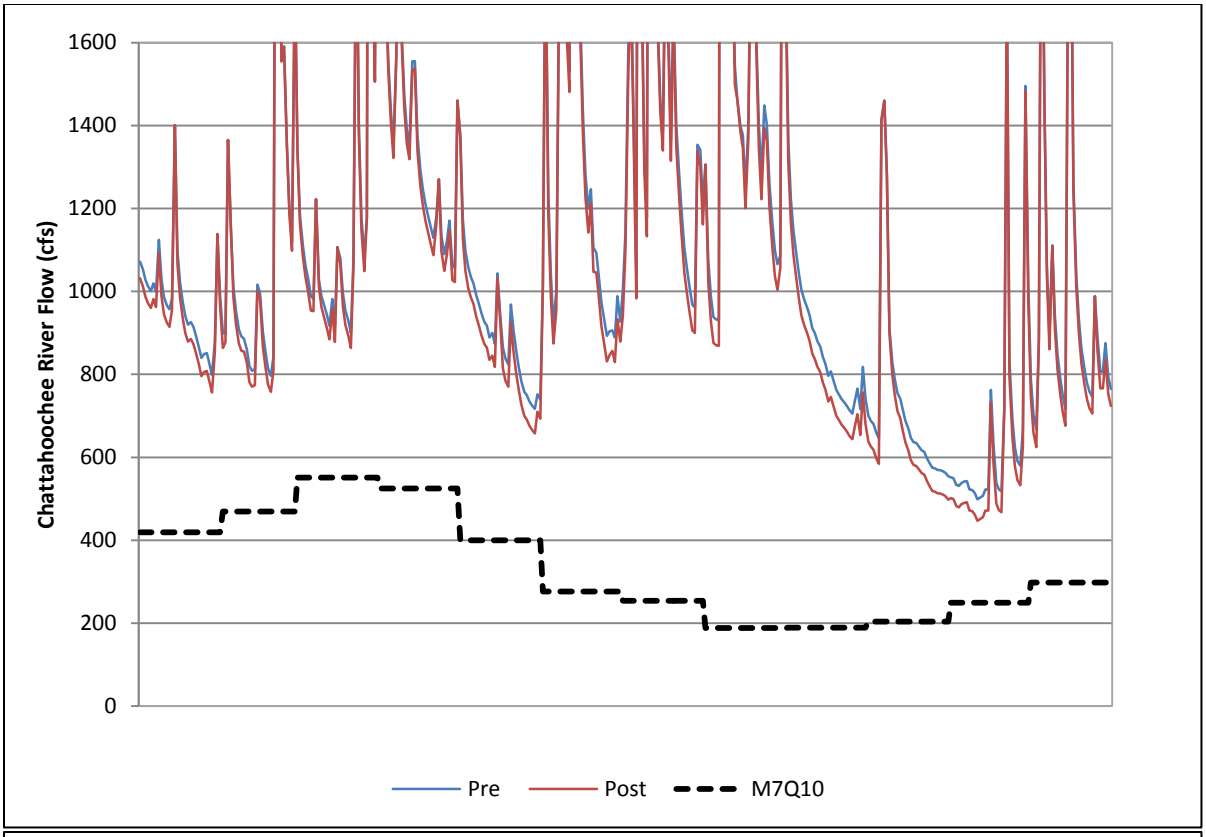


Figure 10. Chattahoochee River Pre and Post Project Flow, IFPT=M7Q10 (Wet Year, 2005)



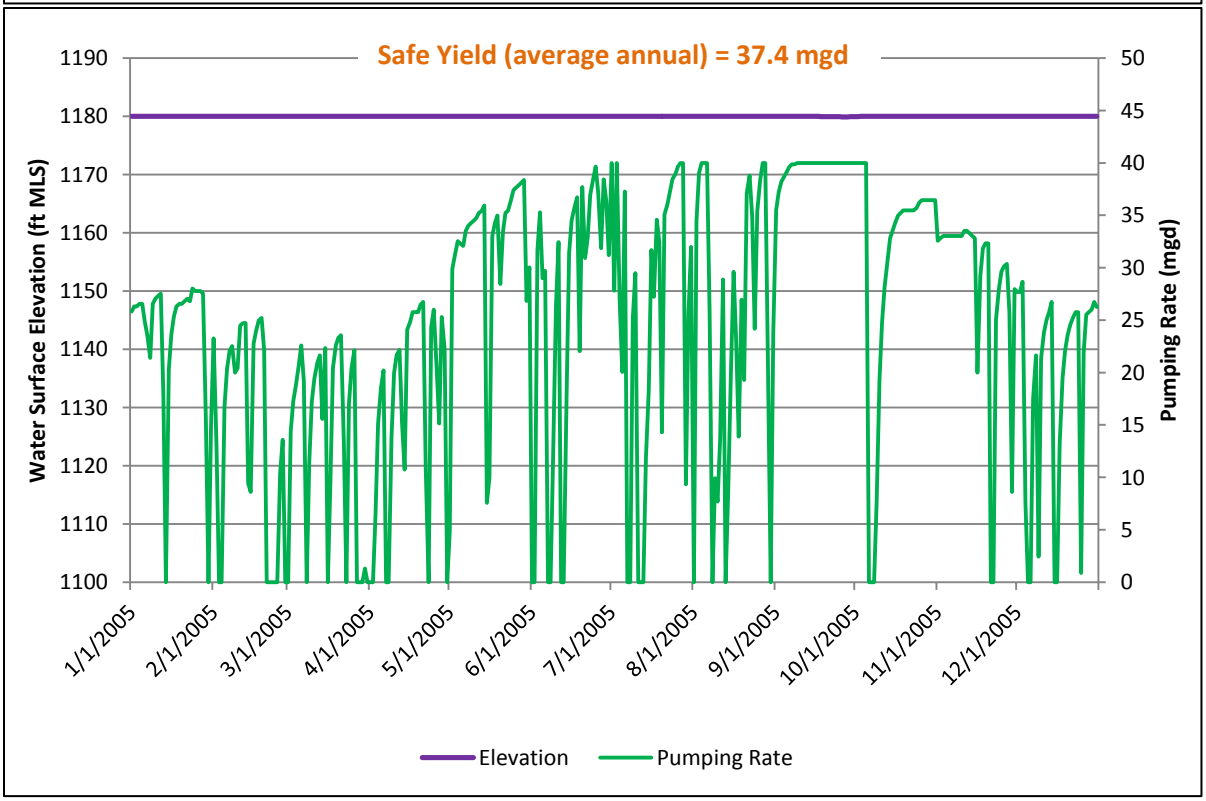
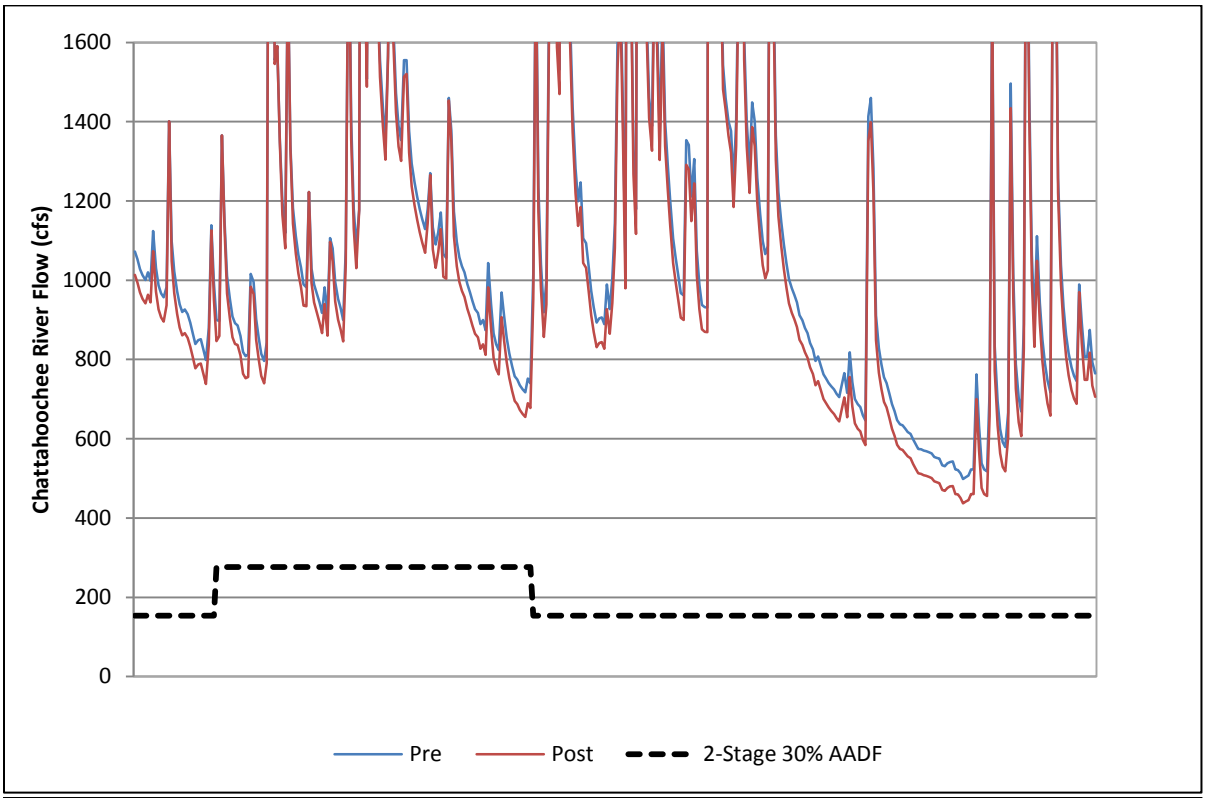


Figure 11. Chattahoochee River Pre and Post Project Flow, IFPT=2-Stage (30% AADF/A7Q10) (Wet Year, 2005)



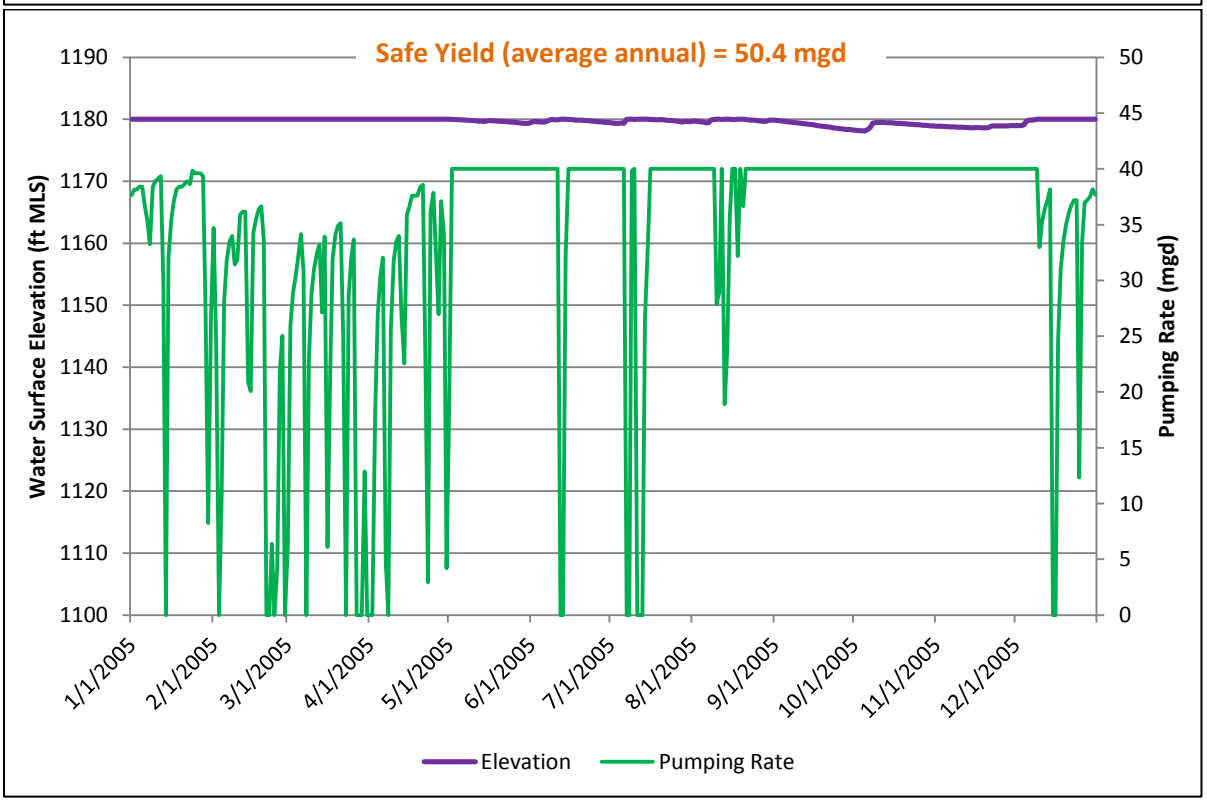


Figure 12. Chattahoochee River Pre and Post Project Flow, IFPT=A7Q10 (Drought, 1986-1989)

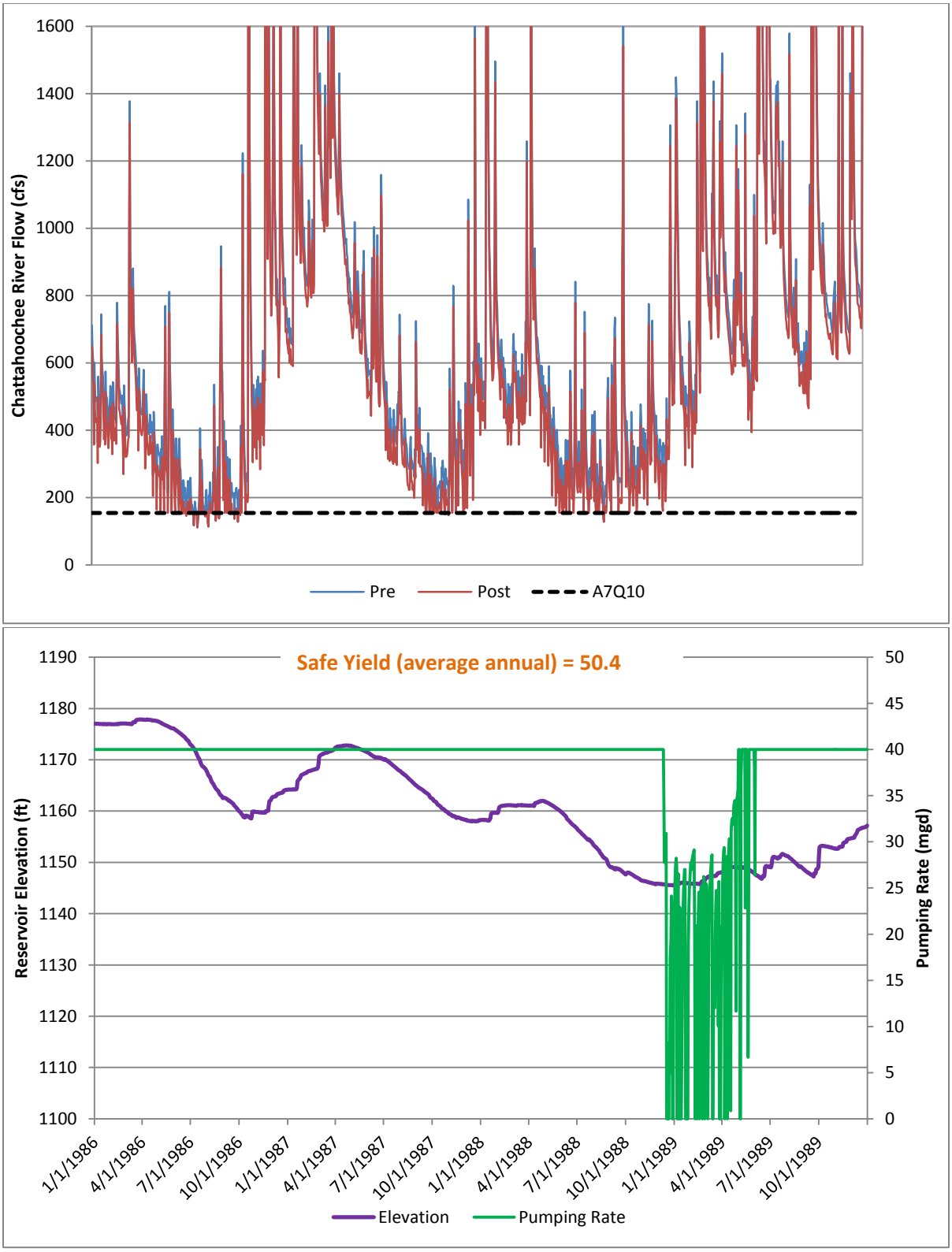


Figure 13. Chattahoochee River Pre and Post Project Flow, IFPT=M7Q10 (Drought, 1986-1989)

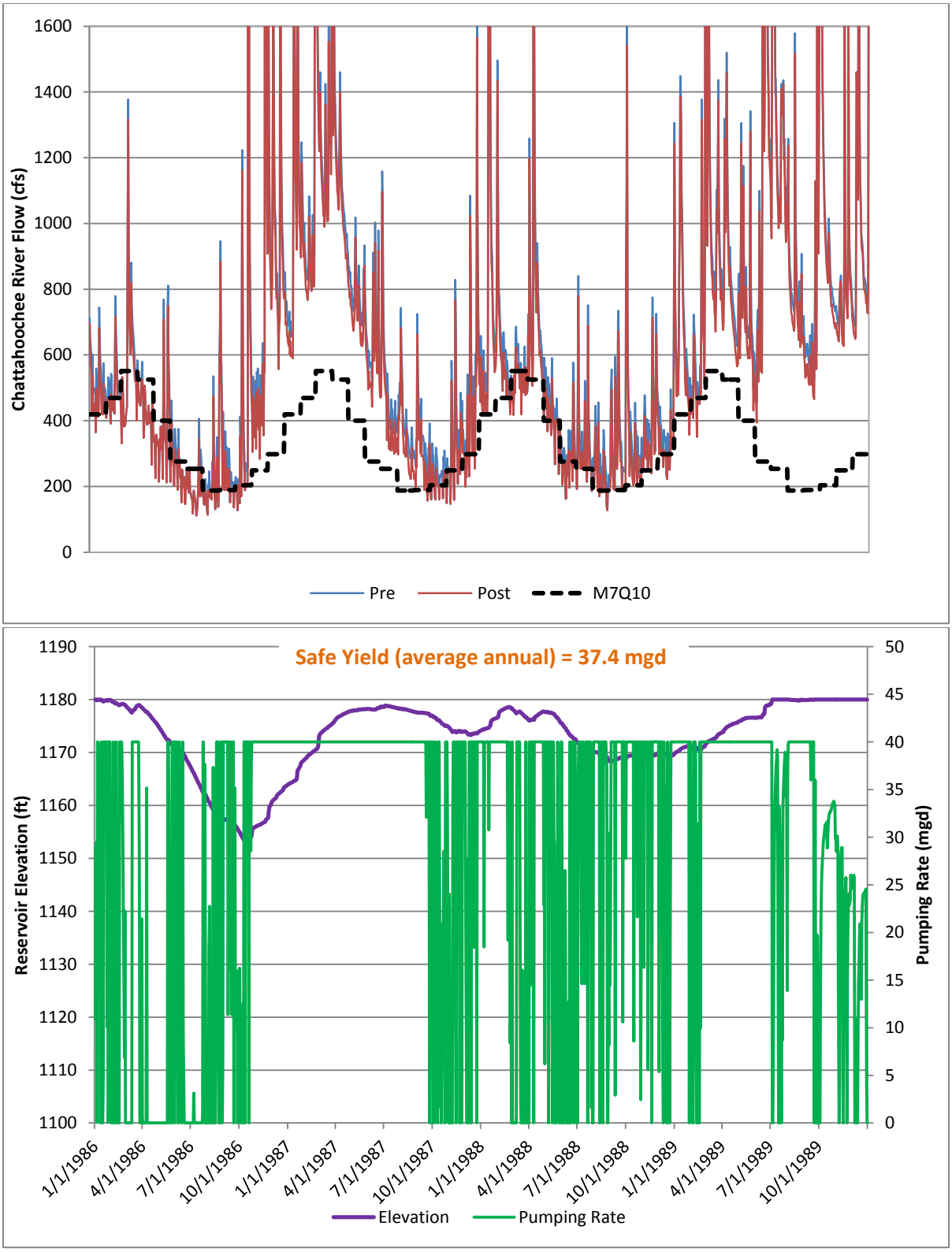


Figure 14. Chattahoochee River Pre and Post Project Flow, IFPT=2-Stage (30% AADF/A7Q10) (Drought, 1986-1989)

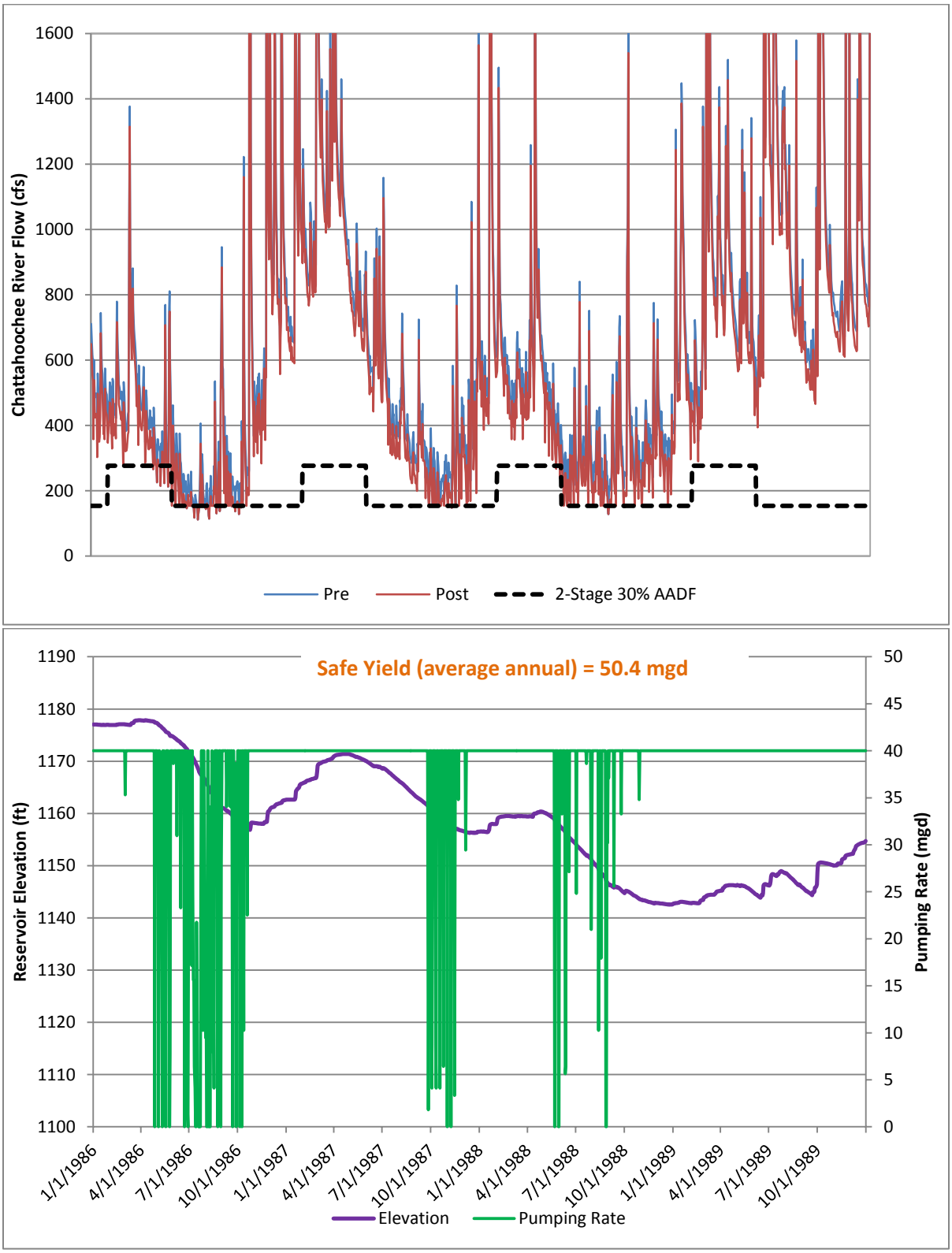


Figure 15. Chattahoochee River Pre and Post Project Flow, IFPT=A7Q10 (Drought, 2001)

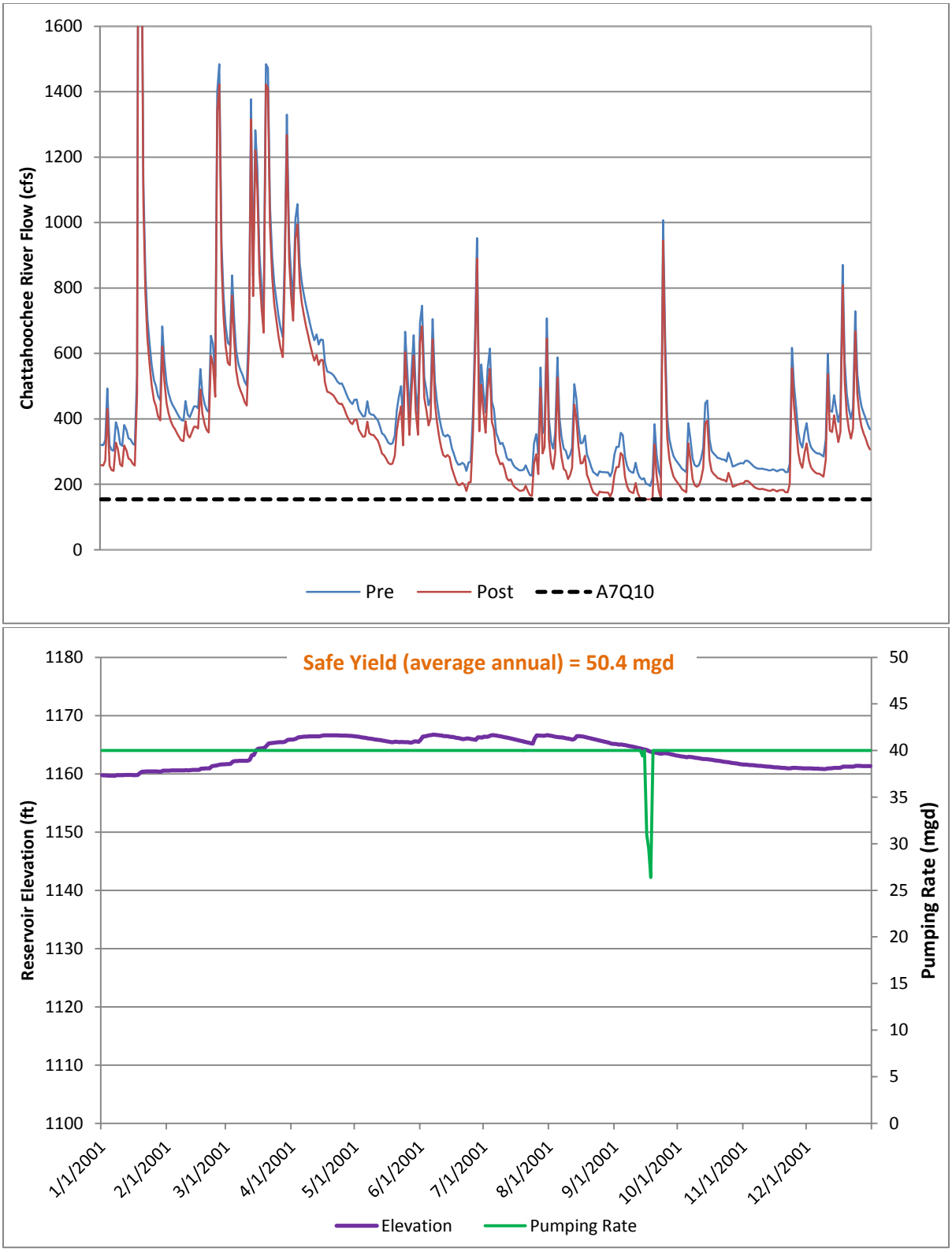
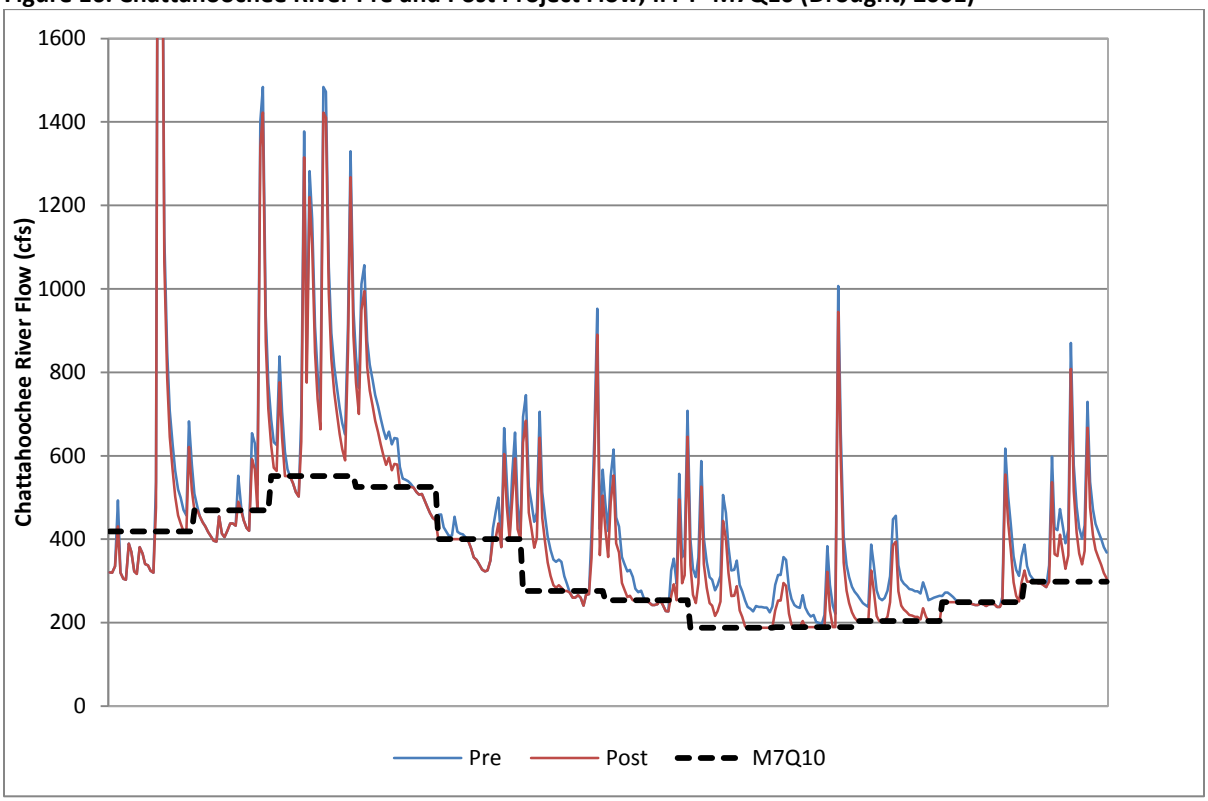


Figure 16. Chattahoochee River Pre and Post Project Flow, IFPT=M7Q10 (Drought, 2001)



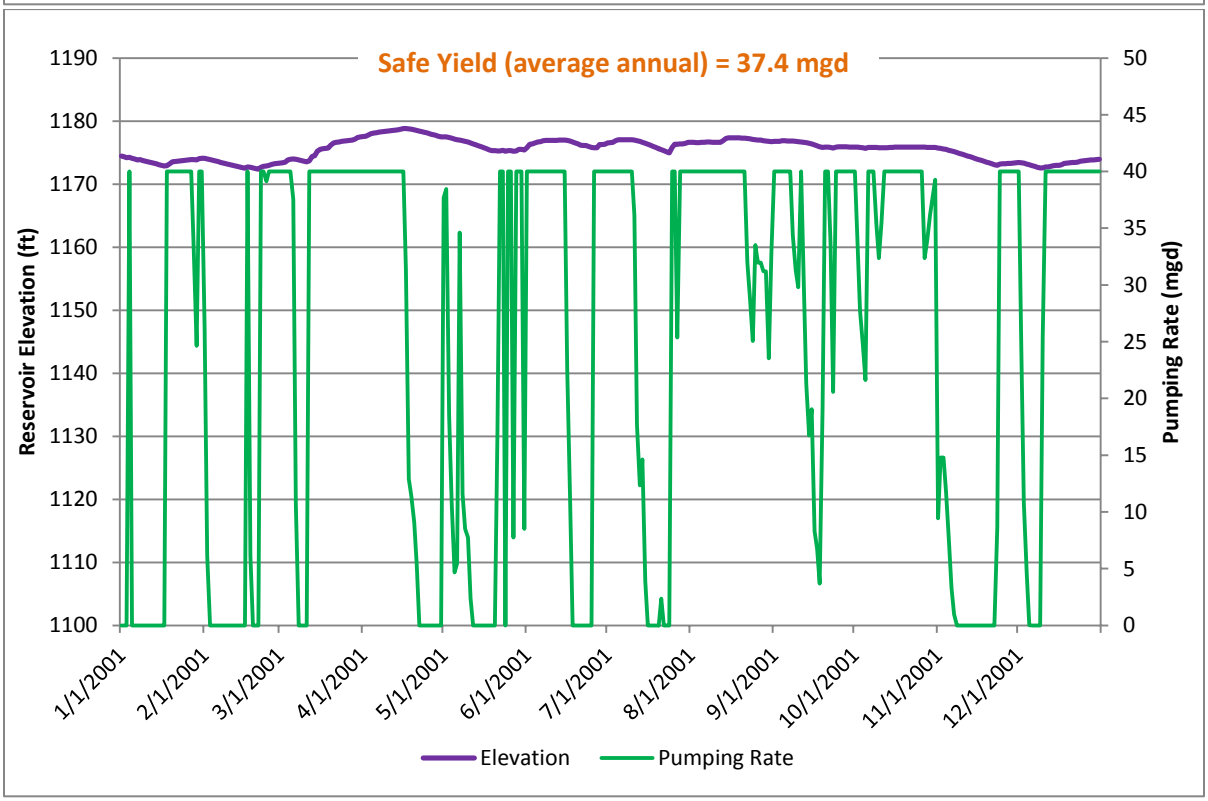
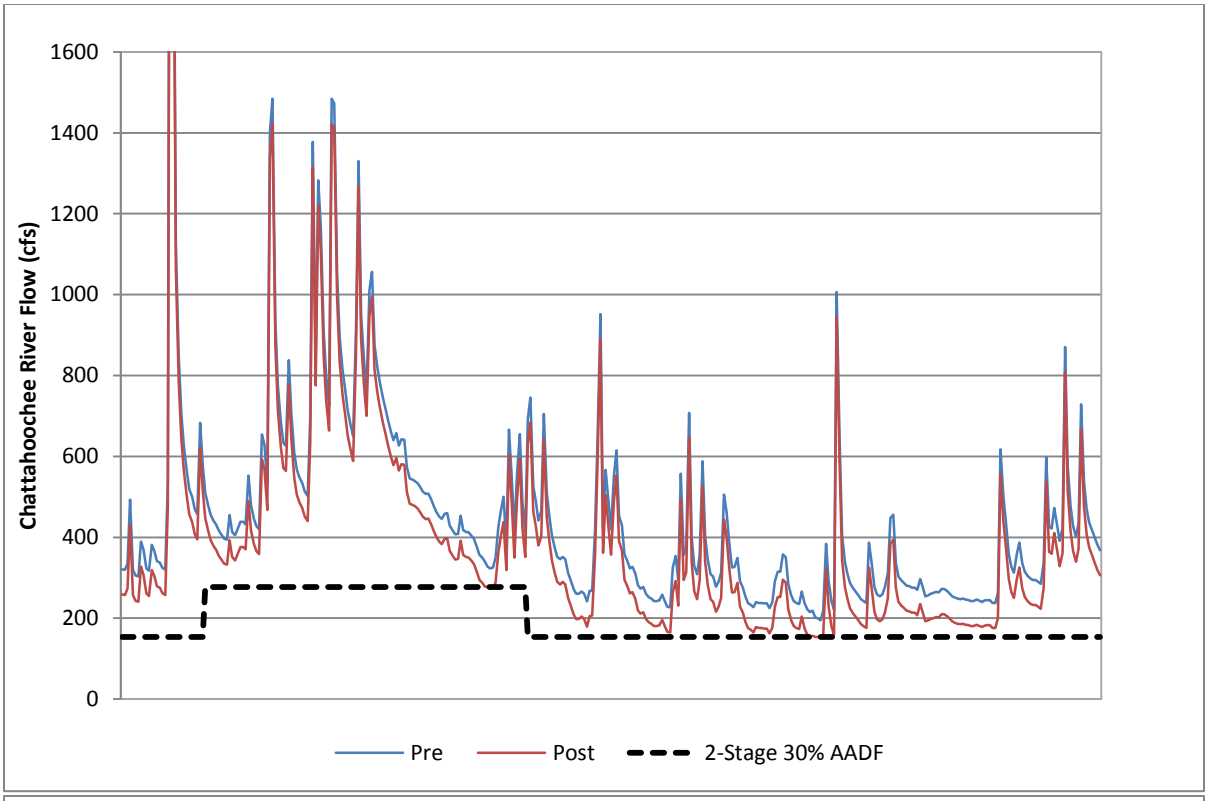


Figure 17. Chattahoochee River Pre and Post Project Flow, IFPT=2-Stage (30% AADF/A7Q10) (Drought, 2001)



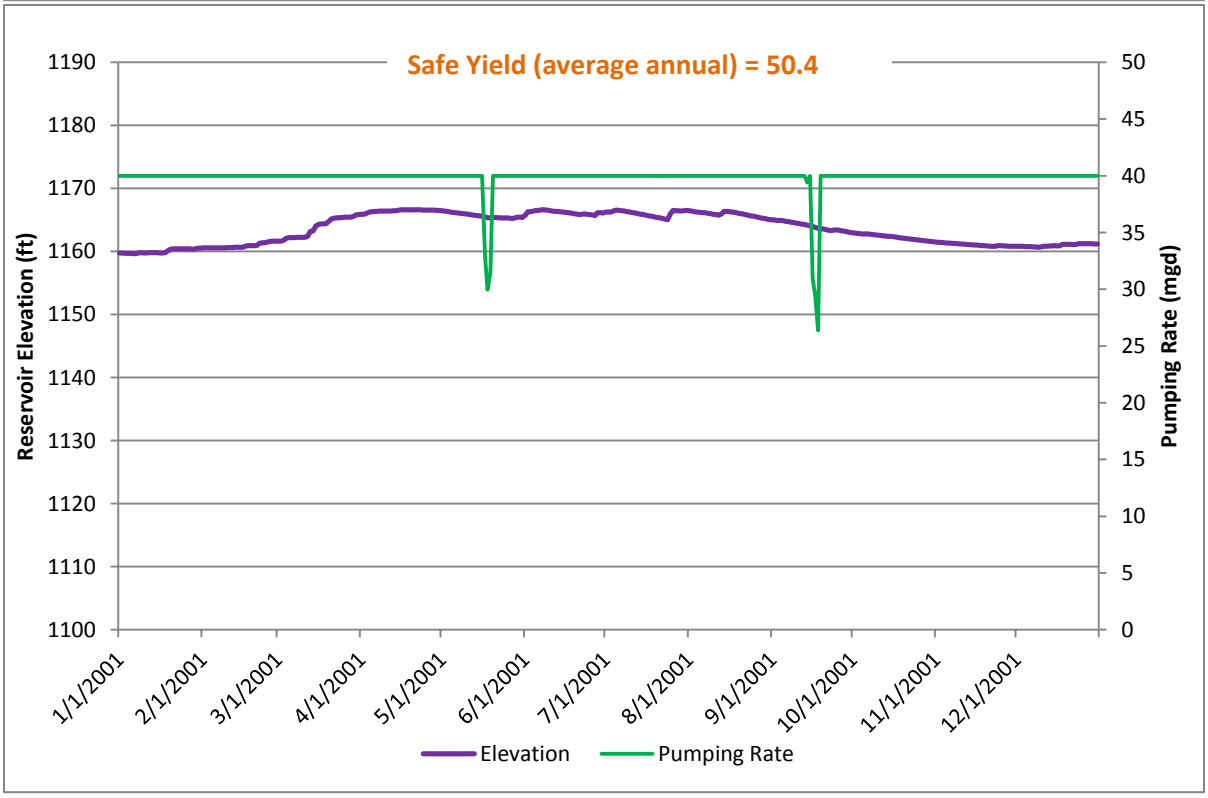


Figure 18. Chattahoochee River Pre and Post Project Flow, IFPT=A7Q10 (Critical Drought, 2007-2008)

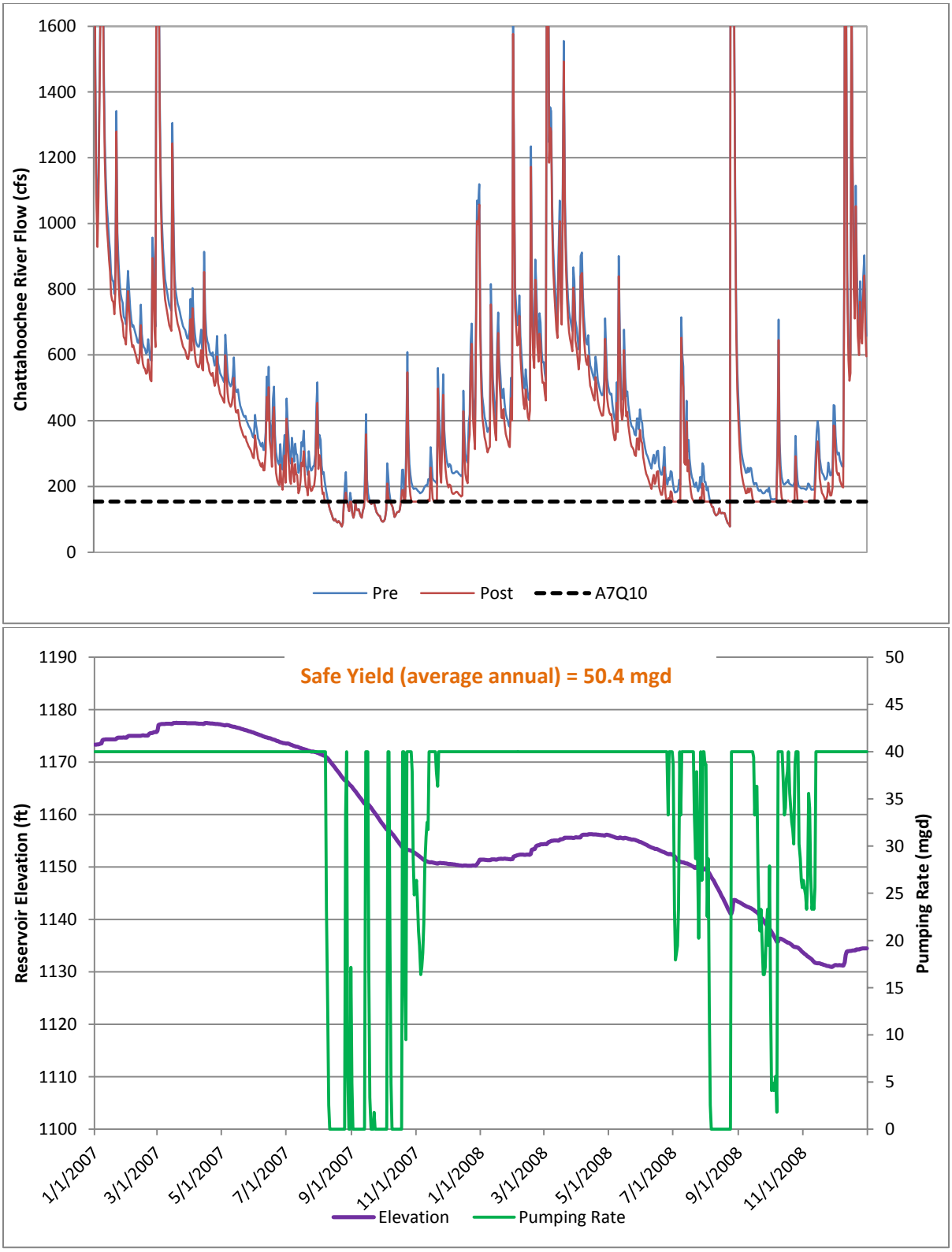


Figure 19. Chattahoochee River Pre and Post Project Flow, IFPT=M7Q10 (Critical Drought, 2007-2008)

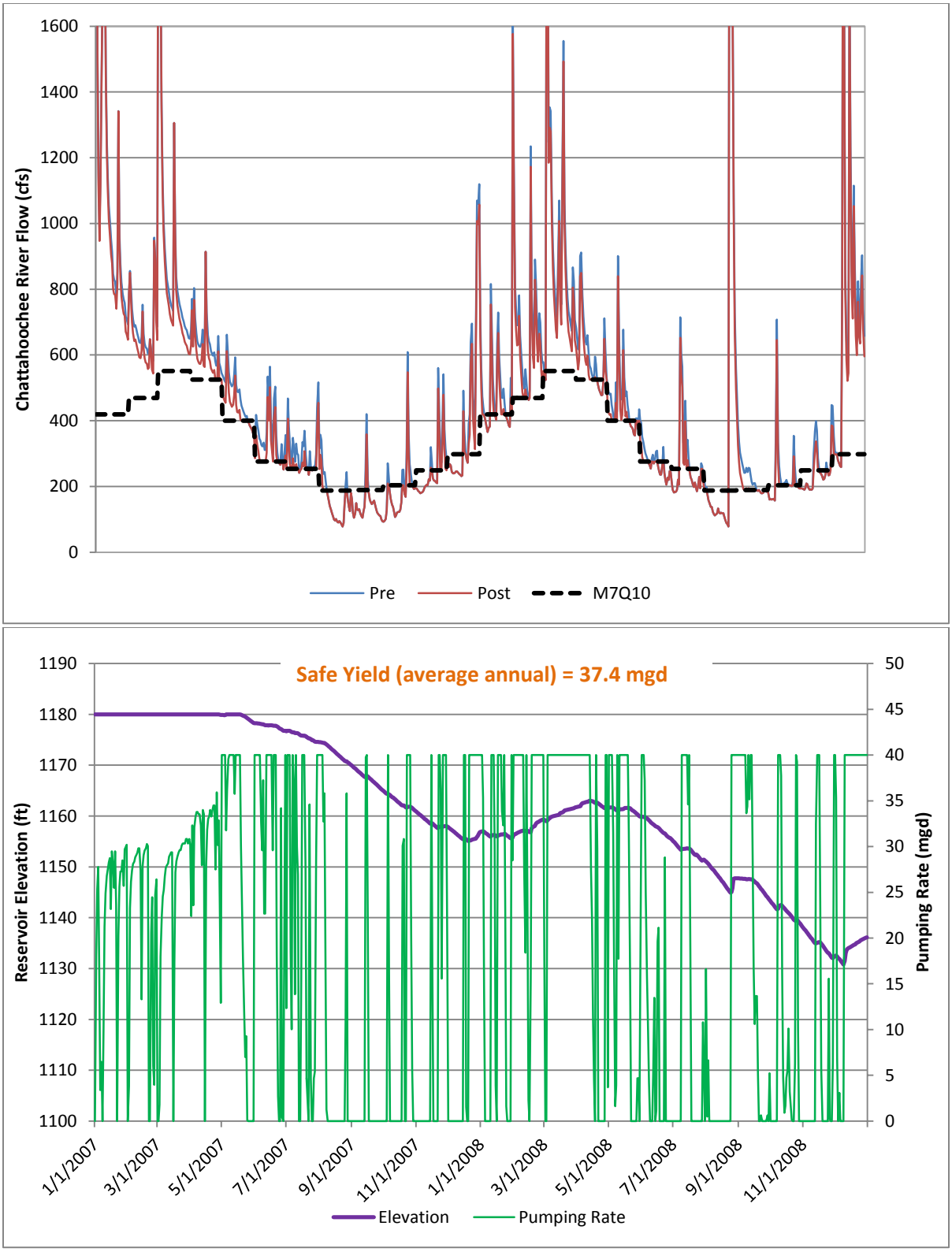
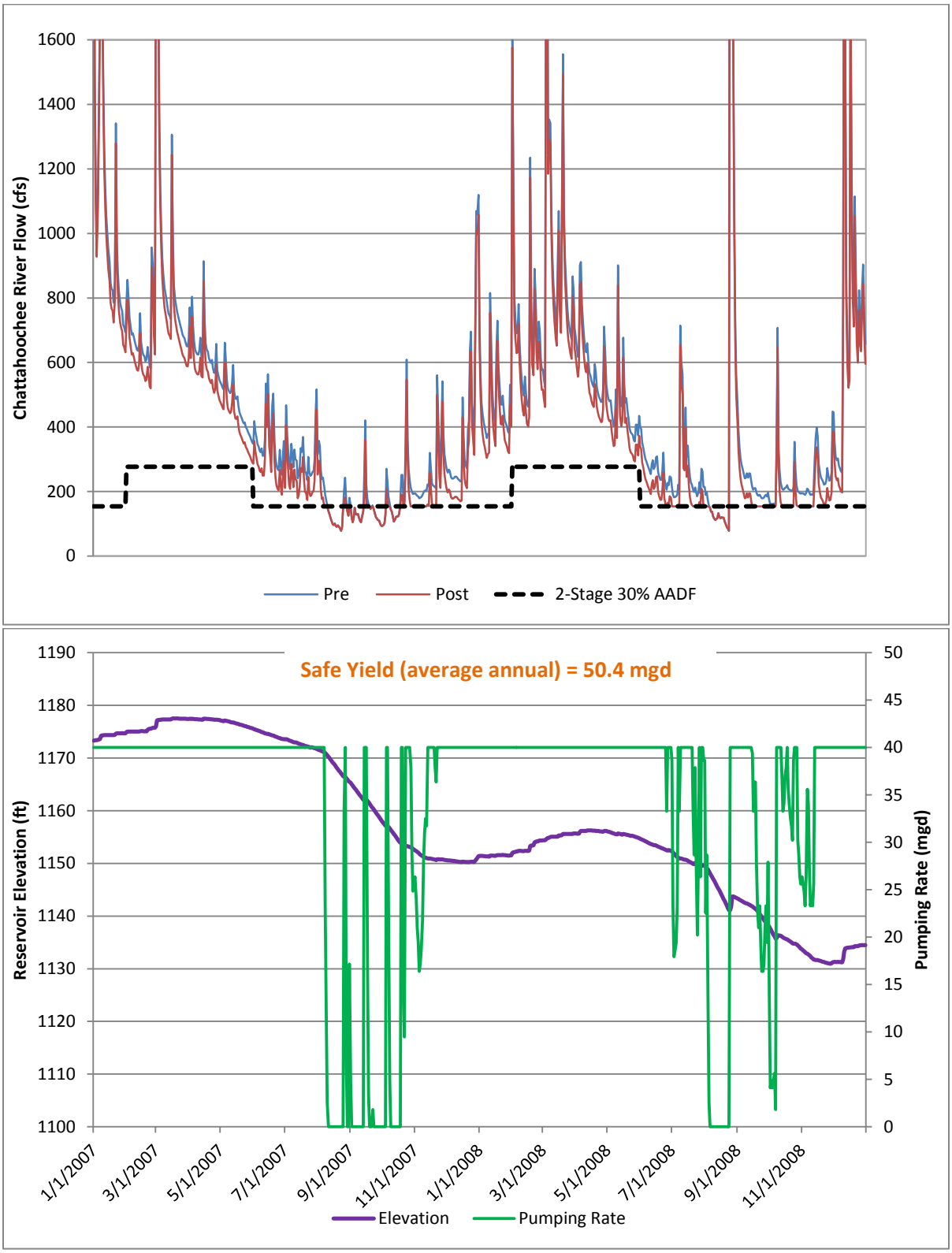


Figure 20. Chattahoochee River Pre and Post Project Flow, IFPT=2-Stage (30% AADF/A7Q10) (Critical Drought, 2007-2008)



ATTACHMENT 4

Impacts of IFPT Scenarios on Pumping Availability during Drought Conditions

Drought – 1986-1989

Drought – 2001

Critical Drought – 2007-2008

Table 1. Streamflow versus the IFPT Conditions (Drought, 1986)

Flow Conditions	No. of Days Streamflow < IFPT (Pumping is not available)			% Streamflow > IFPT		
	A7Q10	M7Q10	2 Stage	A7Q10	M7Q10	2 Stage
January	0	3	0	100%	90%	100%
February	0	12	0	100%	57%	100%
March	0	15	0	100%	52%	100%
April	0	28	1	100%	7%	97%
May	0	24	4	100%	23%	87%
June	2	17	2	93%	43%	93%
July	6	25	6	81%	19%	81%
August	8	15	8	74%	52%	74%
September	2	2	2	93%	93%	93%
October	2	6	2	94%	81%	94%
November	0	0	0	100%	100%	100%
December	0	0	0	100%	100%	100%
Entire Year	**20**	**147**	**25**	**95%**	**60%**	**93%**

Figure 1. Number of Days the Chattahoochee River Flow is Less Than the IFPT Conditions (Drought, 1986)

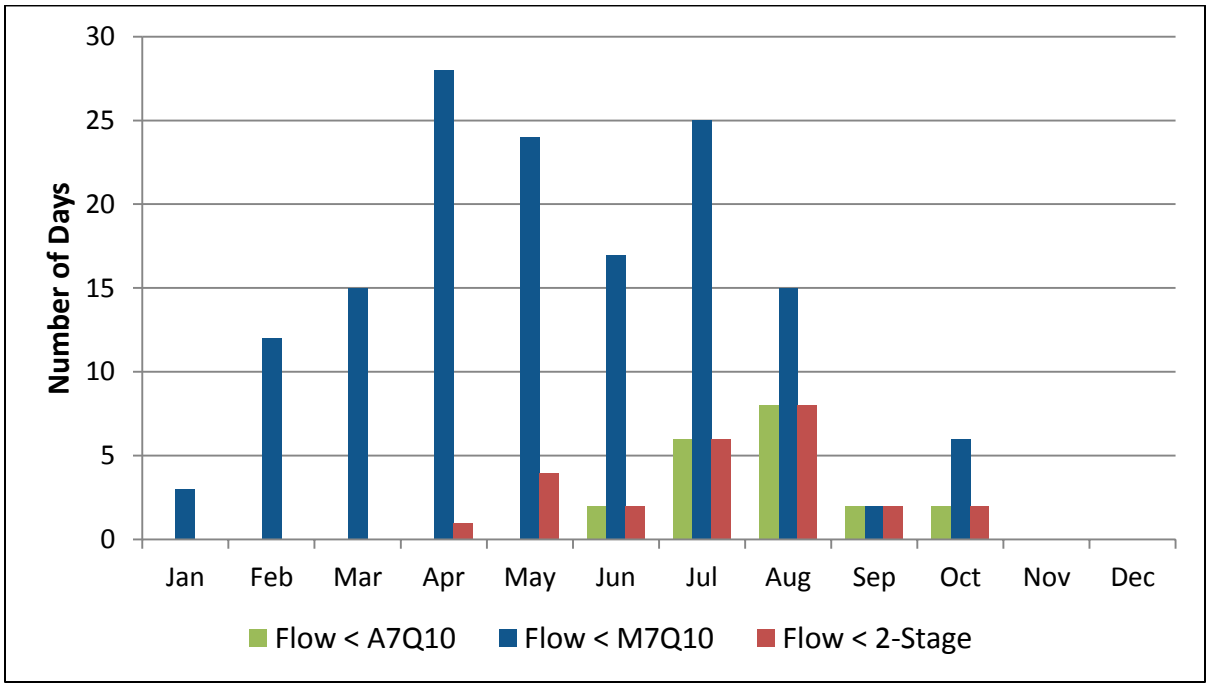


Table 2. Streamflow versus the IFPT Conditions (Drought, 2007)

Flow Conditions	No. of Days Streamflow < IFPT (Pumping is not available)			% Streamflow > IFPT		
	A7Q10	M7Q10	2 Stage	A7Q10	M7Q10	2 Stage
January	0	0	0	100%	100%	100%
February	0	0	0	100%	100%	100%
March	0	0	0	100%	100%	100%
April	0	0	0	100%	100%	100%
May	0	0	6	100%	100%	81%
June	0	0	3	100%	100%	90%
July	0	0	5	100%	100%	84%
August	17	17	21	45%	45%	32%
September	23	23	27	23%	23%	10%
October	14	14	21	55%	55%	32%
November	0	0	19	100%	100%	37%
December	0	0	17	100%	100%	45%
Entire Year	**54**	**54**	**119**	**85%**	**85%**	**67%**

Figure 2. Number of Days the Chattahoochee River Flow is Less Than the IFPT Conditions (Drought, 2007)

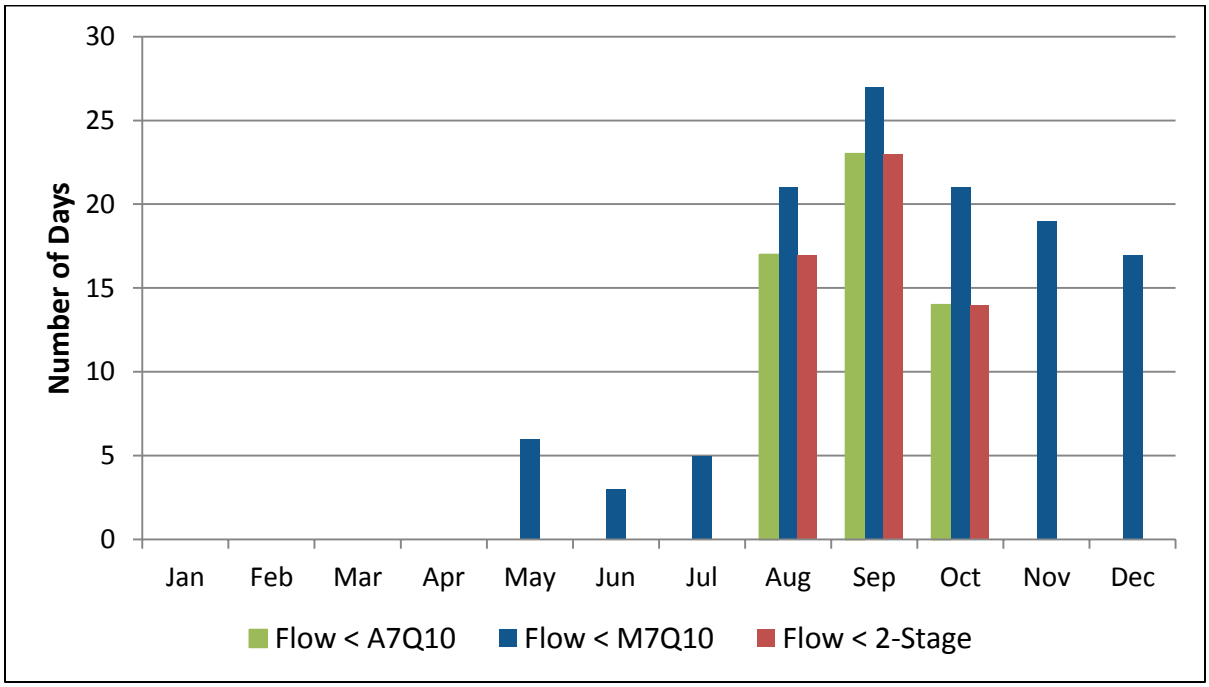


Table 3. Streamflow versus the IFPT Conditions (Drought, 2008)

Flow Conditions	No. of Days Streamflow < IFPT (Pumping is not available)			% Streamflow > IFPT		
	A7Q10	M7Q10	2 Stage	A7Q10	M7Q10	2 Stage
January	0	0	11	100%	100%	65%
February	0	0	1	100%	100%	97%
March	0	0	2	100%	100%	94%
April	0	0	8	100%	100%	73%
May	0	0	7	100%	100%	77%
June	0	0	16	100%	100%	47%
July	0	0	20	100%	100%	35%
August	19	19	21	39%	39%	32%
September	0	0	8	100%	100%	73%
October	0	0	13	100%	100%	58%
November	0	0	20	100%	100%	33%
December	0	0	5	100%	100%	84%
Entire Year	**19**	**19**	**132**	**95%**	**95%**	**64%**

Figure 3. Number of Days the Chattahoochee River Flow is Less Than the IFPT Conditions (Drought, 2008)

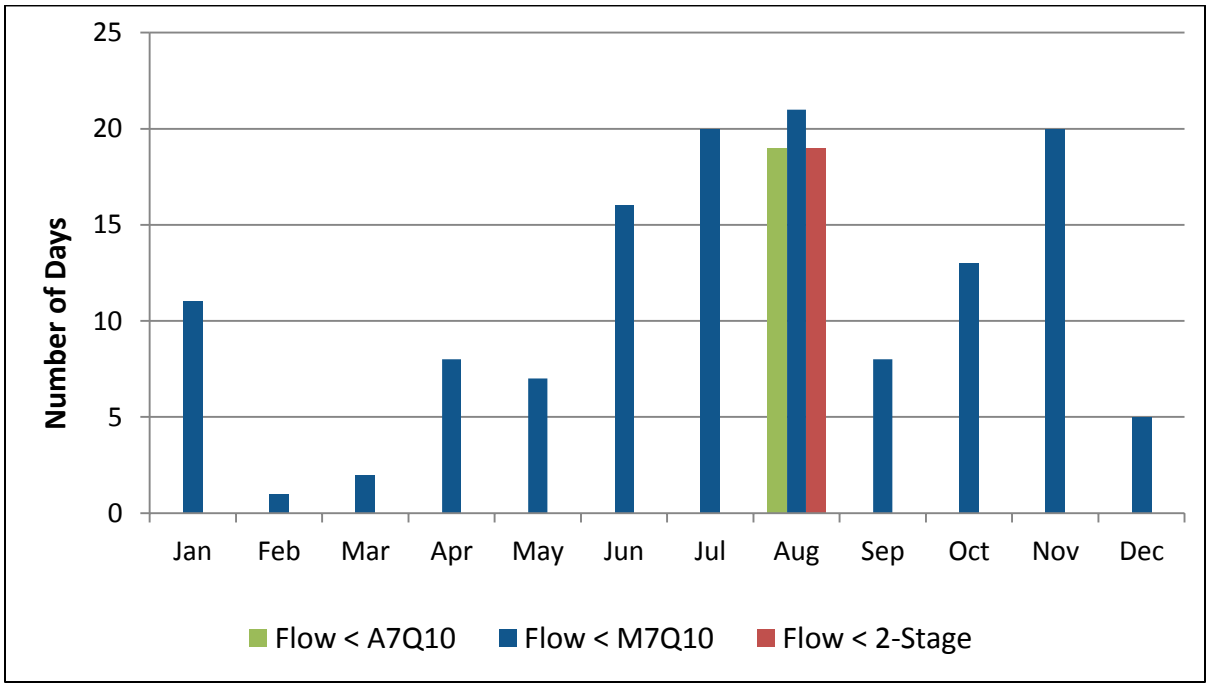


Table 4. Streamflow Impacts on Pumping

	No. of Days Pumping < 40 MGD			% Time Pumping < 40 MGD		
Flow Conditions	A7Q10	M7Q10	2 Stage	A7Q10	M7Q10	2 Stage
Average (1957-2012)[1]	451	1976	481	2%	10%	2%
Average Year (1997)	0	0	0	0%	0%	0%
Wet Year (2005)	0	0	0	0%	0%	0%
Drought (1986-1989)	105	409	125	7%	28%	9%
Drought (2001)	4	175	7	1%	48%	2%
Drought (2007-2008)	176	393	176	24%	54%	24%

Note: The maximum daily pumping capacity of 40 mgd was used in this analysis because it results in a reservoir safe yield of approximately 50 mgd (annual average) with the current transmission configuration.

1. Period of Record 8/21/57 – 12/31/12

Table 5. Seasonal Streamflow Impacts on Pumping During Drought (1986-1989)

	No. of Days Pumping < 40 MGD			% Time Pumping < 40 MGD		
Flow Conditions	A7Q10	M7Q10	2 Stage	A7Q10	M7Q10	2 Stage
Spring (Feb-May)	2	159	22	0.4%	33%	5%
Summer (June- Oct)	98	194	98	16%	32%	16%
Winter (Nov - Jan)	5	56	5	1%	15%	1%

Note: The maximum daily pumping capacity of 40 mgd was used in this analysis because it results in a reservoir safe yield of approximately 50 mgd (annual average) with the current transmission configuration.

Table 6. Seasonal Streamflow Impacts on Pumping During Drought (2007-2008)

	No. of Days Pumping < 40 MGD			% Time Pumping < 40 MGD		
Flow Conditions	A7Q10	M7Q10	2 Stage	A7Q10	M7Q10	2 Stage
Spring (Feb - May)	0	59	0	0%	24%	0%
Summer (June – Oct)	150	239	150	49%	78%	49%
Winter (Nov - Jan)	26	95	26	14%	52%	14%

Note: The maximum daily pumping capacity of 40 mgd was used in this analysis because it results in a reservoir safe yield of approximately 50 mgd (annual average) with the current transmission configuration.

ATTACHMENT 5

Change in Natural Streamflow versus IFPT Conditions

Average Year – 1997

Wet Year – 2005

Drought – 1986-1989

Drought – 2001

Critical Drought – 2007-2008

Figure 1. Percent Difference of the 2-Stage IFPT Scenario Post-Project Flow from Natural Streamflow Conditions under Average Year Conditions (1997)

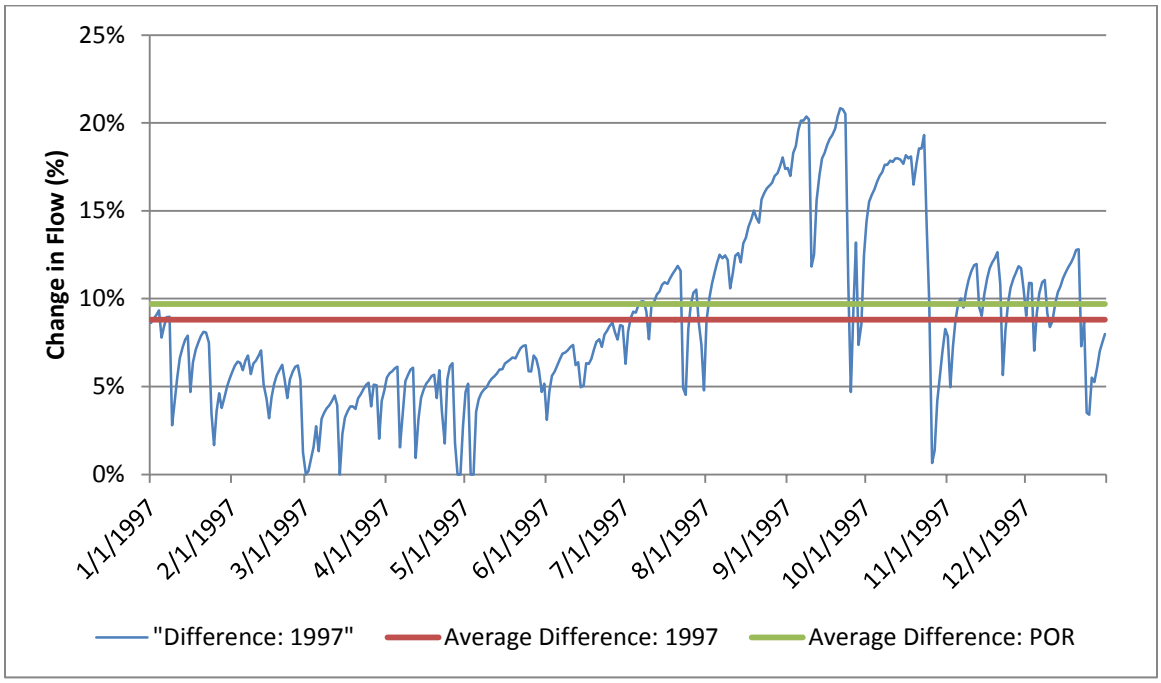


Figure 2. Percent Difference of the 2-Stage IFPT Scenario Post-Project Flow from Natural Streamflow Conditions under Wet Year Conditions (2005)

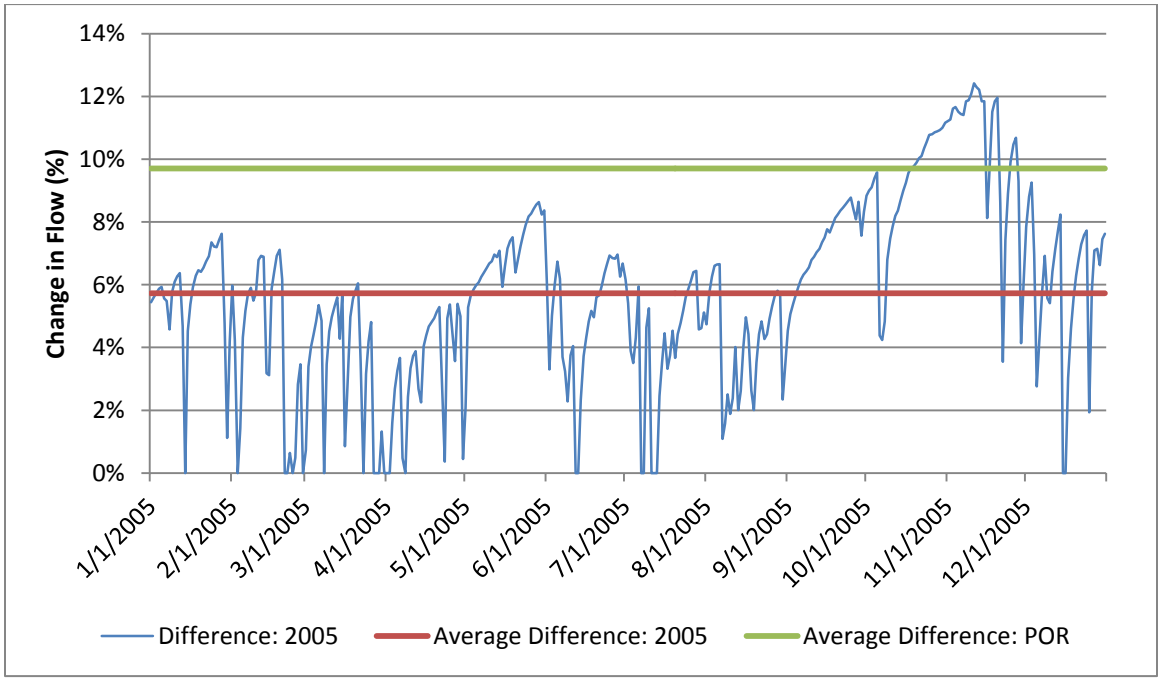


Figure 3. Percent Difference of the 2-Stage IFPT Scenario Post-Project Flow from Natural Streamflow Conditions under Drought Year Conditions (1986-1989)

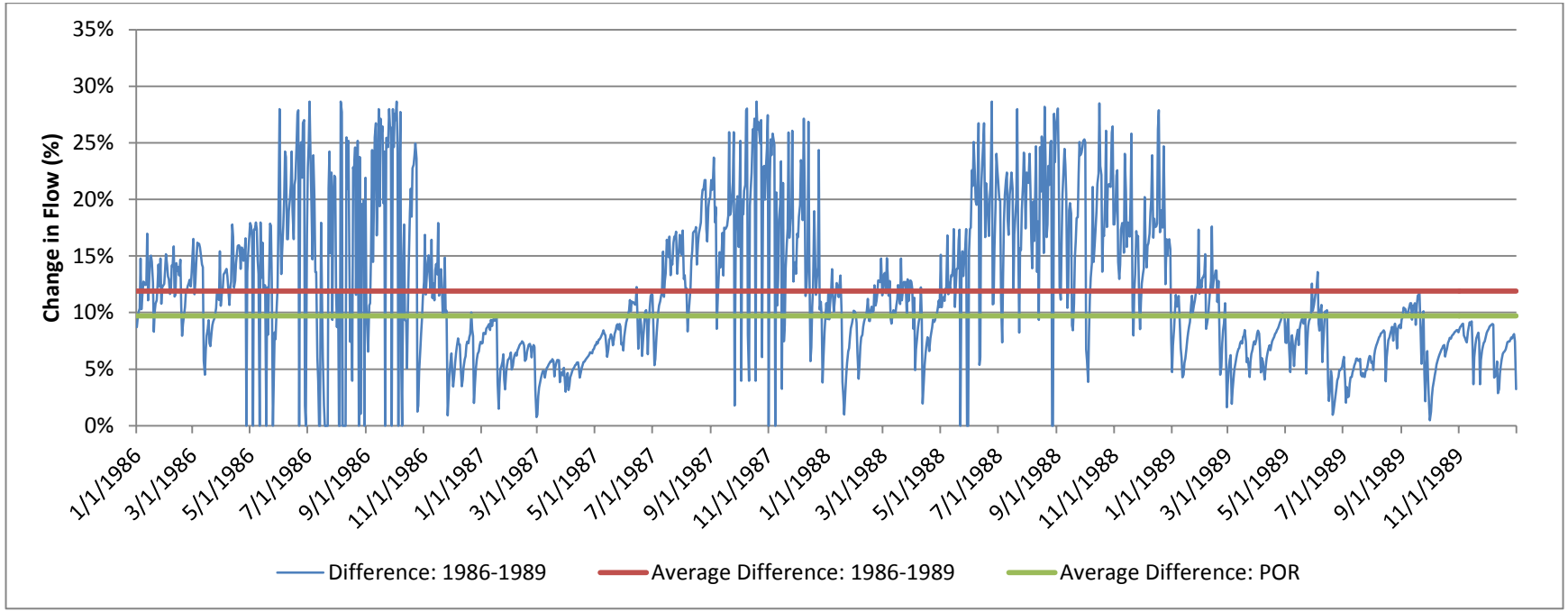


Figure 4. Percent Difference of the 2-Stage IFPT Scenario Post-Project Flow from Natural Streamflow Conditions under Drought Year Conditions (2001)

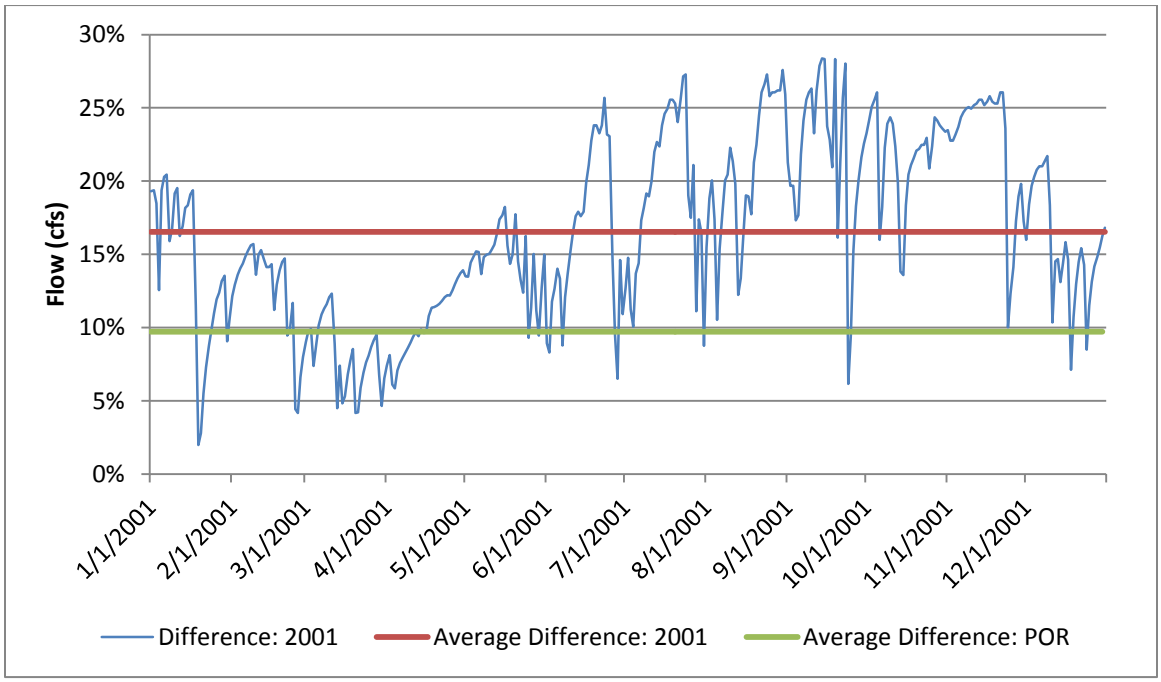
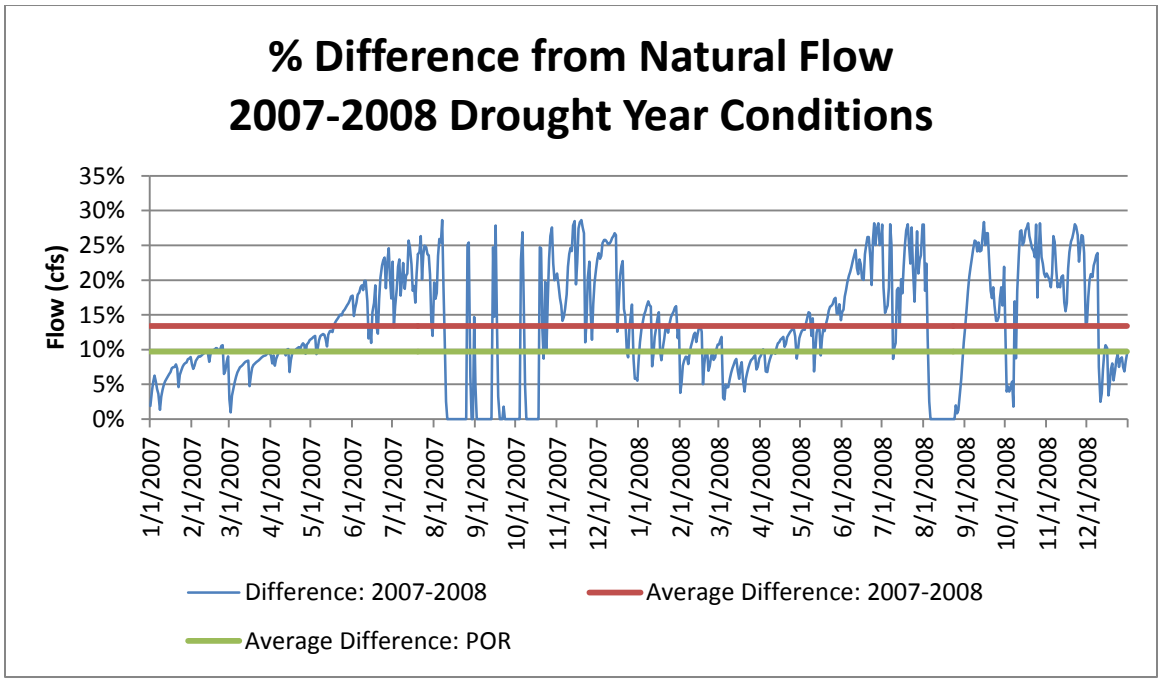


Figure 5. Percent Difference of the 2-Stage IFPT Scenario Post-Project Flow from Natural Streamflow Conditions under Critical Drought Year Conditions (2007-2008)



ATTACHMENT 6

Reservoir Storage vs Time (1958-2012)

A7Q10

M7Q10

2-Stage

Figure 1. Glades Reservoir Storage versus time, IFPT = A7Q10, 1958-2012

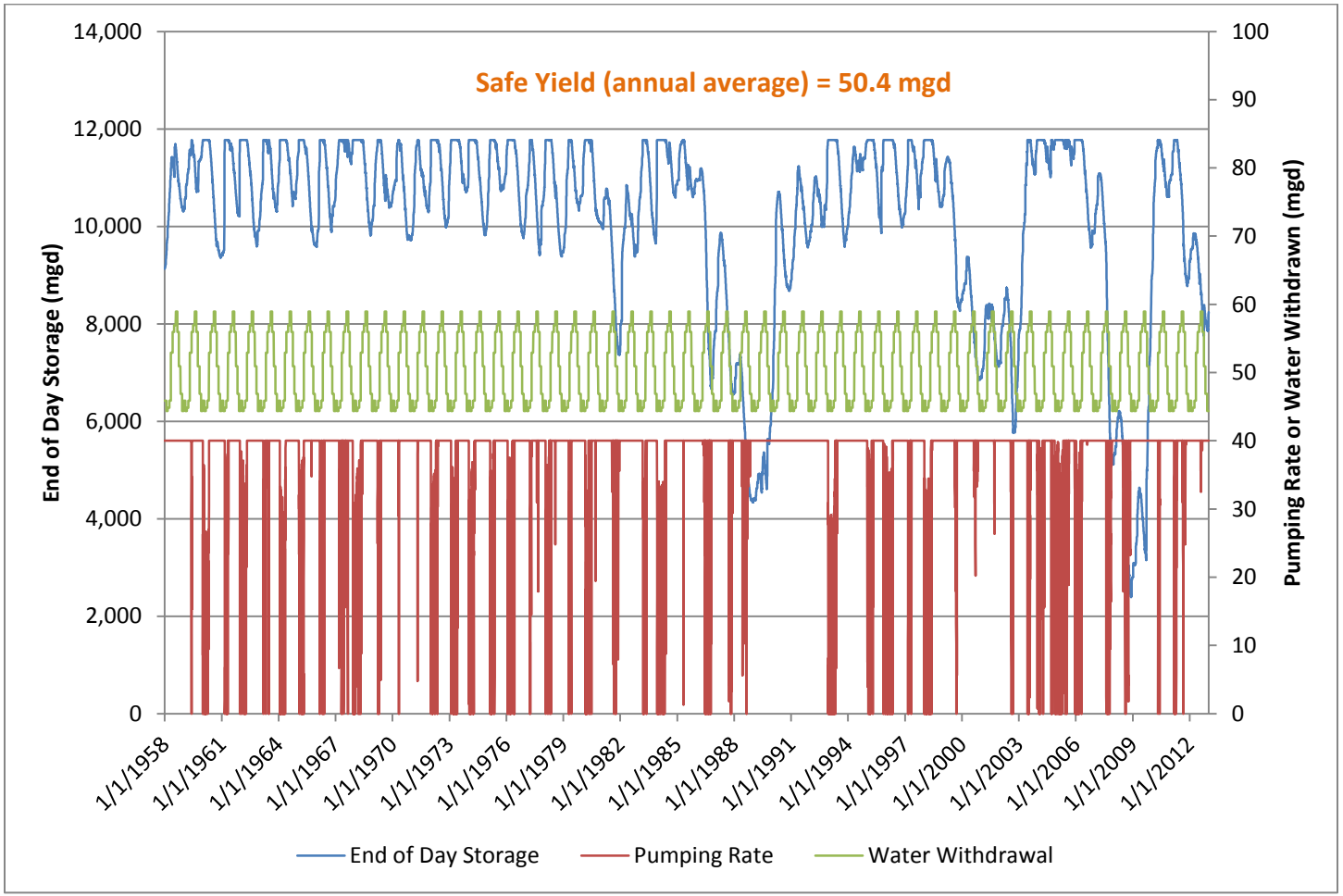


Figure 2. Glades Reservoir Storage versus time, IFPT = M7Q10, 1958-2012

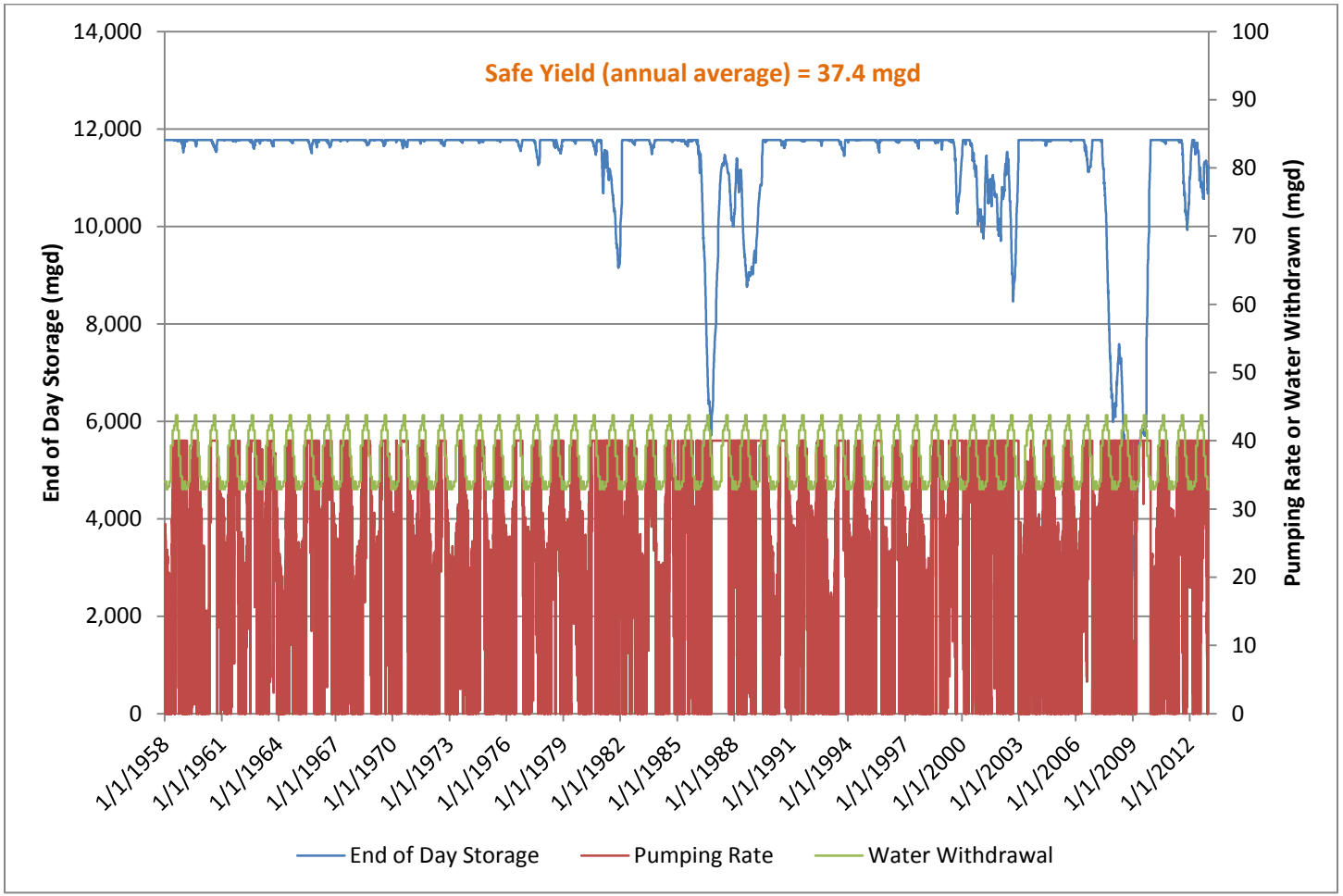
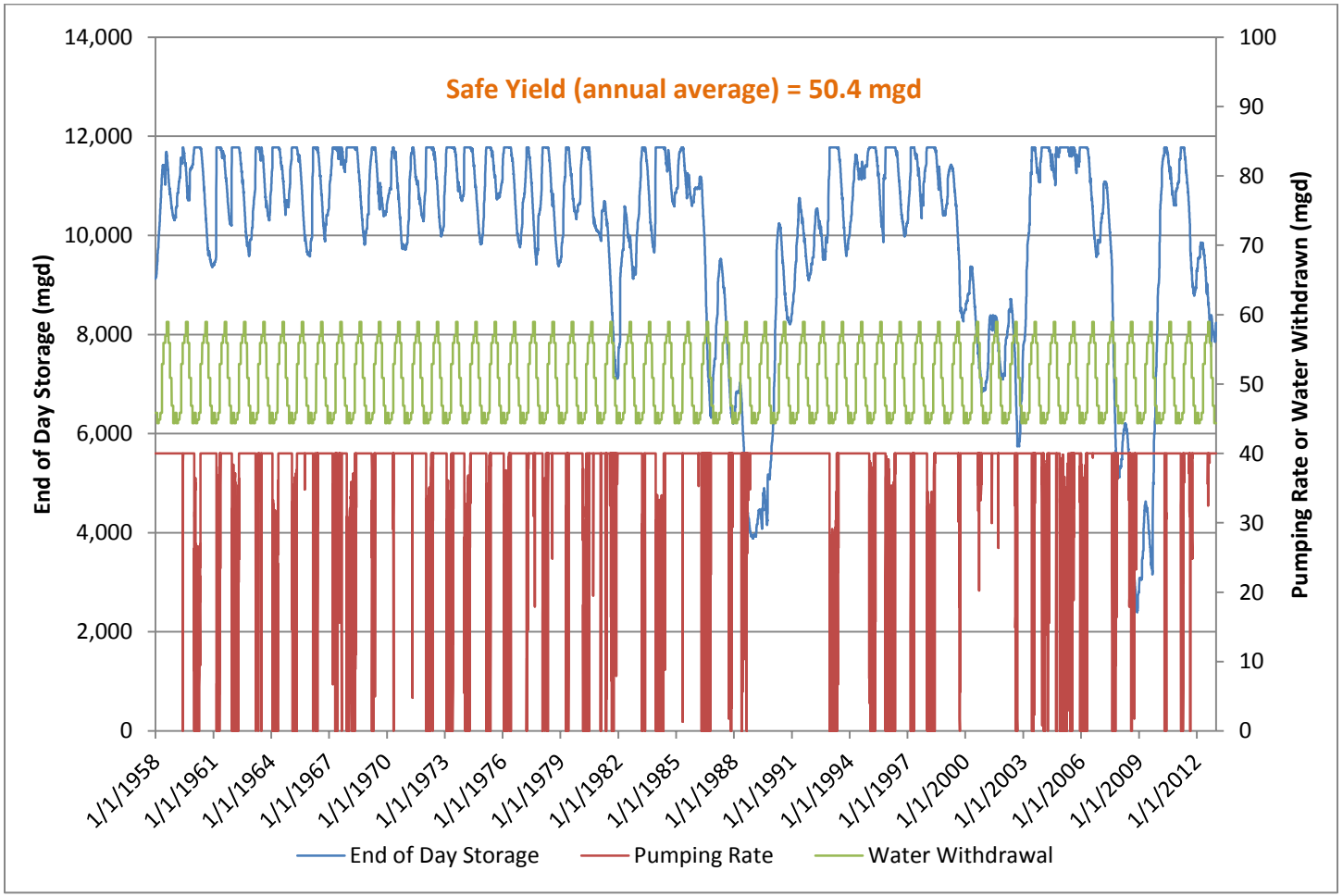


Figure 3. Glades Reservoir Storage versus time, IFPT = 2-Stage, 1958-2012



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DRAFT Memorandum

To	Richard Morgan, Kathrine Freas (U.S. Army Corps of Engineers)	Pages	38
CC			
Subject	Glades Reservoir Environmental Impact Statement – Instream Flow Protection Threshold Analysis for the Proposed Water Intake On the Chattahoochee River: Part 2 - Flow Impacts to Fish Community and Recreational Use		
From	AECOM		
Date	April 28, 2014		

INTRODUCTION

In support of the Environmental Impact Statement (EIS) for the proposed Glades Reservoir project, AECOM evaluated the impacts to various types of primary fish habitat in the Chattahoochee River, from the location of the Applicant's proposed raw water intake downstream to the point of entry into Lake Lanier. The purpose and goals of the evaluation are to:

- Expand the Applicant's previous evaluation to address recreationally important fish species;
- Supplement the Applicant's limited data with expanded data and analyses, including the game fish data provided by the Wildlife Resources Division (WRD) of the Georgia Department of Natural Resources (GADNR) and additional survey conducted by AECOM;
- Evaluate potential critical water levels and impacts to fish migration and recreational use related to seasonal changes in river volume; and
- Evaluate the Applicant's request and recommendation for the annual 7-day, ten-year minimum flow (A7Q10) to be approved as the required minimum instream flow below the proposed raw water intake and pump station in the Chattahoochee River.

This technical memorandum presents the findings of the analysis.

BACKGROUND

Hall County, the Applicant for the proposed Glades Reservoir project, identified as their preferred alternative, a pumped-storage reservoir located on Flat Creek and a raw water intake/pump station on the Chattahoochee River located approximately 1.5 miles upstream from Belton Bridge. The Applicant plans to pump water from the Chattahoochee River to fill or refill the proposed Glades Reservoir.

In addition to the Department of the Army Section 404 permit application (Permit Number SAS-2007-00388), the Applicant submitted a water withdrawal permit application to the Georgia Environmental Protection Division (EPD) in 2011. As part of the withdrawal permit application, the Applicant submitted a letter to EPD (dated May 11, 2011) requesting that the A7Q10 (184 cfs) flow be approved as the minimum instream flow below the proposed Glades Reservoir raw water intake on the Chattahoochee River. The report, "*Study of Flow Impacts on the Fish Community in the Chattahoochee River Downstream of Proposed Water Intake* (December 2010, CCR Environmental, Inc.)" provided survey data and analysis to justify the Applicant's request. AECOM has reviewed and updated the low flow analysis, and the revised A7Q10 based on updated streamflow record for the period of 1958 to 2012 is 154 cfs (Draft Technical Memorandum: Low Flow Analysis for the Proposed Water Intake on the Chattahoochee River, February, 2014).

Summary of Agency Comments

The WRD of Georgia DNR provided scoping comments in a letter to the U.S. Army Corps of Engineers, Savannah District, (Corps) dated April 13, 2012 (**Attachment 1**). On May 31, 2012, the Corps and EPD held a meeting with Hall County and its representatives. Staff from WRD commented to the Corps that they had concerns related to the completeness and conclusions of the Applicant's study. WRD had subsequently provided annual gamefish sampling data for the period of 2008 to 2012 to the Corps. Subsequently, AECOM held two conference calls on August 2, 2012, with the Corps, EPD, and WRD to seek clarification of WRD's comments and on August 28, 2012, to discuss the proposed scope of work to address WRD's comments. A cooperating agencies workshop was held on December 5, 2012, to provide an update on the field surveys and preliminary data. An online meeting was held with the Corps and EPD on February 21, 2013 to review preliminary modeling results.

A summary of WRD's comments are provided below:

- Analysis should be performed to evaluate the impacts to fisheries under various flow scenarios that incorporate the potential for reduced flows (including annual and monthly 7Q10 flows).
- Impacts to game fish species (including those species that normally live in Lake Lanier, but enter the Chattahoochee River to spawn) should be assessed.
- Impacts to recreational boaters/anglers should be assessed.

THE STUDY AREA

The study area is the section of the upper Chattahoochee River located between the upper boundary of Lake Lanier to the Applicant's proposed raw water intake and pump station. This location has been described by the Applicant as being approximately 6.2 miles upstream from Lake Lanier, although review of maps provided by the Corps indicates that the Corps' fee-simple ownership of land for Lake Lanier extends up the Chattahoochee River to within approximately 0.5 miles downstream of the Applicant's proposed intake. Within the operational pool elevations of Lake Lanier, habitat quality for

riverine fish is strongly influenced by the lake level (i.e., stream depth is determined by stored volume, not by stream flow). To focus this analysis on stream flow effects, the study area was generally limited to the river segment from the Applicant's proposed raw water intake and pump station to the normal pool of Lake Lanier.

The nearest USGS gaging station (#02331600 Chattahoochee River near Cornelia) is located approximately 8 miles upstream of the Applicant's proposed intake at Georgia Highway 384 (Duncan Bridge Road) near Cornelia, Georgia. There are 56 years of recorded data for this gaging station (1957 to 2012), including discharge, stage, and precipitation. The USGS data were used to calibrate the PHABSIM models and to identify seasonal flow scenarios and scenarios for the evaluation.

The study area on the upper Chattahoochee River consists of a moderate-gradient piedmont stream, with alternating shoals/riffles formed by rock outcrops, separated from one another by deeper sections that consist of runs, glides, and pools. The shoals and riffles are characterized by an abundance of hard substrates at depths that are typically less than 2 to 3 feet. The pools may reach depths exceeding 6 feet. The bottom composition ranges from bedrock, cobble, gravel, and sand that are dominant within the shoal/riffle areas, to fine gravel, sands, and silts in the deeper, slower areas. Many pools are found on the outside of river bends, and these may have areas of bedrock substrate as well as soft substrates.

The fish species composition varies according to the habitat types. Within the study area, the river contains several primary habitat types for fish. These include shallow to medium depth runs and glides, deeper pools, and shallow riffles and shoals. At certain locations, there may be mixtures of these types of habitat across the width of the river. This is particularly true at some of the bends of the river, where pools may be present in the outside of a bend, but shoal conditions with bedrock and cobble may surround the pools. The study area exists in an area where the river is primarily bordered by riparian forest and upland forest. There are no large clearings or developments adjacent to the river banks.

METHODOLOGY: OVERVIEW OF PHYSICAL HABITAT SIMULATION SYSTEM (PHABSIM)

The U.S. Geological Survey's (USGS) Physical Habit Simulation System (PHABSIM) model was used to evaluate the impacts of low flow to fish communities in the Chattahoochee River below the proposed raw water intake. The Applicant originally used the PHABSIM model to estimate changes in habitat area for several fish species in response to various flow scenarios. The findings of the Applicant's analysis were presented in the report titled "*Study of Flow Impacts on the Fish Community in the Chattahoochee River Downstream of Proposed Water Intake* (December 2010, CCR Environmental, Inc.), hereinafter referred to as the CCR Report.

The PHABSIM model is a suite of models that analyze stream flow, volume, and aquatic habitat for the assessment of comparative conditions for individual species, life stages, or generalized assemblages of species under differing flow scenarios. In order to evaluate how differing flow conditions/scenarios could affect fish species, PHABSIM incorporates Habitat Suitability Curves (HSCs) developed for use with the U.S. Fish & Wildlife Service (USFWS) Habitat Evaluation Procedures (HEP) protocols. The HSCs specify

suitability ranges for various habitat parameters for each species (or guilds of species representing specific types of habitat). The HSCs used for the evaluation of the proposed Glades Reservoir raw water intake location were published by either the USFWS or Progress Energy Company for the Pee Dee River Instream Flow Study (see References). The HSCs identify ranges of values for various habitat factors that are measurable and important to each species. The values provide a ranking of habitat quality (generally from poor to optimal on a 0 to 10 scale) for each factor. The model estimates the changes in flow velocity, depth, cover, and substrate area of the waterbody for hypothetical flow scenarios and predicts the resulting changes to habitat area and quality under those scenarios. The model expresses its simulation of species suitability for differing flow scenarios with a value that is called the Weighted Useable Area (WUA). WUA is a representative index of habitat value and area based on physical attributes of the habitat under a specific flow scenario.

The initial use of PHABSIM by the AECOM Glades EIS team was to verify and recreate the Applicant's previous fish habitat simulations. The Applicant's original simulations prepared by CCR had been lost due to the loss of one of their computers, but hard copies of their raw data and final output graphs were provided by the Applicant. AECOM also performed additional analyses using PHABSIM to develop a more robust environmental analysis of the impacts of the Applicant's proposed action.

For the Glades EIS project, PHABSIM was used to analyze potential impacts (either positive or negative, as represented by loss or gain of habitat area, or changes in physical conditions such as flow rates) under various scenarios that could result due to withdrawal of water from the Chattahoochee River. A range of low flow conditions were evaluated, including monthly median flows, monthly and annual 7Q10 flows, and a spring seasonal average flow for the months of February through April. The spring months were evaluated to predict the impact on striped bass and walleye migration from Lake Lanier during the period the species are most likely to migrate for spawning purposes. Simulations were run to predict the critical flow scenario (or the depth of key shallow zones in the river) that may prevent the spawning fish from migrating upstream from Lake Lanier, or negatively impact river navigability for recreational purposes.

REVIEW OF APPLICANT'S ANALYSIS

The CCR report and data were reviewed for appropriateness and accuracy. The Applicant's report was based on:

- Study of Bio/Physical Characteristics of Flat Creek (Dinkins 2006);
- Protected Species Survey for Flat Creek (Straight, Hagler, and Freeman, 2003)

Table 1 summarizes the three types of habitat identified by the Applicant between the proposed intake site and Lake Lanier.

Table 1. Types of Habitat Identified in Applicant's Report

Habitat	Characteristics	Percent Total of Study Area	Evaluated by Applicant
Pool (Slow/Deep)	3 feet or deeper, mostly sand substrate, slow current	64	No
Runs (Fast/Deep)	Generally 2 to 6 feet deep, sand and gravel substrate, moderate (1 to 2 fps) current	23	Yes
Shoals/Riffles (Fast/Shallow)	Generally less than 3 feet deep, bedrock, boulder, gravel, and coarse sand substrates, fast current with turbulence	13	Yes

Source: Study of Flow Impacts on the Fish Community in the Chattahoochee River Downstream of Proposed Water Intake (December 2010, CCR Environmental, Inc.)

Review of the Applicant's study indicated that much of the pool habitat identified was actually located within the pool of Lake Lanier. Within the section of the river located above the normal pool (at elevation of 1,071 feet above mean sea level) of Lake Lanier, pool habitat constitutes a smaller, but still significant portion of the overall habitat. Field observations by AECOM suggest that approximately three quarters of the habitat in the study area consists of runs (fast/deep habitat), with shoal/riffle and pools making up the remaining quartile of habitat. In the Applicant's study, the potential impacts to pool habitat were not modeled. Evaluation of pool habitat is necessary to understand the full range of impacts and critical flow levels within the river.

The list of species used for the Applicant's modeling effort was very small and it consists of the following:

- Northern hogsucker (adult, fry, and spawning)
- Silver redhorse (adult)
- Bluehead chub (young)

Impacts to game fish species were not addressed and this was one of WRD's major concerns. In addition, no analyses were conducted to evaluate impacts to game fish spawning.

Based on agencies comments and our independent review, the Corps requested that AECOM conduct additional assessment to address these deficiencies and to re-evaluate the potential impacts of representative flow scenarios to support discussions and decision-making relative to minimum instream flow levels and potential water withdrawal limits.

ADDITIONAL ANALYSES

AECOM performed additional studies in winter 2012-spring 2013 to address the items mentioned above. In addition to reviewing the Applicant's report and data, the analyses included the following:

- Review of WRD game fish data: Annual electrofishing surveys for game fish in the river between Lake Lanier and Bull Shoals for the period of 2008 to 2012 were reviewed to determine the importance and seasonality of migratory gamefish usage in the Chattahoochee River within the study area;

- Field survey for the following:
  - Four new cross-section profiles and flow

  - Substrate/habitat data
  - Evaluation of shallow, low-flow chokepoints; and

- Habitat modeling (using PHABSIM models) of appropriate fish species to represent all of the major habitat types and primary fish communities within the study area.

Figure 1 shows the river cross-sections surveyed by the Applicant, new cross-sections surveyed by AECOM, and WRD's game fish survey areas. **Figure 2** shows the study area relative to Lake Lanier water surface levels (top of flood pool water surface elevation at 1085 ft MSL, top of normal pool at 1070 (winter)/1071(summer) ft MSL, and drought years at 1060 ft MSL).

Figure 1. River Cross Sections and WRD Game Fish Survey Areas

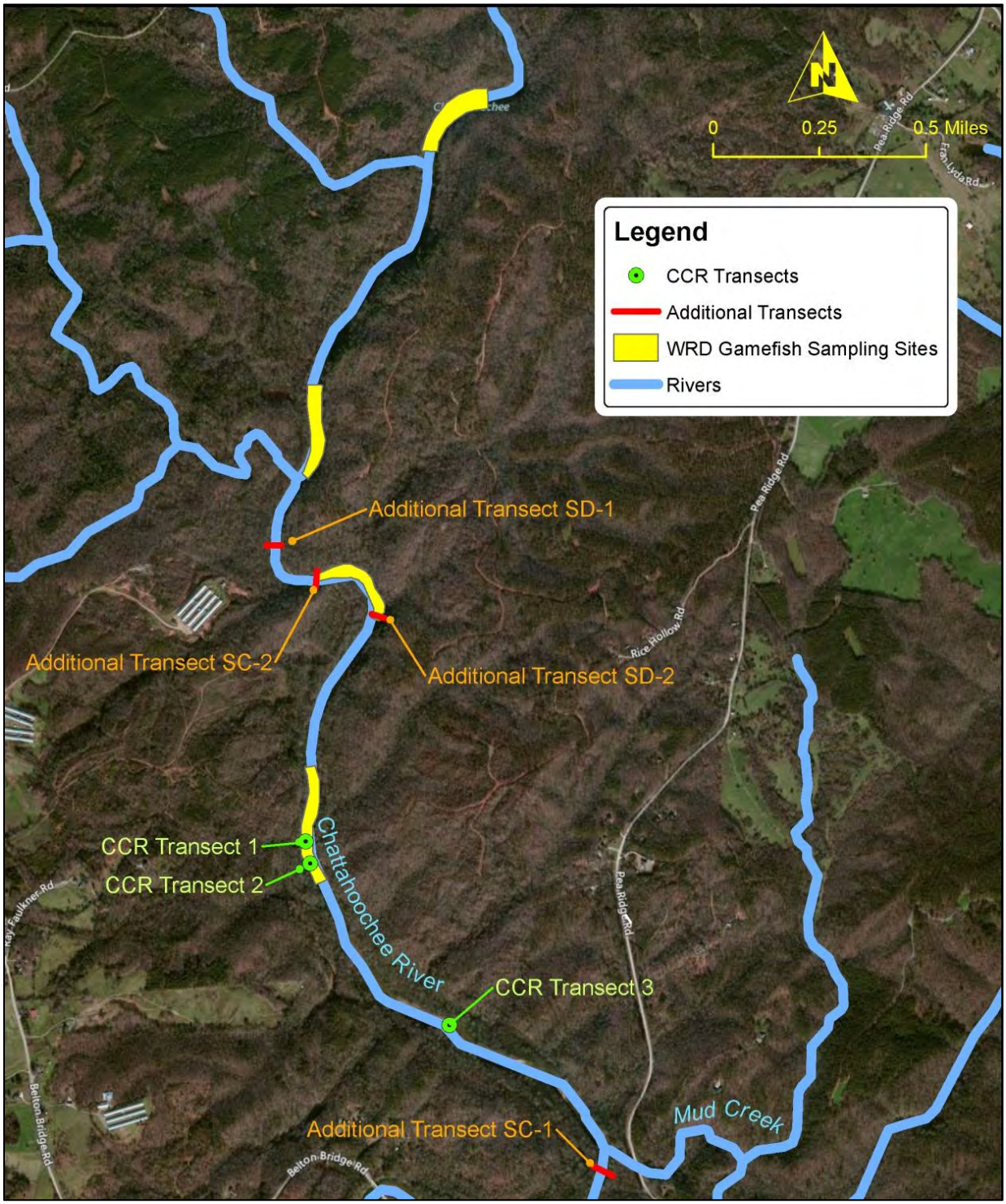
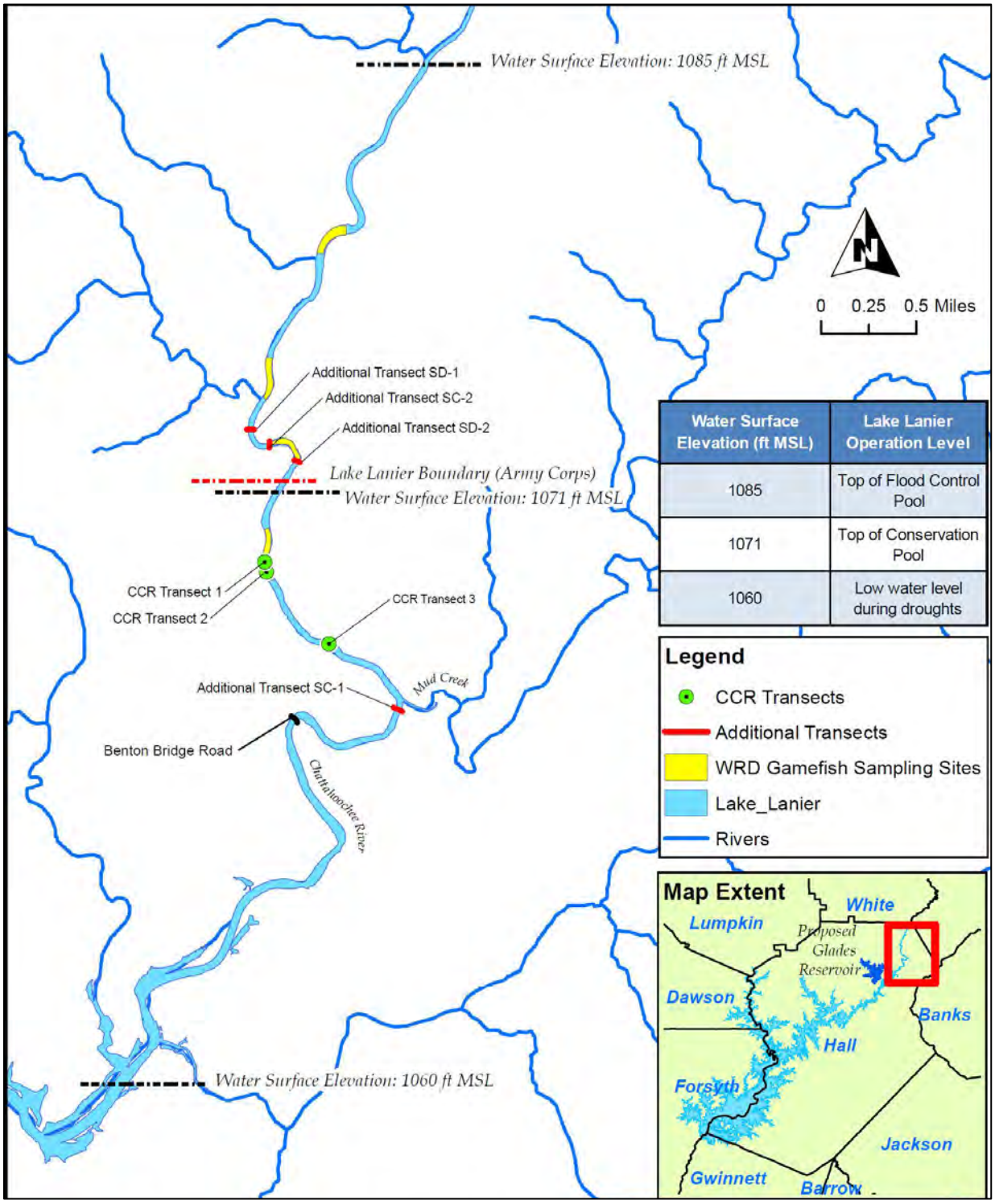


Figure 2. Study Area Relative to Lake Lanier Water Surface Levels



Water Surface Elevation (ft MSL)	Lake Lanier Operation Level
1085	Top of Flood Control Pool
1071	Top of Conservation Pool
1060	Low water level during droughts

The documents reviewed and considered for this analyses included:

- CCR Report
- Study of Bio/Physical Characteristics of Flat Creek (Dinkins 2006)
- Protected species survey for Flat Creek (Straight, Hagler, and Freeman, 2003)
- WRD gamefish survey data (2008 through 2012)
- USFWS information regarding Halloween darter suspected habitat (2012)
- USGS Chattahoochee River near Cornelia, Georgia (#02331600) stream gage data (1957–2011)

The analyses performed by AECOM were designed to be representative of all major habitat types (including pools, glides/runs, and riffles/shoals). In addition, the analyses expanded the types of representative fish species to include species of particular recreational importance, including striped bass, white bass, walleyes, sunfishes, and spotted bass (which was also used as a surrogate for shoal bass) based on WRD input. In addition, AECOM included small-bodied non-game fish species [Bluehead Chub (YOY), Common Shiner (Adult, Fry, Juvenile, Spawning), Fantail Darter (Adult)] in the analysis. Because these species and the Generic Shallow Fast Guild exhibit similar responses to variations in flow regime, only the results of the Bluehead Chub and Generic Shallow Fast Guild are reported in this Technical Memorandum. Evaluations of spawning and migration related impacts were also performed to address the agencies' concerns. The following sub-sections provide additional description of the surveys and modeling analyses.

Field Surveys: River Cross-Sections

The locations of the field data collection points are shown in **Figure 1**. The original data provided by the Applicant were shown as CCR Transects 1-3. WRD's game fish survey points consisted of Bull Shoals, the Slot, Flat Rock, and First Shoals, which are illustrated as sampling zones along the river. Four additional transects were identified by AECOM for field data collection to address data gaps. AECOM's additional data transects consisted of transects SD (Slow-Deep) 1 and 2, and SC (Shallow-Choke) 1 and 2.Two transects (SD1 and SD2) were selected to represent deep areas with slow velocity in the river (pool habitat); two additional transects (SC 1 and SC2) were located to represent the shallowest sections that would likely become too narrow or shallow to allow upstream boat traffic, and/or could become too shallow during pumping to deter upstream migration of striped bass or walleye for spawning purposes.

At each transect, cross-section surveys of water depth, flow velocity, and substrate composition were performed during different flow conditions. The cross-section surveys were set up by locating benchmarks on each bank of the river, and very tautly suspending a static rope between the two points. The rope was used to support a measuring tape across the river between the benchmarks on each bank. The measuring tape provided a reference for the horizontal distance between the benchmarks. The surveys were conducted by collected elevation, water level, flow velocity, and substrate composition at two-foot intervals between shoreline benchmarks that were located above the normal high water marks on each bank of the river at each transect. The elevations were determined using a surveying level and stadia rod. Water velocity measurements were collected using a Global Water FP101 flow probe electronic flow meter. The velocity measurements were recorded at 60% of the water depth at each

location. Field surveys were conducted on November 1, 2012, November 2, 2012, and December 18, 2012.

PHABSIM Model Analyses: Year-Round Resident Fish Habitat

The aquatic habitat impacts were assessed for each of the major habitat types, using HSCs for representative fish species and age classes appropriate to the locale. Some of the HSCs include models for various age classes/life stages of certain species. Within the available HSCs, representative models were selected to evaluate impacts to representative life stages of fish development within each type of habitat. The range of life stages available in some of the models included the following:

- Fry – post-larval young, capable of swimming in the normal currents associated with the species preferred habitat;
- Young of the year – fish that are less than one year old;
- Juvenile – Fish older than one year, but not yet old enough to breed;
- Spawning – the period related to spawning and development of eggs;
- Adult – fish of sufficient age to breed;

The selected species represent a range of ecological niches found in each major habitat classification. In some cases, certain fish species were used as surrogates to represent other species where published HSCs were not available.

In addition, a published generic habitat guild HSC was used for the Shallow/Fast habitat in addition to the HSCs for the individual species. This guild was published to represent the broad spectrum of the Shallow/Fast habitat fish community. **Table 2** details the representative HSCs selected for the Glades project modeling:

Table 2. Resident Fish Species Selected to Represent Major Habitat Types

Shallow/Fast (Shoals/Riffles)	Deep/Fast (Runs/Glides)	Deep/Slow (Pools)
Northern Hogsucker (S) *Hypentelium nigricans*	Spotted Bass (S) *Micropterus punctulatus*	Redbreast Sunfish (A, F, S) *Lepomis auritus*
Bluehead Chub (Y) *Nocomis leptocephalus*	Northern Hogsucker (F) *Hypentelium nigricans*	Spotted Bass (A) *Micropterus punctulatus*
Margined Madtom (A) *Noturus insignis*	Redbreast Sunfish (A, S) *Lepomis auritus*	Bluehead Chub (Y) *Nocomis leptocephalus*
Central Stoneroller (A) *Campostoma anomalum*	Silver Redhorse (Y) *Moxostoma anisurum*	
Generic Shallow Fast Guild	Bluehead Chub (Y) *Nocomis leptocephalus*	

Key to fish life stage abbreviations: A = Adult, F= Fry, S= Spawning, Y= Young

PHABSIM Model Analyses: Flow Scenarios

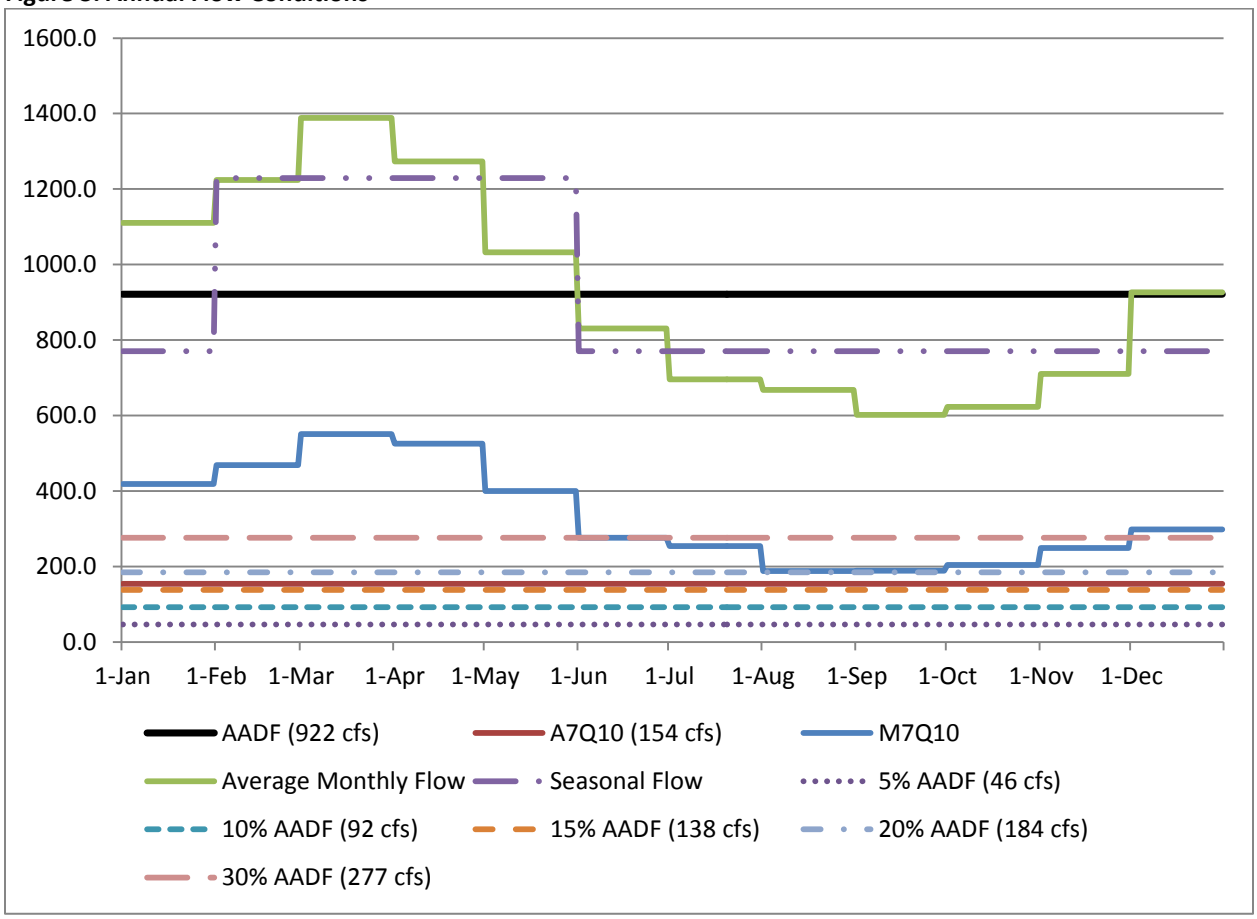
The PHABSIM model was used to analyze the WUA which represents the habitat quality and quantity for each of these species and life stages at specific flow scenarios. A range of flow scenarios were assessed to represent conditions ranging from extremely low to the normal high flows that occur in the study

area. The annual average daily flow (AADF) at the proposed intake site in the Chattahoochee River is 921 cubic feet per second (cfs). The flow scenarios selected for analysis represented a range of flows including 5% AADF, 30% AADF, average monthly flows (AMF) for January through December, monthly 7Q10 (M7Q10) flows for January through December, and AADF. The highest flow scenario that was modeled was the March AMF (1,388cfs). To simplify visual presentation which focuses particularly on potential low flow impacts, the WUA for all of the modeled flows have not been specifically called out in the results tables as the flow scenarios below cover all of the complete range of flow scenarios. The flow scenarios analyzed and presented in the results tables included:

- 5% AADF (46 cfs)
- 10% AADF (92 cfs)
- 15% AADF (138 cfs)
- 20% AADF (184 cfs)
- July M7Q10 (254 cfs)
- 30% AADF (276 cfs)
- May M7Q10 (400 cfs)
- February M7Q10 (469 cfs)
- March M7Q10 (551 cfs)
- August AMF (664 cfs)
- July AMF (696 cfs)
- June AMF (831 cfs)
- AADF (921 cfs)
- May AMF (1,032 cfs)
- January AMF (1,110 cfs)
- Feb-May Spring Seasonal Flow (average daily flow for February to May at 1,224 cfs)
- March AMF (1,388 cfs)

These flow scenarios provided reference points that cover the expected extremes of potential flows within the study area. These are also represented graphically in **Figure 3**.

Figure 3. Annual Flow Conditions



SUMMARY OF RESULTS

The results of AECOM's analyses are presented in the following sections. The results are provided for:

- Analysis of impacts to year-round resident non-game fish species;
- Analysis of impacts to year-round resident game fish species;
- Analysis of impacts to transient migratory gamefish species; and
- Analysis of flow effects to recreational boating/angler access to migrating fish species

Impacts to Year-Round Resident Non-Game Fish Species

The results of the PHABSIM modeling, expressed as WUAs, are presented in **Table 3**. Better habitat conditions correspond with higher WUA values. **Attachment 2** contains graphical output summary of WUAs for the representative species at the modeled flow scenarios. These graphs are particularly useful for understanding the effect of differing flow regimes on the habitat for the species and species guilds that were selected to evaluate each of the three main habitat types. The analysis of the results shows that most of the resident non-game fish experience better habitat conditions at lower flow scenarios

between 5 and 30% of AADF. The only exception to this was young bluehead chubs within the deep-slow pool habitat, for which the greatest WUA value corresponded with the January Average Monthly Daily Flow(i.e., 1,110cfs). It is important to note that the best WUA values for this species within the other habitats occurred at flows of 5 and 10% AADF. Within the study area, the approximate optimal ecological flow for the broadest assemblage of non-game fish for all guilds is between 5% and 30% AADF.

Impacts to Year-Round Resident Game Fish Species

The WRD commented that the CCR study did not adequately address the potential impacts of low flow conditions on certain recreationally important, year-around game fish. These fish species include various species of sunfishes (family *Centrarchidae*, which includes sunfishes and black bass species) that occur as year-round residents within the Chattahoochee River above Lake Lanier, as well as three managed species of game fish that normally reside in Lake Lanier, but enter the upper Chattahoochee during their spring spawning runs. These transient game fish species are comprised of two species of temperate basses (i.e., white bass and striped bass), and walleye (see **Figure 4**).

For the PHABSIM modeling analysis, the HSCs for redbreast sunfish (*Lepomis auritus*) and spotted bass (*Micropterus punctatus*) were used to represent the native game fish species that are year-round residents of the Chattahoochee River. These were selected because HSCs were available, the species are common in the study area, and they represent riverine species of sunfish and black bass. HSCs were not available for the shoal bass, but the “generic shallow-fast guild” HSC was selected to represent the habitat needs for shoal bass in the riffle/shoal segments of the study area, and the redbreast and spotted bass HSCs appeared to be suited for evaluating the potential habitat for shoal bass in the deep-fast sections of the river. The results of these analyses also are summarized in **Table 3**.

The highest WUA values for these species occurred within the deep-fast habitat. Within this habitat type, the highest WUA for the broadest assemblage of these species occurred at a flow range of 10-30% AADF. Within the deep-slow habitat, the highest WUA values corresponded with the two highest flow scenarios, with the exception of the spawning habitat model for redbreast sunfish (which is also a surrogate for other spawning resident gamefish). This model calculated the best spawning habitat occurred at the lowest (i.e., 5% AADF) flow scenario. It is very important to note that the WUA values for the year-round resident game fish generally did not vary as widely between the different flow scenarios as was observed for some of the other fish species. This can be readily observed in the WUA graphs as relatively flat lines across the modeled flow scenarios. This finding is not unexpected, as these species are very adaptable, and are able to thrive in a wide range of habitats, including those found in rivers and in lakes. Considering the combined habitat types, the year-round resident game fish appeared to be little impacted by any of the modeled flow scenarios.

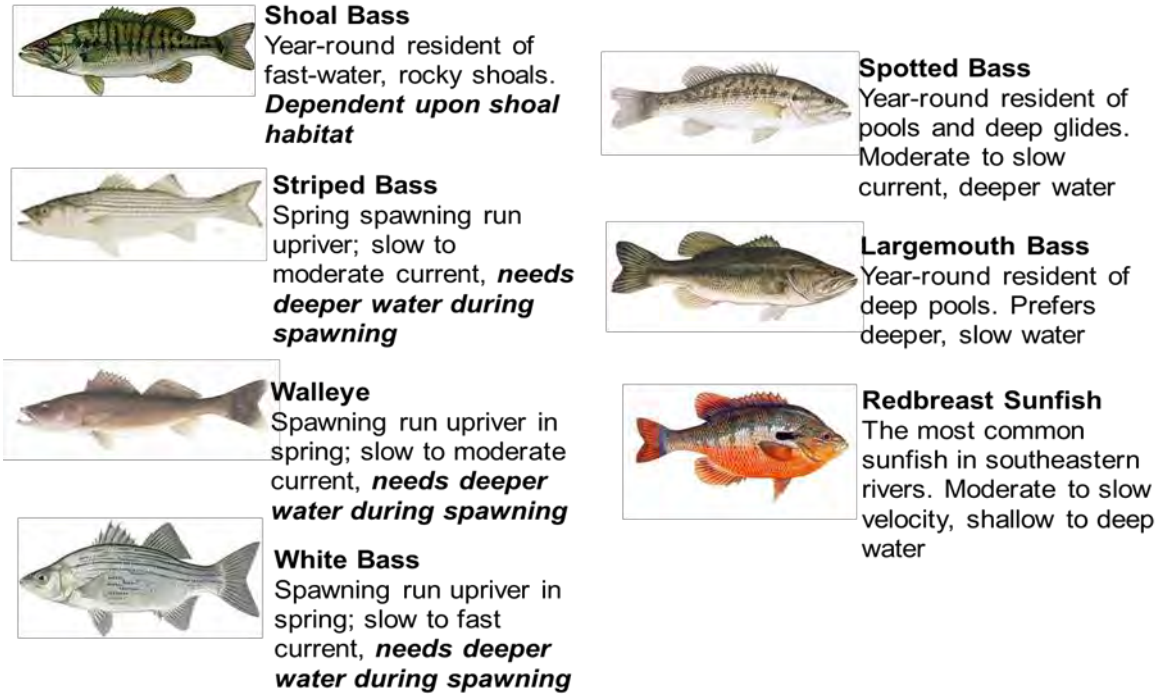
Table 3. PHABSIM Results—WUA Habitat Scoring for Resident Fish Species

Habitat Type	Fish Species	Habitat WUA by Representative Flow Scenario																
		5% AADF (46cfs)	10% AADF (92cfs)	15% AADF (138cfs)	20% AADF (184cfs)	July M7Q10 (254cfs)	30% AADF (276cfs)	May M7Q10 (400cfs)	Feb M7Q10 (469cfs)	Mar M7Q10 (551cfs)	Aug AMF (664cfs)	July AMF (696cfs)	June AMF (831cfs)	AADF (921cfs)	May AMF (1032cfs)	Jan AMF (1110cfs)	Feb May Spring Avg. (1,224cfs)	Mar AMF (1388cfs)
Shallow/Fast Habitat (Riffles and Shoals)	N. Hogsucker (spawning)	14,155	29,444	45,538	57,760	64,719	65,062	59,586	55,265	51,899	46,414	44,494	36,861	32,410	27,706	24,895	21,533	17,821
	Bluehead Chub (young)	5,187	8,157	6,758	6,785	3,893	4,165	2,411	1,641	1,421	1,468	1,503	766	591	552	551	571	549
	Margined Madtom (adult)	42,583	67,055	67,401	62,516	54,995	52,211	34,955	27,405	21,720	15,576	14,188	10,750	9,118	7,736	6,940	5,914	4,889
	Central Stoneroller (adult)	4,306	5,786	8,328	7,762	9,379	9,494	4,377	3,751	1,859	1,145	1,024	684	532	449	387	144	118
	Shallow Fast Guild	23,211	47,322	62,804	63,715	59,857	58,171	43,655	36,566	30,983	23,884	22,209	16,067	13,422	11,099	9,788	8,933	7,844
Deep/Fast Habitat (Runs)	Spotted Bass (spawning)	60,197	74,902	69,630	66,788	60,127	57,994	52,966	49,905	48,283	47,281	46,769	45,405	45,691	44,517	43,893	43,184	42,402
	Bluehead Chub (young)	16,016	13,028	10,160	8,191	7,756	8,636	6,670	6,521	4,380	2,198	2,000	2,406	2,414	2,660	2,440	2,264	2,672
	Redbreast (adult)	82,928	117,988	135,568	143,000	147,305	147,483	144,530	143,095	140,980	138,175	137,529	134,236	132,283	130,614	129,222	127,380	125,477
	N. Hogsucker (fry)	122,520	64,950	23,866	16,735	14,143	12,485	11,577	11,890	9,115	10,877	10,934	8,497	9,024	7,372	4,525	5,523	7,078
	S. Redhorse (young)	119,301	104,073	83,246	66,547	49,240	45,565	31,504	27,228	23,805	20,353	19,701	17,520	15,763	13,782	12,839	11,607	10,829
	Redbreast (spawning)	103,441	124,167	117,497	113,366	99,006	94,597	75,624	65,862	60,302	54,180	53,084	48,707	46,490	43,729	41,697	38,673	35,449
Deep/Slow Habitat (Pools)	Redbreast (adult)	63,850	64,421	64,417	64,776	65,502	65,691	66,827	67,222	67,307	67,252	67,230	67,053	67,059	66,982	67,086	67,361	67,606
	Spotted Bass (adult)	35,812	36,133	36,312	36,427	36,539	36,579	36,793	36,872	36,917	36,907	36,922	37,003	37,084	37,261	37,381	37,540	37,754
	C. Stoneroller (juvenile)	2,546	4,846	4,632	3,158	2,569	3,183	3,205	2,937	2,867	2,774	2,353	2,765	3,735	4,031	4,392	7,582	4,974
	Redbreast(spawning)	32,564	29,072	26,844	26,105	25,885	25,881	26,556	26,645	27,063	27,631	27,676	27,529	27,317	27,033	27,409	28,190	29,199
	Redbreast (fry)	14,266	14,111	12,830	11,250	10,277	10,341	10,986	11,125	10,740	10,406	10,748	11,643	12,832	14,700	15,515	16,207	17,086
	Bluehead Chub (young)	2,885	4,829	6,668	6,304	4,725	4,801	5,307	4,290	3,631	3,779	3,752	5,799	5,008	8,883	10,439	8,624	6,590

Notes:

1. WUA: Weighted Useable Area. WUA is a representative index of habitat value and area based on physical attributes of the habitat under a specific flow scenario

Figure 4. Recreationally Important Fish Species in the Study Area



Impacts to Transient Migratory Game Fish Habitat

The WRD identified that the Applicant's study did not adequately address the potential impacts of low flow to certain transient (i.e., non-year round resident within the Chattahoochee River in the project vicinity), migratory recreationally important game fish. The game fish species of concern included striped bass, white bass, and walleyes. Striped bass and walleye are species that have been produced in fish hatcheries and stocked into Lake Lanier on a periodic basis. These fish species have unique requirements in that they spend most of the year in the open water habitat of Lake Lanier and enter the Chattahoochee River during the late winter to spring period for spawning purposes. White bass are native to the Mississippi River drainage, but they have been naturalized in Lake Lanier and are no longer stocked by the WRD. According to the WRD, white bass were previously known to have had spawning runs in the Chattahoochee River, but recent spawning has occurred in the Chestatee River. Because these species have been shown to utilize the river habitat above Lake Lanier only during their spring spawning runs, the habitat impacts were modeled using spawning specific models and the results were analyzed in comparison to typical flows that occur during that time period to determine if reduced flows in the river would limit the ability of these species to migrate upstream to spawn. The extent of the spawning season for these species was identified by the WRD as the period from the beginning of February through the end of May. This was supported by WRD fish survey data. For the analysis of WUA at different flow scenarios, the average daily flow for the months of February through May (1,224 cfs) was selected as the average high flow for the spawning period for these species.

The spawning runs for these species do not support self-perpetuating standing stock because proper conditions are not present for the eggs to hatch and produce larval fish in this stretch of the upper Chattahoochee River. However, anglers take advantage of the spawning runs to fish for these species while they are concentrated within the river channels. Therefore, WRD was primarily concerned that impacts to the spawning behavior of these species could affect their availability to anglers.

For habitat modeling, the HSC curves for spawning adults for all three species were used. The WUA for each species under various flows for the various habitats was estimated. In addition, the water depths at the shallow choke points on the river were modeled to assess if shallow water barriers would form during low flow conditions to affect upstream migration.

> A primary concern to the WRD is that impacts to the spawning behavior of the transient migratory game fish species could affect their availability to anglers.

A minimum water depth of approximately 18 inches is required for migration for striped bass (as described in the USFWS HSC for spawning striped bass). **Attachment 3** contains graphs that show WUAs for the representative transient migratory game fish species at the flow scenarios modeled. **Table 4** summarizes the WUA Habitat Scoring for Transient Fish Species. The modeling results indicated the following:

- Sufficient water depth (i.e., greater than 18 inches depth) would be present in the shallow points on the river to allow upstream migration of transient species at flow rates at or above 92 cfs, or 10% AADF. Springtime spawning flows for migrating striped bass, walleyes, and white bass can safely go to the 10% AADF during that period (February to April) without impacting the ability of these species to have sufficient channel depth/width in order to migrate upstream. The model indicated that for these species, the habitat suitable for spawning is reduced under the lower flow scenarios and generally higher with increased flow. However, typical average daily flow during the spawning season far exceeds the lower flow scenario levels.
- With the exception of walleye habitat in deep-fast and deep-slow areas, higher flow rates generally contribute to higher quality/volume of habitat for the transient game fish species. These conditions are reflected by the increases in WUAs with higher flow rates in **Table 4**. However, the higher WUA spawning habitat values for these target species are not considered to be critical for the maintenance of these species because the spawning efforts for these species are not considered viable (as the existing conditions in the upper Chattahoochee River do not allow for the eggs of these species to hatch and develop).

- Low flow conditions resulted in lower habitat qualities (WUA values) for the transient game fish species and with the exception of walleye habitat in the deep-fast and deep slow habitats, the lowest WUA values occurred at 5 to 10% AADF levels. The average daily flow during the months of February through the end of May at the proposed pump station location is approximately 1,224 cfs based on the period of record available. Potential reduced flow conditions in the upper Chattahoochee River is not expected to cause a loss of productivity (recruitment) for transient (migratory) striped bass,

walleyes, or white bass, as river conditions do not support successful hatching of eggs/development of larvae for these species.

In summary, low flow conditions down to 10% AADF are not expected to adversely impact these transient game fish species' ability to migrate upstream during spawning season. However, the modeled habitat value (WUA) for these species generally increases with volume. This suggests that greater concentrations of spawning migratory gamefish can be supported within the river during higher flow scenarios.

Table 4. PHABSIM Results—WUA Habitat Scoring for Transient Game Fish Species

Notes:

1. WUA: Weighted Useable Area. WUA is a representative index of habitat value and area based on physical attributes of the habitat under a specific flow scenario
2. Migratory gamefish consist of species that enter the upper Chattahoochee River during the approximate period of February through May for the purposes of spawning. These species do not generally remain in the river habitat throughout the year.
3. WUA graphs are provided in Attachment 4.

		Migratory Gamefish Habitat WUA by Representative Flow Scenario																
Habitat Type	Fish Species	5% AADF (46cfs)	10% AADF (92cfs)	15% AADF (138cfs)	20% AADF (184cfs)	July M7Q10 (254cfs)	30% AADF (276cfs)	May M7Q10 (400cfs)	Feb M7Q10 (469cfs)	Mar M7Q10 (551cfs)	Aug AMF (664cfs)	July AMF (696cfs)	June AMF (831cfs)	AADF (921cfs)	May AMF (1032cfs)	Jan AMF (1110cfs)	Feb May Spring Avg. (1,224cfs)	Mar AMF (1388cfs)
Shallow/Fast Habitat (Riffles and Shoals)	Striped Bass (spawning)	0	181	681	1,583	3,543	4,297	9,557	12,856	16,612	21,682	23,080	28,678	32,203	36,236	38,879	42,497	47,380
	Walleye (spawning)	1,337	3,970	7,080	8,966	12,767	14,482	26,467	33,389	37,671	38,178	37,130	29,035	23,045	18,969	17,465	15,288	11,082
	White Bass (spawning)	0	0	386	7,371	13,516	19,192	40,173	50,234	67,598	84,707	85,433	86,295	85,859	83,879	82,536	80,556	77,682
Deep/Fast Habitat (Runs)	Striped Bass (spawning)	0	0	0	0	382	626	2,989	4,953	7,777	12,212	13,553	19,590	23,753	29,054	32,919	38,598	46,202
	Walleye (spawning)	2,788	5,120	7,569	10,371	14,881	15,908	19,410	16,911	12,480	6,765	5,411	2,221	2,059	1,759	1,543	1,494	1,519
	White Bass (spawning)	0	608	5,436	35,020	63,791	78,464	92,520	97,351	102,257	107,140	108,160	112,007	113,346	114,255	114,503	114,785	115,038
Deep/Slow Habitat (Pools)	Striped Bass (spawning)	8,643	8,218	8,443	8,904	9,707	9,953	11,247	11,920	12,580	13,441	13,669	14,464	14,965	15,544	15,931	16,450	17,106
	Walleye (spawning)	2,481	2,224	2,390	2,542	2,687	2,676	2,310	2,187	2,144	2,134	2,124	2,139	2,173	2,217	2,254	2,301	2,417
	White Bass (spawning)	40,454	42,375	42,920	43,213	43,579	44,013	45,090	44,669	44,907	45,284	45,519	45,424	45,939	46,510	46,951	47,317	47,445

FLOW EFFECTS TO RECREATIONAL BOATERS/ANGLER ACCESS TO MIGRATING FISH SPECIES

The channel depths in the shallowest sections of the river were modeled to assess the flow condition under which small boat navigation would be hindered by shallow water. The potential for impacts to navigation are expected to occur only within the section of the Chattahoochee River above the normal pool surface water elevation (1071 feet above mean sea level) of Lake Lanier. This section of the river is generally defined as the area between the Applicant's proposed intake location and Belton Bridge. The assessment of navigation suitability presented a challenge because safety or technical difficulty would be an issue for navigating through the rocky areas of the river during low flow conditions; but, these issues could also be encountered during high flow conditions. Experienced boat operators with suitable small boats generally are capable of navigating the river during moderate flow conditions by visually inspecting the river for the deepest channels and for potential obstructions and navigating accordingly.

WRD indicated that the most popular period for boaters to travel up the Chattahoochee River from Lake Lanier is generally during the period of spring fish spawning runs (i.e., from February through May). However, WRD also remarked that many limit their upstream travel to the vicinity of Belton Bridge, where the river becomes markedly shallower with sandbars.

The assessment on navigation was performed by modeling the river depth for the two shallow/choke point transects (i.e., SC-1, and SC-2) which were chosen to represent the shallowest depths on the river within the study area.

Published guidance for evaluating operating depths for small craft proved elusive. For this analysis, it was assumed that:

- A channel depth of 30 inches and width of 10 feet could be sufficient for a small fishing boat and small outboard engine (*e.g.*, a jonboat with a shallow draft outboard engine) to navigate upstream.
- Navigation with canoes and kayaks could be accomplished at water levels sufficient to allow 18 inches of channel depth and a width of 5 feet.

One reference relating to operational depths for canoes and kayaks was identified (Bureau of Land Reclamation, 1999). This document indicated that for evaluation of the overall paddling experience of a river, depths of 0-45 centimeter (cm), (or 0 to 18 inches) were considered "poor", 45-75 cm (or 18 to 30 inches) were "fair", and 75-100 cm (or 30 to 39 inches) were considered "good". However, the nature of the shoals and pools in the upper Chattahoochee River ensures a mixture of these depths at almost all but the highest water levels. For the purposes of this evaluation, an 18-inch water depth and 5-foot width was deemed sufficient to allow downstream passage through shoals while minimizing the risk of grounding the paddle craft.

The modeling results indicated that at a streamflow level as low as the 30% AADF (276 cfs), the water depth was sufficient (i.e., depth of 30 inches or more within a channel width of 10 feet or more) to allow upstream navigation through the shallow chokepoints in the river with small outboard-powered boats; some boats are predicted to navigate with increased difficulty if streamflow is below the 30% AADF level. At 10% AADF level

(92 cfs), sufficient water depths were predicted (i.e, at least 18 inches of channel depth and a width of at least 5 feet) to allow for downstream navigation with canoes and kayaks.

It is important to note that the period of safe navigation would generally be limited to daylight hours under any flow scenarios due to many large, submerged rocks that occur throughout the study area. Therefore, flow reductions at night (due to pumping) are less likely to have a negative impact on river navigation. **Attachment 4** contains the PHABSIM diagrams of water levels for the modeled flow scenarios.

FINDINGS

Based on this analysis, the following conclusions are summarized:

- Year-round resident game and non-game fish species generally are predicted to experience increases in habitat quality and quantity under flow conditions as low as 10% AADF (92 cfs) level evaluated in this analysis. Conceptually, this result can be understood as conversion of deep habitat to shallow habitat (i.e., suitable habitat for resident fish species) as flow decreases. Within the study area, the estimated optimal ecological flow for the broadest assemblage of year-round resident fish (including game fish and non-game fish) is generally between 10% (92 cfs) and 30% AADF (276 cfs). At 5% AADF (46 cfs), reductions in WUA are apparent for several species, particularly those that occur in the shallow/fast riffle habitat.

- Springtime spawning flows for migrating striped bass, walleyes, and white bass can safely go to the 10% AADF during that period (February to April) without impacting the ability for these species to have sufficient channel depth/width in order to migrate upstream. The model indicated that for these species, the habitat suitable for spawning is lower under the lower flow scenarios and generally higher with increased flow. However, typical average daily flow during the spawning season far exceeds the lower flow scenario levels.

- Potential reduced flow conditions in the upper Chattahoochee River are not expected to cause a loss of productivity (recruitment) for transient striped bass, walleyes, or white bass, as existing river conditions do not support successful hatching of eggs/development of larvae for these species.

- The 10% AADF (92 cfs) flow scenario generally appears to meet the habitat needs of the representative year-round resident fish community within the study area with only limited impacts. At 5% (46 cfs) AADF, some species are predicted to experience a reduction in habitat quality/volume.

- Transient game fish species generally experience increases in WUA with higher flows and reductions with lower flows. Flows of 30% AADF or greater (up to the highest flow scenarios considered) seem to benefit these species for the period (February through May) when they enter the upper Chattahoochee River from Lake Lanier. Reductions in WUA could limit the number of migratory gamefish that could be supported within the river upstream of the elevation of Lake Lanier (i.e., water surface elevation).

- The *estimated minimum safe boating depth* for small motor boats appears to occur at about 30% AADF (276 cfs), which is estimated to be sufficient for fishing boats with small outboard engines to navigate upstream during the spring spawning period to fish for striped bass, walleyes, and white bass. Below this flow scenario, the model indicates that navigation channels through the shallow shoals would be too shallow or narrow. For recreational paddlers using canoes or kayaks, flows as low as 10% AADF (92 cfs) appear to be sufficient to maintain sufficient channel depths for downstream navigation from the location of the Applicant's proposed intake to Lake Lanier.

- The Applicant requested that A7Q10 be approved as the minimum instream flow required below the proposed raw water intake in the Chattahoochee River. The updated A7Q10 is approximately 154 cfs, or 17% AADF, based on a period of record of 1958 to 2012. Based on the conclusions above, the flows below A7Q10 are sufficient to support year-round resident game and non-game fish species in habitat quality and quantity during all months of the year, including springtime spawning migration of transient game fish species. The Applicant's requested flow of A7Q10 appears to be a suitable MIF for protection of habitat for these species. However, A7Q10 is insufficient to support access by recreational anglers to the upper reaches of the Upper Chattahoochee River during the spring spawning run, and transient game fish species would experience moderate losses of suitable habitat area at this flow. A flow of 30% AADF (276 cfs) during the spring months of February through May would mitigate the moderate losses of suitable habitat for transient game fish species and limitations on angler access during this period.

- The findings of this study recommend that the following revised minimum instream flow requirement be considered: 30% AADF (276 cfs) for the months of February through May and A7Q10 (154 cfs) for the months of June through January.

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Straight, C. A., Hagler, M., and Freeman, B. J. 2003. Protected species survey for Flat Creek, Hall County, Georgia (prepared by Institute of Ecology, University of Georgia for Troutman Sanders, LLP for: Glades Water and Utility Company)

Bureau of Land Reclamation, 1999. Red River Valley Municipal, Rural, and Industrial Water Needs Assessment, Phase 1, Part B

Georgia WRD unpublished gamefish survey data (2008 through 2012)

USFWS comments and map regarding Halloween darter suspected habitat (2012)

USGS Chattahoochee River near Cornelia, Georgia (#02331600) stream gage data (1957 – 2011). USGS Waterdata website: http://waterdata.usgs.gov/usa/nwis/uv?02331600

LIST OF ATTACHMENTS

- **Attachment 1** – WRD's Scoping Comment Letter (April 21, 2012)
- **Attachment 2** – PHABSIM Model Projections of Resident Fish Community Habitat WUA under Differing Flow Scenarios
- **Attachment 3** – PHABSIM Model Projections of Non-Resident Migratory Fish Habitat WUA under Differing Flow Scenarios
- **Attachment 4** – PHABSIM Model Stage Projections of River Navigation and Non-Resident Fish Migration Choke Points for Different Flow Scenarios

Attachment 1

WRD's Scoping Comment Letter (April 13, 2012)

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
WILDLIFE RESOURCES DIVISION

MARK WILLIAMS
COMMISSIONER

DAN FORSTER
DIRECTOR

April 13, 2012

Mr. Richard Morgan
U.S. Army Corps of Engineers
100 West Oglethorpe Avenue
Savannah, Georgia 31401

Dear Mr. Morgan:

Thank you for the opportunity to provide comments on the Glades Reservoir EIS. The Georgia Wildlife Resources Division (WRD) has identified topics of interest for your consideration in the development of the draft EIS.

1) Water Quality. The proposed project includes a pump station on Glades Reservoir and raw water conveyance to an outfall located upstream of Belton Bridge. Potential impacts on water quality in the Chattahoochee River below the proposed outflow station should be addressed. There may be differences in such parameters as temperature, dissolved oxygen, and nutrient loads between the water flowing from upstream reaches in the Chattahoochee River and water that would be pumped from Glades Reservoir to supplement stream flow.
2) Aquatic Resources and Recreation. Lake Lanier and the upstream Chattahoochee River provide popular sport fishing and recreational opportunities. Species such as striped bass, walleye, shoal bass, spotted bass, and other species utilize the stretch of river within the proposed project either seasonally or year-round. Analysis of the proposed project should address potential impacts to species utilizing this stretch of river. Additionally, anglers and other boaters use this stretch of river either floating (e.g. kayaks and canoes) from upstream access points or motor-boating from downstream boat ramps in Lake Lanier. The EIS should include assessment of any effects the project would have on recreational use of the river and upper end of Lake Lanier.
3) Impingement and Entrainment. Evaluation of the proposed water intake structure on the Chattahoochee River should address adequate fish protection to ensure resident fish populations are not adversely effected due to impingement and entrainment.

Again, we appreciate the opportunity to provide input into the Corps of Engineers' review of this proposed project. If you have any questions, please feel free to contact our Region Fisheries Superviser, Jeff Durniak at (770) 535-5498.

Sincerely,

Dan Forster

cc: John Biagi
Jeff Durniak

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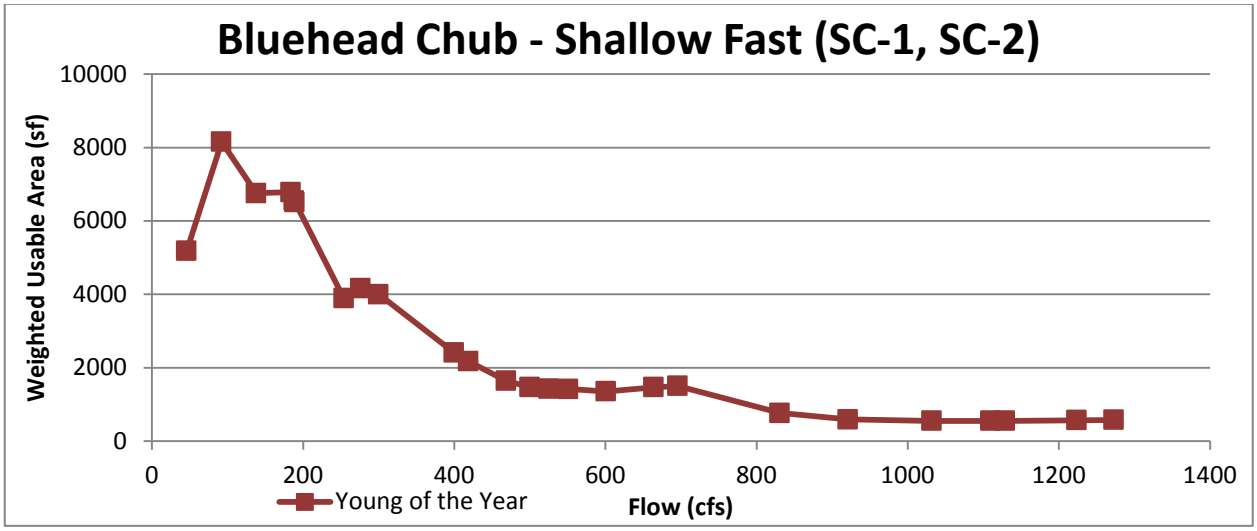
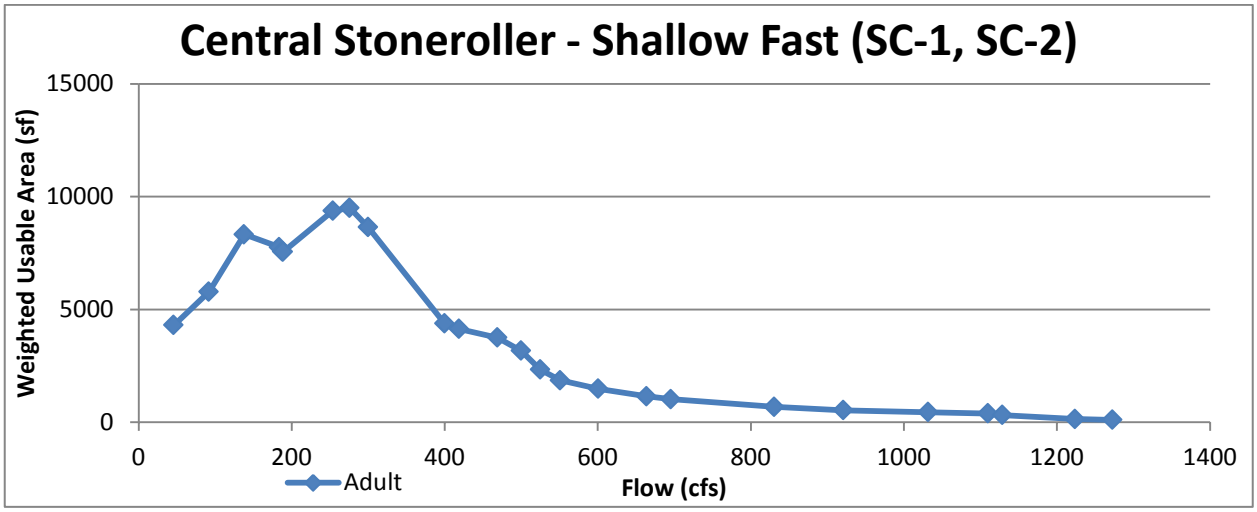
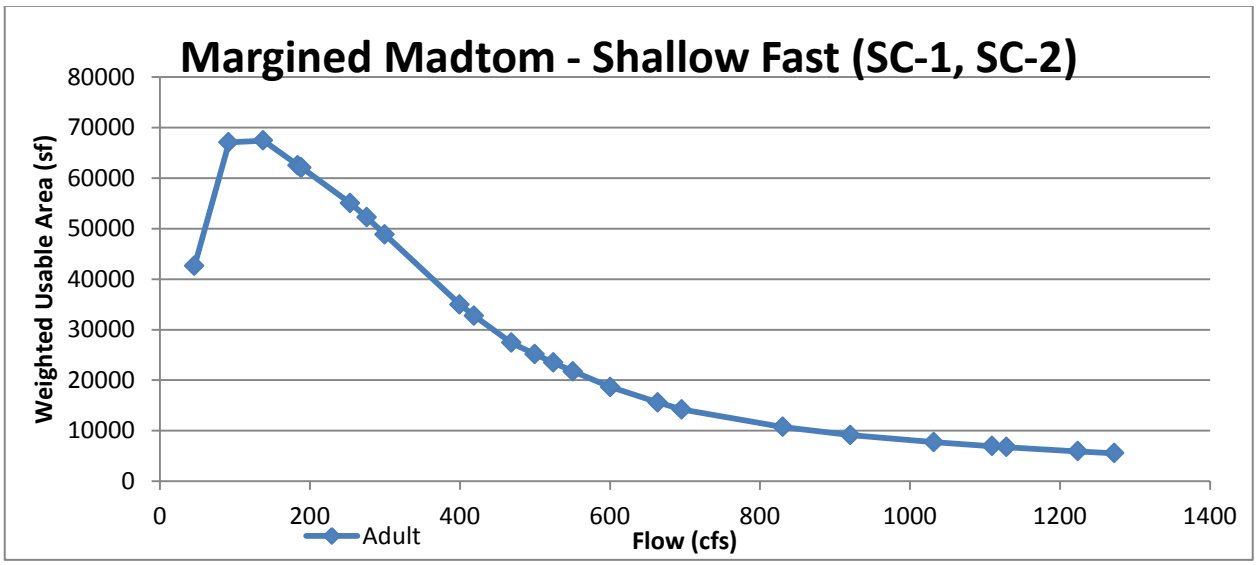
Attachment 2

PHABSIM Model Projections of Resident Fish Community Habitat WUA under Differing Flow Scenarios

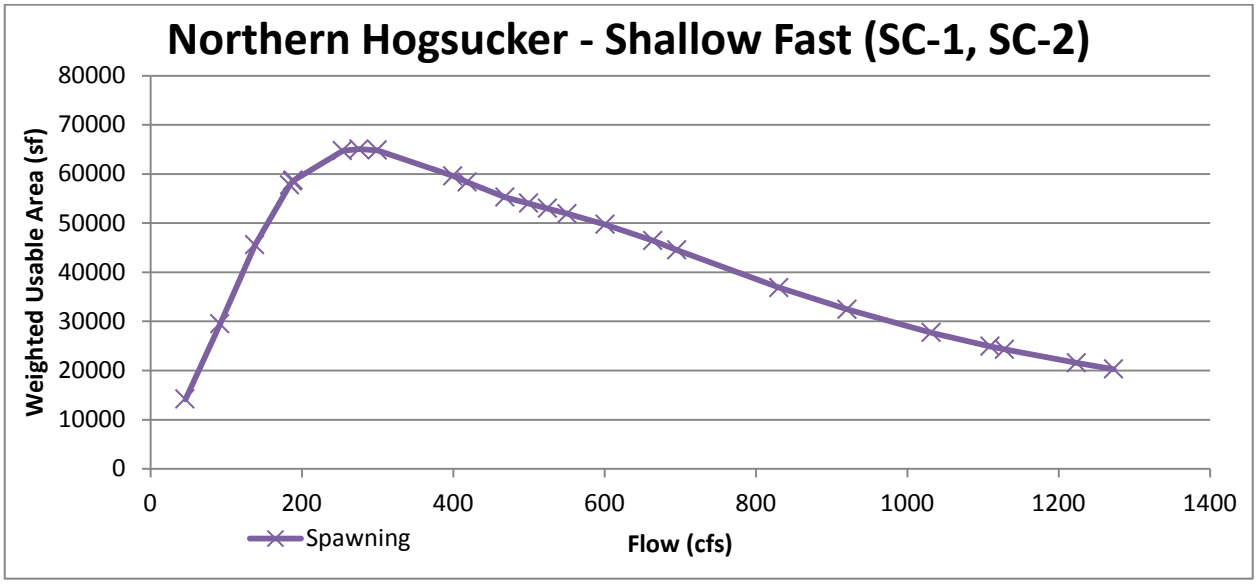
SHALLOW FAST (RIFFLE/SHOAL) HABITAT FISH COMMUNITY

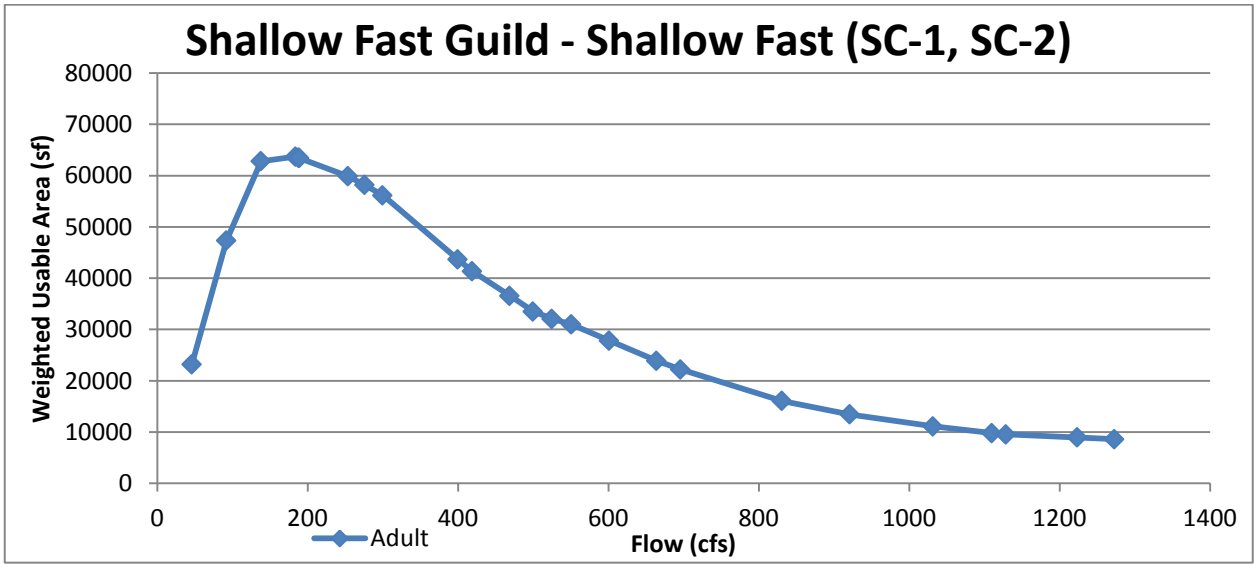




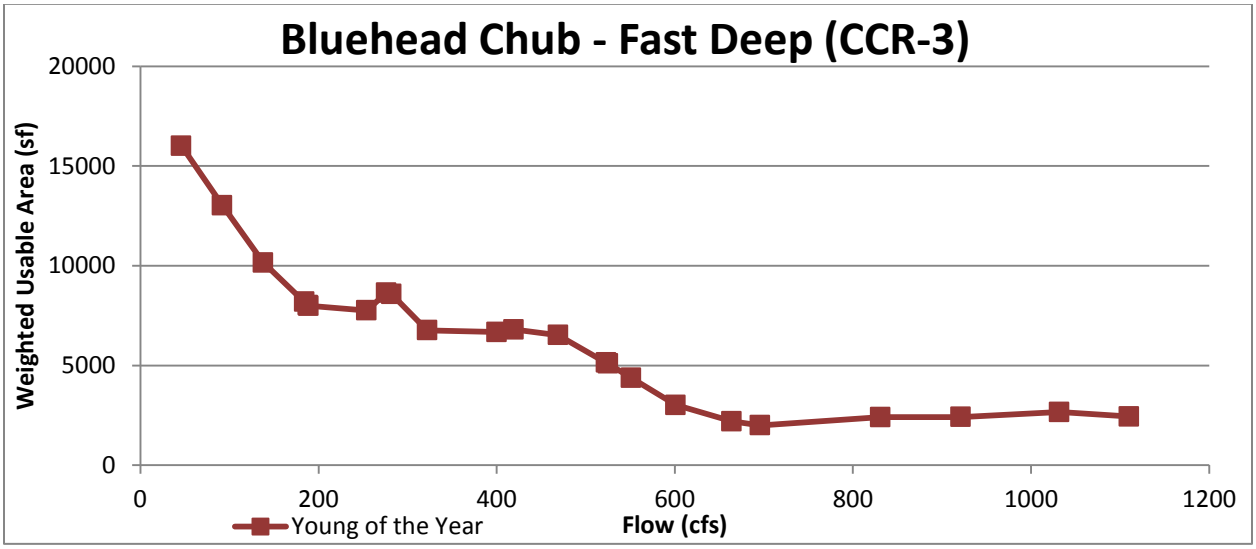


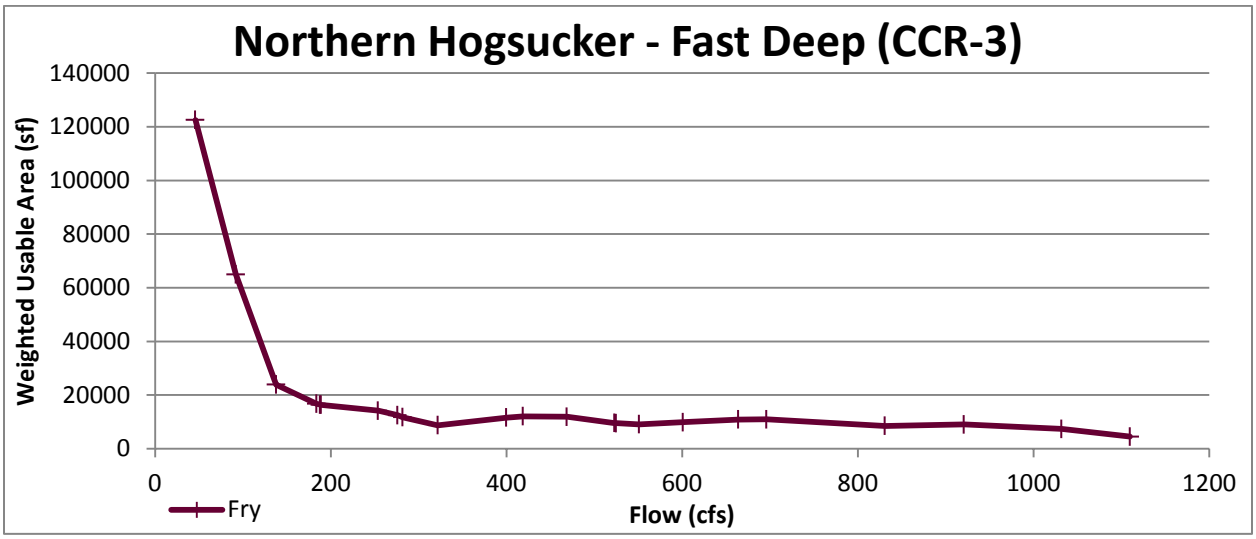
SHALLOW FAST (RIFFLE/SHOAL) HABITAT FISH COMMUNITY (CONTINUED)

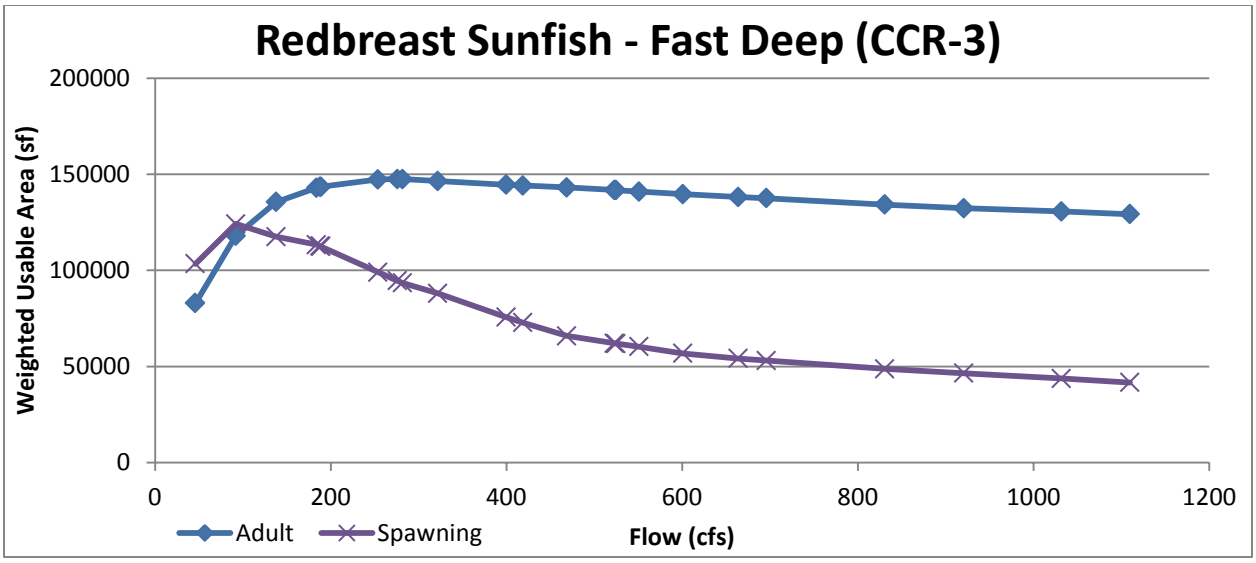




FAST DEEP (GLIDE/RUN) HABITAT FISH COMMUNITY






Redbreast Sunfish - Fast Deep (CCR-3)
Weighted Usable Area (sf)
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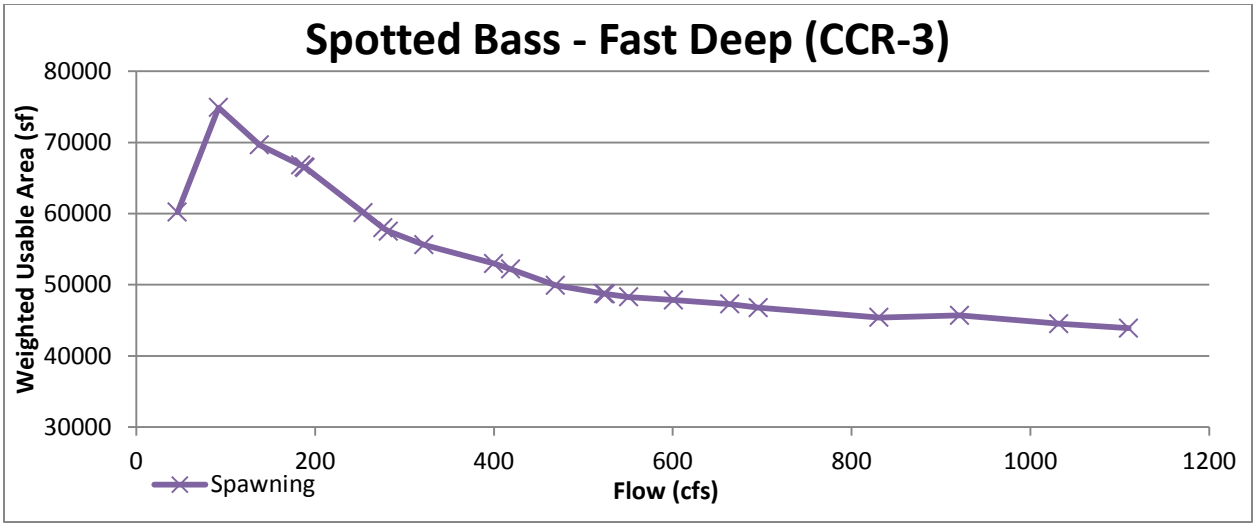
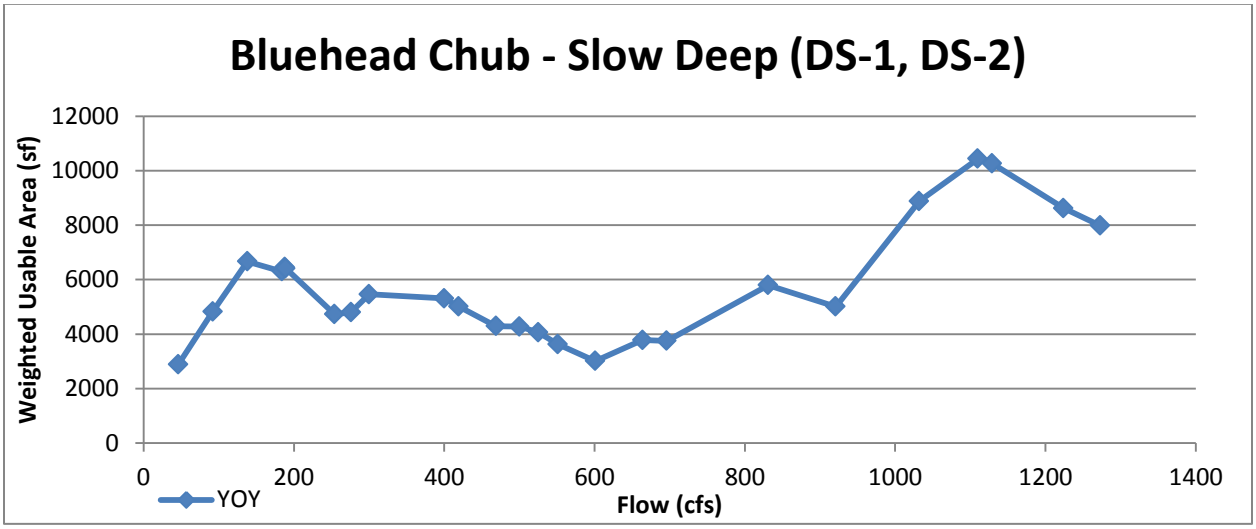
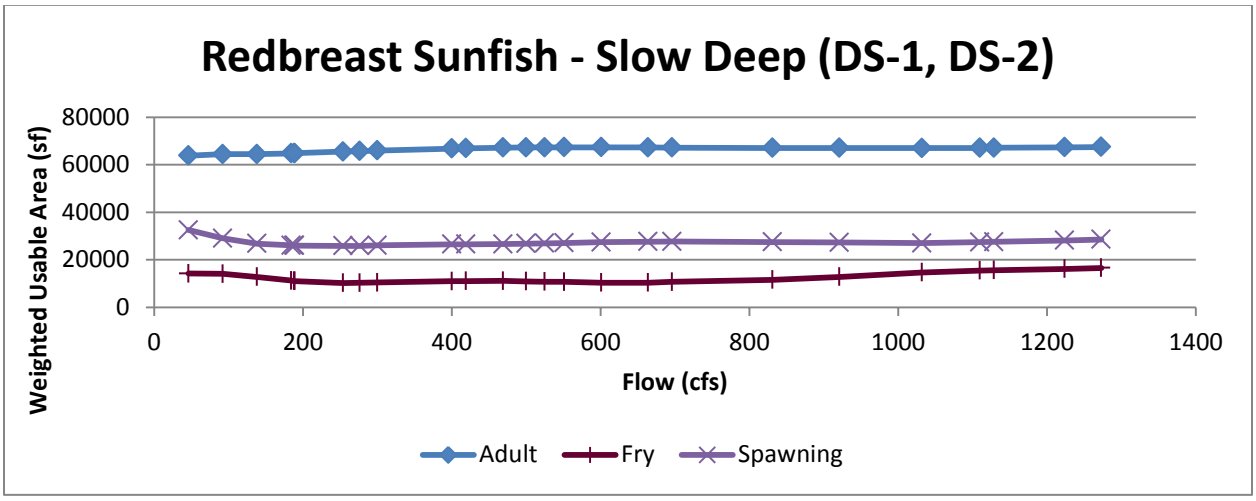
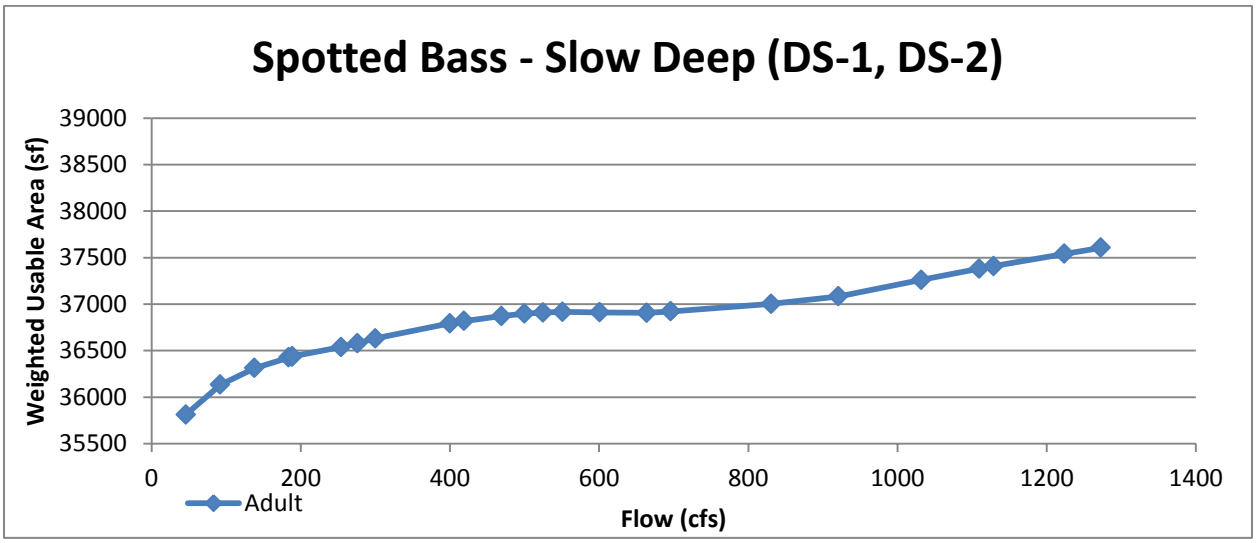
150000
100000
50000
0
0
200
400
600
800
1000
1200
Flow (cfs)
Adult
Spawning


Spotted Bass - Fast Deep (CCR-3)
Weighted Usable Area (sf)
80000
70000
60000
50000
40000
30000
0
200
400
600
800
1000
1200
Flow (cfs)
Spawning

SLOW DEEP (POOL) HABITAT FISH COMMUNITY

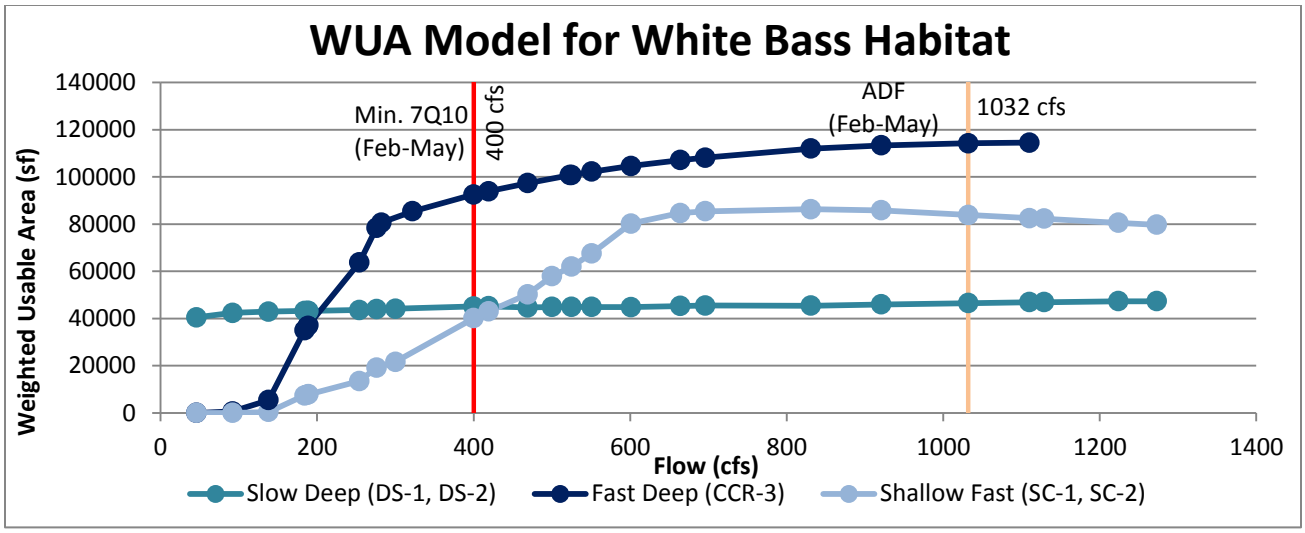


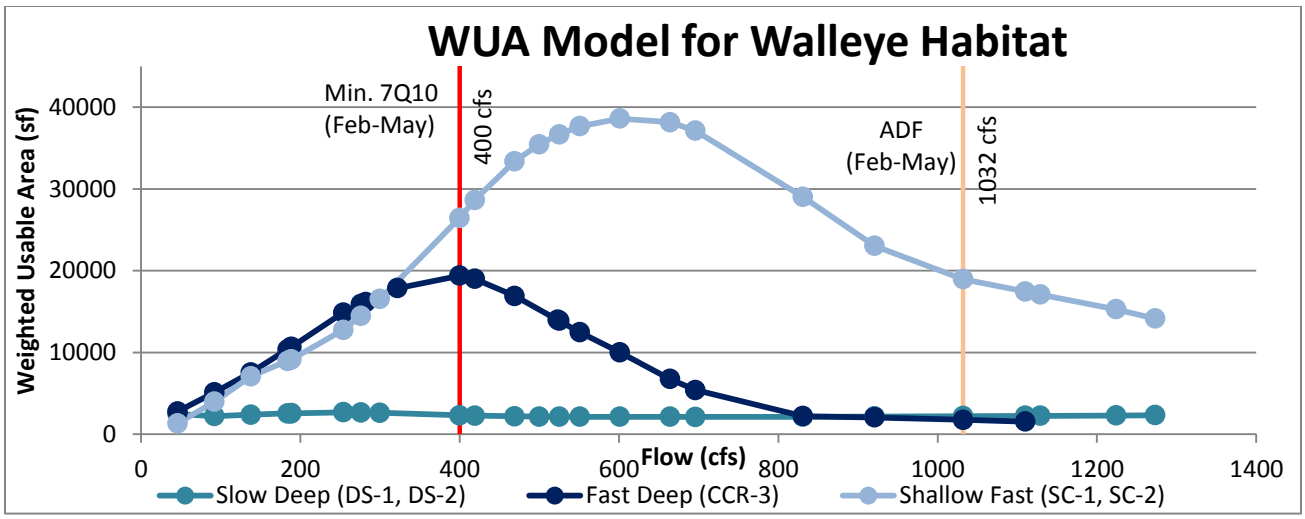


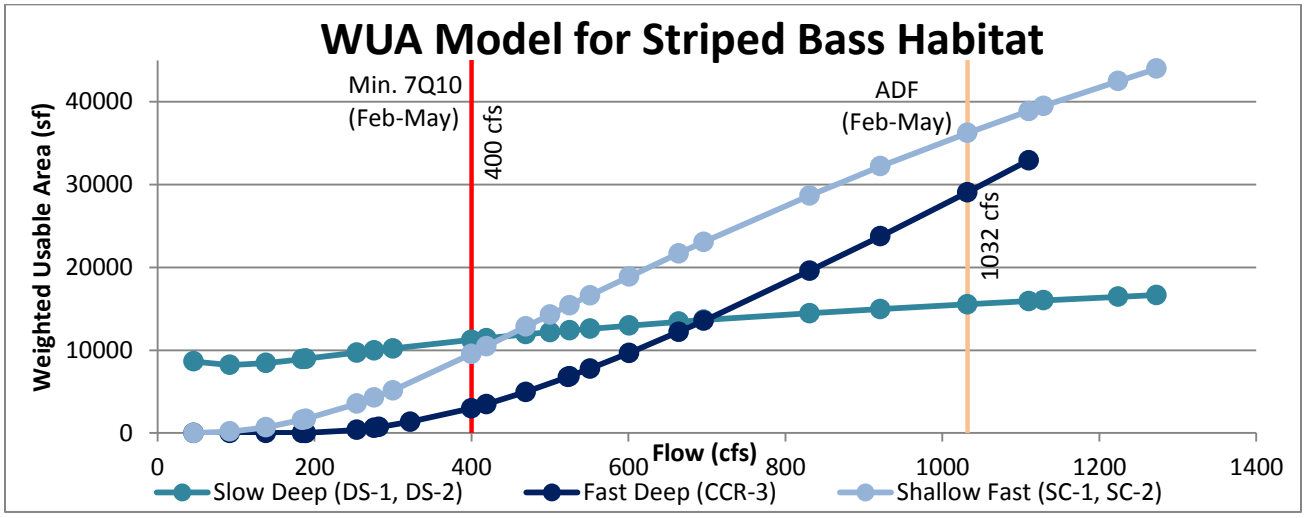


Attachment 3

PHABSIM Model Projections of Non-Resident Migratory Game Fish Habitat WUA under Differing Flow Scenarios





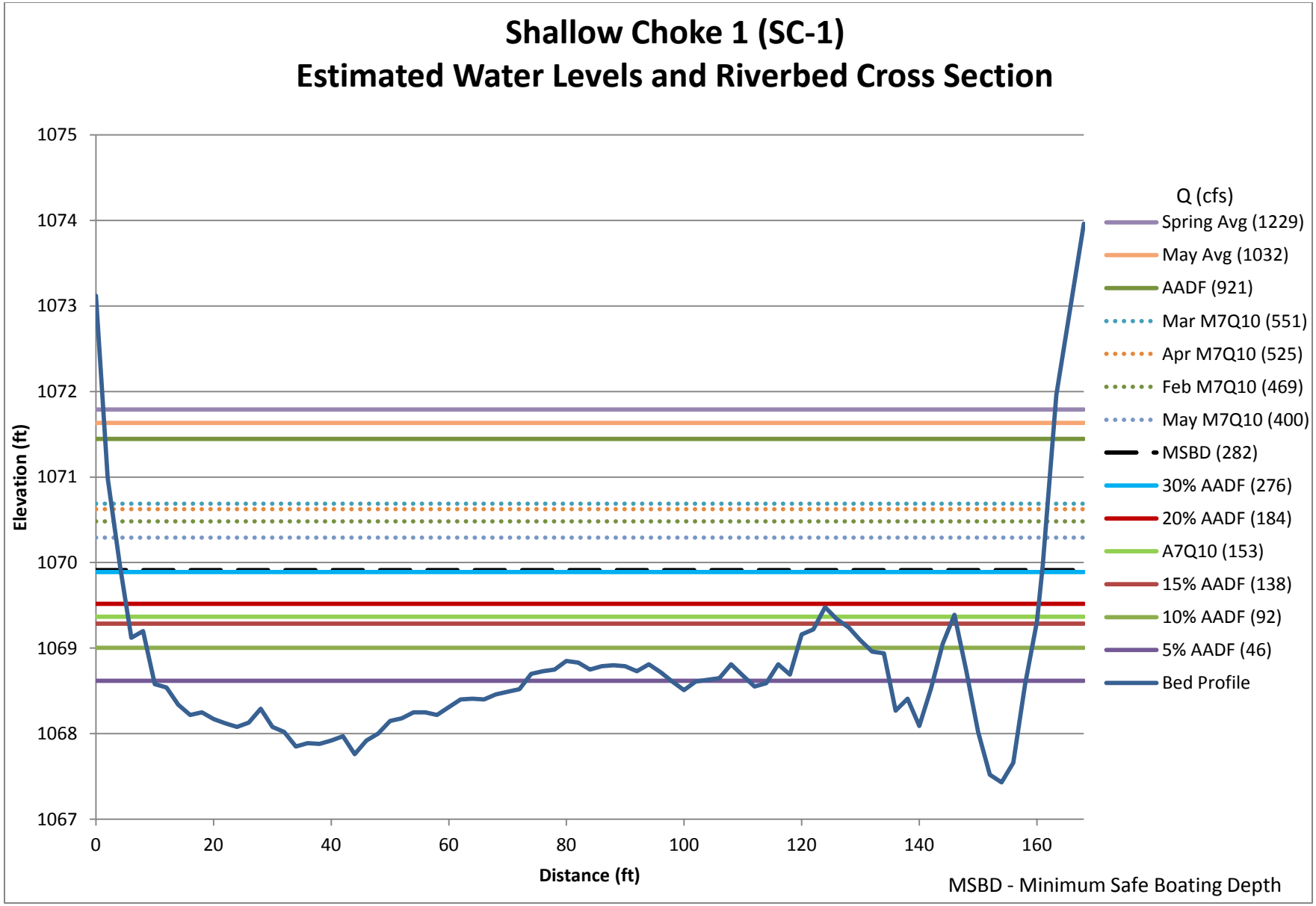


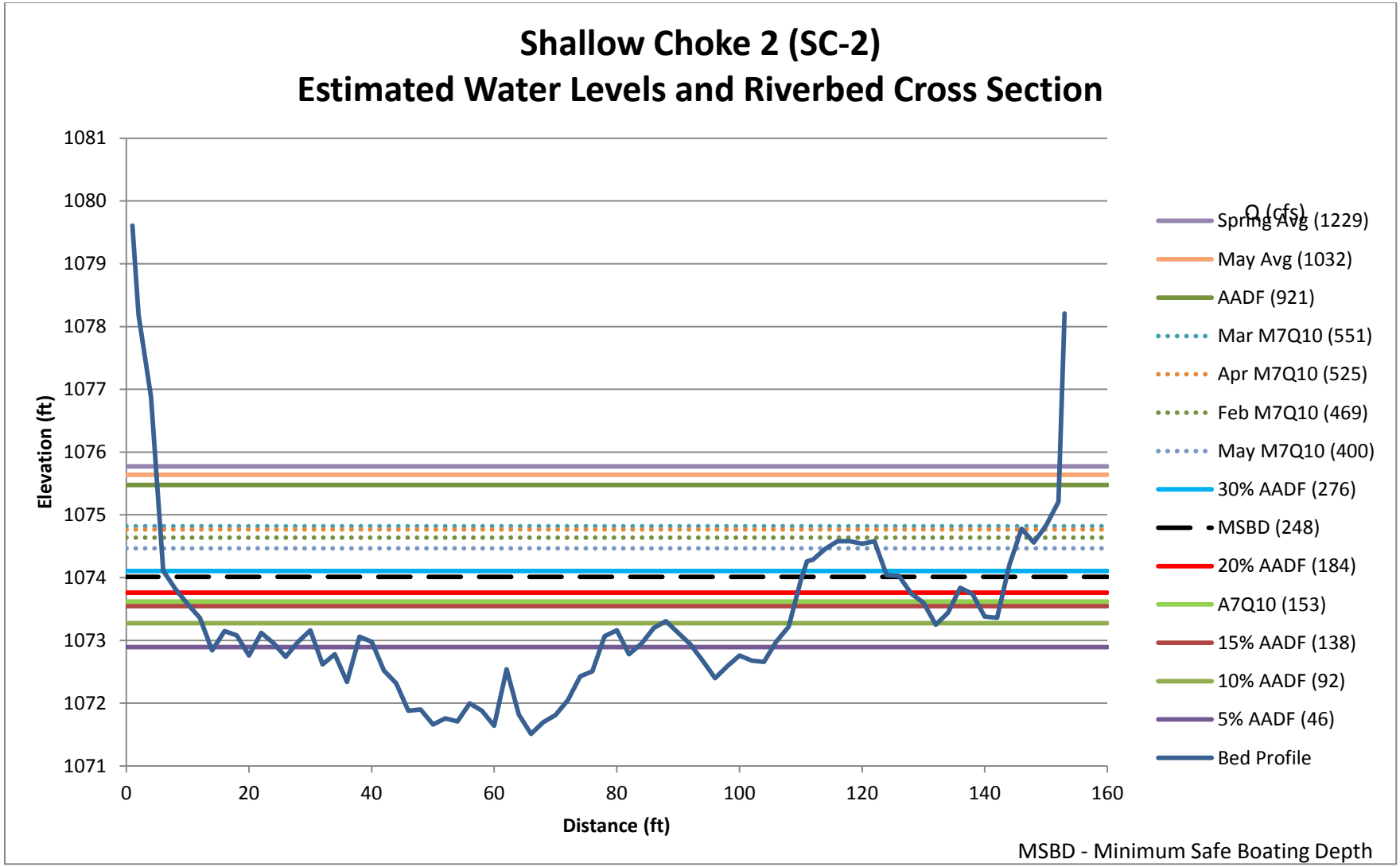
Notes: ADF: average daily flow

The Pool (Slow Deep) habitat represents the majority (approximately 64%) of the habitat for the study area.

Attachment 4

PHABSIM Model Stage Projections of River Navigation and Fish Migration Potential Choke Points for Different Flow Scenarios


Shallow Choke 1 (SC-1)
Estimated Water Levels and Riverbed Cross Section
Elevation (ft)
1075
1074
1073
1072
1071
1070
1069
1068
1067
0
20
40
60
80
100
120
140
160
Distance (ft)
Q (cfs)
Spring Avg (1229)
May Avg (1032)
AADF (921)
Mar M7Q10 (551)
Apr M7Q10 (525)
Feb M7Q10 (469)
May M7Q10 (400)
MSBD (282)
30% AADF (276)
20% AADF (184)
A7Q10 (153)
15% AADF (138)
10% AADF (92)
5% AADF (46)
Bed Profile
MSBD - Minimum Safe Boating Depth


Shallow Choke 2 (SC-2)
Estimated Water Levels and Riverbed Cross Section
Elevation (ft)
1081
1080
1079
1078
1077
1076
1075
1074
1073
1072
1071
0
20
40
60
80
100
120
140
160
Distance (ft)
Q (cfs)
Spring Avg (1229)
May Avg (1032)
AADF (921)
Mar M7Q10 (551)
Apr M7Q10 (525)
Feb M7Q10 (469)
May M7Q10 (400)
30% AADF (276)
MSBD (248)
20% AADF (184)
A7Q10 (153)
15% AADF (138)
10% AADF (92)
5% AADF (46)
Bed Profile
MSBD - Minimum Safe Boating Depth

Glades Reservoir DEIS

APPENDIX P

HEC-RESSIM BASIS FOR MODELING

GEORGIA WATER SUPPLY REQUEST (2013)

HEC-RESSIM MODELING DOCUMENTATION

TECHNICAL MEMORANDUM - SUMMARY OF PROPOSED GLADES RESERVOIR PHYSICAL PROPERTIES (REVISED)

October 2015

STATE OF GEORGIA
OFFICE OF THE GOVERNOR
ATLANTA 30334-0900

Nathan Deal
GOVERNOR

January 11, 2013

The Honorable Jo-Ellen Darcy
Assistant Secretary of the Army for Civil Works
108 Army Pentagon
Washington, D.C. 20310-0108

Re: State of Georgia's Water Supply Request

Dear Secretary Darcy:

On May 16, 2000, Governor Roy Barnes submitted to the Assistant Secretary of the Army for Civil Works a request that the U.S. Army Corps of Engineers allow withdrawals and make releases from Lake Lanier to meet Georgia's projected water supply demands of 705 million gallons per day (mgd). In 2012, after years of litigation, the Corps determined that is has the legal authority to grant Georgia's request. The Corps is now preparing an Environmental Impact Statement and will decide whether and how it will satisfy Georgia's request.

More than 3.3 million Georgians in the Metropolitan Atlanta area now rely on withdrawals or releases from Lake Lanier for water supply. Approximately six million people will rely on Lake Lanier for water supply by the year 2040. Lake Lanier is the most economical and environmentally-protective source of water supply for these Georgians. Operating Lake Lanier as Georgia has requested represents the highest and best use of Lake Lanier. I am confident that the Corps' EIS will concur in this assessment.

To assist the Corps in making its review based on the best and most current information available, I enclose with this letter an Affidavit by Judson H. Turner, Director of the Georgia Environmental Protection Division. Mr. Turner's Affidavit contains updated demographic and water demand data that confirm the continued need for the action Georgia has requested of the Corps, as well as updated analysis of the impact of granting Georgia's request on other project purposes and waters downstream. At a later date, Georgia also will submit an updated analysis of the national economic development benefits of granting Georgia's request.

As reflected in Mr. Turner's affidavit, based on current demographic information and as a consequence of improved water conservation, Georgia now believes that 705 mgd will be sufficient to meet Georgia's water needs from Lake Lanier and the Chattahoochee River to approximately the year 2040. In addition, thanks to improved wastewater treatment, in most

months Georgia requires less flow than previously requested in the Chattahoochee River at the confluence with Peachtree Creek to meet applicable water quality standards.

To provide long-term certainty for all of those involved, Georgia continues to request that the Corps enter into agreements that document the parties' understanding as to how the Corps will operate in support of Georgia's water supply needs. We anticipate that for lake withdrawals that require allocation of storage, certainty will be provided in the form of storage contracts. For river withdrawals, which do not require an allocation of storage, other forms of agreement would be appropriate.

I ask that you act on Georgia's outstanding request at the earliest possible date. If you desire further information from Georgia, please let me know.

Sincerely,

Nathan Deal

cc: Colonel Donald E. Jackson, Commander, South Atlantic Division, U.S. Army Corps of Engineers
Colonel Steven J. Roemhildt, Commander, Mobile District, U.S. Army Corps of Engineers

Affidavit of Judson H. Turner

1. My name is Judson H. Turner. I am Director of the Georgia Environmental Protection Division ("EPD") of the Georgia Department of Natural Resources.

2. In May 2000, the State of Georgia submitted to the Assistant Secretary of the Army for Civil Works a request for reallocation of storage in the Lake Lanier conservation pool to provide sufficient water supplies to meet future municipal and industrial water supply needs of 705 million gallons per day (mgd). In support of that request, Georgia provided an Affidavit from then-EPD Director Harold Reheis discussing Metropolitan Atlanta's then-current and projected water supply needs and why Georgia needed a reallocation of storage in Lake Lanier to meet those needs. Georgia's water supply request remains pending with the Corps. The purpose of this Affidavit is to provide updated data and information that are relevant to that request.

3. The State of Georgia is responsible for managing the quantity and quality of the waters of the State for public and private water supply, and for agricultural, industrial, and recreational uses, while protecting the environment and human health. Georgia law provides that "the government of the state shall assume responsibility for the quality and quantity of such water resources and the establishment and maintenance of a water quality and water quantity control program adequate for present needs and designed to care for the future needs of the state." O.C.G.A. § 12-5-21(a).

4. EPD is the state agency to which state law delegates the responsibility for regulating withdrawals of water from, and discharges of pollutants into, the surface waters of the State. To fulfill this responsibility, EPD maintains data on the population of counties and municipalities within the State, and projections of the State's future population growth and water needs. EPD's expertise in hydrologic and water quality modeling allows it to assess the impact of water withdrawals and wastewater returns. EPD prioritizes water needs and evaluates alternatives for meeting these needs from the State's finite water resources.

GEORGIA'S NEED FOR WATER SUPPLY FROM LAKE LANIER

Current Population and Projections for Future Growth

5. More than 3.3 million Georgians currently rely upon withdrawals of water directly from Lake Lanier or withdrawals of water that the Corps releases from Lake Lanier to the Chattahoochee River to meet their water supply needs. Attached as Appendix 1 is a table that identifies the counties within which municipal and industrial water use customers are dependent in whole or in part on withdrawals and releases from Lake Lanier for their water supply.

6. Also shown in Appendix 1 are projected populations of the counties that will depend on significant amounts of water from Lake Lanier in the future. EPD projects that the number of Georgians who depend upon Lake Lanier for water supply will rise to more than 6 million by around 2040. The numbers in Appendix 1 come from the last published projections of the Georgia Office of Planning and Budget ("OPB"). EPD also reviewed the last published

projections generated by the Metropolitan North Georgia Water Planning District (the "Metro Water District").

7. Municipal water systems in six counties within the Chattahoochee River watershed above the confluence with Peachtree Creek currently withdraw water from the Lake Lanier/Chattahoochee River system. EPD projects that water systems in four additional counties that are riparian or tributary to Lake Lanier will depend upon withdrawals from Lake Lanier in the future. In addition, the following other counties rely on Lake Lanier for water supply: Bartow, Cherokee, Clayton, Douglas, Fayette, Henry, Paulding, Rockdale, and Walton.

8. Counties that rely on Lake Lanier for water supply comprise the majority of the population for the Atlanta Metropolitan Statistical Area ("MSA"), which, according to the U.S. Census Bureau, is the ninth largest MSA by population in the United States. From 2000 to 2010, the Atlanta MSA grew by 24%, a growth rate exceeded by only two other MSA's in the United States. Two counties in the Atlanta MSA (Forsyth and Paulding) were among the 10 fastest growing counties in the United States during this period, both growing at rates greater than 74% for the decade. Gwinnett County added almost 217,000 persons to its population over the decade; for the same period, only 16 counties in the United States added more people.

Municipal and Industrial Water Supply Needs

9. Attached as Appendix 2 and Appendix 3 are the 2011 statistics for water withdrawals by the permit holders who rely upon the Lake Lanier/Chattahoochee River system. The average rate of water withdrawn directly from Lake Lanier in 2011 was 115.2 mgd. *See* Appendix 2. The annual average rate of water withdrawn from the Chattahoochee River between Buford Dam and Peachtree Creek was 245.7 mgd. *See* Appendix 3.

10. Appendix 4 shows projected withdrawals from Lake Lanier and the Chattahoochee River above the confluence with Peachtree Creek for the year 2040. EPD developed its forecasts for future water supply need projections in cooperation with the Metro Water District. These forecasts are based on a number of factors, including population, employment, and commercial and residential consumption rates.

11. EPD and the Metro Water District project that the nine local water systems that currently withdraw water from Lake Lanier or the Chattahoochee River above the confluence with Peachtree Creek will continue to do so. These systems are: City of Gainesville, City of Buford, Gwinnett County Water and Sewerage Authority, Forsyth County, City of Cumming, Atlanta-Fulton Water Resources Commission, DeKalb County Public Works (Water and Sewer), Cobb County Marietta Water Authority, and City of Atlanta.

12. Of these, five systems – City of Gainesville, City of Buford, Gwinnett County Water and Sewerage Authority, Forsyth County, and City of Cumming – withdraw from Lake Lanier. The other four facilities – Atlanta-Fulton Water Resources Commission, DeKalb County Public Works (Water and Sewer), Cobb County Marietta Water Authority, and City of Atlanta – withdraw from the Chattahoochee River upstream of the Peachtree Creek confluence. In

addition, EPD projects that Habersham, White, Lumpkin, and Dawson Counties in the future will need to withdraw approximately 41 mgd from Lake Lanier by 2040.

13. The Metro Water District's most recent Water Supply & Conservation Management Plan includes projections for municipal and industrial water supply needs for 2035 and 2050. Based on these projections, adding the 41 mgd of withdrawals by Habersham, White, Lumpkin, and Dawson Counties, and assuming that growth in water usage between 2035 and 2050 will be roughly linear, water supply needs that are dependent on withdrawals and special releases from Lake Lanier will meet or exceed 705 mgd on an annual average basis by 2040. This includes direct withdrawals from Lake Lanier of 297 mgd and withdrawals of 408 mgd from the Chattahoochee River below Buford Dam and above the confluence of the Chattahoochee River and Peachtree Creek.

14. Note that in calculating its water supply projections, the Metro Water District used a population growth rate for the region that is lower than the rate of growth that OPB has projected. Taking into account differing population projections and other variables affecting demand, EPD projects that municipal and industrial water supply demands that are dependent upon withdrawals and special releases from Lake Lanier will reach 705 mgd (including 297 mgd lake withdrawals and 408 mgd river withdrawals) sometime between 2035 and 2045. It is reasonable to plan using the assumption that Georgia's water supply needs will be at least 705 mgd by 2040.

15. In light of Georgia's projections that its water supply needs from Lake Lanier will equal or exceed 705 mgd by 2040, if not a few years sooner, Georgia's request of the Corps is unchanged from what was requested in 2000: that the Corps operate Lanier to accommodate withdrawals of up to 297 mgd annual average from Lake Lanier and 408 mgd annual average from the Chattahoochee River between Buford Dam and the confluence with Peachtree Creek.

16. Georgia plans to help meet demands from Lake Lanier with water that will be stored in the proposed Glades Reservoir upstream of Lake Lanier on Flat Creek, released to Flat Creek, and will flow into Lake Lanier to be withdrawn from one or several of the intakes in Lake Lanier. The Glades Reservoir currently is in the permitting process. Based on reasonable assumptions regarding operation of Glades Reservoir, EPD projects a 30-40 mgd yield from Glades Reservoir. EPD plans to work with the Corps and the reservoir sponsors to ensure that the Glades Reservoir serves as a net benefit to the system yield, provided that the Corps will be able to meet water supply needs of 705 mgd from Lake Lanier. Because the 30-40 mgd released from Glades Reservoir will be withdrawn from Lake Lanier at the same rate that it enters Lake Lanier, no storage should be required for the withdrawal of that water.

Water Conservation

17. The per capita water use rate in the Metropolitan Atlanta Region has fallen in recent years, and the projected demand the region assumes that per capita water use within the region will continue to fall. The use rate is currently 148 gallons per capita per day (gpcd), and is expected to decline to 135 gpcd by the 2035-2040 timeframe. The decline in per capita water use has and is expected to continue to result from implementation of aggressive state and local

water conservation policies, explained in greater detail below. Note that per capita water use and total population are among the factors, but are not the only factors, used to calculated total projected water use in the areas that are to be supplied by withdrawals and releases from Lake Lanier.

18. In 2001, the Georgia General Assembly created the Metro Water District and charged it with developing and maintaining comprehensive long-term plans for water supply and conservation, wastewater management, and watershed management for metro Atlanta. The Metro Water District is comprised of 15 counties, 92 cities, and 56 water supply systems. The plans are implemented by local water systems and local governments and are enforced by the State of Georgia through water permits and through eligibility for grants and loans. The Metro Water District completed development of its initial set of plans in September 2003. The governments within the Metro Water District spent the ensuing five years implementing the plans. In 2009, the Metro Water District adopted the first major update of its plans largely based upon lessons learned during the 2004-2009 implementation period.

19. Water conservation is an important element of the Metro Water District's Water Supply and Water Conservation Plan. The water conservation measures in the Plan are the most aggressive in Georgia and among the most aggressive in the United States. The 2003 Plan, as amended, included ten conservation measures applicable to all water systems and/or local governments. The 2009 update retained all and strengthened three of those measures. The Water Supply and Water Conservation Plan was again amended in December 2010 and added seven measures – two measures applicable throughout the District and five that apply to water systems that withdraw from Lake Lanier or the Chattahoochee River (denoted with asterisk). The water conservation measures in the Metro Water District Plan include: 1) conservation pricing; 2) replace older, inefficient plumbing fixtures; 3) pre-rinse spray valve retrofit education; 4) rain sensor shut-offs on new irrigation systems; 5) sub-unit meters in new multi-family buildings; 6) assess water losses with IWA/AWWA water audit methodology and develop programs to reduce systems water loss; 7) residential water audits; 8) low-flow retrofit kits for residential; 9) commercial water audits; 10) education and public awareness activities; 11) high-efficiency toilets and urinals in government buildings; 12) new car washes to recycle water; 13) expedited water loss reduction*; 14) multi-family HET rebates*; 15) meters with point of use leak detection*; 16) private fire lines to be metered*; 17) maintain a water conservation program*; 18) water waste policy or ordinance; and 19) HET plumbing fixtures in new construction consistent with state legislation.

20. The Metro Water District has made water conservation a priority, and local water systems have shown a strong record of implementation of water conservation measures. In annual progress surveys, the District has found: that tiered water conservation rates are in place throughout the metro area; that water systems serving 96% of the population offer toilet rebates, and over 76,872 older toilets have been replaced since 2008; that the larger systems have implemented programs to reduce system water losses, and, in 2010, over 10,000 leaks were repaired; and 98% of the population of the metro area is targeted with educational and outreach programs by local governments.

21. In 2010, the Georgia Water Stewardship Act was passed by the Georgia General Assembly and signed by Governor Sonny Perdue. For those water users relying on Lake Lanier and the Chattahoochee River above Peachtree Creek, the Water Stewardship Act amplified and supplemented the 19 water conservation policies and programs identified in the Metro Water District's water supply and conservation plan. Among the Act's provisions that supplement the Metro Water District's demand management initiatives are: 1) requiring state government agencies to examine their programs, practices, and rules to identify opportunities to provide for voluntary water conservation; 2) requiring local governments to include water conservation measures in local comprehensive plans; 3) incentives for public water systems to use full cost accounting; and 4) technical assistance to local governments and public water systems for water loss abatement activities.

22. In 2012, EPD conducted an evaluation of the 2000-2010 rates of growth in water demand compared to rates of population growth in the counties with the 15 largest municipal surface water systems in Georgia. Six of the 15 largest municipal surface water systems are located in five counties (i.e., Fulton, DeKalb, Cobb, Gwinnett, and Hall) that rely upon withdrawals or water supply releases from Lake Lanier. The evaluation showed that water use in each of the five counties demonstrated a consistent decreasing trend over the decade, while population in each of those counties increased over the decade. Trends such as these in the five counties and beyond clearly indicate that the water conservation initiatives being implemented in the Atlanta region by the Metro Water District are significantly reducing per capita water demand.

Crediting of Return Flows

23. EPD projects that returns of treated wastewater to Lake Lanier and tributaries immediately upstream of Lake Lanier will mitigate the effect of withdrawals from Lake Lanier. EPD projects that the average annual return of treated wastewater to Lake Lanier and its tributaries in 2040 (assuming withdrawals of 297 mgd) will be approximately 165 mgd. *See* Appendix 4. The net withdrawal from Lake Lanier is therefore expected to be 132 mgd (297 mgd minus 165 mgd).

24. The State of Georgia will allocate the treated wastewater returned to Lake Lanier and its tributaries to particular users of water supply storage in Lake Lanier. This should increase the yield of the storage account or accounts to which the wastewater return is credited rather than count the same as natural inflows, which increase the yield of a water supply storage account only according to the percentage of total conservation storage owned by that user.

25. I am aware of no legal or legitimate policy reason why the Corps should not credit metered return flows to Lake Lanier or its tributaries exclusively to individual water supply storage accounts to which the State of Georgia has allocated such returns.

26. In accordance with federal law, the Corps has long recognized that it is the State, not the Corps, that determines and allocates water rights, and that the Corps should defer to the State's allocation of water rights. Allocation of wastewater return flows to individual users also is a matter of water rights that is best determined by the State.

27. The return of highly-treated wastewater to an existing reservoir increases the yield of that reservoir by reducing the net withdrawals. As a result, return flows keep reservoir levels higher and mitigate the impact of water supply withdrawals. Return flows to a water supply reservoir are a form of water reuse that Georgia's statewide water plan favors.

28. EPD-permitted discharges from wastewater treatment plants are a function of water use and not rainfall and runoff, and therefore are more consistent and reliable than natural inflows. Because they are metered and reported to EPD, wastewater discharges also are easily monitored and accounted for, ensuring that a user would not obtain credit for any returns than do not actually occur.

29. It is more expensive for local wastewater utilities to discharge wastewater to Lake Lanier than to the Chattahoochee River or its tributaries, because they must treat the wastewater to a higher degree to meet applicable water quality standards. To make it worthwhile for these utilities to return wastewater to Lake Lanier, there must be policies in place that incentivize those returns. Therefore, EPD desires to credit to individual water users the exclusive right to withdraw or store the wastewater returns that are made. The Corps should do the same, or should defer to the State's allocation.

30. Thus, consistent with federal law and good policy, in determining the yield of the storage space that is held by or for a water supply user, the Corps should count exclusively to that user's storage space such returns as the State has allocated to that user.

Net Municipal and Industrial Water Consumption

31. A large portion of the metro Atlanta area's treated wastewater is returned to the Chattahoochee River downstream of Buford Dam and upstream of the United States Geological Survey ("USGS") gaging station at Whitesburg, Georgia. In 2011, an annual average of 34.4 mgd of treated wastewater was discharged to the Chattahoochee River between Buford Dam and the Peachtree Creek confluence, and an annual average of 184.2 mgd of treated wastewater was discharged to the Chattahoochee River between the Peachtree Creek confluence and the USGS Whitesburg gage. EPD projects that by 2040 (or as of the date when water withdrawals reach 705 mgd), the amount of treated wastewater discharged to the Chattahoochee River between Buford Dam and the Whitesburg gage will be 385 mgd on an annual basis, including 94 mgd discharged to the reach between Buford Dam and the Peachtree Creek confluence, and 291 mgd to the reach between the Peachtree Creek confluence and the USGS Whitesburg gage. When combined with return flow directly into Lake Lanier, the total return of wastewater associated with the withdrawal of 705 mgd is projected to be 550 mgd, or 78% of the total withdrawal.

32. Therefore, Georgia projects that as of 2040, the total consumptive use from municipal and industrial water supply from Lake Lanier and from the Chattahoochee River above the Whitesburg gage will be approximately 155 mgd, or 239 cfs, on an annual average basis. To put this amount into perspective, it is a mere 1.1% of the 21,587 cfs annual average daily flow of the Apalachicola River just downstream of the Georgia-Florida state line.

In-Stream Demands for Water Quality

33. Metropolitan Atlanta local governments that discharge treated wastewater to the Chattahoochee River also rely upon releases from Lake Lanier to provide consistent flows in the river to assimilate those discharges.

34. EPD has developed a mathematical model, known as the Chattahoochee River Model, to simulate temperature, dissolved oxygen, and the concentrations of individual pollutants (biochemical oxygen demand, organic nitrogen, ammonia, nitrate, organic phosphorus, and ortho phosphate) under different flow, intake, discharge, and meteorological conditions.

35. Based on conditions that existed at the time of Georgia's 2000 water supply request, EPD determined that certain seasonally-varying flows in the Chattahoochee River at the confluence with Peachtree Creek would be needed to meet water quality standards. Thanks to improvements in wastewater treatment since 2000, the Chattahoochee River Model now shows the flows needed to assimilate wastewater in the Chattahoochee River and maintain water quality standards may be reduced.

Why Assurance of Long-Term Supply is Needed Now

36. If Lake Lanier were not available to satisfy the needs included in Georgia's water supply request, additional reservoirs and water resource projects would be needed to replace it. Due to the complexity and uncertainty associated with the permitting processes, planning for the development of new water supply reservoirs must generally begin 15 to 25 years, or even more, before there is a demand for the water.

37. The three major stages of the planning processes are 1) alternatives analysis and source evaluation; 2) detailed engineering and environmental studies; and, 3) state and federal permitting. The first stage includes forecasting future service area population and water demands; evaluating demand management and supply alternatives for meeting the demands; evaluation of source water capacity, quality, and reliability; and development of environmental, historic/archeological, and socio-economic assessments of impacts. In the second stage, detailed engineering and environmental studies must be conducted on the preferred alternatives, and funding sources must be identified and secured. In the third stage, if a new or expanded water supply reservoir is the preferred alternative, the applicant must apply for and secure a Federal Clean Water Act Section 404 permit (issued by the Corps of Engineers), a Clean Water Act Section 401 Water Quality Certification (issued by the State of Georgia), a Safe Dams permit and a water withdrawal permit (both issued by the State of Georgia), and a Safe Drinking Water Act Permit (also issued by the State of Georgia). Before the Corps of Engineers can issue a Section 404 permit, it must comply with provisions of the National Environmental Policy Act (i.e., prepare an Environmental Assessment and possibly an Environmental Impact Statement) and federal regulations. Of all the stages, the Section 404 permitting process generally requires the greatest amount of time and often is followed by legal challenges to the issued permit. As shown in Appendix 6, the process of studying, designing, permitting, financing, and constructing water supply reservoirs in Georgia has required a range of 5 to 25 years to complete, based upon six cases selected for illustration.

38. Georgia desires assurance of storage for direct lake withdrawals through storage contracts. As for water supply releases, the Corps coordinates those with the Atlanta Regional Commission on a weekly basis. According to the 2011 ruling of the United States Court of Appeals for the Eleventh Circuit, the Corps is authorized to provide these releases without reallocating storage to those water supply users downstream. Nevertheless, to assure long-term certainty for all concerned, it is important that the Corps, Georgia, and local governments that Georgia may designate enter into a written agreement documenting their understandings regarding how and when releases for water supply will be coordinated.

Why Lake Lanier Continues to be the Best Alternative

39. As discussed in the Reheis Affidavit, numerous studies dating back to the 1960s have consistently concluded that Lake Lanier and the Chattahoochee River provide the most economical and environmentally-protective alternative for meeting the water supply needs of the region. *See* Reheis Affidavit at ¶¶ 21-28. As the Reheis Affidavit explains, a number of alternatives were investigated up through 1999, and none of them was determined to be a reasonable alternative. *See id.*

40. As part of the planning process for its 2003 plans and 2009 update, the Metro Water District considered potential water supply source alternatives for the communities in the study area through the planning period. The District's *Water Supply and Water Conservation Management Plan* determined that "after reviewing alternatives to the use of the federal reservoirs, the Metro Water District has concluded that there are no alternatives to the Chattahoochee River and the Etowah River as major water supply sources for north Georgia."

41. A water study task force, comprised of metro Atlanta area government and business leaders and assisted by Boston Consulting Group and technical experts, reached the same conclusion in 2009. The Governor of Georgia convened the task force, known as the Water Contingency Planning Task Force, in response to a decision of the United States District Court that threatened to eliminate virtually all water supply withdrawals and releases from Lake Lanier. The task force studied the costs associated with developing alternative sources of water resources to replace Lake Lanier if the Lake were to cease operating for water supply. The task force concluded that "Lake Lanier is by far the best water supply source for the metro region. If the recommended contingency options were required instead, these options would impose significant incremental costs and environmental impacts the region does not currently face." *See Water Contingency Planning Task Force Findings and Recommendations, 21 December 2009.*

IMPACT OF GEORGIA'S MUNICIPAL AND INDUSTRIAL WATER WITHDRAWAL ON LAKE LANIER AND WATERS DOWNSTREAM

42. EPD has performed computer modeling of the reservoir operations and water withdrawals contemplated in Georgia's water supply request to determine the effects of those operations and withdrawals on Lake Lanier and the Chattahoochee River. EPD's modeling is summarized below and discussed in greater depth in Exhibit A, the Memorandum of Dr. Wei Zeng, manager of EPD's Hydrological Analysis Unit. Although Dr. Zeng, for the purpose of his analysis, assumed that the Corps will continue to operate in accordance with the current version

of the Revised Interim Operation Plan ("RIOP"), the State of Georgia continues to believe that the ACF system can be operated more efficiently for the benefit of all Basin stakeholders and is proposing alternative to the RIOP in our comments on the ACF Water Control Manual EIS Scoping Comments.

Hydropower Production at Lake Lanier and within the ACF System

43. The projected water withdrawals and Corps operations necessary to support them will not have a material impact on the production of hydropower at Buford Dam or the federal reservoirs in the ACF Basin as a whole, and any impact will be gradual over the next several decades. EPD's modeling indicates that, if viewed in terms of hydropower generation for the federal reservoirs in the ACF Basin as a whole, when Georgia has reached demands of 705 mgd and year 2040 water supply needs are met throughout the rest of Georgia, average annual power generation will be 970,900 MWh, as compared with the 988,055 MWh of (simulated) annual average generation with 2011 water supply levels. Thus, EPD projects a mere 1.7% decrease in hydropower generation basin-wide. *See* Zeng Memorandum at Exhibit A.

44. When Georgia has reached demands of 705 mgd from Lanier and the Chattahoochee River above the Peachtree Creek confluence, and 2040 water supply demands exist throughout the remainder of the basin, the annual average energy generated at Lake Lanier is modeled to be 116,435 MWh, in comparison to the amount of 123,735 MWh under 2011 water use conditions. Thus, the amount of hydropower produced at Lake Lanier with 2040 demands will be only 6% less than the amount being produced with current water supply demands. The effect will be even less in the years before Georgia's water demand has reached 705 mgd. *See* Zeng Memorandum at Exhibit A.

45. Georgia's conclusions are consistent with those reached by the Corps in its assessment of the impact to hydropower from granting Georgia's water supply request as compared with a baseline that assumed virtually no water supply operations at all. Using that baseline of comparison, the Corps concluded that the water supply operations and lake withdrawals would result in less than a 1% reduction to ACF Basin dependable hydropower capacity, and that the lake withdrawals and water supply releases contemplated by Georgia's water supply request would result in reductions in basinwide hydropower value of 4.4% and less than 1%, respectively. *See* Zeng Memorandum at Exhibit A.

Recreation at Federal Reservoirs

46. The Corps has established three thresholds for assessing impact of reservoir elevation to recreation at Lake Lanier. The first threshold is called Initial Recreation Impact Level ("IIL"), which is the level at which falling reservoir elevation first has some adverse effect on recreation. The Corps has determined that the IIL at Lake Lanier is 1066 feet above mean sea level (msl). The second threshold, the Recreation Impact Level ("RIL"), is the level at which significant impacts to concessions and recreation occurs. The RIL at Lake Lanier is 1063 feet above msl. The third threshold is Water Access Limitation Level ("WAL"), which is the elevation at which more serious impacts to recreation are observed. The WAL at Lake Lanier is 1060 feet above msl.

47. As discussed at greater length in the attached Memorandum of Wei Zeng, under 2007 hydrologic conditions, with existing water supply demands, Lake Lanier is below RIL for 27 days during the primary recreational season in that year (May 1-September 8). EPD's modeling shows that this level of recreation impact will be increased by only 21 days under 2007 hydrologic conditions if Lanier is operated to meet the metro area's 2040 water needs of 705 mgd and Georgia's 2040 water supply needs in the remainder of the basin exist. EPD's modeling also shows that if Lanier is operated to meet Georgia's water supply request, metro area water supply needs from Lake Lanier reach 705 mgd, and 2040 water demands exist elsewhere in the basin, during the recreational season, the elevation of Lake Lanier would be below the ILL for only 5% more of the time, below the RIL for only 8% more of the time, and below the WAL 8% more of the time, than under the baseline condition. *See* Zeng Memorandum at Exhibit A.

48. At West Point Lake, the Corps has designated a ILL of 632 feet above msl, a RAL of 628 feet above msl, and a WAL of 627 feet above msl. If Lake Lanier is operated to meet water supply needs of 705 mgd, the number of days when West Point Lake falls below the RIL and ILL actually will be lessened, and there will be only a 1% increase in the number of days in which the elevation falls below the WAL.

49. For Lake Walter F. George, the ILL is 187 feet above msl, the RAL is 185 feet above msl, and the WAL is 184 feet above msl. With 2040 water supply demands imposed on the system, Lake Walter F. George will not experience elevations below RIL or WAL, and will see an increase of only 1% to 2% in the number of days below the ILL. *See* Zeng Memorandum at Exhibit A.

Navigation

50. As the ACF Basin reservoirs, for reasons unrelated to Georgia's water supply usage, are no longer used to support commercial navigation except under rare circumstances, Georgia's water supply request will not impact navigation.

Lake Lanier's Flood Control Function

51. The current request to reallocate the conservation storage to meet Georgia's projected future water supply needs does not involve changing the elevation of the top of conservation pool or the size of the flood control pool. Thus, reallocating part of the conservation storage to accommodate Georgia's increase water will have no impact on the flood control capability of Lake Lanier or the ACF system. Although changes to the size of the flood control pool are not necessary for the Corps to grant Georgia's request, Georgia may still recommend raising the conservation pool, at the appropriate time, if and when it determines that the benefits of doing so exceed any costs.

Impacts on Georgia/Florida State Line Flows

52. EPD's modeling indicates that the net water consumption associated with the municipal and industrial withdrawals contemplated in Georgia's water supply request is projected to have a

minor impact on the flow in the Apalachicola River at the state line. *See* Zeng Memorandum at Exhibit A.

CONCLUSION

53. The foregoing information affirms and updates Georgia's 2000 request that the Corps operate Lake Lanier to meet water supply needs of 705 mgd annual average gross withdrawal, including 297 mgd annual average gross withdrawal from Lake Lanier and 408 mgd annual average gross withdrawal from the Chattahoochee River between Buford Dam and the confluence of the Chattahoochee River and Peachtree Creek. Accordingly, the Governor of Georgia has asked that the Corps grant Georgia's request by taking the following actions:

(a) Accommodate water supply demands by providing for 297 mgd annual average gross withdrawal from Lake Lanier and by making releases to allow 408 mgd annual average gross withdrawal from the Chattahoochee River between Buford Dam and the confluence with Peachtree Creek.

(b) Provide certainty for those municipal and industrial water withdrawals from Lake Lanier that require an allocation of storage by entering into long-term contracts. No storage should be required for withdrawals covered by existing relocation contracts or withdrawals of water released to Lake Lanier from Glades Reservoir upstream. Returns to Lake Lanier or its tributaries of treated wastewater should be credited exclusively to the storage accounts of those whom Georgia EPD designates to receive such credit.

(c) Provide certainty for those municipal and industrial water withdrawals from the Chattahoochee River that rely upon special releases from Lake Lanier by entering into agreements that document the parties' understandings about assurance and coordination of releases.

(d) Release from Lake Lanier enough water to provide a flow in the Chattahoochee River at the confluence with Peachtree Creek as EPD may request to maintain applicable water quality standards.

FURTHER AFFIANT SAITH NOT.

This 10th day of January, 2013.

Judson H. Turner

Sworn to and subscribed before me this 10th day of January, 2013

Yolanda P. Fanning

Notary Public

My commission expires: Sept. 29, 2013

YOLANDA P. FANNING NOTARY PUBLIC HENRY COUNTY GEORGIA EXPIRES SEPT. 29, 2013

APPENDIX 1

Historical and Forecasted Population of Counties Using Lake Lanier System for Water Supply

County	1990[1]	2000[1]	2010[1]	2020[2]	2030[2]	2040[3]
Cobb	447,745	607,751	688,078	800,469	909,747	1,033,943
Dawson[4]	9,429	15,999	22,330	27,029	32,022	37,937
DeKalb	545,837	665,865	691,893	761,537	817,276	877,096
Forsyth	44,083	98,407	175,511	256,307	383,258	573,089
Fulton	648,951	816,006	920,581	1,095,897	1,284,954	1,506,626
Gwinnett	352,910	588,448	805,321	1,019,098	1,270,020	1,582,724
Habersham[4]	27,621	35,902	44,553	48,705	54,623	61,260
Hall	95,428	139,277	179,684	226,172	282,164	352,018
Lumpkin[4]	14,573	21,016	29,966	38,075	47,960	60,411
White[4]	13,006	19,944	26,704	31,057	34,841	39,086
Totals[5]	2,199,583	3,008,615	3,584,621	4,273,267	5,116,865	6,127,000

[1]From US Census Bureau

[2]Georgia Office of Planning and Budget 2012 Projections

[3]Projection based upon assumption that 2030 – 2040 growth rate (in per cent) will be same as 2020 – 2030.

[4]Watershed counties not currently withdrawing from Lanier, but may withdraw in future.

[5]This total does not include the additional counties that purchase water from the water systems that withdraw water from Lake Lanier and the Chattahoochee River, such as Paulding County.

APPENDIX 2

Water Systems That Withdraw Directly from Lake Lanier

County	System Name	2011 Withdrawals (MGD)		
		Max. Month	Max. Day	Annual Average
Forsyth	City of Cumming	17.5	18.8	11.6
Forsyth	Forsyth County	11.8	12.8	8.6
Gwinnett	City of Buford	1.5	1.7	1.3
Gwinnett	Gwinnett County Water & Sewerage Authority	90.9	118.8	76.1
Hall	City of Gainesville	20.7	28.5	17.6
Total				115.2

APPENDIX 3

Water Systems That Rely on Water Supply Releases from Lake Lanier to the Chattahoochee River

County	System Name	2011 Withdrawals (MGD)		
		Max. Month	Max. Day	Average Annual
Cobb	Cobb County Marietta Water Authority	51.9	64.8	45.1
DeKalb	DeKalb County Public Works (Water and Sewer)	84.7	114.8	72.7
Fulton	Atlanta – Fulton Water Resources Commission	54.3	69.9	38.7
Fulton	City of Atlanta	101.8	123.4	89.2
Total				245.7

APPENDIX 4

Projected 2040 Water Withdrawals and Returns

(Annual Average)

Table 1 Current and Projected 2040 Water Withdrawals and Returns Above Buford Dam

Time Horizon	Withdrawal (mgd)	Return (mgd)	Net Consumptive Loss (mgd)
2011	120.6[1]	38.1	82.4
2040	297	165	132

Table 2 Current and Projected 2040 Chattahoochee River Water Withdrawals and Returns

Time Horizon	Withdrawal (mgd) (Buford Dam to Peachtree Creek)	Return (mgd)			Net Consumptive Loss (mgd)
		Atlanta Reach (Buford Dam to Peachtree Creek)	Whitesburg Reach (Peachtree Creek to Whitesburg gage)	Total	
2011	247.5[2]	34.5	185.3	219.8	27.7
2040	408	94	291	385	23

Notes:

[1] Including facilities upstream of Lake Lanier. These additional withdrawals are included to provide the sum of all consumptive loss above Buford Dam.

[2] Including facilities that withdrew from tributaries of the Chattahoochee River. These additional withdrawals are included to provide the sum of all consumptive loss below Buford Dam and above the Whitesburg gage.

APPENDIX 5

TIME REQUIRED TO PLAN, PERMIT, FINANCE, AND CONSTRUCT WATER SUPPLY RESERVOIRS IN GEORGIA [Note: Try to fit all on one page]

Project / Activity	Bear Creek Reservoir, Jackson Co.	Cedar Creek Reservoir, Hall Co.	Tussahaw Creek Reservoir, Butts Co.	Big Haynes Creek Reservoir, Rockdale Co.	Line Creek Reservoir (Lake McIntosh), Fayette Co.	Hickory Log Creek Reservoir, Cherokee Co.
Applicant's initial contact with EPD regarding a new reservoir.	2/2/1994	7/17/1996	9/22/2000	11/5/1987	10/27/1987	3/22/2000
Applicant initial contact with the Corps regarding 404 permit for reservoir.	2/2/1994	2/12/1997	9/22/2000	4/29/1991	1/6/1989	3/22/2000
Applicant submits water withdrawal permit application.	3/3/1997	4/2/2002	3/13/2001	6/21/1999	3/21/2001	10/4/2005
EPD comments on withdrawal application.	5/28/1997	4/22/2002	5/22/2001	12/7/1999	4/16/2001	11/22/2005
EPD provides confirmation of need (to the Corps).	4/20/1995	Information unavailable	11/3/2000	5/6/1991	11/20/2000	11/20/2000
Applicant submits 404 application to the Corps.	2/22/1995	8/26/1997	11/15/2000	5/28/1991	5/1/2002	4/27/2000
The Corps notifies public of the 404 application and requests comments.	5/26/1995	10/8/1997	12/27/2000	11/22/1991	10/3/2002	12/27/2000
The Corps responds to applicant's 404 application.	7/1/1995	11/13/1997	2/1/2001	12/28/1991	11/8/2002	2/28/2001
EPD **issues** 401 Water Quality Cert.	5/17/1996	8/21/1998	5/22/2001	8/31/1992	9/6/2006	8/2/2002
EPD issues withdrawal permit.	4/1/2002	8/1/2002	2/14/2003	3/22/2002	9/6/2006	9/12/2008
The Corps issues final 404 permit to applicant.	7/20/1996	11/16/1998	10/23/2002	10/2/1992	6/27/2007	5/24/2004
EPD issues Safe Dams permit.	10/1999	10/2001	8/25/2003	5/31/1994	12/9/2009	4/29/2008

Jurisdiction constructs dam.	04/2001	9/11/2003	June 2005	1/27/1997	April 2010	8/5/2005
Jurisdiction fills reservoir.	Spring 2002	8/11/2005	Sept. 2005	June 1998	Started November 1, 2012	6/30/2011

EXHIBIT A

Memorandum of Dr. Wei Zeng

Manager, Hydrologic Analysis Unit

Georgia Department of Natural Resources
Environmental Protection Division
Watershed Protection Branch
4220 International Pkwy., Suite 101, Atlanta, Georgia 30354
Linda MacGregor, P.E., Branch Chief
(404) 675-6232

Memorandum

To: Judson Turner, Director, Georgia EPD
From: Wei Zeng, Hydrology Unit, Georgia EPD
Date: January 10, 2013
Subject: Technical Analysis of Georgia's 2000 Water Supply Request

Introduction

You asked me to analyze the impact to the federal reservoirs in the Apalachicola-Chattahoochee-Flint (ACF) River Basin, to hydropower production and recreation at those reservoirs, and to river flows at the state line with Florida, of Georgia's 2000 Water Supply Request. Georgia submitted the water supply request to the U.S. Army Corps of Engineers in May 2000, asking for the Corps to operate Lake Lanier to accommodate future municipal and industrial direct withdrawals from Lake Lanier and river withdrawals downstream totaling 705 million gallons per day (mgd). As more than twelve years have passed since Georgia submitted its water supply request to the Corps, Georgia is providing the Corps updated demographic and water demand information in support of its request. Georgia forecasts that its municipal and industrial water supply demands from Lake Lanier will reach or exceed 705 mgd by approximately 2040.

The Hydrology Unit of EPD set up a mathematical model of the ACF Basin to analyze the potential impacts of Georgia's request. This memorandum documents the model settings and results.

Platform Model – HEC-ResSim

The mathematical model that we used for this analysis was developed by the U.S. Army Corps of Engineers Hydrologic Engineering Center (HEC) for analyzing reservoir operations and basin-wide water resource management. The Corps calls this platform model "HEC-ResSim." The Corps periodically upgrades HEC-ResSim's capability. The Corps released its current version of the model to the public in May 2011. This version of the model reflected the Corps' then-current ACF Basin reservoir operating plan, known as the Revised Interim Operation Plan (RIOP), as it existed as of May 2011.

Since May 2011, the Corps has made minor changes to the RIOP. The Hydrology Unit of EPD has added these changes to the Corps' May 2011 platform model. Thus, EPD's version of the HEC-ResSim model reflects operations under the current RIOP.

We modeled a 34-year period, assuming rainfall and inflow conditions that occurred from January 1, 1975 to December 31, 2008, and applied to each of these years the Corps' RIOP and, as discussed below, varying levels of water supply use. We chose the 1975-2008 period for several reasons. First, the Unimpaired Flow (UIF) data developed by the Corps only covers hydrologic conditions through December 31, 2008. In addition, this period excludes the period before all ACF federal reservoirs have been in operation. Finally, the U.S. Fish and Wildlife Service has used the same simulation period for its analyses of various ACF operations. It should be noted that the droughts

that most affected the federal reservoirs in the ACF Basin occurred within in this period, with the possible exception of the current drought, the duration and severity of which cannot yet be determined.

Model Setting on Water Demand

To understand the impacts of Georgia's water supply request, we compiled current and proposed future water use conditions and ran three different scenarios: what we call Baseline Condition, Scenario A, and Scenario B. The Baseline Condition assumes current water use, as further defined below. Scenario A isolates the effect of the withdrawals associated with Georgia's water supply request by applying to the model annual average gross withdrawals of 705 mgd from Lake Lanier and the Chattahoochee River through Atlanta but keeps current demands throughout the remainder of the ACF Basin. Scenario B evaluates the effects of the water use contemplated in Georgia's water supply request in combination with forecasted demands throughout the basin by assuming annual average gross withdrawals of 705 mgd from Lake Lanier and the Chattahoochee River through Atlanta and year 2040 water use throughout the remainder of the ACF Basin in Georgia, plus increasing water use in ACF Basin in Alabama, as discussed further below.

Baseline Condition

To capture the effect of current water use within the ACF Basin, we included in the model the most recent available annual (2011) withdrawal and discharge data of all permitted municipal and industrial facilities in the Georgia portion of the ACF Basin. These include thermal electric power generating facilities that use water for cooling purposes and that incur consumptive water losses as a result of their cooling operations. We included the estimate of 2007 total ACF Basin agricultural water use that Georgia developed as part of its statewide water planning, which is the best information that we have on Georgia's current agricultural use.

We included Alabama's 2007 water consumption from the ACF Basin as estimated by the Alabama Office of Water Resources (OWR) in 2009. For water consumption in Florida, we used the numbers contained in the Corps' platform model.

In the Baseline Condition, and in Scenarios A and B, we assumed the current RIOP would remain in effect.

Scenario A – Impact of Water Supply Request

As Georgia's water supply request remains 297 mgd annual average gross lake withdrawal and 408 mgd annual average gross river withdrawal, for a total of 705 mgd, those are the amounts of withdrawal that we used in the impact analysis. We added back projected returns of treated wastewater to Lake Lanier and the Chattahoochee River. Using EPD projections, we assumed that 78% of the 705 mgd that is withdrawn will be discharged back to surface waters within the basin in the form of highly treated wastewater. This includes 165 mgd returned to Lanier and its upstream tributaries, 94 mgd returned to the Chattahoochee River between Buford Dam and Peachtree Creek, and 291 mgd returned to the Chattahoochee River downstream of Peachtree Creek.

As Scenario A is intended to isolate the impact of meeting the forecasted water supply needs that would be dependent on withdrawals and water supply releases from Lake Lanier, we held water use elsewhere in the basin at current levels (that is, levels according to most recent data available).

Scenario B – Impact of Water Supply Request in Combination with Other 2040 Georgia Demands in ACF Basin

In Scenario B, we added to the water supply uses contemplated by Georgia's water supply request the other projected 2040 water demands within the ACF Basin in Georgia. These include projected municipal, industrial, and agricultural water needs. EPD developed the forecasts for those demands as part of the planning associated with the State Water Plan and Regional Water Development Plans. We do not have projected water demands for portions of the basin that are in Alabama. To estimate the cumulative impact resulting from future Alabama demand, we assumed an increase of 15% to the current Alabama figure used in the baseline condition alternative. We held the level of water use in the Apalachicola River reach the same as in the Baseline Condition because we have no information upon which to base an estimate of future water use in the State of Florida.
I have enclosed a DVD containing these models.

Results and Analysis

In my discussion of the modeling results, Scenarios A and B are compared to the Baseline Condition. The potential impact of Georgia's Request is described with regard to:

(1) Average elevations in the federal reservoirs of Lanier, West Point, and Walter F. George;
(2) Minimum elevations in these reservoirs;
(3) Elevation duration curves in these reservoirs;
(4) Daily average power generation in the federal reservoirs;
(5) Percentage of time when there is some level of recreational impact; and
(6) State line flow duration curve.

Reservoir Elevations

Using the Res-Sim Model, we determined the average and minimum daily elevations, and the elevation duration curves, of the federal reservoirs in the ACF Basin under the Baseline Condition and Scenarios A and B. The average and minimum daily elevations of a reservoir are obtained by looking at the daily elevation of the period of simulation, from January 1, 1975 to December 31, 2008, and calculating the average and minimum daily value for each of the 365 days in a year. The elevation duration curve shows the percentages of time over the entire 34-year period that the reservoirs will exceed certain elevations.

As shown in Slides 9 and 25 of the attached Exhibit 1, the average daily elevation of Lake Lanier under both Scenarios A and B will be no more than 0.7 feet lower around May 1 as compared with the Baseline Condition. May 1 is the date on which the top of conservation pool guide curve for Lake Lanier rises to 1071 feet for the first time in the year and is the beginning of the primary recreational season. Similarly, the average daily elevation of Lake Lanier around December 1 under Scenarios A and B is no more than 1.5 feet lower than under the Baseline Condition.

The difference between the Baseline Condition and Scenarios A and B is more pronounced in terms of the daily minimum elevation in Lake Lanier. (See Slides 10 and 26.) At the lowest point on the minimum daily elevation curve, which usually takes place in the month of December, the elevation under Scenarios A and B is approximately 6 feet lower than in the Baseline Condition.

The elevation duration curves for Lake Lanier are shown on Slides 11 and 27. For the upper 30% of the duration curve (representing the times of higher reservoir elevation), the elevation of Lake Lanier is essentially the same in the Baseline Condition and Scenarios A and B. Moreover, for approximately 70% of the duration curve, the elevation under Scenarios A and B is only approximately one foot or less lower than in the Baseline Condition. The difference is greater, up to 6 feet, at the lowest point in the lower 30% of the duration curve.

The impact on Lakes West Point and Walter F. George is minor. (See Slides 12 through 17 and Slides 28 through 33.) There is very little, only inches, difference in average daily elevation at both West Point and Walter F. George between the Baseline Condition and Scenarios A and B. In terms of minimum daily elevation, the greatest difference between the Baseline Condition and Scenarios A and B is only 1.5 feet in West Point (in the months of September and October), and up to 1.2 feet at Walter F. George (in September and October). At the point in the year when West Point and Walter F. George typically reach their lowest elevation for the year (usually in November or December), there is little difference between the Baseline Condition and Scenarios A and B. Even less of a change is evident in the elevation duration curves for Lakes West Point and Walter F. George. (See Slides 14, 17, 30, and 33).

Power Generation

The projected water withdrawals and Corps operations necessary to support them will not have a material impact on the production of hydropower at Buford Dam. Under Scenario A, with water supply needs of 705 mgd for the Metro Atlanta Area and current demands elsewhere, the daily average energy generated at Lake Lanier is modeled to be 319 MWh, and the annual average energy generated at Lake Lanier is modeled to be 116,435 MWh. In comparison, the daily average energy generated under the Baseline Condition is modeled to be 339 MWh and the annual average is 123,735 MWh. When Georgia has reached demands of 705 mgd from Lake Lanier and the Chattahoochee River above the Peachtree Creek confluence, combined with 2040 water supply demands throughout the remainder of the basin, the annual average energy generated at Lake Lanier is modeled to be 116,435 MWh, in comparison to 123,735 MWh under the Baseline Condition. Thus, assuming 2040 water supply demands throughout the ACF Basin, there would be less than a 6% reduction in power produced at Lanier. The impact will be even less in the years before Georgia's water demand has reached 705 mgd.

As shown by Slides 18 and 34, Georgia's future water supply demands will have very little impact on the total amount of energy produced by all of the federal reservoirs in the ACF Basin. Under Scenario A, when Georgia has reached demands of 705 mgd, the daily average energy output from all ACF federal reservoirs is modeled to be 2,671 MWh (annual average 974,915 MWh). The daily average energy output under the Baseline Condition is 2,707 MWh, and the annual average is 988,055 MWh. Thus, there will be only a reduction in daily average generation of 36 MWh (annual average reduction of 13,140 MWh) for all reservoirs combined. Under Scenario B, the daily average energy output from all ACF federal reservoirs is modeled to be 2,660 MWh (annual average 970,900 MWh). The reduction in daily average generation will be only 47 MWh (annual average reduction of 17,155 MWh). For the combined generation of all of the federal reservoirs in the ACF Basin, there is only a 1.3% reduction under Scenario A and a 1.7% reduction under Scenario B.
Georgia's conclusions are consistent with those reached by the Corps in its assessment of the impact to hydropower from granting Georgia's water supply request as compared with a baseline that assumed virtually no water supply operations at all. Using that baseline of comparison, the Corps concluded that the water supply operations and lake withdrawals under Georgia's water supply

request each would result in less than a 1% reduction to ACF Basin dependable hydropower capacity; that the lake withdrawals contemplated by the request would result in a reduction in basin-wide hydropower value of 4.4%; and, that the water supply releases contemplated by the request would result in a reduction in basin-wide hydropower value of less than 1%.

Recreational Impact

We evaluated the recreational impact by looking at the primary recreational season, defined by the Corps as May 1st through September 8th, and tallying the percentage of days when elevation of a reservoir is lower than the three levels of recreational impact, which are, in increasing degree of impact, the Initial Impact Line (IIL), Recreational Impact Line (RIL), and Water Access Limitation (WAL). According to the Corps, the IIL at Lake Lanier is 1066 feet above mean sea level (msl), the RIL is 1063 feet above msl, and the WAL is 1060 feet above msl. For West Point Lake, the ILL is 632 feet above msl, RAL is 628 feet above msl, and WAL is 627 feet above msl. For Lake Walter F. George, the ILL is 187 feet above msl, the RAL is 185 feet above msl, and the WAL is 184 feet above msl.

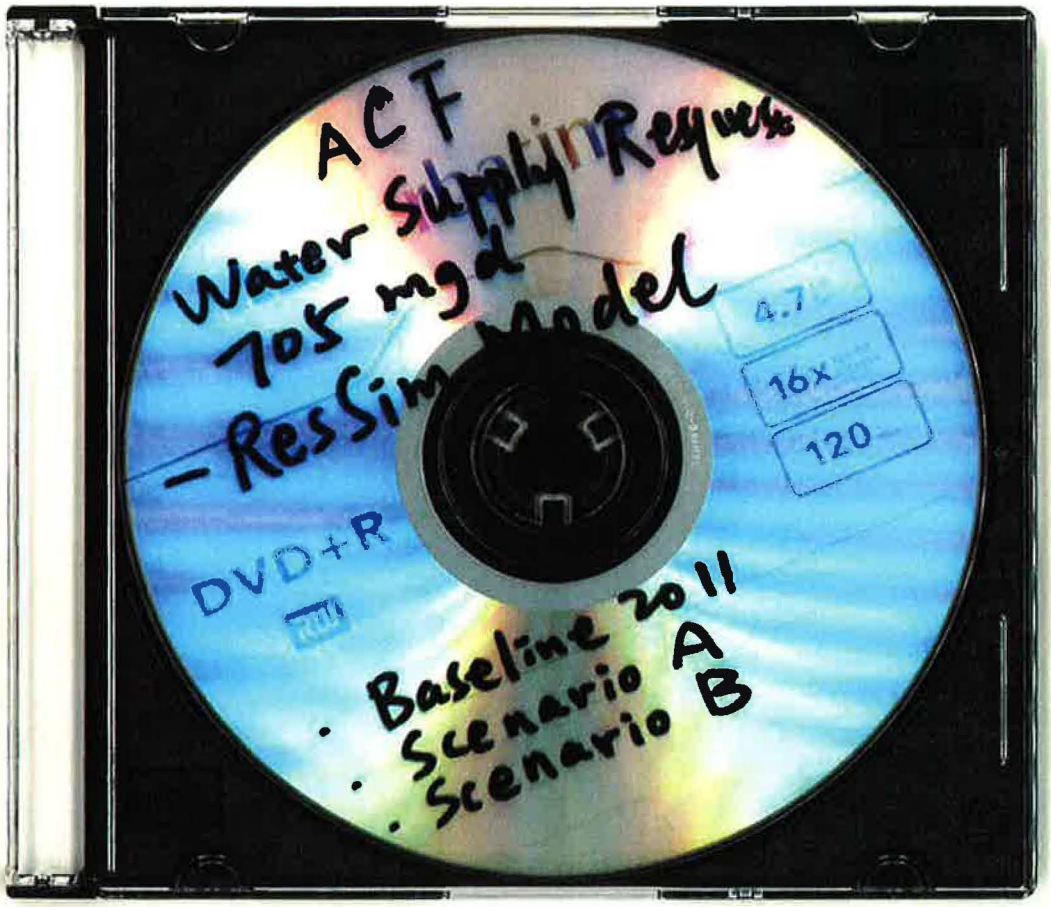
The impact to recreation is shown on Slides 19 through 21 and 35 through 37. In Scenarios A and B as compared with the Baseline Condition, the increase in percentage of days of IIL, RIL, and WAL at Lake Lanier will be 5%, 8%, and 8% respectively. Under hydrologic conditions of Year 2007, a drought year of exceptional dry conditions, the total number of days when the elevation of Lanier falls below the RIL under Scenario A is 47 days, under Scenario B is 48 days, and under the Baseline Condition is 27 days.

The recreational impact on West Point and Walter F. George is virtually non-existent. The only impact on West Point under Scenario A and Scenario B is a 1% increase in the frequency of WAL, while the recreational impact of IIL and RIL actually are lessened. At Walter F. George, there is a 1% and 2% increase in IIL in Scenario A and Scenario B, respectively. The elevation of Walter F. George does not fall to the RIL or WAL in any of the three scenarios.

State Line Flow

There is no noticeable difference between Scenario A and the Baseline Condition alternative in terms of state line flow duration curve, which suggests that the isolated increase in water supply in the metro Atlanta area itself will not result in any significant change in state line flow. (See Slides 22 and 23.) When we look at the portion of the graph between the 80 and 95 percentiles exceedence, the curve resulting from Scenario B is only around 200 cfs below the curve resulting from the Baseline Condition. (See Slides 38 and 39.) This 200 cfs is only 4% of the minimum flow requirement of 5,000 cfs, and less than 1% of the long term average simulated flow. At the very bottom of the duration curve, note that the RIOP's Drought Zone Operation will be triggered roughly 0.2% of the time under Scenario A and only 0.2% more often under Scenario B. Overall, the change in state line flow is minor in comparison to the magnitude of state line flow assuming the RIOP remains in place, and will likely remain so in any new operation plan that replaces the RIOP.

Enclosure


ACF
Water Supply Requests
705 mgd
- ResSim Model
4.7
16x
120
DVD+R
. Baseline 2011
. Scenario A
. Scenario B

ACF Water Supply Request Evaluations

Georgia EPD

Hydrology Unit

January 2013

Model Scenarios

- Baseline
  - Recorded 2011 M&I and thermal water use
  - Estimated 2007 Agricultural water use
  - 2007 Alabama reach-wise (Columbus, WFG, and Jim Woodruff reaches) water use as provided in UIF data
  - May 2011 version ACF ResSim model
  - RIOP operation as revised and reflected in May 2012 Biological Opinion

Model Scenarios

- Scenario A
  - Projected 2040 Metro District (Atlanta area) water use as revised from 2009 Metro District Plan
  - Water use conditions held unchanged in the other reaches
  - May 2011 version ACF ResSim model
  - RIOP operation as revised and reflected in May 2012 Biological Opinion

Model Scenarios

- Scenario B
  - Projected 2040 Metro District (Atlanta area) water use as revised from 2009 Metro District Plan
  - Projected 2040 water use for the other reaches per State Water Plan
  - Alabama 2007 use water with a 15% increase
  - May 2011 version ResSim model
  - RIOP operation as revised and reflected in May 2012 Biological Opinion

Modeled 2040 Metro District Water Demand

- Withdrawal
  - 297 mgd in Lanier reach including 256 mgd from metro District entities and 41 mgd reserved for upstream entities
  - 408 mgd in the upper Chattahoochee River
- Return
  - 165 mgd to Lanier
  - 94 mgd to Chattahoochee River between Buford Dam and Peachtree Creek
  - 291 mgd to Chattahoochee River between Peachtree Creek and Whitesburg gage

Period of Simulation

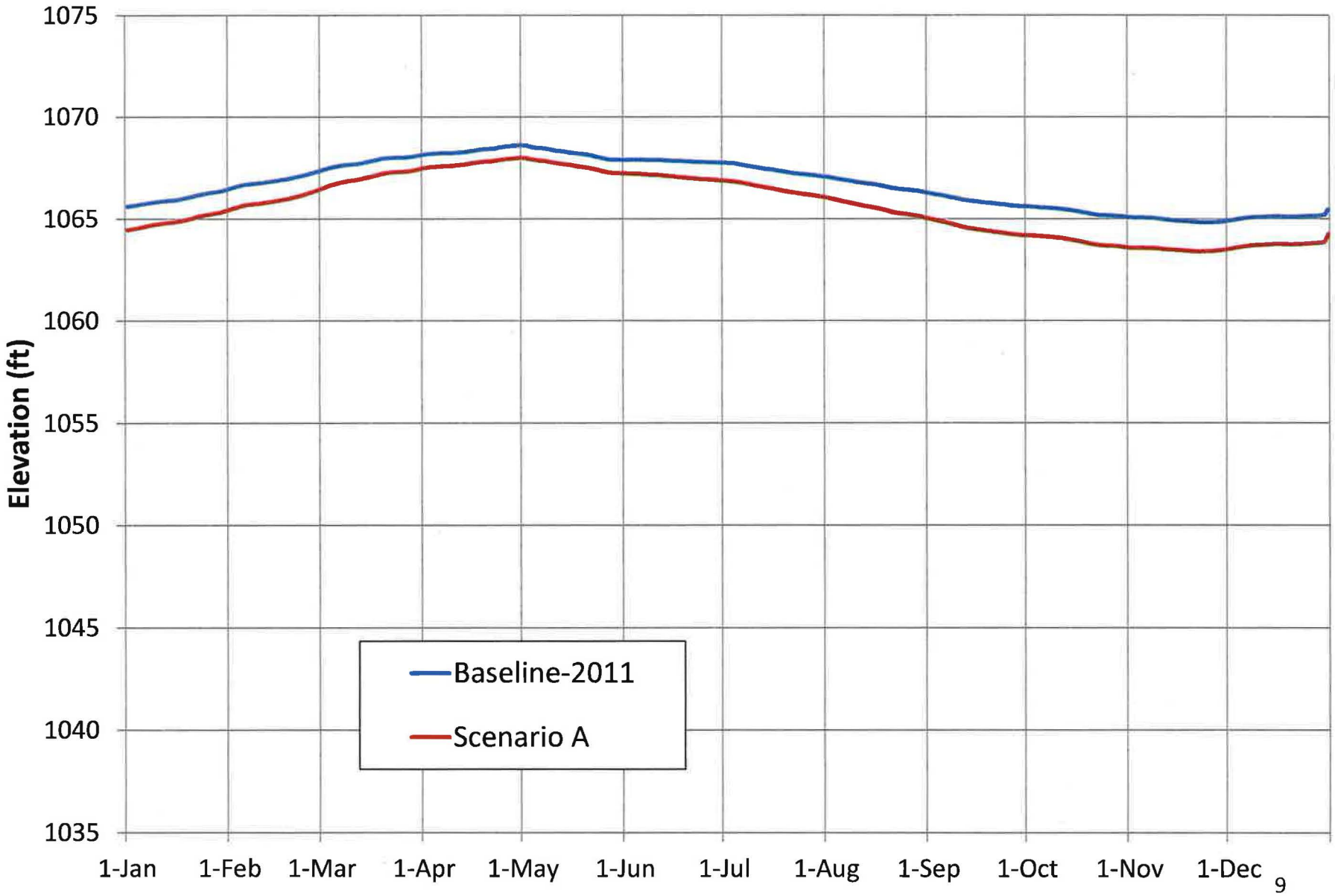
- January 1, 1975 through December 31, 2008
- Corresponding to period when all federal reservoirs are in place
- Period containing the most severe droughts in the past three decades
- Corresponding to the period used by USFWS for alternative evaluations

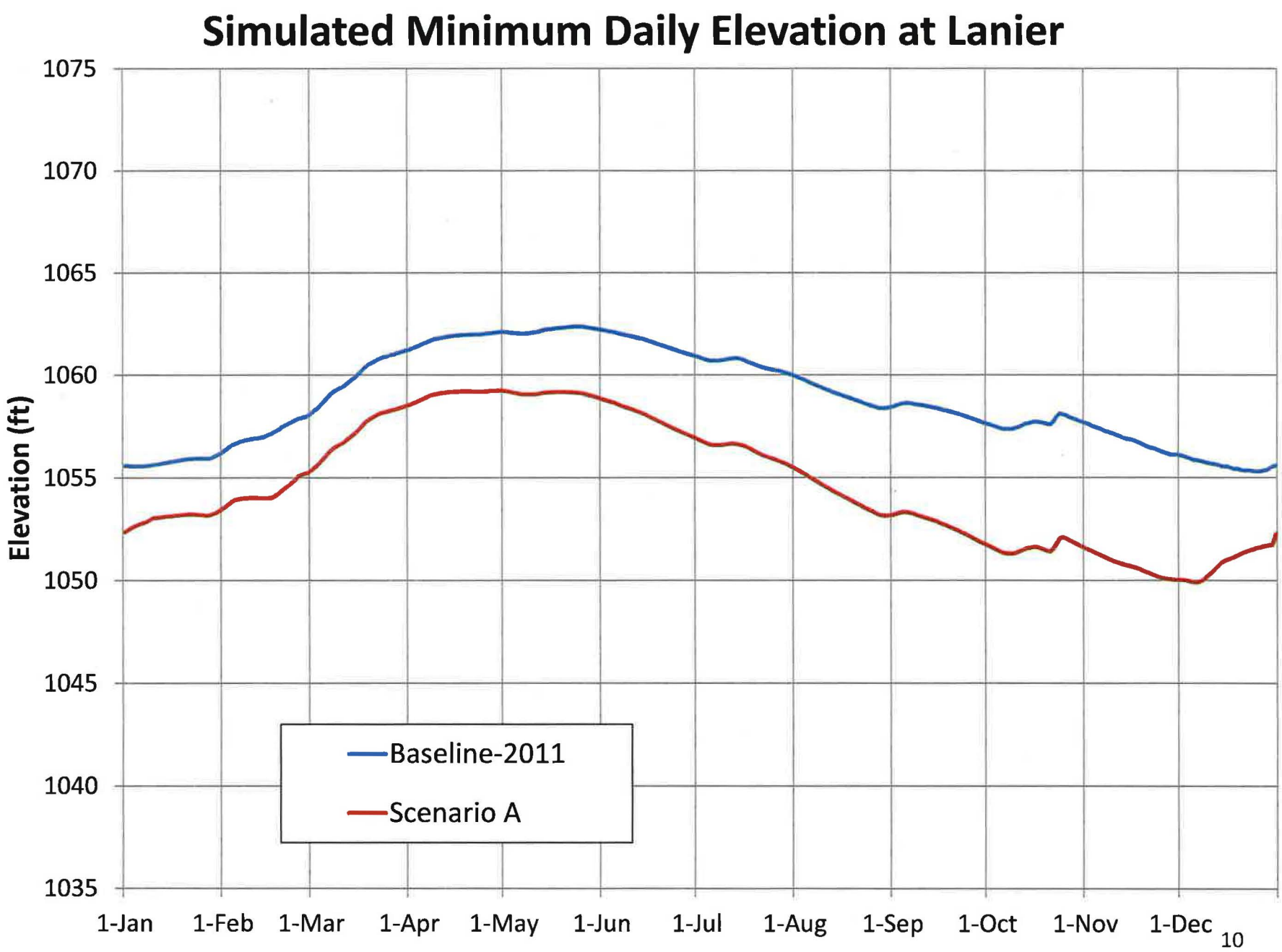
Modeling Results

- Average lake elevations
- Minimum lake elevations
- Lake elevation exceedance
- Average power generation
- Recreation impacts
- State line flow

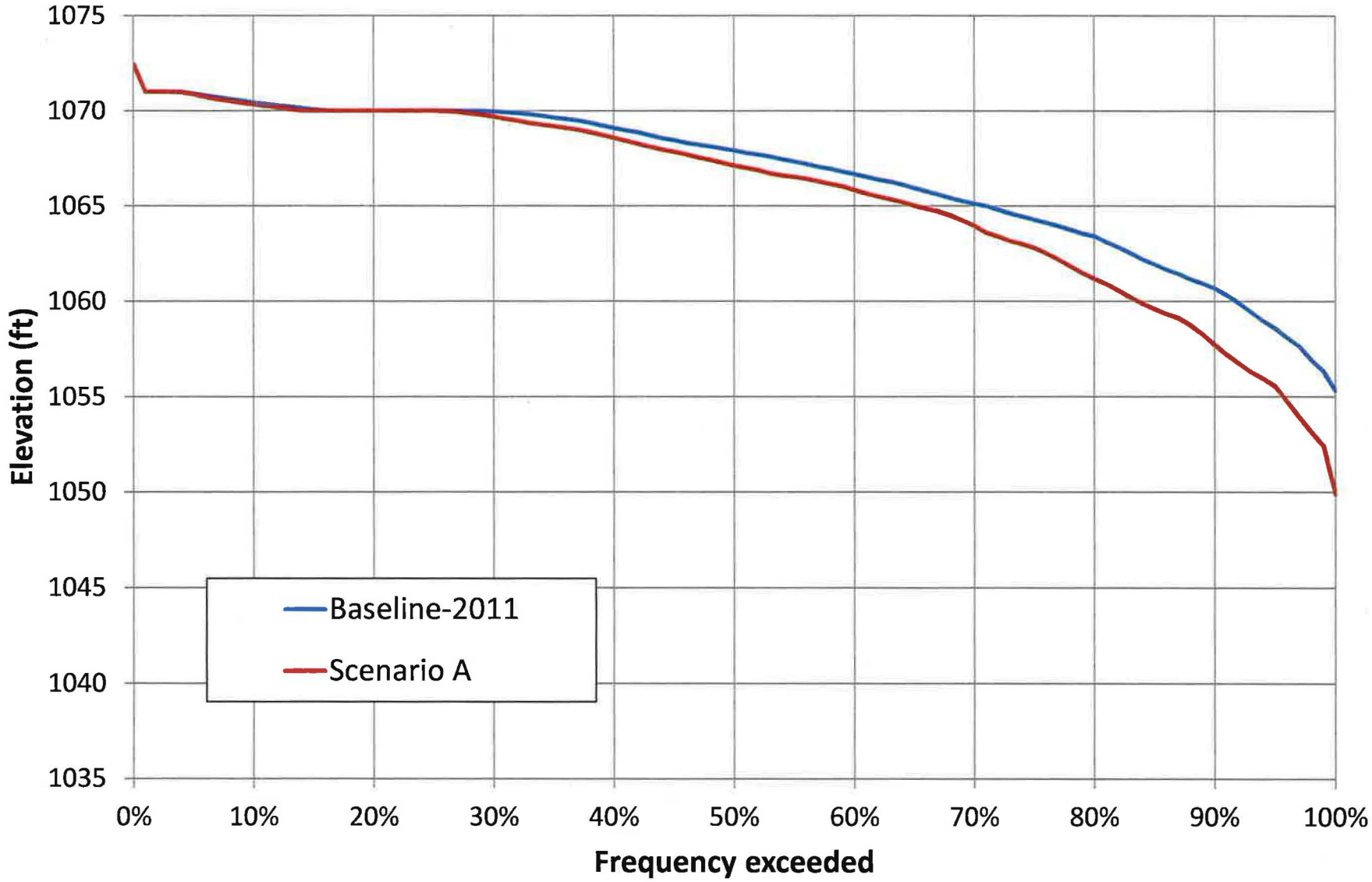
Scenario A vs. Baseline

Simulated Average Daily Elevation at Lanier

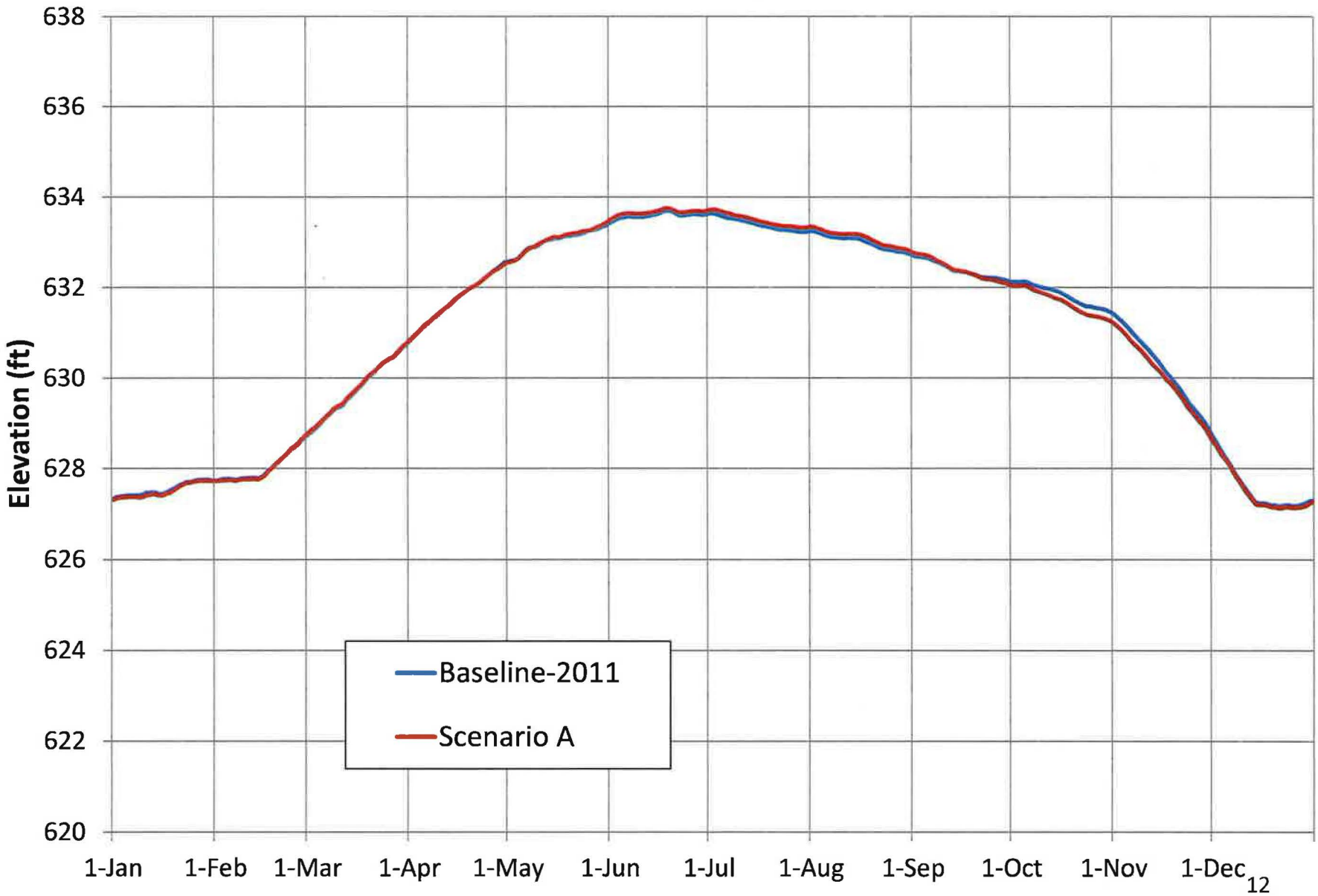


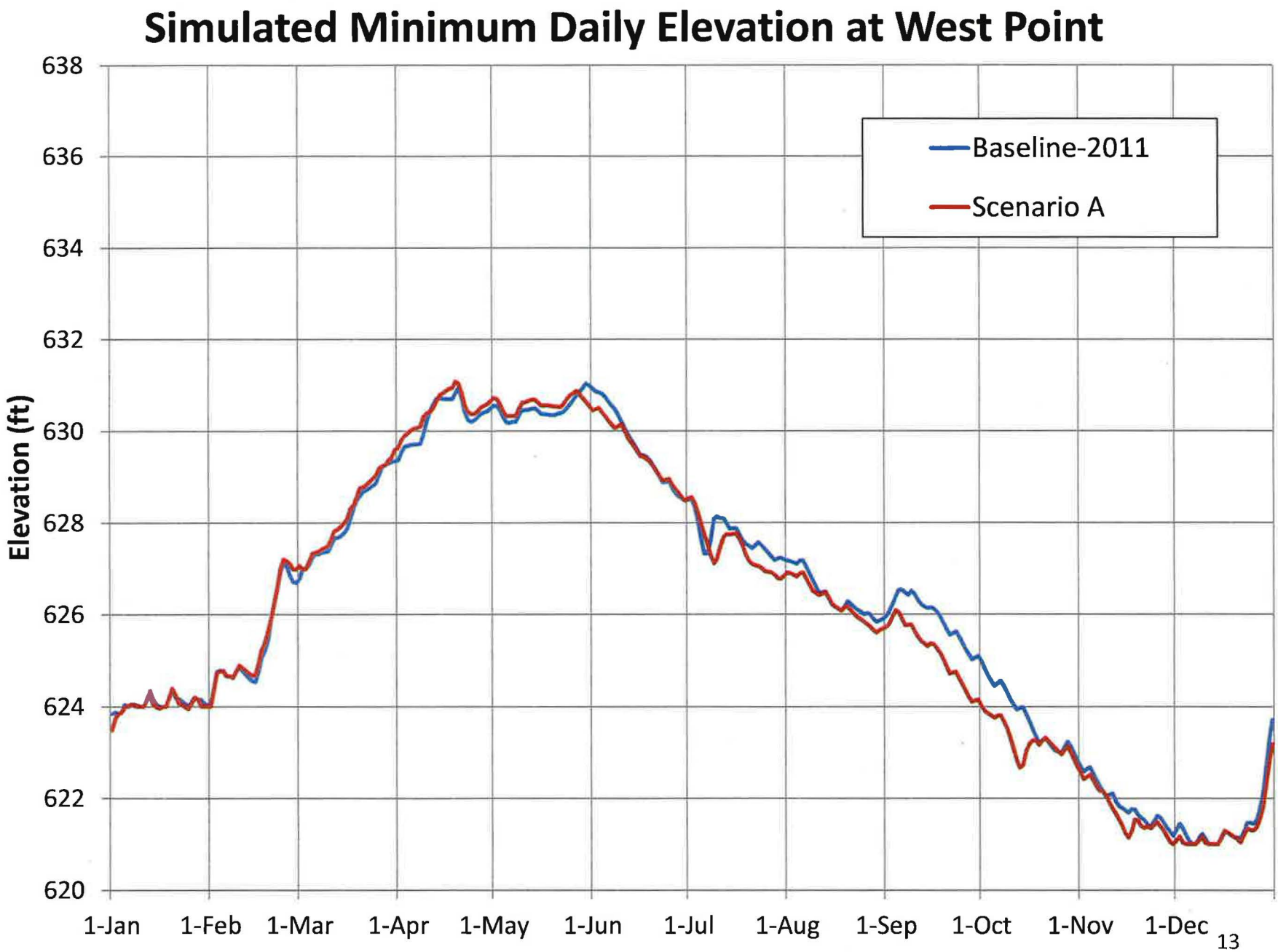

Simulated Minimum Daily Elevation at Lanier
Elevation (ft)
1075
1070
1065
1060
1055
1050
1045
1040
1035
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
Baseline-2011
Scenario A

Duration Curve of Lanier Elevation

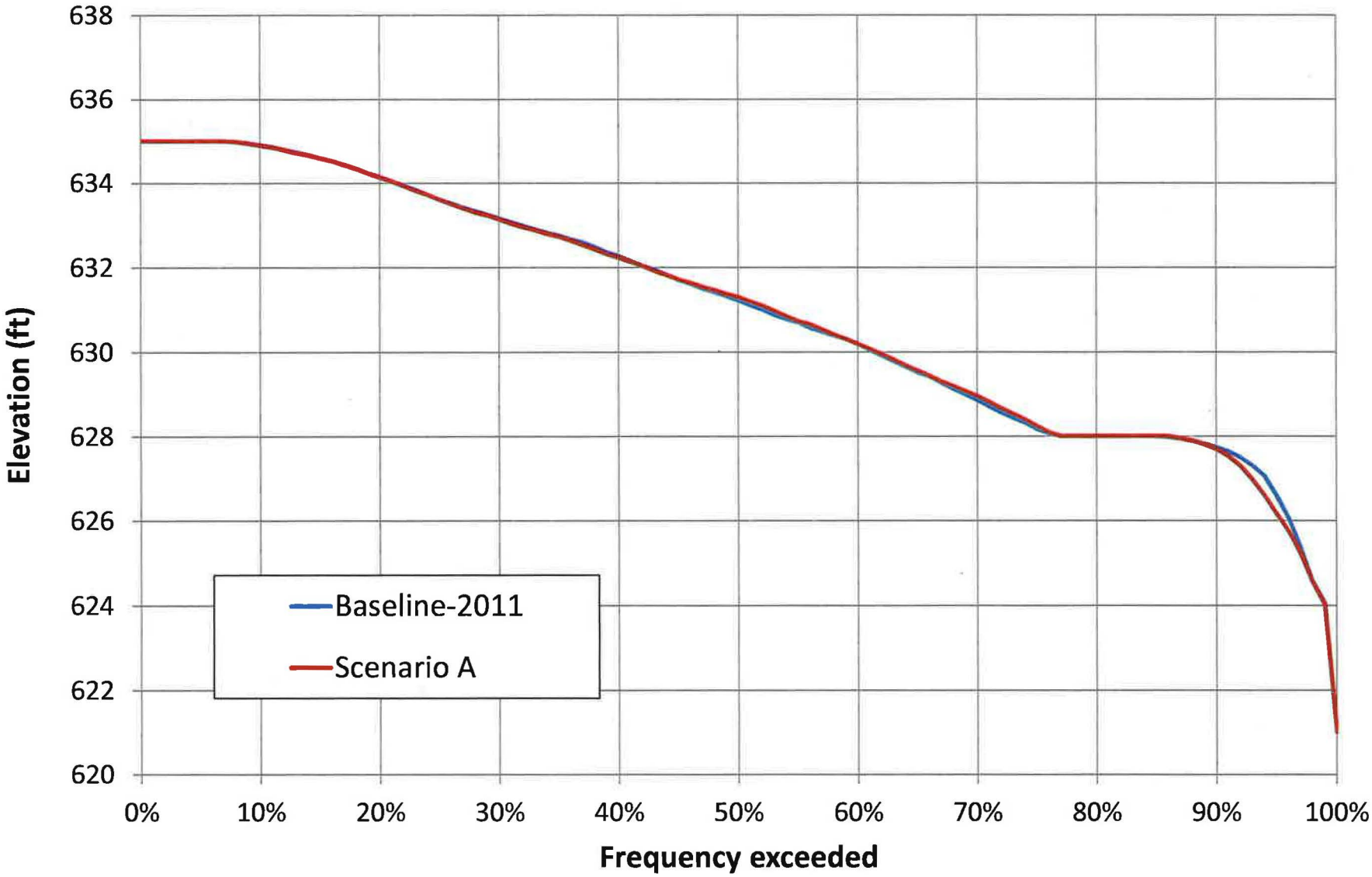


Simulated Average Daily Elevation at West Point

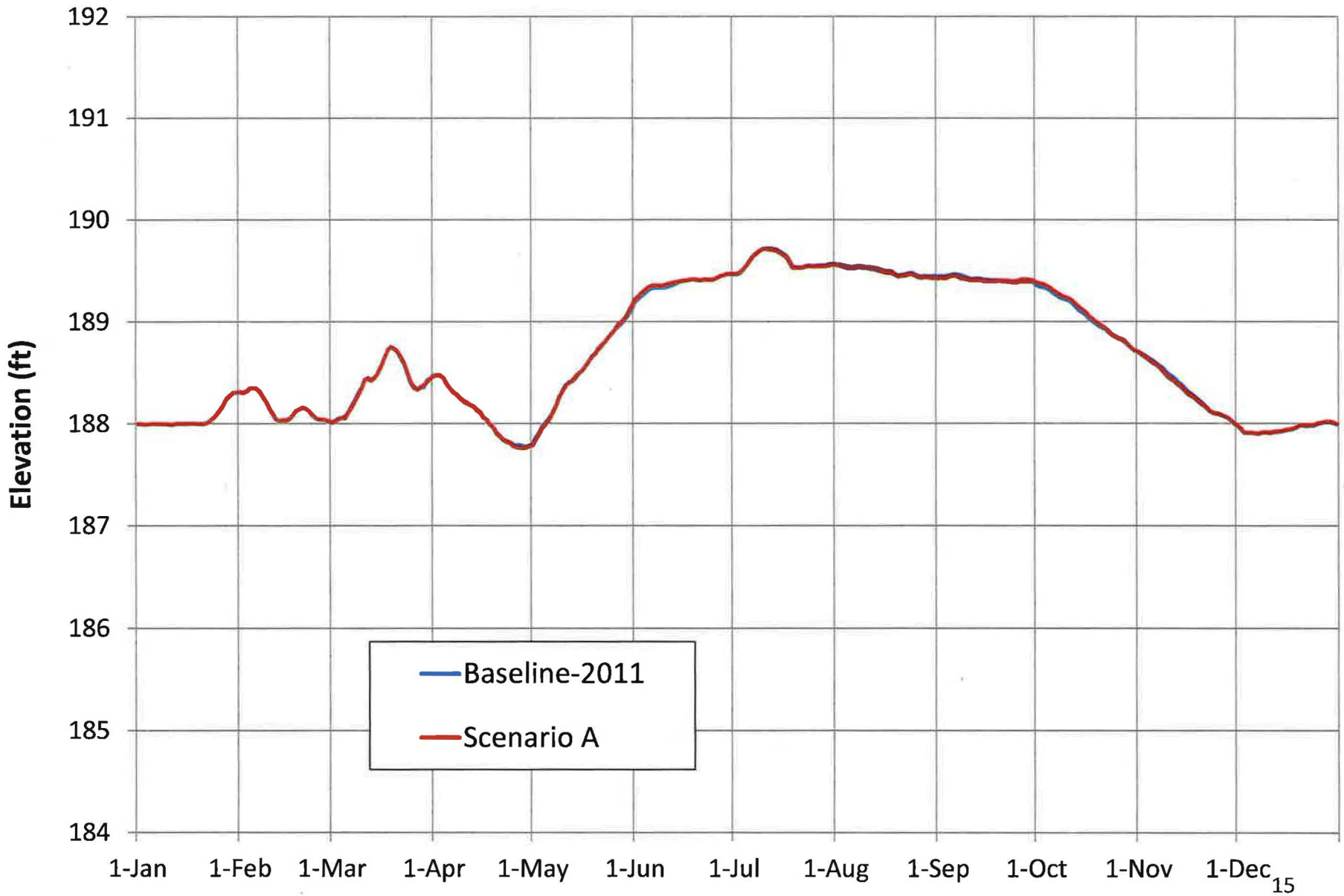


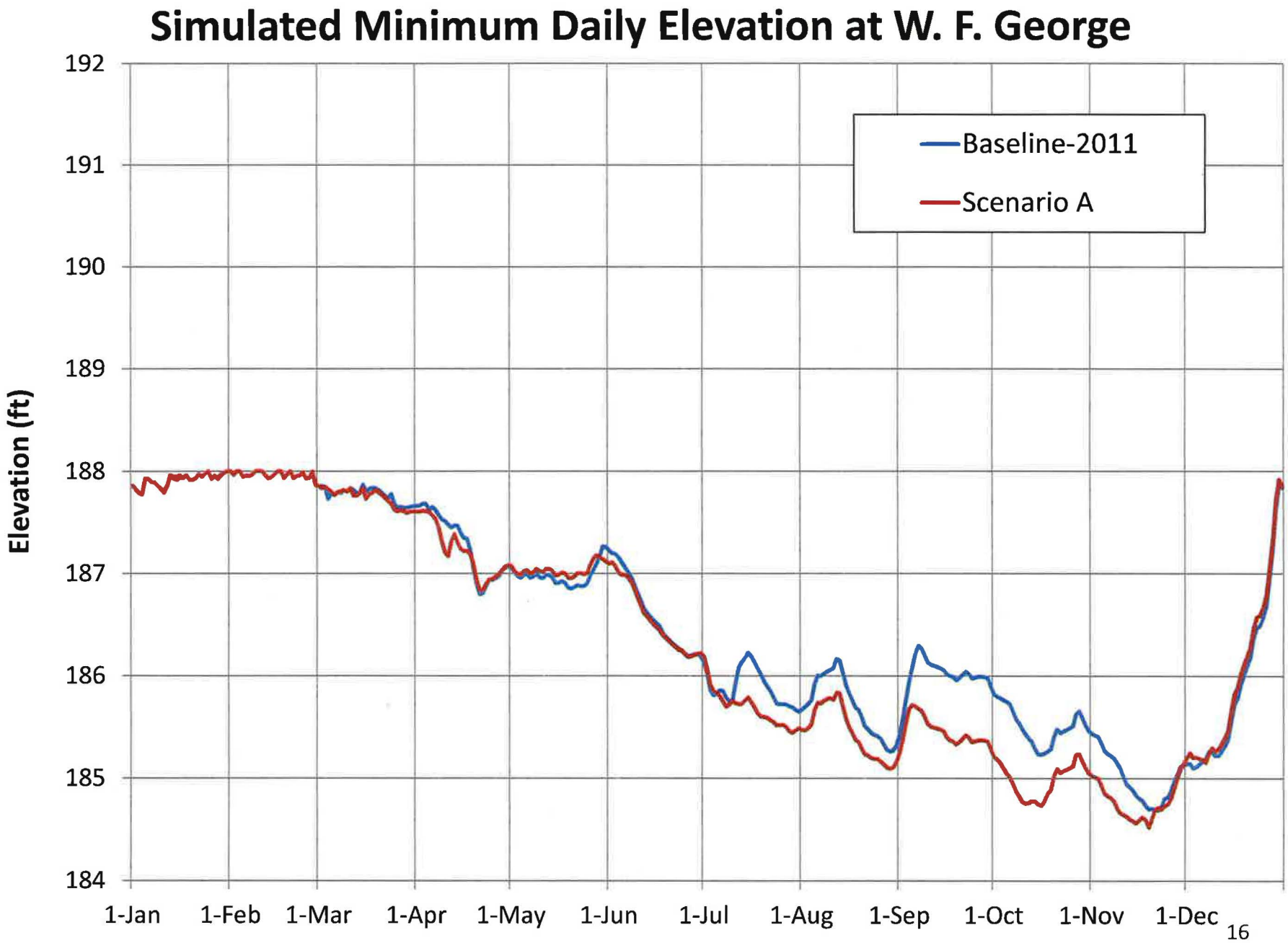

Simulated Minimum Daily Elevation at West Point
Elevation (ft)
638
636
634
632
630
628
626
624
622
620
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
Baseline-2011
Scenario A

Duration Curve of West Point Elevation

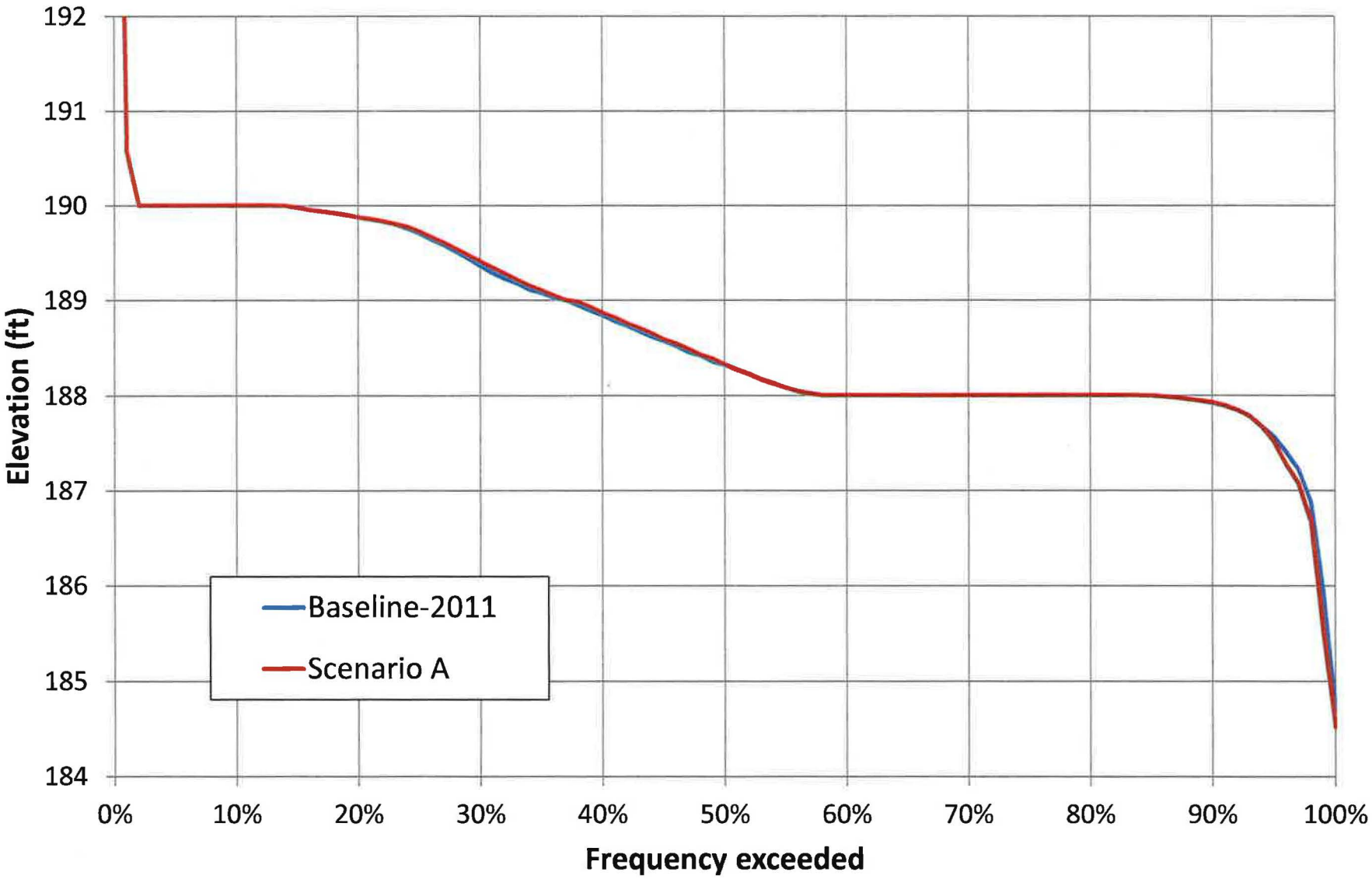


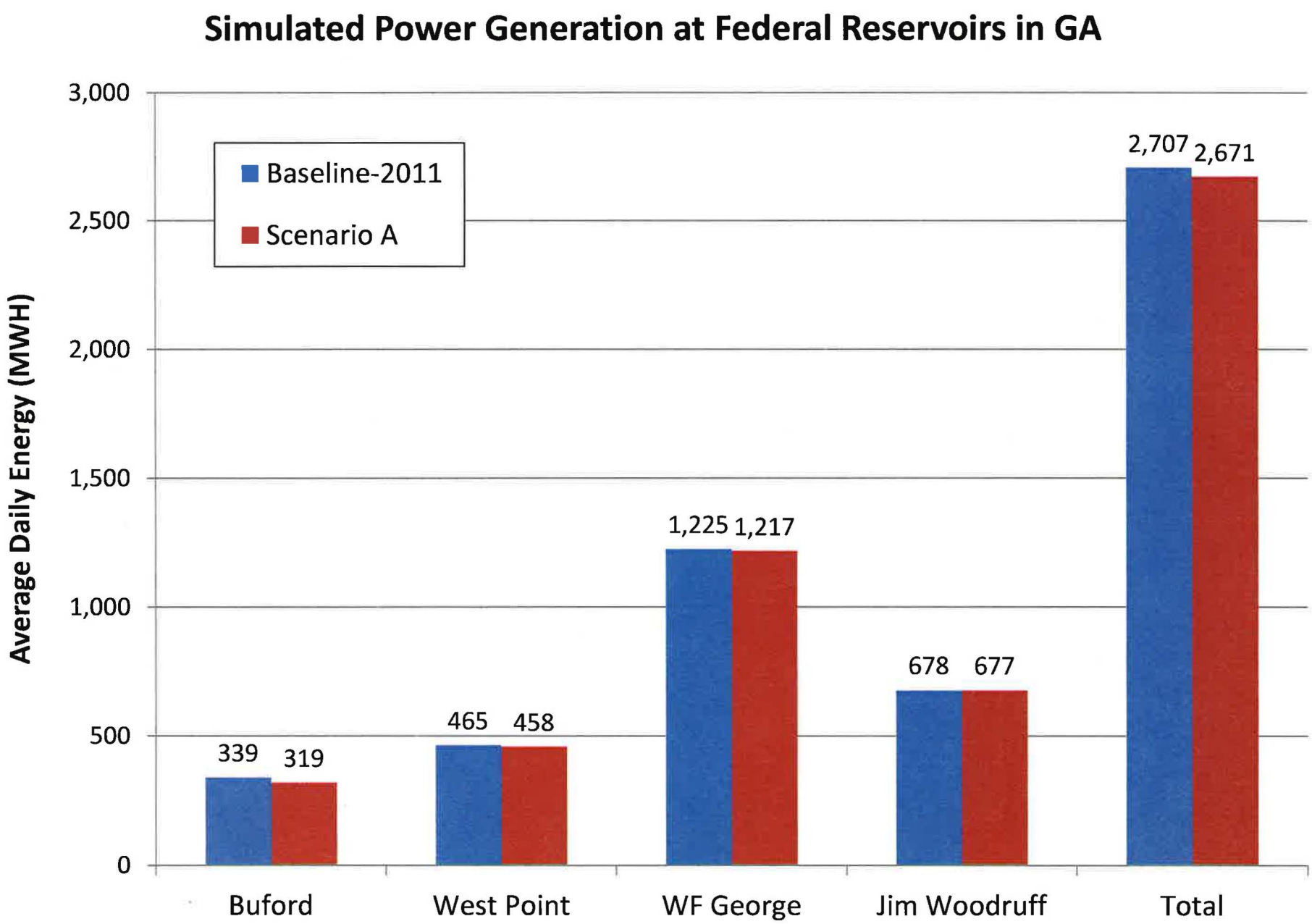
Simulated Average Daily Elevation at W. F. George



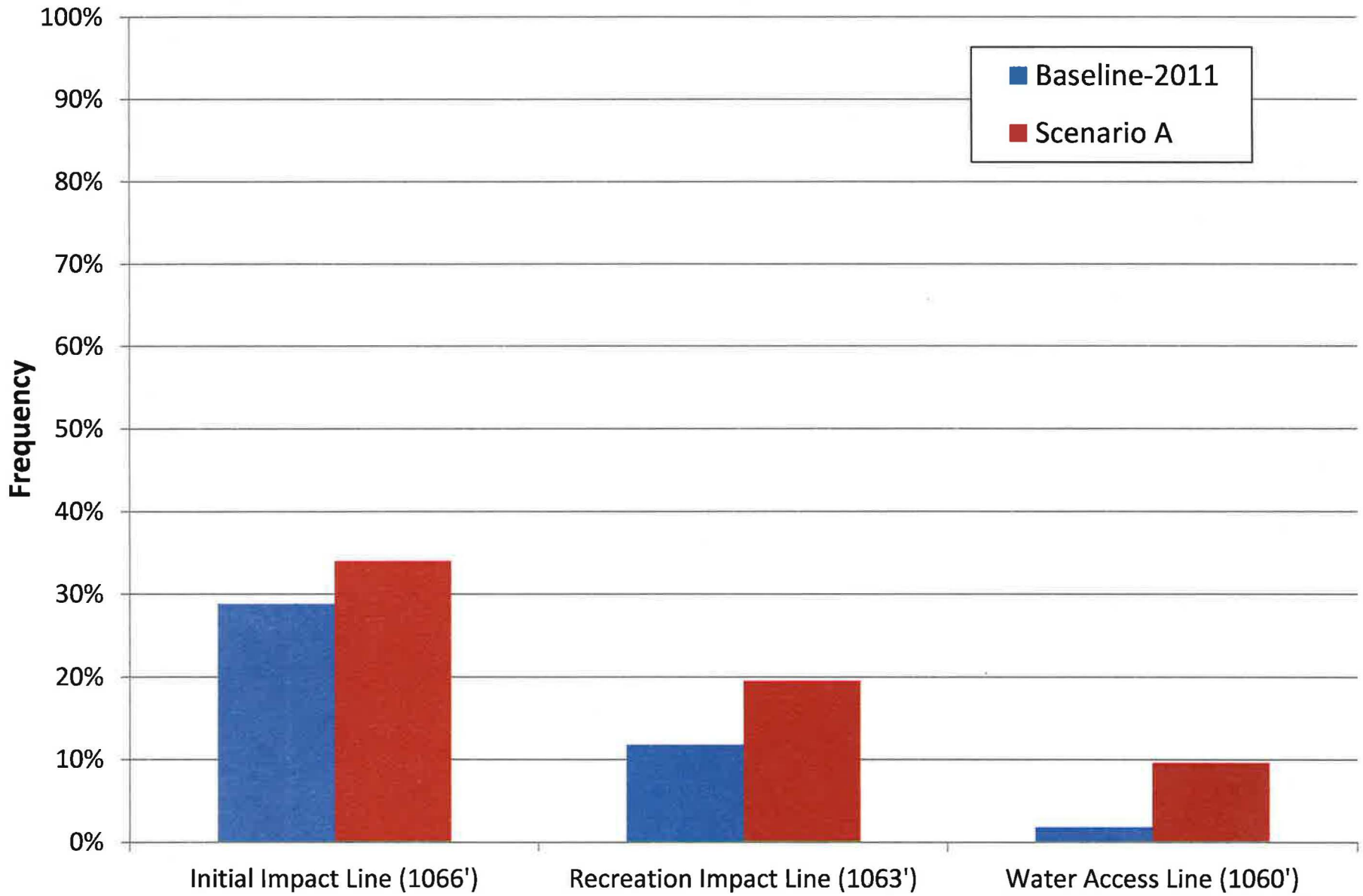

Simulated Minimum Daily Elevation at W. F. George
Elevation (ft)
192
191
190
189
188
187
186
185
184
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
Baseline-2011
Scenario A

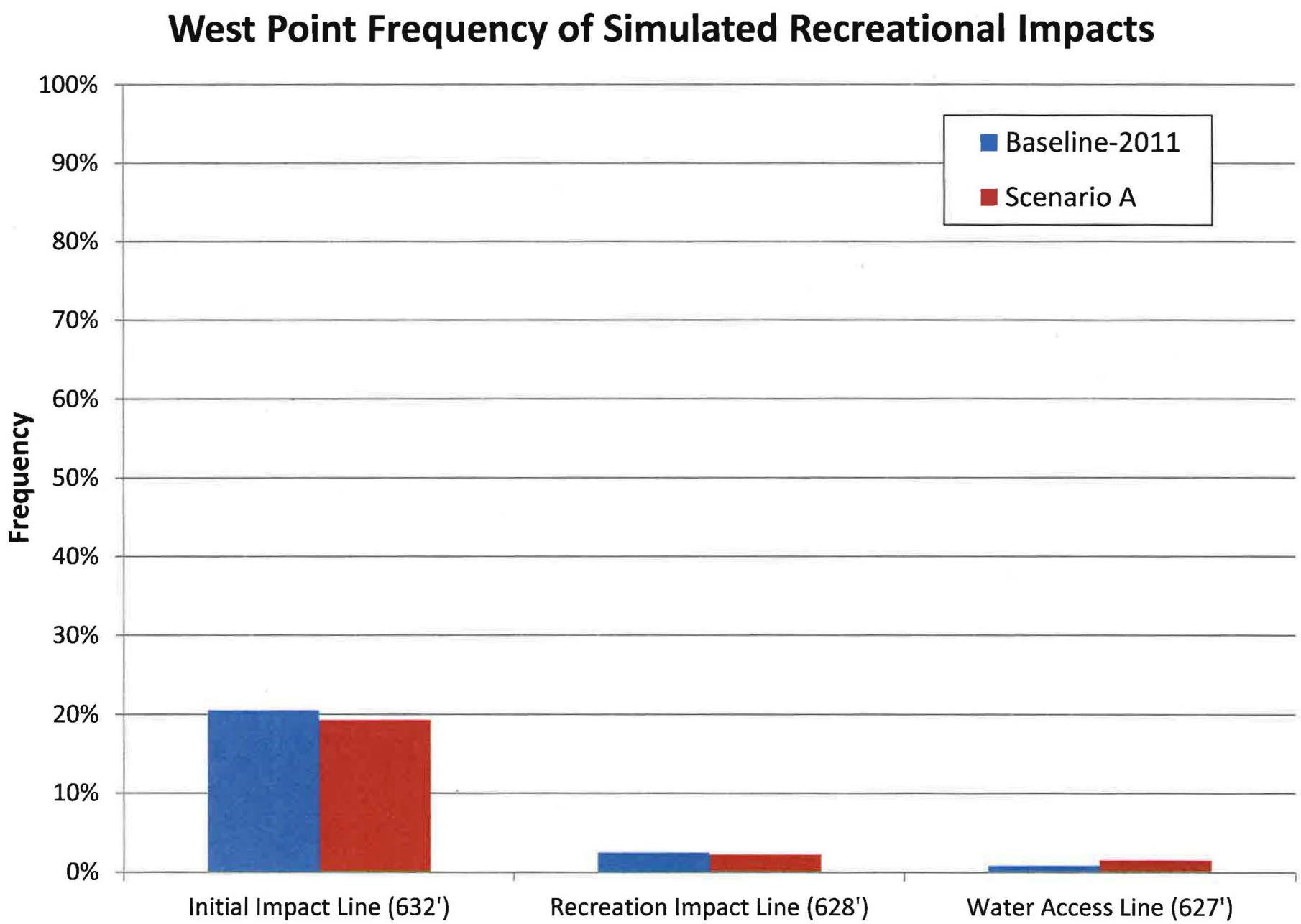
Duration Curve of W. F. George Elevation



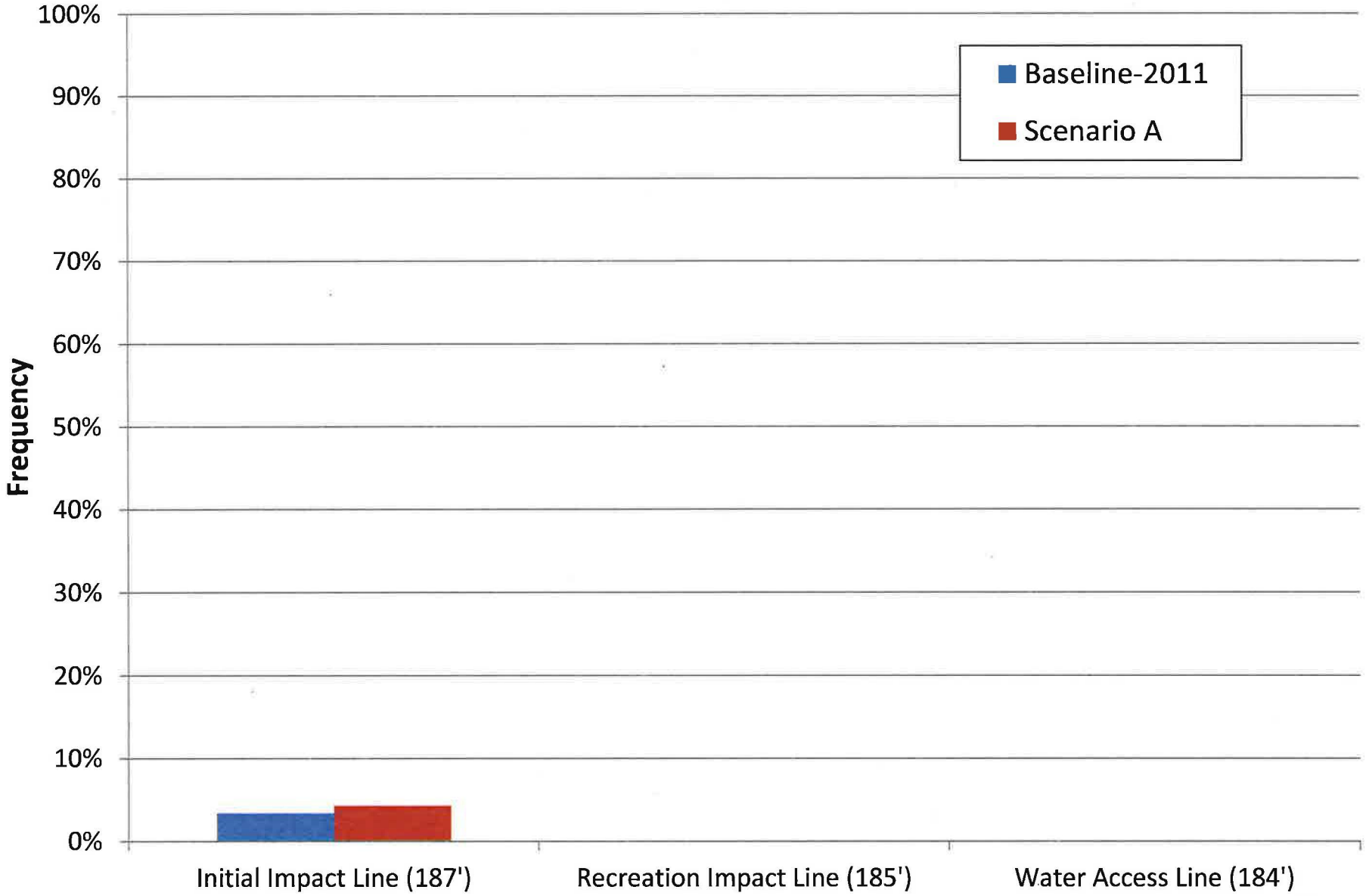

Simulated Power Generation at Federal Reservoirs in GA
Average Daily Energy (MWH)
3,000
2,500
2,000
1,500
1,000
500
0
Baseline-2011
Scenario A
339
319
465
458
1,225
1,217
678
677
2,707
2,671
Buford
West Point
WF George
Jim Woodruff
Total

Lanier Frequency of Simulated Recreational Impacts

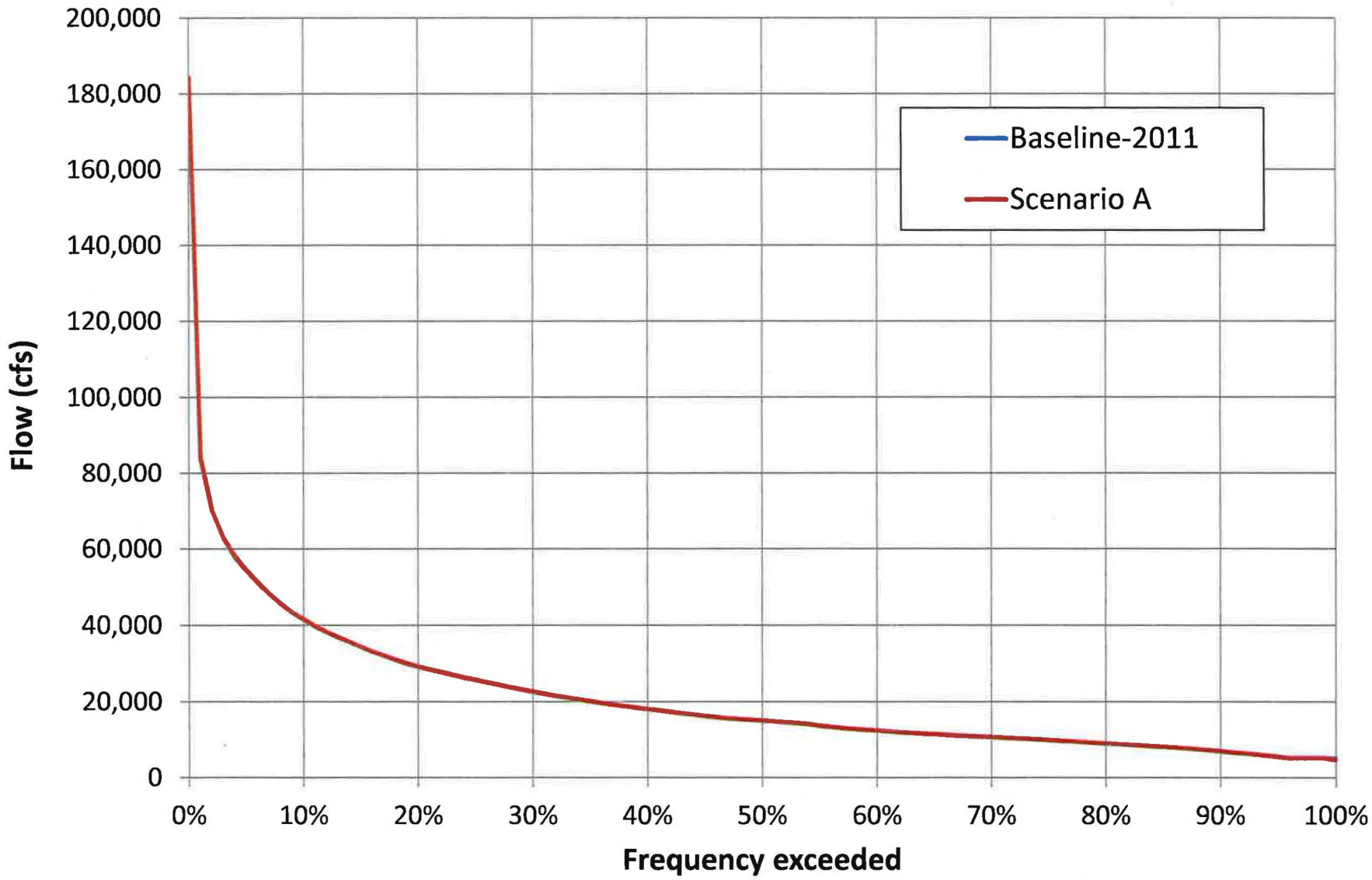



West Point Frequency of Simulated Recreational Impacts
Frequency
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Baseline-2011
Scenario A
Initial Impact Line (632')
Recreation Impact Line (628')
Water Access Line (627')

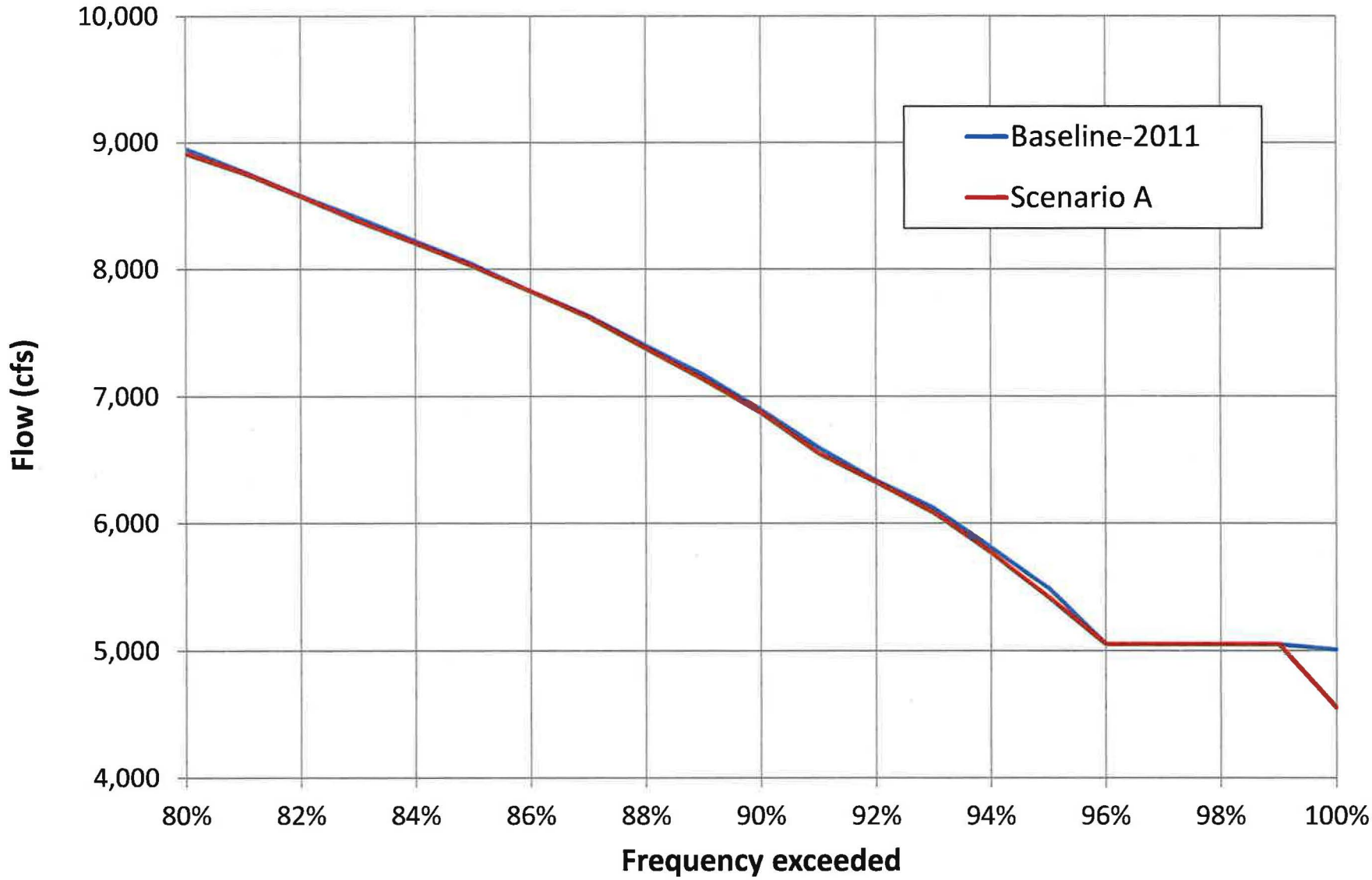
W. F. George Frequency of Simulated Recreational Impacts



Duration Curve of State Line Flow

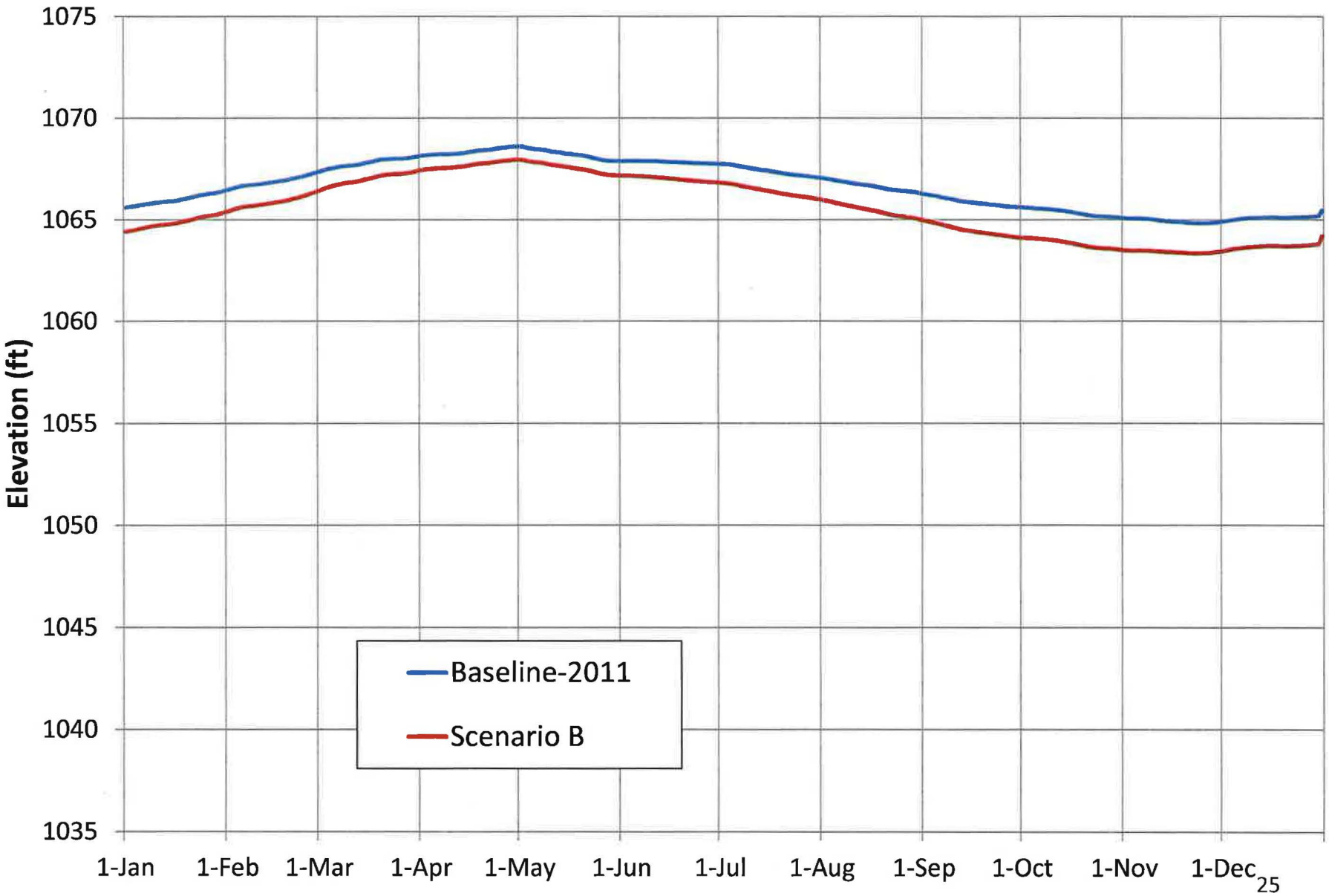


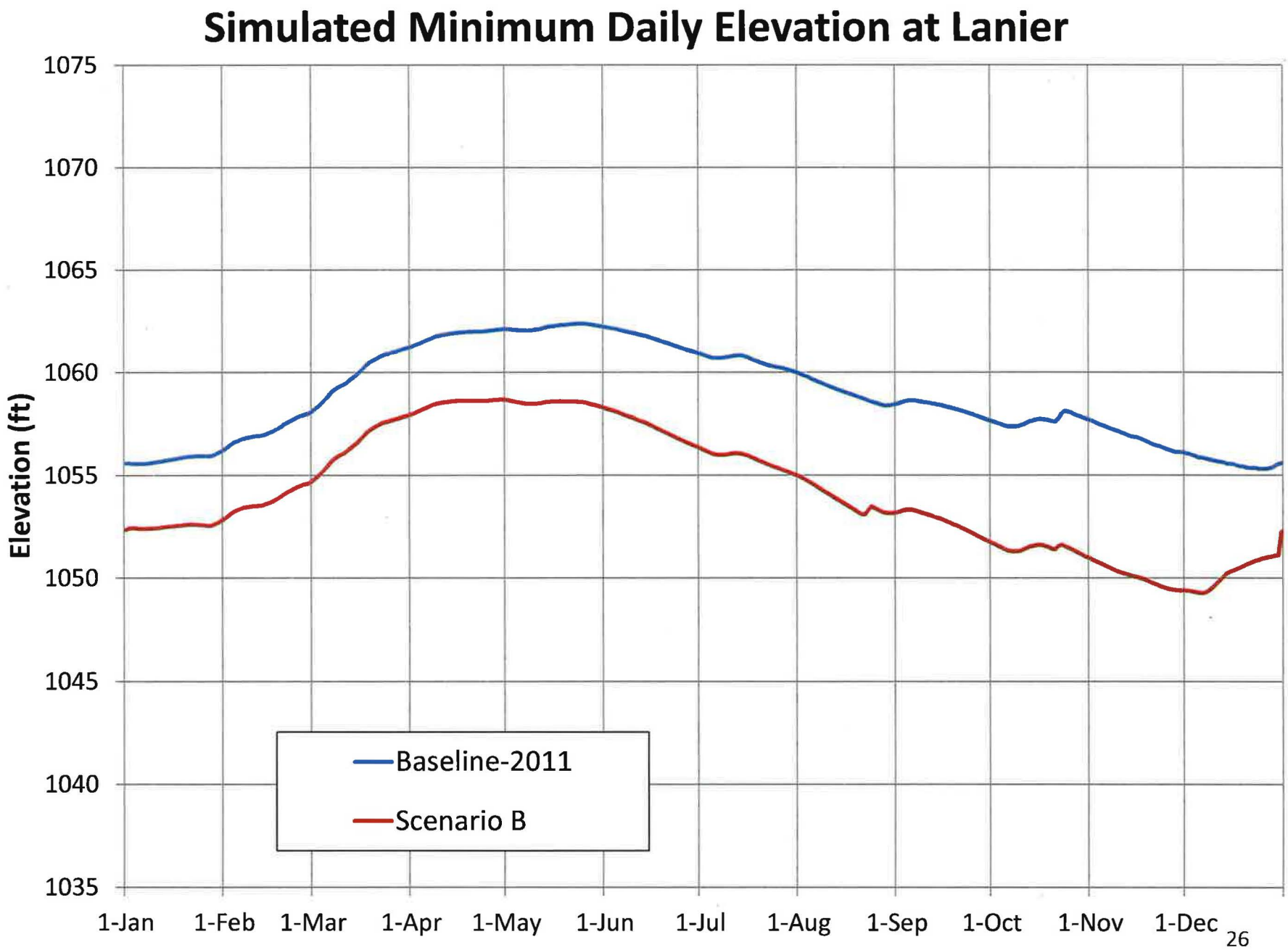
Duration Curve of State Line Flow



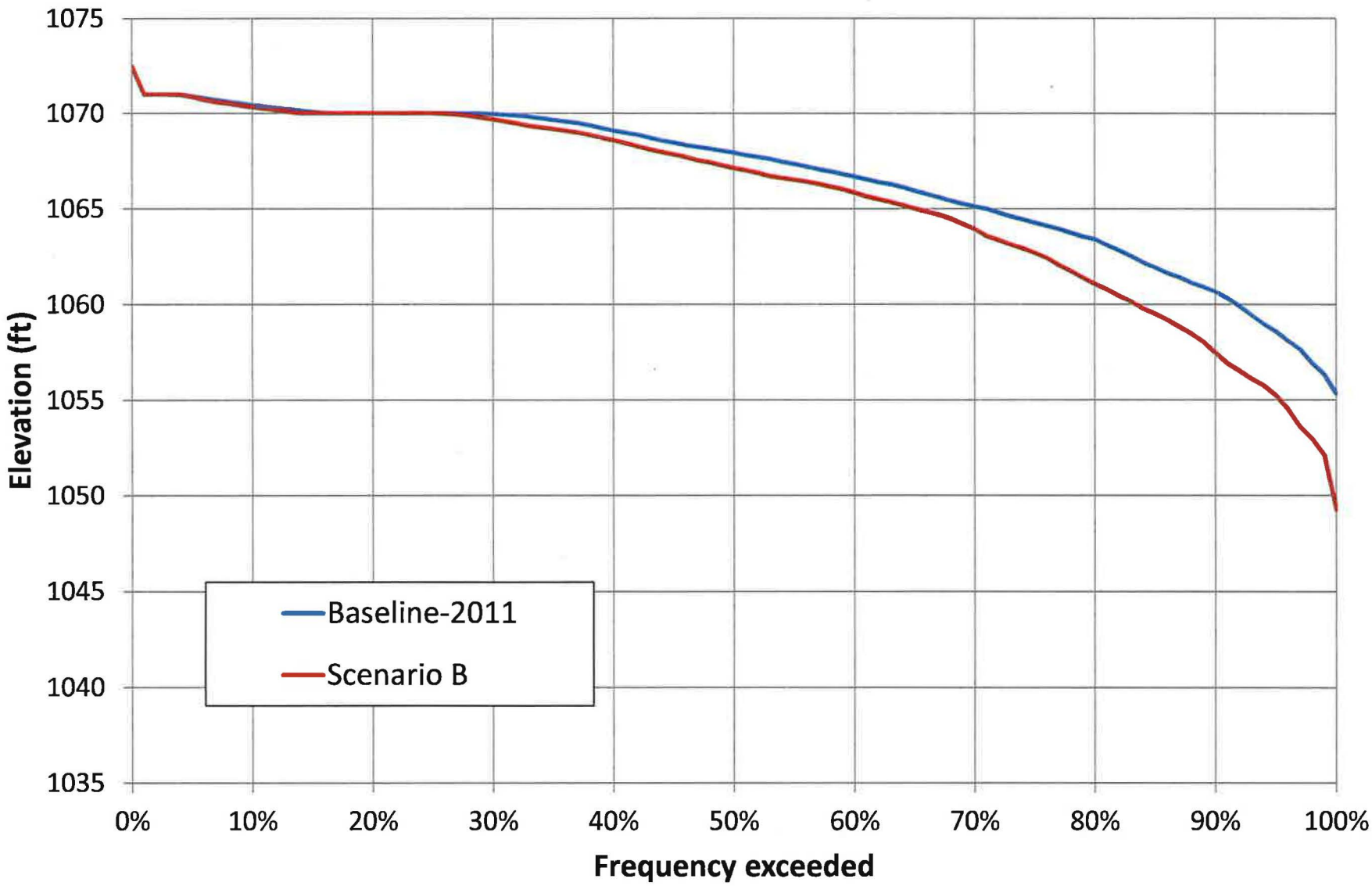
Scenario B vs. Baseline

Simulated Average Daily Elevation at Lanier

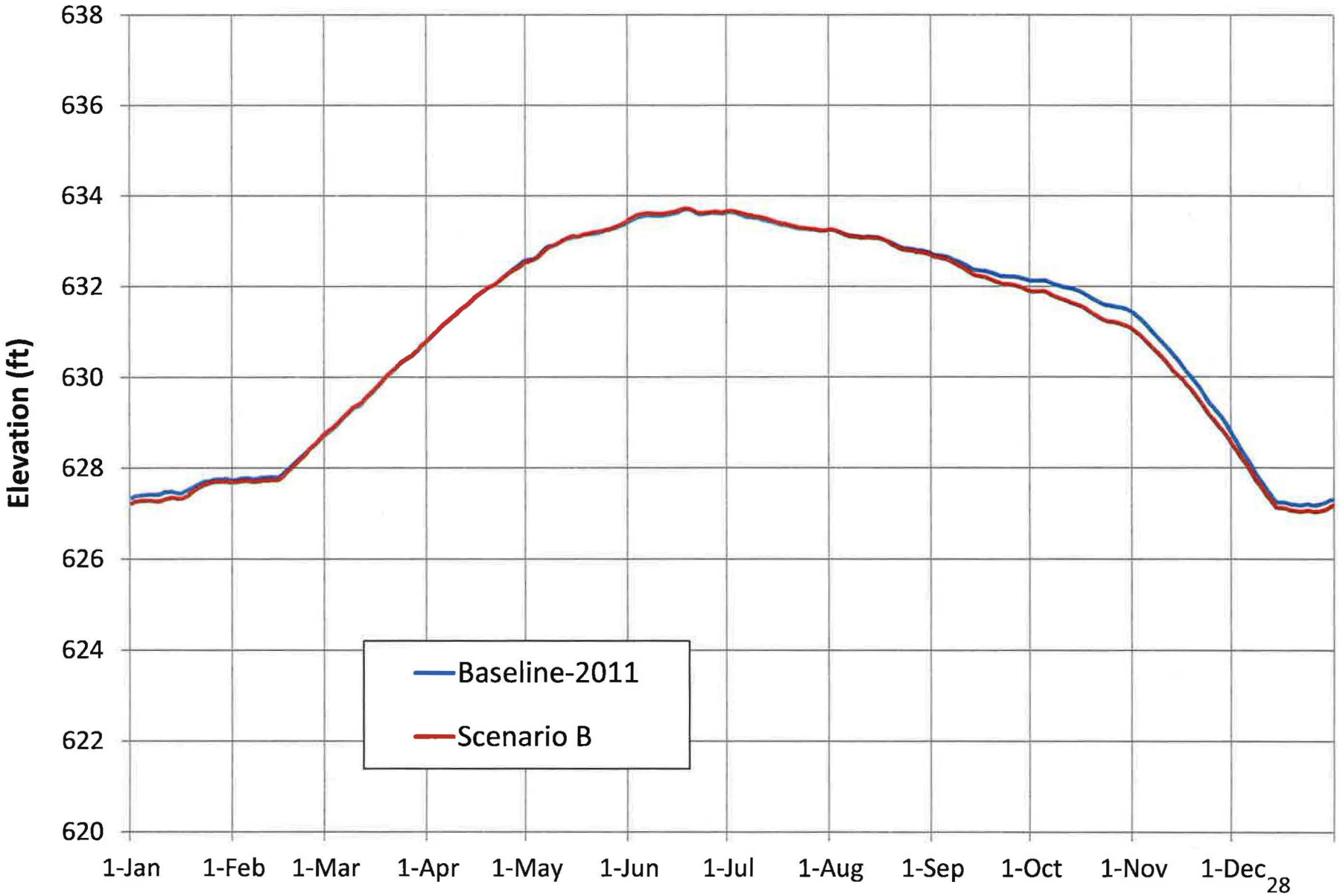


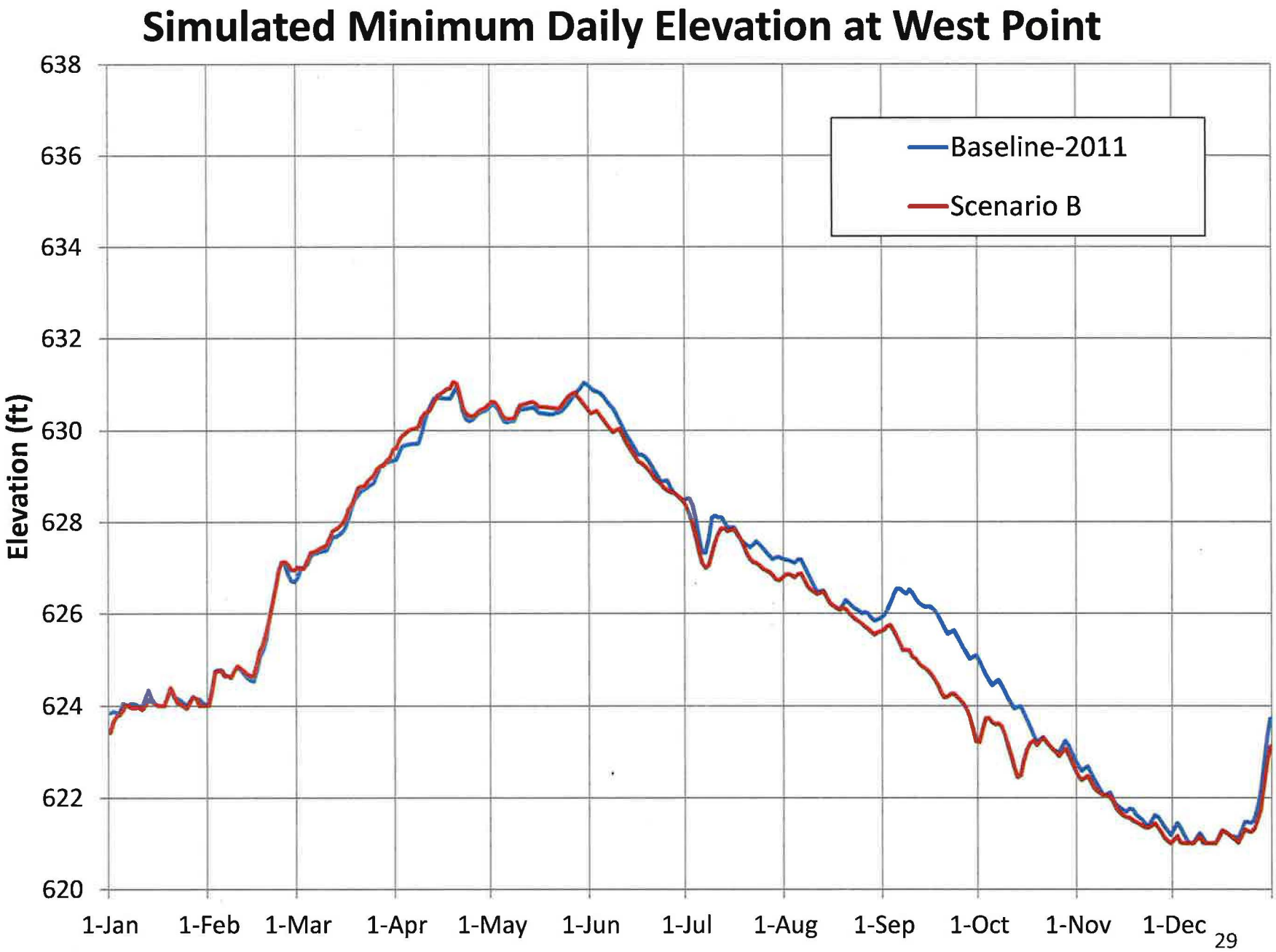

Simulated Minimum Daily Elevation at Lanier
Elevation (ft)
1075
1070
1065
1060
1055
1050
1045
1040
1035
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
Baseline-2011
Scenario B

Duration Curve of Lanier Elevation

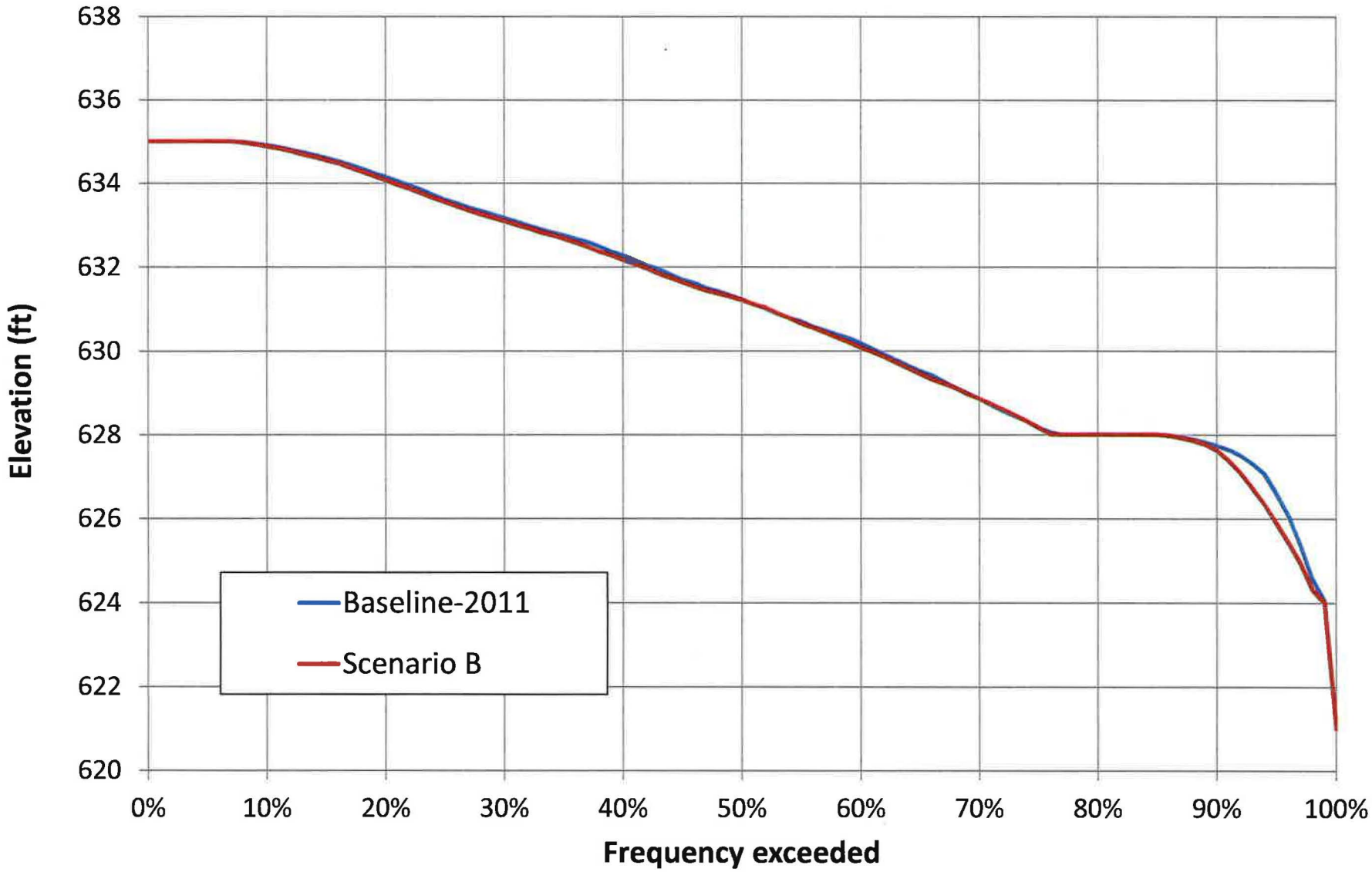


Simulated Average Daily Elevation at West Point

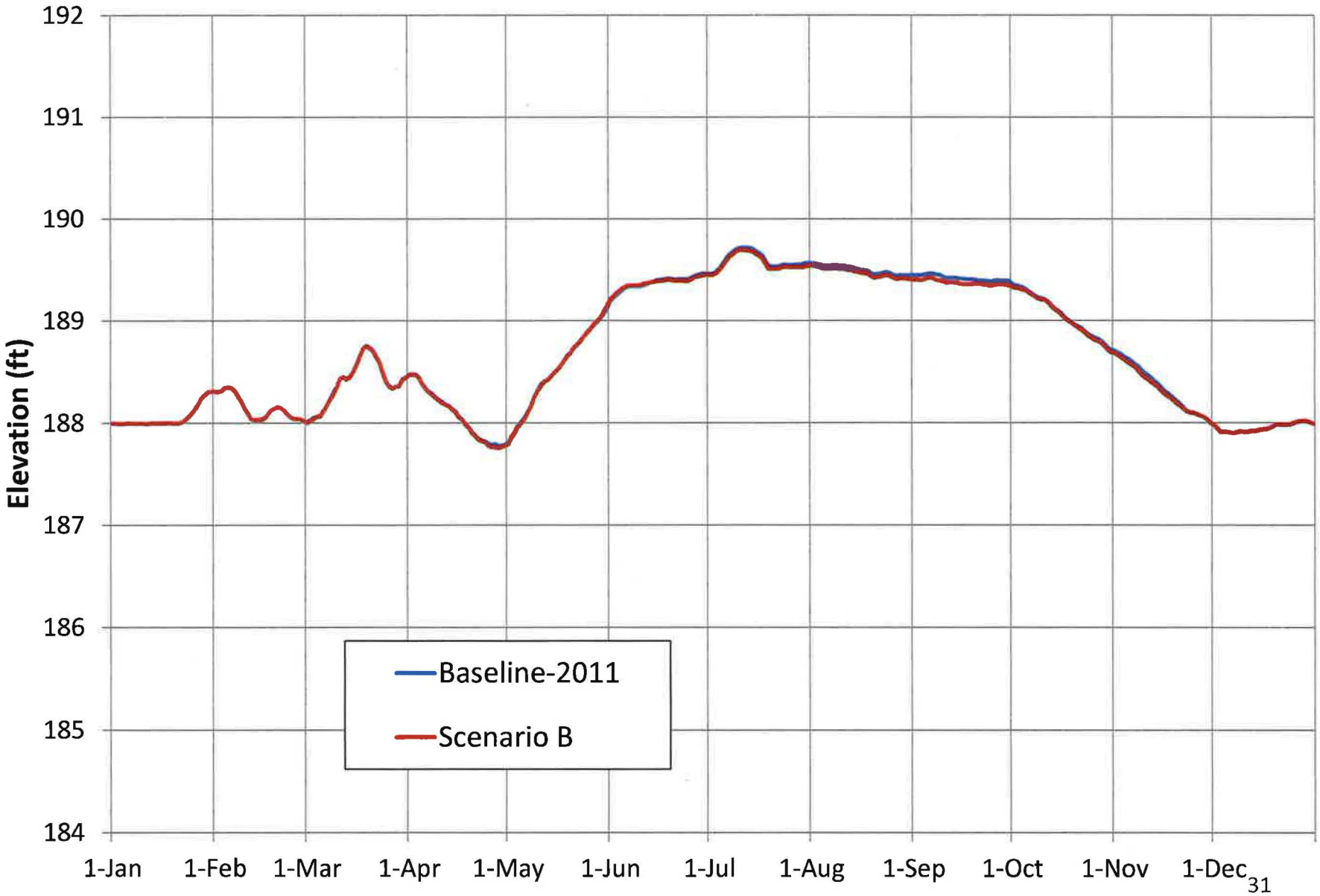


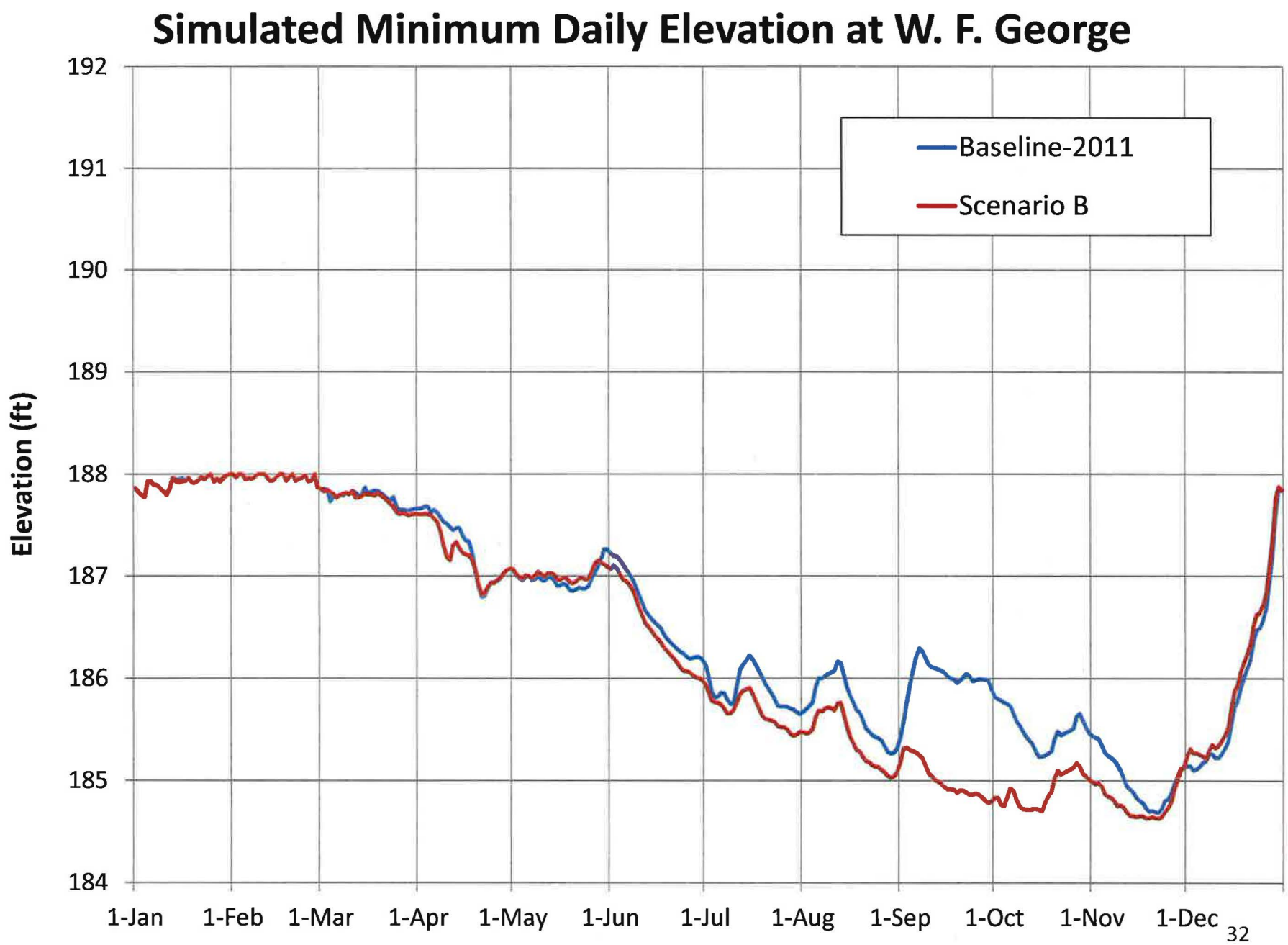

Simulated Minimum Daily Elevation at West Point
Elevation (ft)
638
636
634
632
630
628
626
624
622
620
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
Baseline-2011
Scenario B

Duration Curve of West Point Elevation

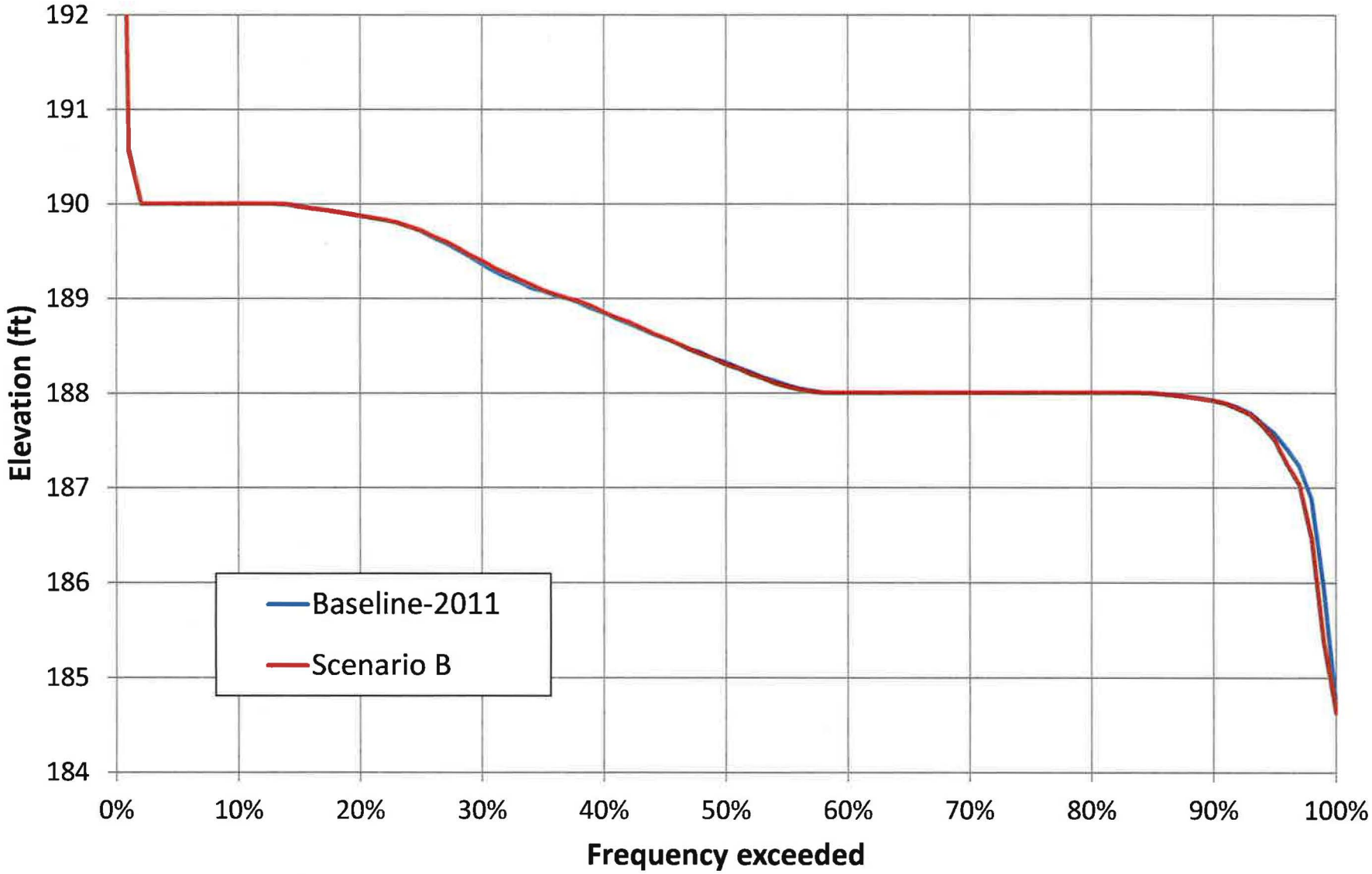


Simulated Average Daily Elevation at W. F. George

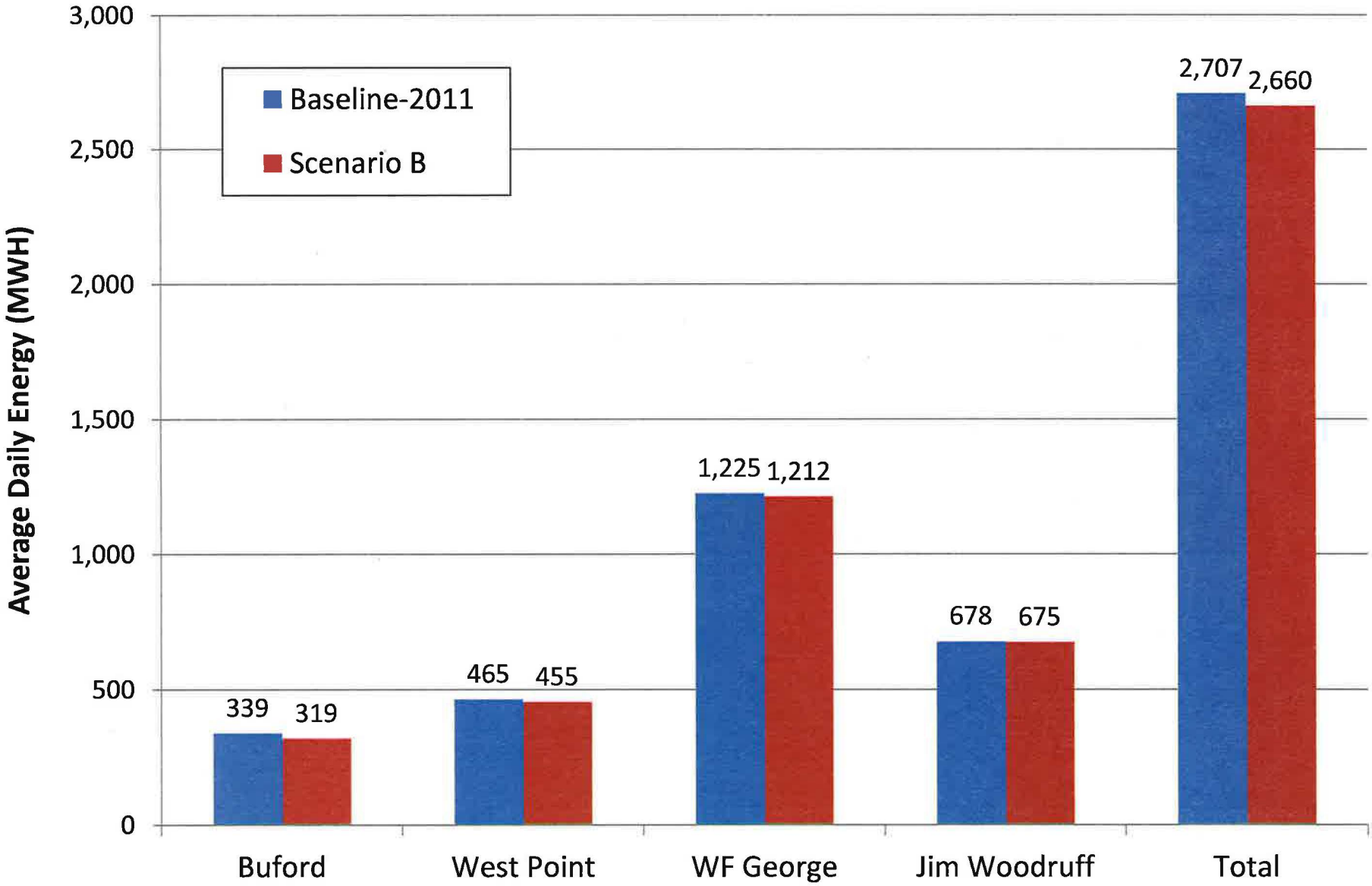


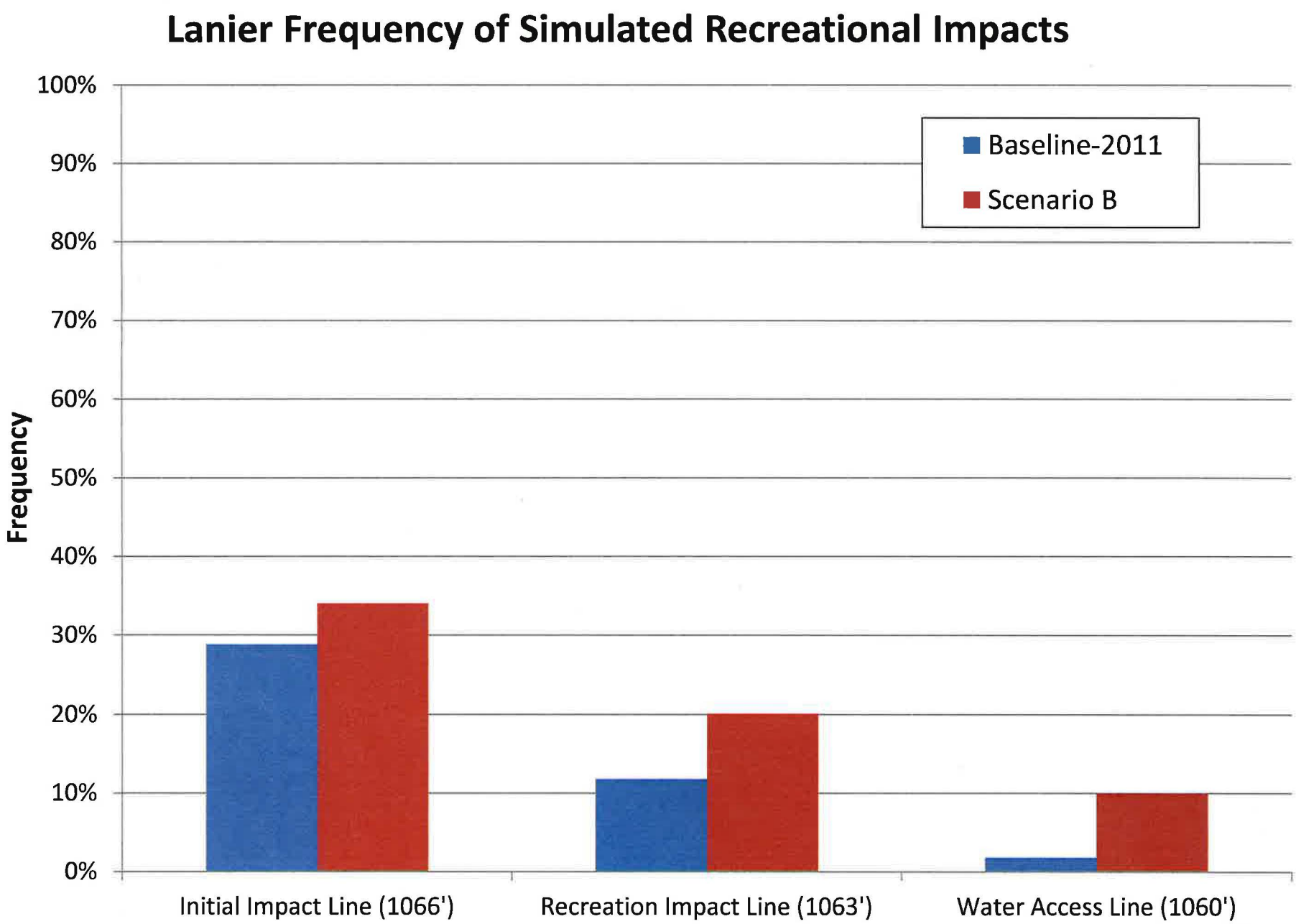

Simulated Minimum Daily Elevation at W. F. George
Elevation (ft)
192
191
190
189
188
187
186
185
184
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
Baseline-2011
Scenario B

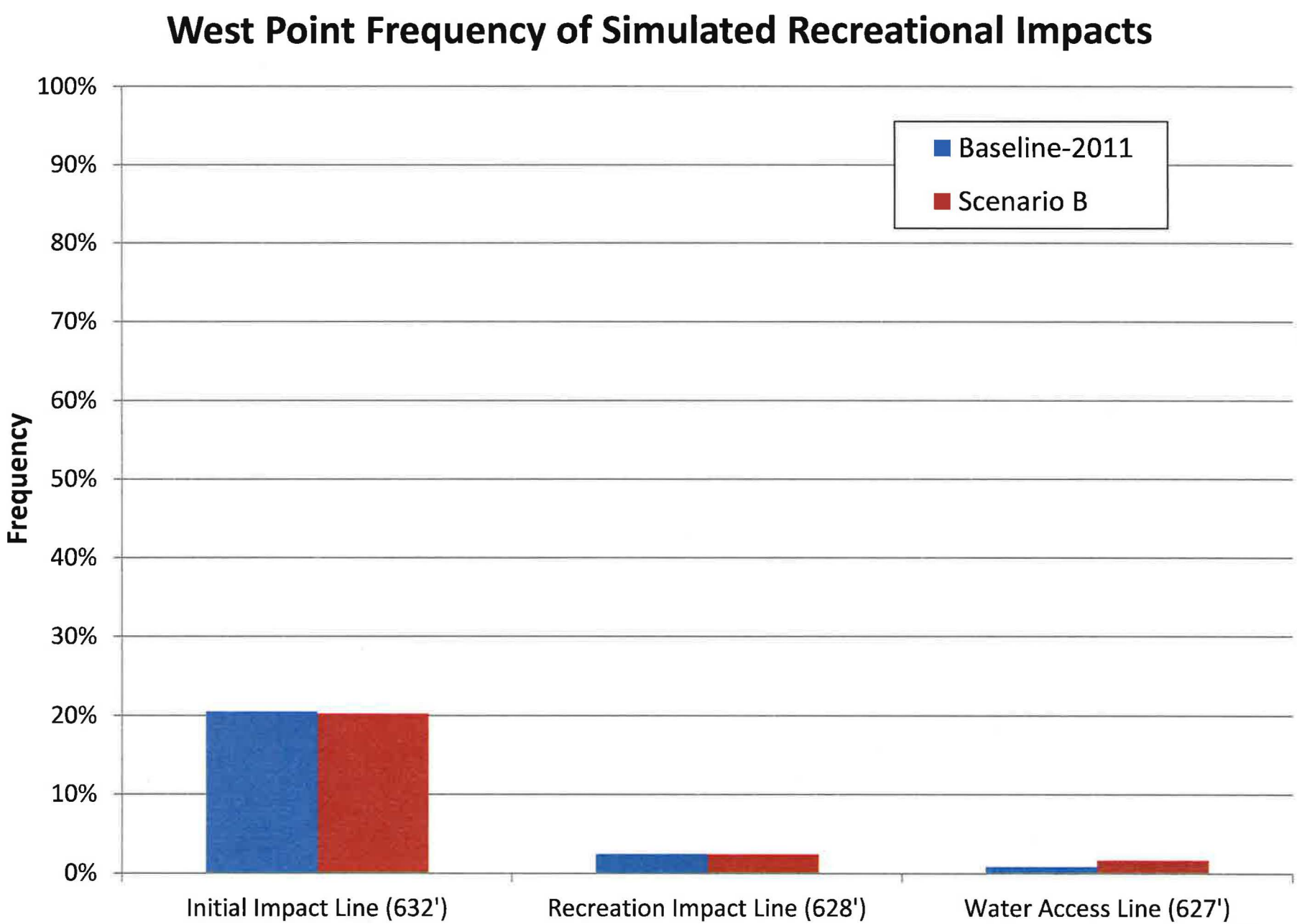
Duration Curve of W. F. George Elevation



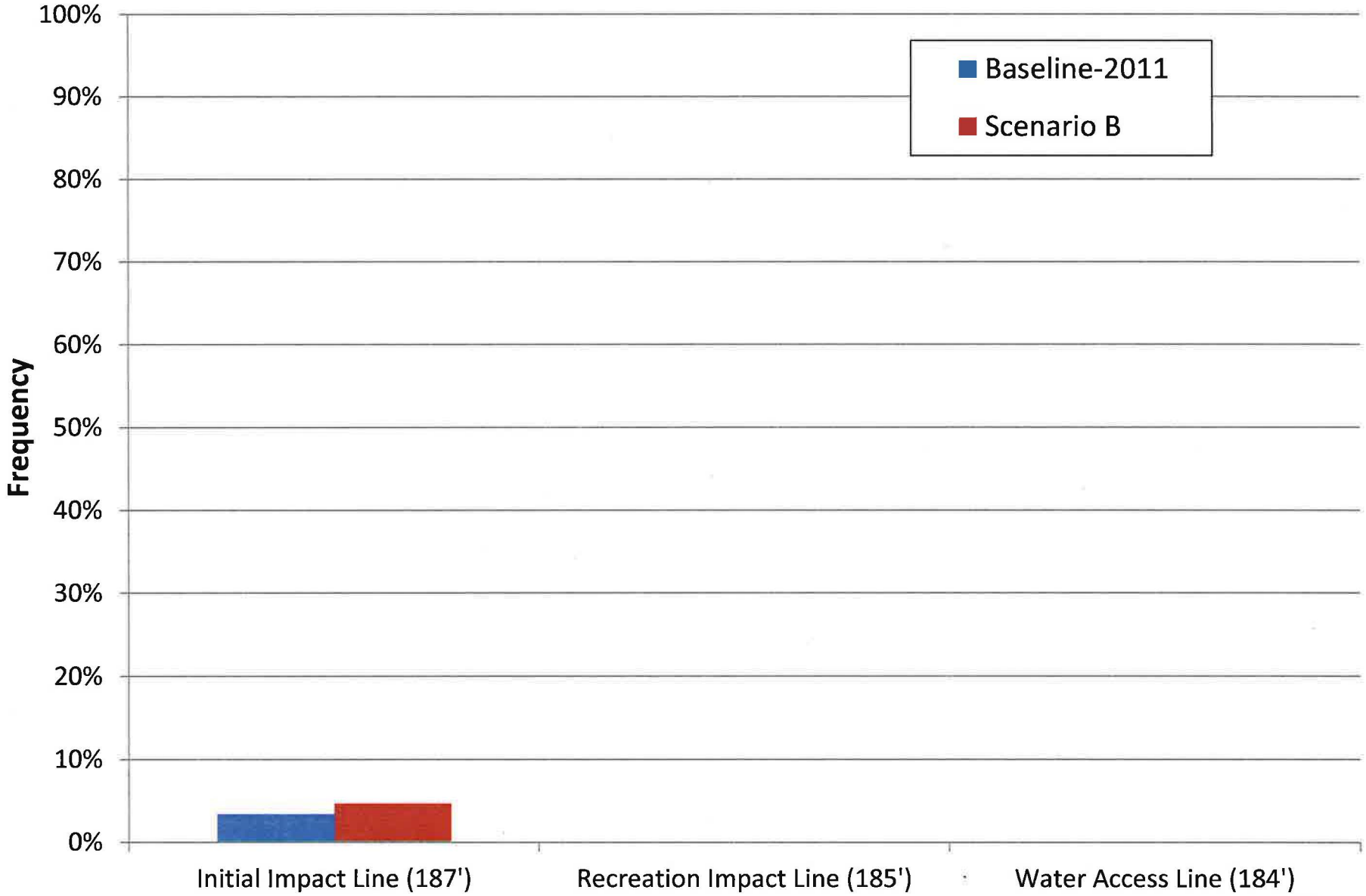
Simulated Power Generation at Federal Reservoirs in GA



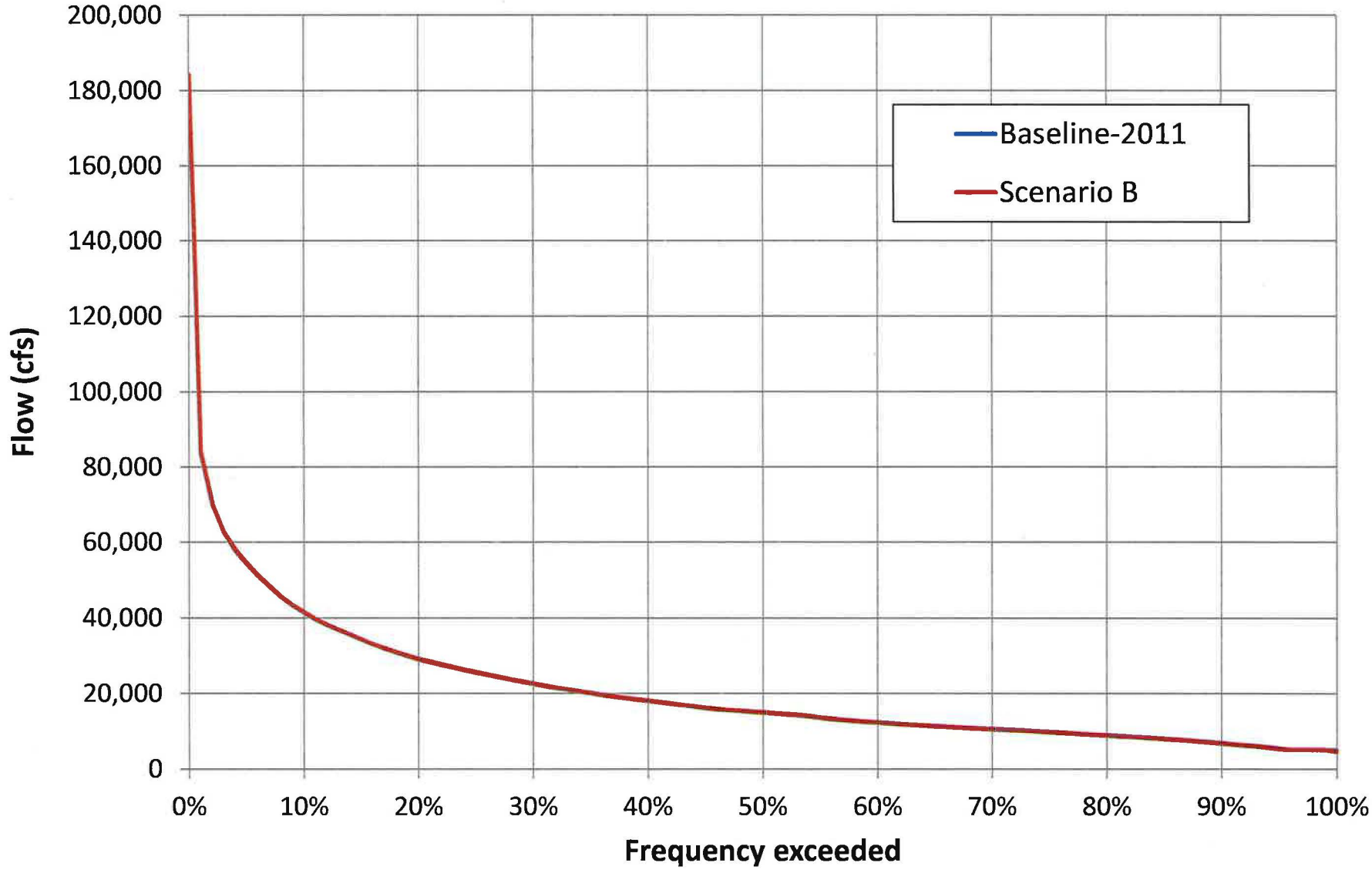

Lanier Frequency of Simulated Recreational Impacts
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Frequency
Baseline-2011
Scenario B
Initial Impact Line (1066')
Recreation Impact Line (1063')
Water Access Line (1060')


West Point Frequency of Simulated Recreational Impacts
Frequency
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Baseline-2011
Scenario B
Initial Impact Line (632')
Recreation Impact Line (628')
Water Access Line (627')

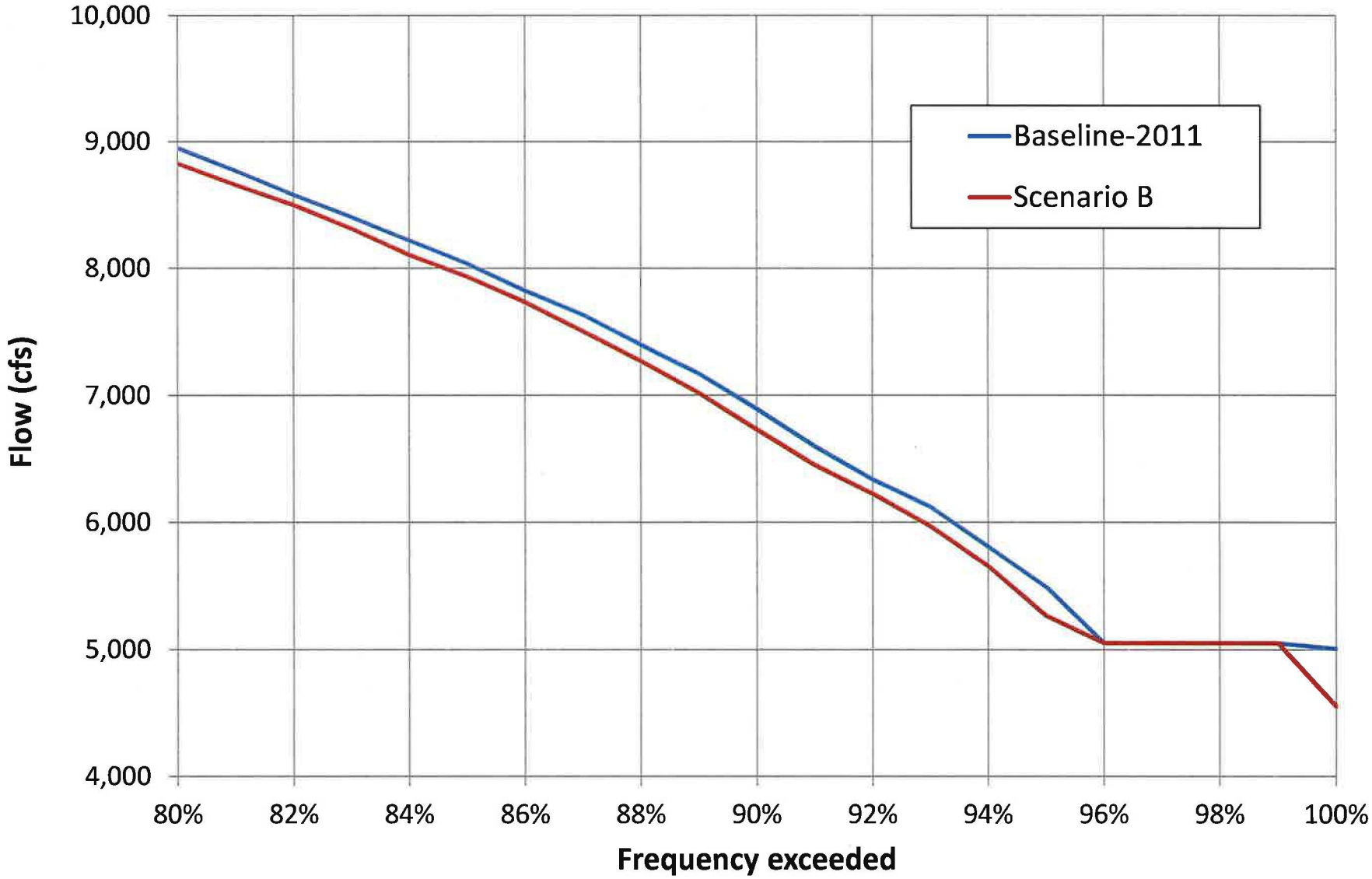
W. F. George Frequency of Simulated Recreational Impacts



Duration Curve of State Line Flow



Duration Curve of State Line Flow



HEC-ResSim Modeling Documentation for Glades Reservoir Draft Environmental Impact Statement

This appendix summarizes the components and model settings of the alternatives that were developed for this DEIS. Fourteen alternatives were created for the Glades DEIS in using the HEC-ResSim (ResSim) hydrologic modeling software. The background information, assumptions, and methodology for the hydrologic modeling for the Glades Reservoir EIS have been submitted to the Corps in previous memorandums (**Appendix U**). The information presented in this technical memo supersedes any previous modeling documentation.

In addition to the Applicant's Proposed Project, four groups of alternatives have been developed based on total Lake Lanier water supply allocation quantities of 18, 30, 43, and 60 mgd, respectively. As the allocation assumption affects the selection of the remaining components for meeting the unmet need (including the safe yield required for new reservoirs), each group of alternative includes multiple variations depending on the combination of components. Pass-through (PT) and pipeline (PL) transmission scenarios were considered for all reservoir sites, new water treatment plants (WTP) were considered where they could be constructed in Hall County (the White Creek site is located in White County). **Table 1** summarizes the Baseline Condition, Proposed Project, Action Alternatives (1-11), and the No Action Alternative based on the components described in Chapter 2.

Table 1. Summary of Alternatives Modeled in this DEIS[1]

Alternative #	Alternative ID	Lake Lanier Allocation (mgd)	Reservoir Site	Reservoir Safe Yield (mgd)	River Water Transmission System (to reservoir)	Reservoir Water Transmission System (to Lakeside WTP)	Reservoir Water Transmission System (to New WTP)
Baseline	L18	18	N/A	N/A	N/A		
No Action	L60	60	N/A	N/A	N/A		
Proposed	L18-G50-PT	18	Glades	50	X		
1	L18-G42-PT	18	Glades	42	X		
2	L18-G42-PL				X	X	
3	L18-G42-WTP				X		X
4	L30-G30-PT	30	Glades	30	X		
5	L30-G30-PL				X	X	
6	L30-G30-WTP				X		X
7	L43-G17-PT	43	Glades	17	X		
8	L43-G17-PL				X	X	
9	L43-G17-WTP				X		X
10	L43-W17-PT	43	White	17	X		
11	L43-W17-PL				X	X	

[1] N/A = Not Applicable

The alternatives were modeled in five individual model files in order to keep the size of the models manageable. **Table 2** lists the ResSim models that were created for this DEIS.

Table 2. Summary of ResSim Models

Model File Name	Model Nickname	Model Description
ACF_Glades EIS_G50_20150930	G50 Model	Models Without Glades scenarios (Baseline and No Action) and Glades Reservoir with a 50 mgd AAD yield
ACF_Glades EIS_G42_20150930	G42 Model	Models Glades Reservoir alternatives with a 42 mgd AAD yield
ACF_Glades EIS_G30_20150930	G30 Model	Models Glades Reservoir alternatives with a 30 mgd AAD yield
ACF_Glades EIS_G17_20150930	G17 Model	Models Glades Reservoir alternatives with a 17 mgd AAD yield
ACF_Glades EIS_W17_20150930	W17 Model	Models White Creek Reservoir alternatives with a 17 mgd AAD yield

Four networks were created to model the components of the alternatives. **Table 3** summarizes the networks and describes the transmission scenarios.

Table 3. Summary of Networks

Network	Network Description
Without Glades	This network does not include Glades or White Creek Reservoir. It is used for comparison of With-Glades and With-White Creek model results.
PT	This transmission option, also referred to as "pass-through" assumes that water supply from the proposed reservoir will be released downstream of the dam and will flow through Lake Lanier via Flat Creek. The water supplied from the Glades Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP.
PL	This transmission option, also referred to as "Pipeline" assumes that water from the proposed reservoir will be pumped directly to a WTP for treatment. The water supplied from the Glades Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP. The direct pumping transmission option includes a new raw water pump station at the proposed reservoir and a new raw water transmission main from the proposed reservoir to the existing Lakeside WTP.
WTP	This transmission option, also referred to as "Water Treatment Plant" assumes that water from the proposed reservoir will be pumped directly to a new WTP and will be treated at a new WTP located at the reservoir prior to distribution to the system. The direct pumping transmission option includes a new raw water pump station at the proposed reservoir and a new raw water transmission main from the proposed reservoir to the new WTP.

Table 4 summarizes the networks that were used to model each alternative, and it shows which alternatives are simulated in each ResSim model file. It is important to note that the components of each network vary slightly for each ResSim model. This is due to the maximum pumping capacities from the Chattahoochee River intakes that were assumed for each alternative. Additionally, the networks used for the White Creek alternatives in the W17 model file will model the White Creek Reservoir, and not Glades Reservoir. However, the same transmission operations and network parameters apply. **Attachment 1** describes the components of each network for each alternative.

Table 4. Summary of Networks used to Model Alternatives in Each ResSim Model File

Alternative #	Alternative ID	G50 Model	G42 Model	G30 Model	G17 Model	W17Model
Baseline	L18	Without Glades				
No Action	L60	Without Glades				
Proposed	L18-G50-PT	PT				
1	L18-G42-PT		PT			
2	L18-G42-PL		PL			
3	L18-G42-WTP		WTP			
4	L30-G30-PT			PT		
5	L30-G30-PL			PL		
6	L30-G30-WTP			WTP		
7	L43-G17-PT				PT	
8	L43-G17-PL				PL	
9	L43-G17-WTP				WTP	
10	L43-W17-PT					PT
11	L43-W17-PL					PL

The model used in this DEIS for the evaluation of the proposed project and its alternatives is based on the reservoir simulation model of the ACF River Basin, "ACF_WCM-August2010_USFWS_Final" developed by the Corps Mobile District using HEC-ResSim 3.1 RC2 Build 42.exe. This version of the ACF Basin model is also known as the "USACE May 2012 BiOp (Biological Opinion) Model." This model was obtained from Corps, and it reflects the Revised Interim Operating Plan (RIOP) for the ACF River Basin developed by the Corps Mobile District in 2008 (Biological Opinion on the U.S. Army Corps of Engineers, Mobile District, Revised Interim Operating Plan for Jim Woodruff Dam and the Associated Releases to the Apalachicola River, U.S. Fish and Wildlife Service, Panama City Field Office, Florida. May 22, 2012). To evaluate the hydrologic effects, the Corps' ResSim model of ACF River Basin was modified to include either Glades or White Creek Reservoir. **Attachment 1** documents the revisions made to the Corps' model for simulation of the DEIS alternatives. The elevation-storage–area relationship for Glades and White Creek Reservoirs are not the same relationships as used in the safe yield analysis model due to modeling calculation restrictions. The ResSim model uses a linear interpolation, while the safe yield analysis uses a regression analysis for interpolation.

The inputs that control the settings of each alternative are listed in **Attachment 2**. The settings in the Alternatives Editor (a component of the ResSim model) include the mapping of the Lookback settings, and the time-series mapping of each hydrologic and operational input.

Attachment 3 lists the monthly net consumptive water withdrawals each model node. The annual average demands are the same for every year simulated in the model. The Baseline Conditions use 2011 system wide demands, while the No Action Alternative and Action Alternatives use 2060 system wide

demands. The assumptions for the demand conditions are provided in the Summary of HEC-ResSim Coordination with Corps Mobile District and HEC (**Appendix U**).

New modeling scripts known as 'State variables" were created in order to simulate the alternatives. The code that was developed for each State Variable is shown in **Attachment 4**.

Attachments:

Attachment 1: DEIS Alternatives HEC-ResSim Model Documentation

Attachment 2: Alternatives Editor Model Settings

Attachment 3: Monthly Net Consumptive Water Withdrawals

Attachment 4: Documentation of State Variable Scripts

DRAFT

ATTACHMENT 1

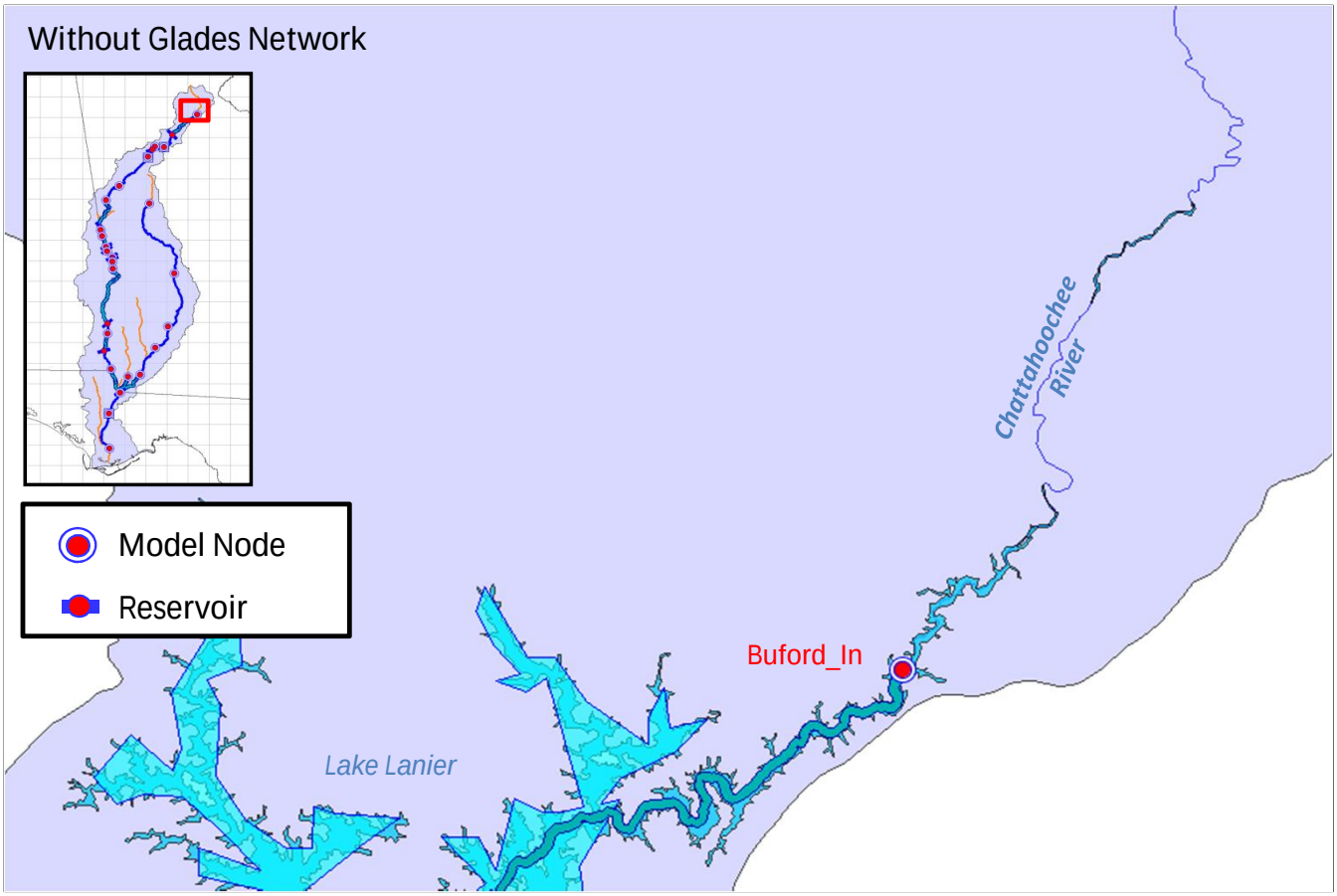
DEIS Alternatives HEC-ResSim Model Documentation

DRAFT

Baseline Conditions

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Baseline	L18	L18	Without Glades

Network



Network Description: Baseline Pre-Glades Network. ACF 2008 "Existing" Operations. Moved Buford_In node downstream of Flat Creek.

Diversions

Not Applicable (N/A)

Reservoir Properties

Not Applicable (N/A)

Baseline Conditions

Alternative Editor

Alternative Description:

Without-Glades Scenario with 2011 withdrawals.

Hall County Lake Lanier Allocaiton = 18 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:

- [ ] Program Determined
- [x] Period Average
- [ ] Instantaneous

- [x] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Not Applicable (N/A)

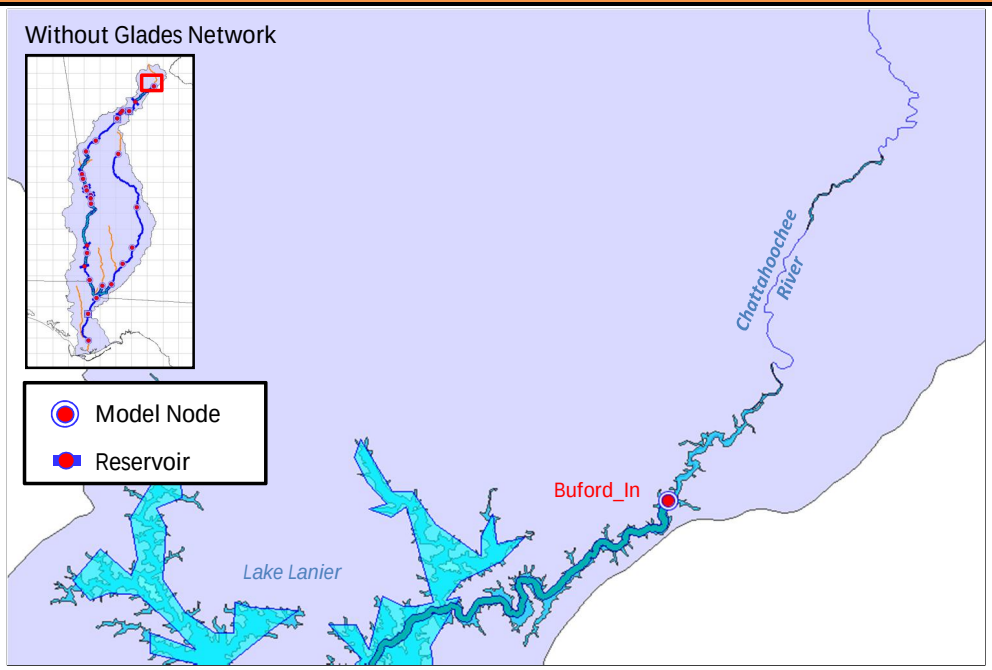
Time-Series

Not Applicable (N/A)

No Action Alternative (L60)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
No Action	L60	L60	Without Glades

Network



Network Description: Baseline Pre-Glades Network. ACF 2008 "Existing" Operations. Moved Buford_In node downstream of Flat Creek.

Diversions

Not Applicable (N/A)

Reservoir Properties

Not Applicable (N/A)

No Action Alternative (L60)

Alternative Editor

Alternative Description:

Without-Glades Scenario with 2060 withdrawals.

Hall County Lake Lanier Allocaiton = 60 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:

- [ ] Program Determined
- [x] Period Average
- [ ] Instantaneous

- [x] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Not Applicable (N/A)

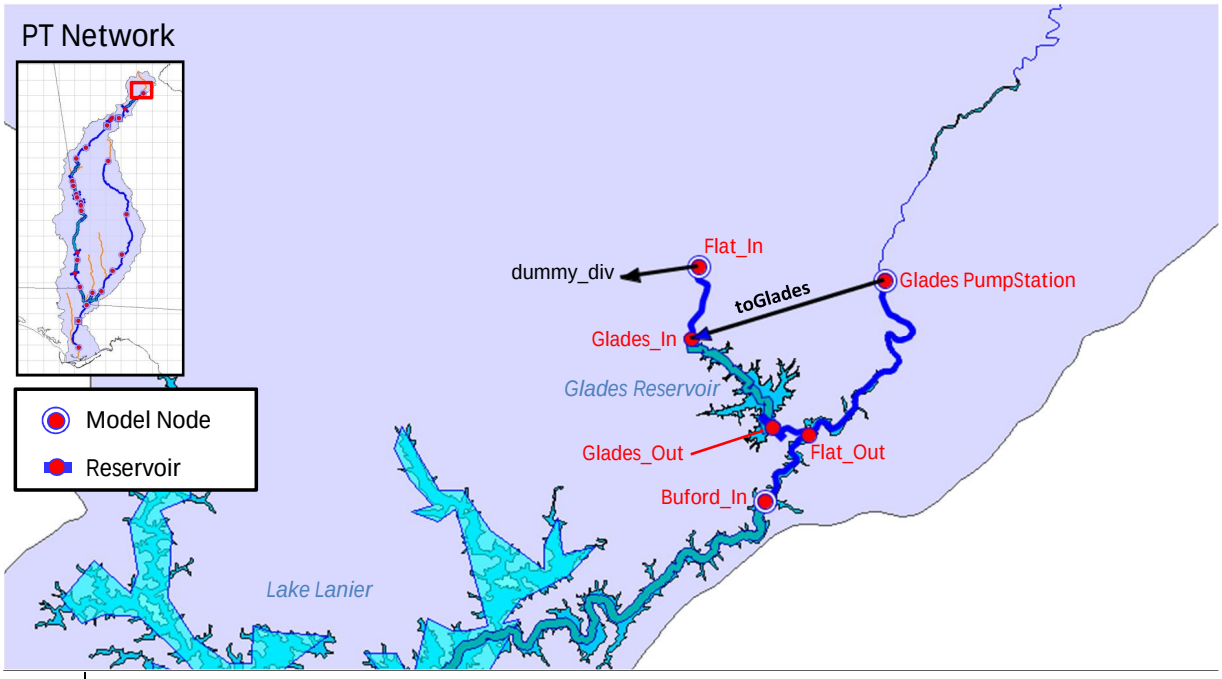
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE USE

Proposed Project (L18-G50-PT)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Proposed	L18-G50-PT	L18-G50PT	PT

Network



Network Description: Annual Average daily withdrawal of 50 MGD from Glades Reservoir with a PT transmission option. This transmission option, also referred to as "pass-through" assumes that water supply from the proposed reservoir will be released downstream of the dam and will flow through Lake Lanier via Flat Creek. The water supplied from the Glades Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 37 mgd (57.24 cfs).

Diversions

dummy_div

Node: Flat_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: Glades PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoG50PT, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
57.24	57.24

Independent Variable Definition
Release is a Function of: State Variable

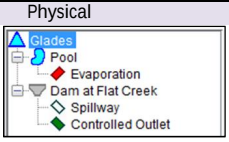
State Variable Name	Parameter Name	Parameter Type
PumptoG50PT	Flow	Flow

Time Series Options
Function: Current Value

Proposed Project (L18-G50-PT)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

Glades-Pool

Glades: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100
1,180	100	0	100
1,182	100	3,224.40	3,324.40
1,184	100	9,120.00	9,220.00
1,186	100	16,754.50	16,854.50
1,188	100	25,795.30	25,895.30
1,190	100	36,050.00	36,150.00
1,192	100	47,388.90	47,488.90
1,194	100	59,716.90	59,816.90
1,196	100	72,960.00	73,060.00
1,198	100	87,059.00	87,159.00
1,200	100	101,964.70	102,064.70
1,220	100	101,964.70	102,064.70

Glades-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,080	-	-
1,090	149	22
1,100	787	66
1,110	2,069	126
1,120	4,100	200
1,130	6,962	285
1,140	10,726	380
1,150	15,454	485
1,160	21,202	600
1,170	28,019	723
1,180	35,953	854
1,190	45,047	993
1,200	55,342	1,140

Glades-Pool-Evaporation [X] Evaporation Time Series

Glades-Dam at Flat Creek

Glades-Dam at Flat Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100
1,180	100	0	100
1,182	100	3,224.40	3,324.40
1,184	100	9,120.00	9,220.00
1,186	100	16,754.50	16,854.50
1,188	100	25,795.30	25,895.30
1,190	100	36,050.00	36,150.00
1,192	100	47,388.90	47,488.90
1,194	100	59,716.90	59,816.90
1,196	100	72,960.00	73,060.00
1,198	100	87,059.00	87,159.00
1,200	100	101,964.70	102,064.70
1,220	100	101,964.70	102,064.70

Glades-Dam at Flat Creek:
Elevation at top of dam (ft): 1195
Length at top of dam (ft): 1000

Glades-Dam at Flat Creek-Spillway:
Outlet Elevation (ft): 1180
Weir Coeffcient: 3.8
Length (ft): 300

Glades-Dam at Flat Creek-Controlled Outlet:
Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	100	100
1220	100	100

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1195	---
Conservation	Date	01Jan	1180	---
Inactive	Date	01Jan	1125.5	Note: Actual inactive storage is 1130.5, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

Glades WS Release

Operates Release From: Glades-Controlled Outlet
Rule Description: ---
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Independent Variable Definition
Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options
Function: Current Value

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Proposed Project (L18-G50-PT)

Alternative Editor

Alternative Description:

With-Glades Scenario with 2060 withdrawals. Glades = 50 mgd, AAD.

Transmission Scenario = PT

Hall County Lake Lanier Allocation = 18 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:

- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Glades	Baseline
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Location	Variable	Type	Default Value
Glades-Pool	Lookback Elevation	Constant	1180
Glades-Pool	Lookback Storage	Computed	
Glades-Spillway	Lookback Spill	Constant	0
Glades-Controlled Outlet	Lookback Release	Constant	0
toGlades-toGlades Cntrl	Lookback Diversion	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
PumptoG50PT	Lookback State Variable	Constant	

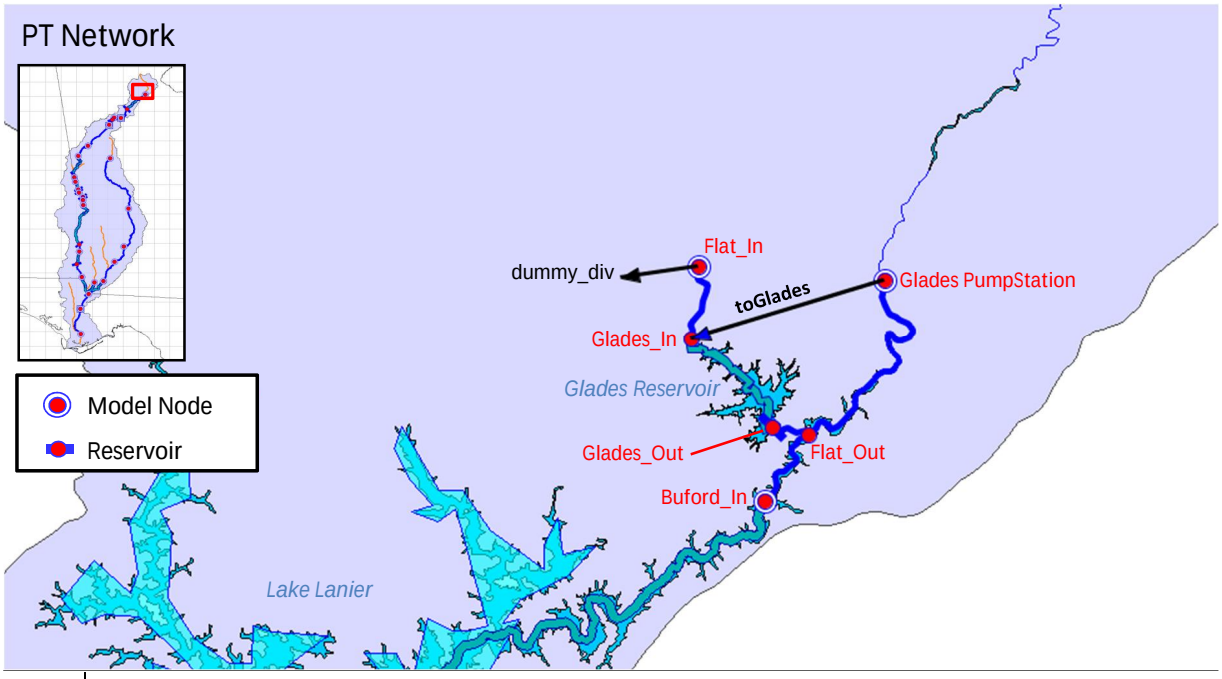
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_374	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI
Flat_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR
Hall Co WD	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	50 MGD
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 APPLICANTS
Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Hall Co Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	50 MGD

Alt 1 (L18-G42-PT)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 1	L18-G42-PT	L18-G42PT	PT

Network



Network Description: Annual Average daily withdrawal of 42 MGD from Glades Reservoir with a PT transmission option. This transmission option, also referred to as "pass-through" assumes that water supply from the proposed reservoir will be released downstream of the dam and will flow through Lake Lanier via Flat Creek. The water supplied from the Glades Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 28 mgd (43.32 cfs).

Diversions

dummy_div

Node: Flat_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: Glades PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoG42PT, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
43.32	43.32

Independent Variable Definition
Release is a Function of: State Variable

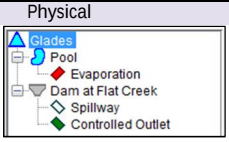
State Variable Name	Parameter Name	Parameter Type
PumptoG42PT	Flow	Flow

Time Series Options
Function: Current Value

Alt 1 (L18-G42-PT)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

Glades-Pool

Glades: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100
1,180	100	0	100
1,182	100	3,224.40	3,324.40
1,184	100	9,120.00	9,220.00
1,186	100	16,754.50	16,854.50
1,188	100	25,795.30	25,895.30
1,190	100	36,050.00	36,150.00
1,192	100	47,388.90	47,488.90
1,194	100	59,716.90	59,816.90
1,196	100	72,960.00	73,060.00
1,198	100	87,059.00	87,159.00
1,200	100	101,964.70	102,064.70
1,220	100	101,964.70	102,064.70

Glades-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,080	-	-
1,090	149	22
1,100	787	66
1,110	2,069	126
1,120	4,100	200
1,130	6,962	285
1,140	10,726	380
1,150	15,454	485
1,160	21,202	600
1,170	28,019	723
1,180	35,953	854
1,190	45,047	993
1,200	55,342	1,140

Glades-Pool-Evaporation [X] Evaporation Time Series

Glades-Dam at Flat Creek

Glades-Dam at Flat Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100
1,180	100	0	100
1,182	100	3,224.40	3,324.40
1,184	100	9,120.00	9,220.00
1,186	100	16,754.50	16,854.50
1,188	100	25,795.30	25,895.30
1,190	100	36,050.00	36,150.00
1,192	100	47,388.90	47,488.90
1,194	100	59,716.90	59,816.90
1,196	100	72,960.00	73,060.00
1,198	100	87,059.00	87,159.00
1,200	100	101,964.70	102,064.70
1,220	100	101,964.70	102,064.70

Glades-Dam at Flat Creek:
Elevation at top of dam (ft): 1195
Length at top of dam (ft): 1000

Glades-Dam at Flat Creek-Spillway:
Outlet Elevation (ft): 1180
Weir Coeffcient: 3.8
Length (ft): 300

Glades-Dam at Flat Creek-Controlled Outlet:
Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	100	100
1220	100	100

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1195	---
Conservation	Date	01Jan	1180	---
Inactive	Date	01Jan	1125.5	Note: Actual inactive storage is 1130.5, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

Glades WS Release

Operates Release From: Glades-Controlled Outlet
Rule Description: ---
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Independent Variable Definition
Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options
Function: Current Value

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Alt 1 (L18-G42-PT)

Alternative Editor

Alternative Description:

With-Glades Scenario with 2060 withdrawals. Glades = 42 mgd, AAD.

Transmission Scenario = PT

Hall County Lake Lanier Allocation = 18 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:

- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Glades	Baseline
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Location	Variable	Type	Default Value
Glades-Pool	Lookback Elevation	Constant	1180
Glades-Pool	Lookback Storage	Computed	
Glades-Spillway	Lookback Spill	Constant	0
Glades-Controlled Outlet	Lookback Release	Constant	0
toGlades-toGlades Cntrl	Lookback Diversion	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
PumptoG42PT	Lookback State Variable	Constant	

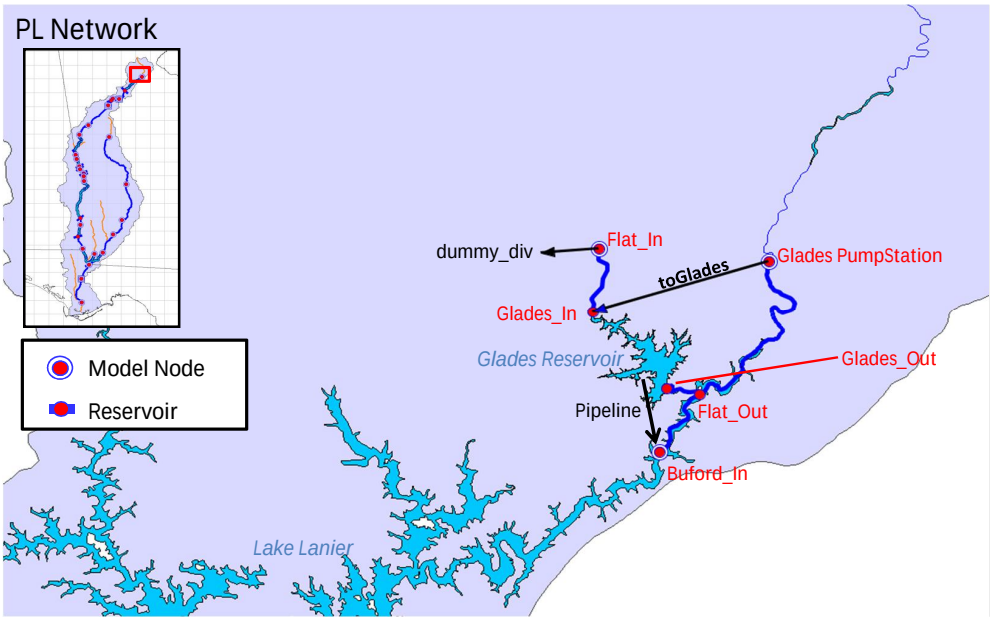
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_374	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI
Flat_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR
Hall Co WD	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	42 MGD
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L18
Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Hall Co Water Supply WD	Input Time S	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	42 MGD

Alt 2 (L18-G42-PL)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 2	L18-G42-PL	L18-G42PL	PL

Network



Network Description: Annual Average daily withdrawal of 42 MGD from Glades Reservoir with a PL transmission option. This transmission option, also referred to as "Pipeline" assumes that water from the proposed reservoir will be pumped directly to a WTP for treatment. The water supplied from the Glades Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP. The direct pumping transmission option includes a new raw water pump station at the proposed reservoir and a new raw water transmission main from the proposed reservoir to the existing Lakeside WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 31 mgd (47.96 cfs).

Diversions

dummy_div

Node: Flat_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: Glades PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoG42PL, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
47.96	47.96

Independent Variable Definition
Release is a Function of: State Variable

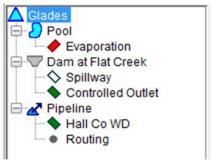
State Variable Name	Parameter Name	Parameter Type
PumptoG42PL	Flow	Flow

Time Series Options
Function: Current Value

Alt 2 (L18-G42-PL)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

Glades-Pool

Glades: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	104.6	0	104.60
1,180	104.6	0	104.60
1,182	104.6	3,224.40	3,329.00
1,184	104.6	9,120.00	9,224.60
1,186	104.6	16,754.50	16,859.10
1,188	104.6	25,795.30	25,899.90
1,190	104.6	36,050.00	36,154.60
1,192	104.6	47,388.90	47,493.50
1,194	104.6	59,716.90	59,821.50
1,196	104.6	72,960.00	73,064.60
1,198	104.6	87,059.00	87,163.60
1,200	104.6	101,964.70	102,069.30
1,220	104.6	101,964.70	102,069.30

Glades-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,080	-	-
1,090	149	22
1,100	787	66
1,110	2,069	126
1,120	4,100	200
1,130	6,962	285
1,140	10,726	380
1,150	15,454	485
1,160	21,202	600
1,170	28,019	723
1,180	35,953	854
1,190	45,047	993
1,200	55,342	1,140

Glades-Pool-Evaporation [X] Evaporation Time Series

Glades-Dam at Flat Creek

Glades-Dam at Flat Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	4.6	0	4.60
1,180	4.6	0	4.60
1,182	4.6	3,224.40	3,229.00
1,184	4.6	9,120.00	9,124.60
1,186	4.6	16,754.50	16,759.10
1,188	4.6	25,795.30	25,799.90
1,190	4.6	36,050.00	36,054.60
1,192	4.6	47,388.90	47,393.50
1,194	4.6	59,716.90	59,721.50
1,196	4.6	72,960.00	72,964.60
1,198	4.6	87,059.00	87,063.60
1,200	4.6	101,964.70	101,969.30
1,220	4.6	101,964.70	101,969.30

Glades-Dam at Flat Creek:

Elevation at top of dam (ft): 1195
Length at top of dam (ft): 1000

Glades-Dam at Flat Creek-Spillway:

Outlet Elevation (ft): 1180
Weir Coeffcient: 3.8
Length (ft): 300

Glades-Dam at Flat Creek-Controlled Outlet:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	4.6	4.6
1220	4.6	4.6

Glades-Pipeline

Glades-Pipeline: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100.00
1,220	100	0	100.00

Glades-Pipeline-Hall Co WD:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	100	100
1220	100	100

Glades-Pipeline-Routing:

Routing	Losses
Method: Null Routing	Constant Seepage (cfs):

Alt 2 (L18-G42-PL)

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1195	---
Conservation	Date	01Jan	1180	---
Inactive	Date	01Jan	1125.5	Note: Actual inactive storage is 1130.5, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

Flat Creek MIF

Operates: Glades-Controlled Outlet
Function of: Flat_In Flat_Ck_LOC Flow, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Flow (cfs)	Release (cfs)
0	0
4.6	4.6
10,000	4.6

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Flat_In Flat_Ck_LOC	junction	Flow

Time Series Options
Function: Current Value

Glades Yield Release

Operates Release From: Glades-Hall Co WD
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Independent Variable Definition
Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options
Function: Current Value

Alternative Editor

Alternative Description:

With-Glades Scenario with 2060 withdrawals. Glades = 42 mgd, AAD.

Transmission Scenario = PL

Hall County Lake Lanier Allocation = 18 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:
- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Alt 2 (L18-G42-PL)

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Glades	Baseline
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Location	Variable	Type	Default Value
Glades-Pool	Lookback Elevation	Constant	1180
Glades-Pool	Lookback Storage	Computed	
Glades-Spillway	Lookback Spill	Constant	0
Glades-Controlled Outlet	Lookback Release	Constant	4.6
Glades-Hall Co WD	Lookback Release	Constant	
toGlades-toGlades Cntrl	Lookback Diversion	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
PumptoG42PL	Lookback State Variable	Constant	

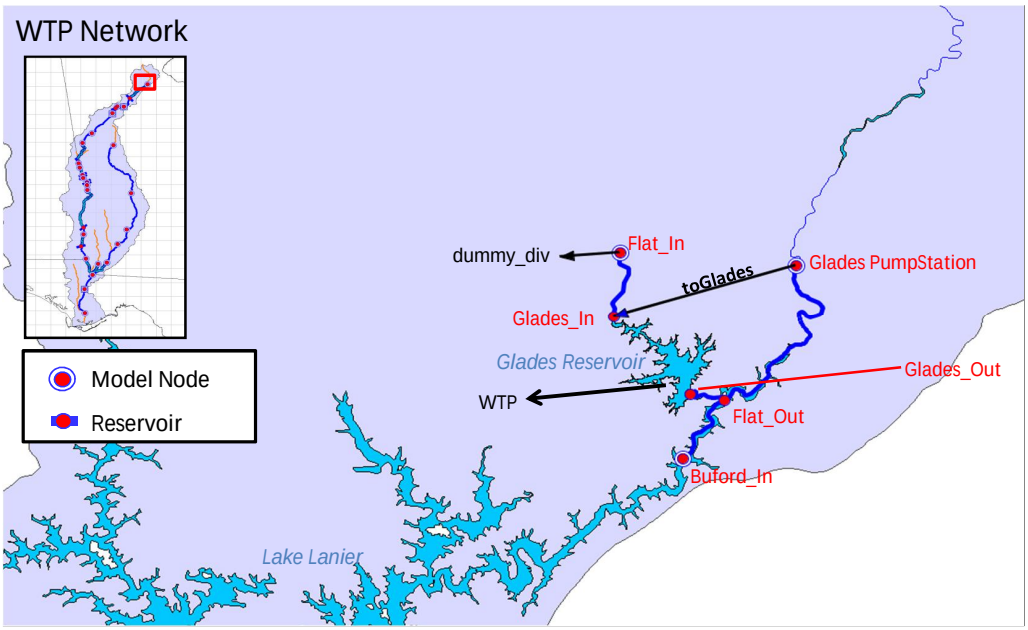
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_374	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI
Flat_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR
Hall Co WD	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	42 MGD
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L18
Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Glades-Hall Co WD	Lookback Release	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	42 MGD
Hall Co Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	42 MGD

Alt 3 (L18-G42-WTP)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 3	L18-G42-WTP	L18-G42WTP	WTP

Network



Network Description: Annual Average daily withdrawal of 42 MGD from Glades Reservoir with a WTP transmission option. This transmission option, also referred to as "Water Treatment Plant" assumes that water from the proposed reservoir will be pumped directly to a new WTP and will be treated at a new WTP located at the reservoir prior to distribution to the system. T The direct pumping transmission option includes a new raw water pump station at the proposed reservoir and a new raw water transmission main from the proposed reservoir to the new WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 31 mgd (47.96 cfs).

Diversions

dummy_div

Node: Flat_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: Glades PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoG42WTP, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
47.96	47.96

Independent Variable Definition
Release is a Function of: State Variable

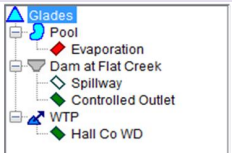
State Variable Name	Parameter Name	Parameter Type
PumptoG42WTP	Flow	Flow

Time Series Options
Function: Current Value

Alt 3 (L18-G42-WTP)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

Glades-Pool

Glades: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	104.6	0	104.60
1,180	104.6	0	104.60
1,182	104.6	3,224.40	3,329.00
1,184	104.6	9,120.00	9,224.60
1,186	104.6	16,754.50	16,859.10
1,188	104.6	25,795.30	25,899.90
1,190	104.6	36,050.00	36,154.60
1,192	104.6	47,388.90	47,493.50
1,194	104.6	59,716.90	59,821.50
1,196	104.6	72,960.00	73,064.60
1,198	104.6	87,059.00	87,163.60
1,200	104.6	101,964.70	102,069.30
1,220	104.6	101,964.70	102,069.30

Glades-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,080	-	-
1,090	149	22
1,100	787	66
1,110	2,069	126
1,120	4,100	200
1,130	6,962	285
1,140	10,726	380
1,150	15,454	485
1,160	21,202	600
1,170	28,019	723
1,180	35,953	854
1,190	45,047	993
1,200	55,342	1,140

Glades-Pool-Evaporation [X] Evaporation Time Series

Glades-Dam at Flat Creek

Glades-Dam at Flat Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	4.6	0	4.60
1,180	4.6	0	4.60
1,182	4.6	3,224.40	3,229.00
1,184	4.6	9,120.00	9,124.60
1,186	4.6	16,754.50	16,759.10
1,188	4.6	25,795.30	25,799.90
1,190	4.6	36,050.00	36,054.60
1,192	4.6	47,388.90	47,393.50
1,194	4.6	59,716.90	59,721.50
1,196	4.6	72,960.00	72,964.60
1,198	4.6	87,059.00	87,063.60
1,200	4.6	101,964.70	101,969.30
1,220	4.6	101,964.70	101,969.30

Glades-Dam at Flat Creek:

Elevation at top of dam (ft): 1195
Length at top of dam (ft): 1000

Glades-Dam at Flat Creek-Spillway:

Outlet Elevation (ft): 1180
Weir Coeffcient: 3.8
Length (ft): 300

Glades-Dam at Flat Creek-Controlled Outlet:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	4.6	4.6
1220	4.6	4.6

Glades-WTP

Glades-WTP: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100.00
1,220	100	0	100.00

Glades-WTP-Hall Co WD:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	100	100
1220	100	100

Alt 3 (L18-G42-WTP)

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1195	---
Conservation	Date	01Jan	1180	---
Inactive	Date	01Jan	1125.5	Note: Actual inactive storage is 1130.5, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

Flat Creek MIF

Operates: Glades-Controlled Outlet
Function of: Flat_In Flat_Ck_LOC Flow, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Independent Variable Definition
Release is a Function of: Model Variable

Time Series Options
Function: Current Value

Time-Series	Element Type	Variable
Flat_In Flat_Ck_LOC	junction	Flow

Flow (cfs)	Release (cfs)
0	0
4.6	4.6
10,000	4.6

Glades WS Release

Operates Release From: Glades-Hall Co WD
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Independent Variable Definition
Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options
Function: Current Value

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Alternative Editor

Alternative Description:

With-Glades Scenario with 2060 withdrawals. Glades = 42 mgd, AAD.

Transmission Scenario = WTP

Hall County Lake Lanier Allocation = 18 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:
- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Alt 3 (L18-G42-WTP)

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Glades	Baseline
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Location	Variable	Type	Default Value
Glades-Pool	Lookback Elevation	Constant	1180
Glades-Pool	Lookback Storage	Computed	
Glades-Spillway	Lookback Spill	Constant	0
Glades-Controlled Outlet	Lookback Release	Constant	4.6
Glades-Hall Co WD	Lookback Release	Time-Series	
toGlades-toGlades Cntrl	Lookback Diversion	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
PumptoG42WTP	Lookback State Variable	Constant	

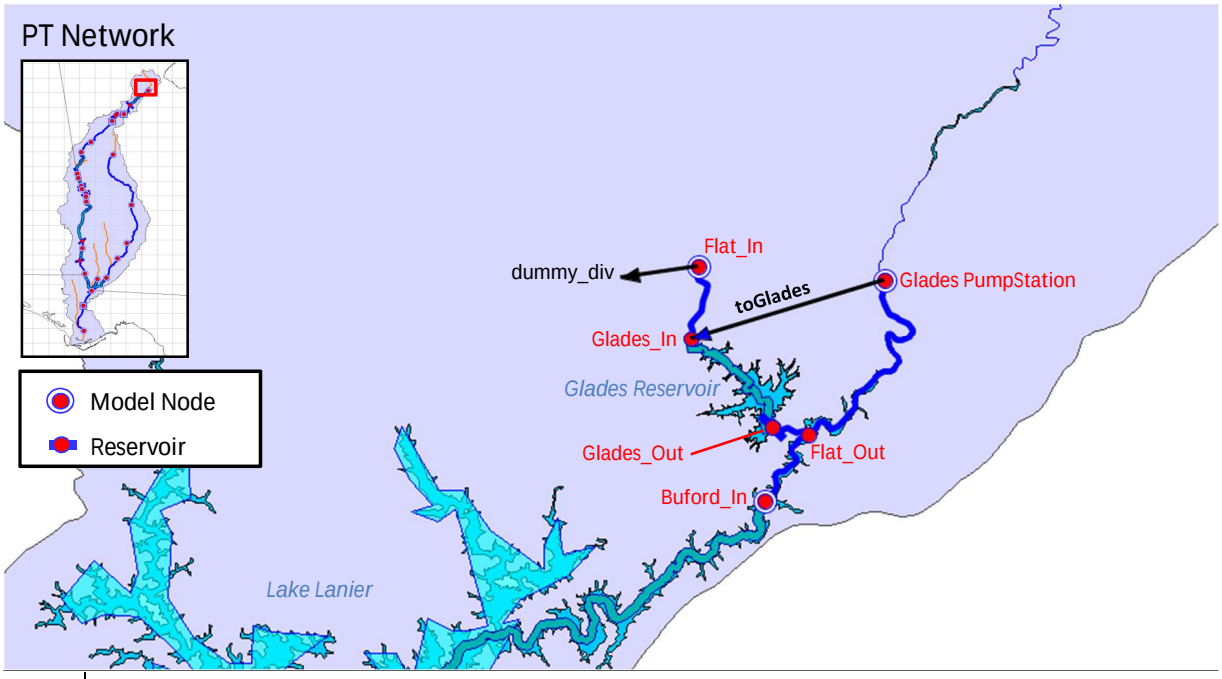
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_374	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI
Flat_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L18
Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Glades-Hall Co WD	Lookback Release	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	42 MGD
Hall Co Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	42 MGD

Alt 4 (L30-G30-PT)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 4	L30-G30-PT	L30-G30PT	PT

Network



Network Description: Annual Average daily withdrawal of 30 MGD from Glades Reservoir with a PT transmission option. This transmission option, also referred to as "pass-through" assumes that water supply from the proposed reservoir will be released downstream of the dam and will flow through Lake Lanier via Flat Creek. The water supplied from the Glades Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 15.5 mgd (23.98 cfs).

Diversions

dummy_div

Node: Flat_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: Glades PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoG30PT, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
23.98	23.98

Independent Variable Definition
Release is a Function of: State Variable

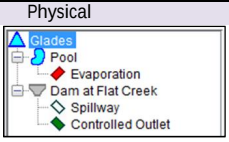
State Variable Name	Parameter Name	Parameter Type
PumptoG30PT	Flow	Flow

Time Series Options
Function: Current Value

Alt 4 (L30-G30-PT)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

Glades-Pool

Glades: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100
1,180	100	0	100
1,182	100	3,224.40	3,324.40
1,184	100	9,120.00	9,220.00
1,186	100	16,754.50	16,854.50
1,188	100	25,795.30	25,895.30
1,190	100	36,050.00	36,150.00
1,192	100	47,388.90	47,488.90
1,194	100	59,716.90	59,816.90
1,196	100	72,960.00	73,060.00
1,198	100	87,059.00	87,159.00
1,200	100	101,964.70	102,064.70
1,220	100	101,964.70	102,064.70

Glades-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,080	-	-
1,090	149	22
1,100	787	66
1,110	2,069	126
1,120	4,100	200
1,130	6,962	285
1,140	10,726	380
1,150	15,454	485
1,160	21,202	600
1,170	28,019	723
1,180	35,953	854
1,190	45,047	993
1,200	55,342	1,140

Glades-Pool-Evaporation [X] Evaporation Time Series

Glades-Dam at Flat Creek

Glades-Dam at Flat Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100
1,180	100	0	100
1,182	100	3,224.40	3,324.40
1,184	100	9,120.00	9,220.00
1,186	100	16,754.50	16,854.50
1,188	100	25,795.30	25,895.30
1,190	100	36,050.00	36,150.00
1,192	100	47,388.90	47,488.90
1,194	100	59,716.90	59,816.90
1,196	100	72,960.00	73,060.00
1,198	100	87,059.00	87,159.00
1,200	100	101,964.70	102,064.70
1,220	100	101,964.70	102,064.70

Glades-Dam at Flat Creek:
Elevation at top of dam (ft): 1195
Length at top of dam (ft): 1000

Glades-Dam at Flat Creek-Spillway:
Outlet Elevation (ft): 1180
Weir Coeffcient: 3.8
Length (ft): 300

Glades-Dam at Flat Creek-Controlled Outlet:
Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	100	100
1220	100	100

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1195	---
Conservation	Date	01Jan	1180	---
Inactive	Date	01Jan	1125.5	Note: Actual inactive storage is 1130.5, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

Glades WS Release

Operates Release From: Glades-Controlled Outlet
Rule Description: ---
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Independent Variable Definition
Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options
Function: Current Value

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Alt 4 (L30-G30-PT)

Alternative Editor

Alternative Description:

With-Glades Scenario with 2060 withdrawals. Glades = 30 mgd, AAD.

Transmission Scenario = PT

Hall County Lake Lanier Allocation = 30 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:

- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Glades	Baseline
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Location	Variable	Type	Default Value
Glades-Pool	Lookback Elevation	Constant	1180
Glades-Pool	Lookback Storage	Computed	
Glades-Spillway	Lookback Spill	Constant	0
Glades-Controlled Outlet	Lookback Release	Constant	0
toGlades-toGlades Cntrl	Lookback Diversion	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
PumptoG30PL	Lookback State Variable	Constant	

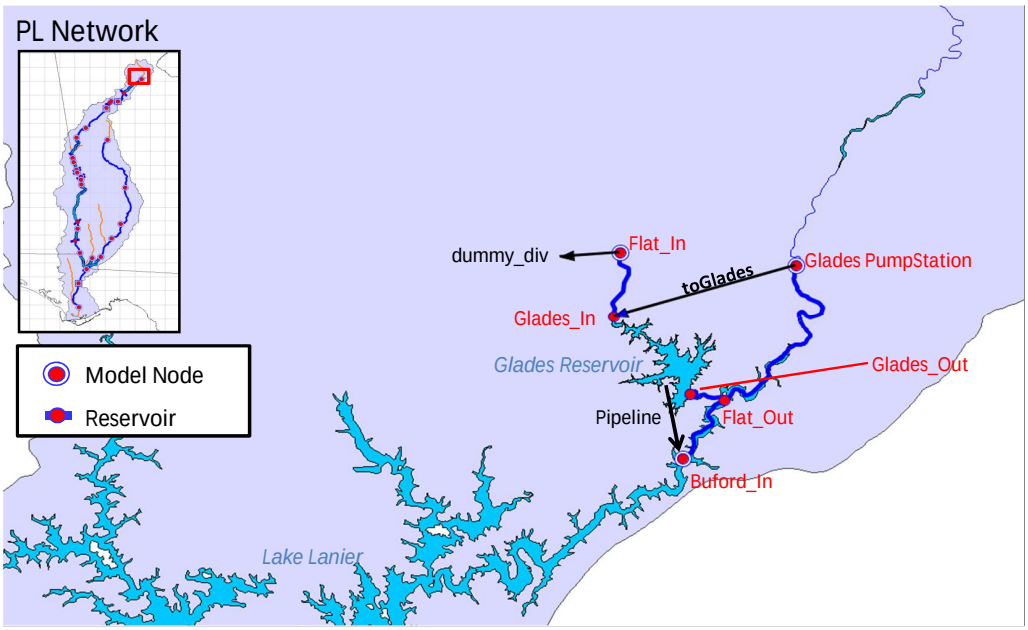
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_374	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI
Flat_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR
Hall Co WD	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	30 MGD
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L30
Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Hall Co Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	30 MGD

Alt 5 (L30-G30-PL)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 5	L30-G30-PL	L30-G30PL	PL

Network



Network Description: Annual Average daily withdrawal of 30 MGD from Glades Reservoir with a PL transmission option. This transmission option, also referred to as "Pipeline" assumes that water from the proposed reservoir will be pumped directly to a WTP for treatment. The water supplied from the Glades Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP. The direct pumping transmission option includes a new raw water pump station at the proposed reservoir and a new raw water transmission main from the proposed reservoir to the existing Lakeside WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 18.5 mgd (28.62 cfs).

Diversions

dummy_div

Node: Flat_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: Glades PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoG30PL, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
28.62	28.62

Independent Variable Definition
Release is a Function of: State Variable

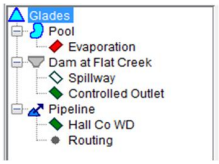
State Variable Name	Parameter Name	Parameter Type
PumptoG30PL	Flow	Flow

Time Series Options
Function: Current Value

Alt 5 (L30-G30-PL)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

Glades-Pool

Glades: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	104.6	0	104.60
1,180	104.6	0	104.60
1,182	104.6	3,224.40	3,329.00
1,184	104.6	9,120.00	9,224.60
1,186	104.6	16,754.50	16,859.10
1,188	104.6	25,795.30	25,899.90
1,190	104.6	36,050.00	36,154.60
1,192	104.6	47,388.90	47,493.50
1,194	104.6	59,716.90	59,821.50
1,196	104.6	72,960.00	73,064.60
1,198	104.6	87,059.00	87,163.60
1,200	104.6	101,964.70	102,069.30
1,220	104.6	101,964.70	102,069.30

Glades-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,080	-	-
1,090	149	22
1,100	787	66
1,110	2,069	126
1,120	4,100	200
1,130	6,962	285
1,140	10,726	380
1,150	15,454	485
1,160	21,202	600
1,170	28,019	723
1,180	35,953	854
1,190	45,047	993
1,200	55,342	1,140

Glades-Pool-Evaporation [X] Evaporation Time Series

Glades-Dam at Flat Creek

Glades-Dam at Flat Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	4.6	0	4.60
1,180	4.6	0	4.60
1,182	4.6	3,224.40	3,229.00
1,184	4.6	9,120.00	9,124.60
1,186	4.6	16,754.50	16,759.10
1,188	4.6	25,795.30	25,799.90
1,190	4.6	36,050.00	36,054.60
1,192	4.6	47,388.90	47,393.50
1,194	4.6	59,716.90	59,721.50
1,196	4.6	72,960.00	72,964.60
1,198	4.6	87,059.00	87,063.60
1,200	4.6	101,964.70	101,969.30
1,220	4.6	101,964.70	101,969.30

Glades-Dam at Flat Creek:

Elevation at top of dam (ft): 1195
Length at top of dam (ft): 1000

Glades-Dam at Flat Creek-Spillway:

Outlet Elevation (ft): 1180
Weir Coeffcient: 3.8
Length (ft): 300

Glades-Dam at Flat Creek-Controlled Outlet:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	4.6	4.6
1220	4.6	4.6

Glades-Pipeline

Glades-Pipeline: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100.00
1,220	100	0	100.00

Glades-Pipeline-Hall Co WD:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	100	100
1220	100	100

Glades-Pipeline-Routing:

Routing	Losses
Method: Null Routing	Constant Seepage (cfs):

Alt 5 (L30-G30-PL)

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1195	---
Conservation	Date	01Jan	1180	---
Inactive	Date	01Jan	1125.5	Note: Actual inactive storage is 1130.5, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

Flat Creek MIF

Operates: Glades-Controlled Outlet
Function of: Flat_In Flat_Ck_LOC Flow, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Independent Variable Definition
Release is a Function of: Model Variable

Time Series Options
Function: Current Value

Time-Series	Element Type	Variable
Flat_In Flat_Ck_LOC	junction	Flow

Flow (cfs)	Release (cfs)
0	0
4.6	4.6
10,000	4.6

Glades Yield Release

Operates Release From: Glades-Hall Co WD
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Independent Variable Definition
Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options
Function: Current Value

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Alternative Editor

Alternative Description:

With-Glades Scenario with 2060 withdrawals. Glades = 30 mgd, AAD.

Transmission Scenario = PL

Hall County Lake Lanier Allocation = 30 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:
- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Alt 5 (L30-G30-PL)

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Glades	Baseline
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Location	Variable	Type	Default Value
Glades-Pool	Lookback Elevation	Constant	1180
Glades-Pool	Lookback Storage	Computed	
Glades-Spillway	Lookback Spill	Constant	0
Glades-Controlled Outlet	Lookback Release	Constant	4.6
Glades-Hall Co WD	Lookback Release	Constant	
toGlades-toGlades Cntrl	Lookback Diversion	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
PumptoG30PL	Lookback State Variable	Constant	

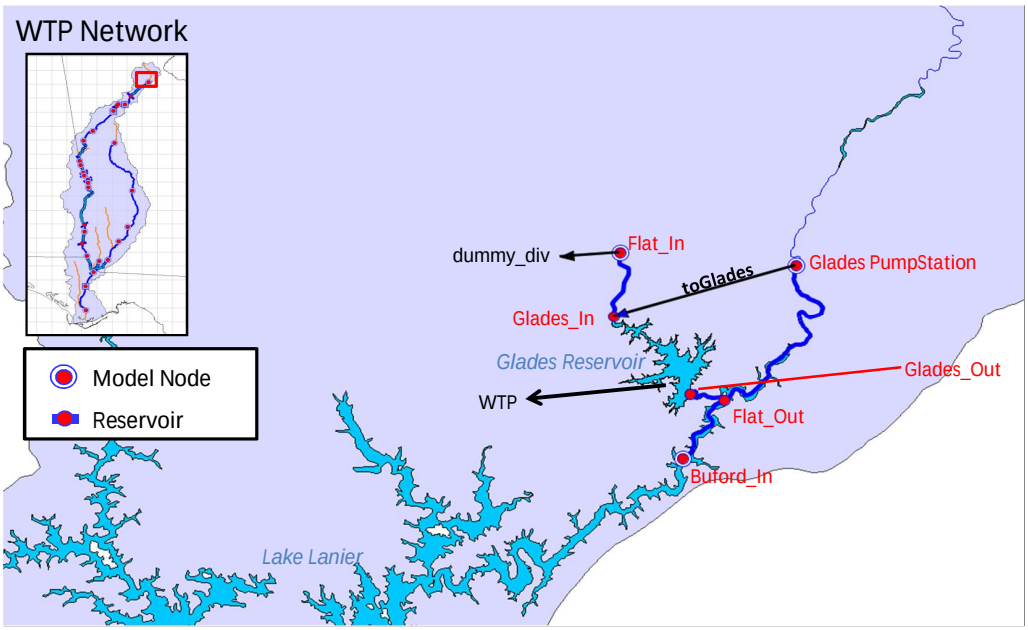
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_374	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI
Flat_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR
Hall Co WD	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	30 MGD
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L30
Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Glades- Hall Co WD	Lookback Release	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	30 MGD
Hall Co Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	30 MGD

Alt 6 (L30-G30-WTP)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 6	L30-G30-WTP	L30-G30WTP	WTP

Network



Network Description: Annual Average daily withdrawal of 30 MGD from Glades Reservoir with a WTP transmission option. This transmission option, also referred to as "Water Treatment Plant" assumes that water from the proposed reservoir will be pumped directly to a new WTP and will be treated at a new WTP located at the reservoir prior to distribution to the system. The direct pumping transmission option includes a new raw water pump station at the proposed reservoir and a new raw water transmission main from the proposed reservoir to the new WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 18.5 mgd (28.62 cfs).

Diversions

dummy_div

Node: Flat_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: Glades PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoG30WTP, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
28.62	28.62

Independent Variable Definition
Release is a Function of: State Variable

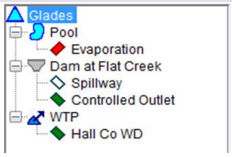
State Variable Name	Parameter Name	Parameter Type
PumptoG30WTP	Flow	Flow

Time Series Options
Function: Current Value

Alt 6 (L30-G30-WTP)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

Glades-Pool

Glades: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	104.6	0	104.60
1,180	104.6	0	104.60
1,182	104.6	3,224.40	3,329.00
1,184	104.6	9,120.00	9,224.60
1,186	104.6	16,754.50	16,859.10
1,188	104.6	25,795.30	25,899.90
1,190	104.6	36,050.00	36,154.60
1,192	104.6	47,388.90	47,493.50
1,194	104.6	59,716.90	59,821.50
1,196	104.6	72,960.00	73,064.60
1,198	104.6	87,059.00	87,163.60
1,200	104.6	101,964.70	102,069.30
1,220	104.6	101,964.70	102,069.30

Glades-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,080	-	-
1,090	149	22
1,100	787	66
1,110	2,069	126
1,120	4,100	200
1,130	6,962	285
1,140	10,726	380
1,150	15,454	485
1,160	21,202	600
1,170	28,019	723
1,180	35,953	854
1,190	45,047	993
1,200	55,342	1,140

Glades-Pool-Evaporation [X] Evaporation Time Series

Glades-Dam at Flat Creek

Glades-Dam at Flat Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	4.6	0	4.60
1,180	4.6	0	4.60
1,182	4.6	3,224.40	3,229.00
1,184	4.6	9,120.00	9,124.60
1,186	4.6	16,754.50	16,759.10
1,188	4.6	25,795.30	25,799.90
1,190	4.6	36,050.00	36,054.60
1,192	4.6	47,388.90	47,393.50
1,194	4.6	59,716.90	59,721.50
1,196	4.6	72,960.00	72,964.60
1,198	4.6	87,059.00	87,063.60
1,200	4.6	101,964.70	101,969.30
1,220	4.6	101,964.70	101,969.30

Glades-Dam at Flat Creek:

Elevation at top of dam (ft): 1195
Length at top of dam (ft): 1000

Glades-Dam at Flat Creek-Spillway:

Outlet Elevation (ft): 1180
Weir Coeffcient: 3.8
Length (ft): 300

Glades-Dam at Flat Creek-Controlled Outlet:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	4.6	4.6
1220	4.6	4.6

Glades-WTP

Glades-WTP: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100.00
1,220	100	0	100.00

Glades-WTP-Hall Co WD:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	100	100
1220	100	100

Alt 6 (L30-G30-WTP)

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1195	---
Conservation	Date	01Jan	1180	---
Inactive	Date	01Jan	1125.5	Note: Actual inactive storage is 1130.5, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

Flat Creek MIF

Operates: Glades-Controlled Outlet
Function of: Flat_In Flat_Ck_LOC Flow, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Independent Variable Definition
Release is a Function of: Model Variable

Time Series Options
Function: Current Value

Time-Series	Element Type	Variable
Flat_In Flat_Ck_LOC	junction	Flow

Flow (cfs)	Release (cfs)
0	0
4.6	4.6
10,000	4.6

Glades WS Release

Operates Release From: Glades-Hall Co WD
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Independent Variable Definition
Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options
Function: Current Value

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Alternative Editor

Alternative Description:

With-Glades Scenario with 2060 withdrawals. Glades = 30 mgd, AAD.

Transmission Scenario = WTP

Hall County Lake Lanier Allocation = 30 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:
- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Alt 6 (L30-G30-WTP)

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Glades	Baseline
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Location	Variable	Type	Default Value
Glades-Pool	Lookback Elevation	Constant	1180
Glades-Pool	Lookback Storage	Computed	
Glades-Spillway	Lookback Spill	Constant	0
Glades-Controlled Outlet	Lookback Release	Constant	4.6
Glades-Hall Co WD	Lookback Release	Time-Series	
toGlades-toGlades Cntrl	Lookback Diversion	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
PumptoG30WTP	Lookback State Variable	Constant	

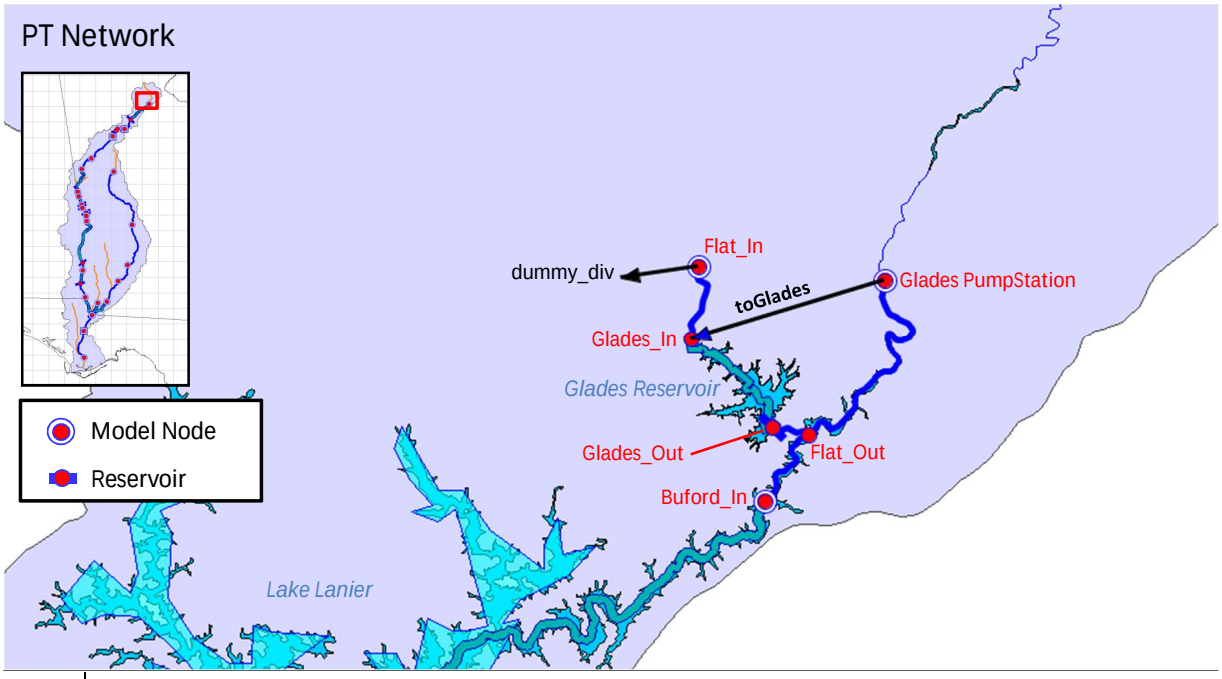
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_374	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI
Flat_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L30
Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Glades-Hall Co WD	Lookback Release	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	30 MGD
Hall Co Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	30 MGD

Alt 7 (L43-G17-PT)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 7	L43-G17-PT	L43-G17PT	PT

Network



Network Description: Annual Average daily withdrawal of 17 MGD from Glades Reservoir with a PT transmission option. This transmission option, also referred to as "pass-through" assumes that water supply from the proposed reservoir will be released downstream of the dam and will flow through Lake Lanier via Flat Creek. The water supplied from the Glades Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 2.0 mgd (3.09 cfs).

Diversions

dummy_div

Node: Flat_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: Glades PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoG17PT, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
3.09	3.09

Independent Variable Definition
Release is a Function of: State Variable

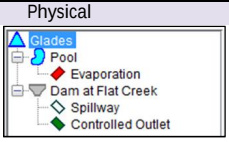
State Variable Name	Parameter Name	Parameter Type
PumptoG17PT	Flow	Flow

Time Series Options
Function: Current Value

Alt 7 (L43-G17-PT)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

Glades-Pool

Glades: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100
1,180	100	0	100
1,182	100	3,224.40	3,324.40
1,184	100	9,120.00	9,220.00
1,186	100	16,754.50	16,854.50
1,188	100	25,795.30	25,895.30
1,190	100	36,050.00	36,150.00
1,192	100	47,388.90	47,488.90
1,194	100	59,716.90	59,816.90
1,196	100	72,960.00	73,060.00
1,198	100	87,059.00	87,159.00
1,200	100	101,964.70	102,064.70
1,220	100	101,964.70	102,064.70

Glades-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,080	-	-
1,090	149	22
1,100	787	66
1,110	2,069	126
1,120	4,100	200
1,130	6,962	285
1,140	10,726	380
1,150	15,454	485
1,160	21,202	600
1,170	28,019	723
1,180	35,953	854
1,190	45,047	993
1,200	55,342	1,140

Glades-Pool-Evaporation [X] Evaporation Time Series

Glades-Dam at Flat Creek

Glades-Dam at Flat Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100
1,180	100	0	100
1,182	100	3,224.40	3,324.40
1,184	100	9,120.00	9,220.00
1,186	100	16,754.50	16,854.50
1,188	100	25,795.30	25,895.30
1,190	100	36,050.00	36,150.00
1,192	100	47,388.90	47,488.90
1,194	100	59,716.90	59,816.90
1,196	100	72,960.00	73,060.00
1,198	100	87,059.00	87,159.00
1,200	100	101,964.70	102,064.70
1,220	100	101,964.70	102,064.70

Glades-Dam at Flat Creek:
Elevation at top of dam (ft): 1195
Length at top of dam (ft): 1000

Glades-Dam at Flat Creek-Spillway:
Outlet Elevation (ft): 1180
Weir Coeffcient: 3.8
Length (ft): 300

Glades-Dam at Flat Creek-Controlled Outlet:
Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	100	100
1220	100	100

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1195	---
Conservation	Date	01Jan	1180	---
Inactive	Date	01Jan	1125.5	Note: Actual inactive storage is 1130.5, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

Glades WS Release

Operates Release From: Glades-Controlled Outlet
Rule Description: ---
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Independent Variable Definition
Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options
Function: Current Value

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Alt 7 (L43-G17-PT)

Alternative Editor

Alternative Description:

With-Glades Scenario with 2060 withdrawals. Glades = 17 mgd, AAD.

Transmission Scenario = PT

Hall County Lake Lanier Allocation = 43 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:

- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Glades	Baseline
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Location	Variable	Type	Default Value
Glades-Pool	Lookback Elevation	Constant	1180
Glades-Pool	Lookback Storage	Computed	
Glades-Spillway	Lookback Spill	Constant	0
Glades-Controlled Outlet	Lookback Release	Constant	0
toGlades-toGlades Cntrl	Lookback Diversion	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
PumptoG17PT	Lookback State Variable	Constant	

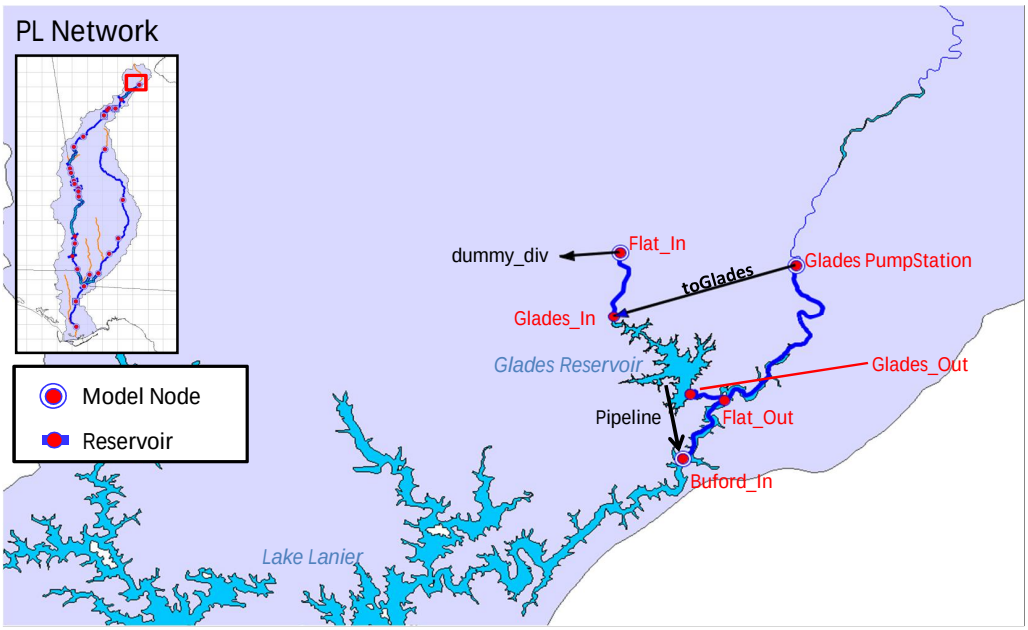
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_374	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI
Flat_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR
Hall Co WD	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L43
Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Hall Co Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD

Alt 8 (L43-G17-PL)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 8	L43-G17-PL	L43-G17PL	PL

Network



Network Description: Annual Average daily withdrawal of 17 MGD from Glades Reservoir with a PL transmission option. This transmission option, also referred to as "Pipeline" assumes that water from the proposed reservoir will be pumped directly to a WTP for treatment. The water supplied from the Glades Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP. The direct pumping transmission option includes a new raw water pump station at the proposed reservoir and a new raw water transmission main from the proposed reservoir to the existing Lakeside WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 5.0 mgd (7.74 cfs).

Diversions

dummy_div

Node: Flat_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: Glades PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoG17PL, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
7.74	7.74

Independent Variable Definition
Release is a Function of: State Variable

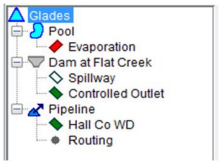
State Variable Name	Parameter Name	Parameter Type
PumptoG17PL	Flow	Flow

Time Series Options
Function: Current Value

Alt 8 (L43-G17-PL)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

Glades-Pool

Glades: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	104.6	0	104.60
1,180	104.6	0	104.60
1,182	104.6	3,224.40	3,329.00
1,184	104.6	9,120.00	9,224.60
1,186	104.6	16,754.50	16,859.10
1,188	104.6	25,795.30	25,899.90
1,190	104.6	36,050.00	36,154.60
1,192	104.6	47,388.90	47,493.50
1,194	104.6	59,716.90	59,821.50
1,196	104.6	72,960.00	73,064.60
1,198	104.6	87,059.00	87,163.60
1,200	104.6	101,964.70	102,069.30
1,220	104.6	101,964.70	102,069.30

Glades-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,080	-	-
1,090	149	22
1,100	787	66
1,110	2,069	126
1,120	4,100	200
1,130	6,962	285
1,140	10,726	380
1,150	15,454	485
1,160	21,202	600
1,170	28,019	723
1,180	35,953	854
1,190	45,047	993
1,200	55,342	1,140

Glades-Pool-Evaporation [X] Evaporation Time Series

Glades-Dam at Flat Creek

Glades-Dam at Flat Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	4.6	0	4.60
1,180	4.6	0	4.60
1,182	4.6	3,224.40	3,229.00
1,184	4.6	9,120.00	9,124.60
1,186	4.6	16,754.50	16,759.10
1,188	4.6	25,795.30	25,799.90
1,190	4.6	36,050.00	36,054.60
1,192	4.6	47,388.90	47,393.50
1,194	4.6	59,716.90	59,721.50
1,196	4.6	72,960.00	72,964.60
1,198	4.6	87,059.00	87,063.60
1,200	4.6	101,964.70	101,969.30
1,220	4.6	101,964.70	101,969.30

Glades-Dam at Flat Creek:

Elevation at top of dam (ft): 1195
Length at top of dam (ft): 1000

Glades-Dam at Flat Creek-Spillway:

Outlet Elevation (ft): 1180
Weir Coeffcient: 3.8
Length (ft): 300

Glades-Dam at Flat Creek-Controlled Outlet:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	4.6	4.6
1220	4.6	4.6

Glades-Pipeline

Glades-Pipeline: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100.00
1,220	100	0	100.00

Glades-Pipeline-Hall Co WD:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	100	100
1220	100	100

Glades-Pipeline-Routing:

Routing	Losses
Method: Null Routing	Constant Seepage (cfs):

Alt 8 (L43-G17-PL)

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1195	---
Conservation	Date	01Jan	1180	---
Inactive	Date	01Jan	1125.5	Note: Actual inactive storage is 1130.5, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

Flat Creek MIF

Operates: Glades-Controlled Outlet
Function of: Flat_In Flat_Ck_LOC Flow, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Independent Variable Definition
Release is a Function of: Model Variable

Time Series Options
Function: Current Value

Time-Series	Element Type	Variable
Flat_In Flat_Ck_LOC	junction	Flow

Flow (cfs)	Release (cfs)
0	0
4.6	4.6
10,000	4.6

Glades Yield Release

Operates Release From: Glades-Hall Co WD
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Independent Variable Definition
Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options
Function: Current Value

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Alternative Editor

Alternative Description:

With-Glades Scenario with 2060 withdrawals. Glades = 17 mgd, AAD.

Transmission Scenario = PL

Hall County Lake Lanier Allocation = 43 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:
- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Alt 8 (L43-G17-PL)

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Glades	Baseline
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Location	Variable	Type	Default Value
Glades-Pool	Lookback Elevation	Constant	1180
Glades-Pool	Lookback Storage	Computed	
Glades-Spillway	Lookback Spill	Constant	0
Glades-Controlled Outlet	Lookback Release	Constant	4.6
Glades-Hall Co WD	Lookback Release	Constant	
toGlades-toGlades Cntrl	Lookback Diversion	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
PumptoG17PL	Lookback State Variable	Constant	

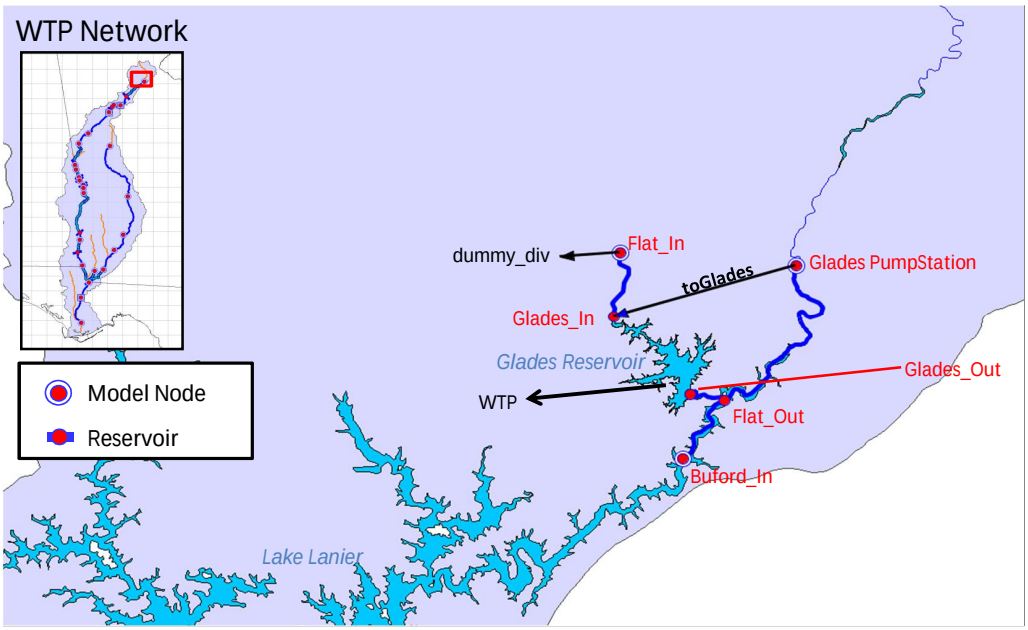
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_374	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI
Flat_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR
Hall Co WD	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L43
Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Glades- Hall Co WD	Lookback Release	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD
Hall Co Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD

Alt 9 (L43-G17-WTP)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 9	L43-G17-WTP	L43-G17WTP	WTP

Network



Network Description: Annual Average daily withdrawal of 17 MGD from Glades Reservoir with a WTP transmission option. This transmission option, also referred to as "Water Treatment Plant" assumes that water from the proposed reservoir will be pumped directly to a new WTP and will be treated at a new WTP located at the reservoir prior to distribution to the system. The direct pumping transmission option includes a new raw water pump station at the proposed reservoir and a new raw water transmission main from the proposed reservoir to the new WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 5.0 mgd (7.74 cfs).

Diversions

dummy_div

Node: Flat_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: Glades PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoG17WTP, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
7.74	7.74

Independent Variable Definition
Release is a Function of: State Variable

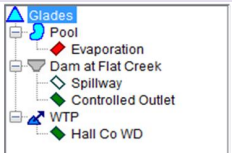
State Variable Name	Parameter Name	Parameter Type
PumptoG17WTP	Flow	Flow

Time Series Options
Function: Current Value

Alt 9 (L43-G17-WTP)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

Glades-Pool

Glades: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	104.6	0	104.60
1,180	104.6	0	104.60
1,182	104.6	3,224.40	3,329.00
1,184	104.6	9,120.00	9,224.60
1,186	104.6	16,754.50	16,859.10
1,188	104.6	25,795.30	25,899.90
1,190	104.6	36,050.00	36,154.60
1,192	104.6	47,388.90	47,493.50
1,194	104.6	59,716.90	59,821.50
1,196	104.6	72,960.00	73,064.60
1,198	104.6	87,059.00	87,163.60
1,200	104.6	101,964.70	102,069.30
1,220	104.6	101,964.70	102,069.30

Glades-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,080	-	-
1,090	149	22
1,100	787	66
1,110	2,069	126
1,120	4,100	200
1,130	6,962	285
1,140	10,726	380
1,150	15,454	485
1,160	21,202	600
1,170	28,019	723
1,180	35,953	854
1,190	45,047	993
1,200	55,342	1,140

Glades-Pool-Evaporation [X] Evaporation Time Series

Glades-Dam at Flat Creek

Glades-Dam at Flat Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	4.6	0	4.60
1,180	4.6	0	4.60
1,182	4.6	3,224.40	3,229.00
1,184	4.6	9,120.00	9,124.60
1,186	4.6	16,754.50	16,759.10
1,188	4.6	25,795.30	25,799.90
1,190	4.6	36,050.00	36,054.60
1,192	4.6	47,388.90	47,393.50
1,194	4.6	59,716.90	59,721.50
1,196	4.6	72,960.00	72,964.60
1,198	4.6	87,059.00	87,063.60
1,200	4.6	101,964.70	101,969.30
1,220	4.6	101,964.70	101,969.30

Glades-Dam at Flat Creek:

Elevation at top of dam (ft): 1195
Length at top of dam (ft): 1000

Glades-Dam at Flat Creek-Spillway:

Outlet Elevation (ft): 1180
Weir Coeffcient: 3.8
Length (ft): 300

Glades-Dam at Flat Creek-Controlled Outlet:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	4.6	4.6
1220	4.6	4.6

Glades-WTP

Glades-WTP: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,080	100	0	100.00
1,220	100	0	100.00

Glades-WTP-Hall Co WD:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1080	100	100
1220	100	100

Alt 9 (L43-G17-WTP)

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1195	---
Conservation	Date	01Jan	1180	---
Inactive	Date	01Jan	1125.5	Note: Actual inactive storage is 1130.5, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

Flat Creek MIF

Operates: Glades-Controlled Outlet
Function of: Flat_In Flat_Ck_LOC Flow, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Independent Variable Definition
Release is a Function of: Model Variable

Time Series Options
Function: Current Value

Time-Series	Element Type	Variable
Flat_In Flat_Ck_LOC	junction	Flow

Flow (cfs)	Release (cfs)
0	0
4.6	4.6
10,000	4.6

Glades WS Release

Operates Release From: Glades-Hall Co WD
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Independent Variable Definition
Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options
Function: Current Value

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Alternative Editor

Alternative Description:

With-Glades Scenario with 2060 withdrawals. Glades = 17 mgd, AAD.

Transmission Scenario = WTP

Hall County Lake Lanier Allocation = 43 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:
- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Alt 9 (L43-G17-WTP)

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Glades	Baseline
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline

Lookback

Location	Variable	Type	Default Value
Glades-Pool	Lookback Elevation	Constant	1180
Glades-Pool	Lookback Storage	Computed	
Glades-Spillway	Lookback Spill	Constant	0
Glades-Controlled Outlet	Lookback Release	Constant	4.6
Glades-Hall Co WD	Lookback Release	Time-Series	
toGlades-toGlades Cntrl	Lookback Diversion	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
PumptoG17WTP	Lookback State Variable	Constant	

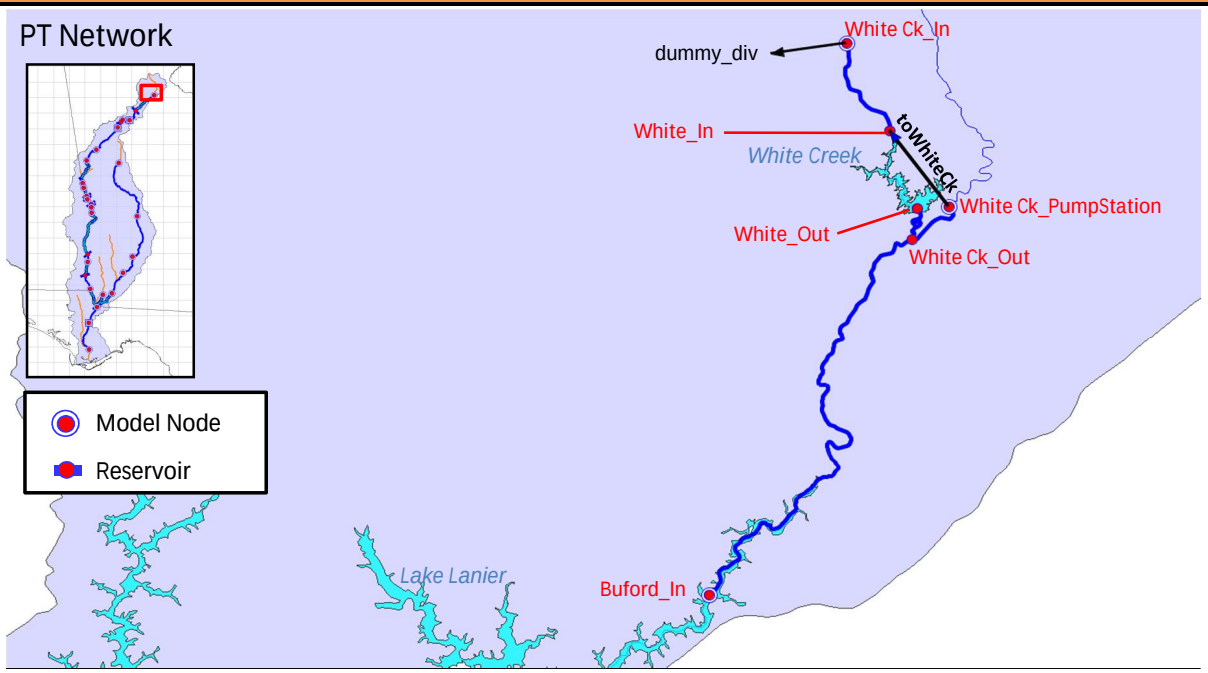
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_374	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI
Flat_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L43
Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Glades-Hall Co WD	Lookback Release	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD
Hall Co Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD

Alt 10 (L43-W17-PT)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 10	L43-W17-PT	L43-W17PT	PT

Network



Network Description: Annual Average daily withdrawal of 17 MGD from White Creek Reservoir with a PT transmission option. This transmission option, also referred to as "pass-through" assumes that water supply from the proposed reservoir will be released downstream of the dam and will flow through Lake Lanier via White Creek. The water supplied from the Glades Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 15.5 mgd (23.98 cfs).

Diversions

dummy_div

Node: White Ck_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: White Ck_PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoW17PT, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
23.98	23.98

Independent Variable Definition
Release is a Function of: State Variable

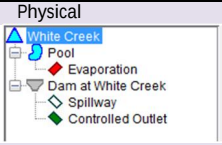
State Variable Name	Parameter Name	Parameter Type
PumptoW17PT	Flow	Flow

Time Series Options
Function: Current Value

Alt 10 (L43-W17-PT)

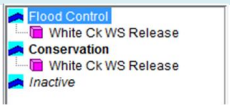
Reservoir Properties

Physical



Operations

Zone-Rules:



Physical

White Creek-Pool

White Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,170	100	0	100
1,305	100	0	100
1,306	100	1,140.00	1,240.00
1,307	100	3,224.40	3,324.40
1,308	100	5,923.60	6,023.60
1,309	100	9,120.00	9,220.00
1,310	100	12,745.60	12,845.60
1,311	100	16,754.50	16,854.50
1,312	100	21,113.10	21,213.10
1,313	100	25,795.30	25,895.30
1,314	100	30,780.00	30,880.00
1,315	100	36,050.00	36,150.00

White Creek-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,170	0	0
1175	2.1	0.84
1180	10.14	2.37
1185	26.41	4.14
1190	51.41	5.86
1195	86.21	8.06
1200	133.32	10.78
1205	196.13	14.34
1210	278.29	18.52
1215	382.26	23.07
1220	510.03	28.04
1225	664.74	33.85
1230	849.02	39.87
1235	1065.1	46.57
1240	1316.48	53.98
1245	1608.71	62.91
1250	1946.36	72.15
1255	2331.58	81.93
1260	2765.92	91.8
1265	3251.11	102.27
1270	3790.51	113.49
1275	4387.14	125.17
1280	5138.57	175.41
1285	6142.85	226.31
1290	7403.67	278.02
1295	8940.44	336.69
1300	10808.87	410.69
1305	13033.41	479.13
1310	15630.01	559.51
1315	18669.07	656.12

White Creek-Pool-Evaporation [X] Evaporation Time Series

White Creek-Dam at White Creek

White Creek-Dam at White Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,170	100	0	100
1,305	100	0	100
1,306	100	1,140.00	1,240.00
1,307	100	3,224.40	3,324.40
1,308	100	5,923.60	6,023.60
1,309	100	9,120.00	9,220.00
1,310	100	12,745.60	12,845.60
1,311	100	16,754.50	16,854.50
1,312	100	21,113.10	21,213.10
1,313	100	25,795.30	25,895.30
1,314	100	30,780.00	30,880.00
1,315	100	36,050.00	36,150.00

White Creek-Dam at White Creek:

Elevation at top of dam (ft):

Length at top of dam (ft):

White Creek-Dam at White Creek-Spillway:

Outlet Elevation (ft): 1305

Weir Coeffcient: 3.8

Length (ft): 300

White Creek-Dam at White Creek-Controlled Outlet:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1170	100	100
1315	100	100

Alt 10 (L43-W17-PT)

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1315	---
Conservation	Date	01Jan	1305	---
Inactive	Date	01Jan	1253	Note: Actual inactive storage is 1258, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

White Ck WS Release

Operates Release From: White Creek-Controlled Outlet

Rule Description: ---

Function of: Hall CO Water Suply WD, Current Value

Limit Type: Specified

Interp: Linear

Independent Variable Definition

Release is a Function of: External Variable

Variable Name: Hall CO Water Supply WD

Time Series Options

Function: Current Value

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Alternative Editor

Alternative Description:

With-White Creek Scenario with 2060 withdrawals. White Creek = 17 mgd, AAD.

Transmission Scenario = PT

Hall County Lake Lanier Allocation = 43 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Run Control

Time Step: 1 Day

Flow Computation Method:

- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Alt 10 (L43-W17-PT)

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline
White Creek	Baseline

Lookback

Location	Variable	Type	Default Value
White Creek-Pool	Lookback Elevation	Constant	1305
White Creek-Pool	Lookback Storage	Computed	
White Creek-Spillway	Lookback Spill	Constant	0
White Creek-Controlled Outlet	Lookback Release	Constant	0
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
toWhiteCk-toWhiteCk Cntrl	Lookback Diversion	Constant	0
PumptoW17PT	Lookback State Variable	Constant	

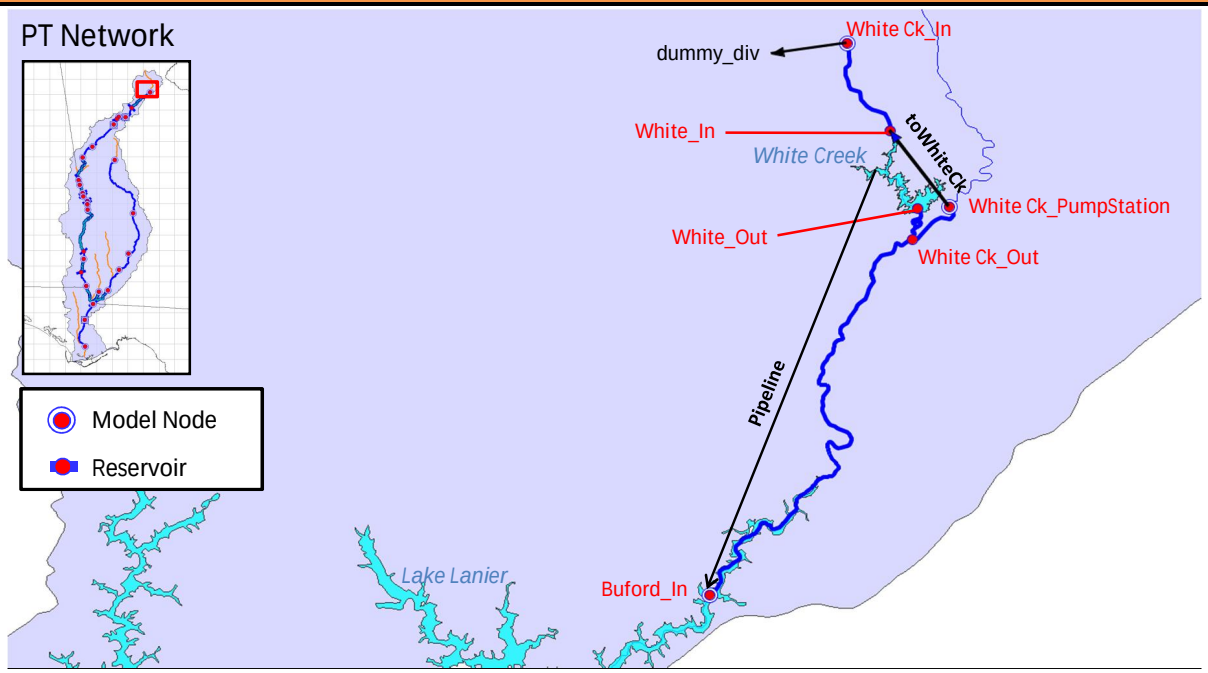
Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_318	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-318 SQ MI
White_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	WHITE CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-WHITE CK RESERVOIR
Hall Co WD	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L43
White Creek-Poo	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
Hall CO Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD

Alt 11 (L43-W17-PL)

Alternative #	Alternative ID	Model Alternative Name	Reservoir Network
Alt 11	L43-W17-PL	L43-W17PL	PL

Network



Network Description: Annual Average daily withdrawal of 17 MGD from White Creek Reservoir with a PL transmission option. This transmission option, also referred to as "Pipeline" assumes that water from the proposed reservoir will be pumped directly to a WTP for treatment. The water supplied from the White Creek Reservoir will be withdrawn from Lake Lanier at the existing intake for Gainesville's Lakeside WTP. The direct pumping transmission option includes a new raw water pump station at the proposed reservoir and a new raw water transmission main from the proposed reservoir to the existing Lakeside WTP.

Max Pumping Capacity from Chattahoochee River Pump Station = 19.0 mgd (29.39 cfs).

Diversions

dummy_div

Node: White Ck_In
Diversion Description: Used to Force all elements above Buford_In into the same compute block
Method: Flexible Diversion Rule
Function of: Buford_IN Flow, Previous Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
99999	0

Independent Variable Definition
Release is a Function of: Model Variable

Time-Series	Element Type	Variable
Buford_IN	juntion	Flow

Time Series Options
Function: Previous Value

toGlades

Node: White Ck_PumpStation
Diversion Description: ---
Method: Flexible Diversion Rule
Function of: PumptoW17PL, Current Value
Interpolation: Linear

Flow (cfs)	Release (cfs)
0	0
29.39	29.39

Independent Variable Definition
Release is a Function of: State Variable

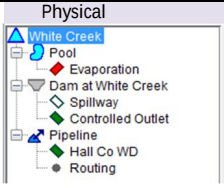
State Variable Name	Parameter Name	Parameter Type
PumptoW17PL	Pump	Flow

Time Series Options
Function: Current Value

Alt 11 (L43-W17-PL)

Reservoir Properties

Physical



Operations

Zone-Rules:

Physical

White Creek-Pool

White Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,170	110	0	110.00
1,305	110	0	110.00
1,306	110	1,140.00	1,250.00
1,307	110	3,224.40	3,334.40
1,308	110	5,923.60	6,033.60
1,309	110	9,120.00	9,230.00
1,310	110	12,745.60	12,855.60
1,311	110	16,754.50	16,864.50
1,312	110	21,113.10	21,223.10
1,313	110	25,795.30	25,905.30
1,314	110	30,780.00	30,890.00
1,315	110	36,050.00	36,160.00

White Creek-Pool [X] Linear Interpolation

Elevation (ft)	Storage (ac-ft)	Area (Acre)
1,170	0	0
1175	2.1	0.84
1180	10.14	2.37
1185	26.41	4.14
1190	51.41	5.86
1195	86.21	8.06
1200	133.32	10.78
1205	196.13	14.34
1210	278.29	18.52
1215	382.26	23.07
1220	510.03	28.04
1225	664.74	33.85
1230	849.02	39.87
1235	1065.1	46.57
1240	1316.48	53.98
1245	1608.71	62.91
1250	1946.36	72.15
1255	2331.58	81.93
1260	2765.92	91.8
1265	3251.11	102.27
1270	3790.51	113.49
1275	4387.14	125.17
1280	5138.57	175.41
1285	6142.85	226.31
1290	7403.67	278.02
1295	8940.44	336.69
1300	10808.87	410.69
1305	13033.41	479.13
1310	15630.01	559.51
1315	18669.07	656.12

White Creek-Pool-Evaporation [X] Evaporation Time Series

White Creek-Dam at White Creek

White Creek-Dam at White Creek: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,170	10	0	10.00
1,305	10	0	10.00
1,306	10	1,140.00	1,150.00
1,307	10	3,224.40	3,234.40
1,308	10	5,923.60	5,933.60
1,309	10	9,120.00	9,130.00
1,310	10	12,745.60	12,755.60
1,311	10	16,754.50	16,764.50
1,312	10	21,113.10	21,123.10
1,313	10	25,795.30	25,805.30
1,314	10	30,780.00	30,790.00
1,315	10	36,050.00	36,060.00

White Creek-Dam at White Creek:

Elevation at top of dam (ft): 1315

Length at top of dam (ft): 1000

White Creek-Dam at White Creek-Spillway:

Outlet Elevation (ft): 1305

Weir Coeffcient: 3.8

Length (ft): 300

White Creek-Dam at White Creek-Controlled Outlet:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1170	10	10
1315	10	10

Alt 11 (L43-W17-PL)

White Creek-Pipeline

White Creek-Pipeline: Composite Release Capacity

Elevation (ft)	Controlled (cfs)	Uncontrolled (cfs)	Total (cfs)
1,170	100	0	100.00
1,315	100	0	100.00

White Creek-Pipeline-Hall Co WD:

Number of Gates of this type: 1

Elevation (ft)	Max Capacity (cfs)	Total Max Capacity (cfs)
1170	100	100
1315	100	100

White Creek-Pipeline-Routing:

Routing	Losses
Method: Null Routing	Constant Seepage (cfs):

Operations

Zones

Storage Zone	Function of	Date	Top Elevation (ft)	Description
Flood Control	Date	01Jan	1315	---
Conservation	Date	01Jan	1305	---
Inactive	Date	01Jan	1253	Note: Actual inactive storage is 1258, and is set 5 ft lower. This allows the reservoir elevation to drop below inactive storage to observe pumping during extreme droughts (Dec 2007 and Nov 2008).

Rules

White Creek MIF

Operates: White Creek-Controlled Outlet
Function of: WhiteCk_M7Q10, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Flow (cfs)	Release (cfs)
0	0
10	10

Independent Variable Definition

Release is a Function of: State Variable

State Variable	Parameter Name	Parameter Type
WhiteCk_M7Q10	Flow	Flow

Time Series Options

Function: Current Value

White Yield Release

Operates Release From: White Creek-Hall Co WD
Function of: Hall Co Water Suply WD, Current Value
Limit Type: Specified
Interp: Linear

Rule Description: ---

Hall Co Water Suply WD	Release (cfs)
0	0
100	100

Independent Variable Definition

Release is a Function of: External Variable
Variable Name: Hall Co Water Supply WD

Time Series Options

Function: Current Value

Alternative Editor

Alternative Description:

With-White Creek Scenario with 2060 withdrawals. White Creek = 17 mgd, AAD.

Transmission Scenario = PL

Hall County Lake Lanier Allocation = 43 mgd AAD.

Jim Woodruff Operations = PACT2, Revised Ramping Rate below 10,000 cfs = 0.13 ft/day, No Storage between 5k-10k non-spawnseason, normal operation with composite storage reaches zone 1

Alt 11 (L43-W17-PL)

Run Control

Time Step: 1 Day

Flow Computation Method:

- [ ] Program Determined
- [X] Period Average
- [ ] Instantaneous

- [X] Compute Unregulated Flows
- [ ] Compute Holdouts

Log Level: 3

Operations

Reservoir System	Storage Balance
COE Reservoirs	EvenBalance_byZone_Baseline

Reservoir	Operation Set
Bartletts Ferry	Flow-thru
Buford	Baseline
George Andrews	flow-thru
Goat Rock	Flow-thru
Jim Woodruff	ProAction 2
Morgan Falls	Flow-thru
North Highlands	Flow-thru
Oliver	Flow-thru
Walter F. George	Baseline
West Point	Baseline
White Creek	Baseline

Lookback

Location	Variable	Type	Default Value
White Creek-Pool	Lookback Elevation	Constant	1305
White Creek-Pool	Lookback Storage	Computed	
White Creek-Spillway	Lookback Spill	Constant	0
White Creek-Controlled Outlet	Lookback Release	Constant	2.6
White Creek-Hall Co WD	Lookback Release	Time-Series	
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	0
toWhiteCk-toWhiteCk Cntrl	Lookback Diversion	Constant	0
PumptoW17PL	Lookback State Variable	Constant	
WhiteCk_M7Q10	Lookback State Variable	Constant	

Time-Series

Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Chattahoochee_PS_318	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-318 SQ MI
White_Ck_LOC	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	WHITE CK	INFLOW	FLOW	1DAY	CALCULATED
Buford_Adj	Known Flow	shared/GLADES_EIS_UPSTREAM.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-WHITE CK RESERVOIR
Hall Co WD	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD
Metro Atlanta	Known Flow	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 L43
White Creek-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY	EST_RATIO
White Creek-Hall Co WD	Lookback Release	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD
Hall CO Water Supply WD	Input Time Series	shared/GLADES_EIS_DEMANDS.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD

ATTACHMENT 2

Alternatives Editor Model Settings

DRAFT

Alternatives Editor Model Settings
Lookback Mapping Locations for Model Operations

Default Value for Lookback Mapping			Baseline	No Action	Proposed	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10	Alternative 11
Location	Variable	Type	L18	L60	L18-G50-PT	L18-G42-PT	L18-G42-PL	L18-G42-WTP	L30-G30-PT	L30-G30-PL	L30-G30-WTP	L43-G17-PT	L43-G17-PL	L43-G17-WTP	L43-W17-PT	L43-W17-PL
White Creek-Pool	Lookback Elevation	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1305	1305
Glades-Pool	Lookback Elevation	Constant	N/A	N/A	1180	1180	1180	1180	1180	1180	1180	1180	1180	1180	N/A	N/A
Buford-Pool	Lookback Elevation	Time-Series														
Morgan Falls-Pool	Lookback Elevation	Time-Series														
West Point-Pool	Lookback Elevation	Time-Series														
Bartletts Ferry-Pool	Lookback Elevation	Time-Series														
Goat Rock-Pool	Lookback Elevation	Time-Series														
Oliver-Pool	Lookback Elevation	Time-Series														
North Highlands-Pool	Lookback Elevation	Time-Series														
Walter F George-Pool	Lookback Elevation	Time-Series														
George Andrews-Pool	Lookback Elevation	Constant	102	102	102	102	102	102	102	102	102	102	102	102	102	102
Jim Woodruff-Pool	Lookback Elevation	Time-Series														
White Creek-Pool	Lookback Storage	Computed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Glades-Pool	Lookback Storage	Computed	N/A	N/A											N/A	N/A
Buford-Pool	Lookback Storage	Computed														
Morgan Falls-Pool	Lookback Storage	Computed														
West Point-Pool	Lookback Storage	Computed														
Bartletts Ferry-Pool	Lookback Storage	Computed														
Goat Rock-Pool	Lookback Storage	Computed														
Oliver-Pool	Lookback Storage	Computed														
North Highlands-Pool	Lookback Storage	Computed														
Walter F George-Pool	Lookback Storage	Computed														
George Andrews-Pool	Lookback Storage	Computed														
Jim Woodruff-Pool	Lookback Storage	Computed														
Buford-Power Plant	Lookback Release	Time-Series														
Morgan Falls-Power Plant	Lookback Release	Time-Series														
West Point-Power Plant	Lookback Release	Time-Series														
Bartletts Ferry-Power Plant	Lookback Release	Time-Series														
Goat Rock-Power Plant	Lookback Release	Time-Series														
Oliver-Power Plant	Lookback Release	Time-Series														
North Highlands-Power Plant	Lookback Release	Time-Series														
Walter F George-Power Plant	Lookback Release	Time-Series														
Jim Woodruff-Power Plant	Lookback Release	Time-Series														
Buford-Emergency Spillway	Lookback Spill	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bartletts Ferry-Emer-Spillway	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jim Woodruff-Emer_Spillway	Lookback Spill	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Goat Rock-Flashboard Spillway	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Highlands-Flashboard Spillway	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White Creek-Spillway	Lookback Spill	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0
Glades-Spillway	Lookback Spill	Constant	N/A	N/A	0	0	0	0	0	0	0	0	0	0	N/A	N/A
Morgan Falls-Spillway	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
West Point-Spillway	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bartletts Ferry-Spillway	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oliver-Spillway	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Walter F George-Spillway	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
George Andrews-Spillway	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jim Woodruff-Spillway	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Goat Rock-Allow Flow-thru	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Highlands-Allow Flow-thru	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buford-Sluice	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buford-Small Unit	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Alternatives Editor Model Settings
Lookback Mapping Locations for Model Operations

Default Value for Lookback Mapping			Baseline	No Action	Proposed	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10	Alternative 11
Location	Variable	Type	L18	L60	L18-G50-PT	L18-G42-PT	L18-G42-PL	L18-G42-WTP	L30-G30-PT	L30-G30-PL	L30-G30-WTP	L43-G17-PT	L43-G17-PL	L43-G17-WTP	L43-W17-PT	L43-W17-PL
West Point-Small Unit	Lookback Release	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
White Creek-Controlled Outlet	Lookback Release	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	2.6
White Creek-Hall Co WD	Lookback Release	Time-Series	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Glades-Controlled Outlet	Lookback Release	Constant	N/A	N/A	0	0	4.6	4.6	0	4.6	4.6	0	4.6	4.6	N/A	N/A
Glades-Hall Co WD	Lookback Release	Time-Series	N/A	N/A	N/A	N/A			N/A			N/A			N/A	N/A
toWhiteCk-toWhiteCk Cntrl	Lookback Diversion	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0	0
toGlades-toGlades Cntrl	Lookback Diversion	Constant	N/A	N/A	0	0	0	0	0	0	0	0	0	0	N/A	N/A
dummy_div-dummy_div Cntrl	Lookback Diversion	Constant	N/A	N/A	0	0	0	0	0	0	0	0	0	0	0	0
Norcross_Divs-Norcross_Divs Cntrl	Lookback Diversion	Time-Series														
Atlanta Divs_River-Atlanta Divs_River Cntrl	Lookback Diversion	Time-Series														
Whitesburg_Divs-Whitesburg_Divs Cntrl	Lookback Diversion	Time-Series														
West Point Gage_Divs-West Point Gage_Divs Cntrl	Lookback Diversion	Time-Series														
Columbus_Divs-Columbus_Divs Cntrl	Lookback Diversion	Time-Series														
Blountstown_Divs-Blountstown_Divs Cntrl	Lookback Diversion	Time-Series														
Sumatra_Divs-Sumatra_Divs Cntrl	Lookback Diversion	Time-Series														
Griffin_Divs-Griffin_Divs Cntrl	Lookback Diversion	Time-Series														
Montezuma_Divs-Montezuma_Divs Cntrl	Lookback Diversion	Time-Series														
Albany_Divs-Albany_Divs Cntrl	Lookback Diversion	Time-Series														
Newton_Divs-Newton_Divs Cntrl	Lookback Diversion	Time-Series														
Bainbridge_Divs-Bainbridge_Divs Cntrl	Lookback Diversion	Time-Series														
BI_FMA7	Lookback State Variable	Constant	500	500	500	500	500	500	500	500	500	500	500	500	500	500
BI_1D	Lookback State Variable	Constant	500	500	500	500	500	500	500	500	500	500	500	500	500	500
BIFallRate	Lookback State Variable	Constant														
CompositeStorage	Lookback State Variable	Constant														
CompositeStorage_MRIOP	Lookback State Variable	Constant														
CS_ACT	Lookback State Variable	Constant														
CS_TOD	Lookback State Variable	Constant														
CS_FC	Lookback State Variable	Constant														
CS_CON	Lookback State Variable	Constant														
CS_Z2	Lookback State Variable	Constant														
CS_Z3	Lookback State Variable	Constant														
CS_Z4	Lookback State Variable	Constant														
CS_EDT	Lookback State Variable	Constant														
CS_IA	Lookback State Variable	Constant														
DroughtOperations	Lookback State Variable	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DroughtOperations_MRIOP	Lookback State Variable	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
DroughtOperationsPA2	Lookback State Variable	Constant														
EDO_Flow	Lookback State Variable	Constant	0	0	0	0	0	0	0	0	0	0	0	0	0	0
FloodSeasons	Lookback State Variable	Constant														
MinStage_Chattahoochee	Lookback State Variable	Constant														
Seasons	Lookback State Variable	Constant														
WestPoint_GCBuffer	Lookback State Variable	Constant														
PumptoG50PT	Lookback State Variable	Constant	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PumptoG42PT	Lookback State Variable	Constant	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PumptoG42PL	Lookback State Variable	Constant	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PumptoG42WTP	Lookback State Variable	Constant	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PumptoG30PT	Lookback State Variable	Constant	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A	N/A
PumptoG30PL	Lookback State Variable	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
PumptoG30WTP	Lookback State Variable	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A
PumptoG17PT	Lookback State Variable	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A	N/A
PumptoG17PL	Lookback State Variable	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A

Alternatives Editor Model Settings
Lookback Mapping Locations for Model Operations

Default Value for Lookback Mapping			Baseline	No Action	Proposed	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7	Alternative 8	Alternative 9	Alternative 10	Alternative 11
Location	Variable	Type	L18	L60	L18-G50-PT	L18-G42-PT	L18-G42-PL	L18-G42-WTP	L30-G30-PT	L30-G30-PL	L30-G30-WTP	L43-G17-PT	L43-G17-PL	L43-G17-WTP	L43-W17-PT	L43-W17-PL
PumptoG17WTP	Lookback State Variable	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A
PumptoW17PT	Lookback State Variable	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A
PumptoW17PL	Lookback State Variable	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
WhiteCk_M7Q10	Lookback State Variable	Constant	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
WalterFGeorge_MinTailwater	Lookback State Variable	Constant														
JimWoodruff_MinTailwater	Lookback State Variable	Constant														
Buford_Elev_State	Lookback State Variable	Constant														
WestPoint_Elev_State	Lookback State Variable	Constant														
WalterFGeorge_Elev_State	Lookback State Variable	Constant														
JimWoodruff_Elev_State	Lookback State Variable	Constant														
Buford_BaseElev	Lookback State Variable	Constant														
WestPoint_BaseElev	Lookback State Variable	Constant														
WalterFGeorge_BaseElev	Lookback State Variable	Constant														
JimWoodruff_BaseElev	Lookback State Variable	Constant														
Buford_FSCompliance	Lookback State Variable	Constant														
WestPoint_FSCompliance	Lookback State Variable	Constant														
WalterFGeorge_FSCompliance	Lookback State Variable	Constant														
JimWoodruff_FSCompliance	Lookback State Variable	Constant														
BufordActivePowerReq	Lookback State Variable	Constant														
WestPointActivePowerReq	Lookback State Variable	Constant														
WalterFGeorgeActivePowerReq	Lookback State Variable	Constant														
BufordActiveEnergyReq	Lookback State Variable	Constant														
WestPointActiveEnergyReq	Lookback State Variable	Constant														
WalterFGeorgeActiveEnergyReq	Lookback State Variable	Constant														

Alternatives Editor Model Settings
Time-Series Mapping Locations for Model Operations

Lookback Diversion Time-Series Mapping Locations

Model Node	Local Flow Name	Variable	DSS File	Part A	Part B	Part C	Part E
Norcross	Norcross_Divs-Norcross_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY
Atlanta	Atlanta Divs_River-Atlanta Divs_River Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY
Whitesburg	Whitesburg_Divs-Whitesburg_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DOV	1DAY
West Point Gage	West Point Gage_Divs-West Point Gage_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY
Columbus	Columbus_Divs-Columbus_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY
Blountstown	Blountstown_Divs-Blountstown_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY
Sumatra	Sumatra_Divs-Sumatra_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY
Griffin	Griffin_Divs-Griffin_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY
Montezuma	Montezuma_Divs-Montezuma_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY
Albany	Albany_Divs-Albany_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY
Newton	Newton_Divs-Newton_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY
Bainbridge	Bainbridge_Divs-Bainbridge_Divs Cntrl	Lookback Diversion	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY

Lookback Evaporation Time-Series Mapping Locations

Model Node	Local Flow Name	Variable	DSS File	Part A	Part B	Part C	Part E
White Ck	White Creek-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY
Glades	Glades-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY
Buford	Buford-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY
Morgan Falls	Morgan Falls-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	BUFORD	EVAPNET_RATE	1DAY
West Point	West Point-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	WEST POINT R	EVAPNET_RATE	1DAY
Bartletts Fery	Bartletts Ferry-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	WEST POINT R	EVAPNET_RATE	1DAY
Goat Rock	Goat Rock-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	WEST POINT R	EVAPNET_RATE	1DAY
Oliver	Oliver-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	WEST POINT R	EVAPNET_RATE	1DAY
North Highlands	North Highlands-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	WEST POINT R	EVAPNET_RATE	1DAY
Walter F George	Walter F George-Pool	Input Evap	shared/ACFEVAP_ver11.dss	CHATTAHOOCHEE	WF GEORGE	EVAPNET_RATE	1DAY
George Andrews	George Andrews-Pool	Input Evap	shared/ACFEVAP_ver11.dss	APALACHICOLA	JIM WOODRUFF	EVAPNET_RATE	1DAY
Jim Woodruff	Jim Woodruff-Pool	Input Evap	shared/ACFEVAP_ver11.dss	APALACHICOLA	JIM WOODRUFF	EVAPNET_RATE	1DAY

Lookback Release Time-Series Mapping Locations

Model Node	Local Flow Name	Variable	DSS File	Part A	Part B	Part C	Part E
Glades	Glades-Hall Co WD	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY
Buford	Buford-Power Plant	Lookback Release	shared/ACFHEC_11_30May2014.dss	CHATTAHOOCHEE	BUFORD	DISCHARGE	1DAY
Morgan Falls	Morgan Falls-Power Plant	Lookback Release	shared/ACFHEC_11_30May2014.dss	CHATTAHOOCHEE	NORCROSS	FLOW	1DAY
West Point	West Point-Power Plant	Lookback Release	shared/ACFHEC_11_30May2014.dss	CHATTAHOOCHEE	WEST POINT R	DISCHARGE	1DAY
Bartletts Fery	Bartletts Ferry-Power Plant	Lookback Release	shared/ACFHEC_11_30May2014.dss	CHATTAHOOCHEE	BARTLETTS FERRY	DISCHARGE	1DAY
Goat Rock	Goat Rock-Power Plant	Lookback Release	shared/ACFHEC_11_30May2014.dss	CHATTAHOOCHEE	GOAT ROCK	FLOW	1DAY
Oliver	Oliver-Power Plant	Lookback Release	shared/ACFHEC_11_30May2014.dss	CHATTAHOOCHEE	OLIVER	FLOW	1DAY
North Highlands	North Highlands-Power Plant	Lookback Release	shared/ACFHEC_11_30May2014.dss	CHATTAHOOCHEE	NORTH HIGHLANDS	FLOW	1DAY
Walter F George	Walter F George-Power Plant	Lookback Release	shared/ACFHEC_11_30May2014.dss	CHATTAHOOCHEE	W.F.GEORGE	DISCHARGE	1DAY
Jim Woodruff	Jim Woodruff-Power Plant	Lookback Release	shared/ACFHEC_11_30May2014.dss	APALACHICOLA	JIM WOODRUFF	DISCHARGE	1DAY

Lookback Elevation Time-Series Mapping Locations

Model Node	Local Flow Name	Variable	DSS File	Part A	Part B	Part C	Part E
Buford	Buford-Pool	Lookback Elevation	shared/lookback_ver11.dss		BUFORD-CONSERVATION	ELEV-ZONE	1DAY
West Point	West Point-Pool	Lookback Elevation	shared/lookback_ver11.dss		WEST POINT-CONSERVATION	ELEV-ZONE	1DAY
Bartletts Fery	Bartletts Ferry-Pool	Lookback Elevation	shared/lookback_ver11.dss		BARTLETTS FERRY-CONSERVATION	ELEV-ZONE	1DAY
Goat Rock	Goat Rock-Pool	Lookback Elevation	shared/lookback_ver11.dss		GOAT ROCK-CONSERVATION	ELEV-ZONE	1DAY
Oliver	Oliver-Pool	Lookback Elevation	shared/lookback_ver11.dss		OLIVER-CONSERVATION	ELEV-ZONE	1DAY
North Highlands	North Highlands-Pool	Lookback Elevation	shared/lookback_ver11.dss		NORTH HIGHLANDS-CONSERVATION	ELEV-ZONE	1DAY
Walter F George	Walter F George-Pool	Lookback Elevation	shared/lookback_ver11.dss		WALTER F GEORGE-CONSERVATION	ELEV-ZONE	1DAY
Jim Woodruff	Jim Woodruff-Pool	Lookback Elevation	shared/lookback_ver11.dss		JIM WOODRUFF-CONSERVATION	ELEV-ZONE	1DAY

Alternatives Editor Model Settings

Time-Series Mapping Locations for Model Operations

Lookback Diversion Time-Series Mapping Locations		Baseline	No Action	Proposed	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
		L18	L60	L18-G50-PT	L18-G42-PT	L18-G42-PL	L18-G42-WTP	L30-G30-PT	L30-G30-PL	L30-G30-WTP	L43-G17-PT
Model Node	Local Flow Name	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F
Norcross	Norcross_Divs-Norcross_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River-Atlanta Divs_River Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs-Whitesburg_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs-West Point Gage_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Columbus	Columbus_Divs-Columbus_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs-Blountstown_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs-Sumatra_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs-Griffin_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Montezuma	Montezuma_Divs-Montezuma_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Albany	Albany_Divs-Albany_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Newton	Newton_Divs-Newton_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge_Divs-Bainbridge_Divs Cntrl	2011 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE

Lookback Evaporation Time-Series Mapping Locations		Baseline	No Action	Proposed	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
		L18	L60	L18-G50-PT	L18-G42-PT	L18-G42-PL	L18-G42-WTP	L30-G30-PT	L30-G30-PL	L30-G30-WTP	L43-G17-PT
Model Node	Local Flow Name	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F
White Ck	White Creek-Pool	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Glades	Glades-Pool	N/A	N/A	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Buford	Buford-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Morgan Falls	Morgan Falls-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
West Point	West Point-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Bartletts Fery	Bartletts Ferry-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Goat Rock	Goat Rock-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Oliver	Oliver-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
North Highlands	North Highlands-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Walter F George	Walter F George-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
George Andrews	George Andrews-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Jim Woodruff	Jim Woodruff-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO

Lookback Release Time-Series Mapping Locations		Baseline	No Action	Proposed	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
		L18	L60	L18-G50-PT	L18-G42-PT	L18-G42-PL	L18-G42-WTP	L30-G30-PT	L30-G30-PL	L30-G30-WTP	L43-G17-PT
Model Node	Local Flow Name	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F
Glades	Glades-Hall Co WD	N/A	N/A	N/A	N/A	42 MGD	42 MGD	N/A	30 MGD	30 MGD	N/A
Buford	Buford-Power Plant	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ
Morgan Falls	Morgan Falls-Power Plant	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ
West Point	West Point-Power Plant	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ
Bartletts Fery	Bartletts Ferry-Power Plant	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ
Goat Rock	Goat Rock-Power Plant	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ
Oliver	Oliver-Power Plant	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ
North Highlands	North Highlands-Power Plant	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ
Walter F George	Walter F George-Power Plant	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ
Jim Woodruff	Jim Woodruff-Power Plant	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ

Lookback Elevation Time-Series Mapping Locations		Baseline	No Action	Proposed	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
		L18	L60	L18-G50-PT	L18-G42-PT	L18-G42-PL	L18-G42-WTP	L30-G30-PT	L30-G30-PL	L30-G30-WTP	L43-G17-PT
Model Node	Local Flow Name	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F	Part F
Buford	Buford-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
West Point	West Point-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
Bartletts Fery	Bartletts Ferry-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
Goat Rock	Goat Rock-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
Oliver	Oliver-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
North Highlands	North Highlands-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
Walter F George	Walter F George-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
Jim Woodruff	Jim Woodruff-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION

Alternatives Editor Model Settings

Time-Series Mapping Locations for Model Operations

Lookback Diversion Time-Series Mapping Locations		Alternative 8	Alternative 9	Alternative 10	Alternative 11
		L43-G17-PL	L43-G17-WTP	L43-W17-PT	L43-W17-PL
Model Node	Local Flow Name	Part F	Part F	Part F	Part F
Norcross	Norcross_Divs-Norcross_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River-Atlanta Divs_River Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs-Whitesburg_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs-West Point Gage_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Columbus	Columbus_Divs-Columbus_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs-Blountstown_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs-Sumatra_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs-Griffin_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Montezuma	Montezuma_Divs-Montezuma_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Albany	Albany_Divs-Albany_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Newton	Newton_Divs-Newton_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge_Divs-Bainbridge_Divs Cntrl	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE	2060 NET CONSUMPTIVE

Lookback Evaporation Time-Series Mapping Locations		Alternative 8	Alternative 9	Alternative 10	Alternative 11
		L43-G17-PL	L43-G17-WTP	L43-W17-PT	L43-W17-PL
Model Node	Local Flow Name	Part F	Part F	Part F	Part F
White Ck	White Creek-Pool	N/A	N/A	EST_RATIO	EST_RATIO
Glades	Glades-Pool	EST_RATIO	EST_RATIO	N/A	N/A
Buford	Buford-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Morgan Falls	Morgan Falls-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
West Point	West Point-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Bartletts Fery	Bartletts Ferry-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Goat Rock	Goat Rock-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Oliver	Oliver-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
North Highlands	North Highlands-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Walter F George	Walter F George-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
George Andrews	George Andrews-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO
Jim Woodruff	Jim Woodruff-Pool	EST_RATIO	EST_RATIO	EST_RATIO	EST_RATIO

Lookback Release Time-Series Mapping Locations		Alternative 8	Alternative 9	Alternative 10	Alternative 11
		L43-G17-PL	L43-G17-WTP	L43-W17-PT	L43-W17-PL
Model Node	Local Flow Name	Part F	Part F	Part F	Part F
Glades	Glades-Hall Co WD	17 MGD	17 MGD	N/A	17 MGD
Buford	Buford-Power Plant	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ
Morgan Falls	Morgan Falls-Power Plant	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ
West Point	West Point-Power Plant	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ
Bartletts Fery	Bartletts Ferry-Power Plant	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ
Goat Rock	Goat Rock-Power Plant	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ
Oliver	Oliver-Power Plant	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ
North Highlands	North Highlands-Power Plant	OBS_ADJ	OBS_ADJ	OBS_ADJ	OBS_ADJ
Walter F George	Walter F George-Power Plant	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ
Jim Woodruff	Jim Woodruff-Power Plant	COE_ADJ	COE_ADJ	COE_ADJ	COE_ADJ

Lookback Elevation Time-Series Mapping Locations		Alternative 8	Alternative 9	Alternative 10	Alternative 11
		L43-G17-PL	L43-G17-WTP	L43-W17-PT	L43-W17-PL
Model Node	Local Flow Name	Part F	Part F	Part F	Part F
Buford	Buford-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
West Point	West Point-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
Bartletts Fery	Bartletts Ferry-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
Goat Rock	Goat Rock-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
Oliver	Oliver-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
North Highlands	North Highlands-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
Walter F George	Walter F George-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION
Jim Woodruff	Jim Woodruff-Pool	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION	FROM NO-ACTION

Alternatives Editor Model Settings
Time-Series Mapping Locations for Model Flow

Flow Time-Series Mapping Locations for Baseline Conditions (L18), and No Action Alternative (L60)

Model Node	Local Flow Name	Variable	DSS File	Part A	Part B	Part C	Part E	Part F	Factor of Flow
Buford_IN	Buford_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	BUFORD	FLOW_INC	1DAY	UNIMP_CMA7	100%
Norcross	Norcross_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	NORCROSS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Morgan Falls_IN	Morgan Falls_IN_LOC (0.71xAtlanta)	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	ATLANTA	FLOW_INC	1DAY	UNIMP_CMA7	71%
Atlanta_IN	Atlanta_IN_LOC (0.29xAtlanta)	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	ATLANTA	FLOW_INC	1DAY	UNIMP_CMA7	29%
Whitesburg	Whitesburg_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	WHITESBURG	FLOW_INC	1DAY	UNIMP_CMA7	100%
West Point_IN	West Point_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	WEST POINT R	FLOW_INC	1DAY	UNIMP_CMA7	100%
West Point Gage	West Point Gage_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	WEST POINT G	FLOW_INC	1DAY	UNIMP_CMA7	100%
Bartletts Ferry_IN	Bartletts Ferry_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	BARTLETTS FERRY	FLOW_INC	1DAY	UNIMP_CMA7	100%
Goat Rock_IN	Goat Rock_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	GOAT ROCK	FLOW_INC	1DAY	UNIMP_CMA7	100%
Oliver_IN	Oliver_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	OLIVER	FLOW_INC	1DAY	UNIMP_CMA7	100%
North Highlands_IN	North Highlands_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	NORTH HIGHLANDS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Columbus	Columbus_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	COLUMBUS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Walter F George_IN	Walter F George_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	W.F.GEORGE	FLOW_INC	1DAY	UNIMP_CMA7	100%
George Andrews_IN	George Andrews_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	GEORGE ANDREWS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Jim Woodruff_IN_CH	Jim Woodruff_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	JIM WOODRUFF	FLOW_INC	1DAY	UNIMP_CMA7	25%
Jim Woodruff_IN_SP	Jim Woodruff_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	JIM WOODRUFF	FLOW_INC	1DAY	UNIMP_CMA7	70%
Chattahoochee_LOC	Chattahoochee_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	CHATTAHOOCHEE	FLOW_INC	1DAY	UNIMP_CMA0	100%
Blountstown_LOC	Blountstown_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	BLOUNTSTOWN	FLOW_INC	1DAY	UNIMP_CMA7	100%
Sumatra_LOC	Sumatra_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	SUMATRA	FLOW_INC	1DAY	UNIMP_CMA7	100%
Griffin_LOC	Griffin_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	GRIFFIN	FLOW_INC	1DAY	UNIMP_CMA0	100%
Montezuma	Montezuma_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	MONTEZUMA	FLOW_INC	1DAY	UNIMP_CMA0	100%
Albany	Albany_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	ALBANY	FLOW_INC	1DAY	UNIMP_CMA5	100%
Newton	Newton_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	NEWTON	FLOW_INC	1DAY	UNIMP_CMA5	100%
Bainbridge	Bainbridge_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	BAINBRIDGE	FLOW_INC	1DAY	UNIMP_CMA5	100%
Jim Woodruff_IN_FL	Jim Woodruff_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	JIM WOODRUFF	FLOW_INC	1DAY	UNIMP_CMA7	5%

Alternatives Editor Model Settings
Time-Series Mapping Locations for Model Flow

Flow Time-Series Mapping Locations for Glades Alternatives (Proposed Project (L18-G50-PT) and Alternatives 1-9)

Model Node	Local Flow Name	Variable	DSS File	Part A	Part B	Part C	Part E	Part F	Factor of Flow
Glades PumpStation	Chattahoochee_PS_374	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-374 SQ MI	100%
Flat_IN	Flat_Ck_LOC	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	FLAT CK	INFLOW	FLOW	1DAY	CALCULATED	100%
Buford_IN	Buford_Adj	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-GLADES RESERVOIR	100%
Norcross	Norcross_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	NORCROSS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Morgan Falls_IN	Morgan Falls_IN_LOC (0.71xAtlanta)	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	ATLANTA	FLOW_INC	1DAY	UNIMP_CMA7	71%
Atlanta_IN	Atlanta_IN_LOC (0.29xAtlanta)	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	ATLANTA	FLOW_INC	1DAY	UNIMP_CMA7	29%
Whitesburg	Whitesburg_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	WHITESBURG	FLOW_INC	1DAY	UNIMP_CMA7	100%
West Point_IN	West Point_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	WEST POINT R	FLOW_INC	1DAY	UNIMP_CMA7	100%
West Point Gage	West Point Gage_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	WEST POINT G	FLOW_INC	1DAY	UNIMP_CMA7	100%
Bartletts Ferry_IN	Bartletts Ferry_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	BARTLETTS FERRY	FLOW_INC	1DAY	UNIMP_CMA7	100%
Goat Rock_IN	Goat Rock_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	GOAT ROCK	FLOW_INC	1DAY	UNIMP_CMA7	100%
Oliver_IN	Oliver_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	OLIVER	FLOW_INC	1DAY	UNIMP_CMA7	100%
North Highlands_IN	North Highlands_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	NORTH HIGHLANDS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Columbus	Columbus_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	COLUMBUS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Walter F George_IN	Walter F George_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	W.F.GEORGE	FLOW_INC	1DAY	UNIMP_CMA7	100%
George Andrews_IN	George Andrews_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	GEORGE ANDREWS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Jim Woodruff_IN_CH	Jim Woodruff_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	JIM WOODRUFF	FLOW_INC	1DAY	UNIMP_CMA7	25%
Jim Woodruff_IN_SP	Jim Woodruff_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	JIM WOODRUFF	FLOW_INC	1DAY	UNIMP_CMA7	70%
Chattahoochee_LOC	Chattahoochee_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	CHATTAHOOCHEE	FLOW_INC	1DAY	UNIMP_CMA0	100%
Blountstown_LOC	Blountstown_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	BLOUNTSTOWN	FLOW_INC	1DAY	UNIMP_CMA7	100%
Sumatra_LOC	Sumatra_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	SUMATRA	FLOW_INC	1DAY	UNIMP_CMA7	100%
Griffin_LOC	Griffin_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	GRIFFIN	FLOW_INC	1DAY	UNIMP_CMA0	100%
Montezuma	Montezuma_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	MONTEZUMA	FLOW_INC	1DAY	UNIMP_CMA0	100%
Albany	Albany_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	ALBANY	FLOW_INC	1DAY	UNIMP_CMA5	100%
Newton	Newton_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	NEWTON	FLOW_INC	1DAY	UNIMP_CMA5	100%
Bainbridge	Bainbridge_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	BAINBRIDGE	FLOW_INC	1DAY	UNIMP_CMA5	100%
Jim Woodruff_IN_FL	Jim Woodruff_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	JIM WOODRUFF	FLOW_INC	1DAY	UNIMP_CMA7	5%

Alternatives Editor Model Settings
Time-Series Mapping Locations for Model Flow

Flow Time-Series Mapping Locations for White Creek Alternatives (Alternatives 10-11)

Model Node	Local Flow Name	Variable	DSS File	Part A	Part B	Part C	Part E	Part F	Factor of Flow
White CK_PumpStation	Chattahoochee_PS_318	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	CHATTAHOOCHEE	PUMPSTATION	FLOW	1DAY	CALCULATED-318 SQ MI	100%
White Ck_IN	White_Ck_LOC	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	WHITE CK	INFLOW	FLOW	1DAY	CALCULATED	100%
Buford_IN	Buford_Adj	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	CHATTAHOOCHEE	BUFORD_IN	FLOW	1DAY	ADJUSTED-WHITE CK RESERVOIR	100%
Norcross	Norcross_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	NORCROSS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Morgan Falls_IN	Morgan Falls_IN_LOC (0.71xAtlanta)	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	ATLANTA	FLOW_INC	1DAY	UNIMP_CMA7	71%
Atlanta_IN	Atlanta_IN_LOC (0.29xAtlanta)	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	ATLANTA	FLOW_INC	1DAY	UNIMP_CMA7	29%
Whitesburg	Whitesburg_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	WHITESBURG	FLOW_INC	1DAY	UNIMP_CMA7	100%
West Point_IN	West Point_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	WEST POINT R	FLOW_INC	1DAY	UNIMP_CMA7	100%
West Point Gage	West Point Gage_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	WEST POINT G	FLOW_INC	1DAY	UNIMP_CMA7	100%
Bartletts Ferry_IN	Bartletts Ferry_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	BARTLETTS FERRY	FLOW_INC	1DAY	UNIMP_CMA7	100%
Goat Rock_IN	Goat Rock_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	GOAT ROCK	FLOW_INC	1DAY	UNIMP_CMA7	100%
Oliver_IN	Oliver_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	OLIVER	FLOW_INC	1DAY	UNIMP_CMA7	100%
North Highlands_IN	North Highlands_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	NORTH HIGHLANDS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Columbus	Columbus_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	COLUMBUS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Walter F George_IN	Walter F George_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	W.F.GEORGE	FLOW_INC	1DAY	UNIMP_CMA7	100%
George Andrews_IN	George Andrews_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	CHATTAHOOCHEE	GEORGE ANDREWS	FLOW_INC	1DAY	UNIMP_CMA7	100%
Jim Woodruff_IN_CH	Jim Woodruff_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	JIM WOODRUFF	FLOW_INC	1DAY	UNIMP_CMA7	25%
Jim Woodruff_IN_SP	Jim Woodruff_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	JIM WOODRUFF	FLOW_INC	1DAY	UNIMP_CMA7	70%
Chattahoochee_LOC	Chattahoochee_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	CHATTAHOOCHEE	FLOW_INC	1DAY	UNIMP_CMA0	100%
Blountstown_LOC	Blountstown_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	BLOUNTSTOWN	FLOW_INC	1DAY	UNIMP_CMA7	100%
Sumatra_LOC	Sumatra_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	SUMATRA	FLOW_INC	1DAY	UNIMP_CMA7	100%
Griffin_LOC	Griffin_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	GRIFFIN	FLOW_INC	1DAY	UNIMP_CMA0	100%
Montezuma	Montezuma_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	MONTEZUMA	FLOW_INC	1DAY	UNIMP_CMA0	100%
Albany	Albany_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	ALBANY	FLOW_INC	1DAY	UNIMP_CMA5	100%
Newton	Newton_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	NEWTON	FLOW_INC	1DAY	UNIMP_CMA5	100%
Bainbridge	Bainbridge_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	FLINT	BAINBRIDGE	FLOW_INC	1DAY	UNIMP_CMA5	100%
Jim Woodruff_IN_FL	Jim Woodruff_IN_LOC	Known Flow	shared/ACFCUM_11_30May2014.dss	APALACHICOLA	JIM WOODRUFF	FLOW_INC	1DAY	UNIMP_CMA7	5%

Alternatives Editor Model Settings
Time-Series Mapping Locations for Model Demand Withdrawals

Withdrawal Time-Series Mapping Locations for Baseline Conditions (L18)

Model Node	Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Buford_In	10 MGD_Rel Contract	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	10 MGD_REL CONTRACT	FLOW-DIV	1DAY	10 MGD
Buford_In	Metro Atlanta	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Norcross	Norcross_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Morgan Falls_IN	Morgan Falls_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MORGAN FALLS	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
West Point_IN	West Point_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Bartletts Ferry_IN	Bartletts Ferry_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ZERO	FLOW-DIV	1DAY	ZERO DEMAND
Columbus	Columbus_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Walter F George_IN	Walter F George_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WF GEORGE	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
George Andrews_IN	George Andrews_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GEORGE ANDREWS	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Jim Woodruff_IN_SP	Jim Woodruff_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	JIM WOODRUFF	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Blountstown	Blountstown_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Sumatra	Sumatra_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Griffin	Griffin_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Montezuma	Montezuma	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Albany	Albany	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Newton	Newton	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE
Bainbridge	Bainbridge	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY	2011 NET CONSUMPTIVE

Withdrawal Time-Series Mapping Locations for No Action Alternative (L60)

Model Node	Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Buford_In	10 MGD_Rel Contract	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	10 MGD_REL CONTRACT	FLOW-DIV	1DAY	10 MGD
Buford_In	Metro Atlanta	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Norcross	Norcross_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Morgan Falls_IN	Morgan Falls_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MORGAN FALLS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point_IN	West Point_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bartletts Ferry_IN	Bartletts Ferry_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ZERO	FLOW-DIV	1DAY	ZERO DEMAND
Columbus	Columbus_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Walter F George_IN	Walter F George_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WF GEORGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
George Andrews_IN	George Andrews_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GEORGE ANDREWS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Jim Woodruff_IN_SP	Jim Woodruff_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	JIM WOODRUFF	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Montezuma	Montezuma	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Albany	Albany	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Newton	Newton	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE

Alternatives Editor Model Settings
Time-Series Mapping Locations for Model Demand Withdrawals

Withdrawal Time-Series Mapping Locations for Proposed Project (L18-G50-PT)

Model Node	Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Glades	Hall Co Water Supply WD	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	50 MGD
Buford_In	Hall Co WD	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	50 MGD
Buford_In	10 MGD_Rel Contract	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	10 MGD_REL CONTRACT	FLOW-DIV	1DAY	10 MGD
Buford_In	Metro Atlanta	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	PROPOSED PROJECT
Norcross	Norcross_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Morgan Falls_IN	Morgan Falls_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MORGAN FALLS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point_IN	West Point_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bartletts Ferry_IN	Bartletts Ferry_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ZERO	FLOW-DIV	1DAY	ZERO DEMAND
Columbus	Columbus_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Walter F George_IN	Walter F George_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WF GEORGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
George Andrews_IN	George Andrews_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GEORGE ANDREWS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Jim Woodruff_IN_SP	Jim Woodruff_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	JIM WOODRUFF	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Montezuma	Montezuma	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Albany	Albany	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Newton	Newton	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE

Withdrawal Time-Series Mapping Locations for Alternative 1 (L18-G42-PT) and Alternative 2 (L18-G42-PL)

Model Node	Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Glades	Hall Co Water Supply WD	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	42 MGD
Buford_In	Hall Co WD	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	42 MGD
Buford_In	10 MGD_Rel Contract	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	10 MGD_REL CONTRACT	FLOW-DIV	1DAY	10 MGD
Buford_In	Metro Atlanta	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	L18
Norcross	Norcross_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Morgan Falls_IN	Morgan Falls_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MORGAN FALLS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point_IN	West Point_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bartletts Ferry_IN	Bartletts Ferry_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ZERO	FLOW-DIV	1DAY	ZERO DEMAND
Columbus	Columbus_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Walter F George_IN	Walter F George_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WF GEORGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
George Andrews_IN	George Andrews_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GEORGE ANDREWS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Jim Woodruff_IN_SP	Jim Woodruff_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	JIM WOODRUFF	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Montezuma	Montezuma	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Albany	Albany	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Newton	Newton	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE

Alternatives Editor Model Settings
Time-Series Mapping Locations for Model Demand Withdrawals

Withdrawal Time-Series Mapping Locations for Alternative 3 (L18-G42-WTP)

Model Node	Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Glades	Hall Co Water Supply WD	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	42 MGD
Buford_In	10 MGD_Rel Contract	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	10 MGD_REL CONTRACT	FLOW-DIV	1DAY	10 MGD
Buford_In	Metro Atlanta	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	L18
Norcross	Norcross_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Morgan Falls_IN	Morgan Falls_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MORGAN FALLS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point_IN	West Point_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bartletts Ferry_IN	Bartletts Ferry_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ZERO	FLOW-DIV	1DAY	ZERO DEMAND
Columbus	Columbus_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Walter F George_IN	Walter F George_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WF GEORGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
George Andrews_IN	George Andrews_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GEORGE ANDREWS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Jim Woodruff_IN_SP	Jim Woodruff_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	JIM WOODRUFF	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Montezuma	Montezuma	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Albany	Albany	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Newton	Newton	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE

Withdrawal Time-Series Mapping Locations for Alternative 4 (L30-G30-PT) and Alternative 5 (L30-G30-PL)

Model Node	Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Glades	Hall Co Water Supply WD	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	30 MGD
Buford_In	Hall Co WD	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	30 MGD
Buford_In	10 MGD_Rel Contract	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	10 MGD_REL CONTRACT	FLOW-DIV	1DAY	10 MGD
Buford_In	Metro Atlanta	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	L30
Norcross	Norcross_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Morgan Falls_IN	Morgan Falls_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MORGAN FALLS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point_IN	West Point_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bartletts Ferry_IN	Bartletts Ferry_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ZERO	FLOW-DIV	1DAY	ZERO DEMAND
Columbus	Columbus_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Walter F George_IN	Walter F George_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WF GEORGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
George Andrews_IN	George Andrews_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GEORGE ANDREWS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Jim Woodruff_IN_SP	Jim Woodruff_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	JIM WOODRUFF	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Montezuma	Montezuma	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Albany	Albany	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Newton	Newton	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE

Alternatives Editor Model Settings
Time-Series Mapping Locations for Model Demand Withdrawals

Withdrawal Time-Series Mapping Locations for Alternative 6 (L30-G30-WTP)

Model Node	Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Glades	Hall Co Water Supply WD	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	30 MGD
Buford_In	10 MGD_Rel Contract	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	10 MGD_REL CONTRACT	FLOW-DIV	1DAY	10 MGD
Buford_In	Metro Atlanta	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	L30
Norcross	Norcross_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Morgan Falls_IN	Morgan Falls_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MORGAN FALLS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point_IN	West Point_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bartletts Ferry_IN	Bartletts Ferry_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ZERO	FLOW-DIV	1DAY	ZERO DEMAND
Columbus	Columbus_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Walter F George_IN	Walter F George_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WF GEORGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
George Andrews_IN	George Andrews_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GEORGE ANDREWS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Jim Woodruff_IN_SP	Jim Woodruff_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	JIM WOODRUFF	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Montezuma	Montezuma	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Albany	Albany	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Newton	Newton	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE

Withdrawal Time-Series Mapping Locations for Alternative 7 (L43-G17-PT) and Alternative 8 (L43-G17-PL)

Model Node	Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Glades	Hall Co Water Supply WD	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD
Buford_In	Hall Co WD	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD
Buford_In	10 MGD_Rel Contract	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	10 MGD_REL CONTRACT	FLOW-DIV	1DAY	10 MGD
Buford_In	Metro Atlanta	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	L43
Norcross	Norcross_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Morgan Falls_IN	Morgan Falls_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MORGAN FALLS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point_IN	West Point_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bartletts Ferry_IN	Bartletts Ferry_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ZERO	FLOW-DIV	1DAY	ZERO DEMAND
Columbus	Columbus_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Walter F George_IN	Walter F George_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WF GEORGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
George Andrews_IN	George Andrews_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GEORGE ANDREWS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Jim Woodruff_IN_SP	Jim Woodruff_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	JIM WOODRUFF	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Montezuma	Montezuma	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Albany	Albany	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Newton	Newton	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE

Alternatives Editor Model Settings
Time-Series Mapping Locations for Model Demand Withdrawals

Withdrawal Time-Series Mapping Locations for Alternative 9 (L43-G17-WTP)

Model Node	Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
Glades	Hall Co Water Supply WD	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GLADES	FLOW-DIV	1DAY	17 MGD
Buford_In	10 MGD_Rel Contract	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	10 MGD_REL CONTRACT	FLOW-DIV	1DAY	10 MGD
Buford_In	Metro Atlanta	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	L43
Norcross	Norcross_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Morgan Falls_IN	Morgan Falls_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MORGAN FALLS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point_IN	West Point_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bartletts Ferry_IN	Bartletts Ferry_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ZERO	FLOW-DIV	1DAY	ZERO DEMAND
Columbus	Columbus_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Walter F George_IN	Walter F George_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WF GEORGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
George Andrews_IN	George Andrews_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GEORGE ANDREWS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Jim Woodruff_IN_SP	Jim Woodruff_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	JIM WOODRUFF	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Montezuma	Montezuma	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Albany	Albany	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Newton	Newton	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE

Withdrawal Time-Series Mapping Locations for Alternative 10 (L43-W17-PT) and Alternative 11 (L43-W17-PL)

Model Node	Location	Variable	DSS File	Part A	Part B	Part C	Part E	Part F
White Ck	Hall CO Water Supply WD	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITE CK	FLOW-DIV	1DAY	17 MGD
Buford_In	Hall Co WD	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITE CK	FLOW-DIV	1DAY	17 MGD
Buford_In	10 MGD_Rel Contract	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	10 MGD_REL CONTRACT	FLOW-DIV	1DAY	10 MGD
Buford_In	Metro Atlanta	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BUFORD	FLOW-DIV	1DAY	L43
Norcross	Norcross_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NORCROSS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Morgan Falls_IN	Morgan Falls_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MORGAN FALLS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Atlanta	Atlanta Divs_River	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ATLANTA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Whitesburg	Whitesburg_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WHITESBURG	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point_IN	West Point_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
West Point Gage	West Point Gage_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WEST POINT GAGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bartletts Ferry_IN	Bartletts Ferry_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ZERO	FLOW-DIV	1DAY	ZERO DEMAND
Columbus	Columbus_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	COLUMBUS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Walter F George_IN	Walter F George_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	WF GEORGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
George Andrews_IN	George Andrews_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GEORGE ANDREWS	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Jim Woodruff_IN_SP	Jim Woodruff_DIV	Known Flow	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	JIM WOODRUFF	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Blountstown	Blountstown_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BLOUNTSTOWN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Sumatra	Sumatra_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	SUMATRA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Griffin	Griffin_Divs	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	GRIFFIN	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Montezuma	Montezuma	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	MONTEZUMA	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Albany	Albany	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	ALBANY	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Newton	Newton	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	NEWTON	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE
Bainbridge	Bainbridge	Input Time Series	shared/ACF_Glades_EIS_30Sep2015.dss	ACF BASIN	BAINBRIDGE	FLOW-DIV	1DAY	2060 NET CONSUMPTIVE

ATTACHMENT 3

Monthly Net Consumptive Water Withdrawals

DRAFT

Water Supply Water Withdrawals

Monthly Net Consumptive Use for Baseline Conditions (L18), mgd

Month	Glades	10 MGD	Buford	Norcross	Morgan Falls	Atlanta	Whitesburg	West Point_DIV	West Point Gage_Divs	Columbus_Divs	Walter F George_DIV	George Andrews_DIV	Jim Woodruff_DIV	Blountstown_Divs	Sumatra_Divs	Griffin_Divs	Montezuma_Divs	Albany_Divs	Newton_Divs	Bainbridge_Divs
1	0.0	10.0	61.9	-4.0	69.0	-50.9	25.7	49.3	-7.1	42.4	-15.0	-5.6	-3.3	3.9	3.5	8.9	8.9	2.0	-2.5	1.4
2	0.0	10.0	54.5	-4.0	70.1	-57.9	23.0	42.2	-6.1	39.7	-22.8	-5.3	1.5	5.3	0.6	8.6	8.6	5.3	-3.2	5.0
3	0.0	10.0	52.0	-3.9	68.5	-65.1	23.3	35.8	-5.1	39.0	-25.3	-3.6	33.0	5.3	2.6	11.7	11.7	20.0	6.6	17.3
4	0.0	10.0	54.4	-4.4	76.9	-59.8	24.9	45.0	-6.5	51.7	-14.4	-3.2	24.4	5.3	7.8	18.1	18.1	48.4	11.3	44.0
5	0.0	10.0	87.5	-4.9	85.3	-51.6	29.6	52.2	-7.5	62.1	5.5	0.7	124.0	7.9	8.5	26.2	26.3	84.8	37.2	144.4
6	0.0	10.0	91.0	-5.6	96.8	-48.2	32.5	67.3	-9.7	69.1	4.9	1.8	175.1	7.9	51.6	28.3	28.4	109.4	46.3	212.4
7	0.0	10.0	85.0	-5.4	94.1	-44.7	30.7	65.3	-9.4	62.6	3.2	3.4	172.9	7.9	31.0	30.9	31.0	168.6	43.2	225.2
8	0.0	10.0	95.7	-5.9	102.9	-42.6	31.1	65.6	-9.4	69.7	7.0	1.1	168.0	7.9	16.2	32.6	32.7	197.2	43.5	240.7
9	0.0	10.0	87.9	-5.6	96.9	-43.5	28.3	50.0	-7.2	49.2	1.2	-1.1	121.5	7.9	10.3	21.5	21.6	72.1	48.1	244.0
10	0.0	10.0	76.6	-5.1	88.1	-45.2	24.8	36.5	-5.2	57.9	-2.9	-2.6	46.3	7.8	7.8	15.4	15.5	14.2	27.0	103.8
11	0.0	10.0	65.7	-4.5	79.1	-48.9	23.9	30.3	-4.3	51.5	-4.4	-3.4	13.5	7.7	2.6	18.9	18.9	15.2	21.7	78.4
12	0.0	10.0	57.9	-4.3	74.3	-53.5	21.9	35.8	-5.1	42.4	-21.9	-4.7	19.8	3.9	0.6	20.1	20.2	25.1	16.2	57.3
Average Annual Daily	0.0	10.0	72.5	-4.8	83.5	-51.0	26.6	47.9	-6.9	53.1	-7.1	-1.9	74.7	6.6	11.9	20.1	20.2	63.5	24.6	114.5

Monthly Net Consumptive Use for No Action Alternatives (L60), mgd

Month	Glades	10 MGD	Buford	Norcross	Morgan Falls	Atlanta	Whitesburg	West Point_DIV	West Point Gage_Divs	Columbus_Divs	Walter F George_DIV	George Andrews_DIV	Jim Woodruff_DIV	Blountstown_Divs	Sumatra_Divs	Griffin_Divs	Montezuma_Divs	Albany_Divs	Newton_Divs	Bainbridge_Divs
1	0.0	10.0	97.9	-2.9	77.1	-69.3	19.5	67.9	-9.1	61.3	-49.9	-6.8	-8.3	3.9	3.5	38.4	15.7	-7.7	1.7	1.2
2	0.0	10.0	64.7	-2.9	78.0	-78.5	14.7	79.8	-10.7	58.5	-60.3	-6.5	-0.6	5.3	0.6	34.8	14.3	-8.9	2.2	3.3
3	0.0	10.0	53.7	-2.8	75.2	-88.2	13.4	82.7	-11.1	68.6	-52.1	-4.4	43.2	5.3	2.6	26.5	10.9	0.3	8.3	14.7
4	0.0	10.0	60.1	-3.3	86.3	-81.2	16.4	89.2	-12.0	83.2	-29.6	-3.9	60.2	5.3	7.8	33.7	13.8	14.0	30.9	66.2
5	0.0	10.0	169.4	-3.7	97.2	-70.7	24.0	105.6	-14.2	106.0	-4.9	0.8	98.6	7.9	8.5	56.3	23.1	52.9	54.9	142.2
6	0.0	10.0	172.6	-4.3	112.8	-66.3	28.4	109.6	-14.7	101.0	-15.3	2.1	192.3	7.9	51.6	60.8	24.9	88.1	88.4	255.7
7	0.0	10.0	149.4	-4.2	111.1	-61.5	27.0	106.2	-14.3	94.3	-19.6	4.1	232.4	7.9	31.0	60.4	24.8	110.1	99.6	308.3
8	0.0	10.0	182.8	-4.6	121.9	-58.8	27.9	101.0	-13.6	105.2	-11.8	1.3	201.1	7.9	16.2	49.8	20.4	88.8	96.7	281.6
9	0.0	10.0	167.3	-4.3	113.8	-59.7	24.4	107.3	-14.4	94.6	-19.1	-1.3	161.6	7.9	10.3	39.5	16.2	68.6	88.4	223.2
10	0.0	10.0	144.4	-3.9	103.9	-61.8	19.7	84.1	-11.3	77.7	-32.7	-3.2	43.6	7.8	7.8	41.9	17.2	2.2	63.8	108.9
11	0.0	10.0	114.8	-3.5	92.2	-66.7	17.7	90.2	-12.1	69.0	-24.7	-4.1	34.7	7.7	2.6	36.2	14.8	1.8	39.8	80.2
12	0.0	10.0	86.9	-3.2	85.4	-72.7	14.3	84.4	-11.3	60.9	-55.9	-5.8	18.0	3.9	0.6	26.5	10.8	-8.5	29.1	55.0
Average Annual Daily	0.0	10.0	122.0	-3.6	96.2	-69.6	20.6	92.3	-12.4	81.7	-31.3	-2.3	89.7	6.6	11.9	42.1	17.2	33.5	50.3	128.4

Monthly Net Consumptive Use for Proposed Project (L18-G50-PT), mgd

Month	Glades	10 MGD	Buford	Norcross	Morgan Falls	Atlanta	Whitesburg	West Point_DIV	West Point Gage_Divs	Columbus_Divs	Walter F George_DIV	George Andrews_DIV	Jim Woodruff_DIV	Blountstown_Divs	Sumatra_Divs	Griffin_Divs	Montezuma_Divs	Albany_Divs	Newton_Divs	Bainbridge_Divs
1	44.5	10.0	53.4	-2.9	77.1	-69.3	19.5	67.9	-9.1	61.3	-49.9	-6.8	-8.3	3.9	3.5	38.4	15.7	-7.7	1.7	1.2
2	43.5	10.0	21.2	-2.9	78.0	-78.5	14.7	79.8	-10.7	58.5	-60.3	-6.5	-0.6	5.3	0.6	34.8	14.3	-8.9	2.2	3.3
3	43.0	10.0	10.8	-2.8	75.2	-88.2	13.4	82.7	-11.1	68.6	-52.1	-4.4	43.2	5.3	2.6	26.5	10.9	0.3	8.3	14.7
4	44.5	10.0	15.7	-3.3	86.3	-81.2	16.4	89.2	-12.0	83.2	-29.6	-3.9	60.2	5.3	7.8	33.7	13.8	14.0	30.9	66.2
5	55.0	10.0	114.3	-3.7	97.2	-70.7	24.0	105.6	-14.2	106.0	-4.9	0.8	98.6	7.9	8.5	56.3	23.1	52.9	54.9	142.2
6	59.0	10.0	113.6	-4.3	112.8	-66.3	28.4	109.6	-14.7	101.0	-15.3	2.1	192.3	7.9	51.6	60.8	24.9	88.1	88.4	255.7
7	57.0	10.0	92.4	-4.2	111.1	-61.5	27.0	106.2	-14.3	94.3	-19.6	4.1	232.4	7.9	31.0	60.4	24.8	110.1	99.6	308.3
8	61.0	10.0	121.8	-4.6	121.9	-58.8	27.9	101.0	-13.6	105.2	-11.8	1.3	201.1	7.9	16.2	49.8	20.4	88.8	96.7	281.6
9	56.0	10.0	111.3	-4.3	113.8	-59.7	24.4	107.3	-14.4	94.6	-19.1	-1.3	161.6	7.9	10.3	39.5	16.2	68.6	88.4	223.2
10	50.0	10.0	94.4	-3.9	103.9	-61.8	19.7	84.1	-11.3	77.7	-32.7	-3.2	43.6	7.8	7.8	41.9	17.2	2.2	63.8	108.9
11	44.5	10.0	70.3	-3.5	92.2	-66.7	17.7	90.2	-12.1	69.0	-24.7	-4.1	34.7	7.7	2.6	36.2	14.8	1.8	39.8	80.2
12	42.0	10.0	44.9	-3.2	85.4	-72.7	14.3	84.4	-11.3	60.9	-55.9	-5.8	18.0	3.9	0.6	26.5	10.8	-8.5	29.1	55.0
Average Annual Daily	50.0	10.0	72.0	-3.6	96.2	-69.6	20.6	92.3	-12.4	81.7	-31.3	-2.3	89.7	6.6	11.9	42.1	17.2	33.5	50.3	128.4

Water Supply Water Withdrawals

Monthly Net Consumptive Use for Alternatives 1 (L18-G42-PT), Alternative 2 (L18-G42-PL), and Alternative 3 (L18-G42-WTP), mgd

Month	Glades	10 MGD	Buford	Norcross	Morgan Falls	Atlanta	Whitesburg	West Point_DIV	West Point Gage_Divs	Columbus_Divs	Walter F George_DIV	George Andrews_DIV	Jim Woodruff_DIV	Blountstown_Divs	Sumatra_Divs	Griffin_Divs	Montezuma_Divs	Albany_Divs	Newton_Divs	Bainbridge_Divs
1	37.4	10.0	60.5	-2.9	77.1	-69.3	19.5	67.9	-9.1	61.3	-49.9	-6.8	-8.3	3.9	3.5	38.4	15.7	-7.7	1.7	1.2
2	36.5	10.0	28.2	-2.9	78.0	-78.5	14.7	79.8	-10.7	58.5	-60.3	-6.5	-0.6	5.3	0.6	34.8	14.3	-8.9	2.2	3.3
3	36.1	10.0	17.7	-2.8	75.2	-88.2	13.4	82.7	-11.1	68.6	-52.1	-4.4	43.2	5.3	2.6	26.5	10.9	0.3	8.3	14.7
4	37.4	10.0	22.8	-3.3	86.3	-81.2	16.4	89.2	-12.0	83.2	-29.6	-3.9	60.2	5.3	7.8	33.7	13.8	14.0	30.9	66.2
5	46.2	10.0	123.1	-3.7	97.2	-70.7	24.0	105.6	-14.2	106.0	-4.9	0.8	98.6	7.9	8.5	56.3	23.1	52.9	54.9	142.2
6	49.6	10.0	123.0	-4.3	112.8	-66.3	28.4	109.6	-14.7	101.0	-15.3	2.1	192.3	7.9	51.6	60.8	24.9	88.1	88.4	255.7
7	47.9	10.0	101.5	-4.2	111.1	-61.5	27.0	106.2	-14.3	94.3	-19.6	4.1	232.4	7.9	31.0	60.4	24.8	110.1	99.6	308.3
8	51.2	10.0	131.6	-4.6	121.9	-58.8	27.9	101.0	-13.6	105.2	-11.8	1.3	201.1	7.9	16.2	49.8	20.4	88.8	96.7	281.6
9	47.0	10.0	120.2	-4.3	113.8	-59.7	24.4	107.3	-14.4	94.6	-19.1	-1.3	161.6	7.9	10.3	39.5	16.2	68.6	88.4	223.2
10	42.0	10.0	102.4	-3.9	103.9	-61.8	19.7	84.1	-11.3	77.7	-32.7	-3.2	43.6	7.8	7.8	41.9	17.2	2.2	63.8	108.9
11	37.4	10.0	77.4	-3.5	92.2	-66.7	17.7	90.2	-12.1	69.0	-24.7	-4.1	34.7	7.7	2.6	36.2	14.8	1.8	39.8	80.2
12	35.3	10.0	51.6	-3.2	85.4	-72.7	14.3	84.4	-11.3	60.9	-55.9	-5.8	18.0	3.9	0.6	26.5	10.8	-8.5	29.1	55.0
Average Annual Daily	42.0	10.0	80.0	-3.6	96.2	-69.6	20.6	92.3	-12.4	81.7	-31.3	-2.3	89.7	6.6	11.9	42.1	17.2	33.5	50.3	128.4

Monthly Net Consumptive Use for Alternatives 4 (L30-G30-PT), Alternative 5 (L30-G30-PL), and Alternative 6 (L30-G30-WTP), mgd

Month	Glades	10 MGD	Buford	Norcross	Morgan Falls	Atlanta	Whitesburg	West Point_DIV	West Point Gage_Divs	Columbus_Divs	Walter F George_DIV	George Andrews_DIV	Jim Woodruff_DIV	Blountstown_Divs	Sumatra_Divs	Griffin_Divs	Montezuma_Divs	Albany_Divs	Newton_Divs	Bainbridge_Divs
1	26.7	10.0	71.2	-2.9	77.1	-69.3	19.5	67.9	-9.1	61.3	-49.9	-6.8	-8.3	3.9	3.5	38.4	15.7	-7.7	1.7	1.2
2	26.1	10.0	38.6	-2.9	78.0	-78.5	14.7	79.8	-10.7	58.5	-60.3	-6.5	-0.6	5.3	0.6	34.8	14.3	-8.9	2.2	3.3
3	25.8	10.0	27.9	-2.8	75.2	-88.2	13.4	82.7	-11.1	68.6	-52.1	-4.4	43.2	5.3	2.6	26.5	10.9	0.3	8.3	14.7
4	26.7	10.0	33.5	-3.3	86.3	-81.2	16.4	89.2	-12.0	83.2	-29.6	-3.9	60.2	5.3	7.8	33.7	13.8	14.0	30.9	66.2
5	33.0	10.0	136.3	-3.7	97.2	-70.7	24.0	105.6	-14.2	106.0	-4.9	0.8	98.6	7.9	8.5	56.3	23.1	52.9	54.9	142.2
6	35.4	10.0	137.2	-4.3	112.8	-66.3	28.4	109.6	-14.7	101.0	-15.3	2.1	192.3	7.9	51.6	60.8	24.9	88.1	88.4	255.7
7	34.2	10.0	115.2	-4.2	111.1	-61.5	27.0	106.2	-14.3	94.3	-19.6	4.1	232.4	7.9	31.0	60.4	24.8	110.1	99.6	308.3
8	36.6	10.0	146.2	-4.6	121.9	-58.8	27.9	101.0	-13.6	105.2	-11.8	1.3	201.1	7.9	16.2	49.8	20.4	88.8	96.7	281.6
9	33.6	10.0	133.7	-4.3	113.8	-59.7	24.4	107.3	-14.4	94.6	-19.1	-1.3	161.6	7.9	10.3	39.5	16.2	68.6	88.4	223.2
10	30.0	10.0	114.4	-3.9	103.9	-61.8	19.7	84.1	-11.3	77.7	-32.7	-3.2	43.6	7.8	7.8	41.9	17.2	2.2	63.8	108.9
11	26.7	10.0	88.1	-3.5	92.2	-66.7	17.7	90.2	-12.1	69.0	-24.7	-4.1	34.7	7.7	2.6	36.2	14.8	1.8	39.8	80.2
12	25.2	10.0	61.7	-3.2	85.4	-72.7	14.3	84.4	-11.3	60.9	-55.9	-5.8	18.0	3.9	0.6	26.5	10.8	-8.5	29.1	55.0
Average Annual Daily	30.0	10.0	92.0	-3.6	96.2	-69.6	20.6	92.3	-12.4	81.7	-31.3	-2.3	89.7	6.6	11.9	42.1	17.2	33.5	50.3	128.4

Monthly Net Consumptive Use for Alternatives 7 (L43-G17-PT), Alternative 8 (L43-G17-PL), Alternative 9 (L43-G17-WTP), Alternative 10 (L43-W17-WTP), and Alternative 11 (L43-W17-WTP), mgd

Month	Glades	10 MGD	Buford	Norcross	Morgan Falls	Atlanta	Whitesburg	West Point_DIV	West Point Gage_Divs	Columbus_Divs	Walter F George_DIV	George Andrews_DIV	Jim Woodruff_DIV	Blountstown_Divs	Sumatra_Divs	Griffin_Divs	Montezuma_Divs	Albany_Divs	Newton_Divs	Bainbridge_Divs
1	15.1	10.0	82.7	-2.9	77.1	-69.3	19.5	67.9	-9.1	61.3	-49.9	-6.8	-8.3	3.9	3.5	38.4	15.7	-7.7	1.7	1.2
2	14.8	10.0	49.9	-2.9	78.0	-78.5	14.7	79.8	-10.7	58.5	-60.3	-6.5	-0.6	5.3	0.6	34.8	14.3	-8.9	2.2	3.3
3	14.6	10.0	39.1	-2.8	75.2	-88.2	13.4	82.7	-11.1	68.6	-52.1	-4.4	43.2	5.3	2.6	26.5	10.9	0.3	8.3	14.7
4	15.1	10.0	45.0	-3.3	86.3	-81.2	16.4	89.2	-12.0	83.2	-29.6	-3.9	60.2	5.3	7.8	33.7	13.8	14.0	30.9	66.2
5	18.7	10.0	150.6	-3.7	97.2	-70.7	24.0	105.6	-14.2	106.0	-4.9	0.8	98.6	7.9	8.5	56.3	23.1	52.9	54.9	142.2
6	20.1	10.0	152.6	-4.3	112.8	-66.3	28.4	109.6	-14.7	101.0	-15.3	2.1	192.3	7.9	51.6	60.8	24.9	88.1	88.4	255.7
7	19.4	10.0	130.0	-4.2	111.1	-61.5	27.0	106.2	-14.3	94.3	-19.6	4.1	232.4	7.9	31.0	60.4	24.8	110.1	99.6	308.3
8	20.7	10.0	162.1	-4.6	121.9	-58.8	27.9	101.0	-13.6	105.2	-11.8	1.3	201.1	7.9	16.2	49.8	20.4	88.8	96.7	281.6
9	19.0	10.0	148.3	-4.3	113.8	-59.7	24.4	107.3	-14.4	94.6	-19.1	-1.3	161.6	7.9	10.3	39.5	16.2	68.6	88.4	223.2
10	17.0	10.0	127.4	-3.9	103.9	-61.8	19.7	84.1	-11.3	77.7	-32.7	-3.2	43.6	7.8	7.8	41.9	17.2	2.2	63.8	108.9
11	15.1	10.0	99.7	-3.5	92.2	-66.7	17.7	90.2	-12.1	69.0	-24.7	-4.1	34.7	7.7	2.6	36.2	14.8	1.8	39.8	80.2
12	14.3	10.0	72.6	-3.2	85.4	-72.7	14.3	84.4	-11.3	60.9	-55.9	-5.8	18.0	3.9	0.6	26.5	10.8	-8.5	29.1	55.0
Average Annual Daily	17.0	10.0	105.0	-3.6	96.2	-69.6	20.6	92.3	-12.4	81.7	-31.3	-2.3	89.7	6.6	11.9	42.1	17.2	33.5	50.3	128.4

ATTACHMENT 4

Documentation of State Variable Scripts

DRAFT

PumptoG50PT State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to Glades after MIF is met)
# GladesStor (storage of Glades Reservoir in ac-ft)
# Pump Capacity to Glades = 37 mgd = 57.24 cfs
# Maximum storage of Glades Reservoir at Normal Pool Operation Elevation (1180 ft) = 35953 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to Glades)
# Note: Chatt 7Q10 (Feb-May) = 276.6 cfs, (Jun-Jan) = 153.9 cfs

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
	Chatt7Q10 = 153.9
elif(curMon == 2):
	Chatt7Q10 = 276.6
elif(curMon == 3):
	Chatt7Q10 = 276.6
elif(curMon == 4):
	Chatt7Q10 = 276.6
elif(curMon == 5):
	Chatt7Q10 = 276.6
elif(curMon == 6):
	Chatt7Q10 = 153.9
elif(curMon == 7):
	Chatt7Q10 = 153.9
elif(curMon == 8):
	Chatt7Q10 = 153.9
elif(curMon == 9):
	Chatt7Q10 = 153.9
elif(curMon == 10):
	Chatt7Q10 = 153.9
elif(curMon == 11):
	Chatt7Q10 = 153.9
else:
	Chatt7Q10 = 153.9

ChattInflow = network.findJunction("Glades PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_374")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
	ChattAvailable = 0
else:
	ChattAvailable = ChattInflow_Cur - Chatt7Q10

GladesStor_Prev = network.getTimeSeries("Reservoir","Glades", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 35953 - GladesStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
	PumpToG50PT = 0
else:
	PumpToG50PT = min(ChattAvailable, 57.24, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToG50PT)
```

PumptoG42PT State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to Glades after MIF is met)
# GladesStor (storage of Glades Reservoir in ac-ft)
# Pump Capacity to Glades = 28 mgd = 43.32 cfs
# Maximum storage of Glades Reservoir at Normal Pool Operation Elevation (1180 ft) = 35953 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to Glades)
# Note: Chatt 7Q10 (Feb-May) = 276.6 cfs, (Jun-Jan) = 153.9 cfs

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
	Chatt7Q10 = 153.9
elif(curMon == 2):
	Chatt7Q10 = 276.6
elif(curMon == 3):
	Chatt7Q10 = 276.6
elif(curMon == 4):
	Chatt7Q10 = 276.6
elif(curMon == 5):
	Chatt7Q10 = 276.6
elif(curMon == 6):
	Chatt7Q10 = 153.9
elif(curMon == 7):
	Chatt7Q10 = 153.9
elif(curMon == 8):
	Chatt7Q10 = 153.9
elif(curMon == 9):
	Chatt7Q10 = 153.9
elif(curMon == 10):
	Chatt7Q10 = 153.9
elif(curMon == 11):
	Chatt7Q10 = 153.9
else:
	Chatt7Q10 = 153.9

ChattInflow = network.findJunction("Glades PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_374")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
	ChattAvailable = 0
else:
	ChattAvailable = ChattInflow_Cur - Chatt7Q10

GladesStor_Prev = network.getTimeSeries("Reservoir","Glades", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 35953 - GladesStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
	PumpToG42PT = 0
else:
	PumpToG42PT = min(ChattAvailable, 43.32, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToG42PT)
```

PumptoG42PL State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to Glades after MIF is met)
# GladesStor (storage of Glades Reservoir in ac-ft)
# Pump Capacity to Glades = 31 mgd = 47.96 cfs
# Maximum storage of Glades Reservoir at Normal Pool Operation Elevation (1180 ft) = 35953 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to Glades)
# Note: Chatt 7Q10 (Feb-May) = 276.6 cfs, (Jun-Jan) = 153.9 cfs

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
	Chatt7Q10 = 153.9
elif(curMon == 2):
	Chatt7Q10 = 276.6
elif(curMon == 3):
	Chatt7Q10 = 276.6
elif(curMon == 4):
	Chatt7Q10 = 276.6
elif(curMon == 5):
	Chatt7Q10 = 276.6
elif(curMon == 6):
	Chatt7Q10 = 153.9
elif(curMon == 7):
	Chatt7Q10 = 153.9
elif(curMon == 8):
	Chatt7Q10 = 153.9
elif(curMon == 9):
	Chatt7Q10 = 153.9
elif(curMon == 10):
	Chatt7Q10 = 153.9
elif(curMon == 11):
	Chatt7Q10 = 153.9
else:
	Chatt7Q10 = 153.9

ChattInflow = network.findJunction("Glades PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_374")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
	ChattAvailable = 0
else:
	ChattAvailable = ChattInflow_Cur - Chatt7Q10

GladesStor_Prev = network.getTimeSeries("Reservoir","Glades", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 35953 - GladesStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
	PumpToG42PL = 0
else:
	PumpToG42PL = min(ChattAvailable, 47.96, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToG42PL)
```

PumptoG42WTP State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to Glades after MIF is met)
# GladesStor (storage of Glades Reservoir in ac-ft)
# Pump Capacity to Glades = 31 mgd = 47.96 cfs
# Maximum storage of Glades Reservoir at Normal Pool Operation Elevation (1180 ft) = 35953 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to Glades)
# Note: Chatt 7Q10 (Feb-May) = 276.6 cfs, (Jun-Jan) = 153.9 cfs

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
	Chatt7Q10 = 153.9
elif(curMon == 2):
	Chatt7Q10 = 276.6
elif(curMon == 3):
	Chatt7Q10 = 276.6
elif(curMon == 4):
	Chatt7Q10 = 276.6
elif(curMon == 5):
	Chatt7Q10 = 276.6
elif(curMon == 6):
	Chatt7Q10 = 153.9
elif(curMon == 7):
	Chatt7Q10 = 153.9
elif(curMon == 8):
	Chatt7Q10 = 153.9
elif(curMon == 9):
	Chatt7Q10 = 153.9
elif(curMon == 10):
	Chatt7Q10 = 153.9
elif(curMon == 11):
	Chatt7Q10 = 153.9
else:
	Chatt7Q10 = 153.9

ChattInflow = network.findJunction("Glades PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_374")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
	ChattAvailable = 0
else:
	ChattAvailable = ChattInflow_Cur - Chatt7Q10

GladesStor_Prev = network.getTimeSeries("Reservoir","Glades", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 35953 - GladesStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
	PumpToG42WTP = 0
else:
	PumpToG42WTP = min(ChattAvailable, 47.96, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToG42WTP)
```

PumptoG30PT State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to Glades after MIF is met)
# GladesStor (storage of Glades Reservoir in ac-ft)
# Pump Capacity to Glades = 15.5 mgd = 23.98 cfs
# Maximum storage of Glades Reservoir at Normal Pool Operation Elevation (1180 ft) = 35953 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to Glades)
# Note: Chatt 7Q10 (Feb-May) = 276.6 cfs, (Jun-Jan) = 153.9 cfs

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
        Chatt7Q10 = 153.9
elif(curMon == 2):
        Chatt7Q10 = 276.6
elif(curMon == 3):
        Chatt7Q10 = 276.6
elif(curMon == 4):
        Chatt7Q10 = 276.6
elif(curMon == 5):
        Chatt7Q10 = 276.6
elif(curMon == 6):
        Chatt7Q10 = 153.9
elif(curMon == 7):
        Chatt7Q10 = 153.9
elif(curMon == 8):
        Chatt7Q10 = 153.9
elif(curMon == 9):
        Chatt7Q10 = 153.9
elif(curMon == 10):
        Chatt7Q10 = 153.9
elif(curMon == 11):
        Chatt7Q10 = 153.9
else:
        Chatt7Q10 = 153.9

ChattInflow = network.findJunction("Glades PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_374")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
        ChattAvailable = 0
else:
        ChattAvailable = ChattInflow_Cur - Chatt7Q10

GladesStor_Prev = network.getTimeSeries("Reservoir","Glades", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 35953 - GladesStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
        PumpToG30PT = 0
else:
        PumpToG30PT = min(ChattAvailable, 23.98, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToG30PT)
```

PumptoG30PL State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to Glades after MIF is met)
# GladesStor (storage of Glades Reservoir in ac-ft)
# Pump Capacity to Glades = 18.5 mgd = 28.62 cfs
# Maximum storage of Glades Reservoir at Normal Pool Operation Elevation (1180 ft) = 35953 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to Glades)
# Note: Chatt 7Q10 (Feb-May) = 276.6 cfs, (Jun-Jan) = 153.9 cfs

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
	Chatt7Q10 = 153.9
elif(curMon == 2):
	Chatt7Q10 = 276.6
elif(curMon == 3):
	Chatt7Q10 = 276.6
elif(curMon == 4):
	Chatt7Q10 = 276.6
elif(curMon == 5):
	Chatt7Q10 = 276.6
elif(curMon == 6):
	Chatt7Q10 = 153.9
elif(curMon == 7):
	Chatt7Q10 = 153.9
elif(curMon == 8):
	Chatt7Q10 = 153.9
elif(curMon == 9):
	Chatt7Q10 = 153.9
elif(curMon == 10):
	Chatt7Q10 = 153.9
elif(curMon == 11):
	Chatt7Q10 = 153.9
else:
	Chatt7Q10 = 153.9

ChattInflow = network.findJunction("Glades PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_374")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
	ChattAvailable = 0
else:
	ChattAvailable = ChattInflow_Cur - Chatt7Q10

GladesStor_Prev = network.getTimeSeries("Reservoir","Glades", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 35953 - GladesStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
	PumpToG30PL = 0
else:
	PumpToG30PL = min(ChattAvailable, 28.62, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToG30PL)
```

PumptoG30WTP State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to Glades after MIF is met)
# GladesStor (storage of Glades Reservoir in ac-ft)
# Pump Capacity to Glades = 18.5 mgd = 28.62 cfs
# Maximum storage of Glades Reservoir at Normal Pool Operation Elevation (1180 ft) = 35953 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to Glades)
# Note: Chatt 7Q10 (Feb-May) = 276.6 cfs, (Jun-Jan) = 153.9 cfs

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
        Chatt7Q10 = 153.9
elif(curMon == 2):
        Chatt7Q10 = 276.6
elif(curMon == 3):
        Chatt7Q10 = 276.6
elif(curMon == 4):
        Chatt7Q10 = 276.6
elif(curMon == 5):
        Chatt7Q10 = 276.6
elif(curMon == 6):
        Chatt7Q10 = 153.9
elif(curMon == 7):
        Chatt7Q10 = 153.9
elif(curMon == 8):
        Chatt7Q10 = 153.9
elif(curMon == 9):
        Chatt7Q10 = 153.9
elif(curMon == 10):
        Chatt7Q10 = 153.9
elif(curMon == 11):
        Chatt7Q10 = 153.9
else:
        Chatt7Q10 = 153.9

ChattInflow = network.findJunction("Glades PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_374")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
        ChattAvailable = 0
else:
        ChattAvailable = ChattInflow_Cur - Chatt7Q10

GladesStor_Prev = network.getTimeSeries("Reservoir","Glades", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 35953 - GladesStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
        PumpToG30WTP = 0
else:
        PumpToG30WTP = min(ChattAvailable, 28.62, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToG30WTP)
```

PumptoG17PT State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to Glades after MIF is met)
# GladesStor (storage of Glades Reservoir in ac-ft)
# Pump Capacity to Glades = 2.0 mgd = 3.09 cfs
# Maximum storage of Glades Reservoir at Normal Pool Operation Elevation (1180 ft) = 35953 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to Glades)
# Note: Chatt 7Q10 (Feb-May) = 276.6 cfs, (Jun-Jan) = 153.9 cfs

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
	Chatt7Q10 = 153.9
elif(curMon == 2):
	Chatt7Q10 = 276.6
elif(curMon == 3):
	Chatt7Q10 = 276.6
elif(curMon == 4):
	Chatt7Q10 = 276.6
elif(curMon == 5):
	Chatt7Q10 = 276.6
elif(curMon == 6):
	Chatt7Q10 = 153.9
elif(curMon == 7):
	Chatt7Q10 = 153.9
elif(curMon == 8):
	Chatt7Q10 = 153.9
elif(curMon == 9):
	Chatt7Q10 = 153.9
elif(curMon == 10):
	Chatt7Q10 = 153.9
elif(curMon == 11):
	Chatt7Q10 = 153.9
else:
	Chatt7Q10 = 153.9

ChattInflow = network.findJunction("Glades PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_374")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
	ChattAvailable = 0
else:
	ChattAvailable = ChattInflow_Cur - Chatt7Q10

GladesStor_Prev = network.getTimeSeries("Reservoir","Glades", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 35953 - GladesStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
	PumpToG17PT = 0
else:
	PumpToG17PT = min(ChattAvailable, 3.09, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToG17PT)
```

PumptoG17PL State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to Glades after MIF is met)
# GladesStor (storage of Glades Reservoir in ac-ft)
# Pump Capacity to Glades = 5.0 mgd = 7.74 cfs
# Maximum storage of Glades Reservoir at Normal Pool Operation Elevation (1180 ft) = 35953 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to Glades)
# Note: Chatt 7Q10 (Feb-May) = 276.6 cfs, (Jun-Jan) = 153.9 cfs

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
        Chatt7Q10 = 153.9
elif(curMon == 2):
        Chatt7Q10 = 276.6
elif(curMon == 3):
        Chatt7Q10 = 276.6
elif(curMon == 4):
        Chatt7Q10 = 276.6
elif(curMon == 5):
        Chatt7Q10 = 276.6
elif(curMon == 6):
        Chatt7Q10 = 153.9
elif(curMon == 7):
        Chatt7Q10 = 153.9
elif(curMon == 8):
        Chatt7Q10 = 153.9
elif(curMon == 9):
        Chatt7Q10 = 153.9
elif(curMon == 10):
        Chatt7Q10 = 153.9
elif(curMon == 11):
        Chatt7Q10 = 153.9
else:
        Chatt7Q10 = 153.9

ChattInflow = network.findJunction("Glades PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_374")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
        ChattAvailable = 0
else:
        ChattAvailable = ChattInflow_Cur - Chatt7Q10

GladesStor_Prev = network.getTimeSeries("Reservoir","Glades", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 35953 - GladesStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
        PumpToG17PL = 0
else:
        PumpToG17PL = min(ChattAvailable, 7.74, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToG17PL)
```

PumptoG17WTP State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to Glades after MIF is met)
# GladesStor (storage of Glades Reservoir in ac-ft)
# Pump Capacity to Glades = 5.0 mgd = 7.74 cfs
# Maximum storage of Glades Reservoir at Normal Pool Operation Elevation (1180 ft) = 35953 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to Glades)
# Note: Chatt 7Q10 (Feb-May) = 276.6 cfs, (Jun-Jan) = 153.9 cfs

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
        Chatt7Q10 = 153.9
elif(curMon == 2):
        Chatt7Q10 = 276.6
elif(curMon == 3):
        Chatt7Q10 = 276.6
elif(curMon == 4):
        Chatt7Q10 = 276.6
elif(curMon == 5):
        Chatt7Q10 = 276.6
elif(curMon == 6):
        Chatt7Q10 = 153.9
elif(curMon == 7):
        Chatt7Q10 = 153.9
elif(curMon == 8):
        Chatt7Q10 = 153.9
elif(curMon == 9):
        Chatt7Q10 = 153.9
elif(curMon == 10):
        Chatt7Q10 = 153.9
elif(curMon == 11):
        Chatt7Q10 = 153.9
else:
        Chatt7Q10 = 153.9

ChattInflow = network.findJunction("Glades PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_374")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
        ChattAvailable = 0
else:
        ChattAvailable = ChattInflow_Cur - Chatt7Q10

GladesStor_Prev = network.getTimeSeries("Reservoir","Glades", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 35953 - GladesStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
        PumpToG17WTP = 0
else:
        PumpToG17WTP = min(ChattAvailable, 7.74, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToG17WTP)
```

PumptoW17PT State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to White after MIF is met)
# WhiteStor (storage of White Reservoir in ac-ft)
# Pump Capacity to White = 15.5 mgd = 23.98 cfs
# Maximum storage of White Creek Reservoir at Normal Pool Operation Elevation (1305 ft) = 13033 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to White Ck)
# Note: Chatt 7Q10 (Feb-May) = M7Q10

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
        Chatt7Q10 = 356.25
elif(curMon == 2):
        Chatt7Q10 = 398.76
elif(curMon == 3):
        Chatt7Q10 = 468.48
elif(curMon == 4):
        Chatt7Q10 = 446.37
elif(curMon == 5):
        Chatt7Q10 = 340.09
elif(curMon == 6):
        Chatt7Q10 = 234.66
elif(curMon == 7):
        Chatt7Q10 = 215.96
elif(curMon == 8):
        Chatt7Q10 = 159.84
elif(curMon == 9):
        Chatt7Q10 = 160.69
elif(curMon == 10):
        Chatt7Q10 = 173.45
elif(curMon == 11):
        Chatt7Q10 = 211.17
else:
        Chatt7Q10 = 253.37

ChattInflow = network.findJunction("White Ck_PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_318")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
        ChattAvailable = 0
else:
        ChattAvailable = ChattInflow_Cur - Chatt7Q10

WhiteStor_Prev = network.getTimeSeries("Reservoir","White Creek", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 13033 - WhiteStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
        PumpToW17PT = 0
else:
        PumpToW17PT = min(ChattAvailable, 23.98, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToW17PT)
```

PumptoW17PL State Variable

```
# ChattAvailable (flow in the Chattahoochee at pump station available for diversion to White after MIF is met)
# WhiteStor (storage of White Reservoir in ac-ft)
# Pump Capacity to White = 19.0 mgd = 29.39 cfs
# Maximum storage of White Creek Reservoir at Normal Pool Operation Elevation (1305 ft) = 13033 ac-ft
# ChattInflow (flow in the Chattahoochee at pump station before diversion to White Ck)
# Note: Chatt 7Q10 (Feb-May) = M7Q10

curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
        Chatt7Q10 = 356.25
elif(curMon == 2):
        Chatt7Q10 = 398.76
elif(curMon == 3):
        Chatt7Q10 = 468.48
elif(curMon == 4):
        Chatt7Q10 = 446.37
elif(curMon == 5):
        Chatt7Q10 = 340.09
elif(curMon == 6):
        Chatt7Q10 = 234.66
elif(curMon == 7):
        Chatt7Q10 = 215.96
elif(curMon == 8):
        Chatt7Q10 = 159.84
elif(curMon == 9):
        Chatt7Q10 = 160.69
elif(curMon == 10):
        Chatt7Q10 = 173.45
elif(curMon == 11):
        Chatt7Q10 = 211.17
else:
        Chatt7Q10 = 253.37

ChattInflow = network.findJunction("White Ck_PumpStation").getLocalFlowTimeSeries("Chattahoochee_PS_318")
ChattInflow_Cur = ChattInflow.getCurrentValue(currentRuntimestep)

if (ChattInflow_Cur) < Chatt7Q10:
        ChattAvailable = 0
else:
        ChattAvailable = ChattInflow_Cur - Chatt7Q10

WhiteStor_Prev = network.getTimeSeries("Reservoir","White Creek", "Pool", "Stor").getPreviousValue(currentRuntimestep)

Pump_Needed_acft = 13033 - WhiteStor_Prev
Pump_Needed_cfs = Pump_Needed_acft * 0.504

if(Pump_Needed_acft < 0):
        PumpToW17PL = 0
else:
        PumpToW17PL = min(ChattAvailable, 29.39, Pump_Needed_cfs)
currentVariable.setValue(currentRuntimestep, PumpToW17PL)
```

WhiteCk_M7Q10 State Variable

```
curMon = currentRuntimestep.getHecTime().month()

if(curMon == 1):
        White7Q10 = 5.4
elif(curMon == 2):
        White7Q10 = 6.1
elif(curMon == 3):
        White7Q10 = 6.6
elif(curMon == 4):
        White7Q10 = 5.8
elif(curMon == 5):
        White7Q10 = 3.3
elif(curMon == 6):
        White7Q10 = 1.5
elif(curMon == 7):
        White7Q10 = 0.7
elif(curMon == 8):
        White7Q10 = 0.6
elif(curMon == 9):
        White7Q10 = 0.8
elif(curMon == 10):
        White7Q10 = 0.9
elif(curMon == 11):
        White7Q10 = 2.4
else:
        White7Q10 = 3.5

WhiteInflow = network.findJunction("White Ck_In").getLocalFlowTimeSeries("White_Ck_LOC")
WhiteInflow_Cur = WhiteInflow.getCurrentValue(currentRuntimestep)

if (WhiteInflow_Cur) < White7Q10:
        WhiteCk_M7Q10 = WhiteInflow_Cur
else:
        WhiteCk_M7Q10 = White7Q10

currentVariable.setValue(currentRuntimestep, WhiteCk_M7Q10)
```

DRAFT Memorandum

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To	Richard Morgan and Kathrine Freas (U.S. Army Corps of Engineers, Savannah District)	Pages	10
CC	James Hathorn (U.S. Army Corps of Engineers, Mobile District)		
Subject	Glades Reservoir Environmental Impact Statement—Summary of Proposed Glades Reservoir Physical Properties		
From	AECOM		
Date	June 30, 2015		

Introduction

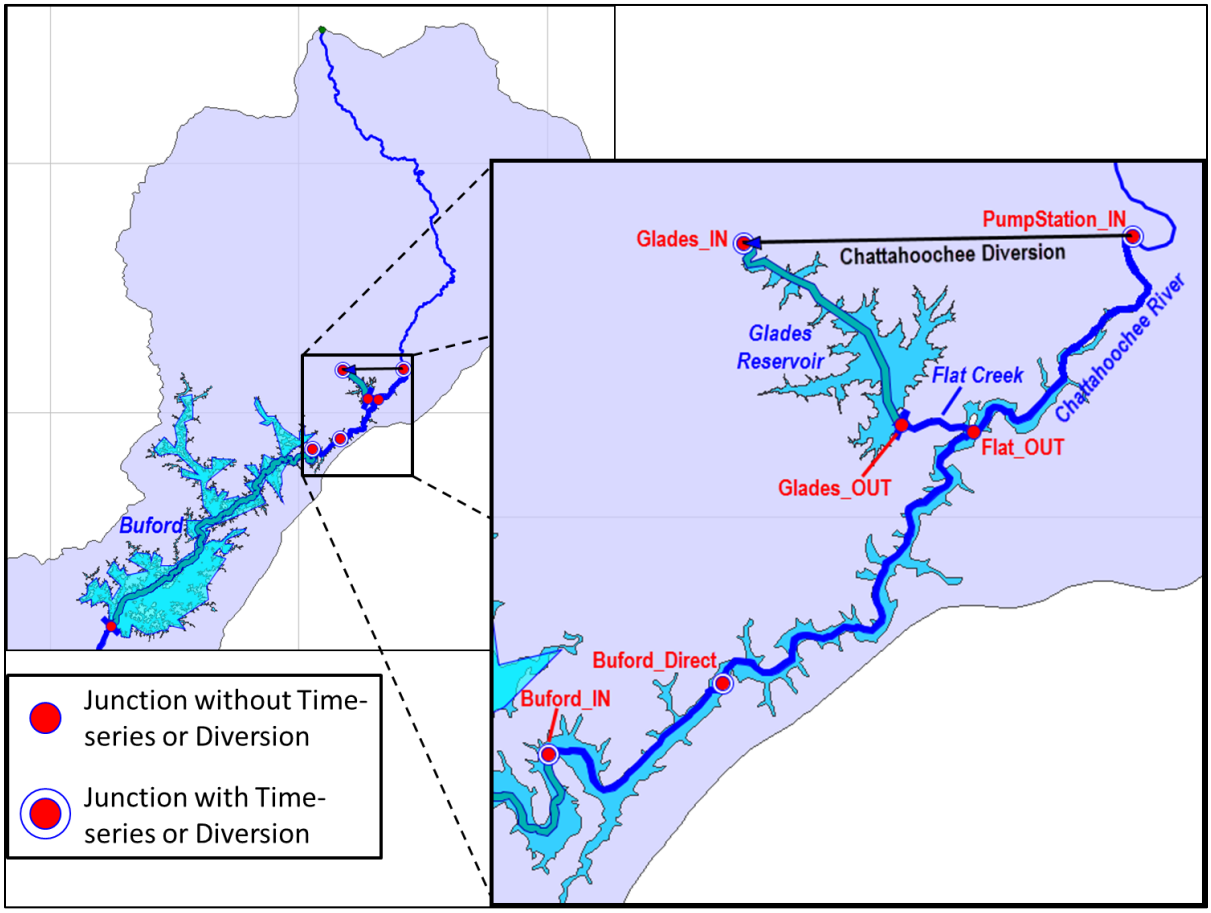
This memorandum documents the response to a request for data from the U.S. Army Corps of Engineers (Corps) Mobile District for development of the hydrological model for the Environmental Impact Statement (EIS) for the Apalachicola-Chattahoochee-Flint (ACF) River Basin Water Control Manual (WCM) Update. This memorandum summarizes the physical properties of the proposed Glades Reservoir based on information provided in the hydrological model and reports submitted by Hall County (Applicant) for the Clean Water Act Section 404 permit application (Permit Number SAS-2007-00388)[1]. Modifications made by AECOM are noted as applicable. In general, modifications were made to 1) incorporate additional data that became available since the application was submitted in 2011, 2) reflect the change in the Applicant's current preferred alternative. Hall County informed the Corps in a letter dated August 10, 2012, (and a subsequent clarification letter dated August 23, 2012) that its new preferred alternative with the proposed Glades Reservoir would no longer include use of the Cedar Creek Reservoir and a pipeline connection to it (**Attachment 1**). In the Applicant's revised preferred alternative, water from the Chattahoochee River would be pumped to the proposed Glades Reservoir only when the minimum instream flow can be maintained in the river below the pump station and there is available space in the reservoir.

[1] *See* Proposed Flat Creek Reservoir (Glades Reservoir) Individual Permit Application, Schnabel Engineering, 2011; Glades Reservoir Simulation Model for the ACF Basin, Schnabel Engineering, 2011; and Hall County's 404 Permit Application and EIS, Hall County Government Board of Commissioners, 2012

Background

The Corps has developed a reservoir simulation model of the ACF River Basin using HEC-ResSim 3.1 RC2 Build29.exe using approximately 69 years of streamflow data (for the period of January 1, 1939, to December 31, 2008). Using the Corps' HEC-ResSim model as a base model, the Applicant added the proposed Glades Reservoir and its connection to the Chattahoochee River system. **Figure 1** illustrates how Glades Reservoir and its connections were added to the existing model upstream of Lake Lanier to evaluate potential downstream impacts that could result from the construction of the proposed Glades Reservoir.

Figure 1. Schematic of Glades Reservoir as modeled by the Applicant in HEC-ResSim



Source: Glades Reservoir Simulation Model for the ACF Basin (Schnabel Engineering, 2011), modified to reflect the Applicant's updated preferred alternative(AECOM, 2013)

Table 1 lists the properties of the junctions that were added to or modified in the existing HEC-ResSim base model by the Applicant in order to simulate the impacts of the proposed Glades Reservoir.

Table 1. Applicant's HEC-ResSim Model Junction Summary on the Chattahoochee River

Junction	HEC ResSim Station	Chattahoochee River Mile
PumpStation_IN	491.5	42.9
Flat_OUT	487.83	47.3
Buford_Direct	482.75	53.1
Buford_IN	480	56.2

Source: Glades Reservoir Simulation Model for the ACF Basin, Schnabel Engineering, 2011

Physical Data

Surface Area and Capacity

Hall County proposes to construct a dam on Flat Creek, a tributary of the Chattahoochee River, to create the Glades Reservoir. The primary purpose of the proposed reservoir is for long-term water

supply for Hall County, Georgia. The Applicant proposes to construct an earthen embankment dam with a height of approximately 115 feet and a crest length of 1,000 feet. The top of dam elevation is estimated to be at 1,195 feet above mean sea level (ft MSL) and the normal pool water surface elevation is proposed to be at 1,180 ft MSL. **Table 2** summarizes the estimated total and usable storage volume and surface areas at the proposed normal pool and flood pool water surface elevations. The Applicant estimated that 20% of the total storage will be reserved for sediment storage. **Figure 2** shows the section view of the dam proposed by the Applicant.

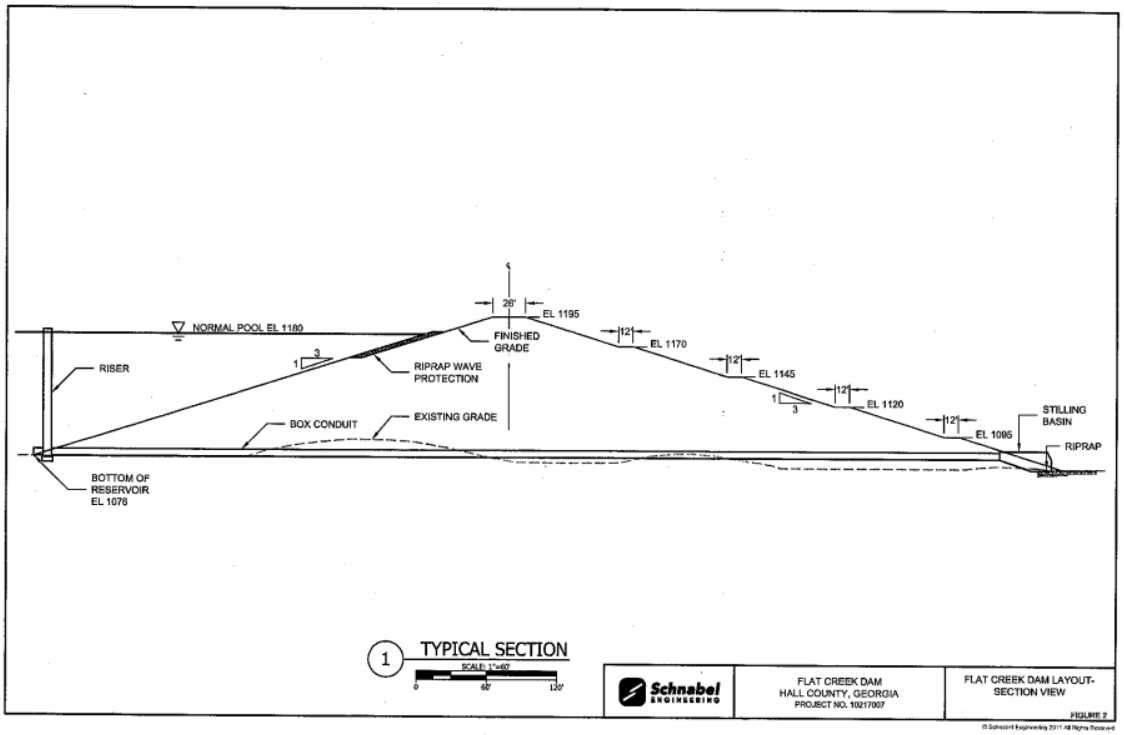
Table 2. Summary of Glades Reservoir Characteristics

	Elevation (ft MSL)	Total Storage (acre ft)	Usable Storage[1] (acre ft)	Surface Area (acres)
Normal Pool	1,180	35,953	28,762	854
Flood Pool (Top of Dam)	1,195	50,195	43,004	1,067

Source: Proposed Flat Creek Reservoir (Glades Reservoir) Individual Permit Application, Schnabel Engineering, 2011

Note: 1. The usable storage is estimated based on the assumption that 20% of the total storage at normal pool level is reserved for sediment storage.

Figure 2. Proposed Flat Creek Dam Section View



Source: Proposed Flat Creek Reservoir (Glades Reservoir) Individual Permit Application, Schnabel Engineering, 2011

Table 3 summarizes the estimated storage capacity and surface area calculated with the reservoir regression coefficients that relate reservoir depth to storage capacity (**Figure 3)** and storage capacity to surface area (**Figure 4).**

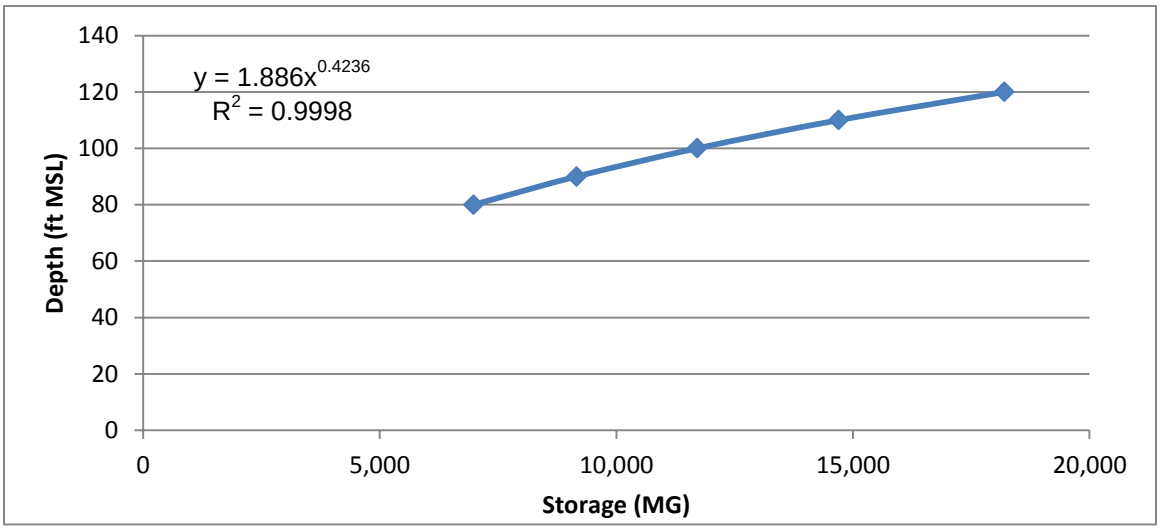
Table 3. Proposed Glades Reservoir Storage Capacity and Surface Area

Elev. (ft MSL)	Total Storage (acre ft)	Total Storage (MG)	Surface Area (acres)
1,080	0	0	0
1,090	149	49	22
1,100	787	256	66
1,110	2,069	674	126
1,120	4,100	1,335	200
1,130	6,962	2,268	285
1,140	10,726	3,494	380
1,150	15,454	5,034	485
1,160	21,202	6,906	600
1,170	28,019	9,127	723
1,180	35,953	11,711	854
1,190	45,047	14,673	993
1,200	55,342	18,027	1,140

Source: Proposed Flat Creek Reservoir (Glades Reservoir) Individual Permit Application, Schnabel Engineering, 2011

MG = million gallons

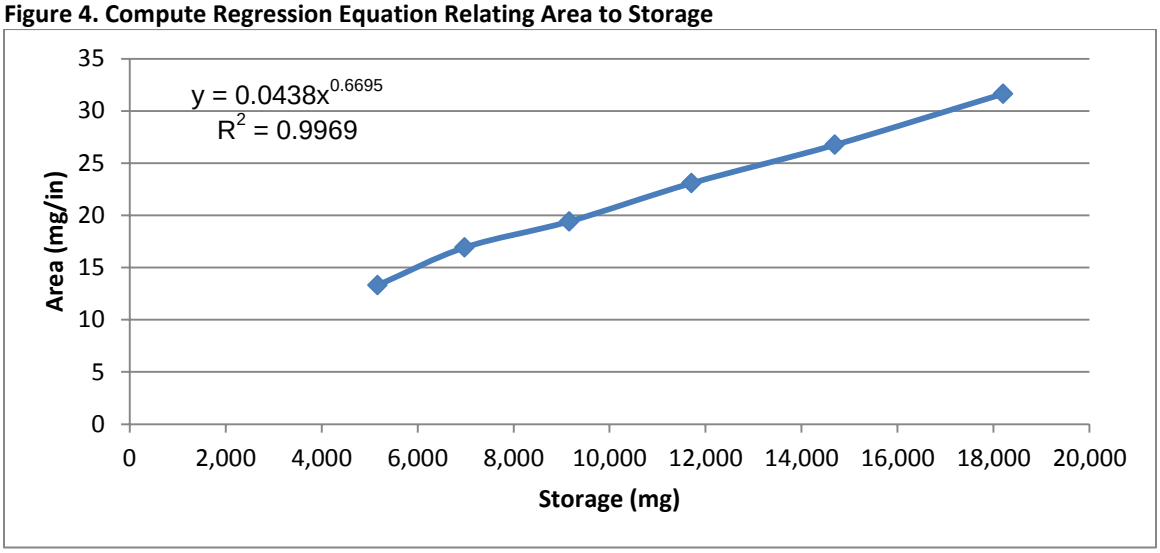
Figure 3. Compute Regression Equation Relating Depth to Storage



Source: Proposed Flat Creek Reservoir (Glades Reservoir) Individual Permit Application, Schnabel Engineering, 2011

MG = million gallons

Figure 4. Compute Regression Equation Relating Area to Storage



Source: Proposed Flat Creek Reservoir (Glades Reservoir) Individual Permit Application, Schnabel Engineering, 2011
MG = million gallons

Outlet and Spillway

The outlet works consists of a controlled outlet for release to Flat Creek below the dam and a spillway. The proposed dam is designed to pass the annual 7-day, 10-year minimum flow (7Q10) of Flat Creek, estimated at 4.6 cubic feet per second (cfs) [or 3.0 million gallons per day (mgd)] or the natural inflow, whichever is less. When the proposed Glades Reservoir reaches capacity at the normal pool water surface elevation of 1,180 ft MSL, all additional volume is passed through the spillway (**Table 4**).

Table 4. Controlled and Uncontrolled Releases for Glades Reservoir

Elevation (ft)	Controlled Release (cfs)	Uncontrolled Release (cfs)	Total Release Capacity (cfs)
1,080	4.6	0	4.6
1,130	4.6	0	4.6
1,180	4.6	3,224	3,229
1,182	4.6	9,120	9,125
1,184	4.6	16,755	16,759
1,186	4.6	25,795	25,800
1,188	4.6	36,050	36,055
1,190	4.6	47,389	47,394
1,192	4.6	59,717	59,722
1,194	4.6	66,338	66,343
1,196	4.6	72,960	72,965
1,198	4.6	87,059	87,064
1,200	4.6	101,965	101,969

Source: Glades Reservoir Simulation Model for the ACF Basin, Schnabel Engineering, 2011 (modified to reflect Applicant's updated preferred alternative, AECOM, 2013)

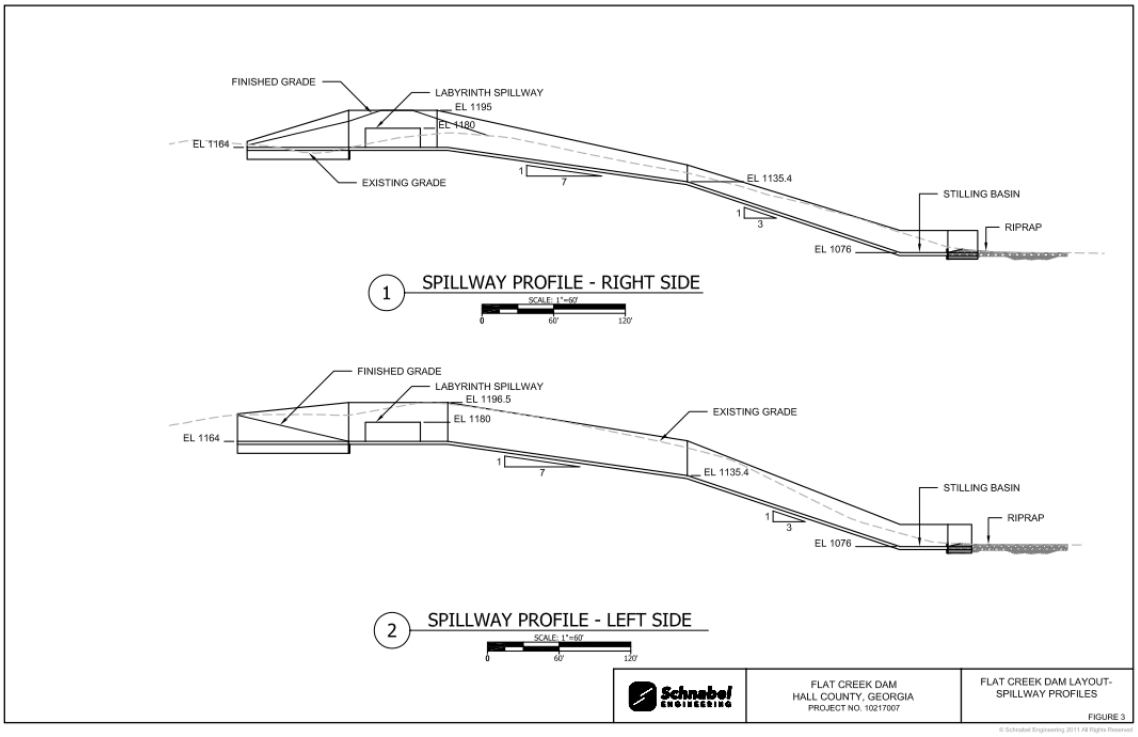
The spillway length and weir coefficients were estimated by the Applicant. The spillway has not been designed (as of January 2011). The estimated values are listed in **Table 5**. The Applicant has provided preliminary spillway drawings, as shown in **Figure 5**.

Table 5. Estimated Flat Creek Dam Spillway Properties

Outlet Elevation (ft MSL)	Weir Coefficient	Weir Length (ft)
1,180	3.8	300

Source: Glades Reservoir Simulation Model for the ACF Basin, Schnabel Engineering, 2011 (Modified to reflect Applicant's updated preferred alternative, AECOM, 2013)

Figure 5. Flat Creek Dam Spillway Profiles



Source: Proposed Flat Creek Reservoir (Glades Reservoir) Individual Permit Application, Schnabel Engineering, 2011

Operation Data

Operation of the proposed Glades Reservoir is described in *Glades Reservoir Simulation Model for the ACF Basin (Schnabel Engineering, 2011)* and has been updated to reflect the Applicant's revised preferred alternative based on the letter submitted by the Hall County Government Board of Commissioners in August, 2012. In this letter, the pumping operation is described as:

- Chattahoochee River Pump Station will pump to Glades Reservoir when flow rate in the River just upstream of the pump station exceeds the annual 7Q10, and when water level in Glades Reservoir is lower than 1180 ft MSL.

- When flow rate in the Chattahoochee River is equal to or less than the annual 7Q10, the pump station will not operate, even if Glades Reservoir's water level is lower than 1,180 ft MSL.
- Chattahoochee River Pump station will be operated so that any pumping to the Glade Reservoir will not result in the streamflow immediately downstream of the pump station being less than annual 7Q10.
- Glades Reservoir water will be released through the dam via a metering device to the Flat Creek arm of Lake Lanier.
- Releases will meet Georgia's minimum instream flow (MIF) requirements for Flat Creek, and will provide the amount of water needed for Gainesville and Hall County water users, which exceed the limits that Gainesville is permitted to withdraw from Lake Lanier.
- Gainesville will withdraw, on a daily basis, amounts of water equal to the amounts released from Glades reservoir for Gainesville's use.
- Hall County will work with the Georgia Environmental Protection Division (EPD) and the Corps Mobile District to obtain a storage contract, for the amount of conservation storage volume in Lake Lanier that is necessary for conveying water releases from Glades Reservoir to Gainesville water intakes.

Minimum Instream Flow below the Proposed Chattahoochee River Raw Water Intake

The Applicant has proposed that the MIF requirement for the Chattahoochee River immediately downstream of the intake be based upon the annual 7Q10 flow. Water would only be pumped from the Chattahoochee River if the streamflow is higher than the annual 7Q10 mgd or the natural inflow, at the pump station. In their application, the Applicant proposed the annual 7Q10 to be 183.4 cfs (118.6 mgd). The Applicant calculated this value using the streamflow data derived from the USGS 02331600 gage Chattahoochee River near Cornelia for the period of 1958-2008. Based on streamflow data from 1958-2012, AECOM updated the annual 7Q10 value to 153.9 cfs (99.2 mgd) with streamflow data through December 2012. As Georgia experienced significant drought from 2007, 2008 and 2012, AECOM included this period of record for the low flow analysis after discussions with EPD. Additional MIF scenarios, such as monthly 7Q10 and seasonally-determined MIF targets was evaluated during the EIS process in order to assess the proposed project's downstream hydrological impacts.

Minimum Instream Flow below the Proposed Glades Reservoir

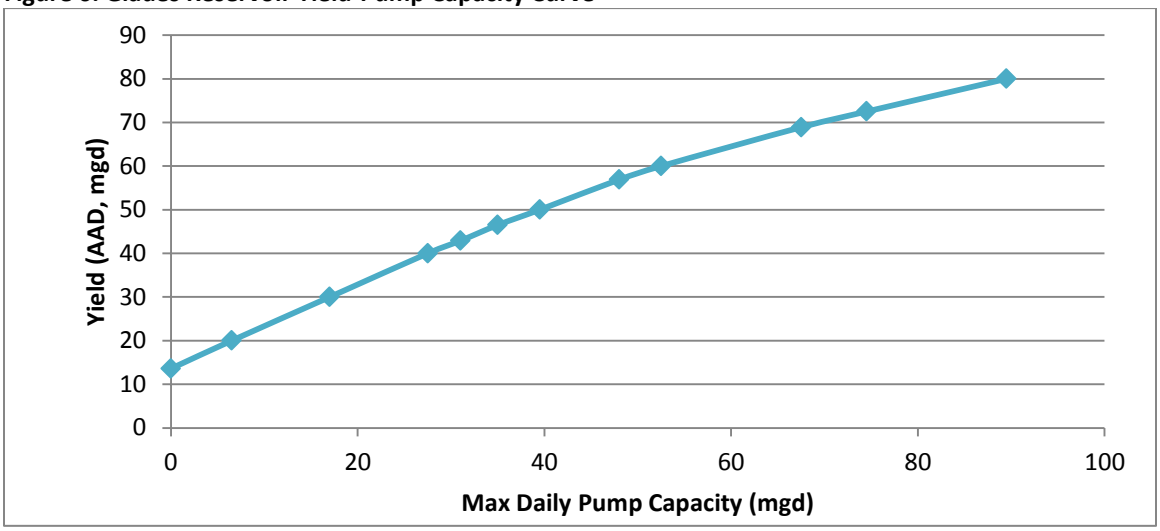
The Applicant has also proposed that the MIF requirement for Flat Creek immediately downstream of the Glades Reservoir be based upon the annual 7Q10. The annual 7Q10 of Flat Creek, 4.6 cfs (3.0 mgd) or the natural inflow, whichever is less, will be continuously passed through a controlled outlet to Flat Creek.

Pump Capacity

Depending on the desired safe yield from the proposed Glades Reservoir, the maximum daily pumping capacity required for the proposed Chattahoochee River Raw Water Intake is estimated.

Figure 6 shows the maximum daily pumping required for a range of safe yields from Glades reservoir while meeting the annual 7Q10 MIF requirements on the Chattahoochee River and on Flat Creek.

Figure 6. Glades Reservoir Yield-Pump Capacity Curve



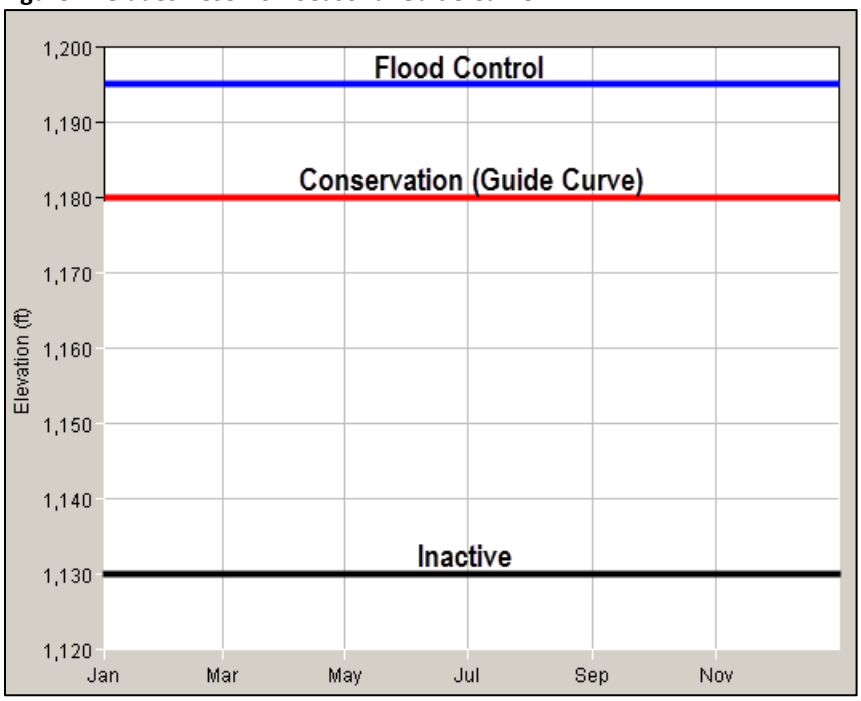
Source: AECOM, 2013

Operational Guide Curve

Within HEC-ResSim, the reservoir element holds the operational data, which include rules for determining reservoir releases. The operational data is grouped as an operation set, and a reservoir can hold multiple operation sets. The operation set is made up of a set of operating zones, each contains a prioritized set of rules. Rules describe minimum or maximum reservoir releases, which can be based on a number of factors, such as downstream flow and current reservoir storage. **Figure 7** shows the three storage zones for the proposed Glades Reservoir.

Below the water surface elevation of 1130.5 ft MSL, the storage is designated as inactive storage (20% of volume at the normal pool water surface elevation). The purpose of the inactive storage zone is for sediment storage.

Figure 7. Glades Reservoir Seasonal Guide Curve



Source: Glades Reservoir Simulation Model for the ACF Basin, Schnabel Engineering, 2011 (Modified to reflect Applicant's updated preferred alternative, AECOM, 2013)

Note: Subsequent updates and modeling efforts have changed the flood pool elevation from 1,195 ft MSl to 1,190 ft MSL.

The guide curve, also referred to as the target pool elevation, was designated manually in the model as the normal pool water surface elevation of 1,180 feet MSL. Storage below the guide curve is referred to as conservation storage, and storage above the guide curve is referred to as flood control storage. HEC-ResSim determines releases form the reservoir based on where the current pool elevation is in relation to the guide curve. When the pool elevation is below the guide curve, the program reduces releases in order to fill the reservoir, and when the pool is above the guide curve the program makes releases to draw down the pool. Constraints (rules) defined by the modeler are applied when the program attempts to lower or raise the pool elevation to the guide curve.

Project Needs Analysis

The Applicant's proposed project needs have been updated and summarized in **Table 8**. The projected 2060 water demands have decreased from the Applicant's initial projected need of 100 mgd to 77.3 mgd based on the revised 2060 population projections of 644,383. This reduces the quantity needed from Glades Reservoir from 72.5 mgd to 49.8 mgd. To supply an annual average daily yield of 49.8 mgd from the proposed Glades Reservoir while meeting the annual 7Q10 MIF release on the Chattahoochee River and on Flat Creek, it is estimated that the a pumping capacity of 40 mgd (on maximum daily basis) is required for the Chattahoochee River Raw Water Pump Station.

Table 8. Applicant's Project Needs

Existing and Potential Water Supply Sources	Quantity (mgd)
Lake Lanier - Existing Allocation[1]	18
Lake Lanier - Additional Allocation[2]	0
Groundwater[3]	2
Cedar Creek Reservoir[4]	7.5
Water Purchase[5]	0
Additional Conservation[6]	0
Effluent Return Credit[7]	0
Total - Potential Available Supply	27.5
Projected Future Demand and Need	
Projected 2060 Water Demand[8]	77.3
Additional Water Supply Need in 2060	49.8
Projected Maximum Daily Pump Capacity Required	
A7Q10 Scenario	40

Source: AECOM, 2013

Notes:

1. Based on the assumption that the existing allocation quantity will be "grandfathered" for the City of Gainesville withdrawal.
2. A maximum annual average daily withdrawal of 44 mgd is assumed by the Applicant based on current Max daily permitted withdrawal of 53 mgd from Gainesville.
3. Groundwater availability analysis, AECOM, date, month
4. Cedar Creek Reservoir safe yield has been revised based on updated streamflow data (1939-2012) that includes the more recent record droughts of 2008-2009.
5. Water Purchase Potential Analysis, AECOM, date, month
6. Demand Forecast Decision Support Model, AECOM, June 2013, the additional conservation is a result of additional non-revenue water reduction
7. Currently there is no Corps policy allowing for the accounting of return effluent credits.
8. Decision Support Model, AECOM, June 2013

The Corps Savannah District will be developing additional alternative analysis scenarios based on other potential supply sources including various combination of additional water conservation, additional allocation from Lake Lanier, groundwater supply and potential purchase from other counties.

ATTACHMENT 1

Letter from Hall County (August 23, 2012)

HALL COUNTY GOVERNMENT
BOARD OF COMMISSIONERS

POST OFFICE DRAWER 1435
GAINESVILLE, GEORGIA 30503
(770) 535-8288
FAX (770) 531-3972

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COUNTY ADMINISTRATOR

MARTY NIX
ASSISTANT COUNTY
ADMINISTRATOR

MELISSA A. MCCAIN
COMMISSION CLERK

August 23, 2012

Mr. Richard Morgan
Team Leader, Southern Section, Regulatory Branch
Savannah District, Corps of Engineers
PO Box 889
Savannah, Georgia 31402-0889

Re: Hall County's 404 Permit Application and EIS

Dear Mr. Morgan:

Hall County, by letter of August 10, 2012, presented a new preferred alternative for the Glades Reservoir Project. This letter included an attachment describing the new alternative.

It has come to our attention that the second to last item of this description could be construed contrary to the intentions of Hall County and the City of Gainesville. Therefore, we hereby revise this item as follows (the underlined words are added for clarification):

"Gainesville will withdraw, on a daily basis, amounts of water equal to the amounts released from Glades Reservoir for Gainesville's use. <u>These amounts of water to be generated by the Glades Reservoir Project are in addition to the Lake Lanier water allocated by the Corps of Engineers and permitted by the Environmental Protection Division for direct withdrawal by the City of Gainesville. The Glades Reservoir Project is not proposed to replace Gainesville's existing and future Lake Lanier permitted direct withdrawal allocations, but is to be used only to supplement the permitted direct withdrawal allocations.</u>"

Sincerely,

Tom Oliver
Chairman

CC: Honorable Danny Dunagan, Mayor, City of Gainesville
Hall County Board of Commissioners
Jock Connell, Special Projects Administrator
Randy Knighton, County Administrator
Marty Nix, Assistant County Administrator
Kip Padgett, City Manager, City of Gainesville
Ken Rearden, Director, Public Works
Harold Reheis, Joe Tanner and Associates
Kevin Farrell, EPD

Glades Reservoir DEIS

APPENDIX Q

Hydrologic Modeling Analysis Results

October 2015

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INTRODUCTION – REPRESENTATIVE CONDITIONS FOR RESULTS ANALYSIS

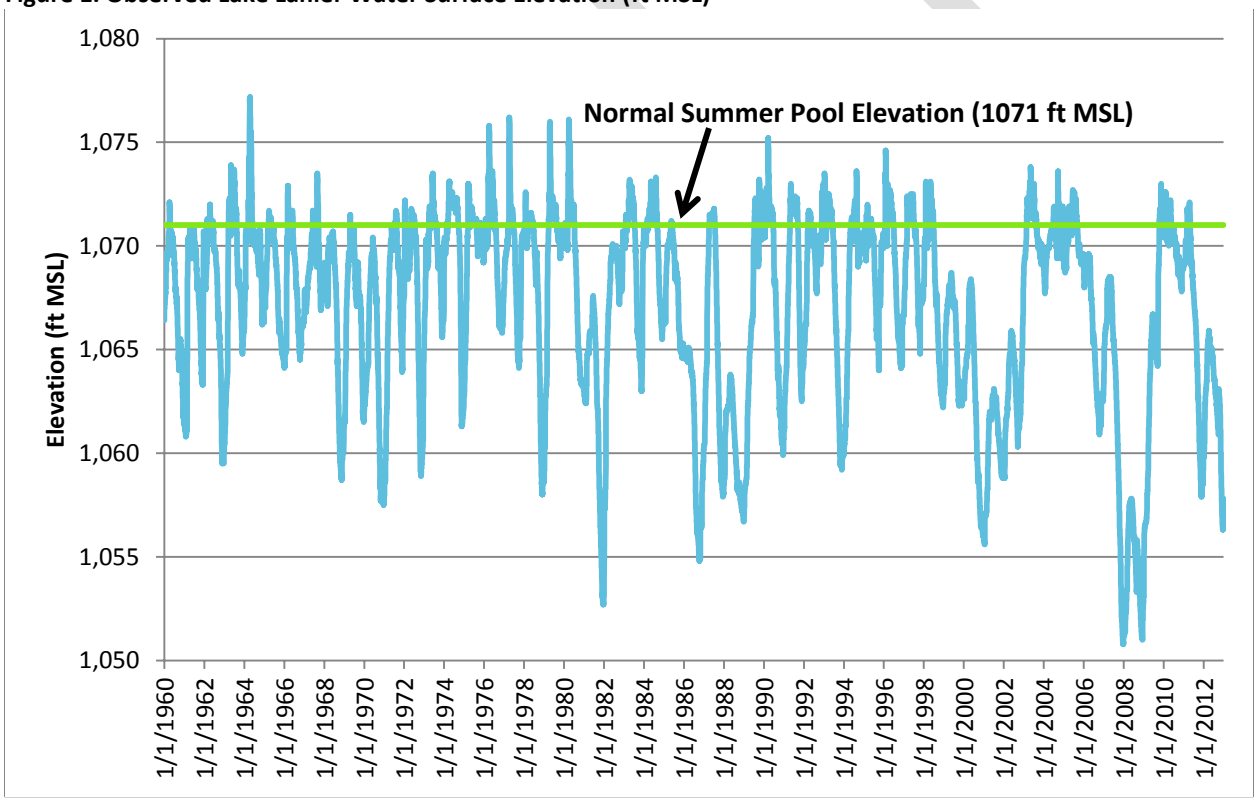
APPENDIX Q - HYDROLOGICAL ANALYSIS RESULTS

Introduction: Representative Conditions for Results Presentation

Historical daily water surface levels at Lake Lanier and estimated average daily streamflow records at the proposed intake location for Glades Reservoir were evaluated to determine the critical drought conditions where simulated results will be displayed and compared.

Figure 1 shows the historic water surface elevation of Lake Lanier for 1960 to 2012. Multiple drought periods were identified including the 1980-1983, 1986-1989, 1998-2003, and 2007-2008 drought. During 2008, the water surface level of Lake Lanier falls to a historic low of 1050.8 ft MSL. Potential impacts of the Proposed Project and action alternatives were plotted to evaluate how the ACF Basin was affected when the system is under the most stress under the 2008 critical drought conditions.

Figure 1. Observed Lake Lanier Water Surface Elevation (ft MSL)[1,2]

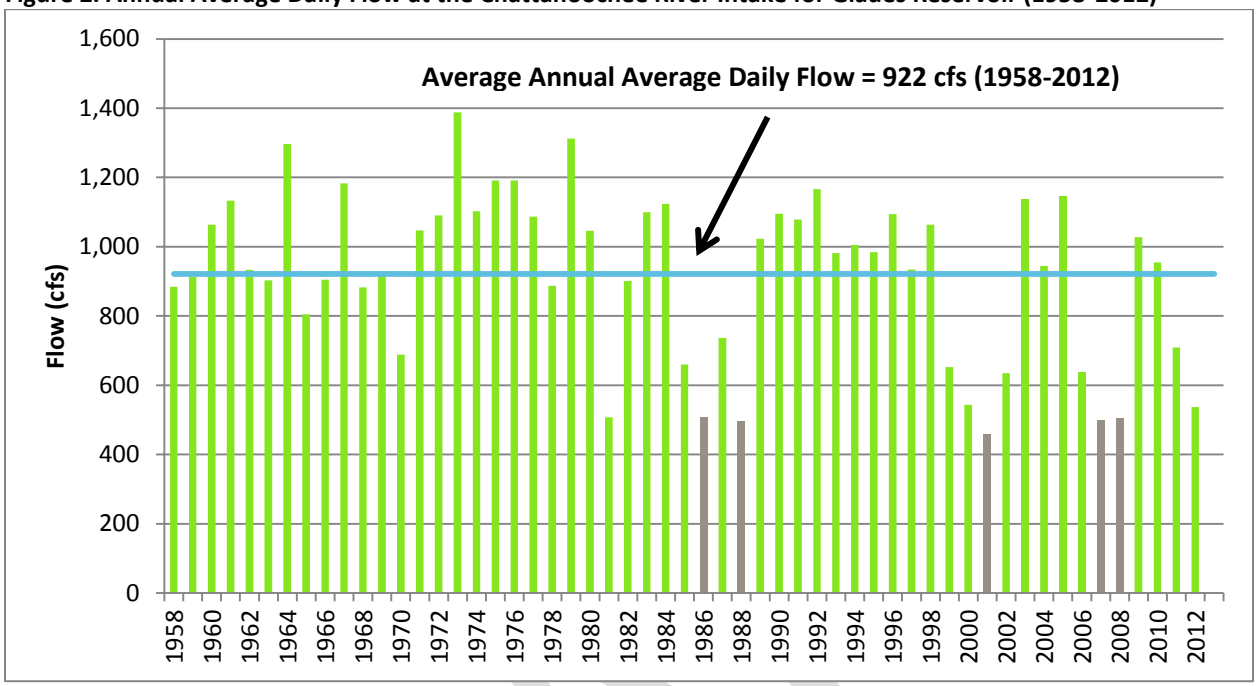


[1] Period of Record Analyzed: January 1, 1960 through December 31, 2012.

[2] Lake Lanier recorded water surface elevations downloaded from the Corps Mobile District Water Management Section webpage (http://water.sam.usace.army.mil/).

For comparison of streamflow, the results were displayed for average, wet and dry years. **Figure 2** shows the historical average annual daily flow (AADF) at the proposed Chattahoochee River intake for Glades Reservoir. Results for representative wet year (2005), average year (1997), and drought years conditions (1986 and 2001) are summarized in this Appendix.

Figure 2. Annual Average Daily Flow at the Chattahoochee River Intake for Glades Reservoir (1958-2012)

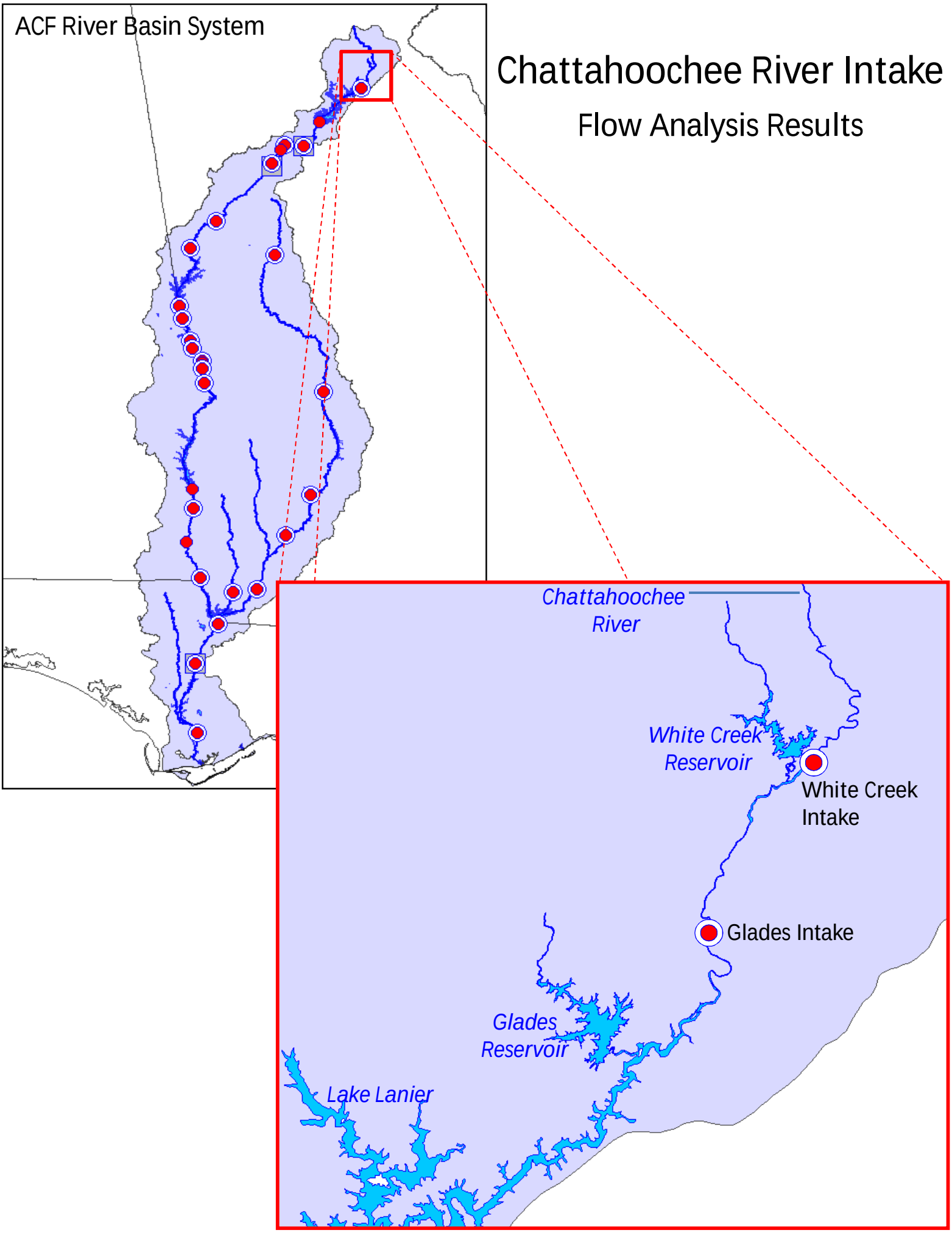


[1] Calculated using a drainage area ratio conversion using USGS gage 02331600 Chattahoochee River near Cornelia, GA.

SUMMARY OF HYDROLOGIC ANALYSIS RESULTS

Chattahoochee River Intake

Flow Analysis Results



Chattahoochee River Intake

74-Year Period of Analysis (January 1, 1939- December 31, 2012)

Average Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	1,099	1,235	1,378	1,249	993	796	694	651	576	569	666	891
Proposed	L18-G50-PT	1,046	1,187	1,333	1,204	938	739	638	596	521	514	609	836
1	L18-G42-PT	1,058	1,197	1,343	1,215	952	753	651	610	534	527	623	849
2	L18-G42-PL	1,054	1,193	1,339	1,210	948	749	647	605	529	523	618	844
3	L18-G42-WTP	1,054	1,193	1,339	1,210	948	749	647	605	529	523	618	844
4	L30-G30-PT	1,077	1,214	1,359	1,231	971	773	670	628	552	546	642	867
5	L30-G30-PL	1,072	1,210	1,355	1,226	966	768	666	624	548	541	637	863
6	L30-G30-WTP	1,072	1,210	1,355	1,226	966	768	666	624	548	541	637	863
7	L43-G17-PT	1,096	1,232	1,376	1,247	990	793	691	648	573	566	663	888
8	L43-G17-PL	1,092	1,228	1,372	1,243	986	789	686	644	568	562	658	883
9	L43-G17-WTP	1,092	1,228	1,372	1,243	986	789	686	644	568	562	658	883
Baseline- White Ck	L18	937	1,052	1,175	1,065	846	679	591	555	491	485	567	759
10	L43-W17-PT	927	1,044	1,167	1,056	830	658	571	533	469	465	551	747
11	L43-W17-PL	924	1,040	1,163	1,051	827	655	569	530	466	465	550	745
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---

Minimum Daily Flow

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	216	258	331	266	213	146	112	78	94	93	147	199
Proposed	L18-G50-PT	159	258	277	266	213	146	112	78	94	93	147	154
1	L18-G42-PT	173	258	288	266	213	146	112	78	94	93	147	156
2	L18-G42-PL	168	258	283	266	213	146	112	78	94	93	147	154
3	L18-G42-WTP	168	258	283	266	213	146	112	78	94	93	147	154
4	L30-G30-PT	192	258	307	266	213	146	112	78	94	93	147	175
5	L30-G30-PL	187	258	303	266	213	146	112	78	94	93	147	171
6	L30-G30-WTP	187	258	303	266	213	146	112	78	94	93	147	171
7	L43-G17-PT	213	258	328	266	213	146	112	78	94	93	147	196
8	L43-G17-PL	208	258	324	266	213	146	112	78	94	93	147	192
9	L43-G17-WTP	208	258	324	266	213	146	112	78	94	93	147	192
Baseline- White Ck	L18	184	220	282	227	181	124	95	67	80	79	125	170
10	L43-W17-PT	184	220	282	227	181	124	95	67	80	79	125	170
11	L43-W17-PL	184	220	282	227	181	124	95	67	80	79	125	170
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---

Maximum Daily Flow

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	15,960	15,079	18,522	15,316	17,453	11,747	9,095	18,759	16,741	12,942	10,377	17,335
Proposed	L18-G50-PT	15,910	15,031	18,522	15,316	17,453	11,747	9,095	18,702	16,683	12,884	10,320	17,277
1	L18-G42-PT	15,916	15,035	18,497	15,273	17,453	11,747	9,051	18,716	16,697	12,898	10,334	17,291
2	L18-G42-PL	15,911	15,031	18,474	15,268	17,453	11,747	9,047	18,711	16,705	12,893	10,329	17,286
3	L18-G42-WTP	15,911	15,031	18,474	15,268	17,453	11,747	9,047	18,711	16,705	12,893	10,329	17,286
4	L30-G30-PT	15,935	15,054	18,498	15,292	17,453	11,747	9,071	18,735	16,741	12,917	10,353	17,310
5	L30-G30-PL	15,931	15,050	18,493	15,287	17,453	11,747	9,066	18,730	16,741	12,913	10,348	17,306
6	L30-G30-WTP	15,931	15,050	18,493	15,287	17,453	11,747	9,066	18,730	16,741	12,913	10,348	17,306
7	L43-G17-PT	15,956	15,075	18,518	15,313	17,453	11,747	9,091	18,756	16,738	12,938	10,374	17,331
8	L43-G17-PL	15,952	15,071	18,514	15,308	17,453	11,747	9,087	18,751	16,733	12,934	10,369	17,327
9	L43-G17-WTP	15,952	15,071	18,514	15,308	17,453	11,747	9,087	18,751	16,733	12,934	10,369	17,327
Baseline- White Ck	L18	13,602	12,851	15,786	13,054	14,875	10,012	7,751	15,988	14,268	11,030	8,844	14,774
10	L43-W17-PT	13,602	12,851	15,785	13,053	14,875	10,012	7,751	15,985	14,268	11,030	8,844	14,774
11	L43-W17-PL	13,602	12,851	15,785	13,053	14,875	10,012	7,751	15,988	14,268	11,030	8,844	14,774
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---

Chattahoochee River Intake
Average Year Analysis - 1997

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	934	1,128	1,247	1,489	1,293	1,228	949	712	462	432	885	638	761
Proposed	L18-G50-PT	880	1,071	1,190	1,454	1,251	1,174	892	655	405	375	828	580	703
1	L18-G42-PT	892	1,084	1,204	1,453	1,261	1,187	906	669	419	389	841	594	717
2	L18-G42-PL	888	1,080	1,199	1,449	1,256	1,183	901	664	414	384	837	590	713
3	L18-G42-WTP	888	1,080	1,199	1,449	1,256	1,183	901	664	414	384	837	590	713
4	L30-G30-PT	911	1,104	1,223	1,466	1,275	1,205	925	688	438	408	861	614	737
5	L30-G30-PL	906	1,099	1,218	1,462	1,271	1,201	920	683	434	403	856	609	732
6	L30-G30-WTP	906	1,099	1,218	1,462	1,271	1,201	920	683	434	403	856	609	732
7	L43-G17-PT	931	1,125	1,244	1,485	1,290	1,225	946	709	459	429	882	635	757
8	L43-G17-PL	926	1,120	1,239	1,481	1,286	1,221	941	704	454	424	877	630	753
9	L43-G17-WTP	926	1,120	1,239	1,481	1,286	1,221	941	704	454	424	877	630	753
Baseline- White Ck	L18	796	961	1,063	1,269	1,102	1,046	809	607	394	368	754	543	648
10	L43-W17-PT	783	954	1,058	1,263	1,093	1,029	792	586	370	347	738	534	640
11	L43-W17-PL	779	950	1,054	1,258	1,088	1,026	790	585	366	344	738	532	637
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	-5.8%	-5.1%	-4.6%	-2.3%	-3.3%	-4.4%	-6.0%	-8.0%	-12.4%	-13.3%	-6.5%	-9.0%	-7.5%
1	L18-G42-PT	-4.4%	-3.8%	-3.5%	-2.4%	-2.5%	-3.3%	-4.6%	-6.1%	-9.4%	-10.0%	-4.9%	-6.8%	-5.7%
2	L18-G42-PL	-4.9%	-4.3%	-3.8%	-2.6%	-2.9%	-3.6%	-5.1%	-6.7%	-10.4%	-11.1%	-5.4%	-7.5%	-6.3%
3	L18-G42-WTP	-4.9%	-4.3%	-3.8%	-2.6%	-2.9%	-3.6%	-5.1%	-6.7%	-10.4%	-11.1%	-5.4%	-7.5%	-6.3%
4	L30-G30-PT	-2.5%	-2.1%	-1.9%	-1.5%	-1.4%	-1.8%	-2.5%	-3.4%	-5.2%	-5.6%	-2.7%	-3.8%	-3.2%
5	L30-G30-PL	-3.0%	-2.5%	-2.3%	-1.8%	-1.7%	-2.2%	-3.0%	-4.0%	-6.2%	-6.6%	-3.2%	-4.5%	-3.8%
6	L30-G30-WTP	-3.0%	-2.5%	-2.3%	-1.8%	-1.7%	-2.2%	-3.0%	-4.0%	-6.2%	-6.6%	-3.2%	-4.5%	-3.8%
7	L43-G17-PT	-0.3%	-0.3%	-0.3%	-0.2%	-0.2%	-0.2%	-0.3%	-0.4%	-0.7%	-0.7%	-0.4%	-0.5%	-0.4%
8	L43-G17-PL	-0.8%	-0.7%	-0.6%	-0.5%	-0.5%	-0.6%	-0.8%	-1.1%	-1.7%	-1.8%	-0.9%	-1.2%	-1.0%
9	L43-G17-WTP	-0.8%	-0.7%	-0.6%	-0.5%	-0.5%	-0.6%	-0.8%	-1.1%	-1.7%	-1.8%	-0.9%	-1.2%	-1.0%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	-1.7%	-0.7%	-0.4%	-0.4%	-0.9%	-1.7%	-2.1%	-3.4%	-6.0%	-5.7%	-2.1%	-1.7%	-1.2%
11	L43-W17-PL	-2.1%	-1.2%	-0.8%	-0.9%	-1.3%	-2.0%	-2.3%	-3.6%	-7.1%	-6.4%	-2.2%	-2.1%	-1.7%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Chattahoochee River Intake
Wet Year Analysis - 2005

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	1,145	500	642	884	998	974	1,107	943	712	609	512	558	571
Proposed	L18-G50-PT	1,098	448	586	829	945	924	1,058	891	655	553	457	513	522
1	L18-G42-PT	1,109	460	599	842	958	936	1,070	903	669	566	470	524	533
2	L18-G42-PL	1,105	456	594	837	954	932	1,065	898	664	562	466	521	529
3	L18-G42-WTP	1,105	456	594	837	954	932	1,065	898	664	562	466	521	529
4	L30-G30-PT	1,126	478	618	861	976	954	1,088	921	689	586	489	539	550
5	L30-G30-PL	1,122	473	613	856	972	950	1,083	917	684	581	484	536	546
6	L30-G30-WTP	1,122	473	613	856	972	950	1,083	917	684	581	484	536	546
7	L43-G17-PT	1,143	497	639	881	995	972	1,105	940	709	606	509	555	568
8	L43-G17-PL	1,139	493	634	876	991	969	1,101	936	705	602	505	552	564
9	L43-G17-WTP	1,139	493	634	876	991	969	1,101	936	705	602	505	552	564
Baseline- White Ck	L18	976	426	547	753	850	830	944	804	607	519	437	475	486
10	L43-W17-PT	963	410	533	740	838	820	932	788	587	500	418	459	467
11	L43-W17-PL	961	410	532	738	834	815	926	783	584	497	416	456	465
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	-4.1%	-10.4%	-8.7%	-6.3%	-5.3%	-5.2%	-4.4%	-5.5%	-8.0%	-9.3%	-10.7%	-8.0%	-8.5%
1	L18-G42-PT	-3.1%	-8.1%	-6.7%	-4.8%	-4.0%	-3.9%	-3.4%	-4.2%	-6.1%	-7.1%	-8.2%	-6.1%	-6.6%
2	L18-G42-PL	-3.5%	-8.8%	-7.4%	-5.3%	-4.4%	-4.3%	-3.8%	-4.7%	-6.7%	-7.8%	-9.1%	-6.7%	-7.2%
3	L18-G42-WTP	-3.5%	-8.8%	-7.4%	-5.3%	-4.4%	-4.3%	-3.8%	-4.7%	-6.7%	-7.8%	-9.1%	-6.7%	-7.2%
4	L30-G30-PT	-1.6%	-4.5%	-3.7%	-2.7%	-2.2%	-2.1%	-1.8%	-2.3%	-3.3%	-3.9%	-4.5%	-3.3%	-3.7%
5	L30-G30-PL	-2.0%	-5.4%	-4.5%	-3.2%	-2.6%	-2.5%	-2.1%	-2.7%	-4.0%	-4.6%	-5.4%	-3.9%	-4.4%
6	L30-G30-WTP	-2.0%	-5.4%	-4.5%	-3.2%	-2.6%	-2.5%	-2.1%	-2.7%	-4.0%	-4.6%	-5.4%	-3.9%	-4.4%
7	L43-G17-PT	-0.2%	-0.6%	-0.5%	-0.4%	-0.3%	-0.2%	-0.2%	-0.3%	-0.4%	-0.5%	-0.6%	-0.4%	-0.5%
8	L43-G17-PL	-0.5%	-1.5%	-1.2%	-0.9%	-0.7%	-0.6%	-0.5%	-0.7%	-1.1%	-1.2%	-1.4%	-1.1%	-1.2%
9	L43-G17-WTP	-0.5%	-1.5%	-1.2%	-0.9%	-0.7%	-0.6%	-0.5%	-0.7%	-1.1%	-1.2%	-1.4%	-1.1%	-1.2%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	-1.3%	-3.8%	-2.5%	-1.8%	-1.5%	-1.3%	-1.3%	-1.9%	-3.3%	-3.6%	-4.2%	-3.5%	-3.9%
11	L43-W17-PL	-1.5%	-3.8%	-2.8%	-2.1%	-1.9%	-1.8%	-1.8%	-2.5%	-3.9%	-4.3%	-4.7%	-4.1%	-4.5%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Chattahoochee River Intake
Drought Year Analysis - 1988

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	496	968	674	533	852	441	302	352	275	358	426	413	370
Proposed	L18-G50-PT	441	911	616	476	795	390	249	297	224	302	369	356	313
1	L18-G42-PT	454	925	630	490	809	402	261	310	236	315	383	370	327
2	L18-G42-PL	449	920	626	485	804	398	257	305	232	310	378	365	323
3	L18-G42-WTP	449	920	626	485	804	398	257	305	232	310	378	365	323
4	L30-G30-PT	473	944	650	509	828	420	279	328	253	334	402	389	346
5	L30-G30-PL	468	939	645	504	823	415	275	324	249	329	397	385	342
6	L30-G30-WTP	468	939	645	504	823	415	275	324	249	329	397	385	342
7	L43-G17-PT	493	965	670	530	849	438	299	349	272	355	423	410	367
8	L43-G17-PL	489	960	666	525	844	434	294	345	268	350	418	406	363
9	L43-G17-WTP	489	960	666	525	844	434	294	345	268	350	418	406	363
Baseline- White Ck	L18	423	825	574	454	726	376	257	300	235	305	363	352	316
10	L43-W17-PT	404	801	552	447	704	361	245	280	214	282	340	330	296
11	L43-W17-PL	401	798	558	445	699	358	243	277	210	278	335	325	292
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	-11.2%	-5.9%	-8.5%	-10.7%	-6.7%	-11.7%	-17.7%	-15.7%	-18.4%	-15.8%	-13.4%	-13.8%	-15.5%
1	L18-G42-PT	-8.5%	-4.5%	-6.4%	-8.1%	-5.1%	-8.9%	-13.6%	-12.2%	-14.2%	-12.1%	-10.2%	-10.5%	-11.7%
2	L18-G42-PL	-9.4%	-5.0%	-7.1%	-9.0%	-5.6%	-9.8%	-15.0%	-13.4%	-15.7%	-13.3%	-11.3%	-11.6%	-12.9%
3	L18-G42-WTP	-9.4%	-5.0%	-7.1%	-9.0%	-5.6%	-9.8%	-15.0%	-13.4%	-15.7%	-13.3%	-11.3%	-11.6%	-12.9%
4	L30-G30-PT	-4.7%	-2.5%	-3.6%	-4.5%	-2.8%	-4.9%	-7.6%	-6.8%	-8.1%	-6.7%	-5.6%	-5.8%	-6.5%
5	L30-G30-PL	-5.7%	-3.0%	-4.3%	-5.4%	-3.4%	-5.9%	-9.0%	-8.1%	-9.6%	-8.0%	-6.7%	-6.9%	-7.7%
6	L30-G30-WTP	-5.7%	-3.0%	-4.3%	-5.4%	-3.4%	-5.9%	-9.0%	-8.1%	-9.6%	-8.0%	-6.7%	-6.9%	-7.7%
7	L43-G17-PT	-0.6%	-0.3%	-0.5%	-0.6%	-0.4%	-0.6%	-1.0%	-0.9%	-1.1%	-0.9%	-0.7%	-0.8%	-0.8%
8	L43-G17-PL	-1.5%	-0.8%	-1.2%	-1.5%	-0.9%	-1.6%	-2.6%	-2.2%	-2.6%	-2.2%	-1.8%	-1.9%	-2.1%
9	L43-G17-WTP	-1.5%	-0.8%	-1.2%	-1.5%	-0.9%	-1.6%	-2.6%	-2.2%	-2.6%	-2.2%	-1.8%	-1.9%	-2.1%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	-4.6%	-2.9%	-3.9%	-1.7%	-3.0%	-3.9%	-4.9%	-6.6%	-8.6%	-7.5%	-6.3%	-6.4%	-6.3%
11	L43-W17-PL	-5.2%	-3.2%	-2.8%	-2.0%	-3.7%	-4.8%	-5.7%	-7.9%	-10.3%	-9.1%	-7.7%	-7.8%	-7.5%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Chattahoochee River Intake
Drought Year Analysis - 2001

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	458	607	559	848	643	430	430	350	314	309	290	289	427
Proposed	L18-G50-PT	401	550	502	790	585	373	373	293	257	253	233	232	370
1	L18-G42-PT	414	563	516	804	599	387	387	307	271	266	247	246	384
2	L18-G42-PL	410	559	511	800	595	382	382	302	266	261	242	241	379
3	L18-G42-WTP	410	559	511	800	595	382	382	302	266	261	242	241	379
4	L30-G30-PT	434	583	535	824	619	406	406	326	290	285	266	265	403
5	L30-G30-PL	429	578	531	819	614	401	402	322	286	280	261	260	398
6	L30-G30-WTP	429	578	531	819	614	401	402	322	286	280	261	260	398
7	L43-G17-PT	454	604	556	844	640	427	427	347	311	306	287	286	424
8	L43-G17-PL	450	599	552	840	635	422	423	342	306	301	282	281	419
9	L43-G17-WTP	450	599	552	840	635	422	423	342	306	301	282	281	419
Baseline- White Ck	L18	390	517	477	722	548	366	367	298	268	263	247	246	364
10	L43-W17-PT	375	506	468	709	541	354	350	282	244	241	223	237	345
11	L43-W17-PL	372	503	467	708	538	352	346	279	241	238	222	236	340
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	-12.5%	-9.4%	-10.2%	-6.8%	-8.9%	-13.1%	-13.3%	-16.3%	-18.2%	-18.1%	-19.7%	-19.8%	-13.4%
1	L18-G42-PT	-9.5%	-7.1%	-7.7%	-5.1%	-6.7%	-10.1%	-10.1%	-12.4%	-13.8%	-14.0%	-14.9%	-15.0%	-10.1%
2	L18-G42-PL	-10.5%	-7.9%	-8.6%	-5.7%	-7.5%	-11.1%	-11.1%	-13.7%	-15.3%	-15.4%	-16.5%	-16.6%	-11.2%
3	L18-G42-WTP	-10.5%	-7.9%	-8.6%	-5.7%	-7.5%	-11.1%	-11.1%	-13.7%	-15.3%	-15.4%	-16.5%	-16.6%	-11.2%
4	L30-G30-PT	-5.2%	-4.0%	-4.3%	-2.8%	-3.7%	-5.6%	-5.6%	-6.8%	-7.6%	-7.8%	-8.3%	-8.3%	-5.6%
5	L30-G30-PL	-6.3%	-4.7%	-5.1%	-3.4%	-4.5%	-6.7%	-6.7%	-8.2%	-9.1%	-9.3%	-9.9%	-9.9%	-6.7%
6	L30-G30-WTP	-6.3%	-4.7%	-5.1%	-3.4%	-4.5%	-6.7%	-6.7%	-8.2%	-9.1%	-9.3%	-9.9%	-9.9%	-6.7%
7	L43-G17-PT	-0.7%	-0.5%	-0.6%	-0.4%	-0.5%	-0.7%	-0.7%	-0.9%	-1.0%	-1.0%	-1.1%	-1.1%	-0.7%
8	L43-G17-PL	-1.7%	-1.3%	-1.4%	-0.9%	-1.2%	-1.8%	-1.8%	-2.2%	-2.5%	-2.5%	-2.7%	-2.7%	-1.8%
9	L43-G17-WTP	-1.7%	-1.3%	-1.4%	-0.9%	-1.2%	-1.8%	-1.8%	-2.2%	-2.5%	-2.5%	-2.7%	-2.7%	-1.8%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	-4.0%	-2.2%	-1.8%	-1.9%	-1.2%	-3.4%	-4.7%	-5.4%	-9.0%	-8.5%	-9.7%	-3.6%	-5.3%
11	L43-W17-PL	-4.6%	-2.8%	-2.1%	-2.0%	-1.8%	-3.9%	-5.7%	-6.5%	-10.2%	-9.8%	-10.3%	-4.1%	-6.5%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

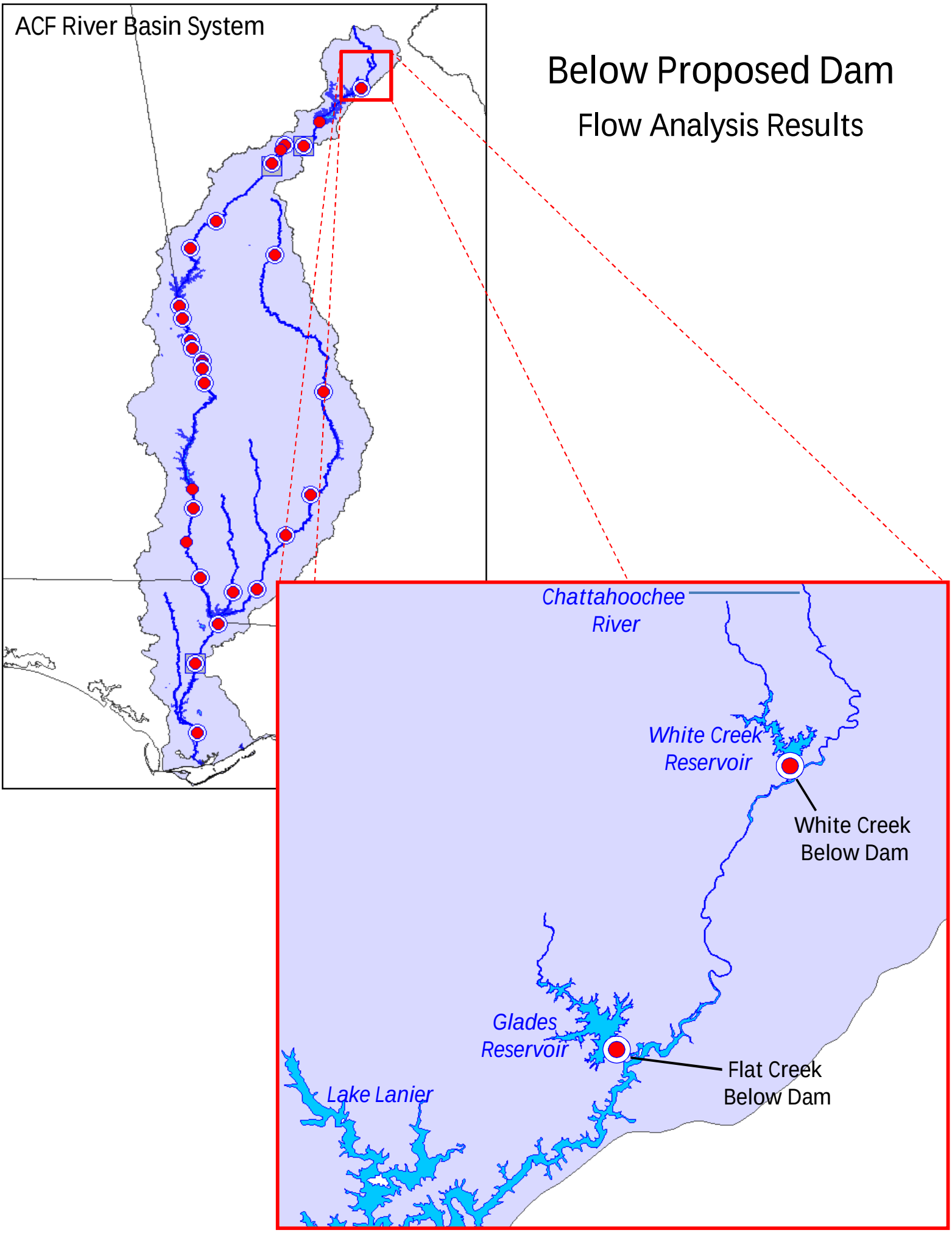
Chattahoochee River Intake
Drought Year Analysis - 2008

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	503	490	717	966	612	467	279	276	735	237	231	247	771
Proposed	L18-G50-PT	452	433	660	908	555	410	222	226	717	190	188	196	714
1	L18-G42-PT	463	447	674	922	569	424	236	235	720	198	196	205	728
2	L18-G42-PL	460	442	669	918	564	419	231	232	719	195	193	202	723
3	L18-G42-WTP	460	442	669	918	564	419	231	232	719	195	193	202	723
4	L30-G30-PT	481	466	693	942	588	443	255	252	726	213	211	223	747
5	L30-G30-PL	476	461	688	937	583	438	250	248	725	209	207	218	743
6	L30-G30-WTP	476	461	688	937	583	438	250	248	725	209	207	218	743
7	L43-G17-PT	500	487	714	962	609	464	276	273	734	234	228	244	768
8	L43-G17-PL	496	482	709	958	604	459	271	269	732	230	224	239	763
9	L43-G17-WTP	496	482	709	958	604	459	271	269	732	230	224	239	763
Baseline- White Ck	L18	429	418	611	823	522	398	238	236	626	202	197	210	657
10	L43-W17-PT	415	404	589	800	505	382	229	228	620	188	189	204	638
11	L43-W17-PL	413	401	584	796	502	379	228	226	619	185	188	203	634
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	-10.1%	-11.7%	-8.0%	-5.9%	-9.4%	-12.3%	-20.4%	-18.1%	-2.5%	-19.9%	-18.6%	-20.6%	-7.4%
1	L18-G42-PT	-7.9%	-8.8%	-6.0%	-4.5%	-7.1%	-9.3%	-15.5%	-14.8%	-2.0%	-16.5%	-15.3%	-16.9%	-5.6%
2	L18-G42-PL	-8.6%	-9.8%	-6.7%	-5.0%	-7.8%	-10.3%	-17.2%	-16.0%	-2.1%	-17.7%	-16.6%	-18.2%	-6.2%
3	L18-G42-WTP	-8.6%	-9.8%	-6.7%	-5.0%	-7.8%	-10.3%	-17.2%	-16.0%	-2.1%	-17.7%	-16.6%	-18.2%	-6.2%
4	L30-G30-PT	-4.5%	-4.9%	-3.3%	-2.5%	-3.9%	-5.1%	-8.6%	-8.7%	-1.2%	-10.1%	-8.9%	-9.7%	-3.1%
5	L30-G30-PL	-5.3%	-5.8%	-4.0%	-3.0%	-4.7%	-6.1%	-10.3%	-10.3%	-1.4%	-11.9%	-10.4%	-11.6%	-3.7%
6	L30-G30-WTP	-5.3%	-5.8%	-4.0%	-3.0%	-4.7%	-6.1%	-10.3%	-10.3%	-1.4%	-11.9%	-10.4%	-11.6%	-3.7%
7	L43-G17-PT	-0.6%	-0.6%	-0.4%	-0.3%	-0.5%	-0.7%	-1.1%	-1.1%	-0.2%	-1.3%	-1.3%	-1.3%	-0.4%
8	L43-G17-PL	-1.5%	-1.6%	-1.1%	-0.8%	-1.3%	-1.7%	-2.8%	-2.8%	-0.4%	-3.3%	-3.2%	-3.1%	-1.0%
9	L43-G17-WTP	-1.5%	-1.6%	-1.1%	-0.8%	-1.3%	-1.7%	-2.8%	-2.8%	-0.4%	-3.3%	-3.2%	-3.1%	-1.0%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	-3.1%	-3.4%	-3.7%	-2.7%	-3.1%	-4.0%	-3.7%	-3.3%	-1.0%	-7.0%	-3.8%	-2.9%	-2.9%
11	L43-W17-PL	-3.7%	-4.1%	-4.4%	-3.3%	-3.8%	-4.8%	-4.2%	-3.9%	-1.2%	-8.3%	-4.4%	-3.4%	-3.5%
No Action	L60	-100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Below Proposed Dam

Flow Analysis Results



Flat Creek and White Creek Below Dam
74-Year Period of Analysis (January 1, 1939- December 31, 2012)

Average Daily Flow (cfs)

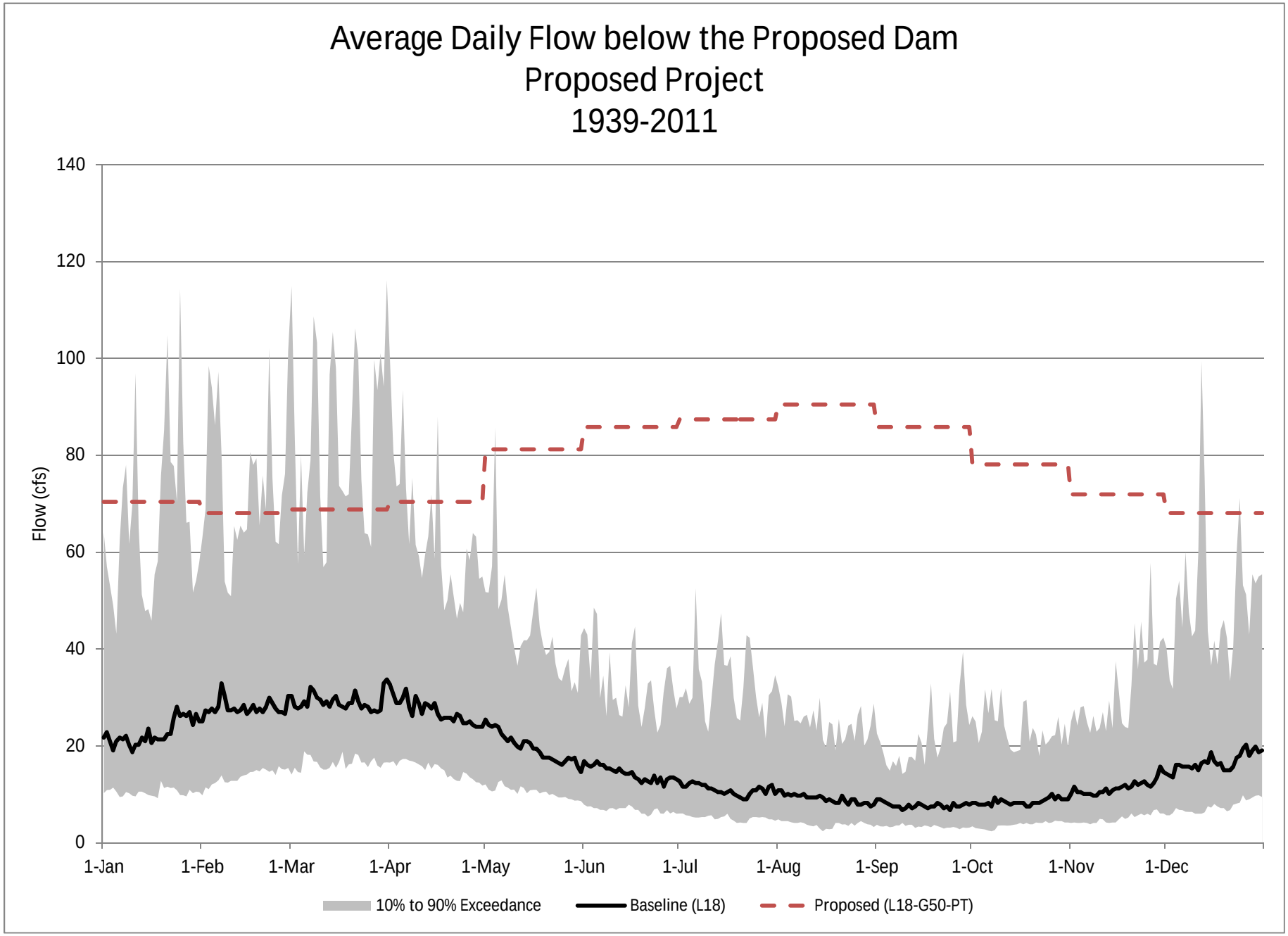
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	38	44	48	37	26	20	19	16	14	15	19	28
Proposed	L18-G50-PT	72	72	76	74	82	86	88	91	86	78	72	69
1	L18-G42-PT	61	61	65	63	70	73	74	76	72	66	61	58
2	L18-G42-PL	6	8	12	8	6	5	5	5	5	4	5	5
3	L18-G42-WTP	6	8	12	8	6	5	5	5	5	4	5	5
4	L30-G30-PT	44	45	50	48	51	52	53	55	52	47	43	42
5	L30-G30-PL	7	9	13	9	7	5	5	5	5	4	5	6
6	L30-G30-WTP	7	9	13	9	7	5	5	5	5	4	5	6
7	L43-G17-PT	27	29	34	31	31	30	31	31	30	27	25	24
8	L43-G17-PL	7	10	15	11	8	6	6	5	5	4	5	6
9	L43-G17-WTP	7	10	15	11	8	6	6	5	5	4	5	6
Baseline- White Ck	L18	22	26	28	22	15	12	11	9	8	9	11	16
10	L43-W17-PT	31	31	33	29	31	33	32	33	30	28	26	27
11	L43-W17-PL	12	14	16	10	5	3	2	2	2	3	5	8
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---

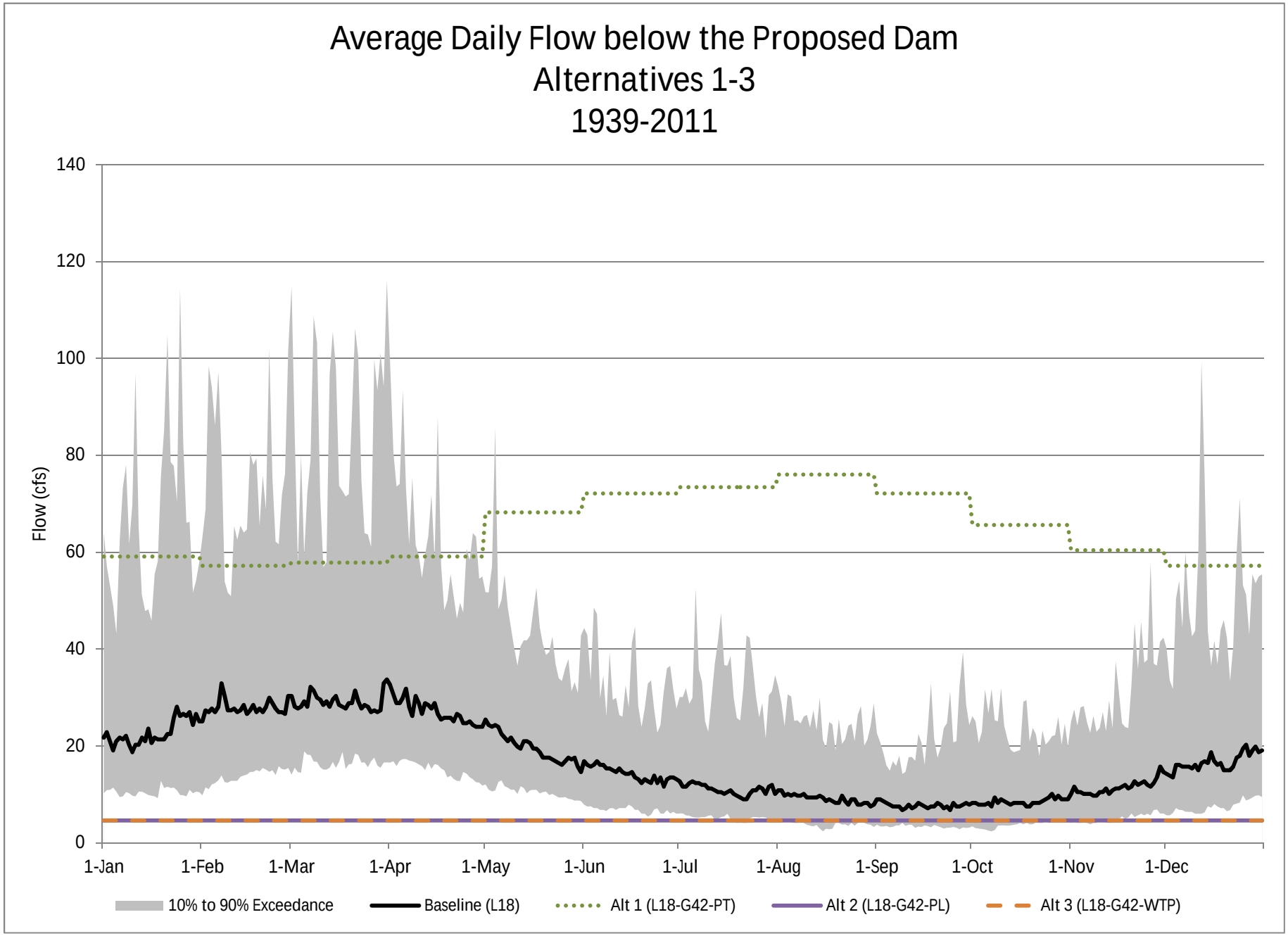
Minimum Daily Flow

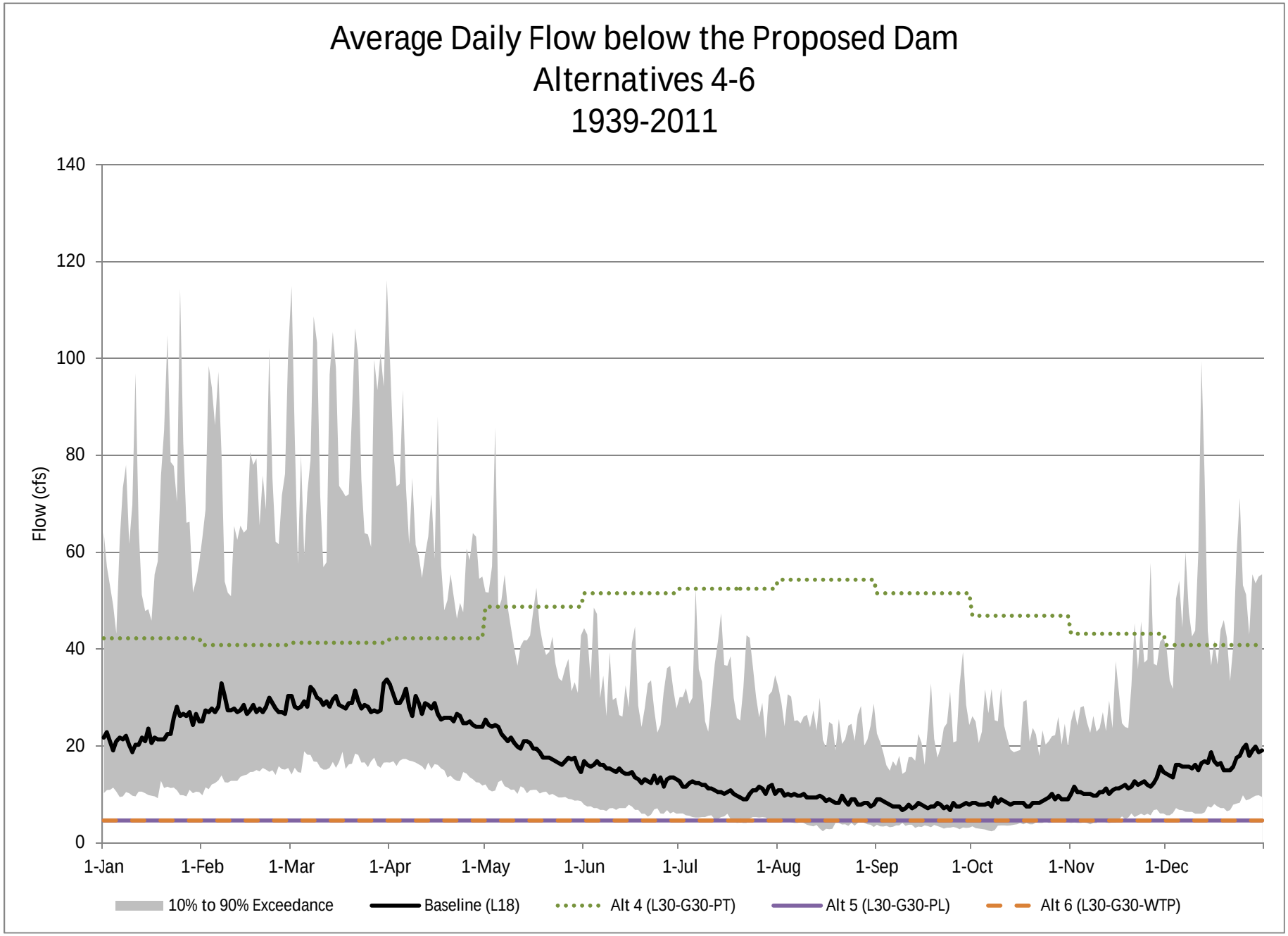
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	4	6	7	6	4	1	0	0	1	1	2	3
Proposed	L18-G50-PT	70	68	69	70	81	86	87	90	86	78	72	68
1	L18-G42-PT	59	57	58	59	68	72	73	76	72	66	60	57
2	L18-G42-PL	4	5	5	5	4	1	0	0	1	1	2	3
3	L18-G42-WTP	4	5	5	5	4	1	0	0	1	1	2	3
4	L30-G30-PT	42	41	41	42	49	52	52	54	52	47	43	41
5	L30-G30-PL	4	5	5	5	4	1	0	0	1	1	2	3
6	L30-G30-WTP	4	5	5	5	4	1	0	0	1	1	2	3
7	L43-G17-PT	24	23	23	24	28	29	30	31	29	27	24	23
8	L43-G17-PL	4	5	5	5	4	1	0	0	1	1	2	3
9	L43-G17-WTP	4	5	5	5	4	1	0	0	1	1	2	3
Baseline- White Ck	L18	2	3	4	3	2	1	0	0	0	1	1	2
10	L43-W17-PT	23	23	23	23	29	31	30	32	29	26	23	22
11	L43-W17-PL	2	3	4	3	2	1	0	0	0	1	1	2
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---

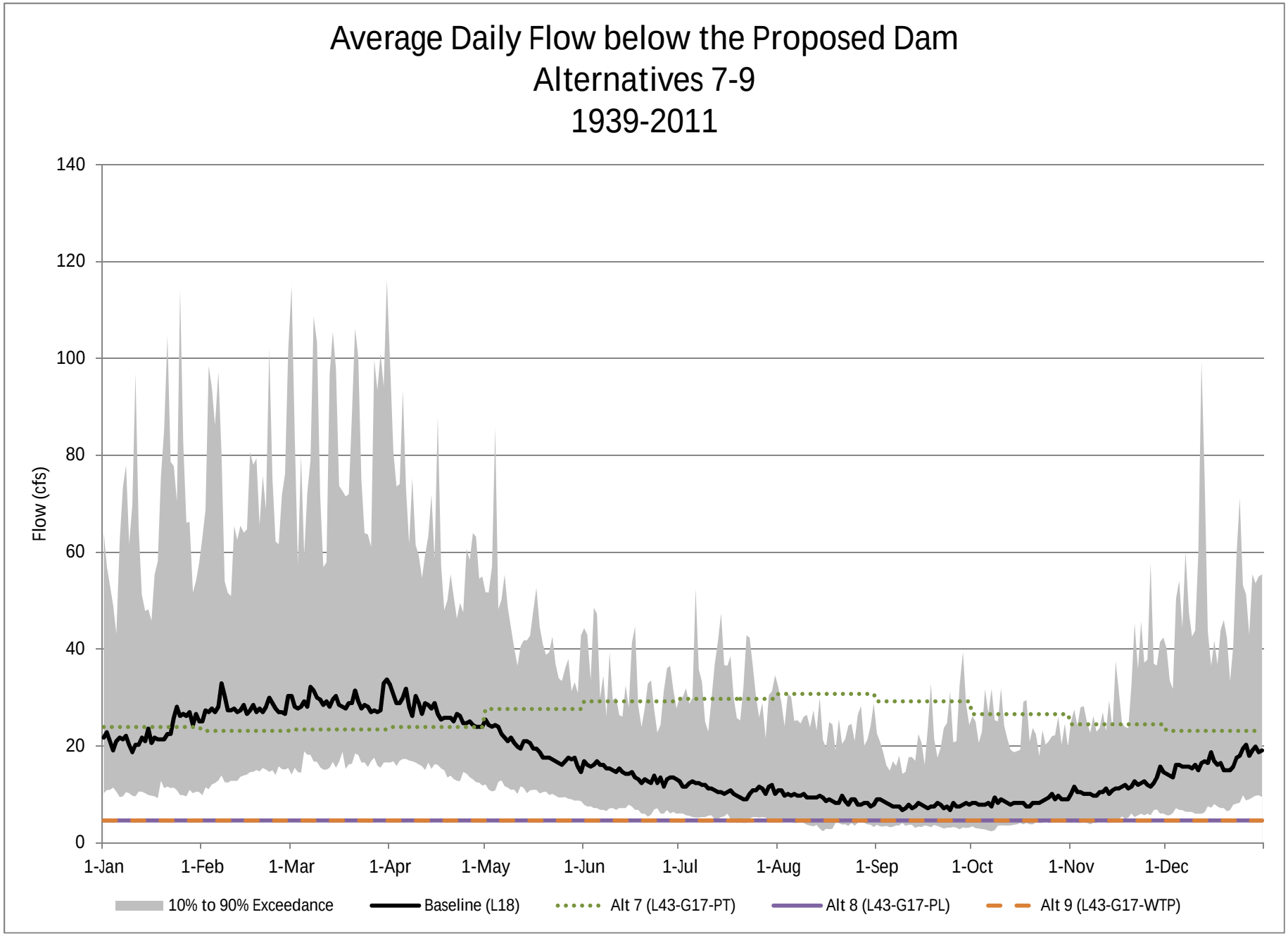
Maximum Daily Flow

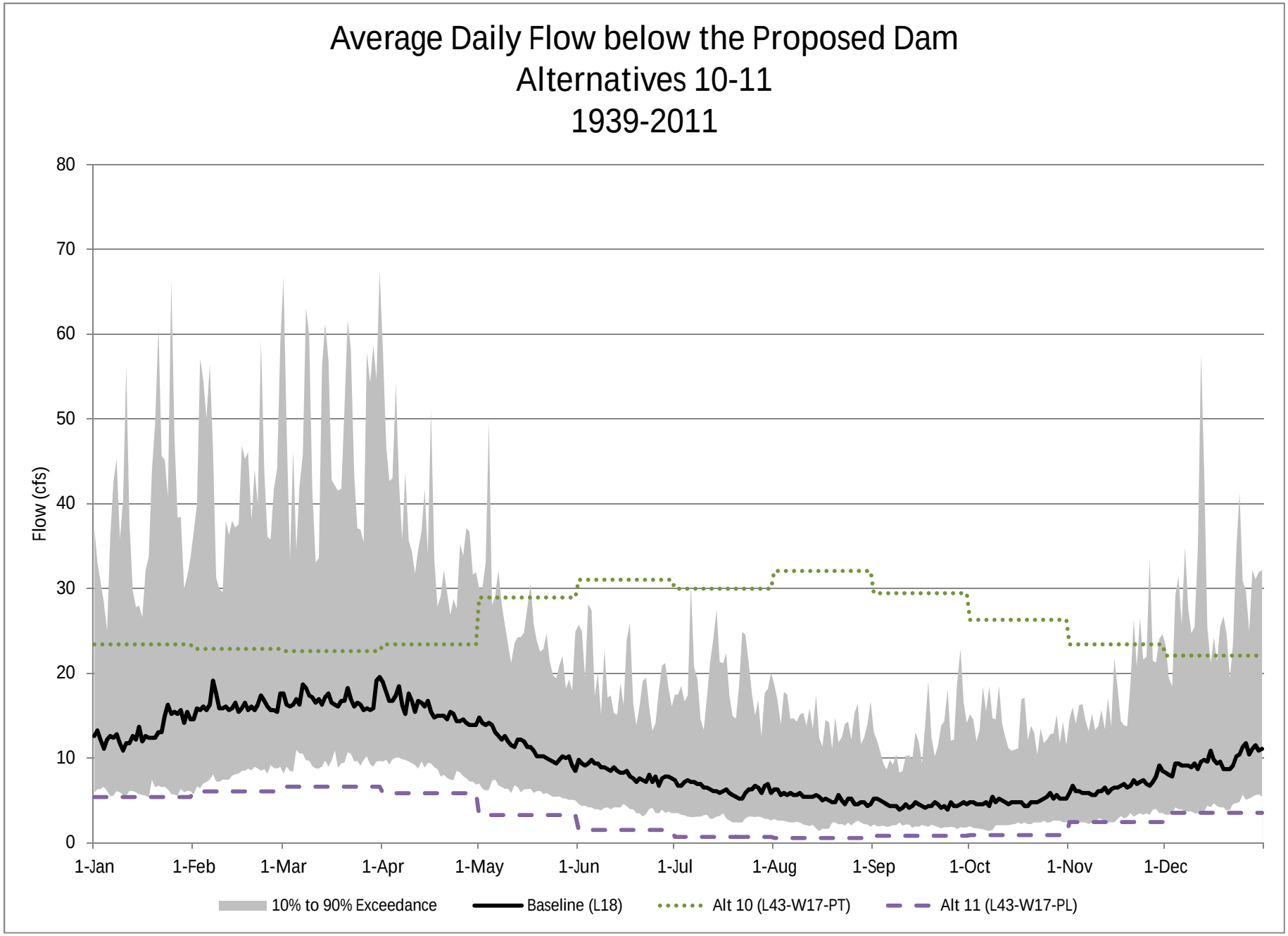
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	1,615	1,480	1,539	773	414	1,031	693	1,719	1,236	1,045	805	872
Proposed	L18-G50-PT	1,231	1,481	1,543	775	410	963	523	299	417	122	341	530
1	L18-G42-PT	944	1,481	1,357	683	410	971	534	321	429	122	341	530
2	L18-G42-PL	936	1,424	1,325	628	342	899	460	245	357	56	281	473
3	L18-G42-WTP	936	1,424	1,325	628	342	899	460	245	357	56	281	473
4	L30-G30-PT	723	873	1,196	538	410	989	547	356	440	122	328	530
5	L30-G30-PL	681	949	1,180	495	362	938	495	302	389	75	285	489
6	L30-G30-WTP	681	949	1,180	495	362	938	495	302	389	75	285	489
7	L43-G17-PT	723	853	1,023	538	410	1,009	554	391	441	122	260	530
8	L43-G17-PL	699	830	1,025	514	383	980	524	360	412	95	235	507
9	L43-G17-WTP	699	830	1,025	514	383	980	524	360	412	95	235	507
Baseline- White Ck	L18	938	859	894	449	240	599	402	998	717	607	467	506
10	L43-W17-PT	940	860	896	450	238	598	402	712	416	608	507	508
11	L43-W17-PL	917	837	873	427	209	567	372	951	386	581	484	486
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---


Average Daily Flow below the Proposed Dam
Proposed Project
1939-2011
Flow (cfs)
140
120
100
80
60
40
20
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
10% to 90% Exceedance
Baseline (L18)
Proposed (L18-G50-PT)


Average Daily Flow below the Proposed Dam
Alternatives 1-3
1939-2011
Flow (cfs)
140
120
100
80
60
40
20
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
10% to 90% Exceedance
Baseline (L18)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)


Average Daily Flow below the Proposed Dam
Alternatives 4-6
1939-2011
Flow (cfs)
140
120
100
80
60
40
20
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
10% to 90% Exceedance
Baseline (L18)
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)


Average Daily Flow below the Proposed Dam
Alternatives 7-9
1939-2011
Flow (cfs)
140
120
100
80
60
40
20
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
10% to 90% Exceedance
Baseline (L18)
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)


Average Daily Flow below the Proposed Dam
Alternatives 10-11
1939-2011
Flow (cfs)
80
70
60
50
40
30
20
10
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
10% to 90% Exceedance
Baseline (L18)
Alt 10 (L43-W17-PT)
Alt 11 (L43-W17-PL)

Flat Creek and White Creek Below Dam
Average Year Analysis - 1997

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	31	34	58	46	33	28	25	21	11	30	30	28	31
Proposed	L18-G50-PT	78	70	68	69	76	85	86	87	90	86	78	72	68
1	L18-G42-PT	66	59	57	58	66	73	72	73	76	72	66	60	57
2	L18-G42-PL	5	5	5	5	11	9	5	5	5	4	5	5	5
3	L18-G42-WTP	5	5	5	5	11	9	5	5	5	4	5	5	5
4	L30-G30-PT	48	42	41	41	50	55	52	52	54	52	47	43	41
5	L30-G30-PL	6	5	5	5	12	10	5	5	5	4	5	5	5
6	L30-G30-WTP	6	5	5	5	12	10	5	5	5	4	5	5	5
7	L43-G17-PT	27	24	23	23	30	35	29	30	31	29	27	24	23
8	L43-G17-PL	6	5	5	5	10	12	5	5	5	4	5	5	5
9	L43-G17-WTP	6	5	5	5	10	12	5	5	5	4	5	5	5
Baseline- White Ck	L18	18	20	34	27	19	16	15	12	6	17	18	16	18
10	L43-W17-PT	31	28	39	32	28	32	31	32	32	33	34	26	27
11	L43-W17-PL	8	9	20	15	10	6	2	3	1	11	8	5	8
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	150.9%	105.2%	16.9%	49.4%	128.4%	201.8%	241.4%	314.4%	758.2%	189.4%	157.8%	154.9%	121.5%
1	L18-G42-PT	111.6%	72.3%	-1.8%	25.5%	96.9%	158.6%	186.7%	248.1%	620.9%	143.1%	116.5%	114.1%	86.1%
2	L18-G42-PL	-82.4%	-86.5%	-92.0%	-89.9%	-67.2%	-68.4%	-81.5%	-78.0%	-56.0%	-85.5%	-84.7%	-83.6%	-84.9%
3	L18-G42-WTP	-82.4%	-86.5%	-92.0%	-89.9%	-67.2%	-68.4%	-81.5%	-78.0%	-56.0%	-85.5%	-84.7%	-83.6%	-84.9%
4	L30-G30-PT	52.7%	23.1%	-29.9%	-10.3%	51.1%	93.8%	104.8%	148.7%	414.9%	73.6%	54.7%	52.9%	32.9%
5	L30-G30-PL	-81.7%	-86.5%	-92.0%	-89.9%	-63.3%	-63.9%	-81.5%	-78.0%	-56.0%	-85.5%	-84.7%	-83.6%	-84.9%
6	L30-G30-WTP	-81.7%	-86.5%	-92.0%	-89.9%	-63.3%	-63.9%	-81.5%	-78.0%	-56.0%	-85.5%	-84.7%	-83.6%	-84.9%
7	L43-G17-PT	-12.0%	-30.2%	-60.3%	-49.2%	-10.4%	24.1%	16.1%	40.9%	191.8%	-1.6%	-12.4%	-13.3%	-24.7%
8	L43-G17-PL	-81.8%	-86.5%	-92.0%	-89.9%	-69.6%	-59.0%	-81.5%	-78.0%	-56.0%	-85.5%	-84.7%	-83.6%	-84.9%
9	L43-G17-WTP	-81.8%	-86.5%	-92.0%	-89.9%	-69.6%	-59.0%	-81.5%	-78.0%	-56.0%	-85.5%	-84.7%	-83.6%	-84.9%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	72.4%	40.9%	15.4%	20.3%	46.2%	97.7%	112.5%	160.7%	424.1%	93.4%	92.2%	57.2%	49.0%
11	L43-W17-PL	-55.5%	-53.9%	-39.5%	-43.6%	-48.1%	-60.6%	-89.6%	-73.7%	-90.9%	-38.8%	-52.8%	-71.8%	-57.9%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Flat Creek and White Creek Below Dam
Wet Year Analysis - 2005

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	38	21	22	32	32	40	39	27	18	16	22	16	23
Proposed	L18-G50-PT	84	77	72	68	72	72	73	73	82	87	91	90	85
1	L18-G42-PT	73	65	60	57	62	61	64	62	69	73	77	76	71
2	L18-G42-PL	12	4	4	5	7	8	10	6	5	5	8	4	4
3	L18-G42-WTP	12	4	4	5	7	8	10	6	5	5	8	4	4
4	L30-G30-PT	56	46	43	41	45	46	48	47	50	53	57	54	51
5	L30-G30-PL	14	4	4	5	8	9	11	8	5	5	8	4	4
6	L30-G30-WTP	14	4	4	5	8	9	11	8	5	5	8	4	4
7	L43-G17-PT	39	26	24	23	28	31	33	29	29	31	35	32	29
8	L43-G17-PL	16	4	4	5	8	12	13	9	6	6	9	5	4
9	L43-G17-WTP	16	4	4	5	8	12	13	9	6	6	9	5	4
Baseline- White Ck	L18	22	12	13	19	18	23	23	16	10	9	13	9	13
10	L43-W17-PT	34	29	28	27	28	30	30	27	30	32	33	33	29
11	L43-W17-PL	10	5	7	9	10	13	13	8	4	2	4	2	1
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	123.7%	273.6%	226.4%	114.6%	129.0%	79.3%	86.2%	172.6%	360.9%	444.3%	307.2%	458.7%	273.9%
1	L18-G42-PT	92.9%	213.9%	174.2%	80.1%	94.4%	53.3%	62.3%	130.8%	288.5%	358.6%	245.8%	369.3%	214.1%
2	L18-G42-PL	-67.9%	-79.8%	-79.6%	-85.0%	-78.0%	-79.0%	-73.8%	-76.4%	-74.0%	-66.8%	-64.7%	-76.5%	-83.7%
3	L18-G42-WTP	-67.9%	-79.8%	-79.6%	-85.0%	-78.0%	-79.0%	-73.8%	-76.4%	-74.0%	-66.8%	-64.7%	-76.5%	-83.7%
4	L30-G30-PT	47.8%	124.2%	95.8%	28.3%	43.2%	14.9%	22.0%	75.1%	181.8%	230.1%	154.1%	236.4%	124.3%
5	L30-G30-PL	-64.2%	-79.8%	-79.6%	-85.5%	-76.2%	-76.7%	-72.1%	-68.5%	-69.0%	-66.2%	-62.3%	-75.9%	-83.7%
6	L30-G30-WTP	-64.2%	-79.8%	-79.6%	-85.5%	-76.2%	-76.7%	-72.1%	-68.5%	-69.0%	-66.2%	-62.3%	-75.9%	-83.7%
7	L43-G17-PT	4.3%	27.0%	11.0%	-27.3%	-10.9%	-21.4%	-15.4%	9.5%	64.0%	92.7%	55.4%	97.5%	27.1%
8	L43-G17-PL	-56.2%	-79.8%	-79.6%	-85.5%	-73.2%	-69.7%	-65.8%	-65.9%	-67.2%	-64.0%	-59.0%	-70.3%	-83.7%
9	L43-G17-WTP	-56.2%	-79.8%	-79.6%	-85.5%	-73.2%	-69.7%	-65.8%	-65.9%	-67.2%	-64.0%	-59.0%	-70.3%	-83.7%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	54.5%	137.2%	118.9%	46.9%	53.2%	31.1%	29.2%	71.5%	192.9%	243.6%	156.6%	249.2%	120.5%
11	L43-W17-PL	-53.8%	-56.7%	-46.1%	-54.0%	-47.1%	-45.6%	-45.2%	-50.3%	-60.8%	-74.1%	-71.3%	-82.9%	-92.3%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Flat Creek and White Creek Below Dam
Drought Year Analysis - 1988

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	13	26	28	13	23	8	2	2	4	14	12	10	10
Proposed	L18-G50-PT	77	70	68	69	70	81	86	87	90	86	78	72	68
1	L18-G42-PT	65	59	57	58	59	68	72	73	76	72	66	60	57
2	L18-G42-PL	4	5	5	5	5	5	2	1	3	5	5	5	5
3	L18-G42-WTP	4	5	5	5	5	5	2	1	3	5	5	5	5
4	L30-G30-PT	46	42	41	41	42	49	52	52	54	52	47	43	41
5	L30-G30-PL	4	5	5	5	5	5	2	1	3	5	5	5	5
6	L30-G30-WTP	4	5	5	5	5	5	2	1	3	5	5	5	5
7	L43-G17-PT	26	24	23	23	24	28	29	30	31	29	27	24	23
8	L43-G17-PL	4	5	5	5	5	5	2	1	3	5	5	5	5
9	L43-G17-WTP	4	5	5	5	5	5	2	1	3	5	5	5	5
Baseline- White Ck	L18	7	15	16	8	13	4	1	1	2	8	7	6	6
10	L43-W17-PT	26	23	23	23	23	29	31	30	32	29	26	23	22
11	L43-W17-PL	3	5	10	7	6	3	1	1	1	1	1	2	4
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	515.5%	172.7%	142.9%	429.2%	211.9%	965.5%	3596.1%	5299.8%	2031.4%	496.6%	557.3%	607.1%	585.5%
1	L18-G42-PT	417.0%	129.0%	104.1%	344.5%	162.0%	795.0%	3004.7%	4435.9%	1690.4%	401.1%	452.1%	494.0%	475.8%
2	L18-G42-PL	-67.8%	-82.0%	-83.4%	-64.3%	-79.4%	-39.8%	0.0%	-18.4%	-24.0%	-68.0%	-61.0%	-54.4%	-53.3%
3	L18-G42-WTP	-67.8%	-82.0%	-83.4%	-64.3%	-79.4%	-39.8%	0.0%	-18.4%	-24.0%	-68.0%	-61.0%	-54.4%	-53.3%
4	L30-G30-PT	269.3%	63.6%	45.8%	217.5%	87.1%	539.3%	2117.7%	3139.9%	1178.8%	257.9%	294.4%	324.3%	311.3%
5	L30-G30-PL	-67.8%	-82.0%	-83.4%	-64.3%	-79.4%	-39.8%	0.0%	-18.4%	-24.0%	-68.0%	-61.0%	-54.4%	-53.3%
6	L30-G30-WTP	-67.8%	-82.0%	-83.4%	-64.3%	-79.4%	-39.8%	0.0%	-18.4%	-24.0%	-68.0%	-61.0%	-54.4%	-53.3%
7	L43-G17-PT	109.3%	-7.3%	-17.4%	79.9%	6.0%	262.3%	1156.7%	1735.9%	624.7%	102.8%	123.5%	140.4%	133.1%
8	L43-G17-PL	-67.8%	-82.0%	-83.4%	-64.3%	-79.4%	-39.8%	0.0%	-18.4%	-24.0%	-68.0%	-61.0%	-54.4%	-53.3%
9	L43-G17-WTP	-67.8%	-82.0%	-83.4%	-64.3%	-79.4%	-39.8%	0.0%	-18.4%	-24.0%	-68.0%	-61.0%	-54.4%	-53.3%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	261.0%	56.2%	40.6%	199.4%	78.6%	553.7%	2201.0%	3090.3%	1201.6%	252.5%	281.1%	296.3%	283.2%
11	L43-W17-PL	-53.4%	-64.2%	-37.5%	-13.7%	-55.6%	-29.2%	-8.4%	-42.5%	-77.3%	-90.1%	-86.9%	-58.5%	-38.7%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Flat Creek and White Creek Below Dam
Drought Year Analysis - 2001

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	22	20	23	54	24	14	34	33	19	9	7	9	14
Proposed	L18-G50-PT	77	70	68	69	70	81	86	87	90	86	78	72	68
1	L18-G42-PT	65	59	57	58	59	68	72	73	76	72	66	60	57
2	L18-G42-PL	5	5	5	5	5	5	5	5	5	5	5	5	5
3	L18-G42-WTP	5	5	5	5	5	5	5	5	5	5	5	5	5
4	L30-G30-PT	46	42	41	41	42	49	52	52	54	52	47	43	41
5	L30-G30-PL	5	5	5	5	5	5	5	5	5	5	5	5	5
6	L30-G30-WTP	5	5	5	5	5	5	5	5	5	5	5	5	5
7	L43-G17-PT	26	24	23	23	24	28	29	30	31	29	27	24	23
8	L43-G17-PL	5	5	5	5	5	5	5	5	5	5	5	5	5
9	L43-G17-WTP	5	5	5	5	5	5	5	5	5	5	5	5	5
Baseline- White Ck	L18	13	11	14	32	14	8	20	19	11	5	4	5	8
10	L43-W17-PT	27	23	23	24	25	29	31	30	32	29	26	23	22
11	L43-W17-PL	3	5	6	10	7	3	2	1	1	1	1	2	4
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	257.2%	256.4%	191.7%	26.5%	188.0%	495.0%	151.5%	168.1%	384.6%	834.6%	1073.8%	737.6%	386.2%
1	L18-G42-PT	200.1%	199.4%	145.0%	6.3%	141.9%	399.8%	111.3%	125.2%	307.1%	685.0%	886.0%	603.6%	308.4%
2	L18-G42-PL	-78.6%	-76.5%	-80.1%	-91.5%	-81.0%	-66.0%	-86.4%	-85.8%	-75.1%	-50.5%	-30.5%	-46.0%	-66.9%
3	L18-G42-WTP	-78.6%	-76.5%	-80.1%	-91.5%	-81.0%	-66.0%	-86.4%	-85.8%	-75.1%	-50.5%	-30.5%	-46.0%	-66.9%
4	L30-G30-PT	114.3%	113.8%	75.0%	-24.1%	72.8%	257.0%	50.9%	60.9%	190.8%	460.7%	604.3%	402.6%	191.7%
5	L30-G30-PL	-78.6%	-76.5%	-80.1%	-91.5%	-81.0%	-66.0%	-86.4%	-85.8%	-75.1%	-50.5%	-30.5%	-46.0%	-66.9%
6	L30-G30-WTP	-78.6%	-76.5%	-80.1%	-91.5%	-81.0%	-66.0%	-86.4%	-85.8%	-75.1%	-50.5%	-30.5%	-46.0%	-66.9%
7	L43-G17-PT	21.5%	21.2%	-0.8%	-57.0%	-2.1%	102.3%	-14.5%	-8.8%	64.8%	217.8%	299.1%	184.8%	65.3%
8	L43-G17-PL	-78.6%	-76.5%	-80.1%	-91.5%	-81.0%	-66.0%	-86.4%	-85.8%	-75.1%	-50.5%	-30.5%	-46.0%	-66.9%
9	L43-G17-WTP	-78.6%	-76.5%	-80.1%	-91.5%	-81.0%	-66.0%	-86.4%	-85.8%	-75.1%	-50.5%	-30.5%	-46.0%	-66.9%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	111.4%	104.1%	68.9%	-23.3%	73.1%	265.0%	56.6%	58.4%	195.9%	452.2%	580.6%	369.4%	171.8%
11	L43-W17-PL	-72.5%	-53.1%	-55.2%	-68.8%	-53.8%	-58.8%	-92.3%	-96.3%	-94.5%	-84.5%	-76.7%	-50.9%	-56.5%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

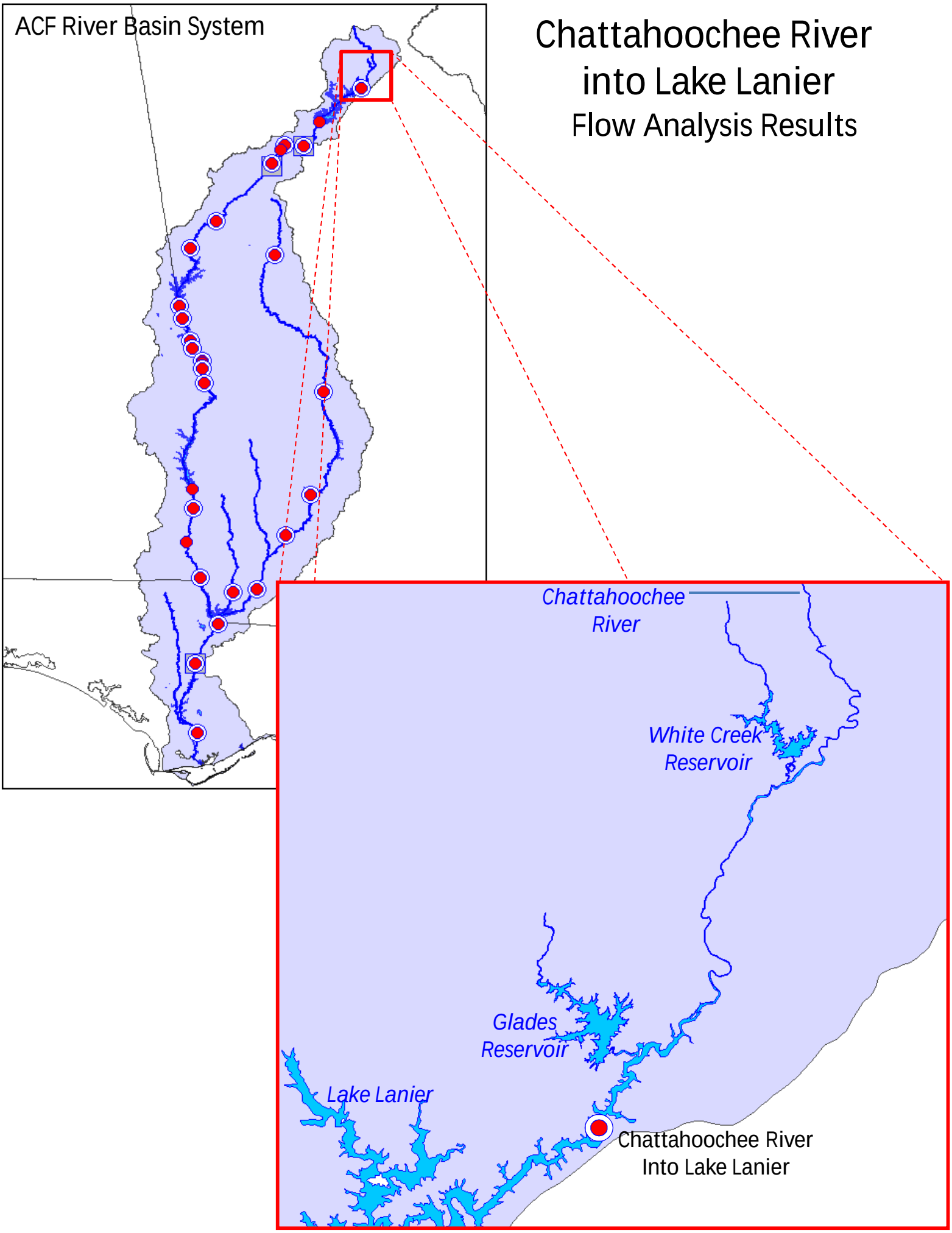
Flat Creek and White Creek Below Dam
Drought Year Analysis - 2008

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	17	14	36	22	20	13	9	17	24	5	10	8	28
Proposed	L18-G50-PT	77	70	68	69	70	81	86	87	90	86	78	72	68
1	L18-G42-PT	65	59	57	58	59	68	72	73	76	72	66	60	57
2	L18-G42-PL	4	5	5	5	5	5	4	4	3	4	4	4	5
3	L18-G42-WTP	4	5	5	5	5	5	4	4	3	4	4	4	5
4	L30-G30-PT	46	42	41	41	42	49	52	52	54	52	47	43	41
5	L30-G30-PL	4	5	5	5	5	5	4	4	3	4	4	4	5
6	L30-G30-WTP	4	5	5	5	5	5	4	4	3	4	4	4	5
7	L43-G17-PT	26	24	23	23	24	28	29	30	31	29	27	24	23
8	L43-G17-PL	4	5	5	5	5	5	4	4	3	4	4	4	5
9	L43-G17-WTP	4	5	5	5	5	5	4	4	3	4	4	4	5
Baseline- White Ck	L18	10	8	21	13	12	8	5	10	14	3	6	5	17
10	L43-W17-PT	26	23	23	23	23	29	31	30	32	29	26	23	22
11	L43-W17-PL	3	5	6	7	6	3	2	1	1	1	1	2	4
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	346.9%	398.5%	89.2%	208.7%	252.7%	512.9%	812.1%	409.0%	271.1%	1754.5%	654.4%	826.5%	139.2%
1	L18-G42-PT	275.4%	318.7%	58.9%	159.3%	196.2%	414.8%	666.2%	327.6%	211.7%	1457.8%	533.7%	678.3%	100.9%
2	L18-G42-PL	-75.4%	-67.1%	-87.1%	-79.2%	-76.7%	-65.0%	-55.8%	-75.7%	-88.0%	-19.3%	-63.6%	-42.3%	-83.7%
3	L18-G42-WTP	-75.4%	-67.1%	-87.1%	-79.2%	-76.7%	-65.0%	-55.8%	-75.7%	-88.0%	-19.3%	-63.6%	-42.3%	-83.7%
4	L30-G30-PT	168.1%	199.1%	13.5%	85.2%	111.6%	267.7%	447.3%	205.4%	122.6%	1012.7%	352.6%	455.9%	43.5%
5	L30-G30-PL	-75.4%	-67.1%	-87.1%	-79.2%	-76.7%	-65.0%	-55.8%	-75.7%	-88.0%	-19.3%	-63.6%	-42.3%	-83.7%
6	L30-G30-WTP	-75.4%	-67.1%	-87.1%	-79.2%	-76.7%	-65.0%	-55.8%	-75.7%	-88.0%	-19.3%	-63.6%	-42.3%	-83.7%
7	L43-G17-PT	51.9%	69.5%	-35.7%	5.0%	19.9%	108.4%	210.1%	73.1%	26.2%	530.5%	156.5%	215.0%	-18.7%
8	L43-G17-PL	-75.4%	-67.1%	-87.1%	-79.2%	-76.7%	-65.0%	-55.8%	-75.7%	-88.0%	-19.3%	-63.6%	-42.3%	-83.7%
9	L43-G17-WTP	-75.4%	-67.1%	-87.1%	-79.2%	-76.7%	-65.0%	-55.8%	-75.7%	-88.0%	-19.3%	-63.6%	-42.3%	-83.7%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	162.1%	185.5%	9.5%	74.7%	102.0%	276.0%	467.9%	200.7%	126.6%	995.8%	337.4%	419.3%	33.7%
11	L43-W17-PL	-69.0%	-35.3%	-70.9%	-48.9%	-50.2%	-57.5%	-72.1%	-93.1%	-96.2%	-69.3%	-85.4%	-46.6%	-78.6%
No Action	L60	-100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Chattahoochee River into Lake Lanier

Flow Analysis Results



Chattahoochee River into Lake Lanier
74-Year Period of Analysis (January 1, 1939- December 31, 2012)

Average Daily Flow (cfs)

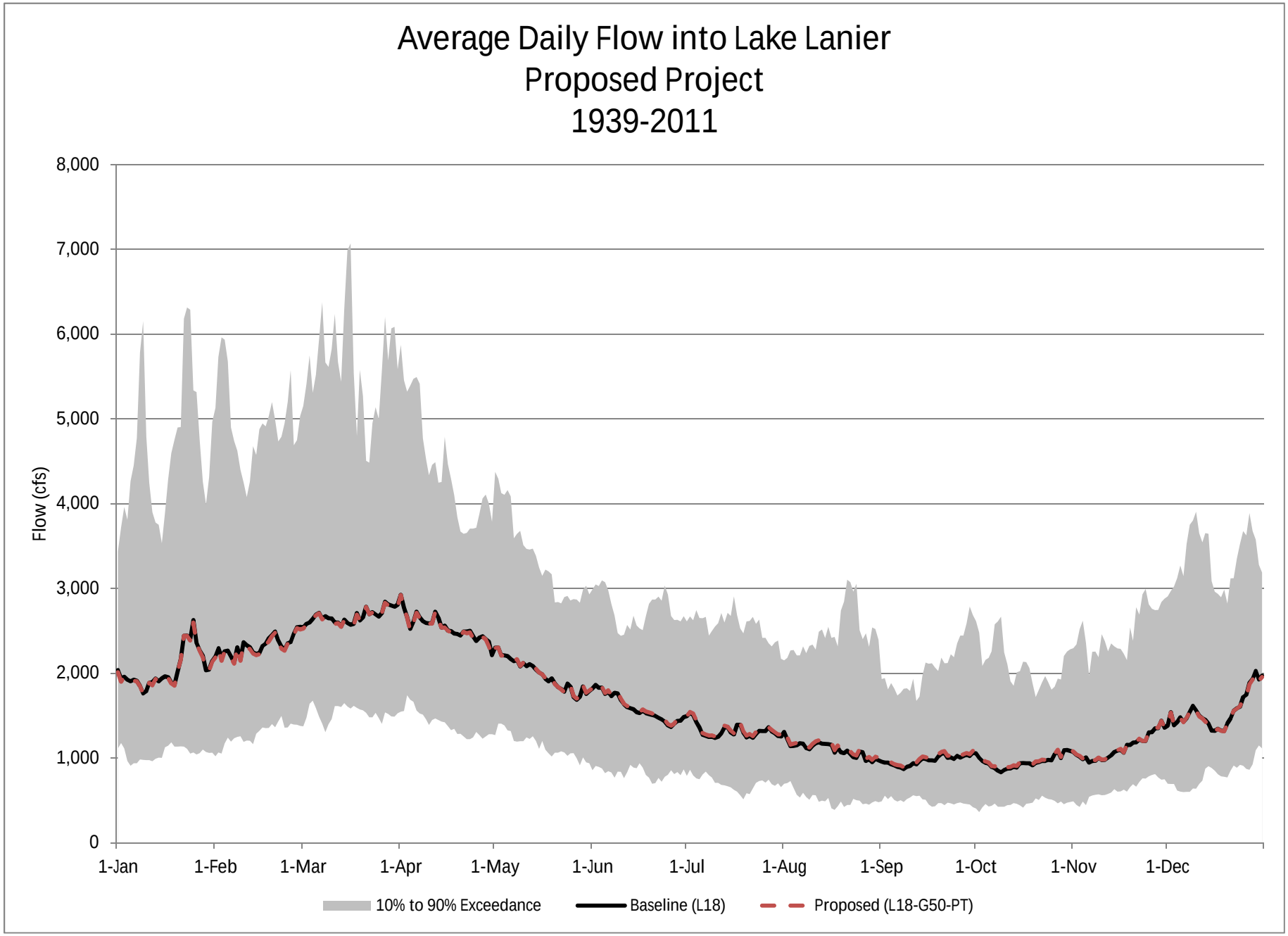
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	2,560	2,861	3,244	2,815	2,203	1,753	1,540	1,432	1,235	1,227	1,444	1,971
Proposed	L18-G50-PT	2,541	2,840	3,226	2,805	2,209	1,768	1,555	1,455	1,252	1,234	1,437	1,954
1	L18-G42-PT	2,541	2,839	3,225	2,805	2,209	1,767	1,554	1,453	1,252	1,234	1,440	1,956
2	L18-G42-PL	2,484	2,783	3,169	2,747	2,138	1,691	1,480	1,374	1,179	1,169	1,382	1,902
3	L18-G42-WTP	2,484	2,783	3,169	2,747	2,138	1,691	1,480	1,374	1,179	1,169	1,382	1,902
4	L30-G30-PT	2,544	2,841	3,226	2,806	2,207	1,765	1,552	1,450	1,250	1,234	1,443	1,960
5	L30-G30-PL	2,502	2,800	3,186	2,765	2,157	1,710	1,499	1,393	1,198	1,188	1,401	1,921
6	L30-G30-WTP	2,502	2,800	3,186	2,765	2,157	1,710	1,499	1,393	1,198	1,188	1,401	1,921
7	L43-G17-PT	2,546	2,843	3,227	2,806	2,206	1,762	1,550	1,445	1,247	1,235	1,445	1,963
8	L43-G17-PL	2,523	2,820	3,204	2,783	2,177	1,731	1,519	1,413	1,218	1,208	1,422	1,941
9	L43-G17-WTP	2,523	2,820	3,204	2,783	2,177	1,731	1,519	1,413	1,218	1,208	1,422	1,941
Baseline- White Ck	L18	2,560	2,861	3,244	2,815	2,203	1,753	1,540	1,432	1,235	1,227	1,444	1,971
10	L43-W17-PT	2,560	2,859	3,242	2,813	2,202	1,753	1,541	1,434	1,235	1,226	1,443	1,969
11	L43-W17-PL	2,538	2,836	3,220	2,790	2,173	1,721	1,510	1,400	1,204	1,200	1,421	1,948
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---

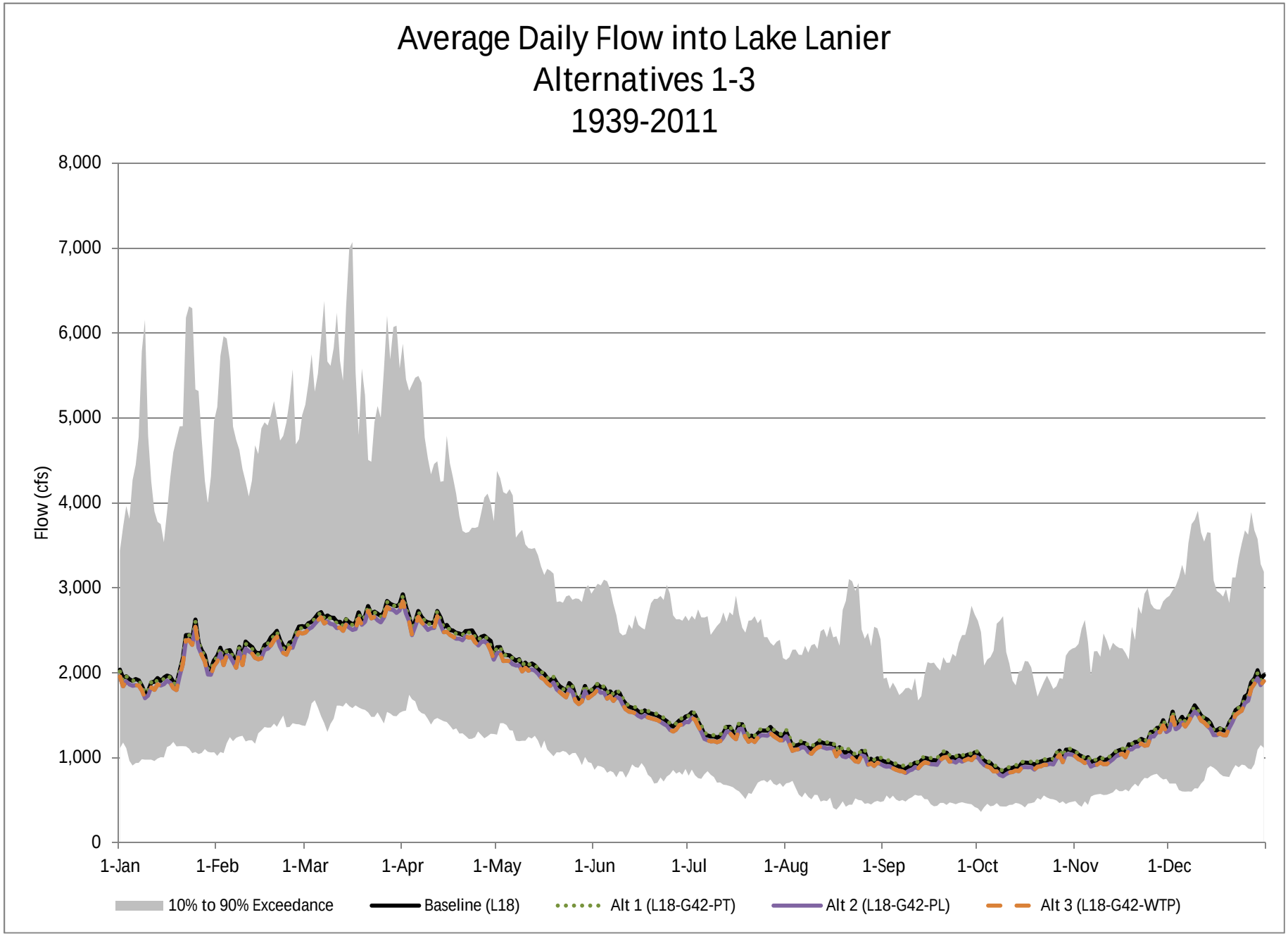
Minimum Daily Flow

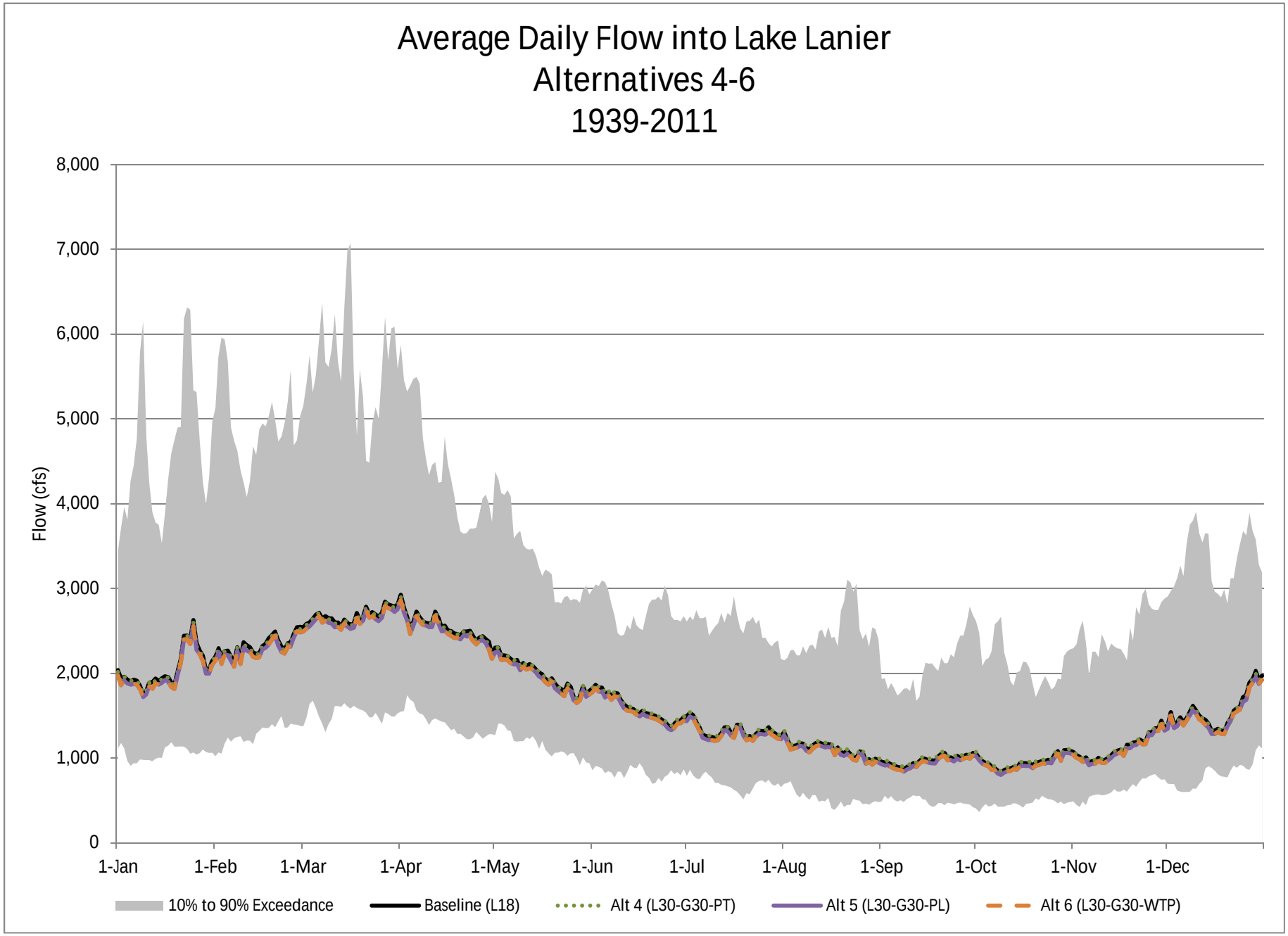
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	473	638	648	662	467	151	5	24	11	19	130	289
Proposed	L18-G50-PT	476	604	645	663	489	198	92	67	56	44	164	293
1	L18-G42-PT	479	607	648	666	486	183	78	66	56	46	153	296
2	L18-G42-PL	421	550	592	608	415	108	5	(18)	(20)	(22)	97	242
3	L18-G42-WTP	421	550	592	608	415	108	5	(18)	(20)	(22)	97	242
4	L30-G30-PT	482	610	652	669	485	180	57	62	45	46	146	300
5	L30-G30-PL	440	569	612	627	434	122	5	2	(5)	(3)	104	261
6	L30-G30-WTP	440	569	612	627	434	122	5	2	(5)	(3)	104	261
7	L43-G17-PT	485	613	655	672	484	177	34	55	35	42	149	304
8	L43-G17-PL	461	590	633	648	455	143	5	23	3	18	123	282
9	L43-G17-WTP	461	590	633	648	455	143	5	23	3	18	123	282
Baseline- White Ck	L18	473	638	648	662	467	151	5	24	11	19	130	289
10	L43-W17-PT	491	611	664	679	491	181	34	38	34	27	153	285
11	L43-W17-PL	473	589	648	662	465	151	5	6	5	(4)	130	260
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---

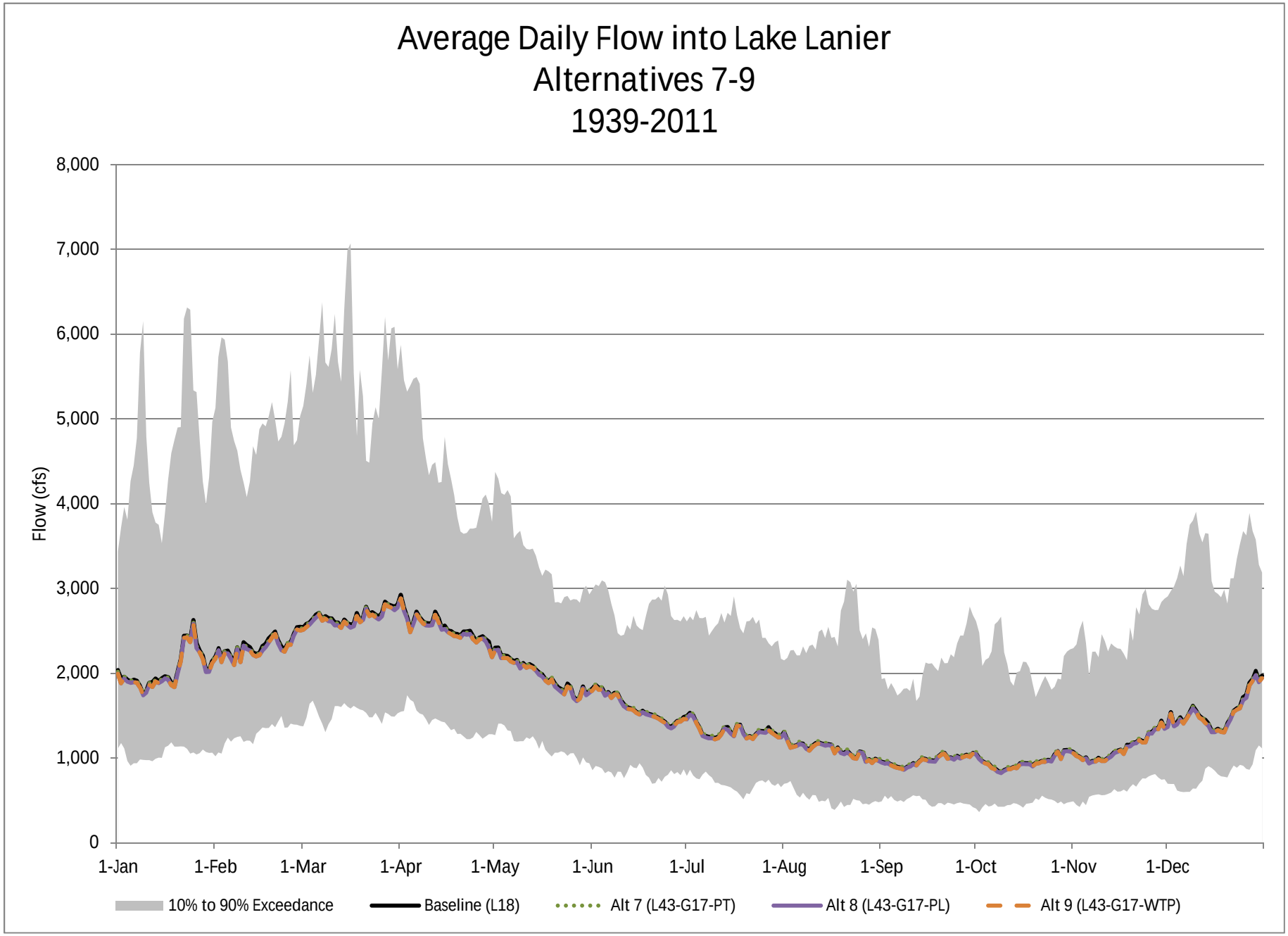
Maximum Daily Flow

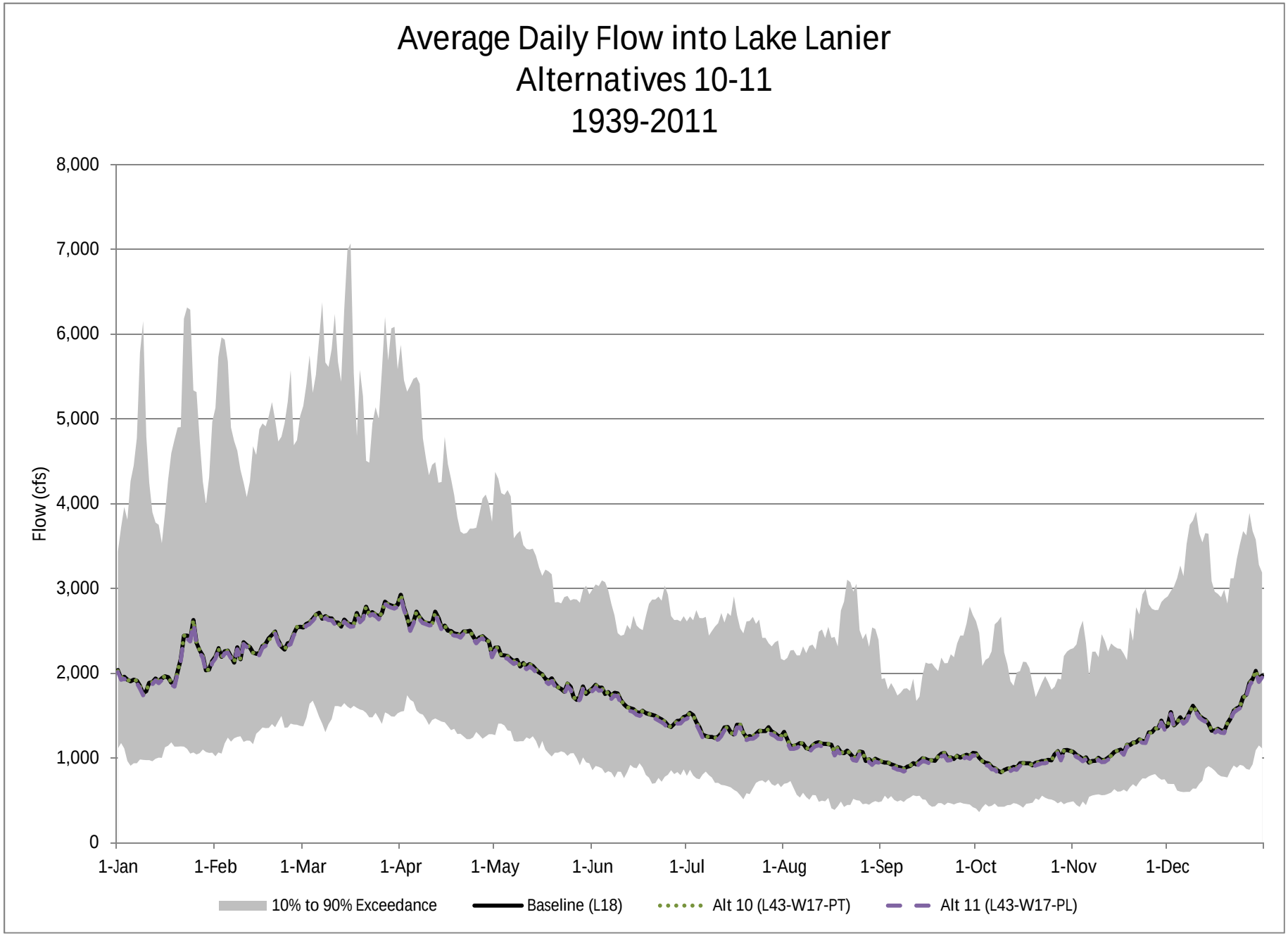
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	18,393	17,682	15,489	16,598	11,630	7,577	7,713	15,270	11,549	11,495	10,124	17,051
Proposed	L18-G50-PT	18,138	17,451	15,492	16,601	11,627	7,594	7,713	15,044	11,516	11,103	10,045	16,960
1	L18-G42-PT	17,994	17,454	15,492	16,601	11,627	7,594	7,667	15,043	11,516	11,105	10,048	16,964
2	L18-G42-PL	17,936	17,398	15,414	16,542	11,558	7,517	7,593	14,964	11,444	11,040	9,990	16,909
3	L18-G42-WTP	17,936	17,398	15,414	16,542	11,558	7,517	7,593	14,964	11,444	11,040	9,990	16,909
4	L30-G30-PT	17,997	17,458	15,274	16,601	11,627	7,591	7,666	15,040	11,515	11,106	10,050	16,967
5	L30-G30-PL	17,956	17,417	15,237	16,560	11,576	7,536	7,613	14,983	11,463	11,059	10,009	16,928
6	L30-G30-WTP	17,956	17,417	15,237	16,560	11,576	7,536	7,613	14,983	11,463	11,059	10,009	16,928
7	L43-G17-PT	18,000	17,461	15,120	16,601	11,627	7,588	7,664	15,073	11,513	11,106	10,053	16,971
8	L43-G17-PL	17,976	17,438	15,097	16,578	11,598	7,557	7,634	15,041	11,484	11,080	10,030	16,949
9	L43-G17-WTP	17,976	17,438	15,097	16,578	11,598	7,557	7,634	15,041	11,484	11,080	10,030	16,949
Baseline- White Ck	L18	18,393	17,682	15,489	16,598	11,630	7,577	7,713	15,270	11,549	11,495	10,124	17,051
10	L43-W17-PT	18,395	17,685	15,491	16,600	11,628	7,577	7,713	15,270	11,549	11,495	10,128	17,055
11	L43-W17-PL	18,372	17,662	15,468	16,576	11,599	7,546	7,683	15,238	11,520	11,468	10,104	17,033
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---


Average Daily Flow into Lake Lanier
Proposed Project
1939-2011
Flow (cfs)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
10% to 90% Exceedance
Baseline (L18)
Proposed (L18-G50-PT)


Average Daily Flow into Lake Lanier
Alternatives 1-3
1939-2011
Flow (cfs)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
10% to 90% Exceedance
Baseline (L18)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)


Average Daily Flow into Lake Lanier
Alternatives 4-6
1939-2011
Flow (cfs)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
10% to 90% Exceedance
Baseline (L18)
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)


Average Daily Flow into Lake Lanier
Alternatives 7-9
1939-2011
Flow (cfs)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
10% to 90% Exceedance
Baseline (L18)
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)


Average Daily Flow into Lake Lanier
Alternatives 10-11
1939-2011
Flow (cfs)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
1,000
0
1-Jan
1-Feb
1-Mar
1-Apr
1-May
1-Jun
1-Jul
1-Aug
1-Sep
1-Oct
1-Nov
1-Dec
10% to 90% Exceedance
Baseline (L18)
Alt 10 (L43-W17-PT)
Alt 11 (L43-W17-PL)

Chattahoochee River into Lake Lanier
Average Year Analysis - 1997

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	2,224	2,612	3,138	3,303	2,798	2,634	2,354	1,626	1,181	1,216	2,496	1,503	1,885
Proposed	L18-G50-PT	2,218	2,589	3,090	3,289	2,797	2,641	2,363	1,636	1,208	1,216	2,486	1,486	1,862
1	L18-G42-PT	2,218	2,592	3,093	3,277	2,797	2,642	2,363	1,636	1,207	1,216	2,488	1,489	1,865
2	L18-G42-PL	2,153	2,534	3,037	3,223	2,738	2,571	2,286	1,561	1,127	1,143	2,423	1,431	1,811
3	L18-G42-WTP	2,153	2,534	3,037	3,223	2,738	2,571	2,286	1,561	1,127	1,143	2,423	1,431	1,811
4	L30-G30-PT	2,218	2,595	3,097	3,274	2,797	2,641	2,360	1,634	1,203	1,214	2,489	1,492	1,869
5	L30-G30-PL	2,171	2,554	3,056	3,234	2,756	2,590	2,305	1,581	1,147	1,162	2,442	1,451	1,830
6	L30-G30-WTP	2,171	2,554	3,056	3,234	2,756	2,590	2,305	1,581	1,147	1,162	2,442	1,451	1,830
7	L43-G17-PT	2,218	2,598	3,100	3,277	2,791	2,640	2,357	1,632	1,200	1,213	2,489	1,495	1,873
8	L43-G17-PL	2,191	2,574	3,077	3,254	2,768	2,611	2,326	1,602	1,168	1,183	2,463	1,472	1,851
9	L43-G17-WTP	2,191	2,574	3,077	3,254	2,768	2,611	2,326	1,602	1,168	1,183	2,463	1,472	1,851
Baseline- White Ck	L18	2,224	2,612	3,138	3,303	2,798	2,634	2,354	1,626	1,181	1,216	2,496	1,503	1,885
10	L43-W17-PT	2,224	2,613	3,139	3,303	2,798	2,633	2,354	1,625	1,184	1,211	2,497	1,503	1,886
11	L43-W17-PL	2,198	2,590	3,116	3,280	2,774	2,604	2,323	1,595	1,148	1,186	2,471	1,480	1,864
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	-0.3%	-0.9%	-1.5%	-0.4%	0.0%	0.3%	0.4%	0.6%	2.2%	0.0%	-0.4%	-1.1%	-1.2%
1	L18-G42-PT	-0.3%	-0.8%	-1.4%	-0.8%	0.0%	0.3%	0.3%	0.6%	2.2%	0.0%	-0.3%	-0.9%	-1.0%
2	L18-G42-PL	-3.2%	-3.0%	-3.2%	-2.4%	-2.1%	-2.4%	-2.9%	-4.0%	-4.6%	-6.0%	-2.9%	-4.8%	-3.9%
3	L18-G42-WTP	-3.2%	-3.0%	-3.2%	-2.4%	-2.1%	-2.4%	-2.9%	-4.0%	-4.6%	-6.0%	-2.9%	-4.8%	-3.9%
4	L30-G30-PT	-0.3%	-0.7%	-1.3%	-0.9%	0.0%	0.2%	0.2%	0.5%	1.9%	-0.1%	-0.3%	-0.7%	-0.8%
5	L30-G30-PL	-2.4%	-2.2%	-2.6%	-2.1%	-1.5%	-1.7%	-2.1%	-2.8%	-2.9%	-4.4%	-2.2%	-3.5%	-2.9%
6	L30-G30-WTP	-2.4%	-2.2%	-2.6%	-2.1%	-1.5%	-1.7%	-2.1%	-2.8%	-2.9%	-4.4%	-2.2%	-3.5%	-2.9%
7	L43-G17-PT	-0.3%	-0.5%	-1.2%	-0.8%	-0.2%	0.2%	0.1%	0.4%	1.6%	-0.3%	-0.3%	-0.5%	-0.6%
8	L43-G17-PL	-1.5%	-1.4%	-2.0%	-1.5%	-1.1%	-0.9%	-1.2%	-1.5%	-1.2%	-2.7%	-1.3%	-2.1%	-1.8%
9	L43-G17-WTP	-1.5%	-1.4%	-2.0%	-1.5%	-1.1%	-0.9%	-1.2%	-1.5%	-1.2%	-2.7%	-1.3%	-2.1%	-1.8%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	0.0%	0.1%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%	0.2%	-0.4%	0.0%	0.0%	0.0%
11	L43-W17-PL	-1.2%	-0.8%	-0.7%	-0.7%	-0.9%	-1.2%	-1.4%	-1.9%	-2.8%	-2.5%	-1.0%	-1.6%	-1.1%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Chattahoochee River into Lake Lanier
Wet Year Analysis - 2005

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	2,520	1,164	1,441	2,010	2,286	2,316	2,631	2,156	1,598	1,382	1,229	1,264	1,281
Proposed	L18-G50-PT	2,520	1,167	1,432	1,988	2,272	2,296	2,617	2,149	1,610	1,400	1,243	1,297	1,296
1	L18-G42-PT	2,520	1,167	1,434	1,991	2,275	2,298	2,618	2,151	1,610	1,400	1,242	1,293	1,293
2	L18-G42-PL	2,455	1,103	1,376	1,936	2,216	2,242	2,560	2,091	1,537	1,323	1,168	1,215	1,221
3	L18-G42-WTP	2,455	1,103	1,376	1,936	2,216	2,242	2,560	2,091	1,537	1,323	1,168	1,215	1,221
4	L30-G30-PT	2,520	1,166	1,436	1,994	2,277	2,301	2,621	2,154	1,609	1,397	1,241	1,286	1,289
5	L30-G30-PL	2,473	1,120	1,395	1,955	2,235	2,261	2,582	2,112	1,557	1,342	1,187	1,230	1,237
6	L30-G30-WTP	2,473	1,120	1,395	1,955	2,235	2,261	2,582	2,112	1,557	1,342	1,187	1,230	1,237
7	L43-G17-PT	2,520	1,166	1,439	1,997	2,279	2,306	2,624	2,156	1,608	1,395	1,239	1,279	1,285
8	L43-G17-PL	2,494	1,140	1,416	1,975	2,256	2,283	2,601	2,132	1,578	1,364	1,208	1,247	1,255
9	L43-G17-WTP	2,494	1,140	1,416	1,975	2,256	2,283	2,601	2,132	1,578	1,364	1,208	1,247	1,255
Baseline- White Ck	L18	2,520	1,164	1,441	2,010	2,286	2,316	2,631	2,156	1,598	1,382	1,229	1,264	1,281
10	L43-W17-PT	2,520	1,164	1,442	2,005	2,283	2,312	2,626	2,151	1,598	1,385	1,231	1,271	1,278
11	L43-W17-PL	2,494	1,140	1,420	1,984	2,261	2,290	2,603	2,128	1,568	1,353	1,199	1,237	1,247
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.3%	-0.6%	-1.1%	-0.6%	-0.8%	-0.5%	-0.3%	0.7%	1.3%	1.2%	2.6%	1.1%
1	L18-G42-PT	0.0%	0.3%	-0.5%	-0.9%	-0.5%	-0.7%	-0.5%	-0.2%	0.7%	1.3%	1.1%	2.3%	0.9%
2	L18-G42-PL	-2.6%	-5.2%	-4.5%	-3.7%	-3.0%	-3.2%	-2.7%	-3.0%	-3.8%	-4.2%	-5.0%	-3.9%	-4.7%
3	L18-G42-WTP	-2.6%	-5.2%	-4.5%	-3.7%	-3.0%	-3.2%	-2.7%	-3.0%	-3.8%	-4.2%	-5.0%	-3.9%	-4.7%
4	L30-G30-PT	0.0%	0.2%	-0.3%	-0.8%	-0.4%	-0.6%	-0.4%	-0.1%	0.7%	1.1%	0.9%	1.7%	0.6%
5	L30-G30-PL	-1.9%	-3.7%	-3.2%	-2.7%	-2.2%	-2.4%	-1.9%	-2.0%	-2.5%	-2.8%	-3.4%	-2.7%	-3.5%
6	L30-G30-WTP	-1.9%	-3.7%	-3.2%	-2.7%	-2.2%	-2.4%	-1.9%	-2.0%	-2.5%	-2.8%	-3.4%	-2.7%	-3.5%
7	L43-G17-PT	0.0%	0.2%	-0.1%	-0.6%	-0.3%	-0.4%	-0.3%	0.0%	0.6%	1.0%	0.8%	1.1%	0.3%
8	L43-G17-PL	-1.1%	-2.1%	-1.8%	-1.7%	-1.3%	-1.4%	-1.1%	-1.1%	-1.2%	-1.3%	-1.7%	-1.4%	-2.0%
9	L43-G17-WTP	-1.1%	-2.1%	-1.8%	-1.7%	-1.3%	-1.4%	-1.1%	-1.1%	-1.2%	-1.3%	-1.7%	-1.4%	-2.0%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	0.0%	0.0%	0.1%	-0.2%	-0.1%	-0.1%	-0.2%	-0.2%	0.0%	0.3%	0.2%	0.5%	-0.2%
11	L43-W17-PL	-1.1%	-2.0%	-1.5%	-1.3%	-1.1%	-1.1%	-1.0%	-1.3%	-1.9%	-2.1%	-2.4%	-2.2%	-2.6%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Chattahoochee River into Lake Lanier
Drought Year Analysis - 1988

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	999	2,191	1,367	1,090	1,758	772	469	657	458	942	806	763	736
Proposed	L18-G50-PT	1,008	2,177	1,349	1,086	1,747	798	505	688	497	958	815	764	734
1	L18-G42-PT	1,009	2,180	1,352	1,089	1,749	797	502	686	494	957	816	767	738
2	L18-G42-PL	944	2,122	1,295	1,033	1,692	726	424	609	414	885	751	709	683
3	L18-G42-WTP	944	2,122	1,295	1,033	1,692	726	424	609	414	885	751	709	683
4	L30-G30-PT	1,009	2,183	1,355	1,093	1,752	794	499	684	488	956	817	770	742
5	L30-G30-PL	962	2,142	1,315	1,053	1,711	743	442	628	431	904	771	728	703
6	L30-G30-WTP	962	2,142	1,315	1,053	1,711	743	442	628	431	904	771	728	703
7	L43-G17-PT	1,010	2,186	1,358	1,096	1,755	791	495	682	483	954	818	773	745
8	L43-G17-PL	983	2,162	1,335	1,074	1,732	762	461	649	450	925	791	749	723
9	L43-G17-WTP	983	2,162	1,335	1,074	1,732	762	461	649	450	925	791	749	723
Baseline- White Ck	L18	999	2,191	1,367	1,090	1,758	772	469	657	458	942	806	763	736
10	L43-W17-PT	999	2,176	1,351	1,097	1,746	782	486	666	468	940	803	757	733
11	L43-W17-PL	973	2,155	1,344	1,080	1,723	753	454	633	432	907	773	732	710
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.9%	-0.6%	-1.3%	-0.3%	-0.6%	3.3%	7.6%	4.7%	8.6%	1.7%	1.0%	0.2%	-0.3%
1	L18-G42-PT	1.0%	-0.5%	-1.1%	0.0%	-0.5%	3.2%	7.1%	4.5%	7.8%	1.6%	1.2%	0.6%	0.2%
2	L18-G42-PL	-5.5%	-3.2%	-5.2%	-5.2%	-3.7%	-6.0%	-9.6%	-7.2%	-9.6%	-6.1%	-6.8%	-7.0%	-7.2%
3	L18-G42-WTP	-5.5%	-3.2%	-5.2%	-5.2%	-3.7%	-6.0%	-9.6%	-7.2%	-9.6%	-6.1%	-6.8%	-7.0%	-7.2%
4	L30-G30-PT	1.0%	-0.4%	-0.9%	0.3%	-0.3%	2.8%	6.3%	4.2%	6.6%	1.4%	1.3%	0.9%	0.7%
5	L30-G30-PL	-3.7%	-2.3%	-3.8%	-3.4%	-2.6%	-3.7%	-5.8%	-4.4%	-6.0%	-4.1%	-4.4%	-4.5%	-4.6%
6	L30-G30-WTP	-3.7%	-2.3%	-3.8%	-3.4%	-2.6%	-3.7%	-5.8%	-4.4%	-6.0%	-4.1%	-4.4%	-4.5%	-4.6%
7	L43-G17-PT	1.1%	-0.3%	-0.6%	0.6%	-0.1%	2.4%	5.5%	3.8%	5.4%	1.3%	1.4%	1.3%	1.2%
8	L43-G17-PL	-1.6%	-1.3%	-2.3%	-1.5%	-1.5%	-1.3%	-1.6%	-1.2%	-1.8%	-1.9%	-1.9%	-1.7%	-1.8%
9	L43-G17-WTP	-1.6%	-1.3%	-2.3%	-1.5%	-1.5%	-1.3%	-1.6%	-1.2%	-1.8%	-1.9%	-1.9%	-1.7%	-1.8%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	0.0%	-0.7%	-1.1%	0.7%	-0.7%	1.3%	3.7%	1.4%	2.1%	-0.2%	-0.4%	-0.7%	-0.5%
11	L43-W17-PL	-2.6%	-1.6%	-1.6%	-0.9%	-2.0%	-2.5%	-3.2%	-3.7%	-5.7%	-3.7%	-4.2%	-4.0%	-3.5%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Chattahoochee River into Lake Lanier
Drought Year Analysis - 2001

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	1,199	1,602	1,437	2,341	1,576	1,164	1,310	1,103	1,066	666	585	629	918
Proposed	L18-G50-PT	1,198	1,594	1,424	2,296	1,563	1,179	1,310	1,101	1,085	687	599	632	911
1	L18-G42-PT	1,200	1,597	1,427	2,299	1,566	1,179	1,309	1,101	1,084	686	600	635	915
2	L18-G42-PL	1,135	1,539	1,370	2,243	1,508	1,107	1,232	1,027	1,004	613	535	577	860
3	L18-G42-WTP	1,135	1,539	1,370	2,243	1,508	1,107	1,232	1,027	1,004	613	535	577	860
4	L30-G30-PT	1,200	1,600	1,430	2,302	1,569	1,178	1,306	1,099	1,080	684	601	638	919
5	L30-G30-PL	1,154	1,559	1,390	2,263	1,528	1,127	1,252	1,046	1,024	632	555	596	880
6	L30-G30-WTP	1,154	1,559	1,390	2,263	1,528	1,127	1,252	1,046	1,024	632	555	596	880
7	L43-G17-PT	1,201	1,603	1,433	2,306	1,572	1,176	1,304	1,097	1,077	683	602	641	923
8	L43-G17-PL	1,175	1,579	1,411	2,283	1,549	1,147	1,273	1,067	1,045	653	575	617	900
9	L43-G17-WTP	1,175	1,579	1,411	2,283	1,549	1,147	1,273	1,067	1,045	653	575	617	900
Baseline- White Ck	L18	1,199	1,602	1,437	2,341	1,576	1,164	1,310	1,103	1,066	666	585	629	918
10	L43-W17-PT	1,198	1,603	1,438	2,320	1,580	1,173	1,304	1,098	1,064	667	584	638	912
11	L43-W17-PL	1,172	1,582	1,419	2,305	1,559	1,145	1,270	1,065	1,029	635	557	616	890
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	-0.1%	-0.5%	-0.9%	-1.9%	-0.8%	1.3%	0.0%	-0.2%	1.7%	3.2%	2.3%	0.5%	-0.7%
1	L18-G42-PT	0.0%	-0.3%	-0.7%	-1.8%	-0.6%	1.2%	-0.1%	-0.2%	1.6%	3.1%	2.6%	0.9%	-0.3%
2	L18-G42-PL	-5.4%	-3.9%	-4.6%	-4.2%	-4.3%	-4.9%	-5.9%	-6.9%	-5.8%	-7.9%	-8.5%	-8.3%	-6.2%
3	L18-G42-WTP	-5.4%	-3.9%	-4.6%	-4.2%	-4.3%	-4.9%	-5.9%	-6.9%	-5.8%	-7.9%	-8.5%	-8.3%	-6.2%
4	L30-G30-PT	0.1%	-0.2%	-0.5%	-1.6%	-0.5%	1.2%	-0.3%	-0.3%	1.3%	2.8%	2.7%	1.4%	0.1%
5	L30-G30-PL	-3.8%	-2.7%	-3.3%	-3.3%	-3.1%	-3.2%	-4.4%	-5.1%	-4.0%	-5.0%	-5.2%	-5.2%	-4.1%
6	L30-G30-WTP	-3.8%	-2.7%	-3.3%	-3.3%	-3.1%	-3.2%	-4.4%	-5.1%	-4.0%	-5.0%	-5.2%	-5.2%	-4.1%
7	L43-G17-PT	0.1%	0.0%	-0.2%	-1.5%	-0.3%	1.0%	-0.5%	-0.5%	1.0%	2.6%	2.8%	1.9%	0.5%
8	L43-G17-PL	-2.1%	-1.4%	-1.8%	-2.5%	-1.7%	-1.4%	-2.8%	-3.2%	-2.0%	-1.9%	-1.7%	-1.9%	-1.9%
9	L43-G17-WTP	-2.1%	-1.4%	-1.8%	-2.5%	-1.7%	-1.4%	-2.8%	-3.2%	-2.0%	-1.9%	-1.7%	-1.9%	-1.9%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	-0.1%	0.0%	0.1%	-0.9%	0.2%	0.7%	-0.5%	-0.5%	-0.3%	0.3%	-0.3%	1.5%	-0.6%
11	L43-W17-PL	-2.3%	-1.3%	-1.2%	-1.5%	-1.1%	-1.6%	-3.0%	-3.4%	-3.5%	-4.5%	-4.8%	-2.0%	-3.1%
No Action	L60	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

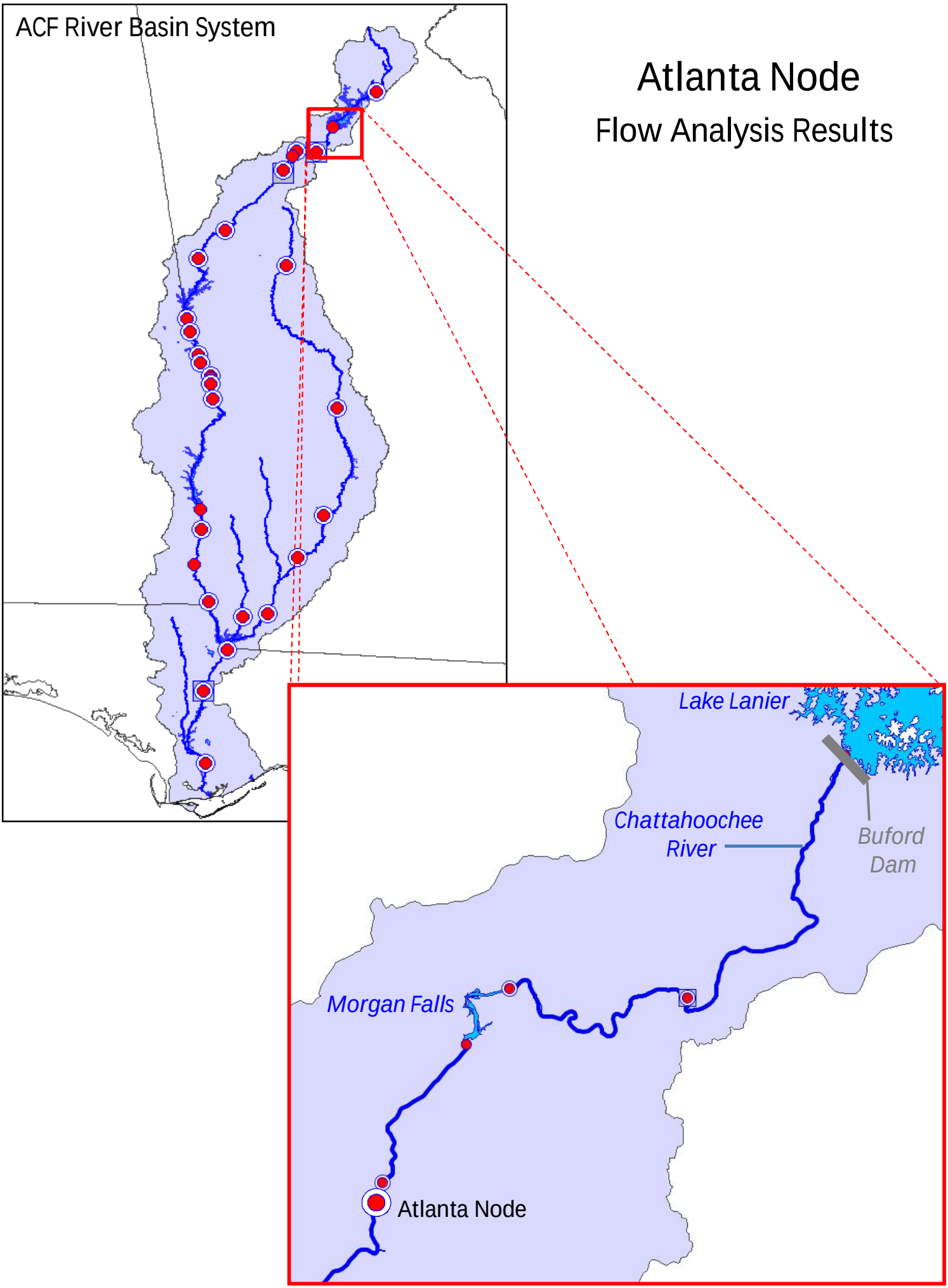
Chattahoochee River into Lake Lanier
Drought Year Analysis - 2008

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	1,144	1,141	1,692	2,353	1,397	1,115	606	755	1,561	467	466	481	1,681
Proposed	L18-G50-PT	1,154	1,138	1,666	2,340	1,389	1,130	631	776	1,612	502	490	491	1,660
1	L18-G42-PT	1,153	1,141	1,669	2,344	1,392	1,130	630	771	1,601	496	486	489	1,664
2	L18-G42-PL	1,088	1,083	1,613	2,288	1,334	1,059	553	698	1,523	424	421	433	1,609
3	L18-G42-WTP	1,088	1,083	1,613	2,288	1,334	1,059	553	698	1,523	424	421	433	1,609
4	L30-G30-PT	1,151	1,144	1,673	2,347	1,394	1,129	628	767	1,584	490	482	491	1,668
5	L30-G30-PL	1,105	1,103	1,632	2,307	1,353	1,078	572	713	1,529	438	436	449	1,629
6	L30-G30-WTP	1,105	1,103	1,632	2,307	1,353	1,078	572	713	1,529	438	436	449	1,629
7	L43-G17-PT	1,151	1,147	1,676	2,351	1,397	1,128	625	765	1,567	489	479	494	1,672
8	L43-G17-PL	1,124	1,124	1,653	2,328	1,374	1,099	593	734	1,536	458	452	470	1,650
9	L43-G17-WTP	1,124	1,124	1,653	2,328	1,374	1,099	593	734	1,536	458	452	470	1,650
Baseline- White Ck	L18	1,144	1,141	1,692	2,353	1,397	1,115	606	755	1,561	467	466	481	1,681
10	L43-W17-PT	1,147	1,142	1,672	2,341	1,393	1,121	623	767	1,572	480	479	494	1,668
11	L43-W17-PL	1,121	1,121	1,650	2,320	1,372	1,092	592	737	1,539	448	453	472	1,645
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---

Percent Change in Average Daily Flow														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline-Glades	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.8%	-0.2%	-1.5%	-0.6%	-0.6%	1.3%	4.1%	2.8%	3.3%	7.4%	5.1%	2.1%	-1.2%
1	L18-G42-PT	0.7%	0.0%	-1.3%	-0.4%	-0.4%	1.3%	3.9%	2.1%	2.6%	6.2%	4.1%	1.7%	-1.0%
2	L18-G42-PL	-4.9%	-5.0%	-4.7%	-2.8%	-4.5%	-5.1%	-8.8%	-7.6%	-2.4%	-9.2%	-9.6%	-10.0%	-4.3%
3	L18-G42-WTP	-4.9%	-5.0%	-4.7%	-2.8%	-4.5%	-5.1%	-8.8%	-7.6%	-2.4%	-9.2%	-9.6%	-10.0%	-4.3%
4	L30-G30-PT	0.6%	0.3%	-1.2%	-0.3%	-0.2%	1.2%	3.5%	1.6%	1.5%	5.0%	3.3%	2.0%	-0.8%
5	L30-G30-PL	-3.5%	-3.3%	-3.5%	-2.0%	-3.1%	-3.3%	-5.6%	-5.5%	-2.0%	-6.3%	-6.6%	-6.6%	-3.1%
6	L30-G30-WTP	-3.5%	-3.3%	-3.5%	-2.0%	-3.1%	-3.3%	-5.6%	-5.5%	-2.0%	-6.3%	-6.6%	-6.6%	-3.1%
7	L43-G17-PT	0.5%	0.5%	-1.0%	-0.1%	0.0%	1.1%	3.1%	1.3%	0.4%	4.7%	2.8%	2.6%	-0.6%
8	L43-G17-PL	-1.8%	-1.5%	-2.3%	-1.1%	-1.7%	-1.5%	-2.1%	-2.7%	-1.6%	-1.8%	-3.0%	-2.3%	-1.9%
9	L43-G17-WTP	-1.8%	-1.5%	-2.3%	-1.1%	-1.7%	-1.5%	-2.1%	-2.7%	-1.6%	-1.8%	-3.0%	-2.3%	-1.9%
Baseline- White Ck	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
10	L43-W17-PT	0.3%	0.1%	-1.2%	-0.5%	-0.3%	0.5%	2.8%	1.6%	0.7%	2.7%	2.7%	2.7%	-0.8%
11	L43-W17-PL	-2.0%	-1.7%	-2.5%	-1.4%	-1.8%	-2.1%	-2.3%	-2.4%	-1.4%	-4.0%	-3.0%	-1.9%	-2.2%
No Action	L60	-100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Atlanta Node

Flow Analysis Results



Chattahoochee River at Atlanta Node
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	2,597	2,822	3,512	2,863	2,698	1,719	1,664	1,581	1,508	1,512	1,795	2,097
No Action	L60	2,358	2,564	3,242	2,638	2,429	1,541	1,475	1,361	1,310	1,288	1,517	1,853
Proposed	L18-G50-PT	2,351	2,556	3,229	2,631	2,430	1,541	1,476	1,366	1,315	1,298	1,520	1,853
1	L18-G42-PT	2,352	2,556	3,229	2,632	2,430	1,541	1,476	1,366	1,314	1,297	1,520	1,853
2	L18-G42-PL	2,352	2,556	3,229	2,632	2,430	1,541	1,476	1,365	1,315	1,297	1,520	1,853
3	L18-G42-WTP	2,352	2,556	3,229	2,632	2,430	1,541	1,476	1,365	1,315	1,297	1,520	1,853
4	L30-G30-PT	2,353	2,556	3,230	2,633	2,428	1,542	1,475	1,365	1,313	1,297	1,521	1,854
5	L30-G30-PL	2,353	2,557	3,231	2,635	2,427	1,541	1,475	1,364	1,313	1,298	1,520	1,854
6	L30-G30-WTP	2,352	2,556	3,231	2,635	2,428	1,541	1,475	1,364	1,313	1,297	1,520	1,854
7	L43-G17-PT	2,353	2,556	3,231	2,632	2,432	1,541	1,474	1,364	1,312	1,297	1,520	1,854
8	L43-G17-PL	2,353	2,557	3,232	2,632	2,432	1,540	1,474	1,364	1,312	1,297	1,519	1,854
9	L43-G17-WTP	2,353	2,557	3,232	2,632	2,432	1,540	1,474	1,364	1,312	1,297	1,519	1,854
10	L43-W17-PT	2,359	2,564	3,242	2,636	2,426	1,540	1,472	1,363	1,310	1,288	1,517	1,853
11	L43-W17-PL	2,359	2,563	3,242	2,639	2,426	1,539	1,472	1,361	1,310	1,288	1,518	1,853

Minimum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	800	800	800	799	798	798	799	799	800	800	800	799
No Action	L60	800	800	800	799	797	798	799	799	800	799	800	800
Proposed	L18-G50-PT	800	800	800	799	787	798	798	799	800	799	800	800
1	L18-G42-PT	800	800	800	799	797	798	798	799	799	799	800	800
2	L18-G42-PL	800	800	800	799	797	798	798	799	800	799	800	800
3	L18-G42-WTP	800	800	800	799	797	798	798	799	800	799	800	800
4	L30-G30-PT	800	800	800	799	797	798	798	799	799	799	800	800
5	L30-G30-PL	800	800	800	799	797	798	798	799	799	799	800	800
6	L30-G30-WTP	800	800	800	799	797	798	798	799	799	799	800	800
7	L43-G17-PT	800	800	800	799	798	798	798	799	799	799	800	800
8	L43-G17-PL	800	800	800	799	798	798	798	799	799	799	800	800
9	L43-G17-WTP	800	800	800	799	798	798	798	799	799	799	800	800
10	L43-W17-PT	800	800	800	799	798	798	799	799	800	799	800	800
11	L43-W17-PL	800	800	800	799	798	798	799	799	800	799	800	800

Maximum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	13,202	13,201	13,202	13,202	12,340	11,669	10,610	11,871	10,489	13,200	13,204	13,202
No Action	L60	13,202	13,201	13,201	13,202	12,207	11,371	10,335	11,675	10,285	6,034	13,203	13,203
Proposed	L18-G50-PT	13,202	13,201	13,205	13,202	12,207	11,425	10,405	11,675	10,285	6,032	13,204	13,204
1	L18-G42-PT	13,202	13,201	13,205	13,202	12,207	11,420	10,404	11,675	10,285	6,032	13,204	13,204
2	L18-G42-PL	13,202	13,201	13,205	13,202	12,207	11,422	10,405	11,675	10,285	6,032	13,204	13,204
3	L18-G42-WTP	13,202	13,201	13,205	13,202	12,207	11,422	10,405	11,675	10,285	6,032	13,204	13,204
4	L30-G30-PT	13,202	13,201	13,205	13,202	12,206	11,416	10,401	11,675	10,285	6,032	13,204	13,204
5	L30-G30-PL	13,202	13,201	13,205	13,202	12,206	11,417	10,402	11,675	10,285	6,032	13,204	13,204
6	L30-G30-WTP	13,202	13,201	13,205	13,202	12,206	11,417	10,402	11,675	10,285	6,032	13,204	13,204
7	L43-G17-PT	13,202	13,201	13,205	13,202	12,207	11,413	10,399	11,675	10,285	6,032	13,204	13,204
8	L43-G17-PL	13,202	13,201	13,205	13,202	12,207	11,414	10,407	11,675	10,285	6,032	13,204	13,204
9	L43-G17-WTP	13,202	13,201	13,205	13,202	12,207	11,414	10,407	11,675	10,285	6,032	13,204	13,204
10	L43-W17-PT	13,202	13,201	13,202	13,202	12,207	11,393	10,364	11,675	10,285	6,035	13,203	13,203
11	L43-W17-PL	13,202	13,201	13,202	13,202	12,207	11,392	10,364	11,675	10,285	6,035	13,203	13,203

Chattahoochee River at Atlanta Node
Average Year Analysis - 1997

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	2,382	2,200	3,319	3,971	2,883	3,564	1,756	1,916	1,431	1,893	1,989	1,756	1,955
No Action	L60	2,183	2,101	2,778	3,851	2,731	3,353	1,620	1,771	1,296	1,615	1,661	1,627	1,816
Proposed	L18-G50-PT	2,182	2,101	2,755	3,803	2,727	3,398	1,620	1,771	1,296	1,629	1,661	1,627	1,816
1	L18-G42-PT	2,182	2,101	2,761	3,794	2,737	3,394	1,620	1,771	1,296	1,629	1,661	1,628	1,817
2	L18-G42-PL	2,182	2,101	2,760	3,795	2,737	3,394	1,620	1,771	1,296	1,629	1,661	1,628	1,817
3	L18-G42-WTP	2,182	2,101	2,760	3,795	2,737	3,394	1,620	1,771	1,296	1,629	1,661	1,628	1,817
4	L30-G30-PT	2,182	2,100	2,781	3,802	2,731	3,347	1,620	1,770	1,296	1,657	1,661	1,627	1,816
5	L30-G30-PL	2,182	2,100	2,780	3,803	2,731	3,347	1,620	1,770	1,296	1,657	1,661	1,627	1,816
6	L30-G30-WTP	2,182	2,100	2,780	3,803	2,731	3,347	1,620	1,770	1,296	1,657	1,661	1,627	1,816
7	L43-G17-PT	2,181	2,100	2,785	3,805	2,731	3,353	1,620	1,771	1,296	1,629	1,661	1,627	1,816
8	L43-G17-PL	2,181	2,100	2,785	3,805	2,731	3,351	1,620	1,771	1,296	1,629	1,661	1,627	1,816
9	L43-G17-WTP	2,181	2,100	2,785	3,805	2,731	3,351	1,620	1,771	1,296	1,629	1,661	1,627	1,816
10	L43-W17-PT	2,184	2,101	2,783	3,841	2,737	3,384	1,620	1,771	1,297	1,601	1,648	1,627	1,816
11	L43-W17-PL	2,184	2,101	2,783	3,841	2,737	3,385	1,620	1,771	1,297	1,601	1,648	1,627	1,816

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-8.3%	-4.5%	-16.3%	-3.0%	-5.3%	-5.9%	-7.7%	-7.6%	-9.4%	-14.7%	-16.5%	-7.3%	-7.1%
Proposed	L18-G50-PT	-8.4%	-4.5%	-17.0%	-4.2%	-5.4%	-4.6%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
1	L18-G42-PT	-8.4%	-4.5%	-16.8%	-4.5%	-5.1%	-4.7%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
2	L18-G42-PL	-8.4%	-4.5%	-16.8%	-4.5%	-5.1%	-4.8%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
3	L18-G42-WTP	-8.4%	-4.5%	-16.8%	-4.5%	-5.1%	-4.8%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
4	L30-G30-PT	-8.4%	-4.5%	-16.2%	-4.3%	-5.3%	-6.1%	-7.7%	-7.6%	-9.4%	-12.4%	-16.5%	-7.3%	-7.1%
5	L30-G30-PL	-8.4%	-4.5%	-16.2%	-4.2%	-5.3%	-6.1%	-7.7%	-7.6%	-9.4%	-12.4%	-16.5%	-7.3%	-7.1%
6	L30-G30-WTP	-8.4%	-4.5%	-16.2%	-4.2%	-5.3%	-6.1%	-7.7%	-7.6%	-9.4%	-12.4%	-16.5%	-7.3%	-7.1%
7	L43-G17-PT	-8.4%	-4.5%	-16.1%	-4.2%	-5.3%	-5.9%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
8	L43-G17-PL	-8.4%	-4.5%	-16.1%	-4.2%	-5.3%	-6.0%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
9	L43-G17-WTP	-8.4%	-4.5%	-16.1%	-4.2%	-5.3%	-6.0%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
10	L43-W17-PT	-8.3%	-4.5%	-16.2%	-3.3%	-5.1%	-5.0%	-7.7%	-7.6%	-9.4%	-15.4%	-17.2%	-7.3%	-7.1%
11	L43-W17-PL	-8.3%	-4.5%	-16.2%	-3.3%	-5.1%	-5.0%	-7.7%	-7.6%	-9.4%	-15.4%	-17.2%	-7.3%	-7.1%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	-0.8%	-1.3%	-0.1%	1.4%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	-0.6%	-1.5%	0.2%	1.2%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	-0.6%	-1.5%	0.2%	1.2%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	-0.6%	-1.5%	0.2%	1.2%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.1%	-1.3%	0.0%	-0.2%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.1%	-1.3%	0.0%	-0.2%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.1%	-1.3%	0.0%	-0.2%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%
7	L43-G17-PT	-0.1%	0.0%	0.2%	-1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
8	L43-G17-PL	-0.1%	0.0%	0.2%	-1.2%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
9	L43-G17-WTP	-0.1%	0.0%	0.2%	-1.2%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.2%	-0.3%	0.2%	0.9%	0.0%	0.0%	0.0%	-0.9%	-0.8%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.2%	-0.3%	0.2%	1.0%	0.0%	0.0%	0.0%	-0.9%	-0.8%	0.0%	0.0%

Chattahoochee River at Atlanta Node
Wet Year Analysis - 2005

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	2,981	2,188	4,029	4,338	3,413	2,641	2,793	4,933	3,952	1,907	1,660	1,683	2,270
No Action	L60	2,771	2,022	3,894	4,218	3,250	2,405	2,498	4,638	3,623	1,682	1,521	1,547	1,998
Proposed	L18-G50-PT	2,772	2,022	3,895	4,217	3,252	2,411	2,492	4,637	3,622	1,690	1,521	1,547	1,998
1	L18-G42-PT	2,772	2,022	3,895	4,218	3,252	2,411	2,492	4,638	3,622	1,690	1,521	1,547	1,998
2	L18-G42-PL	2,772	2,022	3,895	4,218	3,252	2,410	2,492	4,638	3,622	1,690	1,521	1,547	1,998
3	L18-G42-WTP	2,772	2,022	3,895	4,218	3,252	2,410	2,492	4,638	3,622	1,690	1,521	1,547	1,998
4	L30-G30-PT	2,772	2,022	3,895	4,218	3,251	2,410	2,492	4,638	3,621	1,689	1,521	1,546	1,998
5	L30-G30-PL	2,772	2,022	3,895	4,218	3,251	2,410	2,492	4,638	3,621	1,689	1,521	1,546	1,998
6	L30-G30-WTP	2,772	2,022	3,895	4,218	3,251	2,410	2,492	4,638	3,621	1,689	1,521	1,546	1,998
7	L43-G17-PT	2,771	2,023	3,894	4,218	3,251	2,409	2,491	4,638	3,621	1,689	1,521	1,546	1,998
8	L43-G17-PL	2,772	2,023	3,894	4,218	3,251	2,409	2,491	4,638	3,621	1,689	1,521	1,546	1,998
9	L43-G17-WTP	2,772	2,023	3,894	4,218	3,251	2,409	2,491	4,638	3,621	1,689	1,521	1,546	1,998
10	L43-W17-PT	2,770	2,022	3,895	4,218	3,250	2,404	2,497	4,638	3,622	1,675	1,521	1,546	1,998
11	L43-W17-PL	2,770	2,022	3,895	4,218	3,250	2,403	2,497	4,638	3,622	1,674	1,521	1,546	1,998

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-7.0%	-7.5%	-3.4%	-2.7%	-4.8%	-9.0%	-10.6%	-6.0%	-8.3%	-11.8%	-8.4%	-8.1%	-12.0%
Proposed	L18-G50-PT	-7.0%	-7.6%	-3.3%	-2.8%	-4.7%	-8.7%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
1	L18-G42-PT	-7.0%	-7.6%	-3.3%	-2.8%	-4.7%	-8.7%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
2	L18-G42-PL	-7.0%	-7.6%	-3.3%	-2.8%	-4.7%	-8.7%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
3	L18-G42-WTP	-7.0%	-7.6%	-3.3%	-2.8%	-4.7%	-8.7%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
4	L30-G30-PT	-7.0%	-7.6%	-3.3%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
5	L30-G30-PL	-7.0%	-7.6%	-3.3%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
6	L30-G30-WTP	-7.0%	-7.6%	-3.3%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
7	L43-G17-PT	-7.0%	-7.5%	-3.4%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.5%	-8.4%	-8.1%	-12.0%
8	L43-G17-PL	-7.0%	-7.5%	-3.4%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
9	L43-G17-WTP	-7.0%	-7.5%	-3.4%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
10	L43-W17-PT	-7.1%	-7.6%	-3.3%	-2.7%	-4.8%	-9.0%	-10.6%	-6.0%	-8.4%	-12.2%	-8.4%	-8.1%	-12.0%
11	L43-W17-PL	-7.1%	-7.6%	-3.3%	-2.8%	-4.7%	-9.0%	-10.6%	-6.0%	-8.4%	-12.2%	-8.4%	-8.1%	-12.0%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	-0.2%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	-0.3%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	-0.3%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	-0.1%	0.4%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	-0.1%	0.4%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	-0.1%	0.4%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.4%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	0.0%	0.0%	-0.5%	0.0%	0.0%	0.0%

Chattahoochee River at Atlanta Node
Drought Year Analysis - 1988

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,072	1,713	1,240	810	1,022	800	800	811	800	899	1,372	1,327	1,277
No Action	L60	873	1,178	1,056	800	931	800	800	800	800	838	885	800	800
Proposed	L18-G50-PT	876	1,211	1,056	800	931	800	800	800	800	838	885	800	800
1	L18-G42-PT	875	1,200	1,056	800	931	800	800	800	800	838	885	800	800
2	L18-G42-PL	875	1,200	1,056	800	931	800	800	800	800	838	885	800	800
3	L18-G42-WTP	875	1,200	1,056	800	931	800	800	800	800	838	885	800	800
4	L30-G30-PT	875	1,202	1,056	800	931	800	800	800	800	838	885	800	800
5	L30-G30-PL	875	1,200	1,056	800	931	800	800	800	800	838	885	800	800
6	L30-G30-WTP	875	1,200	1,056	800	931	800	800	800	800	838	885	800	800
7	L43-G17-PT	876	1,206	1,056	800	931	800	800	800	800	838	885	800	800
8	L43-G17-PL	875	1,200	1,056	800	931	800	800	800	800	838	885	800	800
9	L43-G17-WTP	875	1,200	1,056	800	931	800	800	800	800	838	885	800	800
10	L43-W17-PT	873	1,178	1,056	800	931	800	800	800	800	838	885	800	800
11	L43-W17-PL	873	1,178	1,056	800	931	800	800	800	800	838	885	800	800

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-18.6%	-31.3%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
Proposed	L18-G50-PT	-18.3%	-29.3%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
1	L18-G42-PT	-18.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
2	L18-G42-PL	-18.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
3	L18-G42-WTP	-18.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
4	L30-G30-PT	-18.4%	-29.8%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
5	L30-G30-PL	-18.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
6	L30-G30-WTP	-18.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
7	L43-G17-PT	-18.3%	-29.6%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
8	L43-G17-PL	-18.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
9	L43-G17-WTP	-18.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
10	L43-W17-PT	-18.6%	-31.3%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
11	L43-W17-PL	-18.6%	-31.3%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.3%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.2%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.3%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Chattahoochee River at Atlanta Node
Drought Year Analysis - 2001

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,282	1,185	1,087	1,762	1,027	960	1,087	1,653	1,493	1,324	1,216	1,217	1,340
No Action	L60	1,119	1,023	1,016	1,649	936	922	1,019	1,060	1,225	1,175	1,077	1,089	1,214
Proposed	L18-G50-PT	1,120	1,041	1,016	1,649	936	922	1,019	1,060	1,225	1,175	1,077	1,090	1,214
1	L18-G42-PT	1,122	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
2	L18-G42-PL	1,120	1,041	1,016	1,649	936	922	1,019	1,060	1,225	1,175	1,077	1,090	1,214
3	L18-G42-WTP	1,120	1,041	1,016	1,649	936	922	1,019	1,060	1,225	1,175	1,077	1,090	1,214
4	L30-G30-PT	1,122	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
5	L30-G30-PL	1,122	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
6	L30-G30-WTP	1,122	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
7	L43-G17-PT	1,122	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
8	L43-G17-PL	1,122	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
9	L43-G17-WTP	1,122	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
10	L43-W17-PT	1,122	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
11	L43-W17-PL	1,122	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-12.8%	-13.6%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-18.0%	-11.3%	-11.4%	-10.5%	-9.4%
Proposed	L18-G50-PT	-12.6%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-17.9%	-11.3%	-11.4%	-10.5%	-9.4%
1	L18-G42-PT	-12.5%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
2	L18-G42-PL	-12.6%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-17.9%	-11.3%	-11.4%	-10.5%	-9.4%
3	L18-G42-WTP	-12.6%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-17.9%	-11.3%	-11.4%	-10.5%	-9.4%
4	L30-G30-PT	-12.5%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
5	L30-G30-PL	-12.5%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
6	L30-G30-WTP	-12.5%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
7	L43-G17-PT	-12.5%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
8	L43-G17-PL	-12.5%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
9	L43-G17-WTP	-12.5%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
10	L43-W17-PT	-12.5%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
11	L43-W17-PL	-12.5%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.3%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%

Chattahoochee River at Atlanta Node
Drought Year Analysis - 2008

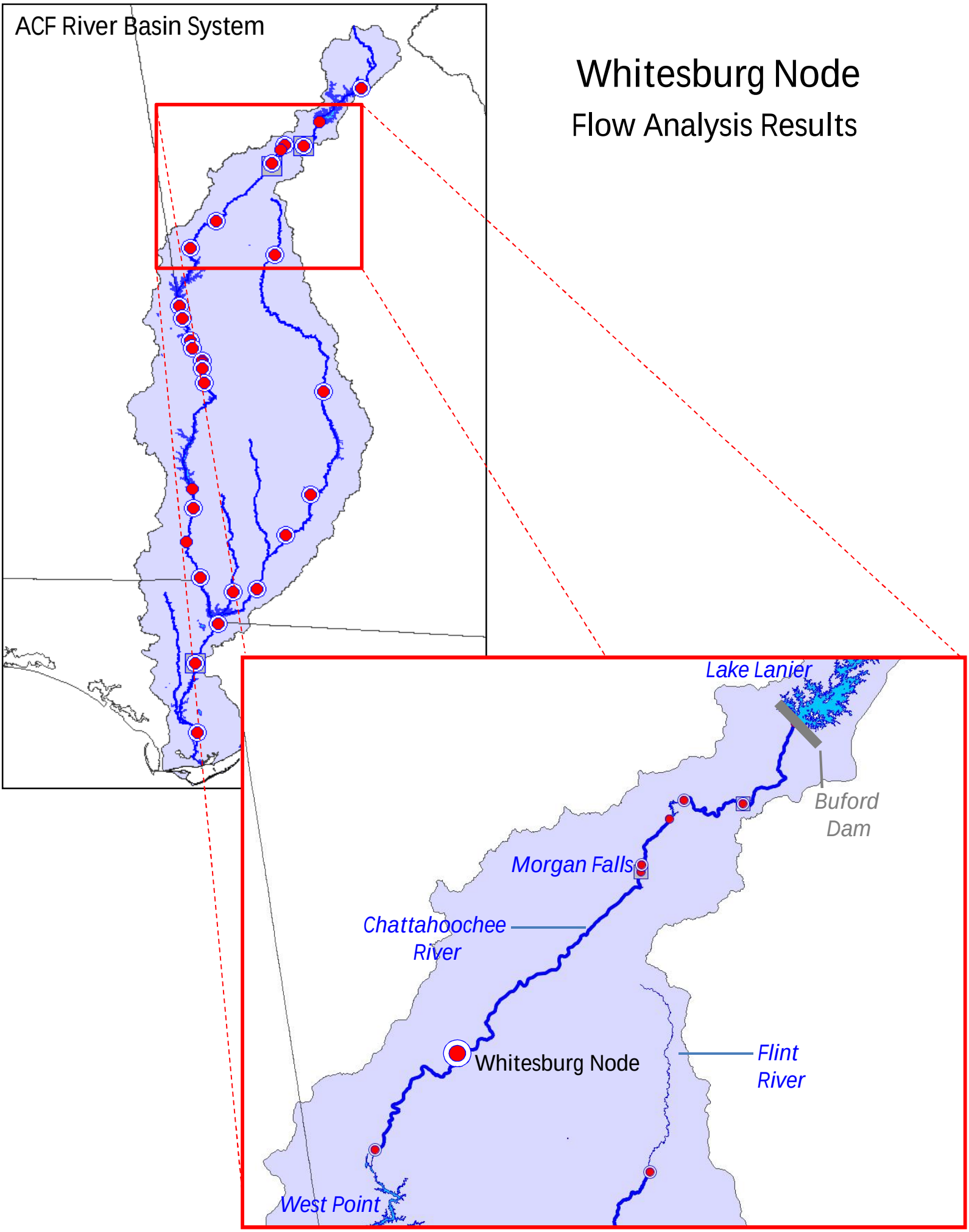
Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	989	959	1,180	1,168	900	802	800	823	880	800	908	1,093	1,560
No Action	L60	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
Proposed	L18-G50-PT	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
1	L18-G42-PT	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
2	L18-G42-PL	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
3	L18-G42-WTP	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
4	L30-G30-PT	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
5	L30-G30-PL	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
6	L30-G30-WTP	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
7	L43-G17-PT	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
8	L43-G17-PL	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
9	L43-G17-WTP	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
10	L43-W17-PT	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994
11	L43-W17-PL	873	837	1,095	1,073	846	800	800	803	839	800	800	800	994

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
Proposed	L18-G50-PT	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
1	L18-G42-PT	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
2	L18-G42-PL	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
3	L18-G42-WTP	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
4	L30-G30-PT	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
5	L30-G30-PL	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
6	L30-G30-WTP	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
7	L43-G17-PT	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
8	L43-G17-PL	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
9	L43-G17-WTP	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
10	L43-W17-PT	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
11	L43-W17-PL	-11.7%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Whitesburg Node

Flow Analysis Results



Chattahoochee River at Whitesburg Node
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Flow (cfs)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	4,663	5,245	6,324	5,130	4,237	2,880	2,804	2,451	2,369	2,342	2,912	3,626
No Action	L60	4,628	5,202	6,289	5,131	4,174	2,898	2,801	2,428	2,360	2,308	2,829	3,589
Proposed	L18-G50-PT	4,621	5,195	6,276	5,124	4,175	2,898	2,803	2,432	2,364	2,319	2,832	3,588
1	L18-G42-PT	4,622	5,195	6,276	5,124	4,175	2,898	2,802	2,432	2,364	2,319	2,833	3,588
2	L18-G42-PL	4,622	5,195	6,276	5,125	4,175	2,898	2,802	2,432	2,364	2,319	2,832	3,588
3	L18-G42-WTP	4,622	5,195	6,276	5,125	4,175	2,898	2,802	2,432	2,364	2,319	2,832	3,588
4	L30-G30-PT	4,623	5,195	6,277	5,126	4,173	2,899	2,802	2,431	2,363	2,319	2,833	3,589
5	L30-G30-PL	4,623	5,195	6,277	5,127	4,172	2,898	2,802	2,430	2,363	2,319	2,833	3,589
6	L30-G30-WTP	4,622	5,195	6,277	5,127	4,173	2,898	2,802	2,430	2,363	2,319	2,833	3,589
7	L43-G17-PT	4,623	5,195	6,278	5,124	4,178	2,898	2,801	2,430	2,362	2,318	2,832	3,589
8	L43-G17-PL	4,623	5,195	6,278	5,125	4,177	2,898	2,801	2,431	2,362	2,317	2,832	3,589
9	L43-G17-WTP	4,623	5,195	6,278	5,125	4,177	2,898	2,801	2,431	2,362	2,317	2,832	3,589
10	L43-W17-PT	4,628	5,202	6,289	5,129	4,171	2,897	2,799	2,429	2,360	2,309	2,830	3,589
11	L43-W17-PL	4,628	5,202	6,288	5,132	4,172	2,896	2,799	2,428	2,360	2,309	2,830	3,588

Minimum Daily Flow (cfs)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,302	1,385	1,606	1,510	1,048	876	731	730	672	656	721	852
No Action	L60	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
Proposed	L18-G50-PT	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
1	L18-G42-PT	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
2	L18-G42-PL	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
3	L18-G42-WTP	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
4	L30-G30-PT	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
5	L30-G30-PL	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
6	L30-G30-WTP	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
7	L43-G17-PT	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
8	L43-G17-PL	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
9	L43-G17-WTP	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
10	L43-W17-PT	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029
11	L43-W17-PL	1,453	1,240	1,801	1,709	1,125	1,039	886	727	831	812	887	1,029

Maximum Daily Flow (cfs)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	26,721	30,726	30,040	26,753	20,364	18,749	27,455	21,608	33,542	23,435	29,961	27,677
No Action	L60	26,915	30,067	30,265	26,978	20,315	18,653	27,365	20,891	33,438	18,175	29,953	27,787
Proposed	L18-G50-PT	26,916	30,068	30,266	26,969	20,030	18,556	27,412	20,863	33,438	18,176	29,958	27,748
1	L18-G42-PT	26,916	30,068	30,266	26,969	20,029	18,554	27,411	20,864	33,438	18,176	29,958	27,745
2	L18-G42-PL	26,916	30,068	30,266	26,969	20,029	18,554	27,413	20,864	33,438	18,176	29,958	27,746
3	L18-G42-WTP	26,916	30,068	30,266	26,969	20,029	18,554	27,413	20,864	33,438	18,176	29,958	27,746
4	L30-G30-PT	26,916	30,068	30,266	26,969	20,028	18,552	27,410	20,857	33,438	18,176	29,958	27,745
5	L30-G30-PL	26,916	30,068	30,266	26,969	20,028	18,552	27,411	20,857	33,438	18,176	29,958	27,746
6	L30-G30-WTP	26,916	30,068	30,266	26,969	20,028	18,552	27,411	20,857	33,438	18,176	29,958	27,746
7	L43-G17-PT	26,916	30,068	30,266	26,969	20,027	18,549	27,412	20,856	33,437	18,176	29,958	27,746
8	L43-G17-PL	26,916	30,068	30,266	26,969	20,026	18,549	27,425	20,891	33,437	18,176	29,958	27,746
9	L43-G17-WTP	26,916	30,068	30,266	26,969	20,026	18,549	27,425	20,891	33,437	18,176	29,958	27,746
10	L43-W17-PT	26,916	30,068	30,266	26,969	20,311	18,667	27,392	20,891	33,438	18,175	29,954	27,794
11	L43-W17-PL	26,916	30,068	30,266	26,969	20,311	18,667	27,392	20,890	33,438	18,175	29,954	27,793

Chattahoochee River at Whitesburg Node
Average Year Analysis - 1997

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	4,208	4,558	6,293	7,391	4,678	5,206	3,534	3,253	2,177	2,906	3,297	3,436	3,899
No Action	L60	4,214	4,663	5,970	7,506	4,751	5,198	3,595	3,299	2,232	2,825	3,157	3,499	3,967
Proposed	L18-G50-PT	4,213	4,663	5,949	7,460	4,742	5,244	3,596	3,299	2,232	2,839	3,157	3,499	3,968
1	L18-G42-PT	4,213	4,663	5,954	7,455	4,749	5,240	3,596	3,299	2,232	2,839	3,157	3,499	3,968
2	L18-G42-PL	4,213	4,663	5,954	7,456	4,749	5,240	3,596	3,299	2,232	2,839	3,157	3,499	3,968
3	L18-G42-WTP	4,213	4,663	5,954	7,456	4,749	5,240	3,596	3,299	2,232	2,839	3,157	3,499	3,968
4	L30-G30-PT	4,213	4,663	5,974	7,456	4,752	5,193	3,595	3,299	2,232	2,867	3,157	3,499	3,968
5	L30-G30-PL	4,213	4,663	5,973	7,456	4,752	5,193	3,595	3,299	2,232	2,867	3,157	3,499	3,968
6	L30-G30-WTP	4,213	4,663	5,973	7,456	4,752	5,193	3,595	3,299	2,232	2,867	3,157	3,499	3,968
7	L43-G17-PT	4,211	4,663	5,977	7,459	4,751	5,199	3,595	3,299	2,232	2,839	3,157	3,499	3,968
8	L43-G17-PL	4,211	4,663	5,977	7,459	4,751	5,196	3,595	3,299	2,232	2,839	3,157	3,499	3,968
9	L43-G17-WTP	4,211	4,663	5,977	7,459	4,751	5,196	3,595	3,299	2,232	2,839	3,157	3,499	3,968
10	L43-W17-PT	4,214	4,663	5,975	7,503	4,749	5,230	3,596	3,300	2,233	2,811	3,144	3,499	3,968
11	L43-W17-PL	4,214	4,663	5,975	7,503	4,749	5,230	3,596	3,300	2,233	2,811	3,144	3,499	3,968

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	0.1%	2.3%	-5.1%	1.5%	1.6%	-0.1%	1.7%	1.4%	2.5%	-2.8%	-4.2%	1.8%	1.8%
Proposed	L18-G50-PT	0.1%	2.3%	-5.5%	0.9%	1.4%	0.7%	1.7%	1.4%	2.5%	-2.3%	-4.2%	1.8%	1.8%
1	L18-G42-PT	0.1%	2.3%	-5.4%	0.9%	1.5%	0.7%	1.7%	1.4%	2.5%	-2.3%	-4.2%	1.8%	1.8%
2	L18-G42-PL	0.1%	2.3%	-5.4%	0.9%	1.5%	0.7%	1.7%	1.4%	2.5%	-2.3%	-4.2%	1.8%	1.8%
3	L18-G42-WTP	0.1%	2.3%	-5.4%	0.9%	1.5%	0.7%	1.7%	1.4%	2.5%	-2.3%	-4.2%	1.8%	1.8%
4	L30-G30-PT	0.1%	2.3%	-5.1%	0.9%	1.6%	-0.3%	1.7%	1.4%	2.5%	-1.3%	-4.2%	1.8%	1.8%
5	L30-G30-PL	0.1%	2.3%	-5.1%	0.9%	1.6%	-0.2%	1.7%	1.4%	2.5%	-1.3%	-4.2%	1.8%	1.8%
6	L30-G30-WTP	0.1%	2.3%	-5.1%	0.9%	1.6%	-0.2%	1.7%	1.4%	2.5%	-1.3%	-4.2%	1.8%	1.8%
7	L43-G17-PT	0.1%	2.3%	-5.0%	0.9%	1.6%	-0.1%	1.7%	1.4%	2.5%	-2.3%	-4.2%	1.8%	1.8%
8	L43-G17-PL	0.1%	2.3%	-5.0%	0.9%	1.6%	-0.2%	1.7%	1.4%	2.5%	-2.3%	-4.2%	1.8%	1.8%
9	L43-G17-WTP	0.1%	2.3%	-5.0%	0.9%	1.6%	-0.2%	1.7%	1.4%	2.5%	-2.3%	-4.2%	1.8%	1.8%
10	L43-W17-PT	0.1%	2.3%	-5.1%	1.5%	1.5%	0.5%	1.7%	1.4%	2.6%	-3.3%	-4.7%	1.8%	1.8%
11	L43-W17-PL	0.1%	2.3%	-5.0%	1.5%	1.5%	0.5%	1.7%	1.4%	2.6%	-3.3%	-4.7%	1.8%	1.8%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	-0.3%	-0.6%	-0.2%	0.9%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	-0.3%	-0.7%	-0.1%	0.8%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	-0.3%	-0.7%	-0.1%	0.8%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	-0.3%	-0.7%	-0.1%	0.8%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.1%	-0.7%	0.0%	-0.1%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.1%	-0.7%	0.0%	-0.1%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.1%	-0.7%	0.0%	-0.1%	0.0%	0.0%	0.0%	1.5%	0.0%	0.0%	0.0%
7	L43-G17-PT	-0.1%	0.0%	0.1%	-0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
8	L43-G17-PL	-0.1%	0.0%	0.1%	-0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
9	L43-G17-WTP	-0.1%	0.0%	0.1%	-0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.1%	0.0%	-0.1%	0.6%	0.0%	0.0%	0.0%	-0.5%	-0.4%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.1%	0.0%	-0.1%	0.6%	0.0%	0.0%	0.0%	-0.5%	-0.4%	0.0%	0.0%

Chattahoochee River at Whitesburg Node
Wet Year Analysis - 2005

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	5,035	3,735	6,322	7,732	6,553	4,094	4,139	10,901	5,845	2,596	2,371	2,456	3,657
No Action	L60	5,029	3,786	6,386	7,851	6,617	4,067	4,045	10,789	5,711	2,558	2,414	2,520	3,589
Proposed	L18-G50-PT	5,029	3,786	6,386	7,849	6,620	4,073	4,038	10,790	5,712	2,565	2,414	2,520	3,590
1	L18-G42-PT	5,029	3,786	6,386	7,849	6,620	4,072	4,038	10,790	5,711	2,565	2,414	2,520	3,590
2	L18-G42-PL	5,029	3,786	6,386	7,849	6,620	4,072	4,038	10,790	5,711	2,565	2,414	2,520	3,590
3	L18-G42-WTP	5,029	3,786	6,386	7,849	6,620	4,072	4,038	10,790	5,711	2,565	2,414	2,520	3,590
4	L30-G30-PT	5,029	3,786	6,386	7,849	6,620	4,071	4,038	10,790	5,711	2,564	2,414	2,520	3,590
5	L30-G30-PL	5,029	3,786	6,386	7,849	6,620	4,072	4,038	10,790	5,711	2,564	2,414	2,520	3,590
6	L30-G30-WTP	5,029	3,786	6,386	7,849	6,620	4,072	4,038	10,790	5,711	2,564	2,414	2,520	3,590
7	L43-G17-PT	5,029	3,786	6,386	7,850	6,619	4,071	4,038	10,790	5,710	2,563	2,414	2,520	3,589
8	L43-G17-PL	5,029	3,786	6,386	7,850	6,619	4,070	4,038	10,790	5,711	2,563	2,414	2,520	3,589
9	L43-G17-WTP	5,029	3,786	6,386	7,850	6,619	4,070	4,038	10,790	5,711	2,563	2,414	2,520	3,589
10	L43-W17-PT	5,028	3,786	6,386	7,850	6,618	4,065	4,044	10,789	5,711	2,550	2,414	2,520	3,589
11	L43-W17-PL	5,028	3,786	6,386	7,850	6,618	4,065	4,044	10,789	5,711	2,550	2,414	2,520	3,589

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.7%	-2.3%	-1.0%	-2.3%	-1.5%	1.8%	2.6%	-1.8%
Proposed	L18-G50-PT	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.5%	-2.4%	-1.0%	-2.3%	-1.2%	1.8%	2.6%	-1.8%
1	L18-G42-PT	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.5%	-2.4%	-1.0%	-2.3%	-1.2%	1.8%	2.6%	-1.8%
2	L18-G42-PL	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.5%	-2.4%	-1.0%	-2.3%	-1.2%	1.8%	2.6%	-1.8%
3	L18-G42-WTP	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.5%	-2.4%	-1.0%	-2.3%	-1.2%	1.8%	2.6%	-1.8%
4	L30-G30-PT	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.5%	-2.4%	-1.0%	-2.3%	-1.2%	1.8%	2.6%	-1.8%
5	L30-G30-PL	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.5%	-2.4%	-1.0%	-2.3%	-1.2%	1.8%	2.6%	-1.8%
6	L30-G30-WTP	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.5%	-2.4%	-1.0%	-2.3%	-1.2%	1.8%	2.6%	-1.8%
7	L43-G17-PT	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.6%	-2.4%	-1.0%	-2.3%	-1.2%	1.8%	2.6%	-1.8%
8	L43-G17-PL	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.6%	-2.4%	-1.0%	-2.3%	-1.2%	1.8%	2.6%	-1.8%
9	L43-G17-WTP	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.6%	-2.4%	-1.0%	-2.3%	-1.2%	1.8%	2.6%	-1.8%
10	L43-W17-PT	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.7%	-2.3%	-1.0%	-2.3%	-1.8%	1.8%	2.6%	-1.8%
11	L43-W17-PL	-0.1%	1.4%	1.0%	1.5%	1.0%	-0.7%	-2.3%	-1.0%	-2.3%	-1.8%	1.8%	2.6%	-1.8%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.3%	0.0%	0.0%	0.0%

Chattahoochee River at Whitesburg Node
Drought Year Analysis - 1988

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	2,007	3,486	3,030	1,940	2,586	1,572	1,292	1,318	1,322	1,538	2,033	2,078	1,942
No Action	L60	2,014	3,159	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
Proposed	L18-G50-PT	2,017	3,192	3,049	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
1	L18-G42-PT	2,016	3,181	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
2	L18-G42-PL	2,016	3,181	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
3	L18-G42-WTP	2,016	3,181	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
4	L30-G30-PT	2,016	3,183	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
5	L30-G30-PL	2,016	3,181	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
6	L30-G30-WTP	2,016	3,181	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
7	L43-G17-PT	2,016	3,187	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
8	L43-G17-PL	2,016	3,181	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
9	L43-G17-WTP	2,016	3,181	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
10	L43-W17-PT	2,014	3,159	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671
11	L43-W17-PL	2,014	3,159	3,050	2,169	2,720	1,776	1,493	1,492	1,515	1,673	1,732	1,772	1,671

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	0.3%	-9.4%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
Proposed	L18-G50-PT	0.5%	-8.4%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
1	L18-G42-PT	0.4%	-8.7%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
2	L18-G42-PL	0.4%	-8.7%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
3	L18-G42-WTP	0.4%	-8.7%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
4	L30-G30-PT	0.4%	-8.7%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
5	L30-G30-PL	0.4%	-8.7%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
6	L30-G30-WTP	0.4%	-8.7%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
7	L43-G17-PT	0.4%	-8.6%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
8	L43-G17-PL	0.4%	-8.7%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
9	L43-G17-WTP	0.4%	-8.7%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
10	L43-W17-PT	0.3%	-9.4%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%
11	L43-W17-PL	0.3%	-9.4%	0.6%	11.8%	5.2%	13.0%	15.5%	13.2%	14.7%	8.7%	-14.8%	-14.7%	-14.0%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	1.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.1%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.1%	0.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Chattahoochee River at Whitesburg Node
Drought Year Analysis - 2001

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	2,433	2,434	2,617	5,344	2,819	1,884	2,659	2,527	2,040	1,796	1,513	1,563	1,985
No Action	L60	2,473	2,479	2,761	5,469	2,949	2,054	2,793	2,141	1,945	1,833	1,566	1,630	2,058
Proposed	L18-G50-PT	2,474	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,945	1,833	1,566	1,630	2,059
1	L18-G42-PT	2,476	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,970	1,833	1,566	1,630	2,059
2	L18-G42-PL	2,474	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,945	1,833	1,566	1,630	2,059
3	L18-G42-WTP	2,474	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,945	1,833	1,566	1,630	2,059
4	L30-G30-PT	2,476	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,970	1,833	1,566	1,630	2,059
5	L30-G30-PL	2,476	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,970	1,833	1,566	1,630	2,059
6	L30-G30-WTP	2,476	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,970	1,833	1,566	1,630	2,059
7	L43-G17-PT	2,476	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,970	1,833	1,566	1,630	2,059
8	L43-G17-PL	2,476	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,970	1,833	1,566	1,630	2,059
9	L43-G17-WTP	2,476	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,970	1,833	1,566	1,630	2,059
10	L43-W17-PT	2,476	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,970	1,833	1,566	1,630	2,058
11	L43-W17-PL	2,476	2,496	2,761	5,469	2,949	2,054	2,793	2,141	1,970	1,833	1,566	1,630	2,058

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	1.6%	1.8%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-4.7%	2.1%	3.5%	4.3%	3.7%
Proposed	L18-G50-PT	1.7%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-4.6%	2.1%	3.6%	4.3%	3.7%
1	L18-G42-PT	1.8%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-3.4%	2.1%	3.6%	4.3%	3.7%
2	L18-G42-PL	1.7%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-4.6%	2.1%	3.6%	4.3%	3.7%
3	L18-G42-WTP	1.7%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-4.6%	2.1%	3.6%	4.3%	3.7%
4	L30-G30-PT	1.8%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-3.4%	2.1%	3.6%	4.3%	3.7%
5	L30-G30-PL	1.8%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-3.4%	2.1%	3.6%	4.3%	3.7%
6	L30-G30-WTP	1.8%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-3.4%	2.1%	3.6%	4.3%	3.7%
7	L43-G17-PT	1.8%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-3.4%	2.1%	3.6%	4.3%	3.7%
8	L43-G17-PL	1.8%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-3.4%	2.1%	3.6%	4.3%	3.7%
9	L43-G17-WTP	1.8%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-3.4%	2.1%	3.6%	4.3%	3.7%
10	L43-W17-PT	1.8%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-3.4%	2.1%	3.5%	4.3%	3.7%
11	L43-W17-PL	1.8%	2.5%	5.5%	2.3%	4.6%	9.0%	5.0%	-15.3%	-3.4%	2.1%	3.5%	4.3%	3.7%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.2%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.2%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.2%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.2%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.2%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.0%

Chattahoochee River at Whitesburg Node
Drought Year Analysis - 2008

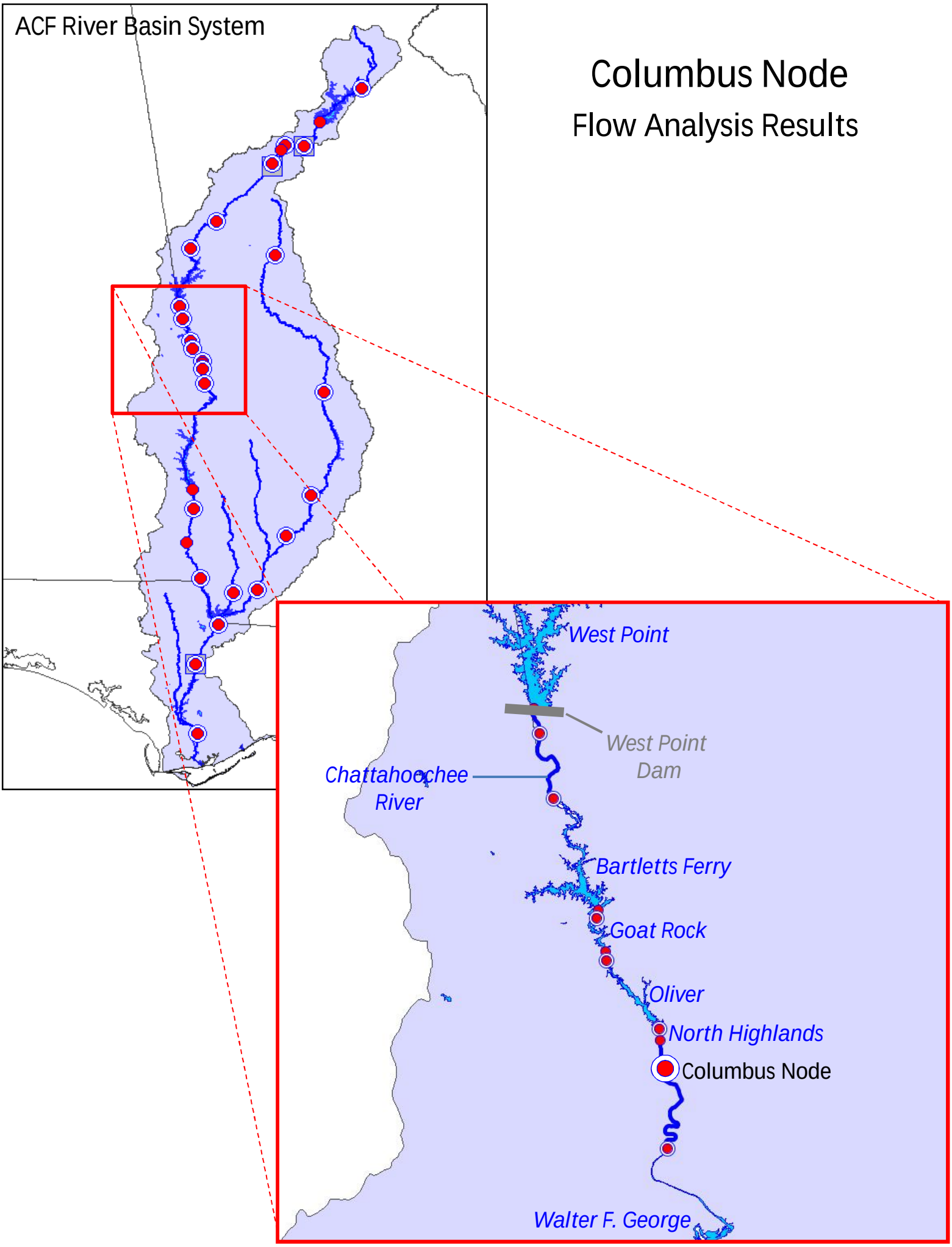
Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,920	1,740	2,812	2,982	2,362	1,822	1,309	1,550	1,717	1,158	1,319	1,478	2,806
No Action	L60	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
Proposed	L18-G50-PT	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,384	2,459
1	L18-G42-PT	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
2	L18-G42-PL	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
3	L18-G42-WTP	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
4	L30-G30-PT	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
5	L30-G30-PL	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
6	L30-G30-WTP	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
7	L43-G17-PT	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
8	L43-G17-PL	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
9	L43-G17-WTP	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
10	L43-W17-PT	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459
11	L43-W17-PL	2,009	1,819	2,939	3,125	2,533	2,023	1,510	1,717	1,870	1,350	1,402	1,383	2,459

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
Proposed	L18-G50-PT	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
1	L18-G42-PT	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
2	L18-G42-PL	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
3	L18-G42-WTP	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
4	L30-G30-PT	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
5	L30-G30-PL	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
6	L30-G30-WTP	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
7	L43-G17-PT	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
8	L43-G17-PL	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
9	L43-G17-WTP	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
10	L43-W17-PT	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%
11	L43-W17-PL	4.6%	4.6%	4.5%	4.8%	7.2%	11.0%	15.3%	10.7%	8.9%	16.5%	6.3%	-6.4%	-12.4%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Columbus Node

Flow Analysis Results



Chattahoochee River at Columbus Node
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Flow (cfs)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	8,210	9,319	10,921	8,625	6,456	4,542	4,734	4,004	3,759	3,842	6,096	7,117
No Action	L60	8,113	9,214	10,788	8,547	6,261	4,472	4,654	3,912	3,682	3,769	5,889	6,973
Proposed	L18-G50-PT	8,108	9,207	10,774	8,541	6,261	4,472	4,656	3,913	3,684	3,779	5,891	6,977
1	L18-G42-PT	8,109	9,207	10,774	8,541	6,262	4,473	4,656	3,913	3,684	3,778	5,890	6,976
2	L18-G42-PL	8,109	9,207	10,775	8,541	6,262	4,473	4,656	3,913	3,684	3,778	5,890	6,976
3	L18-G42-WTP	8,109	9,207	10,775	8,541	6,262	4,473	4,656	3,913	3,684	3,778	5,890	6,976
4	L30-G30-PT	8,109	9,207	10,776	8,541	6,260	4,475	4,654	3,913	3,682	3,779	5,891	6,976
5	L30-G30-PL	8,109	9,207	10,776	8,544	6,257	4,475	4,653	3,913	3,682	3,779	5,892	6,975
6	L30-G30-WTP	8,109	9,207	10,776	8,544	6,258	4,475	4,653	3,913	3,682	3,779	5,892	6,975
7	L43-G17-PT	8,109	9,207	10,777	8,541	6,264	4,474	4,653	3,913	3,681	3,778	5,890	6,975
8	L43-G17-PL	8,110	9,207	10,777	8,541	6,264	4,473	4,653	3,914	3,681	3,778	5,890	6,975
9	L43-G17-WTP	8,110	9,207	10,777	8,541	6,264	4,473	4,653	3,914	3,681	3,778	5,890	6,975
10	L43-W17-PT	8,115	9,212	10,788	8,546	6,254	4,475	4,652	3,912	3,682	3,770	5,889	6,973
11	L43-W17-PL	8,114	9,212	10,787	8,549	6,257	4,473	4,651	3,911	3,683	3,768	5,890	6,973

Minimum Daily Flow (cfs)[1,2]													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	956	971	1,289	1,044	600	198	472	568	205	214	830	971
No Action	L60	942	956	1,254	1,005	542	497	433	532	150	201	804	951
Proposed	L18-G50-PT	942	956	1,254	1,005	542	508	433	532	150	201	804	951
1	L18-G42-PT	942	956	1,254	1,005	542	508	433	532	150	201	804	951
2	L18-G42-PL	942	956	1,254	1,005	542	508	433	532	150	201	804	951
3	L18-G42-WTP	942	956	1,254	1,005	542	508	433	532	150	201	804	951
4	L30-G30-PT	942	956	1,254	1,005	542	506	433	532	150	201	804	951
5	L30-G30-PL	942	956	1,254	1,005	542	506	433	532	150	201	804	951
6	L30-G30-WTP	942	956	1,254	1,005	542	506	433	532	150	201	804	951
7	L43-G17-PT	942	956	1,254	1,005	542	506	433	532	150	201	804	951
8	L43-G17-PL	942	956	1,254	1,005	542	506	433	532	150	201	804	951
9	L43-G17-WTP	942	956	1,254	1,005	542	506	433	532	150	201	804	951
10	L43-W17-PT	942	956	1,254	1,005	542	191	433	532	150	201	804	951
11	L43-W17-PL	942	956	1,254	1,005	542	191	433	532	150	201	804	951

Maximum Daily Flow (cfs)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	48,689	55,203	55,590	46,016	50,824	35,324	41,356	29,224	37,661	31,122	54,196	50,894
No Action	L60	48,764	55,188	55,555	46,147	50,765	35,143	41,047	28,243	37,532	30,851	54,184	50,875
Proposed	L18-G50-PT	48,764	55,188	55,555	46,145	50,765	34,966	40,593	28,123	37,532	30,864	54,184	50,875
1	L18-G42-PT	48,764	55,188	55,555	46,145	50,765	34,965	40,601	28,125	37,532	30,864	54,184	50,875
2	L18-G42-PL	48,764	55,188	55,555	46,145	50,765	34,965	40,598	28,128	37,532	30,864	54,184	50,875
3	L18-G42-WTP	48,764	55,188	55,555	46,145	50,765	34,965	40,598	28,128	37,532	30,864	54,184	50,875
4	L30-G30-PT	48,764	55,188	55,555	46,145	50,765	34,962	40,625	28,097	37,532	30,864	54,184	50,875
5	L30-G30-PL	48,764	55,188	55,555	46,145	50,765	34,962	40,622	28,098	37,532	30,864	54,184	50,875
6	L30-G30-WTP	48,764	55,188	55,555	46,145	50,765	34,962	40,622	28,098	37,532	30,864	54,184	50,875
7	L43-G17-PT	48,764	55,188	55,555	46,145	50,765	34,959	40,668	28,093	37,532	30,865	54,184	50,875
8	L43-G17-PL	48,764	55,188	55,555	46,145	50,765	34,959	40,564	28,244	37,532	30,865	54,184	50,875
9	L43-G17-WTP	48,764	55,188	55,555	46,145	50,765	34,959	40,564	28,244	37,532	30,865	54,184	50,875
10	L43-W17-PT	48,764	55,188	55,555	46,147	50,765	35,122	40,919	28,242	37,532	30,851	54,184	50,875
11	L43-W17-PL	48,764	55,188	55,555	46,147	50,765	35,122	40,918	28,239	37,532	30,851	54,184	50,875

[1] 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. These minimum flow requirements are not included in the ResSim analysis.
[2] Minimum Flows at Columbus drop below 1,350 cfs for 4.6% of the analysis, and below 800 cfs for 0.4% of the analysis.

Chattahoochee River at Columbus Node
Average Year Analysis - 1997

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	7,861	9,741	13,322	12,726	8,675	7,445	6,404	5,161	3,561	3,474	4,752	7,878	11,560
No Action	L60	7,783	9,809	12,953	12,733	8,664	7,393	6,301	5,127	3,527	3,286	4,530	7,852	11,555
Proposed	L18-G50-PT	7,782	9,809	12,936	12,677	8,662	7,373	6,369	5,128	3,527	3,293	4,537	7,852	11,555
1	L18-G42-PT	7,782	9,809	12,940	12,673	8,668	7,399	6,338	5,128	3,527	3,293	4,537	7,852	11,555
2	L18-G42-PL	7,782	9,809	12,940	12,673	8,668	7,399	6,338	5,128	3,527	3,293	4,537	7,852	11,555
3	L18-G42-WTP	7,782	9,809	12,940	12,673	8,668	7,399	6,338	5,128	3,527	3,293	4,537	7,852	11,555
4	L30-G30-PT	7,782	9,809	12,957	12,683	8,664	7,383	6,306	5,127	3,527	3,321	4,537	7,852	11,555
5	L30-G30-PL	7,782	9,809	12,956	12,683	8,664	7,383	6,306	5,127	3,527	3,321	4,537	7,852	11,555
6	L30-G30-WTP	7,782	9,809	12,956	12,683	8,664	7,383	6,306	5,127	3,527	3,321	4,537	7,852	11,555
7	L43-G17-PT	7,780	9,809	12,960	12,687	8,664	7,401	6,293	5,127	3,527	3,293	4,537	7,852	11,555
8	L43-G17-PL	7,780	9,809	12,959	12,687	8,664	7,398	6,294	5,127	3,527	3,293	4,537	7,852	11,555
9	L43-G17-WTP	7,780	9,809	12,959	12,687	8,664	7,398	6,294	5,127	3,527	3,293	4,537	7,852	11,555
10	L43-W17-PT	7,783	9,809	12,957	12,724	8,669	7,387	6,340	5,128	3,527	3,280	4,509	7,852	11,555
11	L43-W17-PL	7,783	9,809	12,957	12,724	8,669	7,388	6,340	5,128	3,527	3,280	4,509	7,852	11,555

Minimum Daily Flow (cfs)[1,2]														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-1.0%	0.7%	-2.8%	0.1%	-0.1%	-0.7%	-1.6%	-0.6%	-0.9%	-5.4%	-4.7%	-0.3%	0.0%
Proposed	L18-G50-PT	-1.0%	0.7%	-2.9%	-0.4%	-0.2%	-1.0%	-0.6%	-0.6%	-0.9%	-5.2%	-4.5%	-0.3%	0.0%
1	L18-G42-PT	-1.0%	0.7%	-2.9%	-0.4%	-0.1%	-0.6%	-1.0%	-0.6%	-0.9%	-5.2%	-4.5%	-0.3%	0.0%
2	L18-G42-PL	-1.0%	0.7%	-2.9%	-0.4%	-0.1%	-0.6%	-1.0%	-0.6%	-0.9%	-5.2%	-4.5%	-0.3%	0.0%
3	L18-G42-WTP	-1.0%	0.7%	-2.9%	-0.4%	-0.1%	-0.6%	-1.0%	-0.6%	-0.9%	-5.2%	-4.5%	-0.3%	0.0%
4	L30-G30-PT	-1.0%	0.7%	-2.7%	-0.3%	-0.1%	-0.8%	-1.5%	-0.7%	-0.9%	-4.4%	-4.5%	-0.3%	0.0%
5	L30-G30-PL	-1.0%	0.7%	-2.7%	-0.3%	-0.1%	-0.8%	-1.5%	-0.7%	-0.9%	-4.4%	-4.5%	-0.3%	0.0%
6	L30-G30-WTP	-1.0%	0.7%	-2.7%	-0.3%	-0.1%	-0.8%	-1.5%	-0.7%	-0.9%	-4.4%	-4.5%	-0.3%	0.0%
7	L43-G17-PT	-1.0%	0.7%	-2.7%	-0.3%	-0.1%	-0.6%	-1.7%	-0.6%	-0.9%	-5.2%	-4.5%	-0.3%	0.0%
8	L43-G17-PL	-1.0%	0.7%	-2.7%	-0.3%	-0.1%	-0.6%	-1.7%	-0.6%	-0.9%	-5.2%	-4.5%	-0.3%	0.0%
9	L43-G17-WTP	-1.0%	0.7%	-2.7%	-0.3%	-0.1%	-0.6%	-1.7%	-0.6%	-0.9%	-5.2%	-4.5%	-0.3%	0.0%
10	L43-W17-PT	-1.0%	0.7%	-2.7%	0.0%	-0.1%	-0.8%	-1.0%	-0.6%	-0.9%	-5.6%	-5.1%	-0.3%	0.0%
11	L43-W17-PL	-1.0%	0.7%	-2.7%	0.0%	-0.1%	-0.8%	-1.0%	-0.6%	-0.9%	-5.6%	-5.1%	-0.3%	0.0%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	-0.1%	-0.4%	0.0%	-0.3%	1.1%	0.0%	0.0%	0.2%	0.2%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	-0.1%	-0.5%	0.1%	0.1%	0.6%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	-0.1%	-0.5%	0.1%	0.1%	0.6%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	-0.1%	-0.5%	0.1%	0.1%	0.6%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	-0.4%	0.0%	-0.1%	0.1%	0.0%	0.0%	1.1%	0.2%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	-0.4%	0.0%	-0.1%	0.1%	0.0%	0.0%	1.1%	0.2%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	-0.4%	0.0%	-0.1%	0.1%	0.0%	0.0%	1.1%	0.2%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.1%	-0.4%	0.0%	0.1%	-0.1%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.1%	-0.4%	0.0%	0.1%	-0.1%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.1%	-0.4%	0.0%	0.1%	-0.1%	0.0%	0.0%	0.2%	0.1%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	-0.1%	0.1%	-0.1%	0.6%	0.0%	0.0%	-0.2%	-0.5%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	-0.1%	0.1%	-0.1%	0.6%	0.0%	0.0%	-0.2%	-0.5%	0.0%	0.0%

Chattahoochee River at Columbus Node
Wet Year Analysis - 2005

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	8,631	6,307	10,652	15,867	12,392	6,112	7,005	17,715	9,130	3,926	3,060	5,171	6,232
No Action	L60	8,540	6,268	10,707	15,892	12,370	5,996	6,816	17,506	8,916	3,825	3,028	5,081	6,091
Proposed	L18-G50-PT	8,541	6,269	10,705	15,890	12,375	6,001	6,808	17,514	8,911	3,826	3,028	5,087	6,091
1	L18-G42-PT	8,541	6,269	10,706	15,890	12,375	6,001	6,808	17,514	8,911	3,826	3,028	5,087	6,091
2	L18-G42-PL	8,541	6,269	10,705	15,890	12,375	6,001	6,808	17,514	8,911	3,826	3,028	5,087	6,091
3	L18-G42-WTP	8,541	6,269	10,705	15,890	12,375	6,001	6,808	17,514	8,911	3,826	3,028	5,087	6,091
4	L30-G30-PT	8,541	6,268	10,706	15,890	12,375	6,000	6,808	17,514	8,910	3,825	3,028	5,086	6,091
5	L30-G30-PL	8,541	6,268	10,706	15,890	12,375	6,000	6,808	17,514	8,910	3,825	3,028	5,086	6,091
6	L30-G30-WTP	8,541	6,268	10,706	15,890	12,375	6,000	6,808	17,514	8,910	3,825	3,028	5,086	6,091
7	L43-G17-PT	8,541	6,269	10,707	15,890	12,374	5,999	6,808	17,514	8,910	3,825	3,028	5,086	6,091
8	L43-G17-PL	8,541	6,269	10,706	15,890	12,375	5,999	6,808	17,514	8,910	3,825	3,028	5,086	6,091
9	L43-G17-WTP	8,541	6,269	10,706	15,890	12,375	5,999	6,808	17,514	8,910	3,825	3,028	5,086	6,091
10	L43-W17-PT	8,539	6,268	10,707	15,891	12,372	5,995	6,814	17,506	8,916	3,825	3,029	5,072	6,091
11	L43-W17-PL	8,539	6,269	10,707	15,891	12,372	5,995	6,814	17,506	8,916	3,825	3,029	5,072	6,091

Minimum Daily Flow (cfs)[1,2]														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-1.0%	-0.6%	0.5%	0.2%	-0.2%	-1.9%	-2.7%	-1.2%	-2.3%	-2.6%	-1.1%	-1.7%	-2.3%
Proposed	L18-G50-PT	-1.0%	-0.6%	0.5%	0.1%	-0.1%	-1.8%	-2.8%	-1.1%	-2.4%	-2.6%	-1.1%	-1.6%	-2.3%
1	L18-G42-PT	-1.0%	-0.6%	0.5%	0.1%	-0.1%	-1.8%	-2.8%	-1.1%	-2.4%	-2.6%	-1.1%	-1.6%	-2.3%
2	L18-G42-PL	-1.0%	-0.6%	0.5%	0.1%	-0.1%	-1.8%	-2.8%	-1.1%	-2.4%	-2.6%	-1.1%	-1.6%	-2.3%
3	L18-G42-WTP	-1.0%	-0.6%	0.5%	0.1%	-0.1%	-1.8%	-2.8%	-1.1%	-2.4%	-2.6%	-1.1%	-1.6%	-2.3%
4	L30-G30-PT	-1.0%	-0.6%	0.5%	0.1%	-0.1%	-1.8%	-2.8%	-1.1%	-2.4%	-2.6%	-1.1%	-1.6%	-2.3%
5	L30-G30-PL	-1.0%	-0.6%	0.5%	0.1%	-0.1%	-1.8%	-2.8%	-1.1%	-2.4%	-2.6%	-1.1%	-1.6%	-2.3%
6	L30-G30-WTP	-1.0%	-0.6%	0.5%	0.1%	-0.1%	-1.8%	-2.8%	-1.1%	-2.4%	-2.6%	-1.1%	-1.6%	-2.3%
7	L43-G17-PT	-1.0%	-0.6%	0.5%	0.1%	-0.1%	-1.8%	-2.8%	-1.1%	-2.4%	-2.6%	-1.1%	-1.6%	-2.3%
8	L43-G17-PL	-1.0%	-0.6%	0.5%	0.1%	-0.1%	-1.8%	-2.8%	-1.1%	-2.4%	-2.6%	-1.1%	-1.6%	-2.3%
9	L43-G17-WTP	-1.0%	-0.6%	0.5%	0.1%	-0.1%	-1.8%	-2.8%	-1.1%	-2.4%	-2.6%	-1.1%	-1.6%	-2.3%
10	L43-W17-PT	-1.1%	-0.6%	0.5%	0.2%	-0.2%	-1.9%	-2.7%	-1.2%	-2.3%	-2.6%	-1.0%	-1.9%	-2.3%
11	L43-W17-PL	-1.1%	-0.6%	0.5%	0.2%	-0.2%	-1.9%	-2.7%	-1.2%	-2.3%	-2.6%	-1.0%	-1.9%	-2.3%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%	0.0%

Chattahoochee River at Columbus Node
Drought Year Analysis - 1988

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	3,367	5,549	6,131	2,683	2,999	2,477	2,381	2,115	2,202	3,121	3,187	3,583	4,110
No Action	L60	3,304	5,190	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
Proposed	L18-G50-PT	3,307	5,226	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
1	L18-G42-PT	3,307	5,222	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
2	L18-G42-PL	3,307	5,222	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
3	L18-G42-WTP	3,307	5,222	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
4	L30-G30-PT	3,307	5,217	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
5	L30-G30-PL	3,306	5,215	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
6	L30-G30-WTP	3,306	5,215	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
7	L43-G17-PT	3,308	5,227	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
8	L43-G17-PL	3,307	5,222	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
9	L43-G17-WTP	3,307	5,222	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
10	L43-W17-PT	3,304	5,190	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750
11	L43-W17-PL	3,304	5,190	5,978	2,821	3,108	2,549	2,338	2,067	2,148	3,116	3,153	3,572	3,750

Minimum Daily Flow (cfs)[1,2]														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-1.9%	-6.5%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
Proposed	L18-G50-PT	-1.8%	-5.8%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
1	L18-G42-PT	-1.8%	-5.9%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
2	L18-G42-PL	-1.8%	-5.9%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
3	L18-G42-WTP	-1.8%	-5.9%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
4	L30-G30-PT	-1.8%	-6.0%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
5	L30-G30-PL	-1.8%	-6.0%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
6	L30-G30-WTP	-1.8%	-6.0%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
7	L43-G17-PT	-1.8%	-5.8%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
8	L43-G17-PL	-1.8%	-5.9%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
9	L43-G17-WTP	-1.8%	-5.9%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
10	L43-W17-PT	-1.9%	-6.5%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%
11	L43-W17-PL	-1.9%	-6.5%	-2.5%	5.1%	3.6%	2.9%	-1.8%	-2.3%	-2.4%	-0.2%	-1.1%	-0.3%	-8.8%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.1%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.1%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.1%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Chattahoochee River at Columbus Node
Drought Year Analysis - 2001

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	4,771	4,272	5,045	15,305	7,067	2,756	4,322	3,500	3,165	2,565	2,734	3,561	2,930
No Action	L60	4,672	4,174	4,531	15,338	7,085	2,769	4,372	3,414	3,065	2,536	2,477	3,298	2,948
Proposed	L18-G50-PT	4,681	4,154	4,661	15,338	7,085	2,769	4,372	3,414	3,065	2,536	2,477	3,300	2,948
1	L18-G42-PT	4,682	4,155	4,659	15,338	7,085	2,769	4,372	3,414	3,090	2,536	2,477	3,298	2,949
2	L18-G42-PL	4,680	4,155	4,660	15,338	7,085	2,769	4,372	3,414	3,065	2,536	2,477	3,298	2,950
3	L18-G42-WTP	4,680	4,155	4,660	15,338	7,085	2,769	4,372	3,414	3,065	2,536	2,477	3,298	2,950
4	L30-G30-PT	4,684	4,151	4,684	15,338	7,085	2,769	4,372	3,414	3,090	2,536	2,477	3,298	2,949
5	L30-G30-PL	4,684	4,151	4,684	15,338	7,085	2,769	4,372	3,414	3,089	2,536	2,477	3,298	2,949
6	L30-G30-WTP	4,684	4,151	4,684	15,338	7,085	2,769	4,372	3,414	3,089	2,536	2,477	3,298	2,949
7	L43-G17-PT	4,684	4,152	4,677	15,338	7,085	2,769	4,372	3,414	3,089	2,536	2,477	3,298	2,950
8	L43-G17-PL	4,684	4,151	4,682	15,338	7,085	2,769	4,372	3,414	3,089	2,536	2,477	3,298	2,950
9	L43-G17-WTP	4,684	4,151	4,682	15,338	7,085	2,769	4,372	3,414	3,089	2,536	2,477	3,298	2,950
10	L43-W17-PT	4,677	4,167	4,576	15,338	7,085	2,769	4,372	3,414	3,090	2,536	2,477	3,298	2,949
11	L43-W17-PL	4,677	4,167	4,578	15,338	7,085	2,769	4,372	3,414	3,090	2,536	2,477	3,298	2,949

Minimum Daily Flow (cfs)[1,2]														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-2.1%	-2.3%	-10.2%	0.2%	0.3%	0.5%	1.1%	-2.5%	-3.2%	-1.1%	-9.4%	-7.4%	0.6%
Proposed	L18-G50-PT	-1.9%	-2.8%	-7.6%	0.2%	0.3%	0.5%	1.1%	-2.5%	-3.2%	-1.1%	-9.4%	-7.3%	0.6%
1	L18-G42-PT	-1.8%	-2.8%	-7.6%	0.2%	0.3%	0.5%	1.1%	-2.5%	-2.4%	-1.1%	-9.4%	-7.4%	0.6%
2	L18-G42-PL	-1.9%	-2.8%	-7.6%	0.2%	0.3%	0.5%	1.1%	-2.5%	-3.2%	-1.1%	-9.4%	-7.4%	0.7%
3	L18-G42-WTP	-1.9%	-2.8%	-7.6%	0.2%	0.3%	0.5%	1.1%	-2.5%	-3.2%	-1.1%	-9.4%	-7.4%	0.7%
4	L30-G30-PT	-1.8%	-2.8%	-7.1%	0.2%	0.3%	0.5%	1.1%	-2.5%	-2.4%	-1.1%	-9.4%	-7.4%	0.6%
5	L30-G30-PL	-1.8%	-2.8%	-7.1%	0.2%	0.3%	0.5%	1.1%	-2.5%	-2.4%	-1.1%	-9.4%	-7.4%	0.6%
6	L30-G30-WTP	-1.8%	-2.8%	-7.1%	0.2%	0.3%	0.5%	1.1%	-2.5%	-2.4%	-1.1%	-9.4%	-7.4%	0.6%
7	L43-G17-PT	-1.8%	-2.8%	-7.3%	0.2%	0.3%	0.5%	1.1%	-2.5%	-2.4%	-1.1%	-9.4%	-7.4%	0.7%
8	L43-G17-PL	-1.8%	-2.8%	-7.2%	0.2%	0.3%	0.5%	1.1%	-2.5%	-2.4%	-1.1%	-9.4%	-7.4%	0.7%
9	L43-G17-WTP	-1.8%	-2.8%	-7.2%	0.2%	0.3%	0.5%	1.1%	-2.5%	-2.4%	-1.1%	-9.4%	-7.4%	0.7%
10	L43-W17-PT	-2.0%	-2.5%	-9.3%	0.2%	0.3%	0.5%	1.1%	-2.5%	-2.4%	-1.1%	-9.4%	-7.4%	0.6%
11	L43-W17-PL	-2.0%	-2.5%	-9.2%	0.2%	0.3%	0.5%	1.1%	-2.5%	-2.4%	-1.1%	-9.4%	-7.4%	0.6%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.2%	-0.5%	2.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.2%	-0.5%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.2%	-0.5%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.2%	-0.5%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.3%	-0.5%	3.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.3%	-0.5%	3.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.3%	-0.5%	3.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.2%	-0.5%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.3%	-0.5%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.3%	-0.5%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.1%	-0.2%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.1%	-0.2%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%	0.0%

Chattahoochee River at Columbus Node
Drought Year Analysis - 2008

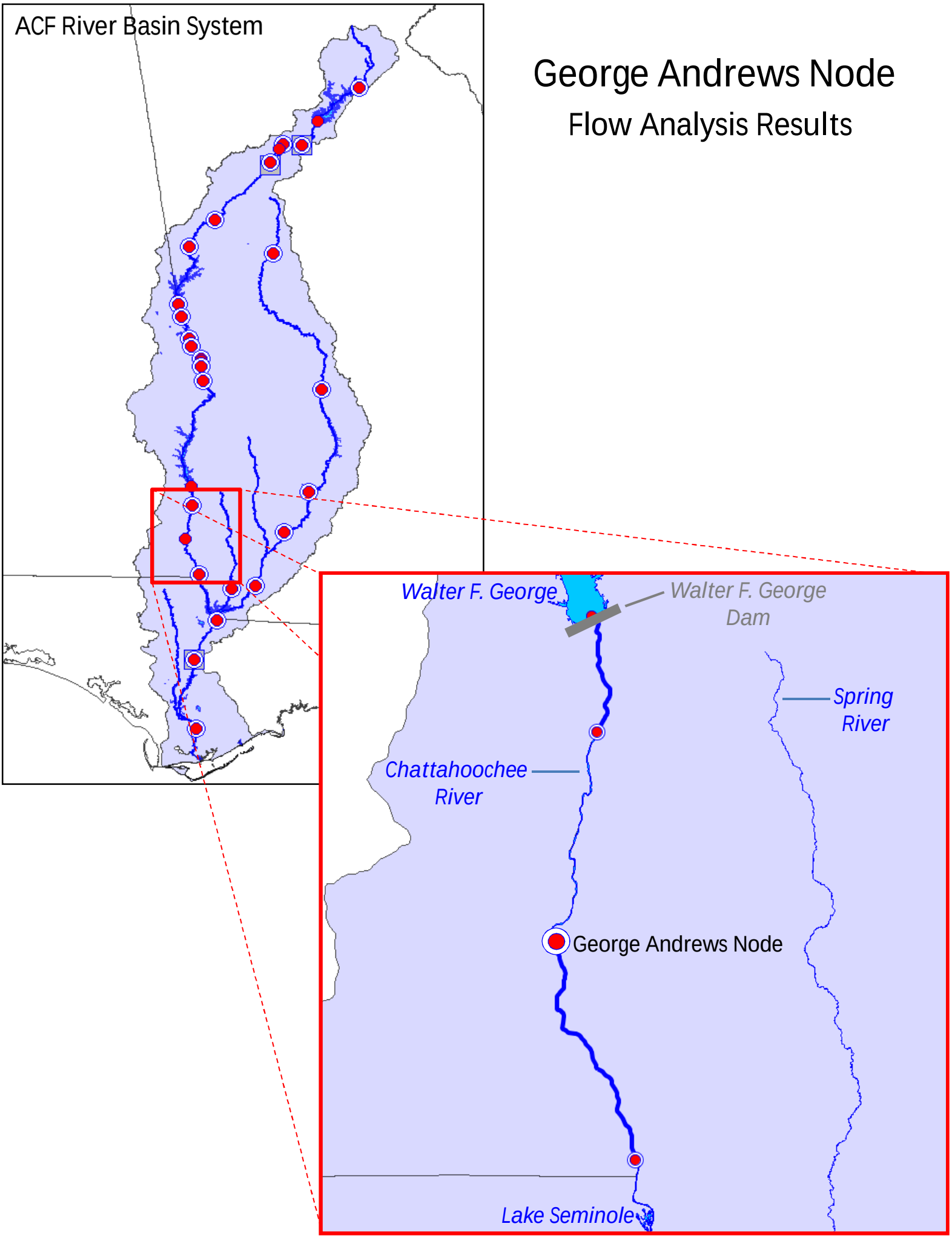
Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	3,184	3,932	4,699	4,838	3,780	2,642	2,016	2,119	2,955	2,202	2,494	2,414	4,141
No Action	L60	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
Proposed	L18-G50-PT	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,295	4,089
1	L18-G42-PT	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
2	L18-G42-PL	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
3	L18-G42-WTP	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
4	L30-G30-PT	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
5	L30-G30-PL	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
6	L30-G30-WTP	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
7	L43-G17-PT	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
8	L43-G17-PL	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
9	L43-G17-WTP	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
10	L43-W17-PT	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089
11	L43-W17-PL	3,215	3,851	4,769	4,845	3,797	2,795	1,974	2,072	2,905	2,504	2,708	2,294	4,089

Minimum Daily Flow (cfs)[1,2]														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
Proposed	L18-G50-PT	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.8%	8.6%	-4.9%	-1.3%
1	L18-G42-PT	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
2	L18-G42-PL	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
3	L18-G42-WTP	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
4	L30-G30-PT	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
5	L30-G30-PL	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
6	L30-G30-WTP	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
7	L43-G17-PT	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
8	L43-G17-PL	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
9	L43-G17-WTP	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
10	L43-W17-PT	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%
11	L43-W17-PL	1.0%	-2.1%	1.5%	0.2%	0.5%	5.8%	-2.1%	-2.2%	-1.7%	13.7%	8.6%	-4.9%	-1.3%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

George Andrews Node

Flow Analysis Results



Chattahoochee River at George Andrews Node
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	13,199	15,657	18,579	15,112	8,883	6,477	7,199	6,008	5,237	5,932	8,558	11,130
No Action	L60	13,149	15,599	18,481	15,061	8,690	6,463	7,167	5,964	5,188	5,895	8,395	11,025
Proposed	L18-G50-PT	13,145	15,590	18,477	15,049	8,691	6,461	7,168	5,966	5,188	5,906	8,399	11,028
1	L18-G42-PT	13,145	15,588	18,477	15,050	8,692	6,461	7,168	5,966	5,188	5,905	8,398	11,028
2	L18-G42-PL	13,145	15,589	18,476	15,051	8,692	6,461	7,168	5,966	5,188	5,905	8,398	11,028
3	L18-G42-WTP	13,145	15,589	18,476	15,051	8,692	6,461	7,168	5,966	5,188	5,905	8,398	11,028
4	L30-G30-PT	13,145	15,587	18,479	15,051	8,689	6,463	7,167	5,965	5,186	5,906	8,399	11,028
5	L30-G30-PL	13,145	15,589	18,478	15,054	8,687	6,464	7,167	5,964	5,186	5,906	8,400	11,027
6	L30-G30-WTP	13,145	15,588	18,478	15,054	8,688	6,464	7,167	5,964	5,187	5,906	8,400	11,027
7	L43-G17-PT	13,145	15,587	18,479	15,052	8,694	6,461	7,168	5,965	5,186	5,905	8,398	11,027
8	L43-G17-PL	13,145	15,587	18,481	15,051	8,692	6,461	7,167	5,965	5,186	5,905	8,399	11,027
9	L43-G17-WTP	13,145	15,587	18,481	15,051	8,692	6,461	7,167	5,965	5,186	5,905	8,399	11,027
10	L43-W17-PT	13,150	15,597	18,482	15,059	8,684	6,465	7,167	5,965	5,189	5,895	8,395	11,025
11	L43-W17-PL	13,149	15,598	18,482	15,062	8,686	6,462	7,165	5,964	5,188	5,894	8,397	11,025

Minimum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	227	2,774	3,181	413	181	143	121	116	130	102	157	93
No Action	L60	229	2,809	3,182	414	181	143	120	116	130	103	158	95
Proposed	L18-G50-PT	229	2,809	3,182	414	181	143	120	116	130	103	158	95
1	L18-G42-PT	229	2,809	3,182	414	181	143	120	116	130	103	158	95
2	L18-G42-PL	229	2,809	3,182	414	181	143	120	116	130	103	158	95
3	L18-G42-WTP	229	2,809	3,182	414	181	143	120	116	130	103	158	95
4	L30-G30-PT	229	2,809	3,182	414	181	143	120	116	130	103	158	95
5	L30-G30-PL	229	2,809	3,182	414	181	143	120	116	130	103	158	95
6	L30-G30-WTP	229	2,809	3,182	414	181	143	120	116	130	103	158	95
7	L43-G17-PT	229	2,809	3,182	414	181	143	120	116	130	103	158	95
8	L43-G17-PL	229	2,809	3,182	414	181	143	120	116	130	103	158	95
9	L43-G17-WTP	229	2,809	3,182	414	181	143	120	116	130	103	158	95
10	L43-W17-PT	229	2,809	3,182	414	181	143	120	116	130	103	158	95
11	L43-W17-PL	229	2,809	3,182	414	181	143	120	116	130	103	158	95

Maximum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	46,651	48,731	110,132	48,108	46,188	40,899	47,512	32,107	43,349	37,903	48,365	84,942
No Action	L60	46,652	48,733	110,133	48,109	46,187	40,755	47,510	30,472	43,241	37,732	48,366	83,375
Proposed	L18-G50-PT	46,652	48,733	110,133	48,109	46,187	40,604	47,510	30,322	43,239	37,729	48,366	83,453
1	L18-G42-PT	46,652	48,733	110,133	48,109	46,187	40,603	47,510	30,325	43,237	37,716	48,366	83,457
2	L18-G42-PL	46,652	48,733	110,133	48,109	46,187	40,603	47,510	30,329	43,238	37,715	48,366	83,456
3	L18-G42-WTP	46,652	48,733	110,133	48,109	46,187	40,603	47,510	30,329	43,238	37,715	48,366	83,456
4	L30-G30-PT	46,652	48,733	110,133	48,109	46,187	40,600	47,510	30,289	43,234	37,694	48,366	83,457
5	L30-G30-PL	46,652	48,733	110,133	48,109	46,187	40,600	47,510	30,290	43,234	37,693	48,366	83,456
6	L30-G30-WTP	46,652	48,733	110,133	48,109	46,187	40,600	47,510	30,290	43,234	37,693	48,366	83,456
7	L43-G17-PT	46,652	48,733	110,133	48,109	46,187	40,597	47,510	30,284	43,233	37,670	48,366	83,456
8	L43-G17-PL	46,652	48,733	110,133	48,109	46,187	40,597	47,510	30,473	43,233	37,669	48,366	83,455
9	L43-G17-WTP	46,652	48,733	110,133	48,109	46,187	40,597	47,510	30,473	43,233	37,669	48,366	83,455
10	L43-W17-PT	46,652	48,733	110,133	48,109	46,187	40,739	47,510	30,470	43,243	37,737	48,366	83,368
11	L43-W17-PL	46,652	48,733	110,133	48,109	46,187	40,739	47,510	30,466	43,243	37,682	48,366	83,369

Chattahoochee River at George Andrews Node
Average Year Analysis - 1997

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	11,710	15,166	20,950	17,065	11,622	9,010	9,117	7,024	4,573	3,838	7,612	13,268	21,880
No Action	L60	11,670	15,284	20,602	17,135	11,635	9,019	9,012	7,032	4,578	3,786	7,340	13,274	21,918
Proposed	L18-G50-PT	11,669	15,283	20,460	17,199	11,626	8,994	9,084	7,032	4,578	3,786	7,354	13,274	21,918
1	L18-G42-PT	11,669	15,283	20,460	17,203	11,628	9,027	9,047	7,032	4,578	3,786	7,355	13,274	21,918
2	L18-G42-PL	11,669	15,283	20,460	17,203	11,628	9,026	9,047	7,032	4,578	3,786	7,355	13,274	21,918
3	L18-G42-WTP	11,669	15,283	20,460	17,203	11,628	9,026	9,047	7,032	4,578	3,786	7,355	13,274	21,918
4	L30-G30-PT	11,669	15,283	20,461	17,217	11,635	9,005	9,020	7,032	4,578	3,785	7,382	13,274	21,918
5	L30-G30-PL	11,669	15,283	20,461	17,216	11,635	9,005	9,020	7,032	4,578	3,785	7,382	13,274	21,918
6	L30-G30-WTP	11,669	15,283	20,461	17,216	11,635	9,005	9,020	7,032	4,578	3,785	7,382	13,274	21,918
7	L43-G17-PT	11,668	15,283	20,461	17,223	11,635	9,029	9,001	7,032	4,578	3,786	7,354	13,274	21,918
8	L43-G17-PL	11,667	15,283	20,461	17,223	11,635	9,025	9,003	7,032	4,578	3,786	7,354	13,274	21,918
9	L43-G17-WTP	11,667	15,283	20,461	17,223	11,635	9,025	9,003	7,032	4,578	3,786	7,354	13,274	21,918
10	L43-W17-PT	11,670	15,284	20,461	17,269	11,628	9,012	9,051	7,033	4,578	3,786	7,313	13,274	21,918
11	L43-W17-PL	11,670	15,284	20,461	17,269	11,628	9,013	9,051	7,033	4,578	3,786	7,313	13,274	21,918

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.3%	0.8%	-1.7%	0.4%	0.1%	0.1%	-1.2%	0.1%	0.1%	-1.3%	-3.6%	0.0%	0.2%
Proposed	L18-G50-PT	-0.4%	0.8%	-2.3%	0.8%	0.0%	-0.2%	-0.4%	0.1%	0.1%	-1.3%	-3.4%	0.0%	0.2%
1	L18-G42-PT	-0.3%	0.8%	-2.3%	0.8%	0.1%	0.2%	-0.8%	0.1%	0.1%	-1.3%	-3.4%	0.0%	0.2%
2	L18-G42-PL	-0.3%	0.8%	-2.3%	0.8%	0.1%	0.2%	-0.8%	0.1%	0.1%	-1.3%	-3.4%	0.0%	0.2%
3	L18-G42-WTP	-0.3%	0.8%	-2.3%	0.8%	0.1%	0.2%	-0.8%	0.1%	0.1%	-1.3%	-3.4%	0.0%	0.2%
4	L30-G30-PT	-0.3%	0.8%	-2.3%	0.9%	0.1%	-0.1%	-1.1%	0.1%	0.1%	-1.4%	-3.0%	0.0%	0.2%
5	L30-G30-PL	-0.3%	0.8%	-2.3%	0.9%	0.1%	-0.1%	-1.1%	0.1%	0.1%	-1.4%	-3.0%	0.0%	0.2%
6	L30-G30-WTP	-0.3%	0.8%	-2.3%	0.9%	0.1%	-0.1%	-1.1%	0.1%	0.1%	-1.4%	-3.0%	0.0%	0.2%
7	L43-G17-PT	-0.4%	0.8%	-2.3%	0.9%	0.1%	0.2%	-1.3%	0.1%	0.1%	-1.3%	-3.4%	0.0%	0.2%
8	L43-G17-PL	-0.4%	0.8%	-2.3%	0.9%	0.1%	0.2%	-1.3%	0.1%	0.1%	-1.3%	-3.4%	0.0%	0.2%
9	L43-G17-WTP	-0.4%	0.8%	-2.3%	0.9%	0.1%	0.2%	-1.3%	0.1%	0.1%	-1.3%	-3.4%	0.0%	0.2%
10	L43-W17-PT	-0.3%	0.8%	-2.3%	1.2%	0.1%	0.0%	-0.7%	0.1%	0.1%	-1.3%	-3.9%	0.0%	0.2%
11	L43-W17-PL	-0.3%	0.8%	-2.3%	1.2%	0.1%	0.0%	-0.7%	0.1%	0.1%	-1.3%	-3.9%	0.0%	0.2%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	-0.7%	0.4%	-0.1%	-0.3%	0.8%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	-0.7%	0.4%	-0.1%	0.1%	0.4%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	-0.7%	0.4%	-0.1%	0.1%	0.4%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	-0.7%	0.4%	-0.1%	0.1%	0.4%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	-0.7%	0.5%	0.0%	-0.2%	0.1%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	-0.7%	0.5%	0.0%	-0.2%	0.1%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	-0.7%	0.5%	0.0%	-0.2%	0.1%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	-0.7%	0.5%	0.0%	0.1%	-0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	-0.7%	0.5%	0.0%	0.1%	-0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	-0.7%	0.5%	0.0%	0.1%	-0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	-0.7%	0.8%	-0.1%	-0.1%	0.4%	0.0%	0.0%	0.0%	-0.4%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	-0.7%	0.8%	-0.1%	-0.1%	0.4%	0.0%	0.0%	0.0%	-0.4%	0.0%	0.0%

Chattahoochee River at George Andrews Node
Wet Year Analysis - 2005

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	13,027	9,291	15,254	20,360	30,050	7,245	10,699	23,678	14,209	4,560	5,382	6,891	8,918
No Action	L60	12,977	9,341	15,314	20,407	30,067	7,162	10,539	23,514	14,036	4,489	5,393	6,835	8,854
Proposed	L18-G50-PT	12,978	9,342	15,311	20,410	30,067	7,166	10,532	23,525	14,027	4,491	5,393	6,841	8,854
1	L18-G42-PT	12,978	9,342	15,311	20,410	30,067	7,166	10,531	23,525	14,027	4,490	5,393	6,841	8,854
2	L18-G42-PL	12,978	9,341	15,311	20,410	30,067	7,166	10,531	23,525	14,027	4,490	5,393	6,841	8,854
3	L18-G42-WTP	12,978	9,341	15,311	20,410	30,067	7,166	10,531	23,525	14,027	4,490	5,393	6,841	8,854
4	L30-G30-PT	12,977	9,341	15,312	20,410	30,067	7,165	10,531	23,525	14,027	4,490	5,393	6,840	8,854
5	L30-G30-PL	12,977	9,341	15,312	20,410	30,067	7,166	10,531	23,525	14,027	4,490	5,393	6,840	8,854
6	L30-G30-WTP	12,977	9,341	15,312	20,410	30,067	7,166	10,531	23,525	14,027	4,490	5,393	6,840	8,854
7	L43-G17-PT	12,977	9,341	15,312	20,410	30,067	7,165	10,531	23,525	14,027	4,489	5,393	6,840	8,854
8	L43-G17-PL	12,977	9,341	15,312	20,410	30,067	7,165	10,531	23,525	14,027	4,489	5,393	6,840	8,854
9	L43-G17-WTP	12,977	9,341	15,312	20,410	30,067	7,165	10,531	23,525	14,027	4,489	5,393	6,840	8,854
10	L43-W17-PT	12,976	9,341	15,313	20,408	30,067	7,161	10,537	23,515	14,036	4,489	5,394	6,826	8,854
11	L43-W17-PL	12,976	9,341	15,313	20,408	30,067	7,161	10,537	23,515	14,036	4,489	5,394	6,825	8,854

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.2%	-1.5%	-0.7%	-1.2%	-1.5%	0.2%	-0.8%	-0.7%
Proposed	L18-G50-PT	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.1%	-1.6%	-0.6%	-1.3%	-1.5%	0.2%	-0.7%	-0.7%
1	L18-G42-PT	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.1%	-1.6%	-0.6%	-1.3%	-1.5%	0.2%	-0.7%	-0.7%
2	L18-G42-PL	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.1%	-1.6%	-0.6%	-1.3%	-1.5%	0.2%	-0.7%	-0.7%
3	L18-G42-WTP	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.1%	-1.6%	-0.6%	-1.3%	-1.5%	0.2%	-0.7%	-0.7%
4	L30-G30-PT	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.1%	-1.6%	-0.6%	-1.3%	-1.5%	0.2%	-0.7%	-0.7%
5	L30-G30-PL	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.1%	-1.6%	-0.6%	-1.3%	-1.5%	0.2%	-0.7%	-0.7%
6	L30-G30-WTP	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.1%	-1.6%	-0.6%	-1.3%	-1.5%	0.2%	-0.7%	-0.7%
7	L43-G17-PT	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.1%	-1.6%	-0.6%	-1.3%	-1.5%	0.2%	-0.7%	-0.7%
8	L43-G17-PL	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.1%	-1.6%	-0.6%	-1.3%	-1.5%	0.2%	-0.7%	-0.7%
9	L43-G17-WTP	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.1%	-1.6%	-0.6%	-1.3%	-1.5%	0.2%	-0.7%	-0.7%
10	L43-W17-PT	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.2%	-1.5%	-0.7%	-1.2%	-1.5%	0.2%	-0.9%	-0.7%
11	L43-W17-PL	-0.4%	0.5%	0.4%	0.2%	0.1%	-1.2%	-1.5%	-0.7%	-1.2%	-1.5%	0.2%	-0.9%	-0.7%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%	0.0%	0.0%	0.1%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%

Chattahoochee River at George Andrews Node
Drought Year Analysis - 1988

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	5,067	9,053	8,996	6,743	5,910	2,949	2,722	2,959	3,066	3,929	3,656	5,551	5,458
No Action	L60	5,043	8,816	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
Proposed	L18-G50-PT	5,046	8,852	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
1	L18-G42-PT	5,045	8,848	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
2	L18-G42-PL	5,045	8,847	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
3	L18-G42-WTP	5,045	8,847	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
4	L30-G30-PT	5,045	8,843	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
5	L30-G30-PL	5,045	8,840	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
6	L30-G30-WTP	5,045	8,841	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
7	L43-G17-PT	5,046	8,853	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
8	L43-G17-PL	5,045	8,847	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
9	L43-G17-WTP	5,045	8,847	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
10	L43-W17-PT	5,043	8,816	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143
11	L43-W17-PL	5,043	8,815	8,815	6,919	6,041	2,941	2,823	2,958	3,047	3,387	4,218	5,572	5,143

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.5%	-2.6%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
Proposed	L18-G50-PT	-0.4%	-2.2%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
1	L18-G42-PT	-0.4%	-2.3%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
2	L18-G42-PL	-0.4%	-2.3%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
3	L18-G42-WTP	-0.4%	-2.3%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
4	L30-G30-PT	-0.4%	-2.3%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
5	L30-G30-PL	-0.4%	-2.3%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
6	L30-G30-WTP	-0.4%	-2.3%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
7	L43-G17-PT	-0.4%	-2.2%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
8	L43-G17-PL	-0.4%	-2.3%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
9	L43-G17-WTP	-0.4%	-2.3%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
10	L43-W17-PT	-0.5%	-2.6%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%
11	L43-W17-PL	-0.5%	-2.6%	-2.0%	2.6%	2.2%	-0.3%	3.7%	0.0%	-0.6%	-13.8%	15.4%	0.4%	-5.8%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Chattahoochee River at George Andrews Node
Drought Year Analysis - 2001

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	7,710	6,662	6,648	31,501	12,894	3,333	7,712	4,103	4,013	3,452	4,091	4,335	3,598
No Action	L60	7,649	6,609	6,193	31,563	12,905	3,387	7,811	4,059	4,028	3,372	3,946	4,093	3,605
Proposed	L18-G50-PT	7,658	6,591	6,316	31,568	12,905	3,387	7,811	4,059	4,028	3,372	3,946	4,093	3,606
1	L18-G42-PT	7,660	6,591	6,314	31,568	12,905	3,387	7,811	4,059	4,028	3,399	3,946	4,093	3,606
2	L18-G42-PL	7,658	6,591	6,315	31,568	12,905	3,387	7,811	4,059	4,028	3,372	3,946	4,093	3,606
3	L18-G42-WTP	7,658	6,591	6,315	31,568	12,905	3,387	7,811	4,059	4,028	3,372	3,946	4,093	3,606
4	L30-G30-PT	7,661	6,587	6,339	31,568	12,905	3,387	7,811	4,059	4,028	3,399	3,946	4,093	3,606
5	L30-G30-PL	7,661	6,588	6,340	31,568	12,905	3,387	7,811	4,059	4,028	3,399	3,946	4,093	3,606
6	L30-G30-WTP	7,661	6,588	6,340	31,568	12,905	3,387	7,811	4,059	4,028	3,399	3,946	4,093	3,606
7	L43-G17-PT	7,661	6,589	6,332	31,568	12,905	3,387	7,811	4,059	4,028	3,399	3,946	4,093	3,606
8	L43-G17-PL	7,661	6,588	6,337	31,568	12,905	3,387	7,811	4,059	4,028	3,399	3,946	4,093	3,606
9	L43-G17-WTP	7,661	6,588	6,337	31,568	12,905	3,387	7,811	4,059	4,028	3,399	3,946	4,093	3,606
10	L43-W17-PT	7,654	6,603	6,310	31,498	12,905	3,387	7,812	4,059	4,028	3,399	3,946	4,093	3,606
11	L43-W17-PL	7,655	6,603	6,312	31,498	12,905	3,387	7,812	4,059	4,028	3,399	3,946	4,093	3,606

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.8%	-0.8%	-6.8%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-2.3%	-3.5%	-5.6%	0.2%
Proposed	L18-G50-PT	-0.7%	-1.1%	-5.0%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-2.3%	-3.5%	-5.6%	0.2%
1	L18-G42-PT	-0.7%	-1.1%	-5.0%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-1.6%	-3.5%	-5.6%	0.2%
2	L18-G42-PL	-0.7%	-1.1%	-5.0%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-2.3%	-3.5%	-5.6%	0.2%
3	L18-G42-WTP	-0.7%	-1.1%	-5.0%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-2.3%	-3.5%	-5.6%	0.2%
4	L30-G30-PT	-0.6%	-1.1%	-4.6%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-1.6%	-3.5%	-5.6%	0.2%
5	L30-G30-PL	-0.6%	-1.1%	-4.6%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-1.6%	-3.5%	-5.6%	0.2%
6	L30-G30-WTP	-0.6%	-1.1%	-4.6%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-1.6%	-3.5%	-5.6%	0.2%
7	L43-G17-PT	-0.6%	-1.1%	-4.8%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-1.6%	-3.5%	-5.6%	0.2%
8	L43-G17-PL	-0.6%	-1.1%	-4.7%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-1.6%	-3.5%	-5.6%	0.2%
9	L43-G17-WTP	-0.6%	-1.1%	-4.7%	0.2%	0.1%	1.6%	1.3%	-1.1%	0.4%	-1.6%	-3.5%	-5.6%	0.2%
10	L43-W17-PT	-0.7%	-0.9%	-5.1%	0.0%	0.1%	1.6%	1.3%	-1.1%	0.4%	-1.6%	-3.5%	-5.6%	0.2%
11	L43-W17-PL	-0.7%	-0.9%	-5.0%	0.0%	0.1%	1.6%	1.3%	-1.1%	0.4%	-1.6%	-3.5%	-5.6%	0.2%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	-0.3%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.1%	-0.3%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	-0.3%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	-0.3%	2.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.2%	-0.3%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.2%	-0.3%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.2%	-0.3%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.2%	-0.3%	2.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.2%	-0.3%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.2%	-0.3%	2.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.1%	-0.1%	1.9%	-0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.1%	-0.1%	1.9%	-0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	0.0%	0.0%	0.0%

Chattahoochee River at George Andrews Node
Drought Year Analysis - 2008

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	5,532	6,687	10,305	8,592	7,241	2,167	1,818	2,258	4,850	3,240	3,468	5,288	10,635
No Action	L60	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
Proposed	L18-G50-PT	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
1	L18-G42-PT	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
2	L18-G42-PL	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
3	L18-G42-WTP	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
4	L30-G30-PT	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
5	L30-G30-PL	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
6	L30-G30-WTP	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
7	L43-G17-PT	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
8	L43-G17-PL	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
9	L43-G17-WTP	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
10	L43-W17-PT	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624
11	L43-W17-PL	5,601	6,662	10,418	8,636	7,281	2,316	1,842	2,250	4,838	3,272	4,018	5,207	10,624

Percent Change in Average Daily Flow from Baseline Conditions

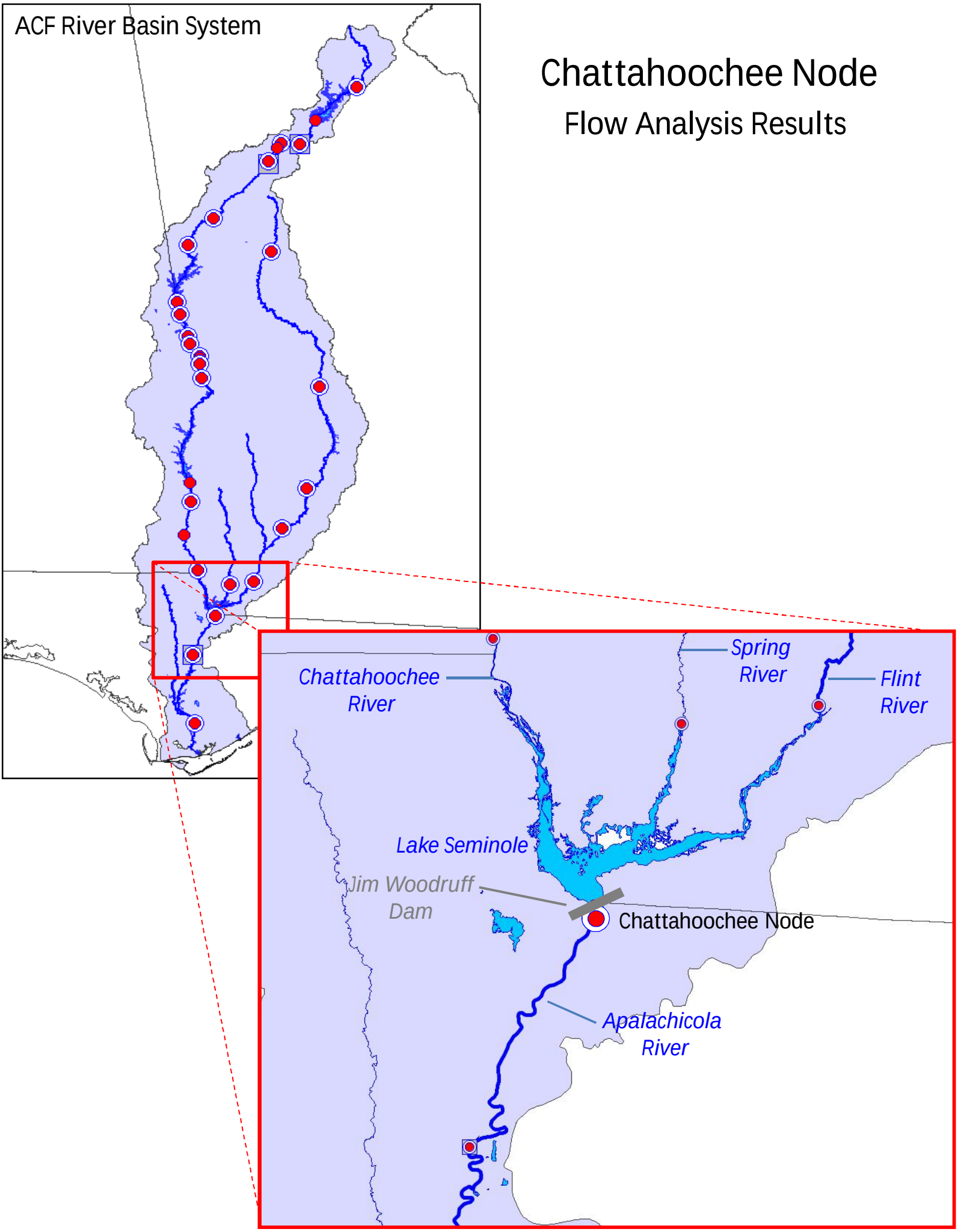
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
Proposed	L18-G50-PT	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
1	L18-G42-PT	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
2	L18-G42-PL	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
3	L18-G42-WTP	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
4	L30-G30-PT	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
5	L30-G30-PL	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
6	L30-G30-WTP	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
7	L43-G17-PT	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
8	L43-G17-PL	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
9	L43-G17-WTP	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
10	L43-W17-PT	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%
11	L43-W17-PL	1.2%	-0.4%	1.1%	0.5%	0.5%	6.9%	1.3%	-0.4%	-0.2%	1.0%	15.9%	-1.5%	-0.1%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Chattahoochee Node

Flow Analysis Results



Apalachicola River at Chattahoochee Node
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	26,841	32,525	38,393	33,118	20,042	14,614	15,715	13,113	11,022	12,066	14,612	20,993
No Action	L60	26,756	32,439	38,289	33,000	19,866	14,419	15,404	13,009	10,859	11,971	14,413	20,935
Proposed	L18-G50-PT	26,752	32,430	38,285	32,988	19,867	14,417	15,405	13,011	10,859	11,980	14,418	20,938
1	L18-G42-PT	26,752	32,429	38,284	32,990	19,867	14,418	15,405	13,011	10,859	11,980	14,417	20,938
2	L18-G42-PL	26,751	32,430	38,285	32,990	19,867	14,418	15,405	13,011	10,859	11,980	14,417	20,938
3	L18-G42-WTP	26,751	32,430	38,285	32,990	19,867	14,418	15,405	13,011	10,859	11,980	14,417	20,938
4	L30-G30-PT	26,752	32,429	38,287	32,991	19,862	14,421	15,405	13,010	10,858	11,980	14,417	20,939
5	L30-G30-PL	26,752	32,429	38,286	32,992	19,861	14,422	15,404	13,010	10,857	11,981	14,418	20,937
6	L30-G30-WTP	26,752	32,429	38,286	32,992	19,862	14,422	15,404	13,010	10,857	11,981	14,418	20,937
7	L43-G17-PT	26,752	32,429	38,287	32,990	19,869	14,418	15,405	13,010	10,857	11,980	14,415	20,938
8	L43-G17-PL	26,752	32,429	38,289	32,988	19,868	14,418	15,405	13,010	10,857	11,980	14,416	20,938
9	L43-G17-WTP	26,752	32,429	38,289	32,988	19,868	14,418	15,405	13,010	10,857	11,980	14,416	20,938
10	L43-W17-PT	26,756	32,437	38,291	32,996	19,860	14,423	15,405	13,009	10,860	11,970	14,413	20,936
11	L43-W17-PL	26,756	32,437	38,291	32,999	19,863	14,419	15,403	13,008	10,859	11,969	14,414	20,937

Minimum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	5,808	7,810	11,393	7,654	5,050	5,015	5,007	5,050	5,050	5,033	5,011	5,050
No Action	L60	5,661	7,807	11,428	7,100	5,050	5,001	5,049	5,007	5,050	4,550	4,550	5,050
Proposed	L18-G50-PT	5,841	7,807	11,436	7,099	5,050	5,030	5,049	5,042	5,050	5,049	4,550	4,550
1	L18-G42-PT	5,841	7,807	11,464	7,099	5,050	5,028	5,049	5,039	5,050	5,049	4,550	4,550
2	L18-G42-PL	5,841	7,807	11,464	7,099	5,050	5,028	5,049	5,039	5,050	5,049	4,550	4,550
3	L18-G42-WTP	5,841	7,807	11,464	7,099	5,050	5,028	5,049	5,039	5,050	5,049	4,550	4,550
4	L30-G30-PT	5,841	7,807	11,464	7,099	5,050	5,026	5,049	5,034	5,050	5,049	4,550	4,550
5	L30-G30-PL	5,841	7,807	11,442	7,099	5,050	5,026	5,049	5,034	5,050	5,049	4,550	4,550
6	L30-G30-WTP	5,841	7,807	11,442	7,099	5,050	5,026	5,049	5,034	5,050	5,049	4,550	4,550
7	L43-G17-PT	5,841	7,807	11,444	7,099	5,050	5,023	5,049	5,030	5,050	5,049	4,550	4,550
8	L43-G17-PL	5,841	7,807	11,444	7,099	5,050	5,023	5,049	5,030	5,050	5,049	4,550	4,550
9	L43-G17-WTP	5,841	7,807	11,444	7,099	5,050	5,023	5,049	5,030	5,050	5,049	4,550	4,550
10	L43-W17-PT	5,841	7,807	11,429	7,099	5,050	5,007	5,049	5,013	5,050	4,550	4,550	5,050
11	L43-W17-PL	5,841	7,807	11,429	7,099	5,050	5,003	5,049	5,008	5,050	4,550	4,550	5,050

Maximum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	110,764	110,721	188,321	131,464	97,877	67,101	184,338	55,571	50,608	52,014	72,079	148,602
No Action	L60	110,717	110,673	188,828	131,406	97,911	66,815	184,060	55,366	50,384	51,915	72,045	147,346
Proposed	L18-G50-PT	110,717	110,673	188,793	131,406	97,911	66,778	184,060	55,334	50,382	51,915	72,045	147,497
1	L18-G42-PT	110,717	110,673	188,797	131,406	97,911	66,787	184,060	55,333	50,380	51,915	72,045	147,515
2	L18-G42-PL	110,717	110,673	188,796	131,406	97,911	66,786	184,060	55,333	50,381	51,915	72,045	147,512
3	L18-G42-WTP	110,717	110,673	188,796	131,406	97,911	66,786	184,060	55,333	50,381	51,915	72,045	147,512
4	L30-G30-PT	110,717	110,673	188,802	131,406	97,911	66,792	184,060	55,331	50,377	51,915	72,045	147,513
5	L30-G30-PL	110,717	110,673	188,800	131,406	97,911	66,791	184,060	55,331	50,377	51,915	72,045	147,515
6	L30-G30-WTP	110,717	110,673	188,800	131,406	97,911	66,791	184,060	55,331	50,377	51,915	72,045	147,515
7	L43-G17-PT	110,717	110,673	188,799	131,406	97,911	66,795	184,060	55,330	50,375	51,915	72,045	147,512
8	L43-G17-PL	110,717	110,673	188,803	131,406	97,911	66,795	184,060	55,330	50,375	51,915	72,045	147,509
9	L43-G17-WTP	110,717	110,673	188,803	131,406	97,911	66,795	184,060	55,330	50,375	51,915	72,045	147,509
10	L43-W17-PT	110,717	110,673	188,828	131,406	97,911	66,805	184,060	55,355	50,386	51,915	72,045	147,325
11	L43-W17-PL	110,717	110,673	188,827	131,406	97,911	66,804	184,060	55,355	50,386	51,915	72,045	147,332

Apalachicola River at Chattahoochee Node
Average Year Analysis - 1997

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	23,378	29,054	38,700	32,483	19,667	21,428	17,684	14,983	12,239	7,685	12,899	23,480	50,911
No Action	L60	23,288	29,144	38,324	32,544	19,624	21,448	17,396	14,712	12,186	7,589	12,504	23,445	51,181
Proposed	L18-G50-PT	23,287	29,144	38,188	32,598	19,620	21,408	17,485	14,712	12,186	7,585	12,522	23,445	51,182
1	L18-G42-PT	23,287	29,144	38,188	32,599	19,625	21,448	17,439	14,712	12,186	7,585	12,522	23,445	51,182
2	L18-G42-PL	23,287	29,144	38,188	32,599	19,625	21,448	17,439	14,712	12,186	7,585	12,522	23,445	51,182
3	L18-G42-WTP	23,287	29,144	38,188	32,599	19,625	21,448	17,439	14,712	12,186	7,585	12,522	23,445	51,182
4	L30-G30-PT	23,287	29,143	38,188	32,621	19,623	21,425	17,414	14,711	12,186	7,585	12,549	23,445	51,181
5	L30-G30-PL	23,287	29,143	38,188	32,621	19,623	21,425	17,414	14,711	12,186	7,585	12,549	23,445	51,182
6	L30-G30-WTP	23,287	29,143	38,188	32,621	19,623	21,425	17,414	14,711	12,186	7,585	12,549	23,445	51,182
7	L43-G17-PT	23,285	29,144	38,188	32,627	19,623	21,457	17,387	14,711	12,186	7,585	12,522	23,445	51,181
8	L43-G17-PL	23,285	29,144	38,188	32,627	19,623	21,453	17,389	14,711	12,186	7,585	12,522	23,445	51,181
9	L43-G17-WTP	23,285	29,144	38,188	32,627	19,623	21,453	17,389	14,711	12,186	7,585	12,522	23,445	51,181
10	L43-W17-PT	23,288	29,144	38,188	32,665	19,625	21,433	17,444	14,712	12,186	7,586	12,480	23,445	51,181
11	L43-W17-PL	23,288	29,144	38,188	32,665	19,625	21,434	17,444	14,712	12,186	7,588	12,478	23,445	51,181

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.4%	0.3%	-1.0%	0.2%	-0.2%	0.1%	-1.6%	-1.8%	-0.4%	-1.3%	-3.1%	-0.2%	0.5%
Proposed	L18-G50-PT	-0.4%	0.3%	-1.3%	0.4%	-0.2%	-0.1%	-1.1%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
1	L18-G42-PT	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.4%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
2	L18-G42-PL	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.4%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
3	L18-G42-WTP	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.4%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
4	L30-G30-PT	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.0%	-1.5%	-1.8%	-0.4%	-1.3%	-2.7%	-0.2%	0.5%
5	L30-G30-PL	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.0%	-1.5%	-1.8%	-0.4%	-1.3%	-2.7%	-0.2%	0.5%
6	L30-G30-WTP	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.0%	-1.5%	-1.8%	-0.4%	-1.3%	-2.7%	-0.2%	0.5%
7	L43-G17-PT	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.7%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
8	L43-G17-PL	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.7%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
9	L43-G17-WTP	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.7%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
10	L43-W17-PT	-0.4%	0.3%	-1.3%	0.6%	-0.2%	0.0%	-1.4%	-1.8%	-0.4%	-1.3%	-3.3%	-0.2%	0.5%
11	L43-W17-PL	-0.4%	0.3%	-1.3%	0.6%	-0.2%	0.0%	-1.4%	-1.8%	-0.4%	-1.3%	-3.3%	-0.2%	0.5%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	-0.4%	0.2%	0.0%	-0.2%	0.5%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	-0.4%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	-0.4%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	-0.4%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	-0.4%	0.2%	0.0%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.4%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	-0.4%	0.2%	0.0%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.4%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	-0.4%	0.2%	0.0%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.4%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	-0.4%	0.3%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	-0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	-0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	-0.4%	0.4%	0.0%	-0.1%	0.3%	0.0%	0.0%	0.0%	-0.2%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	-0.4%	0.4%	0.0%	-0.1%	0.3%	0.0%	0.0%	0.0%	-0.2%	0.0%	0.0%

Apalachicola River at Chattahoochee Node
Wet Year Analysis - 2005

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	28,982	19,692	26,038	36,953	76,717	21,403	24,266	56,043	30,713	13,672	11,965	12,245	18,149
No Action	L60	28,864	19,709	26,062	36,995	76,675	21,362	23,890	55,602	30,471	13,479	11,905	12,150	18,144
Proposed	L18-G50-PT	28,865	19,710	26,059	36,998	76,676	21,366	23,884	55,607	30,468	13,481	11,905	12,156	18,144
1	L18-G42-PT	28,865	19,710	26,059	36,998	76,675	21,366	23,883	55,607	30,468	13,480	11,905	12,155	18,144
2	L18-G42-PL	28,865	19,710	26,059	36,998	76,675	21,366	23,883	55,607	30,468	13,480	11,905	12,155	18,144
3	L18-G42-WTP	28,865	19,710	26,059	36,998	76,675	21,366	23,883	55,607	30,468	13,480	11,905	12,155	18,144
4	L30-G30-PT	28,865	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,480	11,905	12,155	18,144
5	L30-G30-PL	28,865	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,480	11,905	12,155	18,144
6	L30-G30-WTP	28,865	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,480	11,905	12,155	18,144
7	L43-G17-PT	28,864	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,479	11,905	12,155	18,144
8	L43-G17-PL	28,864	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,479	11,905	12,155	18,144
9	L43-G17-WTP	28,864	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,479	11,905	12,155	18,144
10	L43-W17-PT	28,863	19,710	26,061	36,996	76,675	21,361	23,888	55,602	30,471	13,479	11,905	12,141	18,144
11	L43-W17-PL	28,863	19,710	26,061	36,996	76,675	21,361	23,888	55,602	30,471	13,479	11,905	12,140	18,144

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.5%	-0.8%	-0.8%	-1.4%	-0.5%	-0.8%	0.0%
Proposed	L18-G50-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
1	L18-G42-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
2	L18-G42-PL	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
3	L18-G42-WTP	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
4	L30-G30-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
5	L30-G30-PL	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
6	L30-G30-WTP	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
7	L43-G17-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
8	L43-G17-PL	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
9	L43-G17-WTP	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
10	L43-W17-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.9%	0.0%
11	L43-W17-PL	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.9%	0.0%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%

Apalachicola River at Chattahoochee Node
Drought Year Analysis - 1988

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	13,373	19,505	23,404	24,785	18,668	11,959	7,512	8,361	6,076	10,234	9,144	10,785	10,486
No Action	L60	13,286	19,251	23,177	24,954	18,742	11,584	7,847	8,067	6,024	9,383	9,846	10,778	10,216
Proposed	L18-G50-PT	13,289	19,287	23,177	24,954	18,742	11,586	7,845	8,067	6,024	9,383	9,846	10,778	10,216
1	L18-G42-PT	13,289	19,283	23,177	24,954	18,742	11,586	7,845	8,067	6,024	9,383	9,846	10,778	10,216
2	L18-G42-PL	13,289	19,283	23,177	24,954	18,742	11,586	7,845	8,067	6,024	9,383	9,846	10,778	10,216
3	L18-G42-WTP	13,289	19,283	23,177	24,954	18,742	11,586	7,845	8,067	6,024	9,383	9,846	10,778	10,216
4	L30-G30-PT	13,289	19,278	23,177	24,954	18,742	11,584	7,847	8,067	6,024	9,383	9,846	10,778	10,216
5	L30-G30-PL	13,289	19,276	23,177	24,954	18,742	11,584	7,847	8,067	6,024	9,383	9,846	10,778	10,216
6	L30-G30-WTP	13,289	19,276	23,177	24,954	18,742	11,584	7,847	8,067	6,024	9,383	9,846	10,778	10,216
7	L43-G17-PT	13,290	19,289	23,177	24,954	18,742	11,584	7,847	8,067	6,024	9,383	9,846	10,778	10,216
8	L43-G17-PL	13,289	19,283	23,177	24,954	18,742	11,584	7,847	8,067	6,024	9,383	9,846	10,778	10,216
9	L43-G17-WTP	13,289	19,283	23,177	24,954	18,742	11,584	7,847	8,067	6,024	9,383	9,846	10,778	10,216
10	L43-W17-PT	13,286	19,252	23,177	24,954	18,742	11,585	7,846	8,067	6,024	9,383	9,846	10,778	10,216
11	L43-W17-PL	13,286	19,251	23,177	24,954	18,742	11,585	7,846	8,067	6,024	9,383	9,846	10,778	10,216

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.6%	-1.3%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
Proposed	L18-G50-PT	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
1	L18-G42-PT	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
2	L18-G42-PL	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
3	L18-G42-WTP	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
4	L30-G30-PT	-0.6%	-1.2%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
5	L30-G30-PL	-0.6%	-1.2%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
6	L30-G30-WTP	-0.6%	-1.2%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
7	L43-G17-PT	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
8	L43-G17-PL	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
9	L43-G17-WTP	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
10	L43-W17-PT	-0.6%	-1.3%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
11	L43-W17-PL	-0.6%	-1.3%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Apalachicola River at Chattahoochee Node
Drought Year Analysis - 2001

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	16,325	14,350	12,940	57,848	32,339	9,333	17,772	11,130	8,983	8,024	7,340	7,493	8,025
No Action	L60	16,200	14,277	12,585	57,771	32,267	9,472	17,663	10,744	8,980	7,850	7,182	7,182	8,087
Proposed	L18-G50-PT	16,209	14,261	12,661	57,816	32,268	9,473	17,662	10,744	8,980	7,850	7,182	7,181	8,088
1	L18-G42-PT	16,211	14,262	12,660	57,814	32,267	9,473	17,662	10,744	8,979	7,877	7,182	7,181	8,088
2	L18-G42-PL	16,209	14,262	12,661	57,815	32,267	9,473	17,662	10,744	8,980	7,850	7,182	7,181	8,088
3	L18-G42-WTP	16,209	14,262	12,661	57,815	32,267	9,473	17,662	10,744	8,980	7,850	7,182	7,181	8,088
4	L30-G30-PT	16,212	14,259	12,669	57,829	32,267	9,473	17,662	10,744	8,979	7,877	7,182	7,181	8,088
5	L30-G30-PL	16,212	14,259	12,669	57,829	32,267	9,473	17,662	10,744	8,979	7,876	7,182	7,181	8,088
6	L30-G30-WTP	16,212	14,259	12,669	57,829	32,267	9,473	17,662	10,744	8,979	7,876	7,182	7,181	8,088
7	L43-G17-PT	16,212	14,260	12,665	57,826	32,267	9,473	17,662	10,744	8,979	7,877	7,182	7,181	8,088
8	L43-G17-PL	16,212	14,259	12,667	57,829	32,267	9,473	17,662	10,744	8,979	7,876	7,182	7,181	8,088
9	L43-G17-WTP	16,212	14,259	12,667	57,829	32,267	9,473	17,662	10,744	8,979	7,876	7,182	7,181	8,088
10	L43-W17-PT	16,206	14,272	12,613	57,785	32,268	9,473	17,662	10,744	8,979	7,877	7,182	7,181	8,088
11	L43-W17-PL	16,206	14,271	12,615	57,786	32,268	9,473	17,662	10,744	8,979	7,877	7,182	7,182	8,088

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.8%	-0.5%	-2.7%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-2.2%	-2.2%	-4.2%	0.8%
Proposed	L18-G50-PT	-0.7%	-0.6%	-2.2%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-2.2%	-2.2%	-4.2%	0.8%
1	L18-G42-PT	-0.7%	-0.6%	-2.2%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
2	L18-G42-PL	-0.7%	-0.6%	-2.2%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-2.2%	-2.2%	-4.2%	0.8%
3	L18-G42-WTP	-0.7%	-0.6%	-2.2%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-2.2%	-2.2%	-4.2%	0.8%
4	L30-G30-PT	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
5	L30-G30-PL	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
6	L30-G30-WTP	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
7	L43-G17-PT	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
8	L43-G17-PL	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
9	L43-G17-WTP	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
10	L43-W17-PT	-0.7%	-0.5%	-2.5%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
11	L43-W17-PL	-0.7%	-0.5%	-2.5%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	-0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.1%	-0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	-0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	-0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.1%	-0.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.1%	-0.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.1%	-0.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.1%	-0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.1%	-0.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.1%	-0.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%

Apalachicola River at Chattahoochee Node
Drought Year Analysis - 2008

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	14,615	16,650	26,884	24,233	18,798	7,700	5,587	6,165	12,706	10,355	8,080	10,256	28,329
No Action	L60	14,637	16,755	26,961	24,273	18,527	8,111	5,460	5,887	12,618	10,294	8,575	10,154	28,363
Proposed	L18-G50-PT	14,639	16,780	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,155	28,363
1	L18-G42-PT	14,636	16,754	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
2	L18-G42-PL	14,637	16,755	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
3	L18-G42-WTP	14,637	16,755	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
4	L30-G30-PT	14,638	16,773	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
5	L30-G30-PL	14,638	16,771	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
6	L30-G30-WTP	14,638	16,771	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
7	L43-G17-PT	14,638	16,771	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
8	L43-G17-PL	14,638	16,771	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
9	L43-G17-WTP	14,638	16,771	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
10	L43-W17-PT	14,634	16,720	26,961	24,273	18,529	8,109	5,460	5,887	12,619	10,294	8,575	10,154	28,363
11	L43-W17-PL	14,638	16,769	26,961	24,273	18,529	8,109	5,460	5,887	12,619	10,294	8,575	10,154	28,363

Percent Change in Average Daily Flow from Baseline Conditions

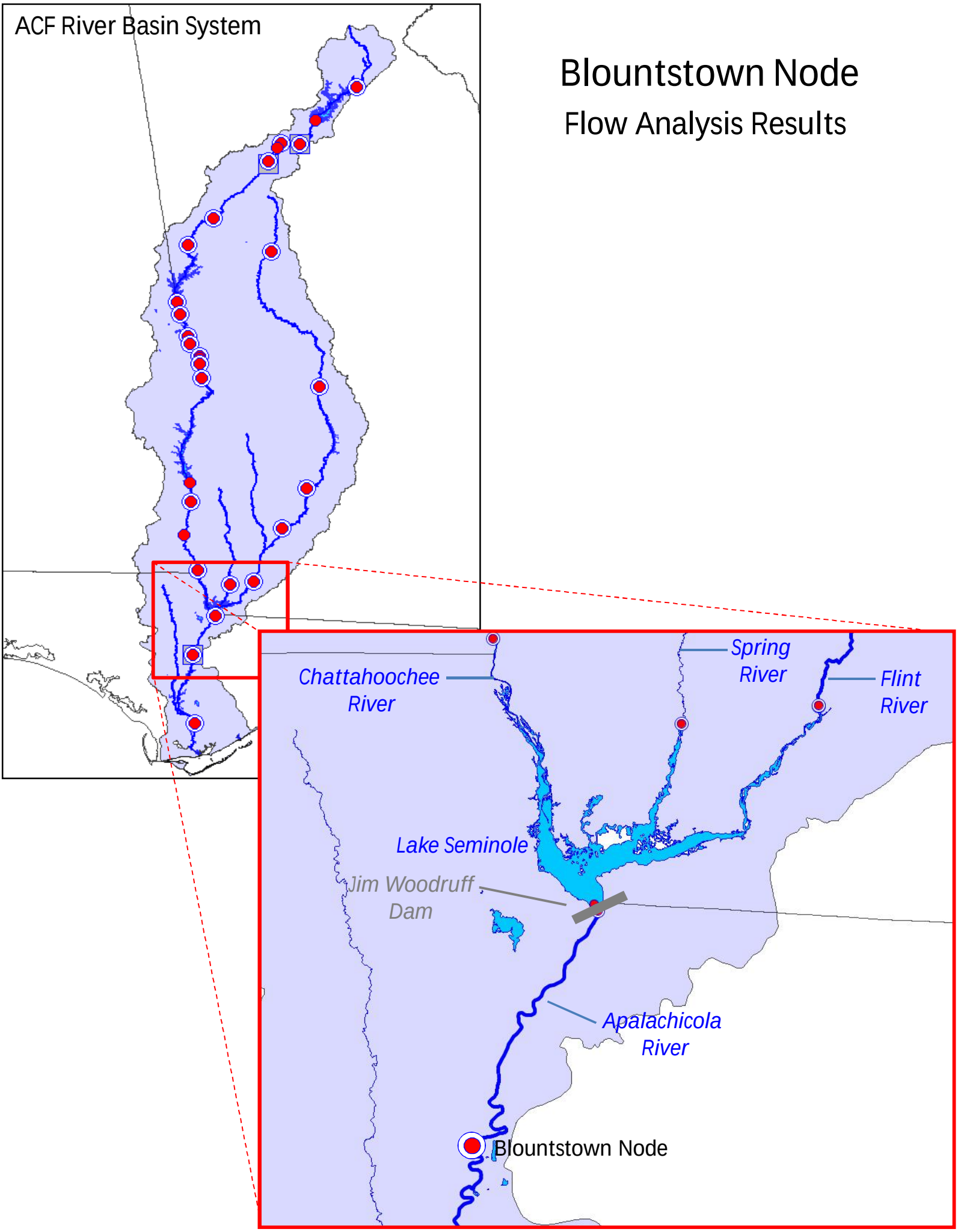
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	0.1%	0.6%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
Proposed	L18-G50-PT	0.2%	0.8%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
1	L18-G42-PT	0.1%	0.6%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
2	L18-G42-PL	0.1%	0.6%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
3	L18-G42-WTP	0.1%	0.6%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
4	L30-G30-PT	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
5	L30-G30-PL	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
6	L30-G30-WTP	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
7	L43-G17-PT	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
8	L43-G17-PL	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
9	L43-G17-WTP	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
10	L43-W17-PT	0.1%	0.4%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
11	L43-W17-PL	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	-0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Blountstown Node

Flow Analysis Results



Apalachicola River at Blountstown Node
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	27,349	33,111	39,011	33,788	20,847	15,338	16,409	13,797	11,562	12,515	14,745	21,161
No Action	L60	27,268	33,026	38,906	33,672	20,674	15,141	16,099	13,688	11,398	12,420	14,550	21,095
Proposed	L18-G50-PT	27,263	33,017	38,902	33,659	20,674	15,139	16,100	13,691	11,398	12,429	14,555	21,098
1	L18-G42-PT	27,263	33,017	38,901	33,661	20,674	15,140	16,100	13,691	11,398	12,429	14,555	21,098
2	L18-G42-PL	27,263	33,017	38,902	33,661	20,674	15,140	16,100	13,691	11,398	12,429	14,554	21,098
3	L18-G42-WTP	27,263	33,017	38,902	33,661	20,674	15,140	16,100	13,691	11,398	12,429	14,554	21,098
4	L30-G30-PT	27,264	33,016	38,904	33,662	20,670	15,143	16,100	13,690	11,397	12,430	14,554	21,099
5	L30-G30-PL	27,264	33,017	38,903	33,663	20,669	15,144	16,099	13,690	11,396	12,430	14,555	21,097
6	L30-G30-WTP	27,264	33,016	38,903	33,663	20,670	15,144	16,099	13,690	11,396	12,430	14,555	21,097
7	L43-G17-PT	27,263	33,016	38,904	33,661	20,677	15,140	16,100	13,690	11,396	12,429	14,552	21,098
8	L43-G17-PL	27,264	33,017	38,906	33,659	20,675	15,140	16,100	13,690	11,396	12,429	14,553	21,098
9	L43-G17-WTP	27,264	33,017	38,906	33,659	20,675	15,140	16,100	13,690	11,396	12,429	14,553	21,098
10	L43-W17-PT	27,267	33,025	38,907	33,667	20,667	15,145	16,100	13,689	11,399	12,420	14,550	21,096
11	L43-W17-PL	27,268	33,025	38,908	33,670	20,670	15,142	16,098	13,688	11,398	12,419	14,551	21,097

Minimum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	6,037	8,016	11,028	9,116	5,207	5,094	4,978	4,717	4,541	3,033	3,863	3,707
No Action	L60	6,067	8,234	11,040	8,404	5,175	5,103	4,978	4,717	4,255	2,974	3,863	3,707
Proposed	L18-G50-PT	6,067	8,234	11,040	8,403	5,175	5,103	4,978	4,717	4,268	2,974	3,863	3,707
1	L18-G42-PT	6,067	8,234	11,040	8,403	5,175	5,103	4,978	4,717	4,267	2,974	3,863	3,707
2	L18-G42-PL	6,067	8,234	11,040	8,403	5,175	5,103	4,978	4,717	4,265	2,974	3,863	3,707
3	L18-G42-WTP	6,067	8,234	11,040	8,403	5,175	5,103	4,978	4,717	4,265	2,974	3,863	3,707
4	L30-G30-PT	6,067	8,234	11,040	8,403	5,176	5,103	4,978	4,717	4,266	2,974	3,863	3,707
5	L30-G30-PL	6,067	8,234	11,040	8,403	5,176	5,103	4,978	4,717	4,264	2,974	3,863	3,707
6	L30-G30-WTP	6,067	8,234	11,040	8,403	5,176	5,103	4,978	4,717	4,264	2,974	3,863	3,707
7	L43-G17-PT	6,067	8,234	11,040	8,403	5,176	5,103	4,978	4,717	4,264	2,974	3,863	3,707
8	L43-G17-PL	6,067	8,234	11,040	8,403	5,176	5,103	4,978	4,717	4,263	2,974	3,863	3,707
9	L43-G17-WTP	6,067	8,234	11,040	8,403	5,176	5,103	4,978	4,717	4,263	2,974	3,863	3,707
10	L43-W17-PT	6,067	8,234	11,040	8,404	5,174	5,103	4,978	4,717	4,251	2,974	3,863	3,707
11	L43-W17-PL	6,067	8,234	11,040	8,404	5,174	5,103	4,978	4,717	4,247	2,974	3,863	3,707

Maximum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	113,568	118,437	209,861	119,933	105,368	69,133	206,013	50,341	47,947	51,049	69,271	135,052
No Action	L60	113,521	118,390	209,790	119,876	105,400	68,870	205,736	50,122	47,681	50,953	68,792	131,495
Proposed	L18-G50-PT	113,521	118,390	209,816	119,876	105,400	68,749	205,736	50,073	47,676	50,952	68,795	131,588
1	L18-G42-PT	113,521	118,390	209,815	119,876	105,400	68,861	205,736	50,072	47,671	50,952	68,795	131,600
2	L18-G42-PL	113,521	118,390	209,816	119,876	105,400	68,862	205,736	50,072	47,673	50,952	68,795	131,598
3	L18-G42-WTP	113,521	118,390	209,816	119,876	105,400	68,862	205,736	50,072	47,673	50,952	68,795	131,598
4	L30-G30-PT	113,521	118,390	209,812	119,876	105,400	68,857	205,736	50,070	47,662	50,952	68,795	131,600
5	L30-G30-PL	113,521	118,390	209,812	119,876	105,400	68,856	205,736	50,070	47,662	50,952	68,795	131,601
6	L30-G30-WTP	113,521	118,390	209,812	119,876	105,400	68,856	205,736	50,070	47,662	50,952	68,795	131,601
7	L43-G17-PT	113,521	118,390	209,805	119,876	105,400	68,859	205,736	50,068	47,659	50,953	68,795	131,600
8	L43-G17-PL	113,521	118,390	209,809	119,876	105,400	68,858	205,736	50,068	47,659	50,953	68,795	131,597
9	L43-G17-WTP	113,521	118,390	209,809	119,876	105,400	68,858	205,736	50,068	47,659	50,953	68,795	131,597
10	L43-W17-PT	113,521	118,390	209,793	119,876	105,400	68,864	205,736	50,113	47,688	50,953	68,793	131,480
11	L43-W17-PL	113,521	118,390	209,793	119,876	105,400	68,864	205,736	50,113	47,686	50,953	68,793	131,483

Apalachicola River at Blountstown Node
Average Year Analysis - 1997

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	24,135	30,257	40,136	35,560	19,840	22,708	18,255	15,442	12,212	7,666	13,236	27,291	47,809
No Action	L60	24,038	30,347	39,786	35,599	19,799	22,727	17,971	15,174	12,152	7,573	12,842	27,252	48,004
Proposed	L18-G50-PT	24,037	30,347	39,701	35,604	19,799	22,688	18,058	15,174	12,151	7,569	12,859	27,252	48,005
1	L18-G42-PT	24,038	30,347	39,701	35,604	19,804	22,728	18,014	15,174	12,152	7,569	12,859	27,252	48,005
2	L18-G42-PL	24,037	30,347	39,701	35,604	19,804	22,727	18,014	15,174	12,152	7,569	12,859	27,252	48,005
3	L18-G42-WTP	24,037	30,347	39,701	35,604	19,804	22,727	18,014	15,174	12,152	7,569	12,859	27,252	48,005
4	L30-G30-PT	24,037	30,347	39,701	35,630	19,799	22,704	17,989	15,174	12,151	7,569	12,886	27,252	48,004
5	L30-G30-PL	24,037	30,347	39,701	35,629	19,799	22,704	17,989	15,174	12,151	7,568	12,886	27,252	48,004
6	L30-G30-WTP	24,037	30,347	39,701	35,629	19,799	22,704	17,989	15,174	12,151	7,568	12,886	27,252	48,004
7	L43-G17-PT	24,036	30,347	39,701	35,636	19,799	22,736	17,963	15,174	12,152	7,569	12,859	27,252	48,004
8	L43-G17-PL	24,036	30,347	39,701	35,636	19,799	22,732	17,964	15,174	12,151	7,569	12,859	27,252	48,004
9	L43-G17-WTP	24,036	30,347	39,701	35,636	19,799	22,732	17,964	15,174	12,151	7,569	12,859	27,252	48,004
10	L43-W17-PT	24,039	30,347	39,701	35,669	19,805	22,712	18,019	15,175	12,152	7,570	12,817	27,251	48,004
11	L43-W17-PL	24,039	30,347	39,701	35,670	19,805	22,714	18,018	15,175	12,152	7,572	12,816	27,251	48,004

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.4%	0.3%	-0.9%	0.1%	-0.2%	0.1%	-1.6%	-1.7%	-0.5%	-1.2%	-3.0%	-0.1%	0.4%
Proposed	L18-G50-PT	-0.4%	0.3%	-1.1%	0.1%	-0.2%	-0.1%	-1.1%	-1.7%	-0.5%	-1.3%	-2.8%	-0.1%	0.4%
1	L18-G42-PT	-0.4%	0.3%	-1.1%	0.1%	-0.2%	0.1%	-1.3%	-1.7%	-0.5%	-1.3%	-2.8%	-0.1%	0.4%
2	L18-G42-PL	-0.4%	0.3%	-1.1%	0.1%	-0.2%	0.1%	-1.3%	-1.7%	-0.5%	-1.3%	-2.8%	-0.1%	0.4%
3	L18-G42-WTP	-0.4%	0.3%	-1.1%	0.1%	-0.2%	0.1%	-1.3%	-1.7%	-0.5%	-1.3%	-2.8%	-0.1%	0.4%
4	L30-G30-PT	-0.4%	0.3%	-1.1%	0.2%	-0.2%	0.0%	-1.5%	-1.7%	-0.5%	-1.3%	-2.6%	-0.1%	0.4%
5	L30-G30-PL	-0.4%	0.3%	-1.1%	0.2%	-0.2%	0.0%	-1.5%	-1.7%	-0.5%	-1.3%	-2.6%	-0.1%	0.4%
6	L30-G30-WTP	-0.4%	0.3%	-1.1%	0.2%	-0.2%	0.0%	-1.5%	-1.7%	-0.5%	-1.3%	-2.6%	-0.1%	0.4%
7	L43-G17-PT	-0.4%	0.3%	-1.1%	0.2%	-0.2%	0.1%	-1.6%	-1.7%	-0.5%	-1.3%	-2.8%	-0.1%	0.4%
8	L43-G17-PL	-0.4%	0.3%	-1.1%	0.2%	-0.2%	0.1%	-1.6%	-1.7%	-0.5%	-1.3%	-2.8%	-0.1%	0.4%
9	L43-G17-WTP	-0.4%	0.3%	-1.1%	0.2%	-0.2%	0.1%	-1.6%	-1.7%	-0.5%	-1.3%	-2.8%	-0.1%	0.4%
10	L43-W17-PT	-0.4%	0.3%	-1.1%	0.3%	-0.2%	0.0%	-1.3%	-1.7%	-0.5%	-1.2%	-3.2%	-0.1%	0.4%
11	L43-W17-PL	-0.4%	0.3%	-1.1%	0.3%	-0.2%	0.0%	-1.3%	-1.7%	-0.5%	-1.2%	-3.2%	-0.1%	0.4%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	-0.2%	0.0%	0.0%	-0.2%	0.5%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	-0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	-0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	-0.2%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	-0.2%	0.1%	0.0%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.3%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	-0.2%	0.1%	0.0%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.3%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	-0.2%	0.1%	0.0%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.3%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	-0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	-0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	-0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	-0.2%	0.2%	0.0%	-0.1%	0.3%	0.0%	0.0%	0.0%	-0.2%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	-0.2%	0.2%	0.0%	-0.1%	0.3%	0.0%	0.0%	0.0%	-0.2%	0.0%	0.0%

Apalachicola River at Blountstown Node
Wet Year Analysis - 2005

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	26,631	19,463	26,298	30,512	58,562	21,182	27,671	49,290	30,828	14,378	12,000	11,947	17,610
No Action	L60	26,513	19,480	26,322	30,555	58,521	21,141	27,315	48,837	30,582	14,191	11,928	11,852	17,604
Proposed	L18-G50-PT	26,514	19,482	26,319	30,558	58,521	21,145	27,308	48,840	30,581	14,192	11,929	11,858	17,604
1	L18-G42-PT	26,514	19,482	26,319	30,558	58,521	21,145	27,308	48,841	30,581	14,192	11,929	11,858	17,604
2	L18-G42-PL	26,514	19,482	26,319	30,558	58,521	21,145	27,308	48,841	30,581	14,192	11,929	11,858	17,604
3	L18-G42-WTP	26,514	19,482	26,319	30,558	58,521	21,145	27,308	48,841	30,581	14,192	11,929	11,858	17,604
4	L30-G30-PT	26,514	19,481	26,320	30,558	58,521	21,144	27,308	48,840	30,581	14,191	11,929	11,857	17,604
5	L30-G30-PL	26,514	19,482	26,319	30,558	58,521	21,144	27,308	48,840	30,581	14,191	11,929	11,857	17,604
6	L30-G30-WTP	26,514	19,482	26,319	30,558	58,521	21,144	27,308	48,840	30,581	14,191	11,929	11,857	17,604
7	L43-G17-PT	26,514	19,481	26,320	30,557	58,521	21,144	27,307	48,841	30,580	14,190	11,929	11,857	17,604
8	L43-G17-PL	26,514	19,481	26,320	30,557	58,521	21,144	27,307	48,840	30,580	14,190	11,929	11,857	17,604
9	L43-G17-WTP	26,514	19,481	26,320	30,557	58,521	21,144	27,307	48,840	30,580	14,190	11,929	11,857	17,604
10	L43-W17-PT	26,512	19,481	26,321	30,556	58,521	21,140	27,313	48,838	30,582	14,191	11,929	11,843	17,604
11	L43-W17-PL	26,512	19,481	26,321	30,556	58,521	21,140	27,313	48,838	30,582	14,191	11,929	11,843	17,604

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.8%	0.0%
Proposed	L18-G50-PT	-0.4%	0.1%	0.1%	0.2%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.7%	0.0%
1	L18-G42-PT	-0.4%	0.1%	0.1%	0.2%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.7%	0.0%
2	L18-G42-PL	-0.4%	0.1%	0.1%	0.2%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.7%	0.0%
3	L18-G42-WTP	-0.4%	0.1%	0.1%	0.2%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.7%	0.0%
4	L30-G30-PT	-0.4%	0.1%	0.1%	0.2%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.8%	0.0%
5	L30-G30-PL	-0.4%	0.1%	0.1%	0.2%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.8%	0.0%
6	L30-G30-WTP	-0.4%	0.1%	0.1%	0.2%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.8%	0.0%
7	L43-G17-PT	-0.4%	0.1%	0.1%	0.2%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.8%	0.0%
8	L43-G17-PL	-0.4%	0.1%	0.1%	0.2%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.8%	0.0%
9	L43-G17-WTP	-0.4%	0.1%	0.1%	0.2%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.8%	0.0%
10	L43-W17-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.9%	0.0%
11	L43-W17-PL	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.3%	-0.9%	-0.8%	-1.3%	-0.6%	-0.9%	0.0%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%

Apalachicola River at Blountstown Node
Drought Year Analysis - 1988

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	13,794	19,595	23,706	25,363	18,263	11,591	7,233	8,928	7,040	10,238	10,190	12,353	11,437
No Action	L60	13,707	19,343	23,479	25,530	18,340	11,258	7,517	8,632	6,995	9,362	10,923	12,339	11,163
Proposed	L18-G50-PT	13,710	19,379	23,479	25,530	18,340	11,260	7,516	8,632	6,995	9,362	10,923	12,338	11,162
1	L18-G42-PT	13,710	19,375	23,479	25,530	18,340	11,260	7,516	8,632	6,995	9,361	10,923	12,339	11,163
2	L18-G42-PL	13,710	19,374	23,479	25,530	18,340	11,260	7,516	8,632	6,995	9,361	10,923	12,339	11,163
3	L18-G42-WTP	13,710	19,374	23,479	25,530	18,340	11,260	7,516	8,632	6,995	9,361	10,923	12,339	11,163
4	L30-G30-PT	13,709	19,370	23,479	25,530	18,340	11,258	7,518	8,632	6,995	9,362	10,923	12,339	11,163
5	L30-G30-PL	13,709	19,367	23,479	25,530	18,340	11,258	7,518	8,632	6,995	9,362	10,923	12,339	11,163
6	L30-G30-WTP	13,709	19,368	23,479	25,530	18,340	11,258	7,518	8,632	6,995	9,362	10,923	12,339	11,163
7	L43-G17-PT	13,710	19,380	23,479	25,530	18,340	11,258	7,517	8,632	6,995	9,362	10,923	12,339	11,163
8	L43-G17-PL	13,710	19,374	23,479	25,530	18,340	11,258	7,517	8,632	6,995	9,362	10,923	12,339	11,163
9	L43-G17-WTP	13,710	19,374	23,479	25,530	18,340	11,258	7,517	8,632	6,995	9,362	10,923	12,339	11,163
10	L43-W17-PT	13,707	19,343	23,479	25,530	18,340	11,259	7,517	8,632	6,995	9,362	10,923	12,339	11,163
11	L43-W17-PL	13,707	19,343	23,479	25,530	18,340	11,259	7,517	8,632	6,995	9,362	10,923	12,339	11,163

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.6%	-1.3%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
Proposed	L18-G50-PT	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
1	L18-G42-PT	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
2	L18-G42-PL	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
3	L18-G42-WTP	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
4	L30-G30-PT	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
5	L30-G30-PL	-0.6%	-1.2%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
6	L30-G30-WTP	-0.6%	-1.2%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
7	L43-G17-PT	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
8	L43-G17-PL	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
9	L43-G17-WTP	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
10	L43-W17-PT	-0.6%	-1.3%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%
11	L43-W17-PL	-0.6%	-1.3%	-1.0%	0.7%	0.4%	-2.9%	3.9%	-3.3%	-0.6%	-8.6%	7.2%	-0.1%	-2.4%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Apalachicola River at Blountstown Node
Drought Year Analysis - 2001

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	15,760	14,075	12,182	48,108	30,700	9,918	20,471	12,590	10,102	7,891	7,228	7,572	8,054
No Action	L60	15,636	14,010	11,887	47,971	30,636	10,041	20,377	12,207	10,095	7,717	7,079	7,248	8,116
Proposed	L18-G50-PT	15,645	13,994	11,923	48,051	30,636	10,041	20,376	12,207	10,095	7,717	7,080	7,247	8,117
1	L18-G42-PT	15,647	13,994	11,923	48,050	30,636	10,041	20,376	12,207	10,095	7,744	7,079	7,248	8,117
2	L18-G42-PL	15,645	13,994	11,923	48,050	30,636	10,041	20,376	12,207	10,095	7,717	7,079	7,248	8,117
3	L18-G42-WTP	15,645	13,994	11,923	48,050	30,636	10,041	20,376	12,207	10,095	7,717	7,079	7,248	8,117
4	L30-G30-PT	15,648	13,991	11,928	48,067	30,636	10,041	20,376	12,207	10,095	7,744	7,079	7,248	8,117
5	L30-G30-PL	15,648	13,991	11,928	48,067	30,636	10,041	20,376	12,207	10,095	7,744	7,079	7,248	8,117
6	L30-G30-WTP	15,648	13,991	11,928	48,067	30,636	10,041	20,376	12,207	10,095	7,744	7,079	7,248	8,117
7	L43-G17-PT	15,648	13,992	11,926	48,063	30,636	10,041	20,376	12,207	10,095	7,744	7,079	7,248	8,117
8	L43-G17-PL	15,648	13,992	11,927	48,066	30,636	10,041	20,376	12,207	10,095	7,744	7,079	7,247	8,117
9	L43-G17-WTP	15,648	13,992	11,927	48,066	30,636	10,041	20,376	12,207	10,095	7,744	7,079	7,247	8,117
10	L43-W17-PT	15,641	14,004	11,899	48,000	30,636	10,041	20,376	12,207	10,095	7,744	7,079	7,248	8,117
11	L43-W17-PL	15,642	14,004	11,900	48,002	30,636	10,041	20,376	12,207	10,095	7,744	7,079	7,248	8,117

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.8%	-0.5%	-2.4%	-0.3%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-2.2%	-2.1%	-4.3%	0.8%
Proposed	L18-G50-PT	-0.7%	-0.6%	-2.1%	-0.1%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-2.2%	-2.1%	-4.3%	0.8%
1	L18-G42-PT	-0.7%	-0.6%	-2.1%	-0.1%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-1.9%	-2.1%	-4.3%	0.8%
2	L18-G42-PL	-0.7%	-0.6%	-2.1%	-0.1%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-2.2%	-2.1%	-4.3%	0.8%
3	L18-G42-WTP	-0.7%	-0.6%	-2.1%	-0.1%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-2.2%	-2.1%	-4.3%	0.8%
4	L30-G30-PT	-0.7%	-0.6%	-2.1%	-0.1%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-1.9%	-2.1%	-4.3%	0.8%
5	L30-G30-PL	-0.7%	-0.6%	-2.1%	-0.1%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-1.9%	-2.1%	-4.3%	0.8%
6	L30-G30-WTP	-0.7%	-0.6%	-2.1%	-0.1%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-1.9%	-2.1%	-4.3%	0.8%
7	L43-G17-PT	-0.7%	-0.6%	-2.1%	-0.1%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-1.9%	-2.1%	-4.3%	0.8%
8	L43-G17-PL	-0.7%	-0.6%	-2.1%	-0.1%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-1.9%	-2.1%	-4.3%	0.8%
9	L43-G17-WTP	-0.7%	-0.6%	-2.1%	-0.1%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-1.9%	-2.1%	-4.3%	0.8%
10	L43-W17-PT	-0.8%	-0.5%	-2.3%	-0.2%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-1.9%	-2.1%	-4.3%	0.8%
11	L43-W17-PL	-0.8%	-0.5%	-2.3%	-0.2%	-0.2%	1.2%	-0.5%	-3.0%	-0.1%	-1.9%	-2.1%	-4.3%	0.8%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	-0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.1%	-0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	-0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	-0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.1%	-0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.1%	-0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.1%	-0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.1%	-0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.1%	-0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.1%	-0.1%	0.3%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%

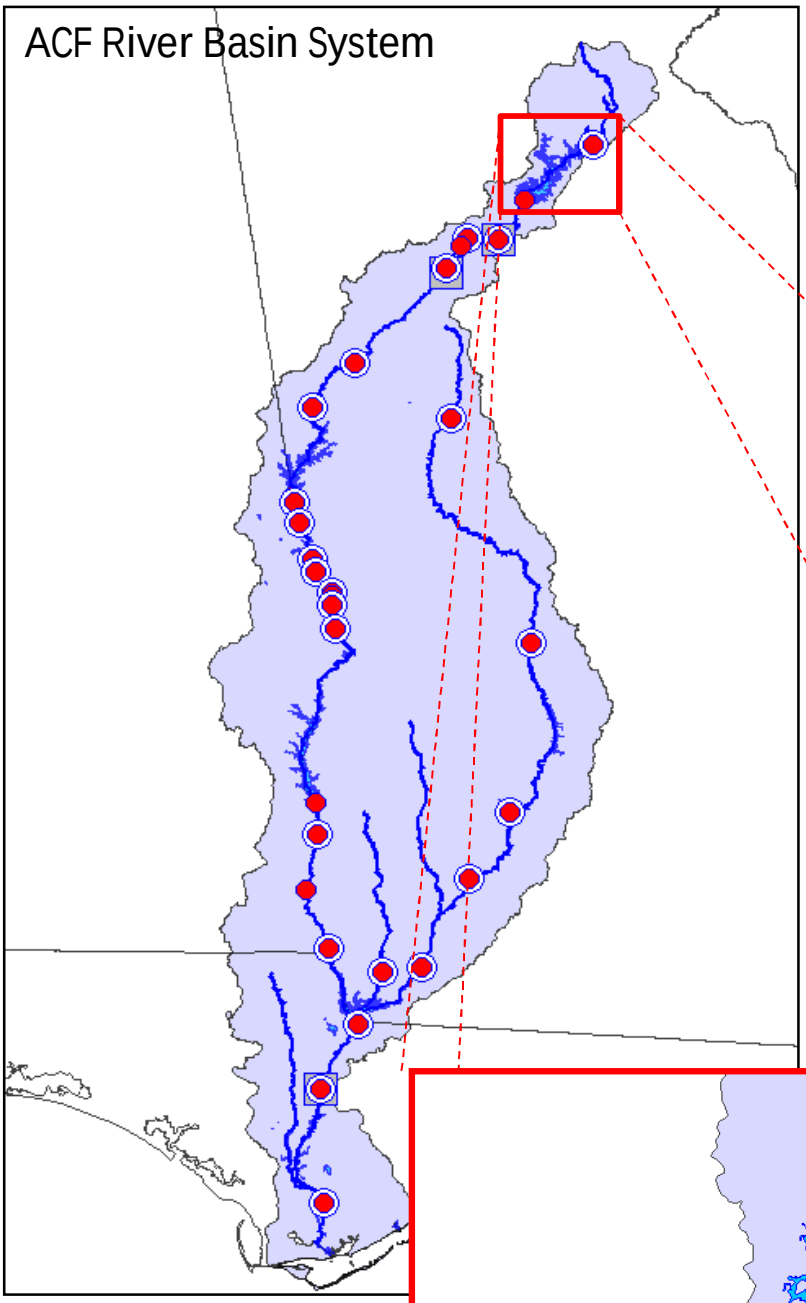
Apalachicola River at Blountstown Node
Drought Year Analysis - 2008

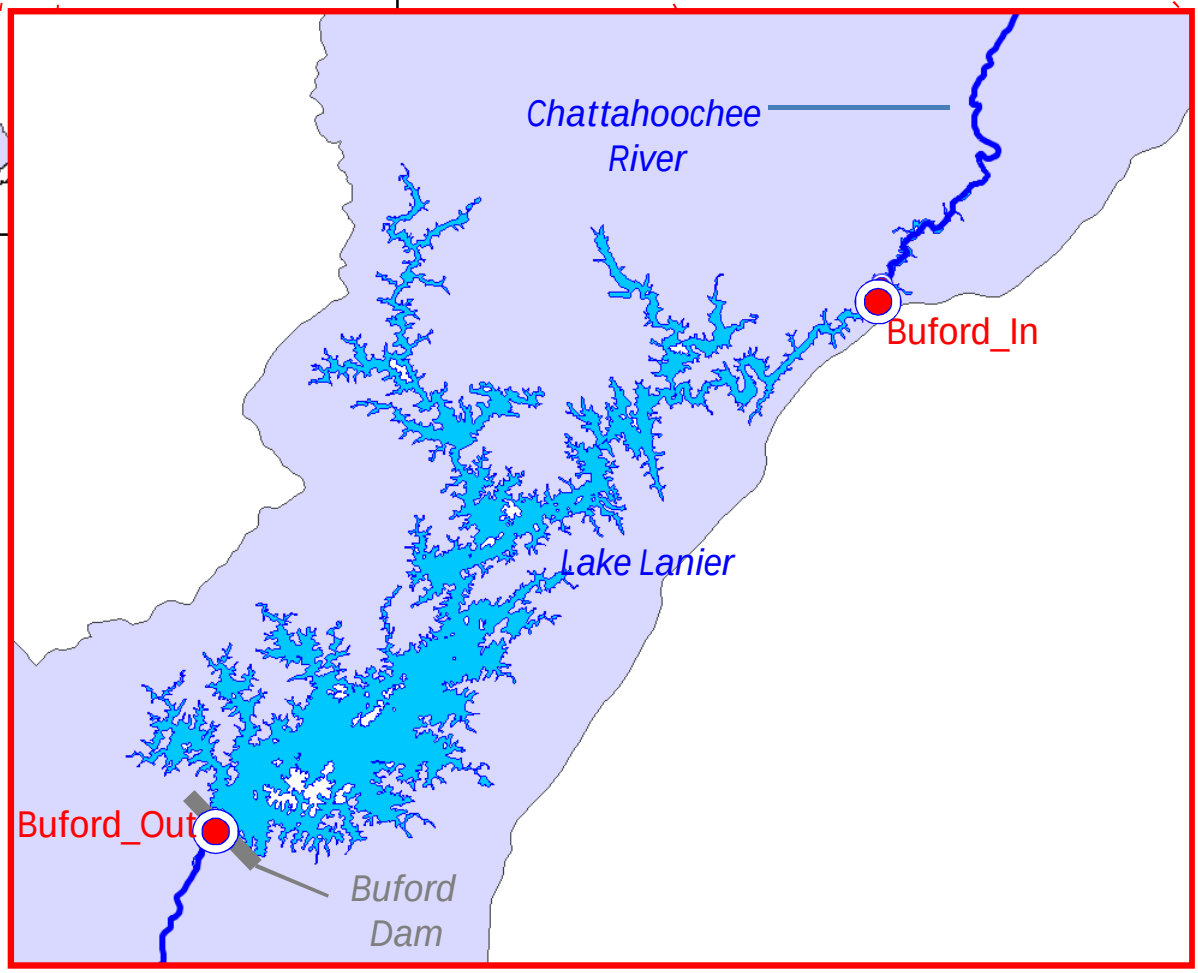
Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	14,677	15,430	25,985	24,380	19,548	8,294	6,388	6,798	12,966	11,664	8,009	9,783	27,238
No Action	L60	14,700	15,552	26,073	24,421	19,295	8,688	6,265	6,521	12,875	11,603	8,503	9,690	27,264
Proposed	L18-G50-PT	14,703	15,588	26,073	24,421	19,295	8,688	6,264	6,521	12,875	11,603	8,503	9,690	27,265
1	L18-G42-PT	14,701	15,560	26,073	24,421	19,295	8,688	6,264	6,521	12,875	11,603	8,503	9,690	27,264
2	L18-G42-PL	14,701	15,561	26,073	24,421	19,295	8,688	6,264	6,521	12,875	11,603	8,503	9,690	27,264
3	L18-G42-WTP	14,701	15,561	26,073	24,421	19,295	8,688	6,264	6,521	12,875	11,603	8,503	9,690	27,264
4	L30-G30-PT	14,703	15,581	26,073	24,421	19,295	8,688	6,264	6,521	12,875	11,603	8,503	9,690	27,264
5	L30-G30-PL	14,702	15,579	26,073	24,421	19,295	8,688	6,264	6,521	12,875	11,603	8,503	9,690	27,264
6	L30-G30-WTP	14,702	15,579	26,073	24,421	19,295	8,688	6,264	6,521	12,875	11,603	8,503	9,690	27,264
7	L43-G17-PT	14,702	15,579	26,073	24,421	19,295	8,688	6,264	6,521	12,875	11,603	8,503	9,690	27,264
8	L43-G17-PL	14,702	15,579	26,073	24,421	19,295	8,688	6,264	6,521	12,875	11,603	8,503	9,690	27,264
9	L43-G17-WTP	14,702	15,579	26,073	24,421	19,295	8,688	6,264	6,521	12,875	11,603	8,503	9,690	27,264
10	L43-W17-PT	14,697	15,521	26,073	24,421	19,297	8,686	6,265	6,521	12,875	11,603	8,503	9,690	27,264
11	L43-W17-PL	14,702	15,569	26,073	24,421	19,297	8,686	6,265	6,521	12,875	11,603	8,503	9,690	27,264

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	0.2%	0.8%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
Proposed	L18-G50-PT	0.2%	1.0%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
1	L18-G42-PT	0.2%	0.8%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
2	L18-G42-PL	0.2%	0.8%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
3	L18-G42-WTP	0.2%	0.8%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
4	L30-G30-PT	0.2%	1.0%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
5	L30-G30-PL	0.2%	1.0%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
6	L30-G30-WTP	0.2%	1.0%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
7	L43-G17-PT	0.2%	1.0%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
8	L43-G17-PL	0.2%	1.0%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
9	L43-G17-WTP	0.2%	1.0%	0.3%	0.2%	-1.3%	4.8%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
10	L43-W17-PT	0.1%	0.6%	0.3%	0.2%	-1.3%	4.7%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%
11	L43-W17-PL	0.2%	0.9%	0.3%	0.2%	-1.3%	4.7%	-1.9%	-4.1%	-0.7%	-0.5%	6.2%	-0.9%	0.1%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	-0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Lake Lanier
Elevation Analysis Results



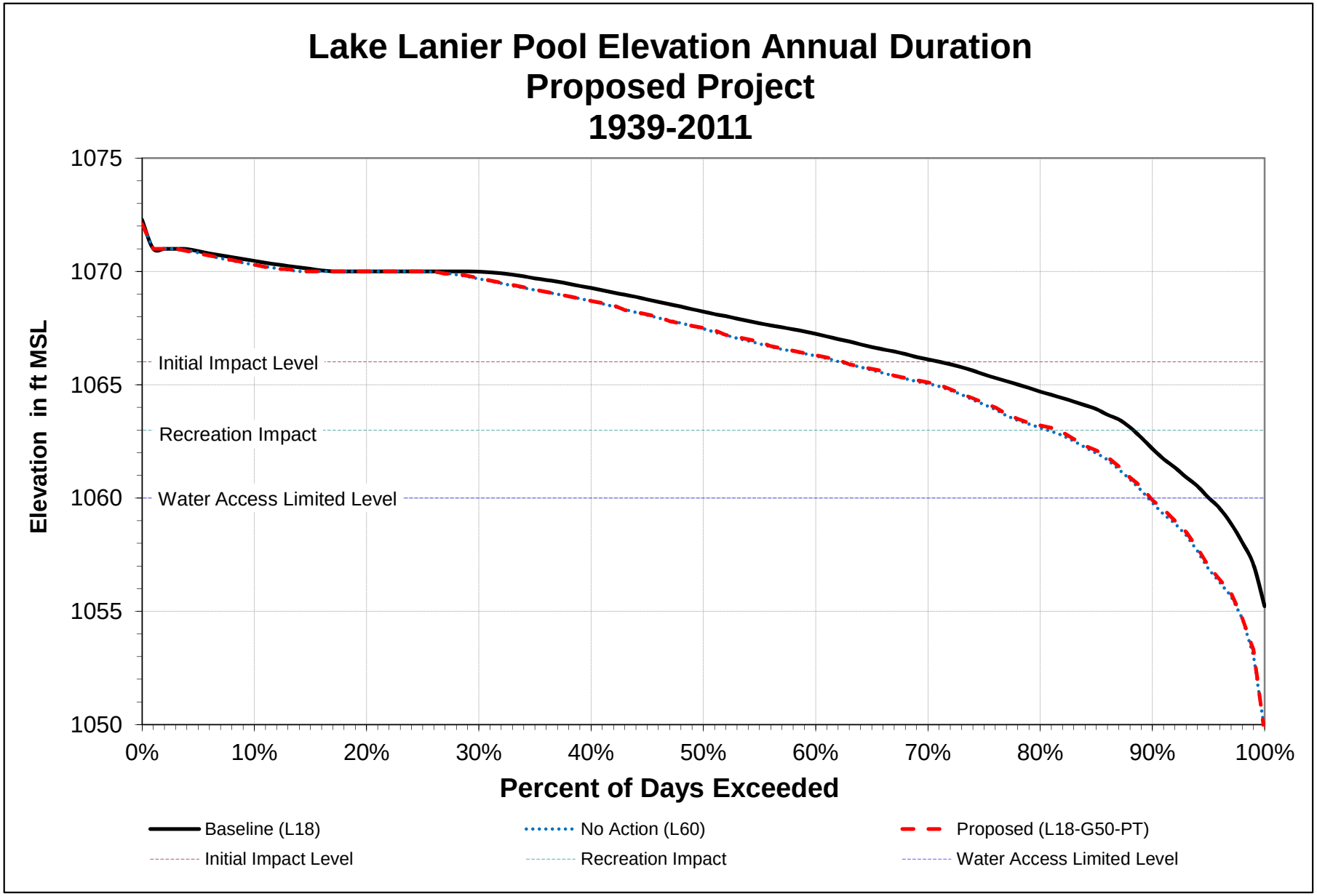


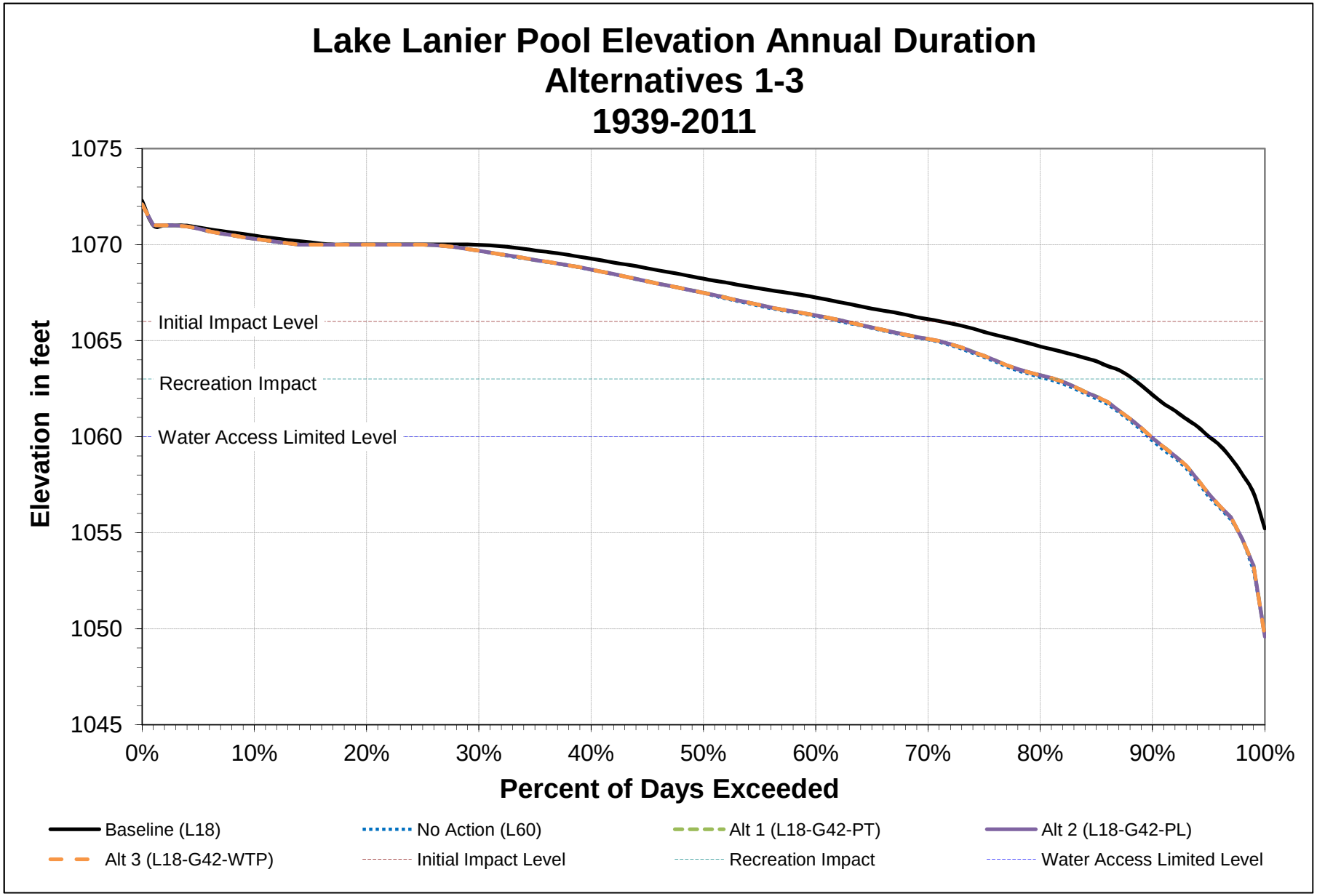
Lake Lanier Pool Elevation
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

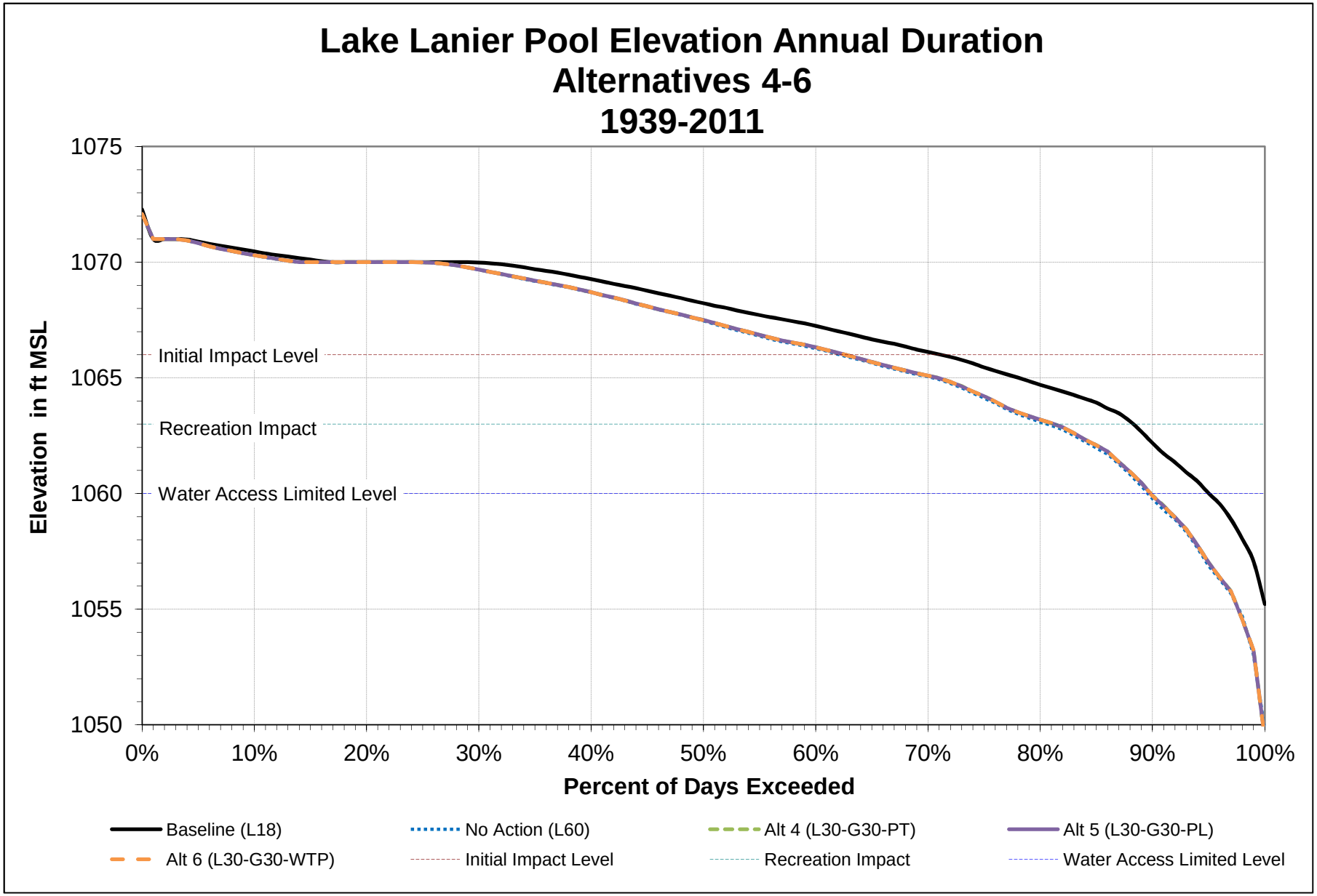
Average Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,066.3	1,067.3	1,068.3	1,068.9	1,068.8	1,068.4	1,068.1	1,067.5	1,066.7	1,066.0	1,065.5	1,065.5
No Action	L60	1,065.1	1,066.2	1,067.5	1,068.3	1,068.3	1,067.8	1,067.3	1,066.5	1,065.5	1,064.7	1,064.1	1,064.2
Proposed	L18-G50-PT	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.4	1,066.6	1,065.6	1,064.8	1,064.2	1,064.2
1	L18-G42-PT	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.4	1,066.6	1,065.6	1,064.8	1,064.2	1,064.2
2	L18-G42-PL	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.4	1,066.6	1,065.6	1,064.8	1,064.2	1,064.2
3	L18-G42-WTP	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.4	1,066.6	1,065.6	1,064.8	1,064.2	1,064.2
4	L30-G30-PT	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.4	1,066.6	1,065.6	1,064.8	1,064.2	1,064.2
5	L30-G30-PL	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.3	1,066.6	1,065.6	1,064.8	1,064.1	1,064.2
6	L30-G30-WTP	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.3	1,066.6	1,065.6	1,064.8	1,064.1	1,064.2
7	L43-G17-PT	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.3	1,066.6	1,065.6	1,064.8	1,064.1	1,064.2
8	L43-G17-PL	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.3	1,066.6	1,065.6	1,064.8	1,064.1	1,064.2
9	L43-G17-WTP	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.3	1,066.6	1,065.6	1,064.8	1,064.1	1,064.2
10	L43-W17-PT	1,065.1	1,066.3	1,067.5	1,068.3	1,068.3	1,067.8	1,067.3	1,066.6	1,065.5	1,064.7	1,064.1	1,064.2
11	L43-W17-PL	1,065.1	1,066.2	1,067.5	1,068.3	1,068.3	1,067.8	1,067.3	1,066.5	1,065.5	1,064.7	1,064.1	1,064.2

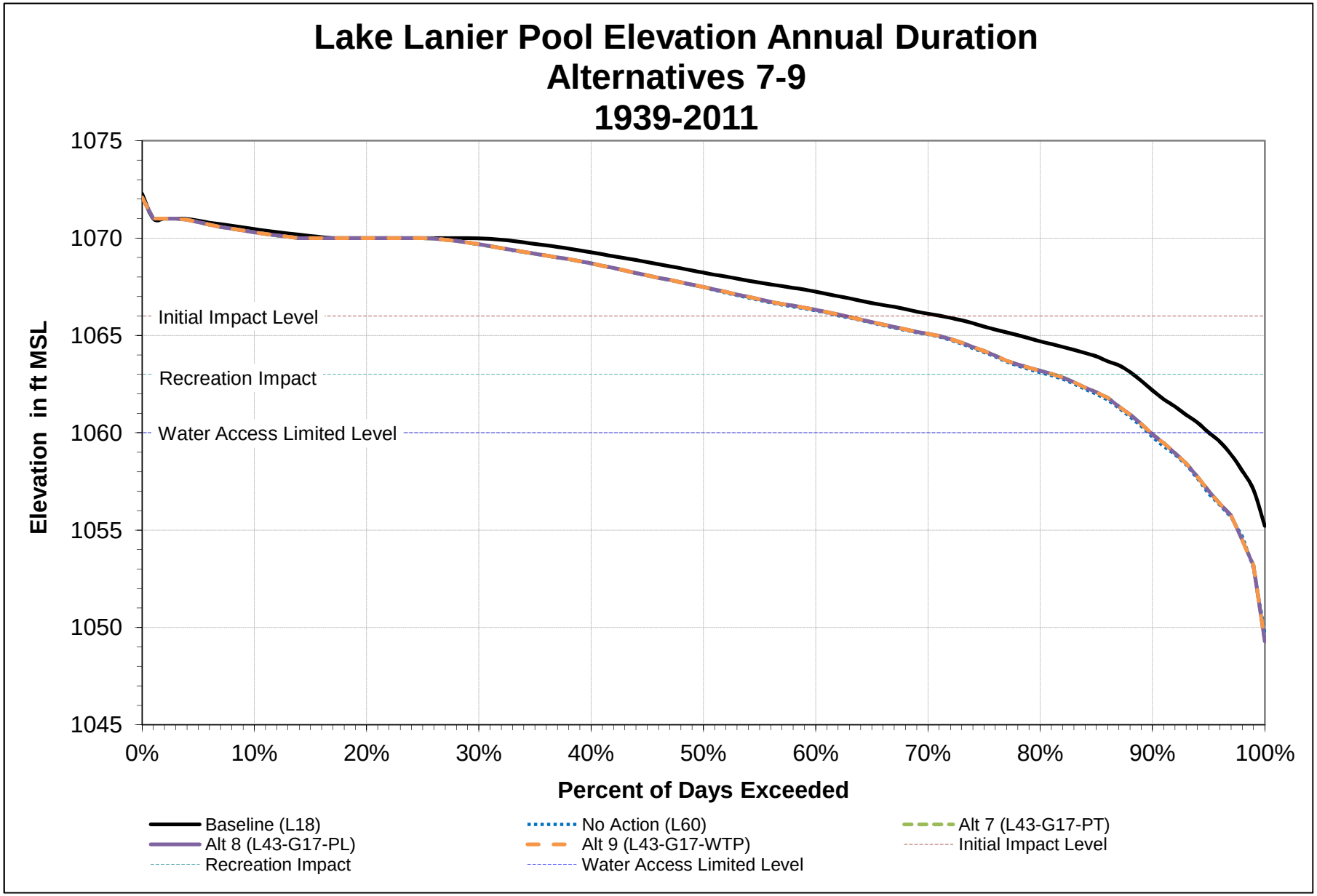
Minimum Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,055.5	1,056.2	1,058.0	1,061.2	1,061.9	1,060.8	1,059.9	1,058.2	1,057.5	1,057.2	1,055.8	1,055.2
No Action	L60	1,051.6	1,053.3	1,055.2	1,058.3	1,058.7	1,056.8	1,055.4	1,053.1	1,051.7	1,051.2	1,049.9	1,049.7
Proposed	L18-G50-PT	1,051.5	1,052.9	1,054.7	1,057.9	1,058.3	1,056.4	1,055.1	1,053.3	1,052.2	1,051.3	1,049.7	1,049.6
1	L18-G42-PT	1,051.4	1,052.9	1,054.8	1,057.9	1,058.3	1,056.4	1,055.1	1,053.3	1,052.2	1,051.3	1,049.7	1,049.6
2	L18-G42-PL	1,051.4	1,052.9	1,054.8	1,057.9	1,058.3	1,056.4	1,055.1	1,053.3	1,052.2	1,051.3	1,049.7	1,049.6
3	L18-G42-WTP	1,051.4	1,052.9	1,054.8	1,057.9	1,058.3	1,056.4	1,055.1	1,053.3	1,052.2	1,051.3	1,049.7	1,049.6
4	L30-G30-PT	1,051.3	1,052.8	1,054.6	1,057.8	1,058.2	1,056.3	1,055.0	1,053.1	1,052.1	1,051.1	1,049.5	1,049.4
5	L30-G30-PL	1,051.3	1,052.8	1,054.6	1,057.8	1,058.2	1,056.3	1,055.0	1,053.1	1,052.1	1,051.1	1,049.5	1,049.4
6	L30-G30-WTP	1,051.3	1,052.8	1,054.6	1,057.8	1,058.2	1,056.3	1,055.0	1,053.1	1,052.1	1,051.1	1,049.5	1,049.4
7	L43-G17-PT	1,051.2	1,052.7	1,054.6	1,057.8	1,058.2	1,056.3	1,054.9	1,053.1	1,052.1	1,051.0	1,049.4	1,049.3
8	L43-G17-PL	1,051.2	1,052.7	1,054.6	1,057.8	1,058.2	1,056.3	1,054.9	1,053.0	1,052.1	1,051.0	1,049.4	1,049.3
9	L43-G17-WTP	1,051.2	1,052.7	1,054.6	1,057.8	1,058.2	1,056.3	1,054.9	1,053.0	1,052.1	1,051.0	1,049.4	1,049.3
10	L43-W17-PT	1,051.8	1,053.5	1,055.3	1,058.4	1,058.8	1,056.9	1,055.6	1,053.3	1,051.9	1,051.5	1,050.1	1,050.0
11	L43-W17-PL	1,051.8	1,053.5	1,055.3	1,058.4	1,058.8	1,056.9	1,055.6	1,053.3	1,052.0	1,051.5	1,050.1	1,050.0

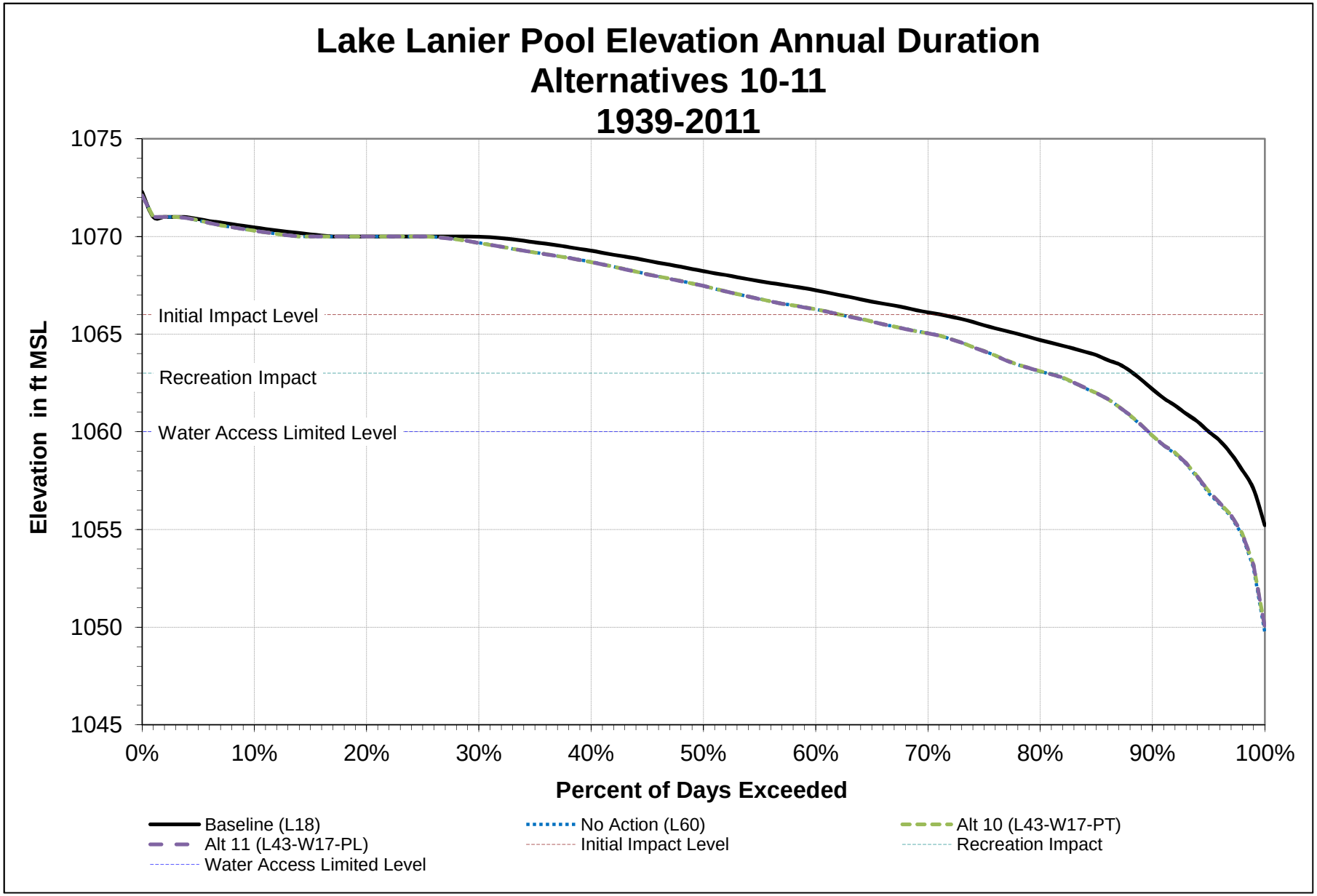
Maximum Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,072.3	1,071.4	1,071.7	1,072.1	1,071.1	1,071.0	1,071.0	1,072.0	1,071.0	1,071.2	1,070.5	1,070.8
No Action	L60	1,071.8	1,070.6	1,071.7	1,072.1	1,071.0	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.5
Proposed	L18-G50-PT	1,071.7	1,070.6	1,071.6	1,072.1	1,071.1	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.4
1	L18-G42-PT	1,071.7	1,070.6	1,071.6	1,072.1	1,071.1	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.4
2	L18-G42-PL	1,071.7	1,070.6	1,071.6	1,072.1	1,071.1	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.4
3	L18-G42-WTP	1,071.7	1,070.6	1,071.6	1,072.1	1,071.1	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.4
4	L30-G30-PT	1,071.7	1,070.6	1,071.6	1,072.1	1,071.1	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.4
5	L30-G30-PL	1,071.7	1,070.6	1,071.6	1,072.1	1,071.1	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.4
6	L30-G30-WTP	1,071.7	1,070.6	1,071.6	1,072.1	1,071.1	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.4
7	L43-G17-PT	1,071.7	1,070.6	1,071.6	1,072.1	1,071.1	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.4
8	L43-G17-PL	1,071.7	1,070.6	1,071.6	1,072.1	1,071.1	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.4
9	L43-G17-WTP	1,071.7	1,070.6	1,071.6	1,072.1	1,071.1	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.4
10	L43-W17-PT	1,071.8	1,070.6	1,071.7	1,072.1	1,071.0	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.5
11	L43-W17-PL	1,071.8	1,070.6	1,071.7	1,072.1	1,071.0	1,071.0	1,071.0	1,071.7	1,071.0	1,070.9	1,070.5	1,070.5


Lake Lanier Pool Elevation Annual Duration
Proposed Project
1939-2011
1075
1070
1065
1060
1055
1050
Elevation in ft MSL
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Proposed (L18-G50-PT)
Initial Impact Level
Recreation Impact
Water Access Limited Level


Lake Lanier Pool Elevation Annual Duration
Alternatives 1-3
1939-2011
1075
1070
1065
1060
1055
1050
1045
Elevation in feet
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)
Initial Impact Level
Recreation Impact
Water Access Limited Level


Lake Lanier Pool Elevation Annual Duration
Alternatives 4-6
1939-2011
1075
1070
1065
1060
1055
1050
Elevation in ft MSL
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)
Initial Impact Level
Recreation Impact
Water Access Limited Level


Lake Lanier Pool Elevation Annual Duration
Alternatives 7-9
1939-2011
1075
1070
1065
1060
1055
1050
1045
Elevation in ft MSL
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)
Initial Impact Level
Recreation Impact
Water Access Limited Level


Lake Lanier Pool Elevation Annual Duration
Alternatives 10-11
1939-2011
1075
1070
1065
1060
1055
1050
1045
Elevation in ft MSL
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 10 (L43-W17-PT)
Alt 11 (L43-W17-PL)
Initial Impact Level
Recreation Impact
Water Access Limited Level

Lake Lanier Pool Elevation
Average Year Analysis - 1997

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,069.1	1,068.0	1,069.7	1,070.0	1,069.7	1,069.6	1,069.7	1,069.8	1,069.3	1,067.8	1,067.4	1,068.9	1,068.9
No Action	L60	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.4	1,069.3	1,068.6	1,066.9	1,066.4	1,067.9	1,067.8
Proposed	L18-G50-PT	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.4	1,069.3	1,068.6	1,066.9	1,066.5	1,067.9	1,067.7
1	L18-G42-PT	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.4	1,069.3	1,068.6	1,066.9	1,066.4	1,067.9	1,067.7
2	L18-G42-PL	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.4	1,069.3	1,068.6	1,066.9	1,066.4	1,067.9	1,067.7
3	L18-G42-WTP	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.4	1,069.3	1,068.6	1,066.9	1,066.4	1,067.9	1,067.7
4	L30-G30-PT	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.5	1,069.3	1,068.6	1,066.9	1,066.5	1,067.9	1,067.7
5	L30-G30-PL	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.5	1,069.3	1,068.6	1,066.9	1,066.5	1,067.9	1,067.7
6	L30-G30-WTP	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.5	1,069.3	1,068.6	1,066.9	1,066.5	1,067.9	1,067.7
7	L43-G17-PT	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.4	1,069.3	1,068.6	1,066.9	1,066.5	1,067.9	1,067.7
8	L43-G17-PL	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.4	1,069.3	1,068.6	1,066.9	1,066.5	1,067.9	1,067.7
9	L43-G17-WTP	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.4	1,069.3	1,068.6	1,066.9	1,066.5	1,067.9	1,067.7
10	L43-W17-PT	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.4	1,069.2	1,068.5	1,066.8	1,066.4	1,067.9	1,067.7
11	L43-W17-PL	1,068.5	1,067.5	1,069.3	1,070.0	1,069.7	1,069.5	1,069.4	1,069.2	1,068.5	1,066.8	1,066.4	1,067.9	1,067.7

Lake Lanier Pool Elevation
Wet Year Analysis - 2005

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,070.2	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.7	1,071.0	1,071.0	1,070.5	1,070.0	1,069.1	1,069.7
No Action	L60	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
Proposed	L18-G50-PT	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
1	L18-G42-PT	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
2	L18-G42-PL	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
3	L18-G42-WTP	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
4	L30-G30-PT	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
5	L30-G30-PL	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
6	L30-G30-WTP	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
7	L43-G17-PT	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
8	L43-G17-PL	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
9	L43-G17-WTP	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
10	L43-W17-PT	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2
11	L43-W17-PL	1,070.1	1,070.0	1,070.0	1,070.0	1,070.2	1,070.2	1,070.6	1,071.0	1,071.0	1,070.4	1,069.7	1,068.6	1,069.2

Lake Lanier Pool Elevation
Drought Year Analysis - 1988

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,060.5	1,059.7	1,061.4	1,061.8	1,063.1	1,063.5	1,062.2	1,061.0	1,060.1	1,059.6	1,059.3	1,057.9	1,056.6
No Action	L60	1,056.9	1,056.9	1,059.2	1,059.5	1,060.6	1,060.7	1,058.9	1,057.1	1,055.6	1,054.5	1,054.2	1,053.1	1,052.3
Proposed	L18-G50-PT	1,057.2	1,057.1	1,059.4	1,059.6	1,060.7	1,060.9	1,059.1	1,057.5	1,055.9	1,055.0	1,054.7	1,053.6	1,052.9
1	L18-G42-PT	1,057.2	1,057.1	1,059.4	1,059.6	1,060.8	1,060.9	1,059.1	1,057.5	1,055.9	1,055.0	1,054.7	1,053.6	1,052.9
2	L18-G42-PL	1,057.2	1,057.1	1,059.4	1,059.6	1,060.7	1,060.9	1,059.1	1,057.4	1,055.9	1,055.0	1,054.6	1,053.6	1,052.8
3	L18-G42-WTP	1,057.2	1,057.1	1,059.4	1,059.6	1,060.7	1,060.9	1,059.1	1,057.4	1,055.9	1,055.0	1,054.6	1,053.6	1,052.8
4	L30-G30-PT	1,057.2	1,057.1	1,059.4	1,059.7	1,060.8	1,060.9	1,059.2	1,057.5	1,055.9	1,055.0	1,054.7	1,053.6	1,052.9
5	L30-G30-PL	1,057.2	1,057.1	1,059.4	1,059.6	1,060.8	1,060.9	1,059.1	1,057.5	1,055.9	1,054.9	1,054.6	1,053.6	1,052.8
6	L30-G30-WTP	1,057.2	1,057.1	1,059.4	1,059.6	1,060.8	1,060.9	1,059.1	1,057.5	1,055.9	1,054.9	1,054.6	1,053.6	1,052.8
7	L43-G17-PT	1,057.2	1,057.1	1,059.4	1,059.7	1,060.8	1,061.0	1,059.2	1,057.5	1,055.9	1,055.0	1,054.6	1,053.6	1,052.9
8	L43-G17-PL	1,057.2	1,057.1	1,059.4	1,059.7	1,060.8	1,060.9	1,059.2	1,057.5	1,055.9	1,054.9	1,054.6	1,053.6	1,052.8
9	L43-G17-WTP	1,057.2	1,057.1	1,059.4	1,059.7	1,060.8	1,060.9	1,059.2	1,057.5	1,055.9	1,054.9	1,054.6	1,053.6	1,052.8
10	L43-W17-PT	1,056.9	1,056.9	1,059.1	1,059.4	1,060.6	1,060.7	1,058.9	1,057.2	1,055.6	1,054.6	1,054.2	1,053.2	1,052.4
11	L43-W17-PL	1,056.9	1,056.8	1,059.1	1,059.4	1,060.5	1,060.7	1,058.9	1,057.2	1,055.6	1,054.6	1,054.2	1,053.1	1,052.3

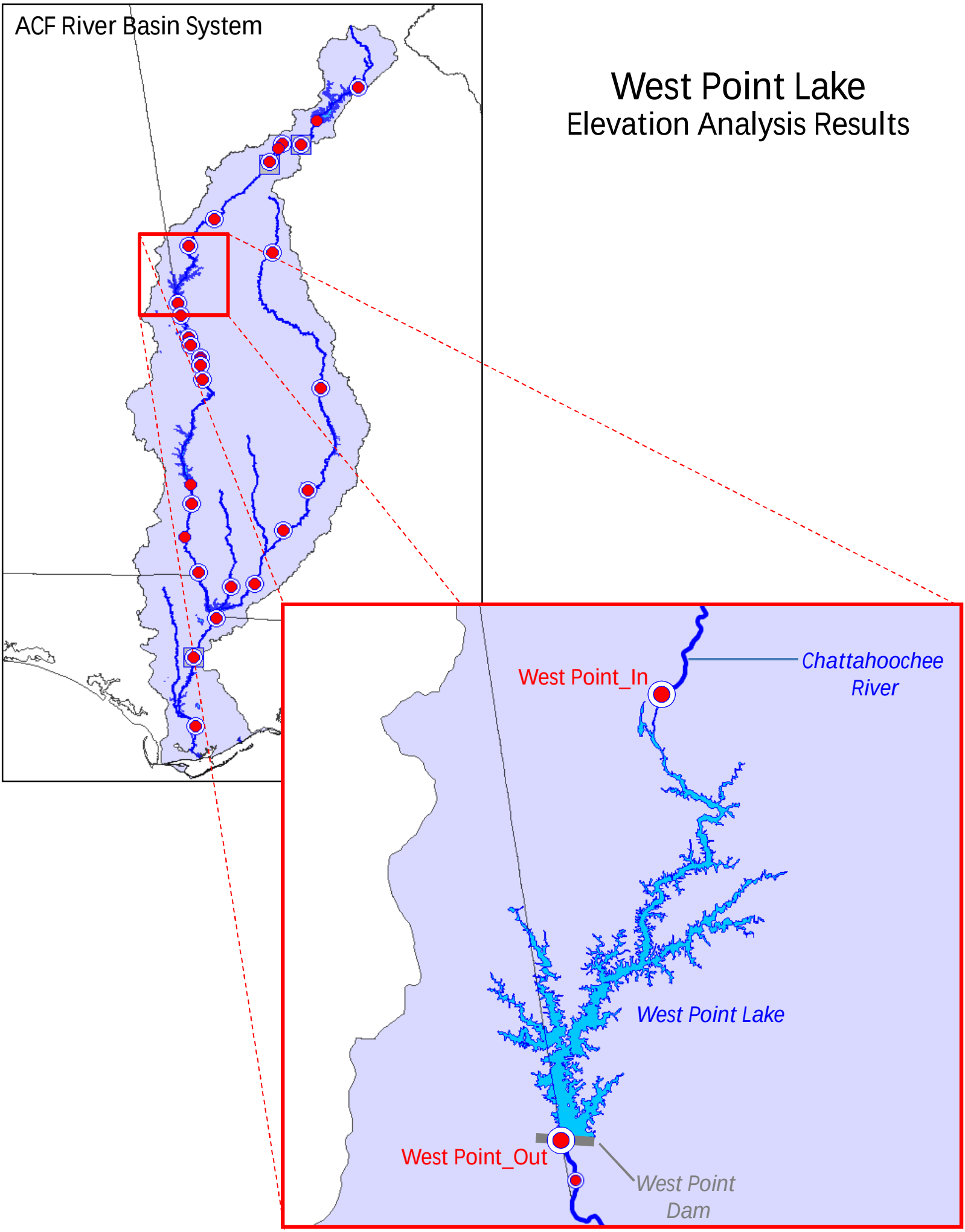
Lake Lanier Elevation
Drought Year Analysis - 2001

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,061.6	1,057.0	1,058.5	1,060.9	1,063.3	1,063.6	1,064.5	1,064.4	1,064.0	1,062.8	1,061.2	1,059.6	1,058.6
No Action	L60	1,059.8	1,055.9	1,057.2	1,059.6	1,062.1	1,062.0	1,062.6	1,062.6	1,062.5	1,060.9	1,059.1	1,057.1	1,055.9
Proposed	L18-G50-PT	1,059.9	1,056.0	1,057.4	1,059.7	1,062.1	1,062.0	1,062.6	1,062.7	1,062.6	1,061.0	1,059.2	1,057.2	1,056.0
1	L18-G42-PT	1,059.9	1,056.0	1,057.4	1,059.7	1,062.1	1,062.0	1,062.7	1,062.7	1,062.5	1,061.0	1,059.2	1,057.2	1,056.0
2	L18-G42-PL	1,059.9	1,056.0	1,057.4	1,059.7	1,062.1	1,062.0	1,062.7	1,062.7	1,062.6	1,061.0	1,059.2	1,057.2	1,056.0
3	L18-G42-WTP	1,059.9	1,056.0	1,057.4	1,059.7	1,062.1	1,062.0	1,062.7	1,062.7	1,062.6	1,061.0	1,059.2	1,057.2	1,056.0
4	L30-G30-PT	1,059.9	1,056.1	1,057.4	1,059.7	1,062.1	1,062.1	1,062.7	1,062.7	1,062.5	1,061.0	1,059.2	1,057.2	1,056.0
5	L30-G30-PL	1,059.9	1,056.0	1,057.4	1,059.7	1,062.1	1,062.1	1,062.7	1,062.7	1,062.5	1,061.0	1,059.2	1,057.2	1,056.0
6	L30-G30-WTP	1,059.9	1,056.0	1,057.4	1,059.7	1,062.1	1,062.1	1,062.7	1,062.7	1,062.5	1,061.0	1,059.2	1,057.2	1,056.0
7	L43-G17-PT	1,059.9	1,056.1	1,057.4	1,059.7	1,062.2	1,062.1	1,062.7	1,062.7	1,062.6	1,061.0	1,059.2	1,057.2	1,056.0
8	L43-G17-PL	1,059.9	1,056.1	1,057.4	1,059.7	1,062.1	1,062.1	1,062.7	1,062.7	1,062.6	1,061.0	1,059.2	1,057.2	1,056.0
9	L43-G17-WTP	1,059.9	1,056.1	1,057.4	1,059.7	1,062.1	1,062.1	1,062.7	1,062.7	1,062.6	1,061.0	1,059.2	1,057.2	1,056.0
10	L43-W17-PT	1,059.9	1,056.0	1,057.4	1,059.7	1,062.2	1,062.1	1,062.7	1,062.7	1,062.6	1,061.0	1,059.1	1,057.1	1,055.9
11	L43-W17-PL	1,059.9	1,056.0	1,057.4	1,059.7	1,062.2	1,062.1	1,062.7	1,062.7	1,062.6	1,061.0	1,059.1	1,057.1	1,055.9

Lake Lanier Pool Elevation
Drought Year Analysis - 2008

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,059.2	1,055.7	1,057.1	1,059.9	1,061.7	1,062.1	1,061.5	1,060.5	1,059.5	1,060.1	1,058.5	1,056.9	1,056.6
No Action	L60	1,054.9	1,053.0	1,054.2	1,057.0	1,058.9	1,058.9	1,057.8	1,056.2	1,054.6	1,054.6	1,052.5	1,050.5	1,050.7
Proposed	L18-G50-PT	1,054.6	1,052.6	1,053.8	1,056.6	1,058.4	1,058.5	1,057.4	1,055.8	1,054.3	1,054.4	1,052.3	1,050.4	1,050.6
1	L18-G42-PT	1,054.6	1,052.6	1,053.8	1,056.6	1,058.5	1,058.5	1,057.4	1,055.8	1,054.3	1,054.4	1,052.3	1,050.4	1,050.5
2	L18-G42-PL	1,054.6	1,052.6	1,053.8	1,056.6	1,058.5	1,058.5	1,057.4	1,055.8	1,054.3	1,054.4	1,052.3	1,050.4	1,050.5
3	L18-G42-WTP	1,054.6	1,052.6	1,053.8	1,056.6	1,058.5	1,058.5	1,057.4	1,055.8	1,054.3	1,054.4	1,052.3	1,050.4	1,050.5
4	L30-G30-PT	1,054.5	1,052.5	1,053.7	1,056.5	1,058.4	1,058.4	1,057.3	1,055.7	1,054.2	1,054.3	1,052.1	1,050.2	1,050.4
5	L30-G30-PL	1,054.5	1,052.5	1,053.7	1,056.5	1,058.4	1,058.4	1,057.3	1,055.7	1,054.2	1,054.3	1,052.1	1,050.2	1,050.4
6	L30-G30-WTP	1,054.5	1,052.5	1,053.7	1,056.5	1,058.4	1,058.4	1,057.3	1,055.7	1,054.2	1,054.3	1,052.1	1,050.2	1,050.4
7	L43-G17-PT	1,054.4	1,052.4	1,053.6	1,056.5	1,058.3	1,058.4	1,057.3	1,055.7	1,054.1	1,054.2	1,052.0	1,050.1	1,050.3
8	L43-G17-PL	1,054.4	1,052.4	1,053.6	1,056.5	1,058.3	1,058.4	1,057.3	1,055.7	1,054.1	1,054.2	1,052.0	1,050.1	1,050.2
9	L43-G17-WTP	1,054.4	1,052.4	1,053.6	1,056.5	1,058.3	1,058.4	1,057.3	1,055.7	1,054.1	1,054.2	1,052.0	1,050.1	1,050.2
10	L43-W17-PT	1,055.0	1,053.1	1,054.3	1,057.1	1,058.9	1,059.0	1,057.9	1,056.3	1,054.7	1,054.8	1,052.7	1,050.8	1,050.9
11	L43-W17-PL	1,055.0	1,053.1	1,054.3	1,057.1	1,059.0	1,059.0	1,057.9	1,056.3	1,054.7	1,054.8	1,052.7	1,050.8	1,050.9

West Point Lake
Elevation Analysis Results

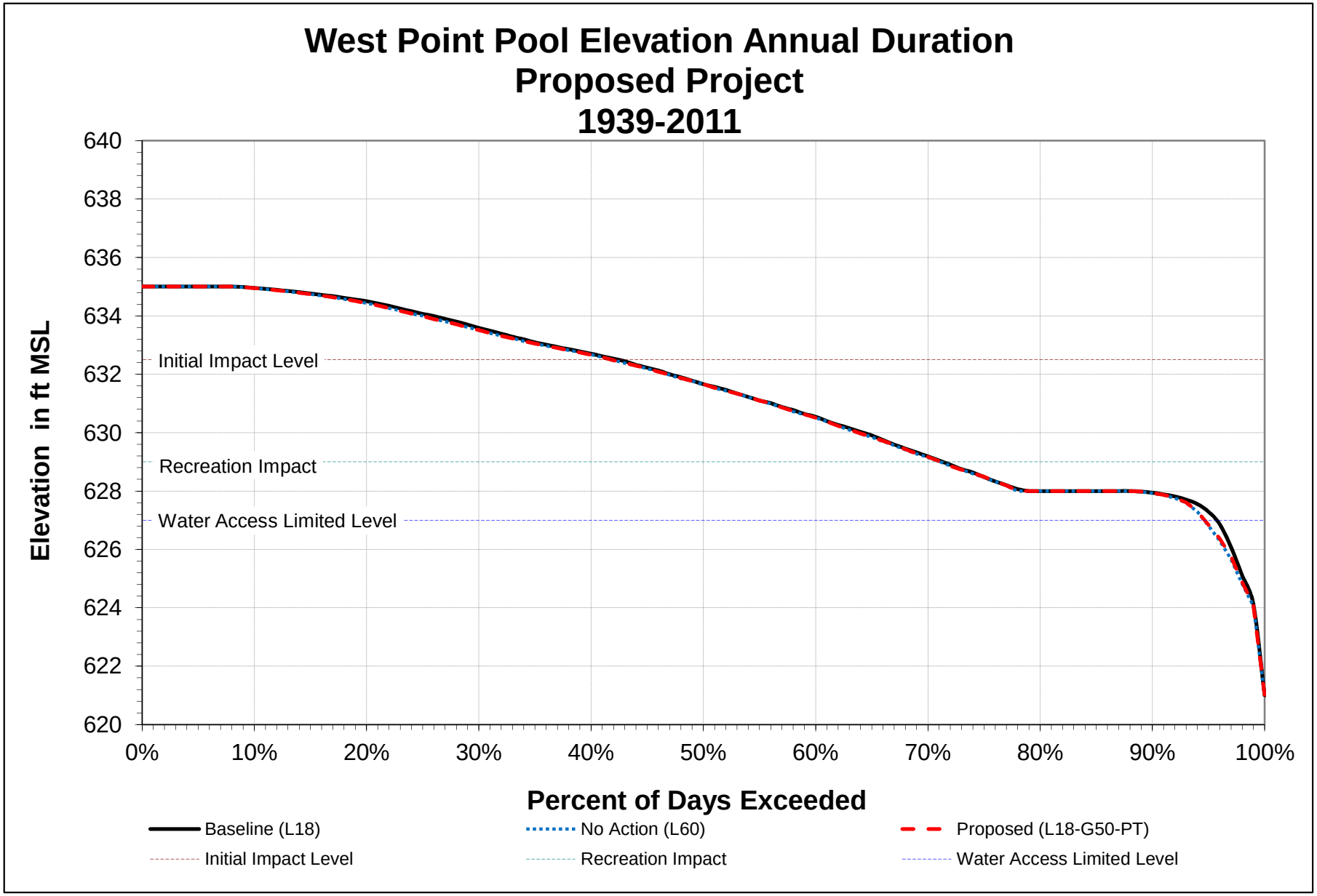


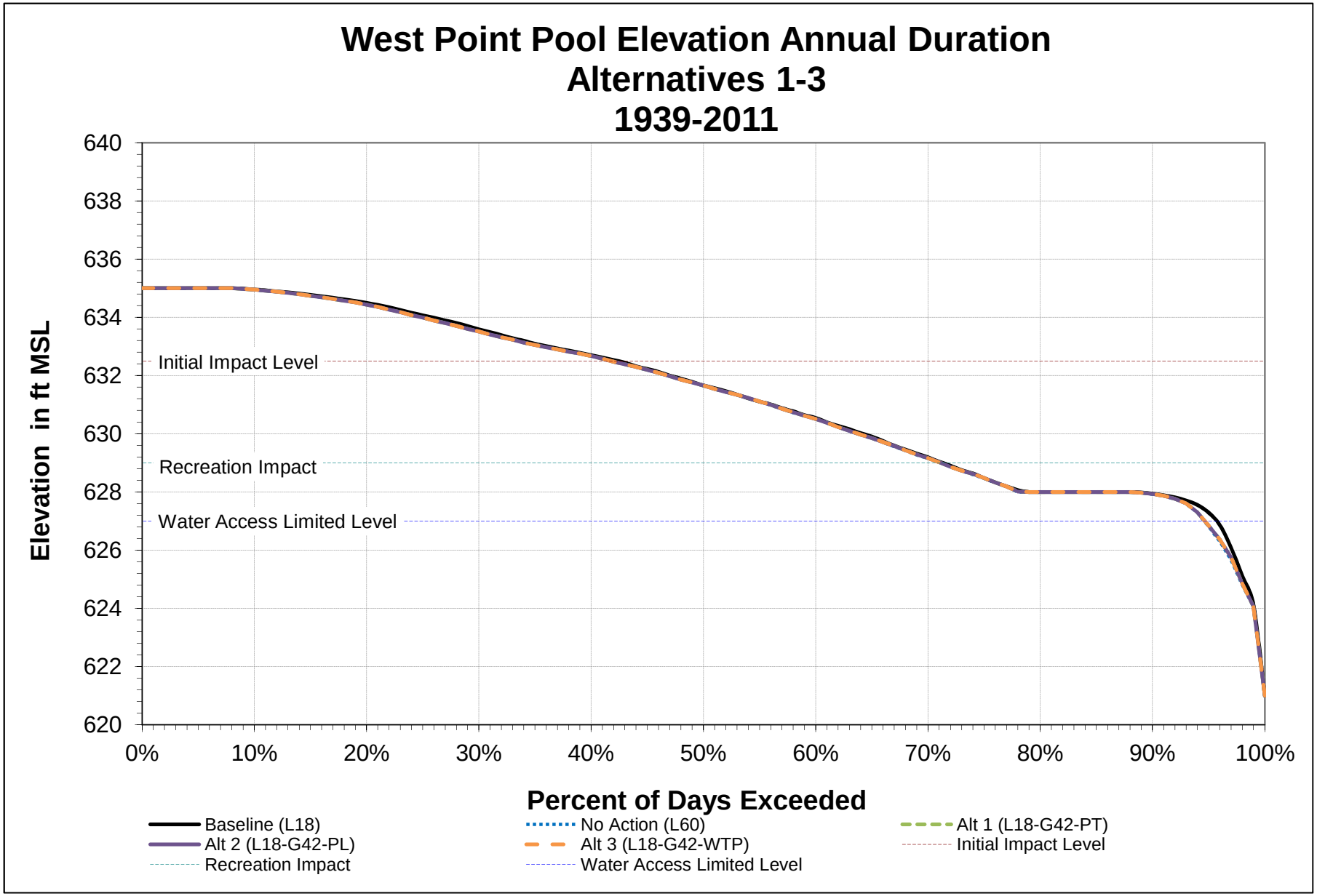
West Point Pool Elevation
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

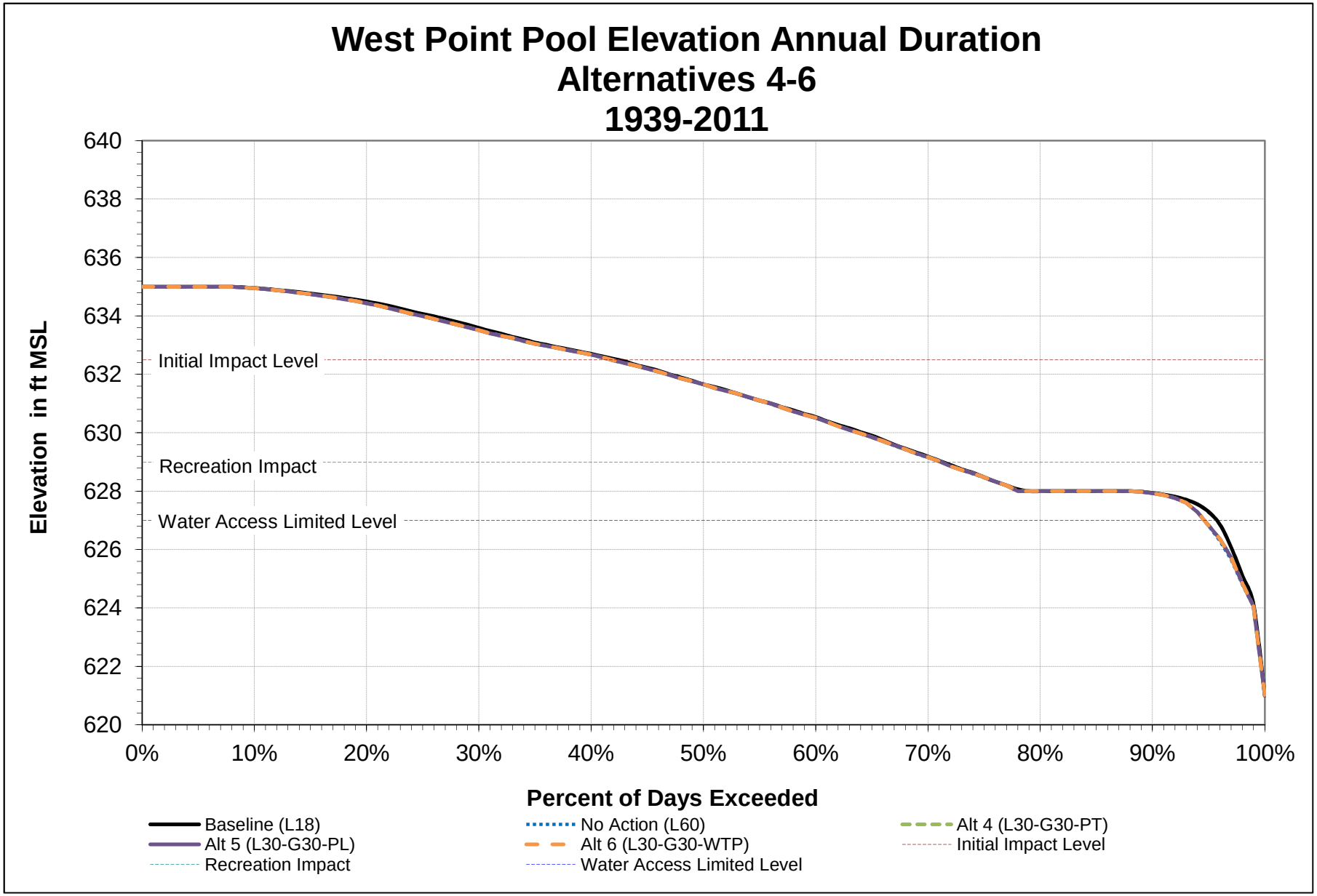
Average Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	627.7	628.1	629.8	631.8	633.2	633.9	633.8	633.5	632.9	632.4	630.7	627.8
No Action	L60	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
Proposed	L18-G50-PT	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
1	L18-G42-PT	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
2	L18-G42-PL	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
3	L18-G42-WTP	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
4	L30-G30-PT	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
5	L30-G30-PL	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
6	L30-G30-WTP	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
7	L43-G17-PT	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
8	L43-G17-PL	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
9	L43-G17-WTP	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
10	L43-W17-PT	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7
11	L43-W17-PL	627.6	628.1	629.8	631.8	633.2	633.9	633.9	633.5	632.8	632.2	630.5	627.7

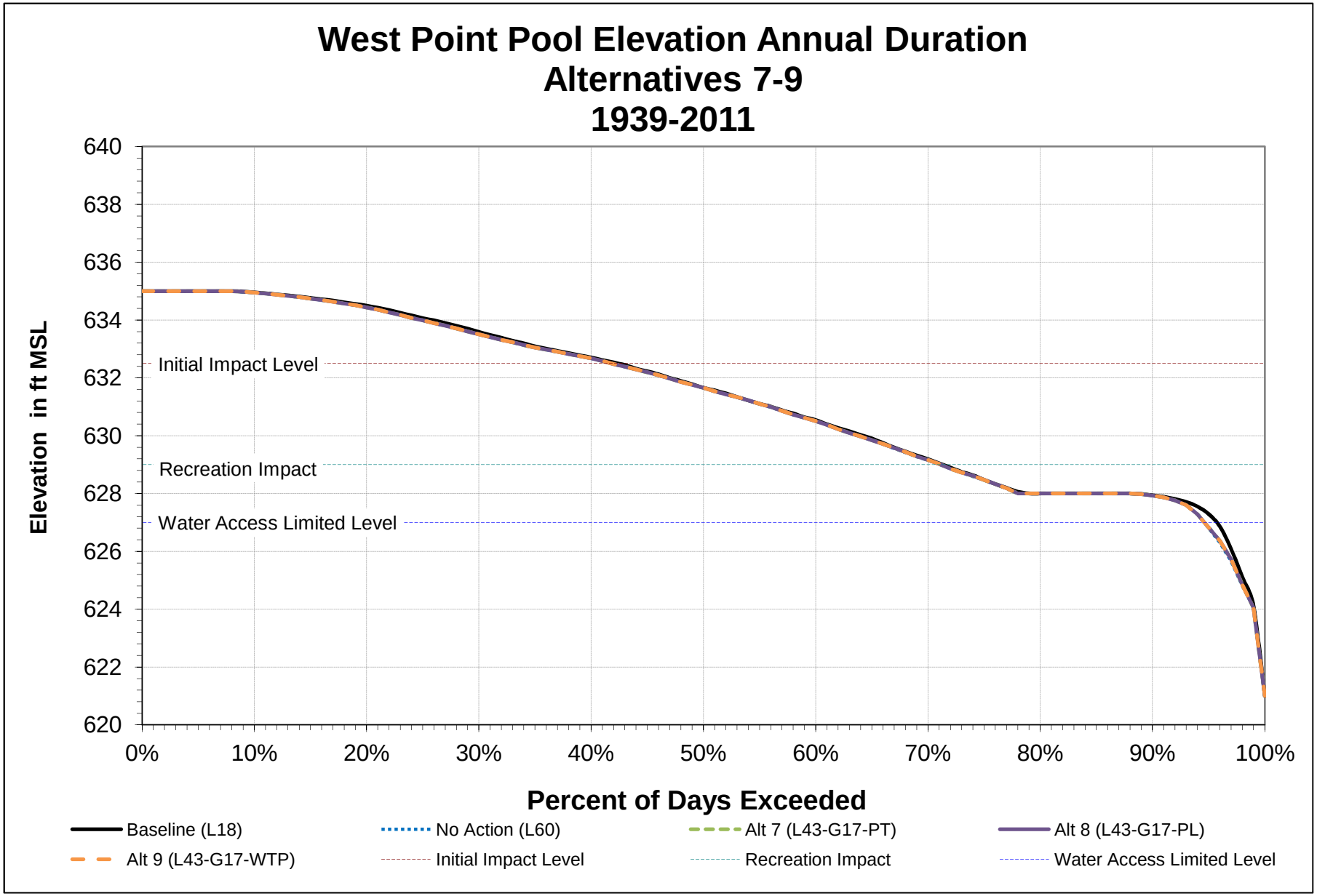
Minimum Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	623.8	624.0	626.8	629.3	630.3	628.5	627.2	626.0	624.7	622.7	621.0	621.0
No Action	L60	623.4	624.0	626.9	629.5	630.0	628.5	626.9	625.5	623.4	622.5	621.0	621.0
Proposed	L18-G50-PT	623.4	624.0	626.9	629.6	630.0	628.6	627.0	625.5	623.4	622.4	621.0	621.0
1	L18-G42-PT	623.4	624.0	626.9	629.5	630.0	628.6	627.0	625.5	623.3	622.5	621.0	621.0
2	L18-G42-PL	623.4	624.0	626.9	629.5	630.0	628.6	627.0	625.5	623.3	622.5	621.0	621.0
3	L18-G42-WTP	623.4	624.0	626.9	629.5	630.0	628.6	627.0	625.5	623.3	622.5	621.0	621.0
4	L30-G30-PT	623.4	624.0	626.9	629.5	630.0	628.5	626.9	625.5	623.3	622.4	621.0	621.0
5	L30-G30-PL	623.4	624.0	626.9	629.5	630.0	628.5	627.0	625.5	623.3	622.4	621.0	621.0
6	L30-G30-WTP	623.4	624.0	626.9	629.5	630.0	628.5	627.0	625.5	623.3	622.4	621.0	621.0
7	L43-G17-PT	623.4	624.0	626.9	629.5	630.0	628.5	626.9	625.5	623.4	622.4	621.0	621.0
8	L43-G17-PL	623.4	624.0	626.9	629.5	630.0	628.5	626.9	625.5	623.4	622.4	621.0	621.0
9	L43-G17-WTP	623.4	624.0	626.9	629.5	630.0	628.5	626.9	625.5	623.4	622.4	621.0	621.0
10	L43-W17-PT	623.4	624.0	626.9	629.5	630.0	628.5	626.8	625.5	623.4	622.5	621.0	621.0
11	L43-W17-PL	623.4	624.0	626.9	629.5	630.0	628.5	626.8	625.5	623.4	622.5	621.0	621.0

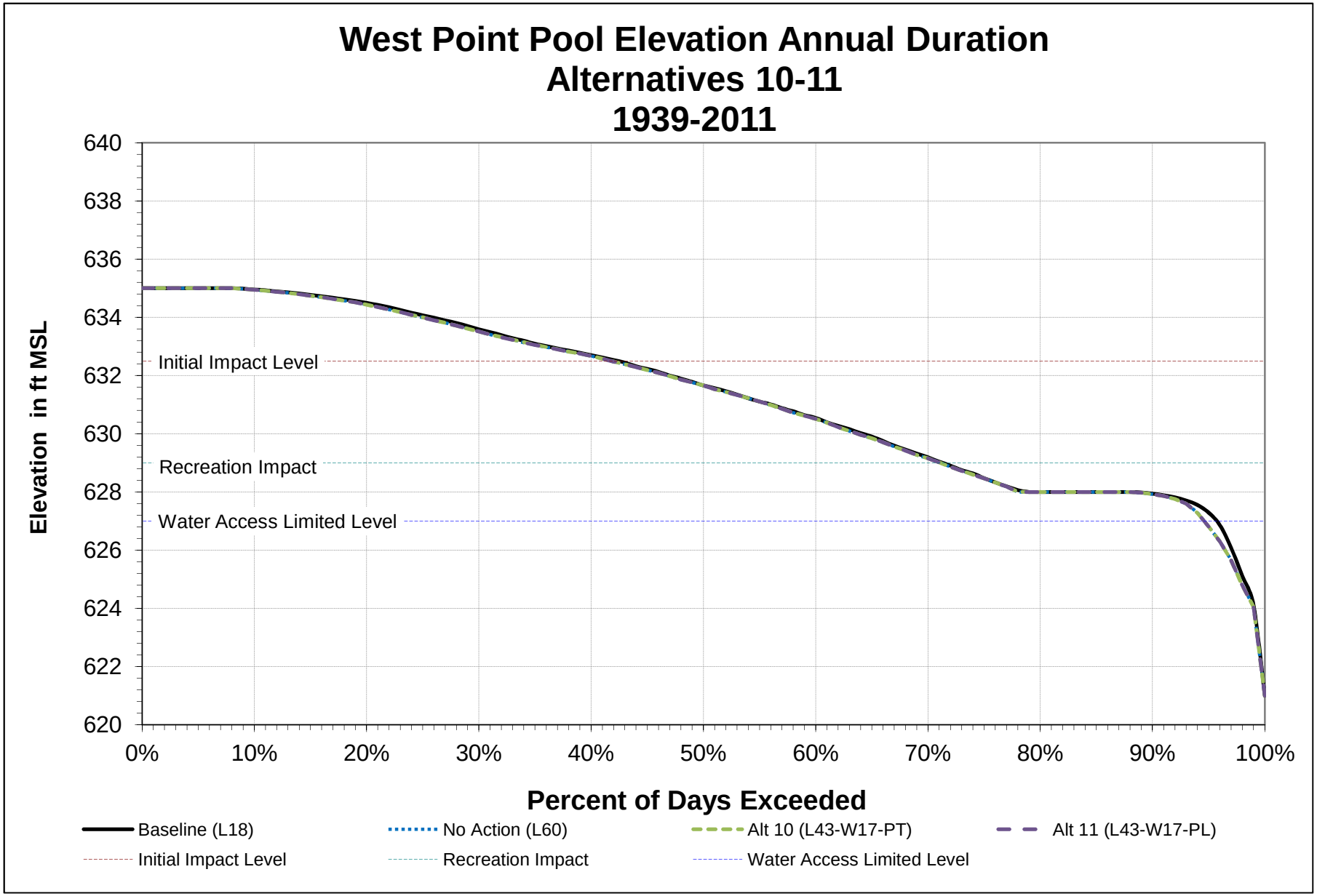
Maximum Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	628.0	633.3	633.1	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.9
No Action	L60	628.0	632.8	632.6	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.1
Proposed	L18-G50-PT	628.0	632.7	632.4	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.2
1	L18-G42-PT	628.0	632.7	632.4	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.2
2	L18-G42-PL	628.0	632.7	632.4	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.2
3	L18-G42-WTP	628.0	632.7	632.4	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.2
4	L30-G30-PT	628.0	632.7	632.4	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.2
5	L30-G30-PL	628.0	632.7	632.4	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.2
6	L30-G30-WTP	628.0	632.7	632.4	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.2
7	L43-G17-PT	628.0	632.7	632.5	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.2
8	L43-G17-PL	628.0	632.7	632.4	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.2
9	L43-G17-WTP	628.0	632.7	632.4	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.2
10	L43-W17-PT	628.0	632.8	632.6	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.1
11	L43-W17-PL	628.0	632.8	632.6	633.0	635.0	635.0	635.0	635.0	635.0	635.0	634.8	632.1


West Point Pool Elevation Annual Duration
Proposed Project
1939-2011
Elevation in ft MSL
640
638
636
634
632
630
628
626
624
622
620
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Proposed (L18-G50-PT)
Initial Impact Level
Recreation Impact
Water Access Limited Level


West Point Pool Elevation Annual Duration
Alternatives 1-3
1939-2011
Elevation in ft MSL
640
638
636
634
632
630
628
626
624
622
620
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)
Initial Impact Level
Recreation Impact
Water Access Limited Level


West Point Pool Elevation Annual Duration
Alternatives 4-6
1939-2011
Elevation in ft MSL
640
638
636
634
632
630
628
626
624
622
620
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)
Initial Impact Level
Recreation Impact
Water Access Limited Level


West Point Pool Elevation Annual Duration
Alternatives 7-9
1939-2011
Elevation in ft MSL
640
638
636
634
632
630
628
626
624
622
620
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)
Initial Impact Level
Recreation Impact
Water Access Limited Level


West Point Pool Elevation Annual Duration
Alternatives 10-11
1939-2011
Elevation in ft MSL
640
638
636
634
632
630
628
626
624
622
620
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 10 (L43-W17-PT)
Alt 11 (L43-W17-PL)
Initial Impact Level
Recreation Impact
Water Access Limited Level

West Point Pool Elevation
Average Year Analysis - 1997

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	632.0	628.0	628.2	630.0	631.9	633.4	635.0	634.8	634.6	632.9	634.6	632.5	628.5
No Action	L60	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.8	634.4	632.5	628.5
Proposed	L18-G50-PT	632.0	628.0	628.2	630.0	631.9	633.4	635.0	634.8	634.6	632.9	634.4	632.5	628.5
1	L18-G42-PT	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.9	634.4	632.5	628.5
2	L18-G42-PL	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.9	634.4	632.5	628.5
3	L18-G42-WTP	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.9	634.4	632.5	628.5
4	L30-G30-PT	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.9	634.4	632.5	628.5
5	L30-G30-PL	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.9	634.4	632.5	628.5
6	L30-G30-WTP	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.9	634.4	632.5	628.5
7	L43-G17-PT	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.9	634.4	632.5	628.5
8	L43-G17-PL	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.9	634.4	632.5	628.5
9	L43-G17-WTP	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.9	634.4	632.5	628.5
10	L43-W17-PT	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.8	634.4	632.5	628.5
11	L43-W17-PL	632.0	628.0	628.2	630.0	631.9	633.3	635.0	634.8	634.6	632.8	634.4	632.5	628.5

West Point Pool Elevation
Wet Year Analysis - 2005

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.6	632.5	628.5
No Action	L60	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.4	628.4
Proposed	L18-G50-PT	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.5	628.4
1	L18-G42-PT	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.5	628.4
2	L18-G42-PL	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.5	628.4
3	L18-G42-WTP	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.5	628.4
4	L30-G30-PT	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.5	628.4
5	L30-G30-PL	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.5	628.4
6	L30-G30-WTP	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.5	628.4
7	L43-G17-PT	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.5	628.4
8	L43-G17-PL	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.5	628.4
9	L43-G17-WTP	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.5	628.4
10	L43-W17-PT	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.4	628.4
11	L43-W17-PL	632.2	628.0	628.2	630.0	632.0	633.6	634.9	634.9	635.0	634.6	634.4	632.4	628.4

West Point Pool Elevation
Drought Year Analysis - 1988

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	629.8	627.0	627.8	628.2	631.1	632.7	631.6	630.4	629.3	630.5	631.0	629.8	628.1
No Action	L60	630.1	626.9	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
Proposed	L18-G50-PT	630.1	626.9	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
1	L18-G42-PT	630.1	627.0	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
2	L18-G42-PL	630.1	627.0	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
3	L18-G42-WTP	630.1	627.0	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
4	L30-G30-PT	630.1	626.9	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
5	L30-G30-PL	630.1	626.9	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
6	L30-G30-WTP	630.1	626.9	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
7	L43-G17-PT	630.1	627.0	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
8	L43-G17-PL	630.1	627.0	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
9	L43-G17-WTP	630.1	627.0	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
10	L43-W17-PT	630.1	626.9	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9
11	L43-W17-PL	630.1	626.9	627.8	628.3	631.2	632.7	631.9	631.1	630.5	631.8	631.8	629.7	627.9

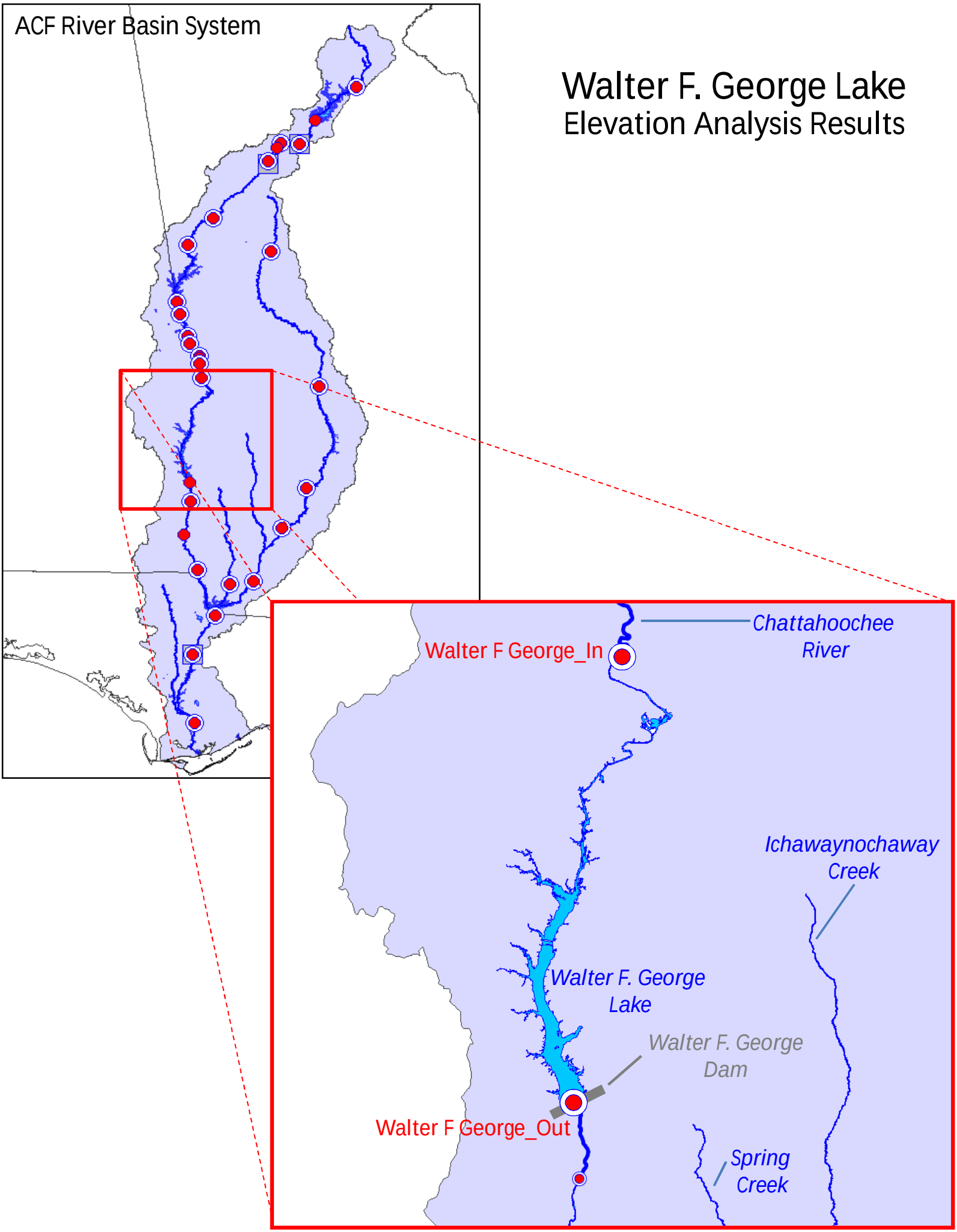
West Point Pool Elevation
Drought Year Analysis - 2001

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	630.3	627.4	628.0	630.0	631.7	632.5	634.8	634.5	634.1	632.3	629.2	625.5	624.1
No Action	L60	629.8	625.3	626.8	630.0	631.7	632.7	634.8	634.2	632.9	631.2	628.2	625.4	624.2
Proposed	L18-G50-PT	629.8	625.6	627.1	630.0	631.7	632.7	634.8	634.2	632.9	631.2	628.2	625.4	624.2
1	L18-G42-PT	629.9	625.6	627.1	630.0	631.7	632.7	634.8	634.2	633.0	631.2	628.2	625.4	624.2
2	L18-G42-PL	629.8	625.6	627.1	630.0	631.7	632.7	634.8	634.2	632.9	631.2	628.2	625.4	624.2
3	L18-G42-WTP	629.8	625.6	627.1	630.0	631.7	632.7	634.8	634.2	632.9	631.2	628.2	625.4	624.2
4	L30-G30-PT	629.9	625.7	627.2	630.0	631.7	632.7	634.8	634.2	633.0	631.2	628.2	625.4	624.2
5	L30-G30-PL	629.9	625.7	627.2	630.0	631.7	632.7	634.8	634.2	633.0	631.2	628.2	625.4	624.2
6	L30-G30-WTP	629.9	625.7	627.2	630.0	631.7	632.7	634.8	634.2	633.0	631.2	628.2	625.4	624.2
7	L43-G17-PT	629.9	625.7	627.1	630.0	631.7	632.7	634.8	634.2	633.0	631.2	628.2	625.4	624.2
8	L43-G17-PL	629.9	625.7	627.2	630.0	631.7	632.7	634.8	634.2	633.0	631.2	628.2	625.4	624.2
9	L43-G17-WTP	629.9	625.7	627.2	630.0	631.7	632.7	634.8	634.2	633.0	631.2	628.2	625.4	624.2
10	L43-W17-PT	629.8	625.4	626.9	630.0	631.7	632.7	634.8	634.2	633.0	631.2	628.2	625.4	624.2
11	L43-W17-PL	629.8	625.4	626.9	630.0	631.7	632.7	634.8	634.2	633.0	631.2	628.2	625.4	624.2

West Point Pool Elevation
Drought Year Analysis - 2008

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	628.8	624.1	625.7	629.8	631.3	632.5	632.1	630.8	630.0	629.9	627.9	625.4	626.5
No Action	L60	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
Proposed	L18-G50-PT	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.5	631.1	630.8	628.1	625.4	625.8
1	L18-G42-PT	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
2	L18-G42-PL	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
3	L18-G42-WTP	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
4	L30-G30-PT	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
5	L30-G30-PL	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
6	L30-G30-WTP	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
7	L43-G17-PT	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
8	L43-G17-PL	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
9	L43-G17-WTP	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
10	L43-W17-PT	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8
11	L43-W17-PL	629.0	624.0	625.7	629.8	631.4	632.7	632.4	631.4	631.1	630.8	628.1	625.4	625.8

Walter F. George Lake
Elevation Analysis Results



Walter F. George Pool Elevation
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Elevation (ft MSL)

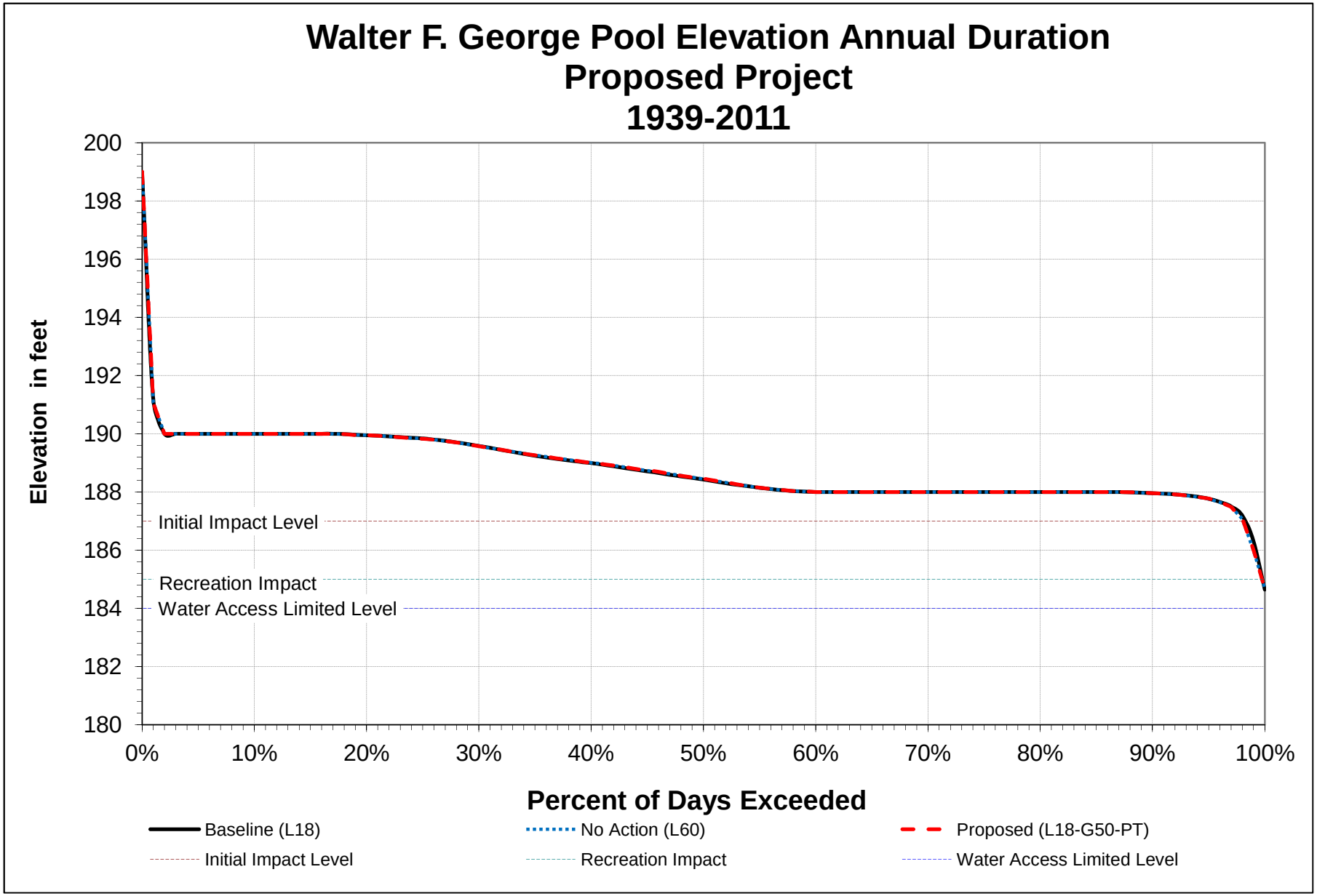
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	188.1	188.1	188.4	188.2	188.6	189.5	189.7	189.7	189.6	189.2	188.4	188.1
No Action	L60	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
Proposed	L18-G50-PT	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
1	L18-G42-PT	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
2	L18-G42-PL	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
3	L18-G42-WTP	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
4	L30-G30-PT	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
5	L30-G30-PL	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
6	L30-G30-WTP	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
7	L43-G17-PT	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
8	L43-G17-PL	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
9	L43-G17-WTP	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
10	L43-W17-PT	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1
11	L43-W17-PL	188.1	188.1	188.3	188.2	188.6	189.5	189.7	189.6	189.6	189.2	188.4	188.1

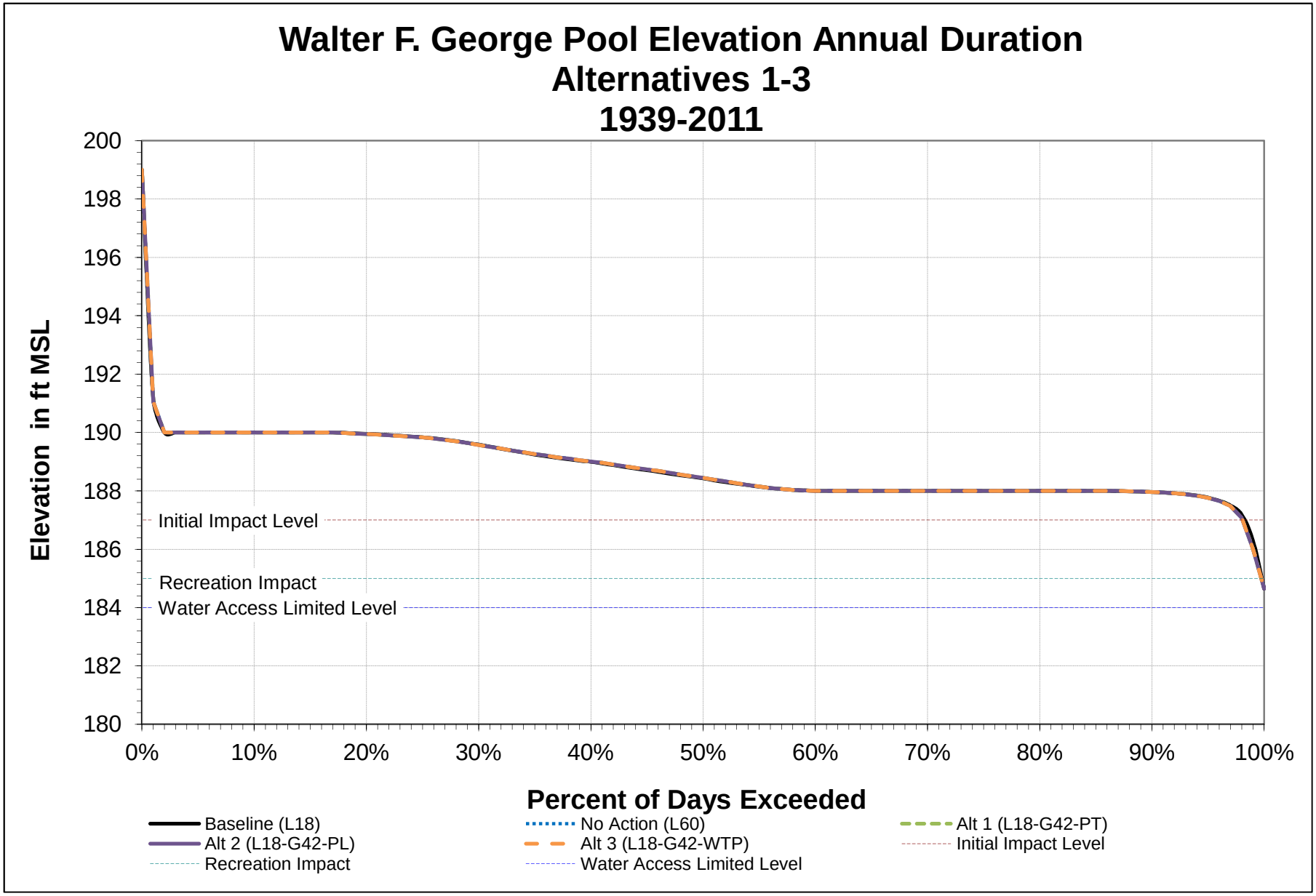
Minimum Daily Elevation (ft MSL)

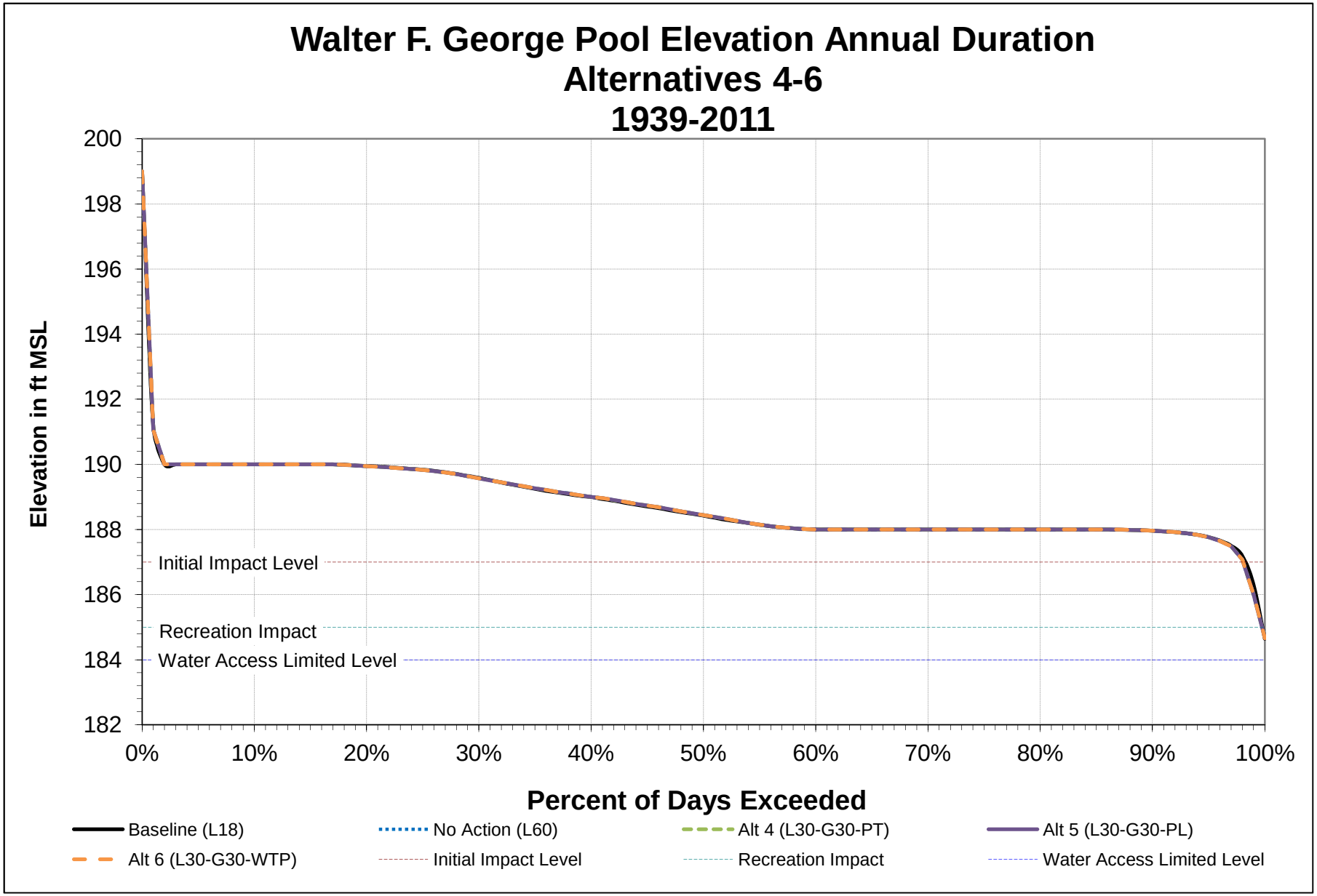
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	187.5	187.8	187.0	186.6	186.9	186.2	185.7	185.6	185.6	185.0	184.6	185.2
No Action	L60	187.6	187.8	187.5	186.8	186.8	186.0	185.5	185.0	184.8	184.7	184.7	185.3
Proposed	L18-G50-PT	187.6	187.9	187.4	186.8	186.8	186.0	185.5	185.0	184.8	184.7	184.7	185.3
1	L18-G42-PT	187.6	187.8	187.5	186.8	186.8	186.0	185.5	185.0	184.8	184.7	184.6	185.3
2	L18-G42-PL	187.6	187.8	187.5	186.8	186.8	186.0	185.5	185.0	184.8	184.7	184.7	185.3
3	L18-G42-WTP	187.6	187.8	187.5	186.8	186.8	186.0	185.5	185.0	184.8	184.7	184.7	185.3
4	L30-G30-PT	187.6	187.8	187.5	186.8	186.8	186.1	185.5	185.0	184.8	184.7	184.7	185.3
5	L30-G30-PL	187.6	187.8	187.5	186.8	186.8	186.1	185.5	185.0	184.8	184.7	184.7	185.3
6	L30-G30-WTP	187.6	187.8	187.5	186.8	186.8	186.1	185.5	185.0	184.8	184.7	184.7	185.3
7	L43-G17-PT	187.6	187.8	187.5	186.8	186.8	186.1	185.5	185.0	184.8	184.7	184.7	185.3
8	L43-G17-PL	187.6	187.8	187.5	186.8	186.8	186.1	185.5	185.0	184.8	184.7	184.7	185.3
9	L43-G17-WTP	187.6	187.8	187.5	186.8	186.8	186.1	185.5	185.0	184.8	184.7	184.7	185.3
10	L43-W17-PT	187.6	187.8	187.5	186.8	186.7	186.1	185.5	185.0	184.8	184.7	184.7	185.3
11	L43-W17-PL	187.6	187.8	187.5	186.8	186.7	186.1	185.5	185.0	184.8	184.7	184.7	185.3

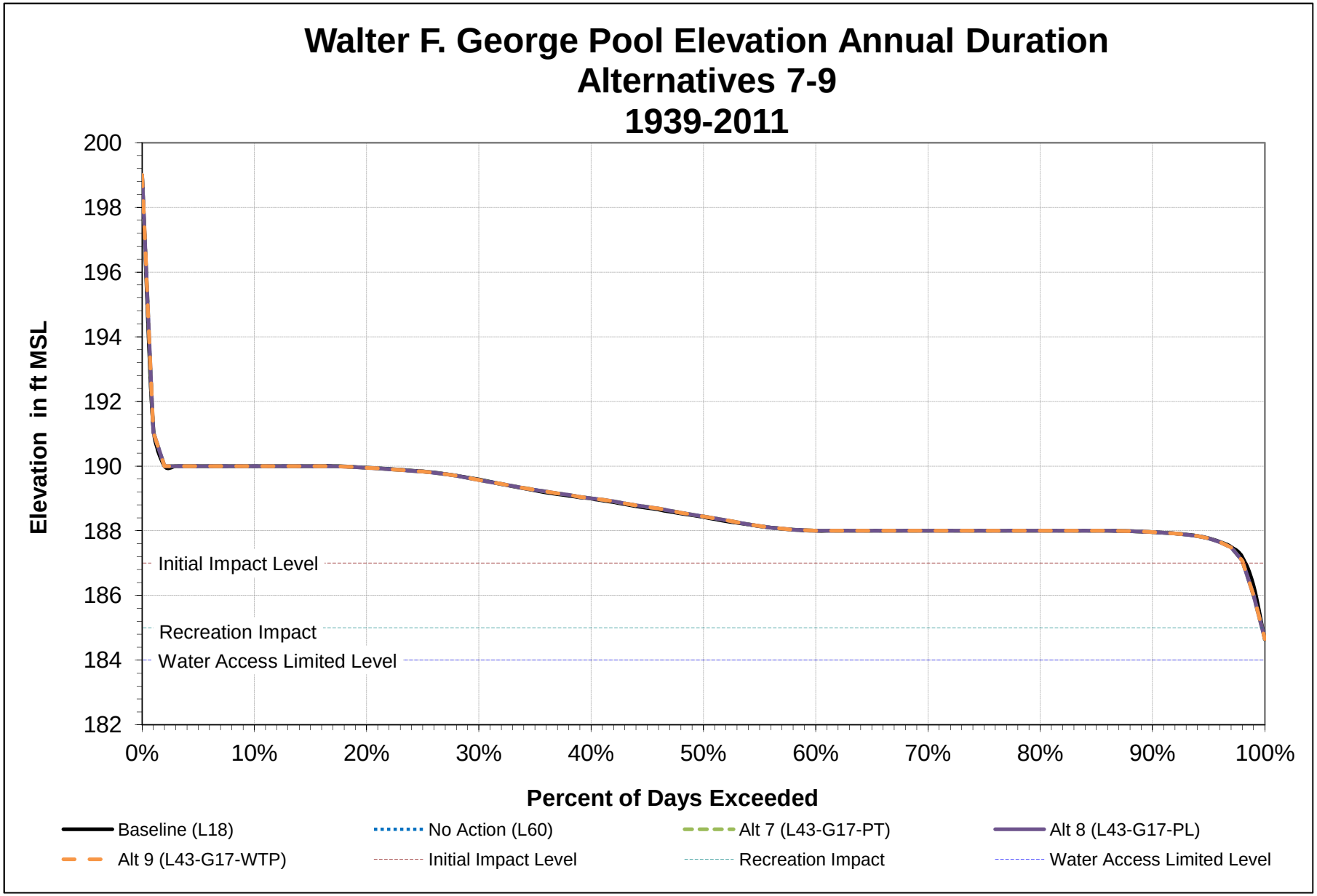
Maximum Daily Elevation (ft MSL)

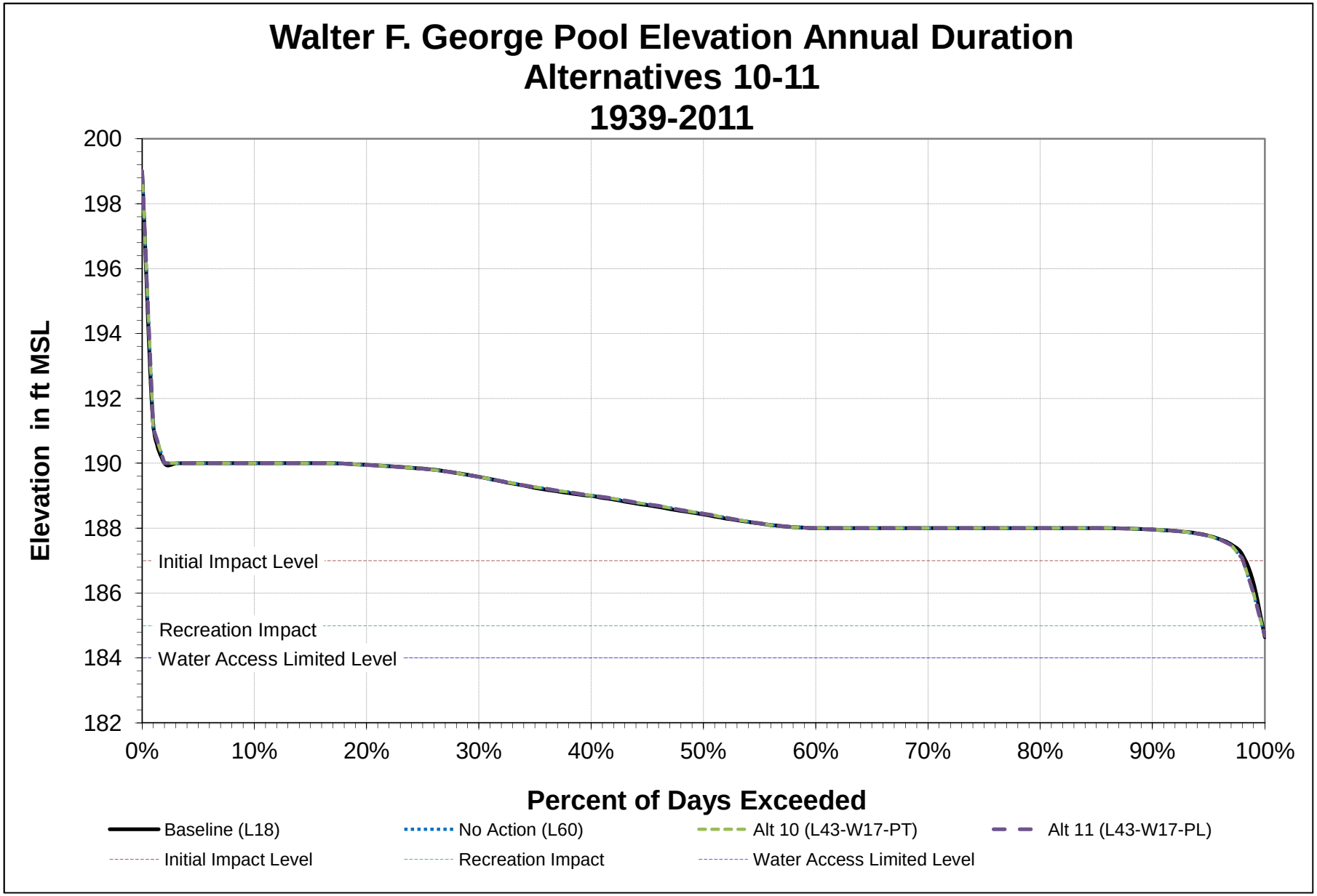
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	195.1	195.6	199.0	198.6	192.8	190.0	196.9	190.0	190.0	190.0	192.9	199.0
No Action	L60	195.1	195.6	199.0	198.6	192.9	190.0	196.9	190.0	190.0	190.0	192.7	199.0
Proposed	L18-G50-PT	195.0	195.6	199.0	198.6	192.7	190.0	196.9	190.0	190.0	190.0	192.7	199.0
1	L18-G42-PT	195.0	195.6	199.0	198.6	192.7	190.0	196.9	190.0	190.0	190.0	192.7	199.0
2	L18-G42-PL	195.0	195.6	199.0	198.6	192.7	190.0	196.9	190.0	190.0	190.0	192.7	199.0
3	L18-G42-WTP	195.0	195.6	199.0	198.6	192.7	190.0	196.9	190.0	190.0	190.0	192.7	199.0
4	L30-G30-PT	195.0	195.6	199.0	198.6	192.7	190.0	196.9	190.0	190.0	190.0	192.7	199.0
5	L30-G30-PL	195.0	195.6	199.0	198.6	192.7	190.0	196.9	190.0	190.0	190.0	192.7	199.0
6	L30-G30-WTP	195.0	195.6	199.0	198.6	192.7	190.0	196.9	190.0	190.0	190.0	192.7	199.0
7	L43-G17-PT	195.0	195.6	199.0	198.6	192.7	190.0	196.9	190.0	190.0	190.0	192.7	199.0
8	L43-G17-PL	195.0	195.6	199.0	198.6	192.7	190.0	196.9	190.0	190.0	190.0	192.7	199.0
9	L43-G17-WTP	195.0	195.6	199.0	198.6	192.7	190.0	196.9	190.0	190.0	190.0	192.7	199.0
10	L43-W17-PT	195.1	195.6	199.0	198.6	192.9	190.0	196.9	190.0	190.0	190.0	192.7	199.0
11	L43-W17-PL	195.1	195.6	199.0	198.6	192.9	190.0	196.9	190.0	190.0	190.0	192.7	199.0


Walter F. George Pool Elevation Annual Duration
Proposed Project
1939-2011
Elevation in feet
200
198
196
194
192
190
188
186
184
182
180
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Proposed (L18-G50-PT)
Initial Impact Level
Recreation Impact
Water Access Limited Level


Walter F. George Pool Elevation Annual Duration
Alternatives 1-3
1939-2011
Elevation in ft MSL
200
198
196
194
192
190
188
186
184
182
180
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)
Initial Impact Level
Recreation Impact
Water Access Limited Level


Walter F. George Pool Elevation Annual Duration
Alternatives 4-6
1939-2011
Elevation in ft MSL
200
198
196
194
192
190
188
186
184
182
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)
Initial Impact Level
Recreation Impact
Water Access Limited Level


Walter F. George Pool Elevation Annual Duration
Alternatives 7-9
1939-2011
Elevation in ft MSL
200
198
196
194
192
190
188
186
184
182
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)
Initial Impact Level
Recreation Impact
Water Access Limited Level


Walter F. George Pool Elevation Annual Duration
Alternatives 10-11
1939-2011
Elevation in ft MSL
200
198
196
194
192
190
188
186
184
182
Initial Impact Level
Recreation Impact
Water Access Limited Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 10 (L43-W17-PT)
Alt 11 (L43-W17-PL)
Initial Impact Level
Recreation Impact
Water Access Limited Level

Walter F. George Pool Elevation
Average Year Analysis - 1997

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.5	188.5	188.3
No Action	L60	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
Proposed	L18-G50-PT	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
1	L18-G42-PT	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
2	L18-G42-PL	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
3	L18-G42-WTP	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
4	L30-G30-PT	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
5	L30-G30-PL	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
6	L30-G30-WTP	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
7	L43-G17-PT	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
8	L43-G17-PL	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
9	L43-G17-WTP	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
10	L43-W17-PT	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3
11	L43-W17-PL	188.9	188.0	188.0	188.2	187.9	188.7	190.0	190.0	189.9	189.7	189.4	188.5	188.3

Walter F. George Pool Elevation
Wet Year Analysis - 2005

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	189.3	188.0	188.0	188.8	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
No Action	L60	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
Proposed	L18-G50-PT	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
1	L18-G42-PT	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
2	L18-G42-PL	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
3	L18-G42-WTP	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
4	L30-G30-PT	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
5	L30-G30-PL	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
6	L30-G30-WTP	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
7	L43-G17-PT	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
8	L43-G17-PL	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
9	L43-G17-WTP	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
10	L43-W17-PT	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0
11	L43-W17-PL	189.3	188.0	188.0	188.9	192.3	188.8	190.0	190.3	190.0	189.9	189.5	188.5	188.0

Walter F. George Pool Elevation
Drought Year Analysis - 1988

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	188.5	188.0	188.0	188.0	187.9	188.3	189.0	189.5	188.8	188.7	189.0	188.5	188.0
No Action	L60	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
Proposed	L18-G50-PT	188.5	188.0	188.0	188.0	188.0	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
1	L18-G42-PT	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
2	L18-G42-PL	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
3	L18-G42-WTP	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
4	L30-G30-PT	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
5	L30-G30-PL	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
6	L30-G30-WTP	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
7	L43-G17-PT	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
8	L43-G17-PL	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
9	L43-G17-WTP	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
10	L43-W17-PT	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0
11	L43-W17-PL	188.5	188.0	188.0	188.0	187.9	188.4	189.0	189.5	188.8	188.9	189.4	188.5	188.0

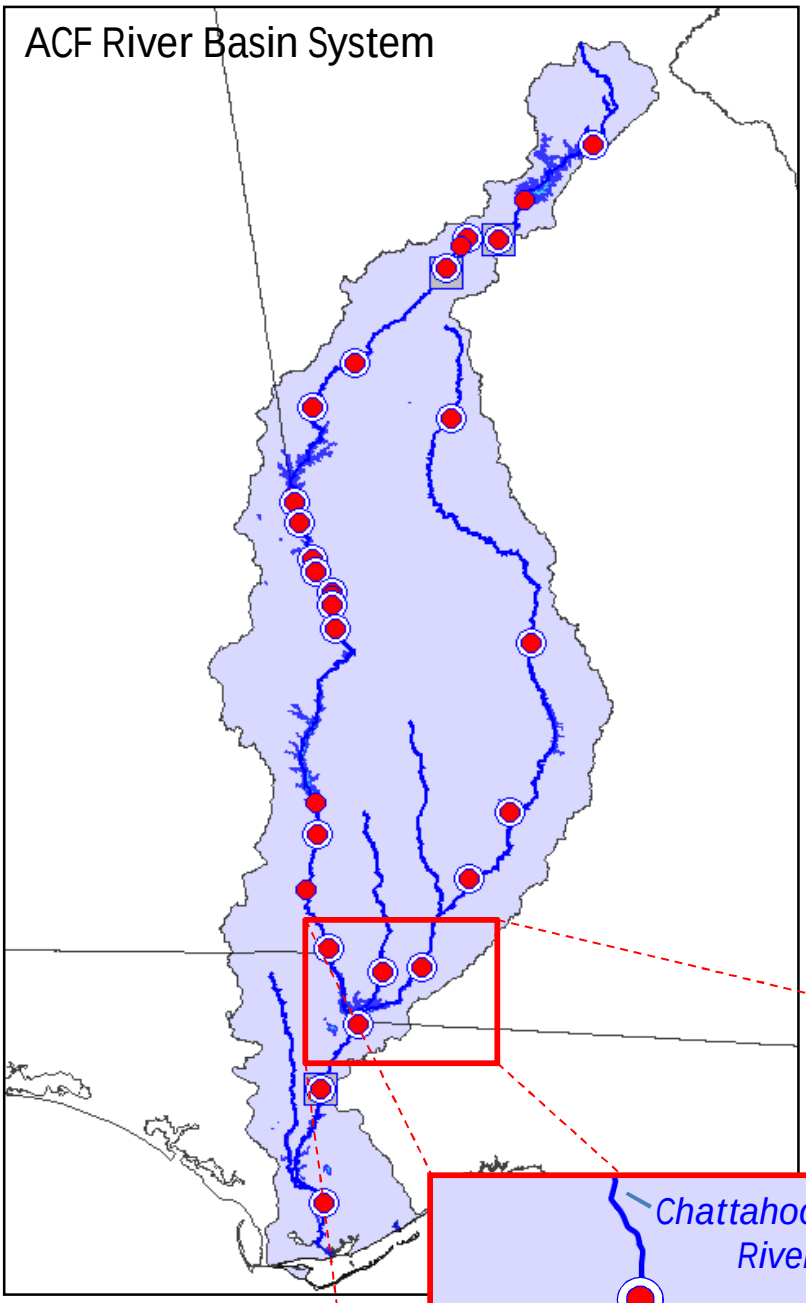
Walter F. George Pool Elevation
Drought Year Analysis - 2001

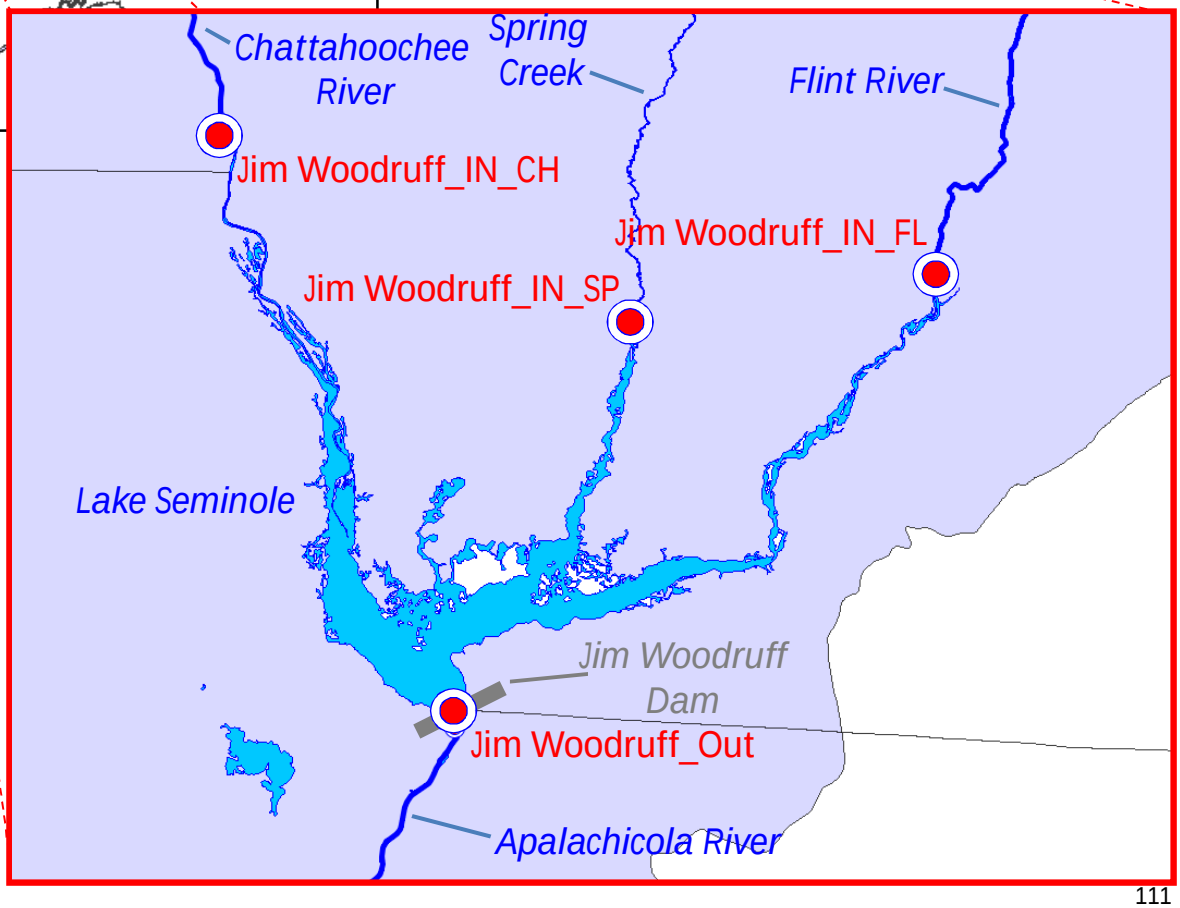
Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	188.8	188.0	188.0	188.5	187.8	188.3	190.0	189.9	189.8	189.7	189.4	188.5	187.9
No Action	L60	188.8	188.0	188.0	188.6	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
Proposed	L18-G50-PT	188.8	188.0	188.0	188.5	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
1	L18-G42-PT	188.8	188.0	188.0	188.5	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
2	L18-G42-PL	188.8	188.0	188.0	188.5	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
3	L18-G42-WTP	188.8	188.0	188.0	188.5	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
4	L30-G30-PT	188.8	188.0	188.0	188.5	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
5	L30-G30-PL	188.8	188.0	188.0	188.5	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
6	L30-G30-WTP	188.8	188.0	188.0	188.5	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
7	L43-G17-PT	188.8	188.0	188.0	188.5	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
8	L43-G17-PL	188.8	188.0	188.0	188.5	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
9	L43-G17-WTP	188.8	188.0	188.0	188.5	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
10	L43-W17-PT	188.8	188.0	188.0	188.7	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9
11	L43-W17-PL	188.8	188.0	188.0	188.7	187.8	188.4	190.0	189.9	189.8	189.7	189.4	188.4	187.9

Walter F. George Pool Elevation
Drought Year Analysis - 2008

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	188.5	188.0	188.0	188.0	187.7	188.3	189.0	189.0	189.2	189.6	188.9	188.5	188.0
No Action	L60	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
Proposed	L18-G50-PT	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
1	L18-G42-PT	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
2	L18-G42-PL	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
3	L18-G42-WTP	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
4	L30-G30-PT	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
5	L30-G30-PL	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
6	L30-G30-WTP	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
7	L43-G17-PT	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
8	L43-G17-PL	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
9	L43-G17-WTP	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
10	L43-W17-PT	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0
11	L43-W17-PL	188.6	188.0	188.0	188.0	187.8	188.3	189.0	189.0	189.2	189.8	189.3	188.4	188.0

Lake Seminole
Elevation Analysis Results



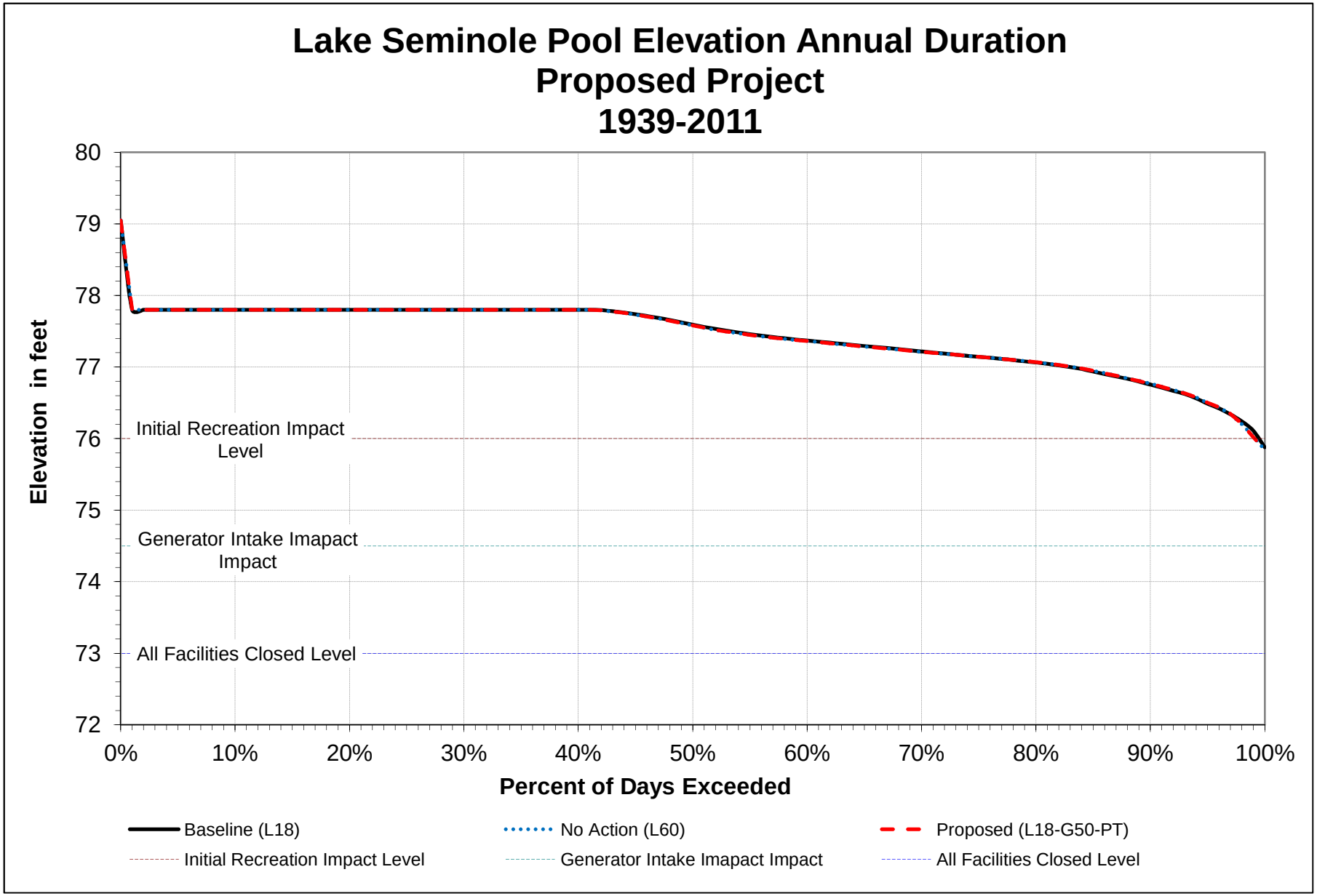


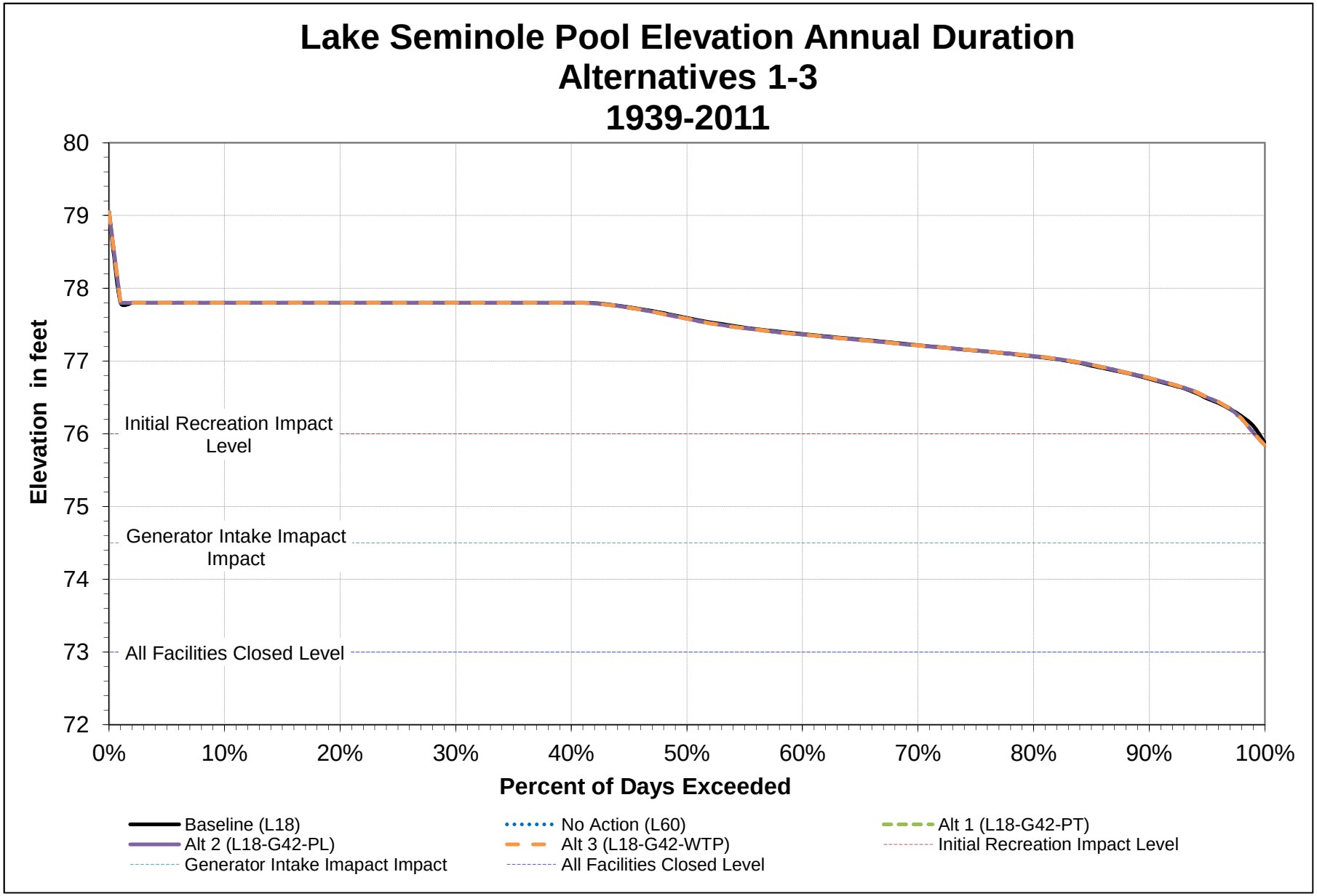
Lake Seminole Pool Elevation
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

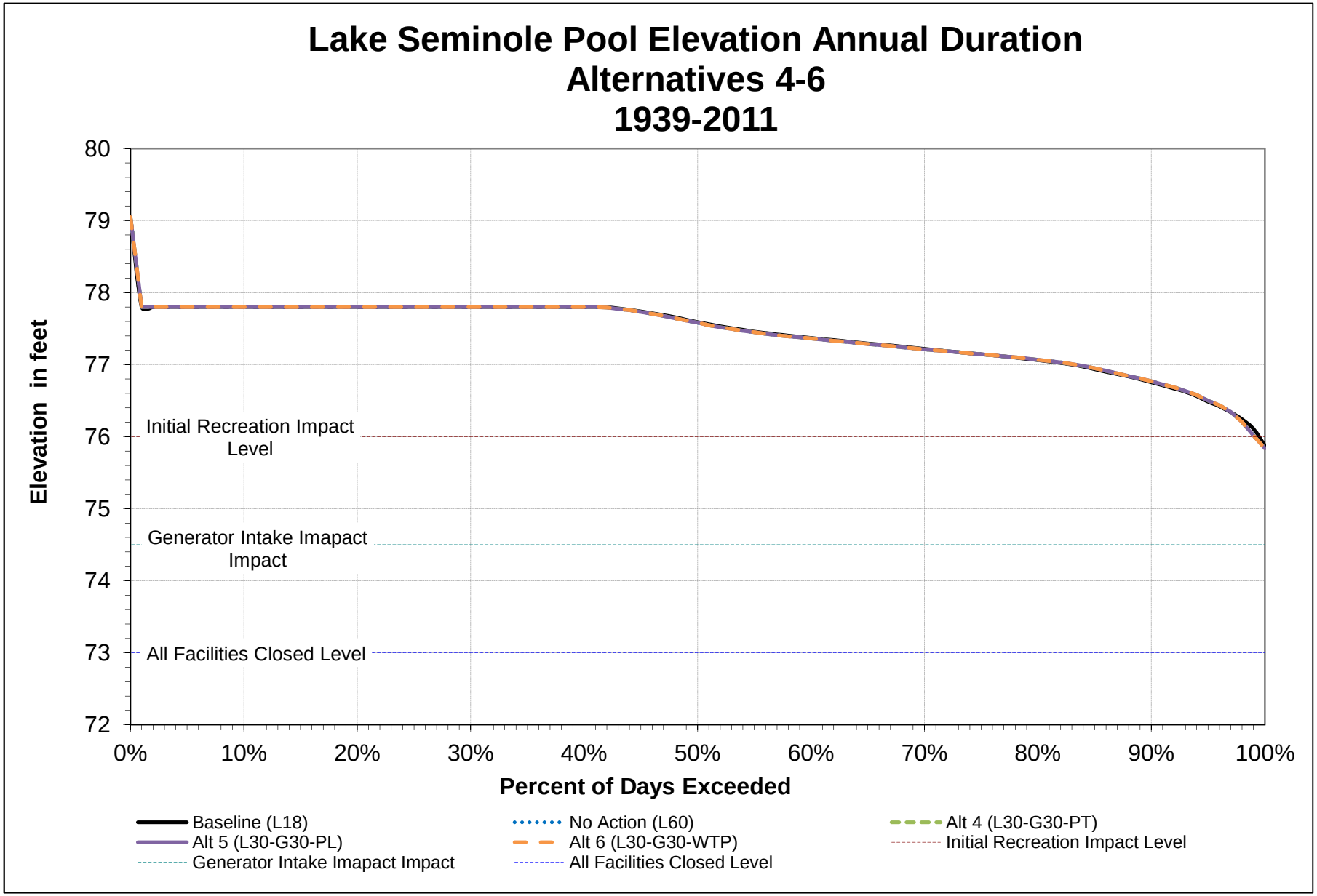
Average Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	77.7	77.7	77.7	77.6	77.2	77.2	77.3	77.2	77.2	77.2	77.4	77.5
No Action	L60	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
Proposed	L18-G50-PT	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
1	L18-G42-PT	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
2	L18-G42-PL	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
3	L18-G42-WTP	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
4	L30-G30-PT	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
5	L30-G30-PL	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
6	L30-G30-WTP	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
7	L43-G17-PT	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
8	L43-G17-PL	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
9	L43-G17-WTP	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
10	L43-W17-PT	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5
11	L43-W17-PL	77.7	77.7	77.7	77.6	77.3	77.2	77.3	77.2	77.2	77.2	77.4	77.5

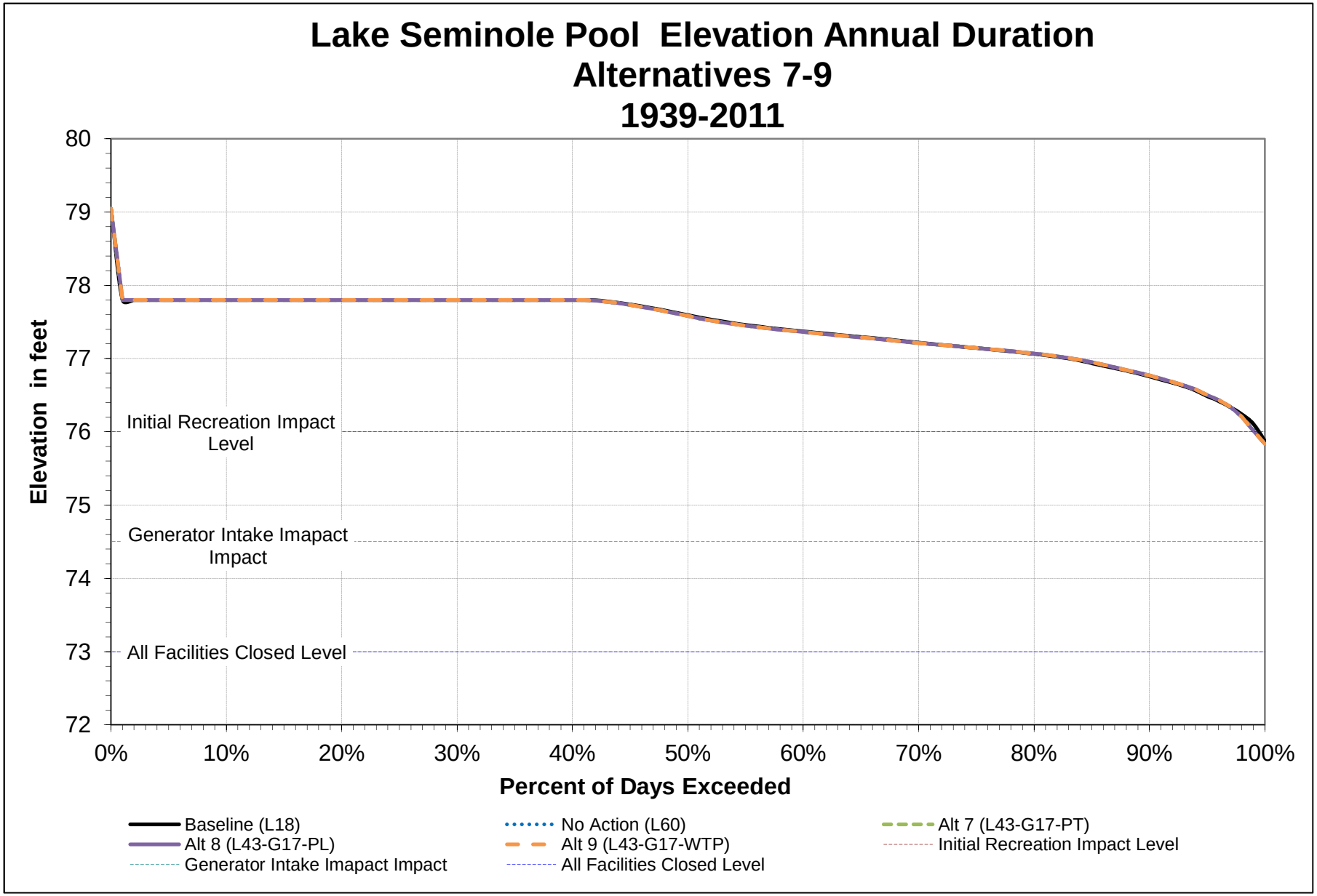
Minimum Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	76.6	77.0	76.4	76.1	76.0	75.9	75.9	76.0	76.0	76.0	75.9	76.2
No Action	L60	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.9	75.9	76.2
Proposed	L18-G50-PT	76.6	77.1	76.5	76.1	76.0	75.9	75.9	75.9	75.8	75.8	75.9	76.2
1	L18-G42-PT	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.8	75.9	76.2
2	L18-G42-PL	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.8	75.9	76.2
3	L18-G42-WTP	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.8	75.9	76.2
4	L30-G30-PT	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.8	75.9	76.2
5	L30-G30-PL	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.8	75.9	76.2
6	L30-G30-WTP	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.8	75.9	76.2
7	L43-G17-PT	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.8	75.9	76.2
8	L43-G17-PL	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.8	75.9	76.2
9	L43-G17-WTP	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.8	75.9	76.2
10	L43-W17-PT	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.9	75.9	76.2
11	L43-W17-PL	76.6	77.1	76.5	76.1	75.9	75.9	75.9	75.9	75.8	75.9	75.9	76.2

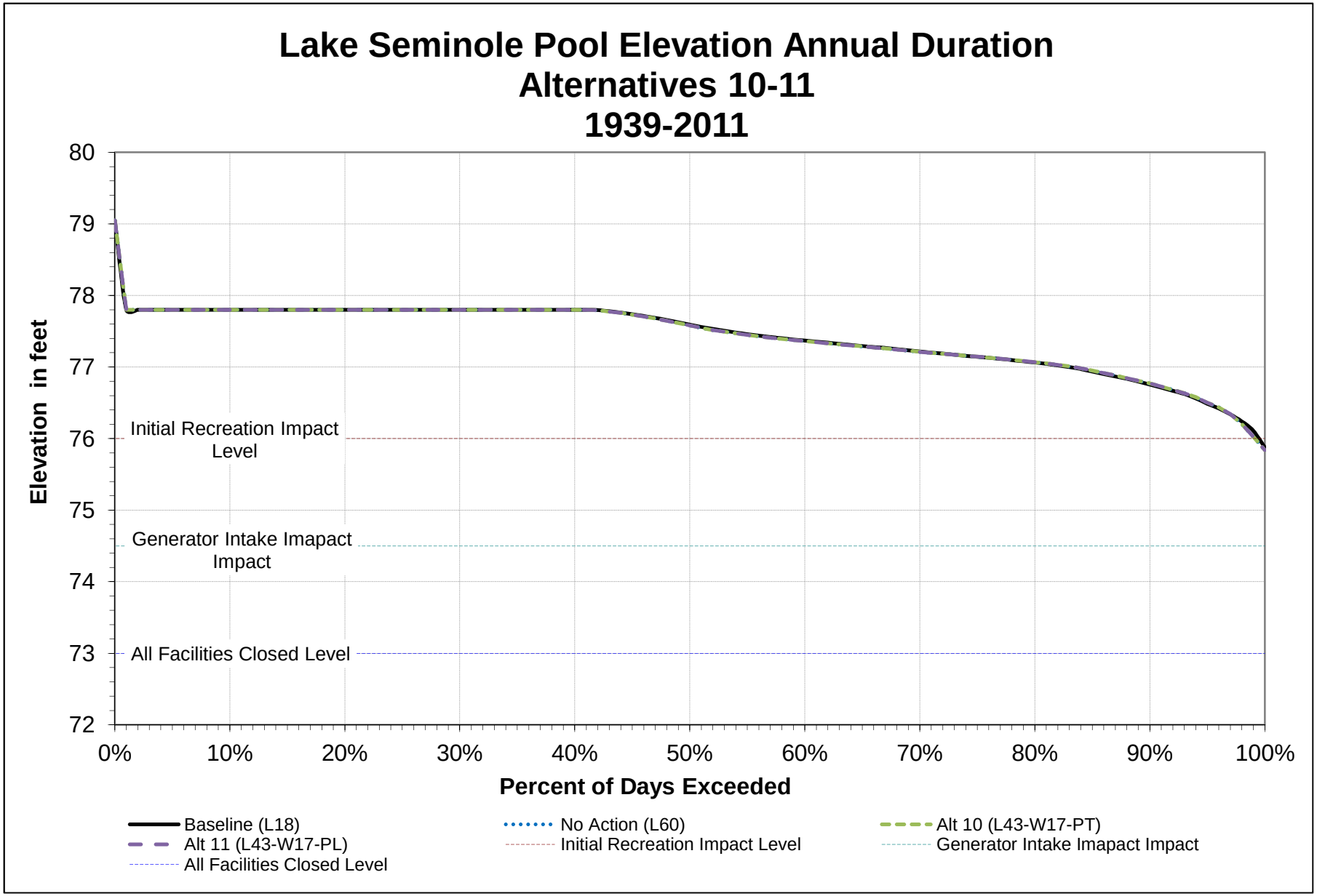
Maximum Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
No Action	L60	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
Proposed	L18-G50-PT	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
1	L18-G42-PT	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
2	L18-G42-PL	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
3	L18-G42-WTP	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
4	L30-G30-PT	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
5	L30-G30-PL	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
6	L30-G30-WTP	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
7	L43-G17-PT	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
8	L43-G17-PL	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
9	L43-G17-WTP	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
10	L43-W17-PT	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3
11	L43-W17-PL	77.8	77.8	79.0	77.8	77.8	77.8	77.8	77.8	77.8	77.8	77.8	78.3


Lake Seminole Pool Elevation Annual Duration
Proposed Project
1939-2011
Elevation in feet
80
79
78
77
76
75
74
73
72
Initial Recreation Impact Level
Generator Intake Imapact Impact
All Facilities Closed Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Proposed (L18-G50-PT)
Initial Recreation Impact Level
Generator Intake Imapact Impact
All Facilities Closed Level


Lake Seminole Pool Elevation Annual Duration
Alternatives 1-3
1939-2011
Elevation in feet
80
79
78
77
76
75
74
73
72
Initial Recreation Impact Level
Generator Intake Imapact Impact
All Facilities Closed Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)
Initial Recreation Impact Level
Generator Intake Imapact Impact
All Facilities Closed Level


Lake Seminole Pool Elevation Annual Duration
Alternatives 4-6
1939-2011
Elevation in feet
80
79
78
77
76
75
74
73
72
Initial Recreation Impact Level
Generator Intake Imapact Impact
All Facilities Closed Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)
Initial Recreation Impact Level
Generator Intake Imapact Impact
All Facilities Closed Level


Lake Seminole Pool Elevation Annual Duration
Alternatives 7-9
1939-2011
Elevation in feet
80
79
78
77
76
75
74
73
72
Initial Recreation Impact Level
Generator Intake Imapact Impact
All Facilities Closed Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)
Initial Recreation Impact Level
Generator Intake Imapact Impact
All Facilities Closed Level


Lake Seminole Pool Elevation Annual Duration
Alternatives 10-11
1939-2011
Elevation in feet
80
79
78
77
76
75
74
73
72
Initial Recreation Impact Level
Generator Intake Imapact Impact
All Facilities Closed Level
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Baseline (L18)
No Action (L60)
Alt 10 (L43-W17-PT)
Alt 11 (L43-W17-PL)
Initial Recreation Impact Level
Generator Intake Imapact Impact
All Facilities Closed Level

Lake Seminole Pool Elevation
Average Year Analysis - 1997

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	77.6	77.8	77.8	77.8	77.6	77.4	77.7	77.6	77.4	76.9	77.1	77.8	77.8
No Action	L60	77.5	77.8	77.8	77.8	77.6	77.3	77.7	77.5	77.3	76.9	77.0	77.8	77.8
Proposed	L18-G50-PT	77.5	77.8	77.8	77.8	77.6	77.4	77.7	77.5	77.3	76.9	77.0	77.8	77.8
1	L18-G42-PT	77.5	77.8	77.8	77.8	77.6	77.4	77.7	77.5	77.3	76.9	77.0	77.8	77.8
2	L18-G42-PL	77.5	77.8	77.8	77.8	77.6	77.4	77.7	77.5	77.3	76.9	77.0	77.8	77.8
3	L18-G42-WTP	77.5	77.8	77.8	77.8	77.6	77.4	77.7	77.5	77.3	76.9	77.0	77.8	77.8
4	L30-G30-PT	77.5	77.8	77.8	77.8	77.6	77.3	77.7	77.5	77.3	76.9	77.1	77.8	77.8
5	L30-G30-PL	77.5	77.8	77.8	77.8	77.6	77.3	77.7	77.5	77.3	76.9	77.1	77.8	77.8
6	L30-G30-WTP	77.5	77.8	77.8	77.8	77.6	77.3	77.7	77.5	77.3	76.9	77.1	77.8	77.8
7	L43-G17-PT	77.5	77.8	77.8	77.8	77.6	77.3	77.7	77.5	77.3	76.9	77.0	77.8	77.8
8	L43-G17-PL	77.5	77.8	77.8	77.8	77.6	77.3	77.7	77.5	77.3	76.9	77.0	77.8	77.8
9	L43-G17-WTP	77.5	77.8	77.8	77.8	77.6	77.3	77.7	77.5	77.3	76.9	77.0	77.8	77.8
10	L43-W17-PT	77.5	77.8	77.8	77.8	77.6	77.4	77.7	77.5	77.3	76.9	77.0	77.8	77.8
11	L43-W17-PL	77.5	77.8	77.8	77.8	77.6	77.4	77.7	77.5	77.3	76.9	77.0	77.8	77.8

Lake Seminole Pool Elevation
Wet Year Analysis - 2005

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
No Action	L60	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
Proposed	L18-G50-PT	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
1	L18-G42-PT	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
2	L18-G42-PL	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
3	L18-G42-WTP	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
4	L30-G30-PT	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
5	L30-G30-PL	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
6	L30-G30-WTP	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
7	L43-G17-PT	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
8	L43-G17-PL	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
9	L43-G17-WTP	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
10	L43-W17-PT	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8
11	L43-W17-PL	77.7	77.8	77.8	77.8	77.8	77.5	77.8	77.8	77.8	77.4	77.3	77.4	77.8

Lake Seminole Pool Elevation
Drought Year Analysis - 1988

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	77.2	77.6	77.8	77.8	77.8	77.0	76.9	76.9	76.8	76.9	76.9	77.3	77.2
No Action	L60	77.3	77.6	77.8	77.8	77.7	77.3	77.1	77.1	76.9	77.1	77.2	77.3	77.2
Proposed	L18-G50-PT	77.3	77.6	77.8	77.8	77.7	77.3	77.1	77.1	76.9	77.1	77.2	77.3	77.2
1	L18-G42-PT	77.3	77.6	77.8	77.8	77.7	77.3	77.1	77.1	76.9	77.1	77.2	77.3	77.2
2	L18-G42-PL	77.3	77.6	77.8	77.8	77.7	77.3	77.1	77.1	76.9	77.1	77.2	77.3	77.2
3	L18-G42-WTP	77.3	77.6	77.8	77.8	77.7	77.3	77.1	77.1	76.9	77.1	77.2	77.3	77.2
4	L30-G30-PT	77.3	77.6	77.8	77.8	77.7	77.2	77.1	77.1	76.9	77.1	77.2	77.3	77.2
5	L30-G30-PL	77.3	77.6	77.8	77.8	77.7	77.2	77.1	77.1	76.9	77.1	77.2	77.3	77.2
6	L30-G30-WTP	77.3	77.6	77.8	77.8	77.7	77.2	77.1	77.1	76.9	77.1	77.2	77.3	77.2
7	L43-G17-PT	77.3	77.6	77.8	77.8	77.7	77.2	77.1	77.1	76.9	77.1	77.2	77.3	77.2
8	L43-G17-PL	77.3	77.6	77.8	77.8	77.7	77.2	77.1	77.1	76.9	77.1	77.2	77.3	77.2
9	L43-G17-WTP	77.3	77.6	77.8	77.8	77.7	77.2	77.1	77.1	76.9	77.1	77.2	77.3	77.2
10	L43-W17-PT	77.3	77.6	77.8	77.8	77.7	77.2	77.1	77.0	76.9	77.1	77.2	77.3	77.2
11	L43-W17-PL	77.3	77.6	77.8	77.8	77.7	77.2	77.1	77.0	76.9	77.1	77.2	77.3	77.2

Lake Seminole Pool Elevation
Drought Year Analysis - 2001

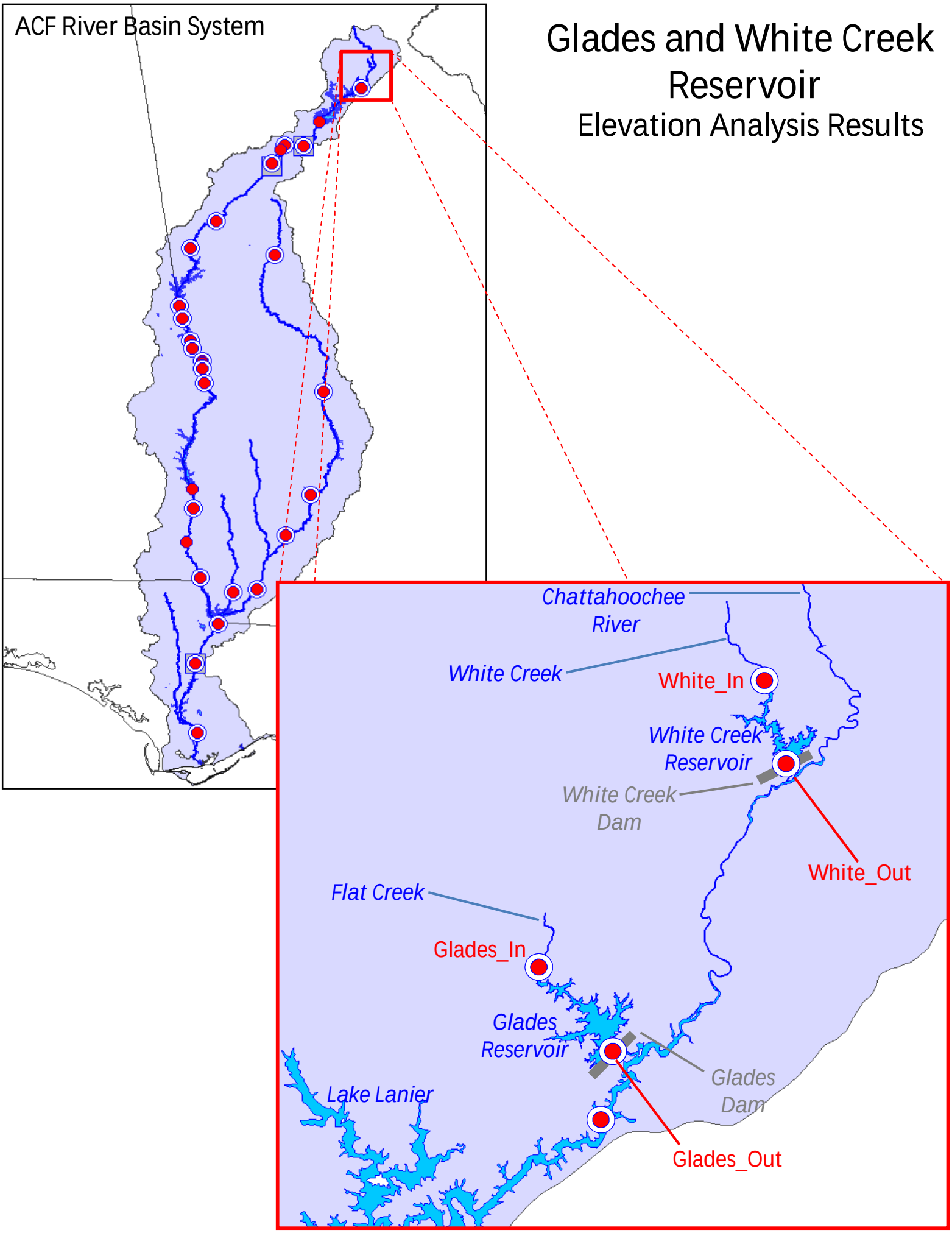
Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	77.3	77.6	77.5	77.8	77.3	76.9	77.6	77.3	77.1	77.1	77.0	77.1	77.1
No Action	L60	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.0	77.0	77.0	77.1
Proposed	L18-G50-PT	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.0	77.0	77.0	77.1
1	L18-G42-PT	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.1	77.0	77.0	77.1
2	L18-G42-PL	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.0	77.0	77.0	77.1
3	L18-G42-WTP	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.0	77.0	77.0	77.1
4	L30-G30-PT	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.1	77.0	77.0	77.1
5	L30-G30-PL	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.1	77.0	77.0	77.1
6	L30-G30-WTP	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.1	77.0	77.0	77.1
7	L43-G17-PT	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.1	77.0	77.0	77.1
8	L43-G17-PL	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.1	77.0	77.0	77.1
9	L43-G17-WTP	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.1	77.0	77.0	77.1
10	L43-W17-PT	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.1	77.0	77.0	77.1
11	L43-W17-PL	77.3	77.6	77.4	77.8	77.3	76.9	77.6	77.3	77.1	77.1	77.0	77.0	77.1

Lake Seminole Pool Elevation
Drought Year Analysis - 2008

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	77.3	77.7	77.8	77.8	77.2	77.0	76.8	76.9	77.2	77.2	77.1	77.2	77.8
No Action	L60	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
Proposed	L18-G50-PT	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
1	L18-G42-PT	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
2	L18-G42-PL	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
3	L18-G42-WTP	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
4	L30-G30-PT	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
5	L30-G30-PL	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
6	L30-G30-WTP	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
7	L43-G17-PT	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
8	L43-G17-PL	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
9	L43-G17-WTP	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
10	L43-W17-PT	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8
11	L43-W17-PL	77.3	77.7	77.8	77.8	77.3	77.1	76.8	76.9	77.2	77.2	77.1	77.2	77.8

Glades and White Creek Reservoir

Elevation Analysis Results

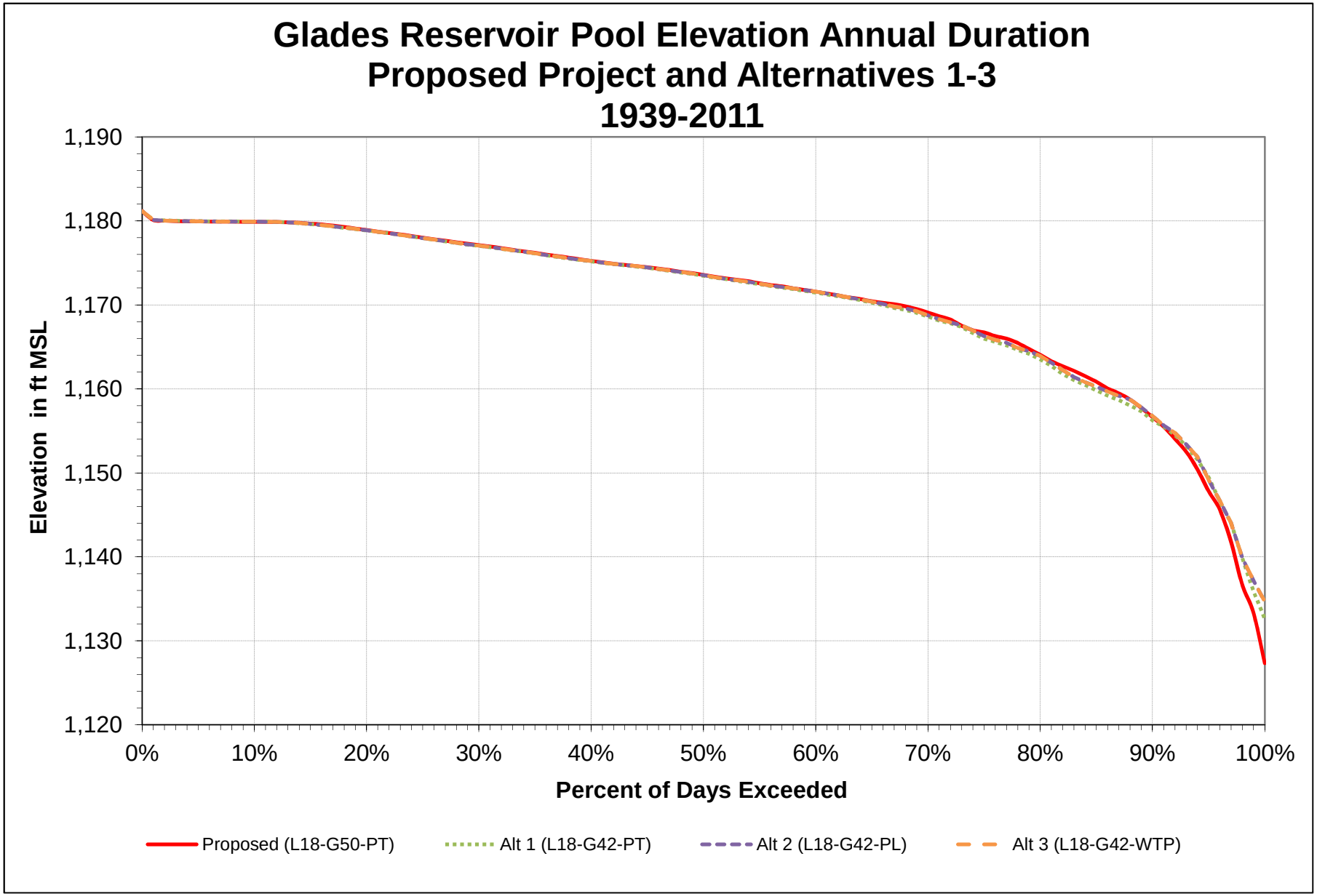


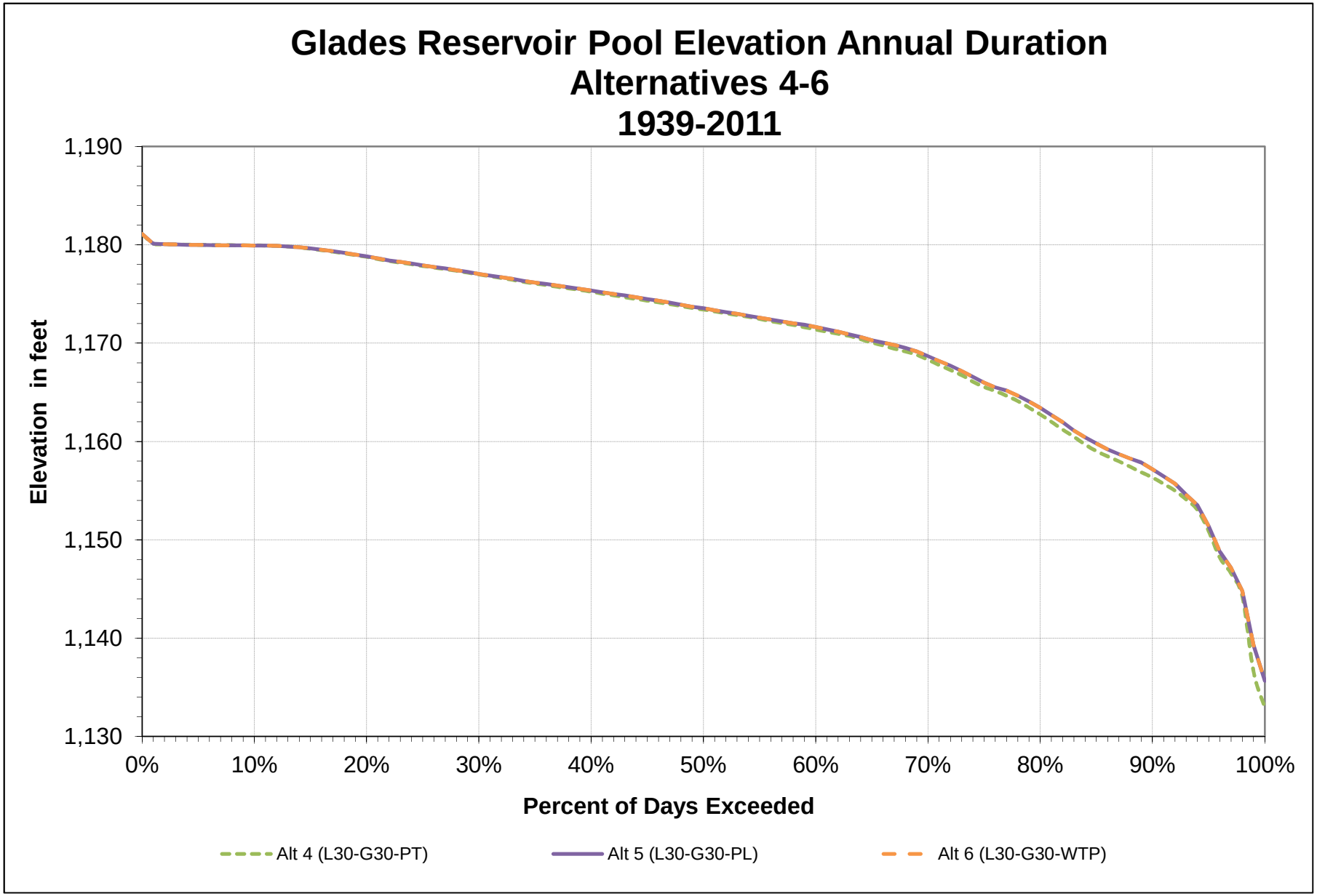
Glades and White Creek Reservoir Pool Elevation
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

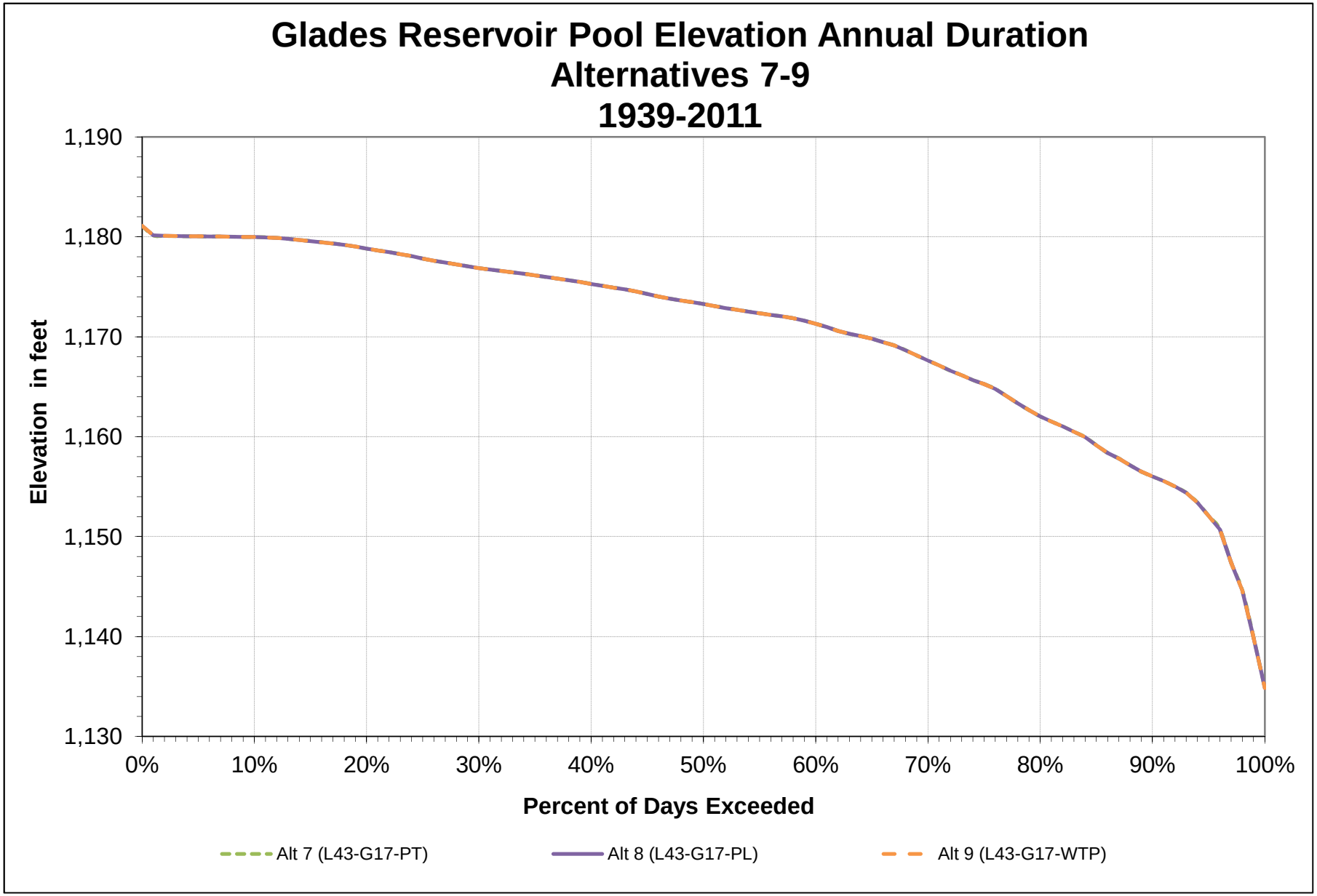
Average Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	---	---	---	---	---	---	---	---	---	---	---	---
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---
Proposed	L18-G50-PT	1,169.5	1,171.3	1,173.2	1,174.4	1,174.3	1,173.2	1,171.7	1,169.8	1,167.7	1,166.6	1,166.4	1,167.6
1	L18-G42-PT	1,169.4	1,171.1	1,172.9	1,174.0	1,174.0	1,172.9	1,171.6	1,169.8	1,168.0	1,166.9	1,166.7	1,167.6
2	L18-G42-PL	1,169.5	1,171.3	1,173.0	1,174.2	1,174.1	1,173.0	1,171.7	1,170.0	1,168.1	1,167.1	1,166.8	1,167.8
3	L18-G42-WTP	1,169.5	1,171.3	1,173.0	1,174.2	1,174.1	1,173.0	1,171.7	1,170.0	1,168.1	1,167.1	1,166.8	1,167.8
4	L30-G30-PT	1,169.3	1,170.9	1,172.5	1,173.6	1,173.6	1,172.7	1,171.5	1,170.0	1,168.4	1,167.5	1,167.1	1,167.8
5	L30-G30-PL	1,169.6	1,171.2	1,172.8	1,173.9	1,173.9	1,172.9	1,171.8	1,170.3	1,168.7	1,167.8	1,167.5	1,168.1
6	L30-G30-WTP	1,169.6	1,171.2	1,172.8	1,173.9	1,173.9	1,172.9	1,171.8	1,170.3	1,168.7	1,167.8	1,167.5	1,168.1
7	L43-G17-PT	1,176.0	1,177.0	1,177.9	1,178.4	1,178.3	1,177.8	1,177.1	1,176.2	1,175.3	1,174.8	1,174.6	1,175.0
8	L43-G17-PL	1,169.2	1,170.6	1,172.1	1,173.1	1,173.1	1,172.4	1,171.4	1,170.2	1,168.9	1,168.1	1,167.6	1,168.0
9	L43-G17-WTP	1,169.2	1,170.6	1,172.1	1,173.1	1,173.1	1,172.4	1,171.4	1,170.2	1,168.9	1,168.1	1,167.6	1,168.0
10	L43-W17-PT	1,303.3	1,303.7	1,304.1	1,304.3	1,304.3	1,304.0	1,303.6	1,303.1	1,302.6	1,302.4	1,302.5	1,302.8
11	L43-W17-PL	1,303.5	1,303.7	1,304.0	1,304.3	1,304.2	1,304.0	1,303.8	1,303.5	1,303.4	1,303.2	1,303.1	1,303.3

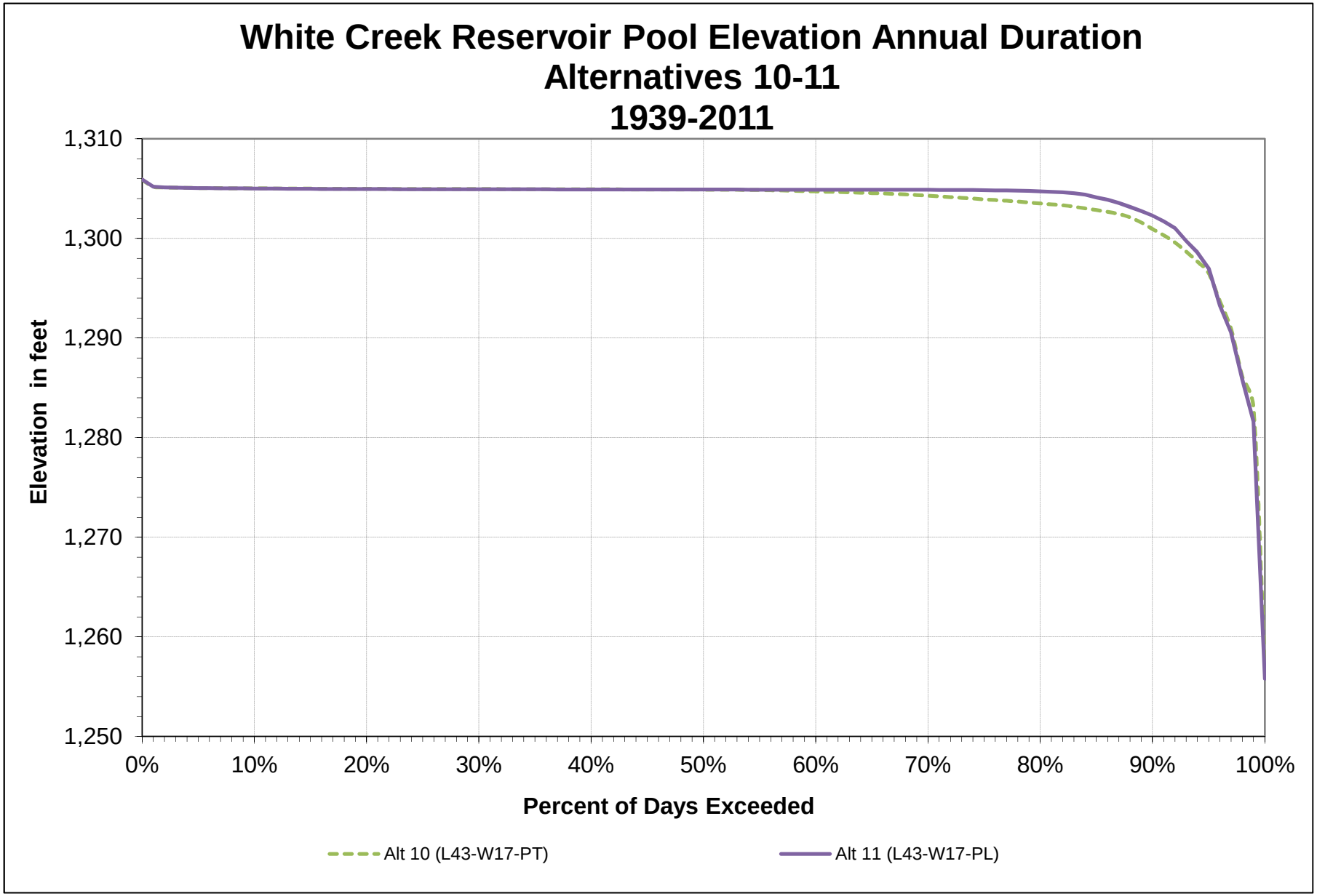
Minimum Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	-	-	-	-	-	-	-	-	-	-	-	-
No Action	L60	-	-	-	-	-	-	-	-	-	-	-	-
Proposed	L18-G50-PT	1,131.6	1,132.6	1,133.9	1,135.7	1,135.0	1,133.1	1,135.2	1,133.1	1,131.9	1,129.9	1,127.3	1,127.7
1	L18-G42-PT	1,133.4	1,133.1	1,134.2	1,135.7	1,134.7	1,132.9	1,135.1	1,134.5	1,132.6	1,134.3	1,133.5	1,133.3
2	L18-G42-PL	1,135.4	1,135.2	1,136.2	1,137.7	1,136.7	1,135.0	1,137.1	1,136.6	1,134.6	1,136.3	1,134.8	1,135.0
3	L18-G42-WTP	1,135.4	1,135.2	1,136.2	1,137.7	1,136.7	1,135.0	1,137.1	1,136.6	1,134.6	1,136.3	1,134.8	1,135.0
4	L30-G30-PT	1,134.5	1,133.9	1,134.8	1,135.7	1,134.5	1,132.9	1,135.3	1,135.6	1,133.8	1,136.9	1,135.7	1,134.9
5	L30-G30-PL	1,137.2	1,136.7	1,137.6	1,138.5	1,137.2	1,135.7	1,138.1	1,138.3	1,136.5	1,139.6	1,138.4	1,137.6
6	L30-G30-WTP	1,137.2	1,136.7	1,137.6	1,138.5	1,137.2	1,135.7	1,138.1	1,138.3	1,136.5	1,139.6	1,138.4	1,137.6
7	L43-G17-PT	1,161.4	1,161.3	1,162.3	1,162.9	1,162.7	1,162.2	1,163.9	1,164.2	1,163.4	1,162.6	1,161.6	1,161.3
8	L43-G17-PL	1,137.5	1,136.6	1,137.3	1,137.6	1,136.2	1,134.8	1,137.5	1,138.6	1,137.0	1,141.2	1,139.9	1,138.4
9	L43-G17-WTP	1,137.5	1,136.6	1,137.3	1,137.6	1,136.2	1,134.8	1,137.5	1,138.6	1,137.0	1,141.2	1,139.9	1,138.4
10	L43-W17-PT	1,267.3	1,273.5	1,276.3	1,285.6	1,290.4	1,286.8	1,282.6	1,275.2	1,273.9	1,266.9	1,258.4	1,257.3
11	L43-W17-PL	1,266.9	1,271.5	1,274.5	1,284.0	1,289.0	1,285.9	1,281.9	1,273.6	1,273.7	1,266.8	1,257.4	1,255.8

Maximum Daily Elevation (ft MSL)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	-	-	-	-	-	-	-	-	-	-	-	-
No Action	L60	-	-	-	-	-	-	-	-	-	-	-	-
Proposed	L18-G50-PT	1,181.0	1,181.1	1,181.2	1,180.7	1,180.4	1,180.8	1,180.5	1,180.3	1,180.4	1,180.1	1,180.4	1,180.5
1	L18-G42-PT	1,180.9	1,181.1	1,181.1	1,180.7	1,180.5	1,180.9	1,180.5	1,180.3	1,180.4	1,180.1	1,180.4	1,180.5
2	L18-G42-PL	1,181.0	1,181.1	1,181.1	1,180.7	1,180.4	1,180.9	1,180.5	1,180.3	1,180.4	1,180.1	1,180.4	1,180.5
3	L18-G42-WTP	1,181.0	1,181.1	1,181.1	1,180.7	1,180.4	1,180.9	1,180.5	1,180.3	1,180.4	1,180.1	1,180.4	1,180.5
4	L30-G30-PT	1,180.7	1,180.9	1,181.1	1,180.6	1,180.5	1,180.9	1,180.5	1,180.4	1,180.5	1,180.1	1,180.4	1,180.5
5	L30-G30-PL	1,180.7	1,181.0	1,181.1	1,180.8	1,180.5	1,180.9	1,180.5	1,180.4	1,180.5	1,180.1	1,180.4	1,180.5
6	L30-G30-WTP	1,180.7	1,181.0	1,181.1	1,180.8	1,180.5	1,180.9	1,180.5	1,180.4	1,180.5	1,180.1	1,180.4	1,180.5
7	L43-G17-PT	1,181.0	1,181.2	1,181.2	1,180.8	1,180.5	1,180.9	1,180.7	1,180.5	1,180.7	1,180.2	1,180.8	1,180.6
8	L43-G17-PL	1,180.7	1,180.8	1,181.1	1,180.5	1,180.5	1,180.9	1,180.7	1,180.4	1,180.5	1,180.2	1,180.4	1,180.6
9	L43-G17-WTP	1,180.7	1,180.8	1,181.1	1,180.5	1,180.5	1,180.9	1,180.7	1,180.4	1,180.5	1,180.2	1,180.4	1,180.6
10	L43-W17-PT	1,305.9	1,305.8	1,305.8	1,305.5	1,305.3	1,305.6	1,305.5	1,305.9	1,305.5	1,305.6	1,305.5	1,305.6
11	L43-W17-PL	1,305.9	1,305.8	1,305.8	1,305.5	1,305.3	1,305.6	1,305.5	1,305.9	1,305.5	1,305.6	1,305.5	1,305.6


Glades Reservoir Pool Elevation Annual Duration
Proposed Project and Alternatives 1-3
1939-2011
Elevation in ft MSL
1,190
1,180
1,170
1,160
1,150
1,140
1,130
1,120
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Proposed (L18-G50-PT)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)


Glades Reservoir Pool Elevation Annual Duration
Alternatives 4-6
1939-2011
1,190
1,180
1,170
1,160
1,150
1,140
1,130
Elevation in feet
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)


Glades Reservoir Pool Elevation Annual Duration
Alternatives 7-9
1939-2011
1,190
1,180
1,170
1,160
1,150
1,140
1,130
Elevation in feet
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)


White Creek Reservoir Pool Elevation Annual Duration
Alternatives 10-11
1939-2011
1,310
1,300
1,290
1,280
1,270
1,260
1,250
Elevation in feet
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of Days Exceeded
Alt 10 (L43-W17-PT)
Alt 11 (L43-W17-PL)

Glades and White Creek Reservoir Pool Elevation
Average Year Analysis - 1997

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---
Proposed	L18-G50-PT	1,177.0	1,173.9	1,175.8	1,179.9	1,179.9	1,179.5	1,178.6	1,177.5	1,176.1	1,174.1	1,174.7	1,176.1	1,177.4
1	L18-G42-PT	1,177.1	1,173.8	1,175.6	1,179.8	1,179.9	1,179.6	1,178.7	1,177.7	1,176.4	1,174.6	1,175.1	1,176.4	1,177.5
2	L18-G42-PL	1,177.1	1,173.8	1,175.6	1,179.8	1,179.9	1,179.6	1,178.7	1,177.7	1,176.4	1,174.6	1,175.1	1,176.4	1,177.6
3	L18-G42-WTP	1,177.1	1,173.8	1,175.6	1,179.8	1,179.9	1,179.6	1,178.7	1,177.7	1,176.4	1,174.6	1,175.1	1,176.4	1,177.6
4	L30-G30-PT	1,177.4	1,173.9	1,175.5	1,179.6	1,180.0	1,179.7	1,178.9	1,178.1	1,177.0	1,175.3	1,175.9	1,177.0	1,177.9
5	L30-G30-PL	1,177.4	1,173.9	1,175.5	1,179.6	1,180.0	1,179.7	1,178.9	1,178.1	1,177.0	1,175.3	1,175.9	1,177.1	1,178.0
6	L30-G30-WTP	1,177.4	1,173.9	1,175.5	1,179.6	1,180.0	1,179.7	1,178.9	1,178.1	1,177.0	1,175.3	1,175.9	1,177.1	1,178.0
7	L43-G17-PT	1,179.1	1,177.0	1,178.6	1,180.1	1,180.0	1,179.9	1,179.6	1,179.3	1,178.8	1,177.7	1,178.6	1,179.9	1,180.0
8	L43-G17-PL	1,177.7	1,174.1	1,175.4	1,179.3	1,179.7	1,179.8	1,179.2	1,178.5	1,177.6	1,176.2	1,176.8	1,177.8	1,178.4
9	L43-G17-WTP	1,177.7	1,174.1	1,175.4	1,179.3	1,179.7	1,179.8	1,179.2	1,178.5	1,177.6	1,176.2	1,176.8	1,177.8	1,178.4
10	L43-W17-PT	1,304.9	1,305.0	1,305.0	1,305.0	1,305.0	1,304.9	1,304.9	1,304.9	1,304.6	1,304.2	1,304.9	1,305.0	1,305.0
11	L43-W17-PL	1,304.9	1,305.0	1,305.0	1,305.0	1,304.9	1,304.9	1,304.9	1,304.9	1,304.9	1,304.9	1,304.9	1,305.0	1,305.0

Glades and White Creek Reservoir Pool Elevation
Wet Year Analysis - 2005

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---
Proposed	L18-G50-PT	1,179.5	1,179.9	1,180.0	1,180.0	1,179.9	1,179.4	1,179.4	1,179.7	1,179.7	1,178.8	1,178.5	1,178.5	1,179.7
1	L18-G42-PT	1,179.5	1,179.9	1,180.0	1,180.0	1,180.0	1,179.5	1,179.5	1,179.8	1,179.8	1,178.9	1,178.6	1,178.5	1,179.7
2	L18-G42-PL	1,179.5	1,179.9	1,180.0	1,180.0	1,180.0	1,179.5	1,179.5	1,179.8	1,179.8	1,178.9	1,178.6	1,178.5	1,179.7
3	L18-G42-WTP	1,179.5	1,179.9	1,180.0	1,180.0	1,180.0	1,179.5	1,179.5	1,179.8	1,179.8	1,178.9	1,178.6	1,178.5	1,179.7
4	L30-G30-PT	1,179.6	1,180.0	1,180.0	1,180.0	1,180.0	1,179.6	1,179.6	1,179.9	1,179.9	1,179.1	1,178.9	1,178.6	1,179.6
5	L30-G30-PL	1,179.6	1,179.9	1,180.0	1,180.0	1,180.0	1,179.6	1,179.6	1,179.8	1,179.9	1,179.1	1,178.9	1,178.6	1,179.6
6	L30-G30-WTP	1,179.6	1,179.9	1,180.0	1,180.0	1,180.0	1,179.6	1,179.6	1,179.8	1,179.9	1,179.1	1,178.9	1,178.6	1,179.6
7	L43-G17-PT	1,179.9	1,180.0	1,180.1	1,180.1	1,180.1	1,179.8	1,179.9	1,180.0	1,180.0	1,179.5	1,179.6	1,179.5	1,180.0
8	L43-G17-PL	1,179.7	1,180.0	1,180.1	1,180.1	1,180.0	1,179.7	1,179.8	1,179.9	1,180.0	1,179.3	1,179.1	1,178.6	1,179.6
9	L43-G17-WTP	1,179.7	1,180.0	1,180.1	1,180.1	1,180.0	1,179.7	1,179.8	1,179.9	1,180.0	1,179.3	1,179.1	1,178.6	1,179.6
10	L43-W17-PT	1,305.0	1,305.0	1,305.0	1,305.0	1,305.0	1,304.9	1,305.0	1,305.0	1,305.0	1,304.8	1,304.9	1,304.9	1,305.0
11	L43-W17-PL	1,305.0	1,304.9	1,305.0	1,305.0	1,305.0	1,304.9	1,305.0	1,305.0	1,305.0	1,304.9	1,304.9	1,304.9	1,305.0

Glades and White Creek Reservoir Pool Elevation
Drought Year Analysis - 1988

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---
Proposed	L18-G50-PT	1,144.3	1,150.9	1,153.2	1,153.6	1,154.2	1,153.4	1,149.3	1,144.7	1,139.8	1,135.3	1,133.5	1,132.2	1,132.2
1	L18-G42-PT	1,145.2	1,151.7	1,153.8	1,154.0	1,154.3	1,153.4	1,149.6	1,145.4	1,141.0	1,137.1	1,135.4	1,133.8	1,133.4
2	L18-G42-PL	1,146.6	1,152.5	1,154.6	1,154.8	1,155.1	1,154.2	1,150.6	1,146.8	1,142.7	1,139.1	1,137.4	1,135.8	1,135.5
3	L18-G42-WTP	1,146.6	1,152.5	1,154.6	1,154.8	1,155.1	1,154.2	1,150.6	1,146.8	1,142.7	1,139.1	1,137.4	1,135.8	1,135.5
4	L30-G30-PT	1,146.6	1,152.9	1,154.7	1,154.5	1,154.6	1,153.6	1,150.4	1,146.6	1,142.7	1,139.8	1,138.1	1,136.2	1,135.3
5	L30-G30-PL	1,148.3	1,154.1	1,155.9	1,155.7	1,155.7	1,154.7	1,151.6	1,148.4	1,144.8	1,142.0	1,140.6	1,138.9	1,138.0
6	L30-G30-WTP	1,148.3	1,154.1	1,155.9	1,155.7	1,155.7	1,154.7	1,151.6	1,148.4	1,144.8	1,142.0	1,140.6	1,138.9	1,138.0
7	L43-G17-PT	1,167.6	1,170.3	1,171.7	1,171.6	1,171.7	1,171.3	1,169.5	1,167.3	1,165.2	1,164.0	1,163.5	1,162.7	1,162.2
8	L43-G17-PL	1,149.0	1,154.9	1,156.3	1,155.8	1,155.5	1,154.4	1,151.8	1,148.9	1,145.8	1,143.5	1,142.2	1,140.5	1,139.1
9	L43-G17-WTP	1,149.0	1,154.9	1,156.3	1,155.8	1,155.5	1,154.4	1,151.8	1,148.9	1,145.8	1,143.5	1,142.2	1,140.5	1,139.1
10	L43-W17-PT	1,299.5	1,300.5	1,303.1	1,302.9	1,302.9	1,303.1	1,300.6	1,298.5	1,296.6	1,295.8	1,296.3	1,296.6	1,297.1
11	L43-W17-PL	1,301.1	1,303.4	1,304.9	1,303.6	1,303.3	1,303.4	1,301.0	1,299.3	1,298.1	1,297.8	1,299.0	1,299.7	1,300.4

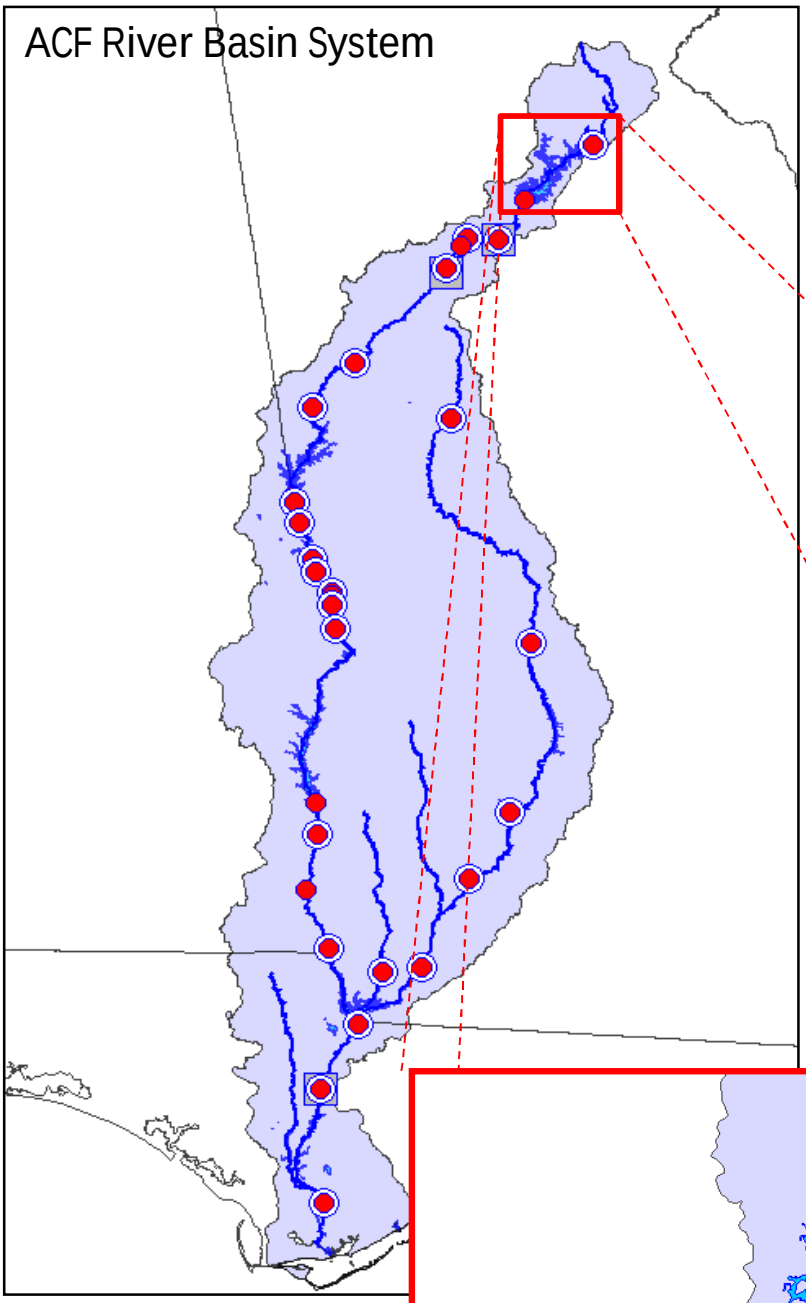
Glades and White Creek Reservoir Pool Elevation
Drought Year Analysis - 2001

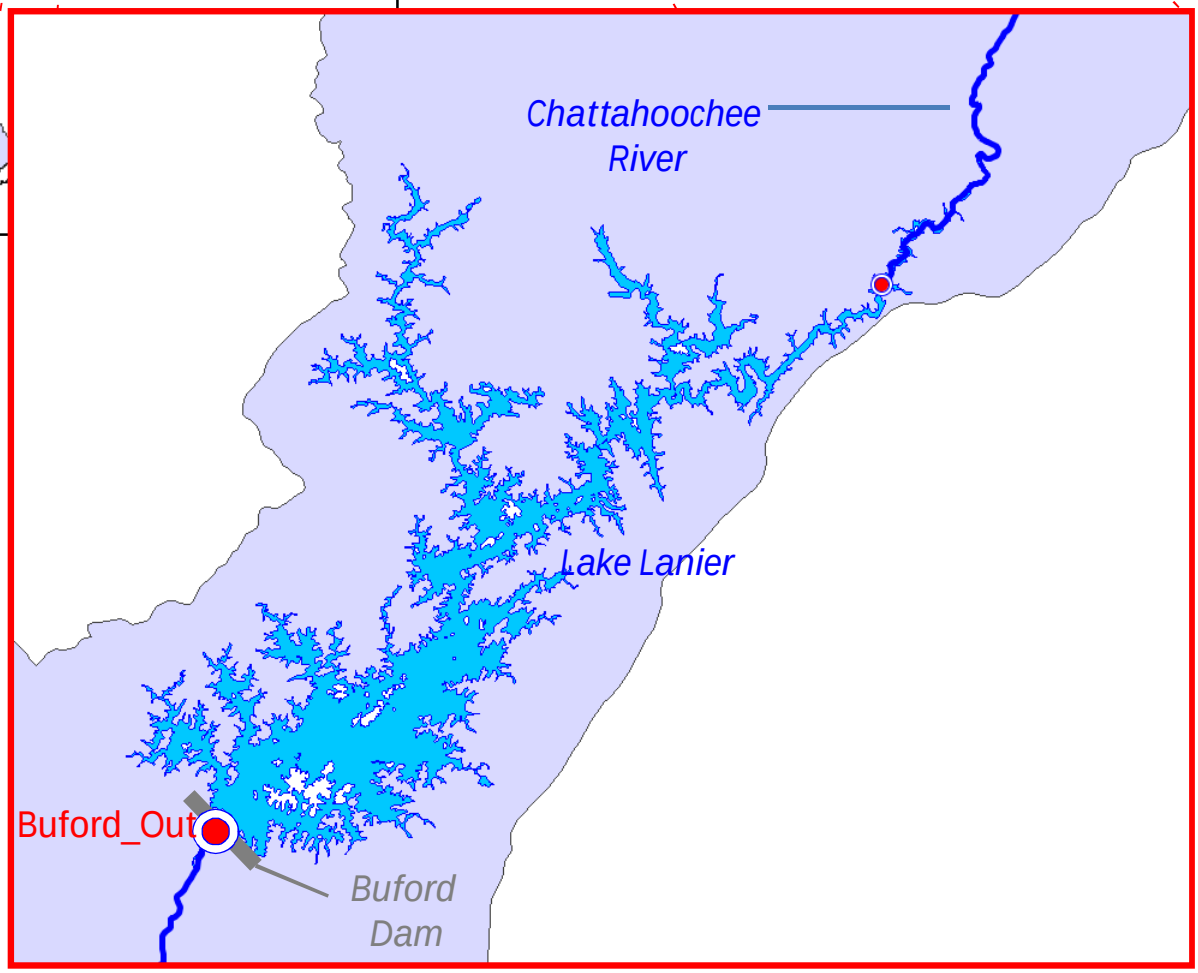
Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---
Proposed	L18-G50-PT	1,159.2	1,156.4	1,157.4	1,160.5	1,163.2	1,162.5	1,162.2	1,161.5	1,160.9	1,158.6	1,156.5	1,155.4	1,155.5
1	L18-G42-PT	1,158.2	1,155.7	1,156.5	1,159.4	1,162.0	1,161.2	1,161.0	1,160.5	1,160.0	1,157.7	1,155.7	1,154.5	1,154.3
2	L18-G42-PL	1,158.4	1,155.9	1,156.6	1,159.6	1,162.2	1,161.4	1,161.2	1,160.6	1,160.2	1,157.9	1,155.9	1,154.7	1,154.5
3	L18-G42-WTP	1,158.4	1,155.9	1,156.6	1,159.6	1,162.2	1,161.4	1,161.2	1,160.6	1,160.2	1,157.9	1,155.9	1,154.7	1,154.5
4	L30-G30-PT	1,157.2	1,155.1	1,155.6	1,158.2	1,160.7	1,159.8	1,159.8	1,159.3	1,159.1	1,157.0	1,155.1	1,153.6	1,153.2
5	L30-G30-PL	1,157.6	1,155.4	1,155.9	1,158.6	1,161.0	1,160.1	1,160.1	1,159.7	1,159.4	1,157.4	1,155.5	1,154.0	1,153.5
6	L30-G30-WTP	1,157.6	1,155.4	1,155.9	1,158.6	1,161.0	1,160.1	1,160.1	1,159.7	1,159.4	1,157.4	1,155.5	1,154.0	1,153.5
7	L43-G17-PT	1,170.8	1,167.4	1,167.9	1,170.2	1,172.2	1,171.8	1,172.2	1,172.4	1,172.8	1,171.8	1,170.8	1,169.9	1,169.6
8	L43-G17-PL	1,156.1	1,154.5	1,154.6	1,156.9	1,159.2	1,158.1	1,158.3	1,158.1	1,158.1	1,156.4	1,154.5	1,152.8	1,152.0
9	L43-G17-WTP	1,156.1	1,154.5	1,154.6	1,156.9	1,159.2	1,158.1	1,158.3	1,158.1	1,158.1	1,156.4	1,154.5	1,152.8	1,152.0
10	L43-W17-PT	1,303.2	1,300.8	1,300.8	1,303.1	1,304.8	1,303.4	1,303.8	1,303.8	1,304.4	1,304.1	1,303.8	1,302.9	1,302.5
11	L43-W17-PL	1,303.9	1,302.9	1,302.5	1,304.1	1,304.7	1,303.0	1,303.5	1,303.9	1,304.7	1,304.8	1,304.9	1,303.8	1,303.5

Glades and White Creek Reservoir Pool Elevation
Drought Year Analysis - 2008

Average Daily Elevation (ft MSL)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	---	---	---	---	---	---	---	---	---	---	---	---	---
No Action	L60	---	---	---	---	---	---	---	---	---	---	---	---	---
Proposed	L18-G50-PT	1,144.1	1,149.8	1,151.2	1,153.3	1,154.3	1,153.5	1,151.0	1,147.6	1,141.7	1,137.3	1,131.5	1,128.2	1,130.1
1	L18-G42-PT	1,148.1	1,152.5	1,153.6	1,155.5	1,156.2	1,155.3	1,152.9	1,150.3	1,145.8	1,142.6	1,138.6	1,136.5	1,138.0
2	L18-G42-PL	1,147.7	1,152.2	1,153.4	1,155.3	1,156.0	1,155.1	1,152.7	1,150.0	1,145.3	1,142.1	1,137.8	1,135.5	1,136.8
3	L18-G42-WTP	1,147.7	1,152.2	1,153.4	1,155.3	1,156.0	1,155.1	1,152.7	1,150.0	1,145.3	1,142.1	1,137.8	1,135.5	1,136.8
4	L30-G30-PT	1,153.1	1,156.4	1,157.2	1,158.8	1,159.2	1,158.2	1,156.0	1,153.8	1,151.2	1,149.3	1,146.6	1,144.9	1,145.7
5	L30-G30-PL	1,153.1	1,156.4	1,157.2	1,158.8	1,159.2	1,158.2	1,156.0	1,153.8	1,151.2	1,149.3	1,146.6	1,144.9	1,145.7
6	L30-G30-WTP	1,153.1	1,156.4	1,157.2	1,158.8	1,159.2	1,158.2	1,156.0	1,153.8	1,151.2	1,149.3	1,146.6	1,144.9	1,145.7
7	L43-G17-PT	1,167.1	1,167.6	1,168.4	1,169.8	1,170.3	1,169.7	1,168.4	1,167.1	1,166.1	1,165.7	1,164.4	1,163.5	1,164.2
8	L43-G17-PL	1,157.1	1,160.1	1,160.6	1,161.6	1,161.6	1,160.7	1,158.8	1,156.9	1,155.4	1,154.6	1,152.8	1,151.2	1,151.5
9	L43-G17-WTP	1,157.1	1,160.1	1,160.6	1,161.6	1,161.6	1,160.7	1,158.8	1,156.9	1,155.4	1,154.6	1,152.8	1,151.2	1,151.5
10	L43-W17-PT	1,281.1	1,284.7	1,286.7	1,290.4	1,292.4	1,291.9	1,289.1	1,284.6	1,279.4	1,277.9	1,270.5	1,262.2	1,263.1
11	L43-W17-PL	1,280.7	1,285.5	1,287.0	1,290.3	1,292.1	1,291.3	1,288.4	1,283.7	1,278.3	1,277.8	1,270.5	1,261.6	1,262.2

Buford Dam
Discharge Analysis Results





Buford Dam Discharge
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	2,597	2,822	3,512	2,863	2,698	1,719	1,664	1,581	1,508	1,512	1,795	2,097
No Action	L60	2,358	2,564	3,242	2,638	2,429	1,541	1,475	1,361	1,310	1,288	1,517	1,853
Proposed	L18-G50-PT	2,351	2,556	3,229	2,631	2,430	1,541	1,476	1,366	1,315	1,298	1,520	1,853
1	L18-G42-PT	2,352	2,556	3,229	2,632	2,430	1,541	1,476	1,366	1,314	1,297	1,520	1,853
2	L18-G42-PL	2,352	2,556	3,229	2,632	2,430	1,541	1,476	1,365	1,315	1,297	1,520	1,853
3	L18-G42-WTP	2,352	2,556	3,229	2,632	2,430	1,541	1,476	1,365	1,315	1,297	1,520	1,853
4	L30-G30-PT	2,353	2,556	3,230	2,633	2,428	1,542	1,475	1,365	1,313	1,297	1,521	1,854
5	L30-G30-PL	2,353	2,557	3,231	2,635	2,427	1,541	1,475	1,364	1,313	1,298	1,520	1,854
6	L30-G30-WTP	2,352	2,556	3,231	2,635	2,428	1,541	1,475	1,364	1,313	1,297	1,520	1,854
7	L43-G17-PT	2,353	2,556	3,231	2,632	2,432	1,541	1,474	1,364	1,312	1,297	1,520	1,854
8	L43-G17-PL	2,353	2,557	3,232	2,632	2,432	1,540	1,474	1,364	1,312	1,297	1,519	1,854
9	L43-G17-WTP	2,353	2,557	3,232	2,632	2,432	1,540	1,474	1,364	1,312	1,297	1,519	1,854
10	L43-W17-PT	2,359	2,564	3,242	2,636	2,426	1,540	1,472	1,363	1,310	1,288	1,517	1,853
11	L43-W17-PL	2,359	2,563	3,242	2,639	2,426	1,539	1,472	1,361	1,310	1,288	1,518	1,853

Minimum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	800	800	600	600	798	798	600	600	800	800	600	600
No Action	L60	800	800	800	799	797	798	799	799	800	799	800	800
Proposed	L18-G50-PT	800	600	800	600	787	600	798	600	800	600	800	600
1	L18-G42-PT	800	600	800	799	797	798	798	799	799	799	800	800
2	L18-G42-PL	600	800	600	799	600	798	600	799	600	799	600	800
3	L18-G42-WTP	800	800	600	799	797	798	798	799	800	799	800	800
4	L30-G30-PT	800	600	800	600	797	600	798	600	799	600	800	600
5	L30-G30-PL	800	800	800	600	797	798	798	799	799	799	800	800
6	L30-G30-WTP	600	800	600	799	600	798	600	799	600	799	600	800
7	L43-G17-PT	800	800	800	799	600	798	798	799	799	799	800	800
8	L43-G17-PL	800	600	800	600	798	600	798	600	799	600	800	600
9	L43-G17-WTP	800	800	800	799	798	600	798	799	799	799	800	800
10	L43-W17-PT	600	800	600	799	600	798	600	799	600	799	600	800
11	L43-W17-PL	800	800	800	799	798	798	600	799	800	799	800	800

Maximum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	10,000	10,000	10,000	10,000	10,000	9,699	7,539	10,000	8,379	10,000	8,643	10,000
No Action	L60	10,000	10,000	10,000	10,000	10,000	10,000	7,439	10,000	8,256	3,534	8,770	10,000
Proposed	L18-G50-PT	10,000	10,000	10,000	10,000	10,000	8,612	7,394	10,000	8,294	5,014	8,770	10,000
1	L18-G42-PT	10,000	10,000	10,000	10,000	10,000	8,616	7,393	10,000	8,289	4,582	8,770	10,000
2	L18-G42-PL	10,000	10,000	10,000	10,000	10,000	8,614	7,393	10,000	8,291	4,597	8,770	10,000
3	L18-G42-WTP	10,000	10,000	10,000	10,000	10,000	8,614	7,393	10,000	8,291	4,597	8,770	10,000
4	L30-G30-PT	10,000	10,000	10,000	10,000	10,000	8,628	7,391	10,000	8,284	4,942	8,770	10,000
5	L30-G30-PL	10,000	10,000	10,000	10,000	10,000	8,630	7,391	10,000	8,285	4,915	8,770	10,000
6	L30-G30-WTP	10,000	10,000	10,000	10,000	10,000	8,630	7,391	10,000	8,285	4,915	8,770	10,000
7	L43-G17-PT	10,000	10,000	10,000	10,000	10,000	8,585	7,389	10,000	8,280	5,161	8,770	10,000
8	L43-G17-PL	10,000	10,000	10,000	10,000	10,000	8,585	7,389	10,000	8,281	5,159	8,770	10,000
9	L43-G17-WTP	10,000	10,000	10,000	10,000	10,000	8,585	7,389	10,000	8,281	5,159	8,770	10,000
10	L43-W17-PT	10,000	10,000	10,000	10,000	10,000	10,000	7,450	10,000	8,266	3,522	8,770	10,000
11	L43-W17-PL	10,000	10,000	10,000	10,000	10,000	10,000	7,450	10,000	8,266	3,523	8,770	10,000

Buford Dam Discharge
Average Year Analysis - 1997

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,966	2,200	3,319	3,971	2,883	3,564	1,756	1,916	1,431	1,610	1,989	1,756	1,955
No Action	L60	1,924	1,540	2,778	3,851	2,731	3,353	1,620	1,771	1,296	1,615	1,661	1,627	1,816
Proposed	L18-G50-PT	1,923	2,101	2,755	3,803	2,727	3,398	1,620	1,771	1,296	1,629	1,469	1,627	1,816
1	L18-G42-PT	1,923	2,101	2,761	3,163	2,737	3,135	1,620	1,771	1,296	1,536	1,661	1,477	1,817
2	L18-G42-PL	1,923	1,539	2,760	3,163	2,737	3,394	1,620	1,771	1,296	1,629	1,661	1,477	1,817
3	L18-G42-WTP	1,923	2,101	2,760	3,795	2,737	3,394	1,620	1,771	1,296	1,629	1,661	1,628	1,561
4	L30-G30-PT	1,923	2,100	2,781	3,802	2,400	3,347	1,620	1,770	1,296	1,657	1,661	1,627	1,560
5	L30-G30-PL	1,923	2,100	2,780	3,803	2,731	3,088	1,620	1,770	1,296	1,657	1,661	1,627	1,816
6	L30-G30-WTP	1,923	2,100	2,780	3,803	2,731	3,088	1,620	1,770	1,296	1,657	1,661	1,627	1,816
7	L43-G17-PT	1,922	2,100	2,064	3,805	2,400	3,353	1,535	1,771	1,296	1,629	1,469	1,627	1,816
8	L43-G17-PL	1,922	2,100	2,785	3,805	2,731	3,351	1,535	1,771	1,296	1,629	1,661	1,627	1,816
9	L43-G17-WTP	1,922	2,100	2,785	3,178	2,731	3,351	1,620	1,580	1,296	1,629	1,661	1,477	1,816
10	L43-W17-PT	1,925	2,101	2,783	3,841	2,737	3,384	1,620	1,771	1,297	1,601	1,648	1,627	1,816
11	L43-W17-PL	1,925	1,540	2,783	3,841	2,737	3,385	1,620	1,771	1,297	1,601	1,648	1,627	1,816

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-2.1%	-4.5%	-16.3%	-3.0%	-5.3%	-5.9%	-7.7%	-7.6%	-9.4%	-14.7%	-16.5%	-7.3%	-7.1%
Proposed	L18-G50-PT	-2.2%	-4.5%	-17.0%	-4.2%	-5.4%	-4.6%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
1	L18-G42-PT	-2.2%	-4.5%	-16.8%	-4.5%	-5.1%	-4.7%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
2	L18-G42-PL	-2.2%	-4.5%	-16.8%	-4.5%	-5.1%	-4.8%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
3	L18-G42-WTP	-2.2%	-4.5%	-16.8%	-4.5%	-5.1%	-4.8%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
4	L30-G30-PT	-2.2%	-4.5%	-16.2%	-4.3%	-5.3%	-6.1%	-7.7%	-7.6%	-9.4%	-12.4%	-16.5%	-7.3%	-7.1%
5	L30-G30-PL	-2.2%	-4.5%	-16.2%	-4.2%	-5.3%	-6.1%	-7.7%	-7.6%	-9.4%	-12.4%	-16.5%	-7.3%	-7.1%
6	L30-G30-WTP	-2.2%	-4.5%	-16.2%	-4.2%	-5.3%	-6.1%	-7.7%	-7.6%	-9.4%	-12.4%	-16.5%	-7.3%	-7.1%
7	L43-G17-PT	-2.2%	-4.5%	-16.1%	-4.2%	-5.3%	-5.9%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
8	L43-G17-PL	-2.3%	-4.5%	-16.1%	-4.2%	-5.3%	-6.0%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
9	L43-G17-WTP	-2.3%	-4.5%	-16.1%	-4.2%	-5.3%	-6.0%	-7.7%	-7.6%	-9.4%	-13.9%	-16.5%	-7.3%	-7.1%
10	L43-W17-PT	-2.1%	-4.5%	-16.2%	-3.3%	-5.1%	-5.0%	-7.7%	-7.6%	-9.4%	-15.4%	-17.2%	-7.3%	-7.1%
11	L43-W17-PL	-2.1%	-4.5%	-16.2%	-3.3%	-5.1%	-5.0%	-7.7%	-7.6%	-9.4%	-15.4%	-17.2%	-7.3%	-7.1%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	-0.1%	0.0%	-0.8%	-1.3%	-0.1%	1.4%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	-0.6%	-1.5%	0.2%	1.2%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	-0.6%	-1.5%	0.2%	1.2%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	-0.6%	-1.5%	0.2%	1.2%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
4	L30-G30-PT	-0.1%	0.0%	0.1%	-1.3%	0.0%	-0.2%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%
5	L30-G30-PL	-0.1%	0.0%	0.1%	-1.3%	0.0%	-0.2%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%
6	L30-G30-WTP	-0.1%	0.0%	0.1%	-1.3%	0.0%	-0.2%	0.0%	0.0%	0.0%	2.6%	0.0%	0.0%	0.0%
7	L43-G17-PT	-0.1%	0.0%	0.2%	-1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
8	L43-G17-PL	-0.1%	0.0%	0.2%	-1.2%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
9	L43-G17-WTP	-0.1%	0.0%	0.2%	-1.2%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.2%	-0.3%	0.2%	0.9%	0.0%	0.0%	0.0%	-0.9%	-0.8%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.2%	-0.3%	0.2%	1.0%	0.0%	0.0%	0.0%	-0.9%	-0.8%	0.0%	0.0%

Buford Dam Discharge
Wet Year Analysis - 2005

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	2,365	2,188	4,029	4,338	3,413	2,641	2,793	4,933	3,952	1,907	1,660	1,683	2,270
No Action	L60	2,308	1,654	2,831	3,215	2,505	2,305	2,257	3,269	3,185	1,877	1,545	1,573	1,499
Proposed	L18-G50-PT	2,309	2,022	3,895	4,217	3,252	2,411	2,492	4,637	3,622	1,690	1,521	1,547	1,499
1	L18-G42-PT	2,309	2,022	3,895	4,218	3,252	2,411	2,492	4,638	3,622	1,690	1,521	1,547	1,998
2	L18-G42-PL	2,309	2,022	3,895	4,218	3,252	2,410	2,492	4,638	3,622	1,690	1,521	1,547	1,998
3	L18-G42-WTP	2,309	2,022	3,895	4,218	3,252	2,410	2,492	4,638	3,622	1,690	1,521	1,573	1,998
4	L30-G30-PT	2,309	2,022	3,895	4,218	3,251	2,410	2,492	4,638	3,621	1,689	1,521	1,546	1,499
5	L30-G30-PL	2,309	2,022	3,895	4,218	3,251	2,410	2,492	4,638	3,621	1,689	1,521	1,546	1,499
6	L30-G30-WTP	2,309	2,022	3,895	4,218	3,251	2,410	2,492	4,638	3,621	1,689	1,521	1,573	1,998
7	L43-G17-PT	2,308	2,023	3,894	4,218	3,251	2,409	2,491	4,638	3,621	1,689	1,521	1,546	1,998
8	L43-G17-PL	2,308	2,023	3,894	4,218	3,251	2,409	2,491	4,638	3,621	1,689	1,521	1,546	1,998
9	L43-G17-WTP	2,308	2,023	3,894	4,218	3,251	2,409	2,491	4,638	3,621	1,689	1,521	1,546	1,499
10	L43-W17-PT	2,307	2,022	3,895	4,218	3,250	2,404	2,497	4,638	3,622	1,675	1,521	1,546	1,998
11	L43-W17-PL	2,307	2,022	3,895	4,218	3,250	2,403	2,497	4,638	3,622	1,674	1,521	1,573	1,499

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-2.4%	-7.5%	-3.4%	-2.7%	-4.8%	-9.0%	-10.6%	-6.0%	-8.3%	-11.8%	-8.4%	-8.1%	-12.0%
Proposed	L18-G50-PT	-2.4%	-7.6%	-3.3%	-2.8%	-4.7%	-8.7%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
1	L18-G42-PT	-2.4%	-7.6%	-3.3%	-2.8%	-4.7%	-8.7%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
2	L18-G42-PL	-2.4%	-7.6%	-3.3%	-2.8%	-4.7%	-8.7%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
3	L18-G42-WTP	-2.4%	-7.6%	-3.3%	-2.8%	-4.7%	-8.7%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
4	L30-G30-PT	-2.4%	-7.6%	-3.3%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
5	L30-G30-PL	-2.4%	-7.6%	-3.3%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
6	L30-G30-WTP	-2.4%	-7.6%	-3.3%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
7	L43-G17-PT	-2.4%	-7.5%	-3.4%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.5%	-8.4%	-8.1%	-12.0%
8	L43-G17-PL	-2.4%	-7.5%	-3.4%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
9	L43-G17-WTP	-2.4%	-7.5%	-3.4%	-2.8%	-4.7%	-8.8%	-10.8%	-6.0%	-8.4%	-11.4%	-8.4%	-8.1%	-12.0%
10	L43-W17-PT	-2.4%	-7.6%	-3.3%	-2.7%	-4.8%	-9.0%	-10.6%	-6.0%	-8.4%	-12.2%	-8.4%	-8.1%	-12.0%
11	L43-W17-PL	-2.4%	-7.6%	-3.3%	-2.8%	-4.7%	-9.0%	-10.6%	-6.0%	-8.4%	-12.2%	-8.4%	-8.1%	-12.0%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	-0.2%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	-0.3%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	-0.3%	0.0%	0.0%	0.5%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	0.0%	0.4%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	-0.1%	0.4%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	-0.1%	0.4%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	-0.3%	0.0%	-0.1%	0.4%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.4%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	-0.1%	0.0%	0.0%	-0.5%	0.0%	0.0%	0.0%

Buford Dam Discharge
Drought Year Analysis - 1988

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	931	1,713	1,240	810	1,022	800	800	811	800	899	1,372	1,327	1,277
No Action	L60	889	740	733	748	682	978	1,115	1,038	1,067	798	933	870	948
Proposed	L18-G50-PT	891	1,211	1,056	800	931	800	800	800	800	838	885	800	800
1	L18-G42-PT	890	1,200	1,056	800	931	800	800	800	800	838	885	800	800
2	L18-G42-PL	890	1,200	1,056	800	931	800	800	800	800	838	885	800	800
3	L18-G42-WTP	890	1,200	1,056	800	931	800	800	800	800	838	885	800	800
4	L30-G30-PT	891	1,202	1,056	800	931	800	800	800	800	838	885	800	800
5	L30-G30-PL	890	1,200	1,056	800	931	800	800	800	800	838	885	800	800
6	L30-G30-WTP	890	1,200	1,056	800	931	800	800	800	800	838	885	800	800
7	L43-G17-PT	891	1,206	1,056	800	931	800	800	800	800	838	885	800	800
8	L43-G17-PL	890	1,200	1,056	800	931	800	800	800	800	838	885	800	800
9	L43-G17-WTP	890	1,200	1,056	800	931	800	800	800	800	838	885	800	800
10	L43-W17-PT	889	1,178	1,056	800	931	800	800	800	800	838	885	800	800
11	L43-W17-PL	889	1,178	1,056	800	931	800	800	800	800	838	885	800	800

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-4.6%	-31.3%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
Proposed	L18-G50-PT	-4.3%	-29.3%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
1	L18-G42-PT	-4.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
2	L18-G42-PL	-4.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
3	L18-G42-WTP	-4.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
4	L30-G30-PT	-4.3%	-29.8%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
5	L30-G30-PL	-4.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
6	L30-G30-WTP	-4.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
7	L43-G17-PT	-4.3%	-29.6%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
8	L43-G17-PL	-4.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
9	L43-G17-WTP	-4.4%	-30.0%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
10	L43-W17-PT	-4.6%	-31.3%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%
11	L43-W17-PL	-4.6%	-31.3%	-14.8%	-1.2%	-8.9%	0.0%	0.0%	-1.4%	0.0%	-6.8%	-35.5%	-39.7%	-37.3%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.3%	2.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.2%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.3%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.2%	1.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Buford Dam Discharge
Drought Year Analysis - 2001

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	959	1,185	1,087	1,762	1,027	960	1,087	1,653	1,493	1,324	1,216	1,217	1,340
No Action	L60	951	699	676	600	710	810	760	775	1,216	1,264	1,329	1,320	1,239
Proposed	L18-G50-PT	953	1,041	1,016	1,649	936	922	1,019	1,060	1,225	1,175	1,077	1,090	1,214
1	L18-G42-PT	955	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
2	L18-G42-PL	953	1,041	1,016	1,649	936	922	1,019	1,060	1,225	1,175	1,077	1,090	1,214
3	L18-G42-WTP	953	1,041	1,016	1,649	936	922	1,019	1,060	1,225	1,175	1,077	1,090	1,214
4	L30-G30-PT	955	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
5	L30-G30-PL	955	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
6	L30-G30-WTP	955	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
7	L43-G17-PT	955	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
8	L43-G17-PL	955	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
9	L43-G17-WTP	955	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
10	L43-W17-PT	955	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214
11	L43-W17-PL	955	1,041	1,016	1,649	936	922	1,019	1,060	1,250	1,175	1,077	1,090	1,214

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.8%	-13.6%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-18.0%	-11.3%	-11.4%	-10.5%	-9.4%
Proposed	L18-G50-PT	-0.6%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-17.9%	-11.3%	-11.4%	-10.5%	-9.4%
1	L18-G42-PT	-0.4%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
2	L18-G42-PL	-0.6%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-17.9%	-11.3%	-11.4%	-10.5%	-9.4%
3	L18-G42-WTP	-0.6%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-17.9%	-11.3%	-11.4%	-10.5%	-9.4%
4	L30-G30-PT	-0.4%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
5	L30-G30-PL	-0.4%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
6	L30-G30-WTP	-0.4%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
7	L43-G17-PT	-0.4%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
8	L43-G17-PL	-0.4%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
9	L43-G17-WTP	-0.4%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
10	L43-W17-PT	-0.4%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%
11	L43-W17-PL	-0.4%	-12.2%	-6.5%	-6.4%	-8.9%	-4.0%	-6.3%	-35.9%	-16.3%	-11.3%	-11.4%	-10.5%	-9.4%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.2%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.4%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.2%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.2%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.4%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.4%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.4%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.4%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.4%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.4%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.4%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.4%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.1%	0.0%	0.0%	0.0%	0.0%

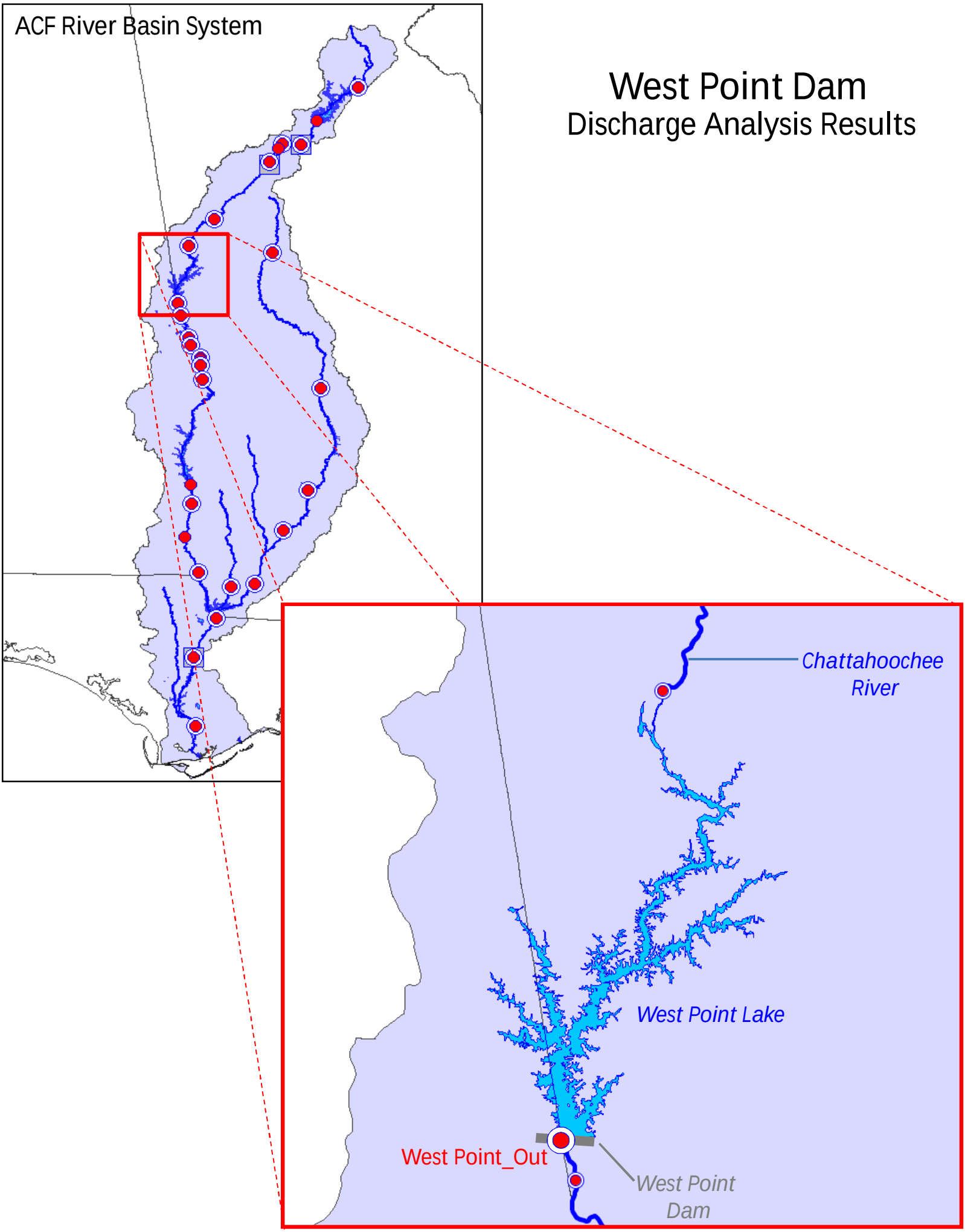
Buford Dam Discharge
Drought Year Analysis - 2008

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	899	959	1,180	1,168	900	802	800	823	880	800	908	1,093	1,560
No Action	L60	941	754	642	621	767	900	1,192	1,050	1,099	1,294	1,105	1,060	802
Proposed	L18-G50-PT	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
1	L18-G42-PT	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
2	L18-G42-PL	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
3	L18-G42-WTP	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
4	L30-G30-PT	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
5	L30-G30-PL	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
6	L30-G30-WTP	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
7	L43-G17-PT	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
8	L43-G17-PL	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
9	L43-G17-WTP	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
10	L43-W17-PT	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994
11	L43-W17-PL	941	837	1,095	1,073	846	800	800	803	839	800	800	800	994

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
Proposed	L18-G50-PT	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
1	L18-G42-PT	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
2	L18-G42-PL	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
3	L18-G42-WTP	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
4	L30-G30-PT	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
5	L30-G30-PL	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
6	L30-G30-WTP	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
7	L43-G17-PT	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
8	L43-G17-PL	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
9	L43-G17-WTP	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
10	L43-W17-PT	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%
11	L43-W17-PL	4.6%	-12.8%	-7.2%	-8.1%	-6.0%	-0.3%	0.0%	-2.3%	-4.7%	0.0%	-11.9%	-26.8%	-36.3%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

West Point Dam
Discharge Analysis Results



West Point Dam Discharge
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	6,266	6,911	8,153	6,476	5,034	3,459	3,605	3,022	2,898	3,010	4,877	5,481
No Action	L60	6,182	6,821	8,054	6,438	4,898	3,428	3,565	2,966	2,877	2,950	4,682	5,357
Proposed	L18-G50-PT	6,177	6,814	8,040	6,431	4,899	3,428	3,566	2,968	2,879	2,960	4,685	5,360
1	L18-G42-PT	6,178	6,814	8,040	6,432	4,899	3,428	3,566	2,968	2,879	2,959	4,684	5,360
2	L18-G42-PL	6,178	6,814	8,041	6,432	4,899	3,428	3,566	2,967	2,879	2,959	4,684	5,360
3	L18-G42-WTP	6,178	6,814	8,041	6,432	4,899	3,428	3,566	2,967	2,879	2,959	4,684	5,360
4	L30-G30-PT	6,178	6,814	8,042	6,432	4,897	3,431	3,565	2,967	2,877	2,960	4,685	5,360
5	L30-G30-PL	6,178	6,814	8,042	6,434	4,894	3,431	3,564	2,968	2,877	2,960	4,686	5,359
6	L30-G30-WTP	6,178	6,814	8,042	6,434	4,895	3,431	3,564	2,967	2,877	2,960	4,686	5,359
7	L43-G17-PT	6,178	6,814	8,043	6,432	4,901	3,429	3,564	2,968	2,876	2,959	4,683	5,359
8	L43-G17-PL	6,179	6,814	8,043	6,431	4,901	3,429	3,564	2,968	2,877	2,959	4,684	5,359
9	L43-G17-WTP	6,179	6,814	8,043	6,431	4,901	3,429	3,564	2,968	2,877	2,959	4,684	5,359
10	L43-W17-PT	6,184	6,820	8,054	6,436	4,891	3,431	3,563	2,967	2,877	2,951	4,682	5,356
11	L43-W17-PL	6,183	6,819	8,053	6,439	4,894	3,428	3,562	2,965	2,878	2,949	4,683	5,357

Minimum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	675	675	675	675	675	675	675	675	675	675	675	675
No Action	L60	675	675	675	675	675	675	675	675	675	675	675	675
Proposed	L18-G50-PT	675	675	675	675	675	675	675	675	675	675	675	675
1	L18-G42-PT	675	675	675	675	675	675	675	675	675	675	675	675
2	L18-G42-PL	675	675	675	675	675	675	675	675	675	675	675	675
3	L18-G42-WTP	675	675	675	675	675	675	675	675	675	675	675	675
4	L30-G30-PT	675	675	675	675	675	675	675	675	675	675	675	675
5	L30-G30-PL	675	675	675	675	675	675	675	675	675	675	675	675
6	L30-G30-WTP	675	675	675	675	675	675	675	675	675	675	675	675
7	L43-G17-PT	675	675	675	675	675	675	675	675	675	675	675	675
8	L43-G17-PL	675	675	675	675	675	675	675	675	675	675	675	675
9	L43-G17-WTP	675	675	675	675	675	675	675	675	675	675	675	675
10	L43-W17-PT	675	675	675	675	675	675	675	675	675	675	675	675
11	L43-W17-PL	675	675	675	675	675	675	675	675	675	675	675	675

Maximum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	39,911	40,000	40,000	36,792	40,000	29,787	35,152	24,958	38,142	25,403	40,000	40,000
No Action	L60	40,000	40,000	40,000	36,962	40,000	29,646	34,882	24,014	38,068	25,145	40,000	40,000
Proposed	L18-G50-PT	40,000	40,000	40,000	36,961	40,000	29,548	34,428	23,894	38,068	25,158	40,000	40,000
1	L18-G42-PT	40,000	40,000	40,000	36,961	40,000	29,547	34,436	23,896	38,068	25,158	40,000	40,000
2	L18-G42-PL	40,000	40,000	40,000	36,961	40,000	29,547	34,433	23,899	38,068	25,158	40,000	40,000
3	L18-G42-WTP	40,000	40,000	40,000	36,961	40,000	29,547	34,433	23,899	38,068	25,158	40,000	40,000
4	L30-G30-PT	40,000	40,000	40,000	36,961	40,000	29,544	34,460	23,867	38,068	25,159	40,000	40,000
5	L30-G30-PL	40,000	40,000	40,000	36,961	40,000	29,544	34,457	23,868	38,068	25,159	40,000	40,000
6	L30-G30-WTP	40,000	40,000	40,000	36,961	40,000	29,544	34,457	23,868	38,068	25,159	40,000	40,000
7	L43-G17-PT	40,000	40,000	40,000	36,961	40,000	29,541	34,503	23,863	38,068	25,159	40,000	40,000
8	L43-G17-PL	40,000	40,000	40,000	36,961	40,000	29,541	34,399	24,014	38,068	25,159	40,000	40,000
9	L43-G17-WTP	40,000	40,000	40,000	36,961	40,000	29,541	34,399	24,014	38,068	25,159	40,000	40,000
10	L43-W17-PT	40,000	40,000	40,000	36,962	40,000	29,659	34,754	24,013	38,068	25,145	40,000	40,000
11	L43-W17-PL	40,000	40,000	40,000	36,962	40,000	29,659	34,753	24,010	38,068	25,145	40,000	40,000

West Point Dam Discharge
Average Year Analysis - 1997

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	5,397	6,605	8,567	9,477	5,209	5,292	4,390	3,641	2,671	2,797	3,873	5,773	6,663
No Action	L60	5,350	6,686	8,213	9,518	5,238	5,299	4,326	3,647	2,674	2,664	3,664	5,759	6,677
Proposed	L18-G50-PT	5,349	6,686	8,196	9,463	5,236	5,279	4,394	3,647	2,674	2,671	3,671	5,759	6,677
1	L18-G42-PT	5,349	6,686	8,200	9,459	5,242	5,305	4,363	3,647	2,674	2,671	3,671	5,759	6,677
2	L18-G42-PL	5,349	6,686	8,199	9,459	5,242	5,304	4,363	3,647	2,674	2,671	3,671	5,759	6,677
3	L18-G42-WTP	5,349	6,686	8,199	9,459	5,242	5,304	4,363	3,647	2,674	2,671	3,671	5,759	6,677
4	L30-G30-PT	5,349	6,686	8,216	9,469	5,238	5,288	4,331	3,647	2,674	2,699	3,671	5,759	6,677
5	L30-G30-PL	5,349	6,686	8,216	9,469	5,238	5,288	4,331	3,647	2,674	2,699	3,671	5,759	6,677
6	L30-G30-WTP	5,349	6,686	8,216	9,469	5,238	5,288	4,331	3,647	2,674	2,699	3,671	5,759	6,677
7	L43-G17-PT	5,348	6,686	8,219	9,473	5,237	5,306	4,318	3,647	2,674	2,671	3,671	5,759	6,677
8	L43-G17-PL	5,347	6,686	8,219	9,472	5,237	5,303	4,319	3,647	2,674	2,671	3,671	5,759	6,677
9	L43-G17-WTP	5,347	6,686	8,219	9,472	5,237	5,303	4,319	3,647	2,674	2,671	3,671	5,759	6,677
10	L43-W17-PT	5,350	6,686	8,217	9,510	5,242	5,292	4,365	3,647	2,674	2,658	3,643	5,759	6,677
11	L43-W17-PL	5,350	6,686	8,217	9,510	5,242	5,293	4,365	3,647	2,674	2,658	3,643	5,759	6,677

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.9%	1.2%	-4.1%	0.4%	0.5%	0.1%	-1.5%	0.2%	0.1%	-4.8%	-5.4%	-0.2%	0.2%
Proposed	L18-G50-PT	-0.9%	1.2%	-4.3%	-0.1%	0.5%	-0.3%	0.1%	0.2%	0.1%	-4.5%	-5.2%	-0.2%	0.2%
1	L18-G42-PT	-0.9%	1.2%	-4.3%	-0.2%	0.6%	0.2%	-0.6%	0.2%	0.1%	-4.5%	-5.2%	-0.2%	0.2%
2	L18-G42-PL	-0.9%	1.2%	-4.3%	-0.2%	0.6%	0.2%	-0.6%	0.2%	0.1%	-4.5%	-5.2%	-0.2%	0.2%
3	L18-G42-WTP	-0.9%	1.2%	-4.3%	-0.2%	0.6%	0.2%	-0.6%	0.2%	0.1%	-4.5%	-5.2%	-0.2%	0.2%
4	L30-G30-PT	-0.9%	1.2%	-4.1%	-0.1%	0.5%	-0.1%	-1.3%	0.1%	0.1%	-3.5%	-5.2%	-0.2%	0.2%
5	L30-G30-PL	-0.9%	1.2%	-4.1%	-0.1%	0.5%	-0.1%	-1.3%	0.1%	0.1%	-3.5%	-5.2%	-0.2%	0.2%
6	L30-G30-WTP	-0.9%	1.2%	-4.1%	-0.1%	0.5%	-0.1%	-1.3%	0.1%	0.1%	-3.5%	-5.2%	-0.2%	0.2%
7	L43-G17-PT	-0.9%	1.2%	-4.1%	0.0%	0.5%	0.3%	-1.6%	0.2%	0.1%	-4.5%	-5.2%	-0.2%	0.2%
8	L43-G17-PL	-0.9%	1.2%	-4.1%	0.0%	0.5%	0.2%	-1.6%	0.2%	0.1%	-4.5%	-5.2%	-0.2%	0.2%
9	L43-G17-WTP	-0.9%	1.2%	-4.1%	0.0%	0.5%	0.2%	-1.6%	0.2%	0.1%	-4.5%	-5.2%	-0.2%	0.2%
10	L43-W17-PT	-0.9%	1.2%	-4.1%	0.3%	0.6%	0.0%	-0.6%	0.2%	0.1%	-5.0%	-5.9%	-0.2%	0.2%
11	L43-W17-PL	-0.9%	1.2%	-4.1%	0.3%	0.6%	0.0%	-0.6%	0.2%	0.1%	-5.0%	-5.9%	-0.2%	0.2%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	-0.2%	-0.6%	0.0%	-0.4%	1.6%	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	-0.2%	-0.6%	0.1%	0.1%	0.9%	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	-0.2%	-0.6%	0.1%	0.1%	0.9%	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	-0.2%	-0.6%	0.1%	0.1%	0.9%	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	-0.5%	0.0%	-0.2%	0.1%	0.0%	0.0%	1.3%	0.2%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	-0.5%	0.0%	-0.2%	0.1%	0.0%	0.0%	1.3%	0.2%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	-0.5%	0.0%	-0.2%	0.1%	0.0%	0.0%	1.3%	0.2%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.1%	-0.5%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.1%	-0.5%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.1%	-0.5%	0.0%	0.1%	-0.2%	0.0%	0.0%	0.3%	0.2%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	0.9%	0.0%	0.0%	-0.2%	-0.6%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	0.9%	0.0%	0.0%	-0.2%	-0.6%	0.0%	0.0%

West Point Dam Discharge
Wet Year Analysis - 2005

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	6,282	4,281	7,595	10,075	8,338	4,507	4,516	13,869	6,986	3,039	2,467	4,393	5,290
No Action	L60	6,223	4,256	7,666	10,135	8,355	4,449	4,366	13,699	6,809	2,993	2,448	4,316	5,169
Proposed	L18-G50-PT	6,224	4,256	7,664	10,133	8,360	4,455	4,358	13,707	6,804	2,994	2,448	4,322	5,169
1	L18-G42-PT	6,224	4,256	7,664	10,133	8,360	4,454	4,358	13,707	6,804	2,994	2,448	4,322	5,169
2	L18-G42-PL	6,224	4,256	7,664	10,133	8,360	4,454	4,358	13,707	6,804	2,994	2,448	4,322	5,169
3	L18-G42-WTP	6,224	4,256	7,664	10,133	8,360	4,454	4,358	13,707	6,804	2,994	2,448	4,322	5,169
4	L30-G30-PT	6,224	4,256	7,665	10,133	8,360	4,454	4,358	13,707	6,803	2,993	2,448	4,321	5,169
5	L30-G30-PL	6,224	4,256	7,665	10,133	8,360	4,454	4,358	13,707	6,803	2,993	2,448	4,321	5,169
6	L30-G30-WTP	6,224	4,256	7,665	10,133	8,360	4,454	4,358	13,707	6,803	2,993	2,448	4,321	5,169
7	L43-G17-PT	6,223	4,256	7,665	10,133	8,359	4,453	4,358	13,707	6,803	2,993	2,448	4,321	5,169
8	L43-G17-PL	6,224	4,256	7,665	10,133	8,360	4,453	4,358	13,707	6,803	2,993	2,448	4,321	5,169
9	L43-G17-WTP	6,224	4,256	7,665	10,133	8,360	4,453	4,358	13,707	6,803	2,993	2,448	4,321	5,169
10	L43-W17-PT	6,222	4,256	7,666	10,134	8,357	4,448	4,365	13,700	6,809	2,993	2,449	4,307	5,169
11	L43-W17-PL	6,222	4,256	7,665	10,134	8,357	4,448	4,364	13,700	6,809	2,993	2,449	4,306	5,169

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.9%	-0.6%	0.9%	0.6%	0.2%	-1.3%	-3.3%	-1.2%	-2.5%	-1.5%	-0.8%	-1.7%	-2.3%
Proposed	L18-G50-PT	-0.9%	-0.6%	0.9%	0.6%	0.3%	-1.2%	-3.5%	-1.2%	-2.6%	-1.5%	-0.8%	-1.6%	-2.3%
1	L18-G42-PT	-0.9%	-0.6%	0.9%	0.6%	0.3%	-1.2%	-3.5%	-1.2%	-2.6%	-1.5%	-0.8%	-1.6%	-2.3%
2	L18-G42-PL	-0.9%	-0.6%	0.9%	0.6%	0.3%	-1.2%	-3.5%	-1.2%	-2.6%	-1.5%	-0.8%	-1.6%	-2.3%
3	L18-G42-WTP	-0.9%	-0.6%	0.9%	0.6%	0.3%	-1.2%	-3.5%	-1.2%	-2.6%	-1.5%	-0.8%	-1.6%	-2.3%
4	L30-G30-PT	-0.9%	-0.6%	0.9%	0.6%	0.3%	-1.2%	-3.5%	-1.2%	-2.6%	-1.5%	-0.8%	-1.6%	-2.3%
5	L30-G30-PL	-0.9%	-0.6%	0.9%	0.6%	0.3%	-1.2%	-3.5%	-1.2%	-2.6%	-1.5%	-0.8%	-1.6%	-2.3%
6	L30-G30-WTP	-0.9%	-0.6%	0.9%	0.6%	0.3%	-1.2%	-3.5%	-1.2%	-2.6%	-1.5%	-0.8%	-1.6%	-2.3%
7	L43-G17-PT	-0.9%	-0.6%	0.9%	0.6%	0.3%	-1.2%	-3.5%	-1.2%	-2.6%	-1.5%	-0.8%	-1.6%	-2.3%
8	L43-G17-PL	-0.9%	-0.6%	0.9%	0.6%	0.3%	-1.2%	-3.5%	-1.2%	-2.6%	-1.5%	-0.8%	-1.6%	-2.3%
9	L43-G17-WTP	-0.9%	-0.6%	0.9%	0.6%	0.3%	-1.2%	-3.5%	-1.2%	-2.6%	-1.5%	-0.8%	-1.6%	-2.3%
10	L43-W17-PT	-1.0%	-0.6%	0.9%	0.6%	0.2%	-1.3%	-3.3%	-1.2%	-2.5%	-1.5%	-0.8%	-2.0%	-2.3%
11	L43-W17-PL	-1.0%	-0.6%	0.9%	0.6%	0.2%	-1.3%	-3.3%	-1.2%	-2.5%	-1.5%	-0.8%	-2.0%	-2.3%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.1%	0.1%	-0.2%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%	0.0%

West Point Dam Discharge
Drought Year Analysis - 1988

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	2,539	4,139	4,643	1,936	2,205	1,830	1,660	1,599	1,703	2,373	2,531	2,722	3,227
No Action	L60	2,508	3,793	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
Proposed	L18-G50-PT	2,511	3,829	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
1	L18-G42-PT	2,511	3,825	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
2	L18-G42-PL	2,511	3,825	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
3	L18-G42-WTP	2,511	3,825	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
4	L30-G30-PT	2,510	3,820	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
5	L30-G30-PL	2,510	3,818	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
6	L30-G30-WTP	2,510	3,818	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
7	L43-G17-PT	2,511	3,830	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
8	L43-G17-PL	2,511	3,825	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
9	L43-G17-WTP	2,511	3,825	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
10	L43-W17-PT	2,508	3,793	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887
11	L43-W17-PL	2,508	3,793	4,505	2,109	2,354	1,960	1,656	1,590	1,686	2,424	2,510	2,724	2,887

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-1.2%	-8.4%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
Proposed	L18-G50-PT	-1.1%	-7.5%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
1	L18-G42-PT	-1.1%	-7.6%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
2	L18-G42-PL	-1.1%	-7.6%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
3	L18-G42-WTP	-1.1%	-7.6%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
4	L30-G30-PT	-1.1%	-7.7%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
5	L30-G30-PL	-1.1%	-7.8%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
6	L30-G30-WTP	-1.1%	-7.8%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
7	L43-G17-PT	-1.1%	-7.5%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
8	L43-G17-PL	-1.1%	-7.6%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
9	L43-G17-WTP	-1.1%	-7.6%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
10	L43-W17-PT	-1.2%	-8.4%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%
11	L43-W17-PL	-1.2%	-8.4%	-3.0%	8.9%	6.8%	7.1%	-0.2%	-0.5%	-1.0%	2.1%	-0.8%	0.1%	-10.5%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.1%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.1%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.1%	1.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.1%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.1%	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

West Point Dam Discharge
Drought Year Analysis - 2001

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	3,386	3,040	3,466	8,992	4,222	1,965	3,606	2,750	2,626	2,469	2,764	2,495	2,222
No Action	L60	3,319	2,955	2,968	9,059	4,280	2,037	3,695	2,703	2,562	2,495	2,521	2,245	2,259
Proposed	L18-G50-PT	3,328	2,935	3,098	9,059	4,280	2,037	3,695	2,703	2,562	2,495	2,520	2,246	2,259
1	L18-G42-PT	3,330	2,936	3,096	9,059	4,280	2,037	3,695	2,703	2,587	2,495	2,521	2,245	2,260
2	L18-G42-PL	3,327	2,935	3,096	9,059	4,280	2,037	3,695	2,703	2,562	2,495	2,520	2,245	2,260
3	L18-G42-WTP	3,327	2,935	3,096	9,059	4,280	2,037	3,695	2,703	2,562	2,495	2,520	2,245	2,260
4	L30-G30-PT	3,331	2,932	3,121	9,059	4,280	2,037	3,695	2,703	2,587	2,495	2,521	2,244	2,260
5	L30-G30-PL	3,331	2,932	3,121	9,059	4,280	2,037	3,695	2,703	2,587	2,495	2,521	2,244	2,260
6	L30-G30-WTP	3,331	2,932	3,121	9,059	4,280	2,037	3,695	2,703	2,587	2,495	2,521	2,244	2,260
7	L43-G17-PT	3,331	2,933	3,114	9,059	4,280	2,037	3,695	2,703	2,587	2,495	2,521	2,245	2,260
8	L43-G17-PL	3,331	2,932	3,119	9,059	4,280	2,037	3,695	2,703	2,587	2,495	2,521	2,244	2,260
9	L43-G17-WTP	3,331	2,932	3,119	9,059	4,280	2,037	3,695	2,703	2,587	2,495	2,521	2,244	2,260
10	L43-W17-PT	3,324	2,948	3,012	9,059	4,280	2,037	3,695	2,703	2,587	2,495	2,521	2,244	2,260
11	L43-W17-PL	3,324	2,948	3,015	9,059	4,280	2,037	3,695	2,703	2,587	2,495	2,521	2,245	2,260

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-2.0%	-2.8%	-14.4%	0.7%	1.4%	3.7%	2.5%	-1.7%	-2.4%	1.1%	-8.8%	-10.0%	1.7%
Proposed	L18-G50-PT	-1.7%	-3.4%	-10.6%	0.7%	1.4%	3.7%	2.5%	-1.7%	-2.4%	1.1%	-8.8%	-10.0%	1.7%
1	L18-G42-PT	-1.7%	-3.4%	-10.7%	0.7%	1.4%	3.7%	2.5%	-1.7%	-1.5%	1.1%	-8.8%	-10.0%	1.7%
2	L18-G42-PL	-1.7%	-3.4%	-10.7%	0.7%	1.4%	3.7%	2.5%	-1.7%	-2.4%	1.1%	-8.8%	-10.0%	1.7%
3	L18-G42-WTP	-1.7%	-3.4%	-10.7%	0.7%	1.4%	3.7%	2.5%	-1.7%	-2.4%	1.1%	-8.8%	-10.0%	1.7%
4	L30-G30-PT	-1.6%	-3.5%	-10.0%	0.7%	1.4%	3.7%	2.5%	-1.7%	-1.5%	1.1%	-8.8%	-10.0%	1.7%
5	L30-G30-PL	-1.6%	-3.5%	-10.0%	0.7%	1.4%	3.7%	2.5%	-1.7%	-1.5%	1.1%	-8.8%	-10.0%	1.7%
6	L30-G30-WTP	-1.6%	-3.5%	-10.0%	0.7%	1.4%	3.7%	2.5%	-1.7%	-1.5%	1.1%	-8.8%	-10.0%	1.7%
7	L43-G17-PT	-1.6%	-3.5%	-10.2%	0.7%	1.4%	3.7%	2.5%	-1.7%	-1.5%	1.1%	-8.8%	-10.0%	1.7%
8	L43-G17-PL	-1.6%	-3.5%	-10.0%	0.7%	1.4%	3.7%	2.5%	-1.7%	-1.5%	1.1%	-8.8%	-10.0%	1.7%
9	L43-G17-WTP	-1.6%	-3.5%	-10.0%	0.7%	1.4%	3.7%	2.5%	-1.7%	-1.5%	1.1%	-8.8%	-10.0%	1.7%
10	L43-W17-PT	-1.8%	-3.0%	-13.1%	0.7%	1.4%	3.7%	2.5%	-1.7%	-1.5%	1.1%	-8.8%	-10.0%	1.7%
11	L43-W17-PL	-1.8%	-3.0%	-13.0%	0.7%	1.4%	3.6%	2.5%	-1.7%	-1.5%	1.1%	-8.8%	-10.0%	1.7%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.3%	-0.7%	4.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
1	L18-G42-PT	0.3%	-0.6%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.3%	-0.6%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
3	L18-G42-WTP	0.3%	-0.6%	4.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%
4	L30-G30-PT	0.4%	-0.8%	5.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.4%	-0.8%	5.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.4%	-0.8%	5.2%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.3%	-0.7%	4.9%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.4%	-0.8%	5.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.4%	-0.8%	5.1%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.2%	-0.2%	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.2%	-0.2%	1.6%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	0.0%	0.0%	0.0%

West Point Dam Discharge
Drought Year Analysis - 2008

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	2,075	2,269	2,301	2,954	2,265	1,718	1,609	1,681	1,605	1,681	2,015	1,934	2,858
No Action	L60	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
Proposed	L18-G50-PT	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
1	L18-G42-PT	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
2	L18-G42-PL	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
3	L18-G42-WTP	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
4	L30-G30-PT	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
5	L30-G30-PL	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
6	L30-G30-WTP	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
7	L43-G17-PT	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
8	L43-G17-PL	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
9	L43-G17-WTP	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
10	L43-W17-PT	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826
11	L43-W17-PL	2,137	2,202	2,386	2,996	2,322	1,929	1,606	1,673	1,592	2,040	2,243	1,827	2,826

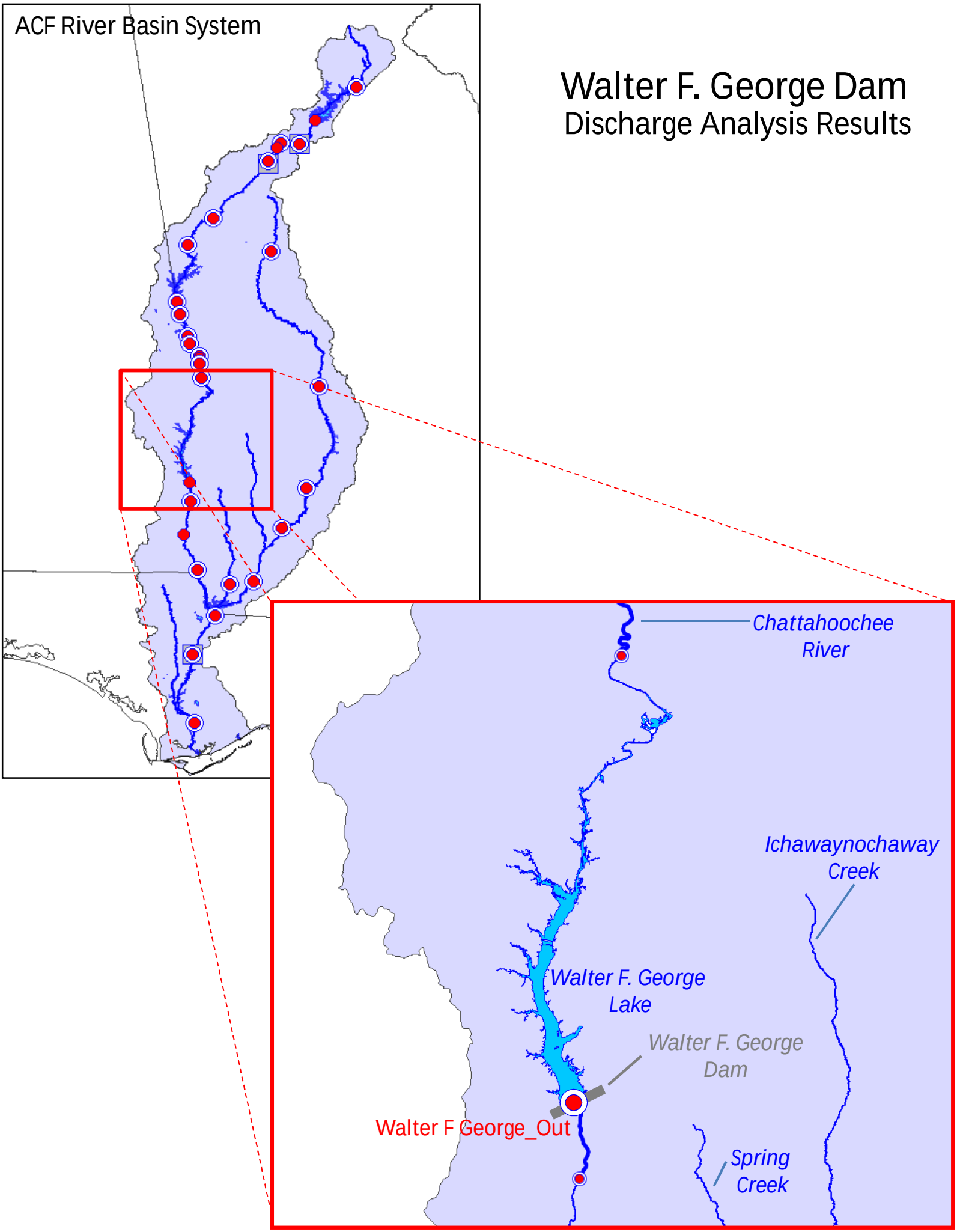
Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
Proposed	L18-G50-PT	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
1	L18-G42-PT	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
2	L18-G42-PL	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
3	L18-G42-WTP	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
4	L30-G30-PT	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
5	L30-G30-PL	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
6	L30-G30-WTP	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
7	L43-G17-PT	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
8	L43-G17-PL	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
9	L43-G17-WTP	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
10	L43-W17-PT	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%
11	L43-W17-PL	3.0%	-3.0%	3.7%	1.4%	2.5%	12.3%	-0.2%	-0.5%	-0.9%	21.3%	11.3%	-5.5%	-1.1%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Walter F. George Dam
Discharge Analysis Results



Walter F. George Dam Discharge
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Flow (cfs)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	11,999	14,180	16,827	13,728	7,998	5,818	6,508	5,400	4,719	5,449	7,928	10,151
No Action	L60	11,947	14,120	16,727	13,677	7,805	5,805	6,477	5,356	4,669	5,412	7,764	10,045
Proposed	L18-G50-PT	11,942	14,110	16,723	13,664	7,805	5,803	6,479	5,358	4,669	5,422	7,768	10,048
1	L18-G42-PT	11,942	14,109	16,724	13,665	7,806	5,803	6,478	5,358	4,669	5,422	7,767	10,048
2	L18-G42-PL	11,942	14,110	16,723	13,666	7,806	5,803	6,478	5,358	4,669	5,422	7,767	10,048
3	L18-G42-WTP	11,942	14,110	16,723	13,666	7,806	5,803	6,478	5,358	4,669	5,422	7,767	10,048
4	L30-G30-PT	11,942	14,108	16,726	13,666	7,803	5,806	6,477	5,357	4,668	5,422	7,768	10,048
5	L30-G30-PL	11,942	14,109	16,724	13,669	7,801	5,807	6,477	5,356	4,668	5,423	7,769	10,047
6	L30-G30-WTP	11,942	14,109	16,724	13,669	7,802	5,806	6,477	5,356	4,668	5,423	7,769	10,047
7	L43-G17-PT	11,942	14,108	16,726	13,667	7,808	5,804	6,478	5,357	4,667	5,421	7,767	10,047
8	L43-G17-PL	11,943	14,108	16,727	13,666	7,807	5,804	6,478	5,357	4,667	5,421	7,768	10,047
9	L43-G17-WTP	11,943	14,108	16,727	13,666	7,807	5,804	6,478	5,357	4,667	5,421	7,768	10,047
10	L43-W17-PT	11,947	14,117	16,729	13,674	7,799	5,807	6,477	5,356	4,670	5,412	7,765	10,045
11	L43-W17-PL	11,947	14,118	16,728	13,677	7,801	5,805	6,475	5,356	4,669	5,410	7,766	10,045

Minimum Daily Flow (cfs)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	10	2,416	2,788	10	10	10	10	10	10	10	10	10
No Action	L60	10	2,204	2,788	10	10	10	10	10	10	10	10	10
Proposed	L18-G50-PT	10	2,204	2,788	10	10	10	10	10	10	10	10	10
1	L18-G42-PT	10	2,204	2,788	10	10	10	10	10	10	10	10	10
2	L18-G42-PL	10	2,204	2,788	10	10	10	10	10	10	10	10	10
3	L18-G42-WTP	10	2,204	2,788	10	10	10	10	10	10	10	10	10
4	L30-G30-PT	10	2,204	2,788	10	10	10	10	10	10	10	10	10
5	L30-G30-PL	10	2,204	2,788	10	10	10	10	10	10	10	10	10
6	L30-G30-WTP	10	2,204	2,788	10	10	10	10	10	10	10	10	10
7	L43-G17-PT	10	2,204	2,788	10	10	10	10	10	10	10	10	10
8	L43-G17-PL	10	2,204	2,788	10	10	10	10	10	10	10	10	10
9	L43-G17-WTP	10	2,204	2,788	10	10	10	10	10	10	10	10	10
10	L43-W17-PT	10	2,204	2,788	10	10	10	10	10	10	10	10	10
11	L43-W17-PL	10	2,204	2,788	10	10	10	10	10	10	10	10	10

Maximum Daily Flow (cfs)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	40,000	40,000	99,663	40,000	40,000	37,732	40,000	30,840	39,661	36,375	40,000	78,916
No Action	L60	40,000	40,000	99,662	40,000	40,000	37,589	40,000	29,071	39,519	36,203	40,000	77,347
Proposed	L18-G50-PT	40,000	40,000	99,662	40,000	40,000	37,437	40,000	28,922	39,517	36,200	40,000	77,426
1	L18-G42-PT	40,000	40,000	99,662	40,000	40,000	37,436	40,000	28,924	39,516	36,188	40,000	77,429
2	L18-G42-PL	40,000	40,000	99,662	40,000	40,000	37,436	40,000	28,928	39,516	36,187	40,000	77,429
3	L18-G42-WTP	40,000	40,000	99,662	40,000	40,000	37,436	40,000	28,928	39,516	36,187	40,000	77,429
4	L30-G30-PT	40,000	40,000	99,662	40,000	40,000	37,433	40,000	28,888	39,512	36,166	40,000	77,429
5	L30-G30-PL	40,000	40,000	99,662	40,000	40,000	37,433	40,000	28,890	39,512	36,165	40,000	77,429
6	L30-G30-WTP	40,000	40,000	99,662	40,000	40,000	37,433	40,000	28,890	39,512	36,165	40,000	77,429
7	L43-G17-PT	40,000	40,000	99,662	40,000	40,000	37,431	40,000	28,884	39,511	36,142	40,000	77,428
8	L43-G17-PL	40,000	40,000	99,662	40,000	40,000	37,431	40,000	29,072	39,511	36,140	40,000	77,427
9	L43-G17-WTP	40,000	40,000	99,662	40,000	40,000	37,431	40,000	29,072	39,511	36,140	40,000	77,427
10	L43-W17-PT	40,000	40,000	99,662	40,000	40,000	37,572	40,000	29,069	39,522	36,209	40,000	77,341
11	L43-W17-PL	40,000	40,000	99,662	40,000	40,000	37,572	40,000	29,066	39,521	36,154	40,000	77,341

Walter F. George Dam Discharge
Average Year Analysis - 1997

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	10,651	14,009	19,016	15,450	10,751	8,125	8,212	6,234	3,977	3,210	7,114	12,317	19,951
No Action	L60	10,611	14,125	18,666	15,519	10,763	8,135	8,108	6,243	3,982	3,158	6,842	12,321	19,987
Proposed	L18-G50-PT	10,610	14,125	18,524	15,583	10,754	8,110	8,180	6,243	3,982	3,158	6,856	12,321	19,987
1	L18-G42-PT	10,610	14,125	18,525	15,587	10,756	8,143	8,143	6,243	3,982	3,158	6,856	12,321	19,987
2	L18-G42-PL	10,610	14,125	18,525	15,587	10,756	8,142	8,143	6,243	3,982	3,158	6,856	12,321	19,987
3	L18-G42-WTP	10,610	14,125	18,525	15,587	10,756	8,142	8,143	6,243	3,982	3,158	6,856	12,321	19,987
4	L30-G30-PT	10,610	14,125	18,525	15,600	10,763	8,121	8,116	6,243	3,982	3,157	6,883	12,321	19,987
5	L30-G30-PL	10,610	14,125	18,525	15,600	10,763	8,121	8,116	6,243	3,982	3,157	6,883	12,321	19,987
6	L30-G30-WTP	10,610	14,125	18,525	15,600	10,763	8,121	8,116	6,243	3,982	3,157	6,883	12,321	19,987
7	L43-G17-PT	10,609	14,125	18,525	15,606	10,762	8,145	8,097	6,243	3,982	3,158	6,856	12,321	19,987
8	L43-G17-PL	10,608	14,125	18,525	15,606	10,762	8,141	8,099	6,243	3,982	3,158	6,856	12,321	19,987
9	L43-G17-WTP	10,608	14,125	18,525	15,606	10,762	8,141	8,099	6,243	3,982	3,158	6,856	12,321	19,987
10	L43-W17-PT	10,611	14,125	18,525	15,652	10,756	8,128	8,147	6,243	3,982	3,158	6,815	12,321	19,987
11	L43-W17-PL	10,611	14,125	18,525	15,653	10,756	8,129	8,147	6,243	3,982	3,158	6,815	12,321	19,987

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.4%	0.8%	-1.8%	0.4%	0.1%	0.1%	-1.3%	0.1%	0.1%	-1.6%	-3.8%	0.0%	0.2%
Proposed	L18-G50-PT	-0.4%	0.8%	-2.6%	0.9%	0.0%	-0.2%	-0.4%	0.1%	0.1%	-1.6%	-3.6%	0.0%	0.2%
1	L18-G42-PT	-0.4%	0.8%	-2.6%	0.9%	0.0%	0.2%	-0.8%	0.1%	0.1%	-1.6%	-3.6%	0.0%	0.2%
2	L18-G42-PL	-0.4%	0.8%	-2.6%	0.9%	0.0%	0.2%	-0.8%	0.1%	0.1%	-1.6%	-3.6%	0.0%	0.2%
3	L18-G42-WTP	-0.4%	0.8%	-2.6%	0.9%	0.0%	0.2%	-0.8%	0.1%	0.1%	-1.6%	-3.6%	0.0%	0.2%
4	L30-G30-PT	-0.4%	0.8%	-2.6%	1.0%	0.1%	-0.1%	-1.2%	0.1%	0.1%	-1.6%	-3.2%	0.0%	0.2%
5	L30-G30-PL	-0.4%	0.8%	-2.6%	1.0%	0.1%	-0.1%	-1.2%	0.1%	0.1%	-1.6%	-3.2%	0.0%	0.2%
6	L30-G30-WTP	-0.4%	0.8%	-2.6%	1.0%	0.1%	-0.1%	-1.2%	0.1%	0.1%	-1.6%	-3.2%	0.0%	0.2%
7	L43-G17-PT	-0.4%	0.8%	-2.6%	1.0%	0.1%	0.2%	-1.4%	0.1%	0.1%	-1.6%	-3.6%	0.0%	0.2%
8	L43-G17-PL	-0.4%	0.8%	-2.6%	1.0%	0.1%	0.2%	-1.4%	0.1%	0.1%	-1.6%	-3.6%	0.0%	0.2%
9	L43-G17-WTP	-0.4%	0.8%	-2.6%	1.0%	0.1%	0.2%	-1.4%	0.1%	0.1%	-1.6%	-3.6%	0.0%	0.2%
10	L43-W17-PT	-0.4%	0.8%	-2.6%	1.3%	0.1%	0.0%	-0.8%	0.1%	0.1%	-1.6%	-4.2%	0.0%	0.2%
11	L43-W17-PL	-0.4%	0.8%	-2.6%	1.3%	0.1%	0.0%	-0.8%	0.1%	0.1%	-1.6%	-4.2%	0.0%	0.2%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	-0.8%	0.4%	-0.1%	-0.3%	0.9%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	-0.8%	0.4%	-0.1%	0.1%	0.4%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	-0.8%	0.4%	-0.1%	0.1%	0.4%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	-0.8%	0.4%	-0.1%	0.1%	0.4%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	-0.8%	0.5%	0.0%	-0.2%	0.1%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	-0.8%	0.5%	0.0%	-0.2%	0.1%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	-0.8%	0.5%	0.0%	-0.2%	0.1%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	-0.8%	0.6%	0.0%	0.1%	-0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	-0.8%	0.6%	0.0%	0.1%	-0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	-0.8%	0.6%	0.0%	0.1%	-0.1%	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	-0.8%	0.9%	-0.1%	-0.1%	0.5%	0.0%	0.0%	0.0%	-0.4%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	-0.8%	0.9%	-0.1%	-0.1%	0.5%	0.0%	0.0%	0.0%	-0.4%	0.0%	0.0%

Walter F. George Dam Discharge
Wet Year Analysis - 2005

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	11,838	8,354	13,997	18,084	27,781	6,566	9,648	21,519	12,834	4,038	5,046	6,332	8,083
No Action	L60	11,788	8,402	14,055	18,130	27,796	6,483	9,488	21,356	12,662	3,967	5,056	6,275	8,017
Proposed	L18-G50-PT	11,789	8,403	14,052	18,133	27,797	6,488	9,481	21,367	12,653	3,969	5,056	6,280	8,017
1	L18-G42-PT	11,789	8,403	14,052	18,133	27,797	6,488	9,481	21,367	12,653	3,969	5,056	6,280	8,017
2	L18-G42-PL	11,789	8,403	14,052	18,133	27,797	6,488	9,481	21,367	12,653	3,969	5,056	6,280	8,017
3	L18-G42-WTP	11,789	8,403	14,052	18,133	27,797	6,488	9,481	21,367	12,653	3,969	5,056	6,280	8,017
4	L30-G30-PT	11,788	8,402	14,053	18,133	27,796	6,487	9,481	21,367	12,653	3,968	5,056	6,280	8,017
5	L30-G30-PL	11,788	8,402	14,053	18,133	27,796	6,487	9,481	21,367	12,653	3,968	5,056	6,280	8,017
6	L30-G30-WTP	11,788	8,402	14,053	18,133	27,796	6,487	9,481	21,367	12,653	3,968	5,056	6,280	8,017
7	L43-G17-PT	11,788	8,402	14,053	18,132	27,796	6,486	9,480	21,367	12,652	3,967	5,056	6,280	8,017
8	L43-G17-PL	11,788	8,402	14,053	18,133	27,796	6,486	9,480	21,367	12,652	3,967	5,056	6,280	8,017
9	L43-G17-WTP	11,788	8,402	14,053	18,133	27,796	6,486	9,480	21,367	12,652	3,967	5,056	6,280	8,017
10	L43-W17-PT	11,787	8,402	14,054	18,131	27,796	6,482	9,486	21,357	12,662	3,967	5,057	6,266	8,017
11	L43-W17-PL	11,787	8,402	14,054	18,131	27,796	6,482	9,486	21,357	12,662	3,967	5,057	6,265	8,017

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.3%	-1.7%	-0.8%	-1.3%	-1.8%	0.2%	-0.9%	-0.8%
Proposed	L18-G50-PT	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.2%	-1.7%	-0.7%	-1.4%	-1.7%	0.2%	-0.8%	-0.8%
1	L18-G42-PT	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.2%	-1.7%	-0.7%	-1.4%	-1.7%	0.2%	-0.8%	-0.8%
2	L18-G42-PL	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.2%	-1.7%	-0.7%	-1.4%	-1.7%	0.2%	-0.8%	-0.8%
3	L18-G42-WTP	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.2%	-1.7%	-0.7%	-1.4%	-1.7%	0.2%	-0.8%	-0.8%
4	L30-G30-PT	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.2%	-1.7%	-0.7%	-1.4%	-1.7%	0.2%	-0.8%	-0.8%
5	L30-G30-PL	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.2%	-1.7%	-0.7%	-1.4%	-1.7%	0.2%	-0.8%	-0.8%
6	L30-G30-WTP	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.2%	-1.7%	-0.7%	-1.4%	-1.7%	0.2%	-0.8%	-0.8%
7	L43-G17-PT	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.2%	-1.7%	-0.7%	-1.4%	-1.8%	0.2%	-0.8%	-0.8%
8	L43-G17-PL	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.2%	-1.7%	-0.7%	-1.4%	-1.8%	0.2%	-0.8%	-0.8%
9	L43-G17-WTP	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.2%	-1.7%	-0.7%	-1.4%	-1.8%	0.2%	-0.8%	-0.8%
10	L43-W17-PT	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.3%	-1.7%	-0.8%	-1.3%	-1.8%	0.2%	-1.0%	-0.8%
11	L43-W17-PL	-0.4%	0.6%	0.4%	0.3%	0.1%	-1.3%	-1.7%	-0.8%	-1.3%	-1.8%	0.2%	-1.0%	-0.8%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	-0.1%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	-0.1%	0.0%	0.0%	0.1%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.2%	0.0%

Walter F. George Dam Discharge
Drought Year Analysis - 1988

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	4,580	8,225	8,078	6,208	5,316	2,382	2,359	2,823	2,928	3,621	3,161	5,025	4,989
No Action	L60	4,554	7,986	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
Proposed	L18-G50-PT	4,557	8,022	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
1	L18-G42-PT	4,557	8,018	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
2	L18-G42-PL	4,557	8,018	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
3	L18-G42-WTP	4,557	8,018	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
4	L30-G30-PT	4,556	8,013	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
5	L30-G30-PL	4,556	8,010	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
6	L30-G30-WTP	4,556	8,011	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
7	L43-G17-PT	4,557	8,023	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
8	L43-G17-PL	4,557	8,017	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
9	L43-G17-WTP	4,557	8,017	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
10	L43-W17-PT	4,554	7,986	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672
11	L43-W17-PL	4,554	7,986	7,895	6,382	5,446	2,375	2,460	2,824	2,909	3,079	3,723	5,046	4,672

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.6%	-2.9%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
Proposed	L18-G50-PT	-0.5%	-2.5%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
1	L18-G42-PT	-0.5%	-2.5%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
2	L18-G42-PL	-0.5%	-2.5%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
3	L18-G42-WTP	-0.5%	-2.5%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
4	L30-G30-PT	-0.5%	-2.6%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
5	L30-G30-PL	-0.5%	-2.6%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
6	L30-G30-WTP	-0.5%	-2.6%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
7	L43-G17-PT	-0.5%	-2.5%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
8	L43-G17-PL	-0.5%	-2.5%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
9	L43-G17-WTP	-0.5%	-2.5%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
10	L43-W17-PT	-0.6%	-2.9%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%
11	L43-W17-PL	-0.6%	-2.9%	-2.3%	2.8%	2.4%	-0.3%	4.3%	0.0%	-0.7%	-15.0%	17.8%	0.4%	-6.3%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.1%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.1%	0.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.1%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Walter F. George Dam Discharge
Drought Year Analysis - 2001

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	7,024	6,020	6,127	28,700	11,762	2,875	6,908	3,703	3,613	3,179	3,848	4,074	3,318
No Action	L60	6,962	5,965	5,671	28,761	11,772	2,930	7,008	3,661	3,629	3,099	3,702	3,832	3,324
Proposed	L18-G50-PT	6,971	5,947	5,794	28,766	11,772	2,930	7,008	3,661	3,629	3,099	3,702	3,831	3,325
1	L18-G42-PT	6,972	5,947	5,792	28,766	11,772	2,930	7,008	3,661	3,628	3,125	3,702	3,832	3,324
2	L18-G42-PL	6,970	5,947	5,792	28,766	11,772	2,930	7,008	3,661	3,629	3,099	3,702	3,832	3,325
3	L18-G42-WTP	6,970	5,947	5,792	28,766	11,772	2,930	7,008	3,661	3,629	3,099	3,702	3,832	3,325
4	L30-G30-PT	6,974	5,943	5,816	28,766	11,772	2,930	7,008	3,661	3,628	3,125	3,702	3,831	3,325
5	L30-G30-PL	6,974	5,944	5,817	28,766	11,772	2,930	7,008	3,661	3,628	3,125	3,702	3,831	3,325
6	L30-G30-WTP	6,974	5,944	5,817	28,766	11,772	2,930	7,008	3,661	3,628	3,125	3,702	3,831	3,325
7	L43-G17-PT	6,974	5,944	5,810	28,766	11,772	2,930	7,008	3,661	3,628	3,125	3,702	3,832	3,325
8	L43-G17-PL	6,974	5,944	5,815	28,766	11,772	2,930	7,008	3,661	3,628	3,125	3,702	3,831	3,325
9	L43-G17-WTP	6,974	5,944	5,815	28,766	11,772	2,930	7,008	3,661	3,628	3,125	3,702	3,831	3,325
10	L43-W17-PT	6,967	5,959	5,788	28,696	11,772	2,930	7,008	3,661	3,628	3,125	3,702	3,832	3,324
11	L43-W17-PL	6,967	5,958	5,790	28,696	11,772	2,930	7,008	3,661	3,628	3,125	3,702	3,832	3,324

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.9%	-0.9%	-7.5%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-2.5%	-3.8%	-6.0%	0.2%
Proposed	L18-G50-PT	-0.8%	-1.2%	-5.4%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-2.5%	-3.8%	-6.0%	0.2%
1	L18-G42-PT	-0.7%	-1.2%	-5.5%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-1.7%	-3.8%	-6.0%	0.2%
2	L18-G42-PL	-0.8%	-1.2%	-5.5%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-2.5%	-3.8%	-6.0%	0.2%
3	L18-G42-WTP	-0.8%	-1.2%	-5.5%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-2.5%	-3.8%	-6.0%	0.2%
4	L30-G30-PT	-0.7%	-1.3%	-5.1%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-1.7%	-3.8%	-6.0%	0.2%
5	L30-G30-PL	-0.7%	-1.3%	-5.1%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-1.7%	-3.8%	-6.0%	0.2%
6	L30-G30-WTP	-0.7%	-1.3%	-5.1%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-1.7%	-3.8%	-6.0%	0.2%
7	L43-G17-PT	-0.7%	-1.3%	-5.2%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-1.7%	-3.8%	-6.0%	0.2%
8	L43-G17-PL	-0.7%	-1.3%	-5.1%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-1.7%	-3.8%	-6.0%	0.2%
9	L43-G17-WTP	-0.7%	-1.3%	-5.1%	0.2%	0.1%	1.9%	1.5%	-1.1%	0.4%	-1.7%	-3.8%	-6.0%	0.2%
10	L43-W17-PT	-0.8%	-1.0%	-5.5%	0.0%	0.1%	1.9%	1.5%	-1.1%	0.4%	-1.7%	-3.8%	-6.0%	0.2%
11	L43-W17-PL	-0.8%	-1.0%	-5.5%	0.0%	0.1%	1.9%	1.5%	-1.1%	0.4%	-1.7%	-3.8%	-6.0%	0.2%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	-0.3%	2.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.1%	-0.3%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	-0.3%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	-0.3%	2.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.2%	-0.4%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.2%	-0.4%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.2%	-0.4%	2.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.2%	-0.3%	2.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.2%	-0.4%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.2%	-0.4%	2.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.1%	-0.1%	2.1%	-0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.1%	-0.1%	2.1%	-0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	0.0%	0.0%	0.0%

Walter F. George Dam Discharge
Drought Year Analysis - 2008

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	5,033	6,251	9,246	7,826	6,618	1,844	1,666	2,093	4,353	3,053	3,209	4,805	9,570
No Action	L60	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
Proposed	L18-G50-PT	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
1	L18-G42-PT	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
2	L18-G42-PL	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
3	L18-G42-WTP	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
4	L30-G30-PT	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
5	L30-G30-PL	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
6	L30-G30-WTP	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
7	L43-G17-PT	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
8	L43-G17-PL	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
9	L43-G17-WTP	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
10	L43-W17-PT	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558
11	L43-W17-PL	5,100	6,224	9,357	7,869	6,657	1,993	1,690	2,086	4,342	3,084	3,758	4,723	9,558

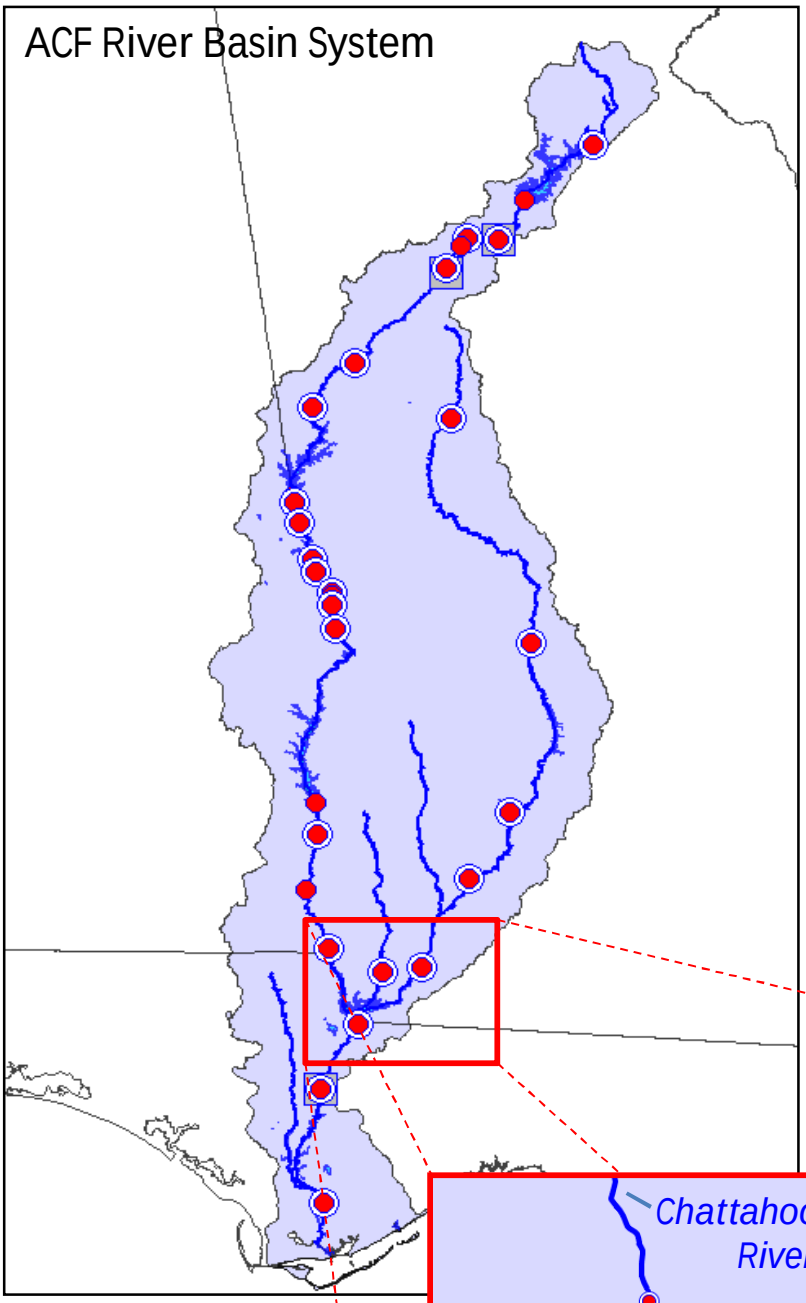
Percent Change in Average Daily Flow from Baseline Conditions

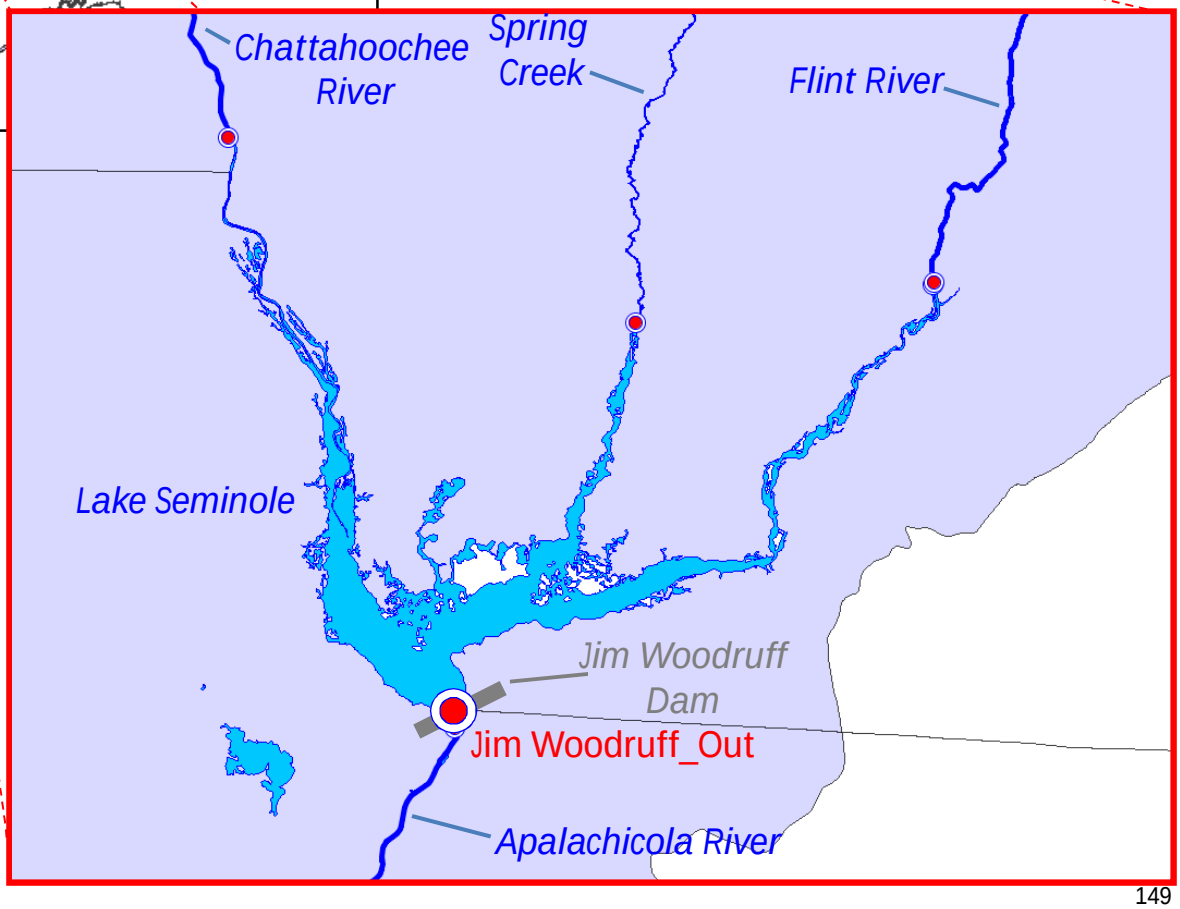
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
Proposed	L18-G50-PT	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
1	L18-G42-PT	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
2	L18-G42-PL	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
3	L18-G42-WTP	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
4	L30-G30-PT	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
5	L30-G30-PL	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
6	L30-G30-WTP	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
7	L43-G17-PT	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
8	L43-G17-PL	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
9	L43-G17-WTP	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
10	L43-W17-PT	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%
11	L43-W17-PL	1.3%	-0.4%	1.2%	0.5%	0.6%	8.1%	1.5%	-0.3%	-0.3%	1.0%	17.1%	-1.7%	-0.1%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Jim Woodruff Dam
Discharge Analysis Results





Jim Woodruff Dam Discharge
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	26,841	32,525	38,393	33,119	20,042	14,615	15,716	13,114	11,023	12,067	14,612	20,994
No Action	L60	26,757	32,439	38,289	33,000	19,867	14,419	15,405	13,009	10,859	11,971	14,414	20,936
Proposed	L18-G50-PT	26,752	32,431	38,285	32,988	19,867	14,418	15,406	13,012	10,860	11,980	14,418	20,938
1	L18-G42-PT	26,752	32,430	38,284	32,990	19,867	14,418	15,405	13,011	10,860	11,980	14,417	20,939
2	L18-G42-PL	26,752	32,430	38,285	32,990	19,867	14,418	15,405	13,011	10,859	11,980	14,417	20,939
3	L18-G42-WTP	26,752	32,430	38,285	32,990	19,867	14,418	15,405	13,011	10,859	11,980	14,417	20,939
4	L30-G30-PT	26,752	32,429	38,287	32,991	19,862	14,421	15,405	13,010	10,859	11,981	14,417	20,939
5	L30-G30-PL	26,752	32,430	38,286	32,992	19,861	14,423	15,405	13,010	10,857	11,981	14,418	20,938
6	L30-G30-WTP	26,752	32,430	38,286	32,992	19,862	14,422	15,405	13,010	10,858	11,981	14,418	20,938
7	L43-G17-PT	26,752	32,429	38,287	32,991	19,869	14,418	15,406	13,010	10,858	11,980	14,415	20,939
8	L43-G17-PL	26,753	32,429	38,290	32,988	19,868	14,418	15,405	13,010	10,858	11,980	14,416	20,938
9	L43-G17-WTP	26,753	32,429	38,290	32,988	19,868	14,418	15,405	13,010	10,858	11,980	14,416	20,938
10	L43-W17-PT	26,756	32,438	38,291	32,996	19,860	14,423	15,405	13,009	10,860	11,970	14,413	20,937
11	L43-W17-PL	26,756	32,438	38,292	32,999	19,863	14,420	15,404	13,008	10,859	11,969	14,414	20,937

Minimum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	5,808	7,810	11,393	7,654	5,050	5,015	5,007	5,050	5,050	5,033	5,011	5,050
No Action	L60	5,661	7,807	11,428	7,100	5,050	5,001	5,050	5,007	5,050	4,550	4,550	5,050
Proposed	L18-G50-PT	5,841	7,807	11,437	7,099	5,050	5,030	5,050	5,042	5,050	5,050	4,550	4,550
1	L18-G42-PT	5,841	7,807	11,464	7,099	5,050	5,029	5,050	5,039	5,050	5,050	4,550	4,550
2	L18-G42-PL	5,841	7,807	11,464	7,099	5,050	5,028	5,050	5,039	5,050	5,050	4,550	4,550
3	L18-G42-WTP	5,841	7,807	11,464	7,099	5,050	5,028	5,050	5,039	5,050	5,050	4,550	4,550
4	L30-G30-PT	5,841	7,807	11,465	7,099	5,050	5,026	5,050	5,034	5,050	5,050	4,550	4,550
5	L30-G30-PL	5,841	7,807	11,442	7,099	5,050	5,026	5,050	5,034	5,050	5,050	4,550	4,550
6	L30-G30-WTP	5,841	7,807	11,442	7,099	5,050	5,026	5,050	5,034	5,050	5,050	4,550	4,550
7	L43-G17-PT	5,841	7,807	11,444	7,099	5,050	5,023	5,050	5,030	5,050	5,050	4,550	4,550
8	L43-G17-PL	5,841	7,807	11,444	7,099	5,050	5,023	5,050	5,030	5,050	5,050	4,550	4,550
9	L43-G17-WTP	5,841	7,807	11,444	7,099	5,050	5,023	5,050	5,030	5,050	5,050	4,550	4,550
10	L43-W17-PT	5,841	7,807	11,429	7,099	5,050	5,007	5,050	5,013	5,050	4,550	4,550	5,050
11	L43-W17-PL	5,841	7,807	11,429	7,099	5,050	5,003	5,050	5,008	5,050	4,550	4,550	5,050

Maximum Daily Flow (cfs)

Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	110,764	110,721	188,321	131,464	97,877	67,101	184,338	55,572	50,608	52,014	72,079	148,602
No Action	L60	110,717	110,673	188,828	131,406	97,911	66,816	184,060	55,367	50,384	51,916	72,045	147,346
Proposed	L18-G50-PT	110,717	110,673	188,793	131,406	97,911	66,778	184,060	55,334	50,382	51,915	72,045	147,497
1	L18-G42-PT	110,717	110,673	188,797	131,406	97,911	66,787	184,060	55,333	50,380	51,915	72,045	147,515
2	L18-G42-PL	110,717	110,673	188,796	131,406	97,911	66,787	184,060	55,333	50,381	51,915	72,045	147,512
3	L18-G42-WTP	110,717	110,673	188,796	131,406	97,911	66,787	184,060	55,333	50,381	51,915	72,045	147,512
4	L30-G30-PT	110,717	110,673	188,802	131,406	97,911	66,793	184,060	55,332	50,377	51,915	72,045	147,513
5	L30-G30-PL	110,717	110,673	188,800	131,406	97,911	66,792	184,060	55,332	50,377	51,915	72,045	147,515
6	L30-G30-WTP	110,717	110,673	188,800	131,406	97,911	66,792	184,060	55,332	50,377	51,915	72,045	147,515
7	L43-G17-PT	110,717	110,673	188,799	131,406	97,911	66,796	184,060	55,330	50,375	51,916	72,045	147,512
8	L43-G17-PL	110,717	110,673	188,803	131,406	97,911	66,795	184,060	55,330	50,375	51,916	72,045	147,509
9	L43-G17-WTP	110,717	110,673	188,803	131,406	97,911	66,795	184,060	55,330	50,375	51,916	72,045	147,509
10	L43-W17-PT	110,717	110,673	188,828	131,406	97,911	66,805	184,060	55,355	50,386	51,916	72,045	147,325
11	L43-W17-PL	110,717	110,673	188,827	131,406	97,911	66,805	184,060	55,355	50,386	51,916	72,045	147,333

Jim Woodruff Dam Discharge
Average Year Analysis - 1997

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	23,378	29,054	38,700	32,483	19,667	21,428	17,684	14,983	12,239	7,685	12,899	23,480	50,911
No Action	L60	23,288	29,144	38,324	32,544	19,624	21,448	17,396	14,712	12,186	7,589	12,504	23,445	51,181
Proposed	L18-G50-PT	23,286	29,144	38,187	32,598	19,620	21,408	17,485	14,712	12,186	7,585	12,522	23,445	51,182
1	L18-G42-PT	23,287	29,144	38,188	32,599	19,625	21,448	17,439	14,712	12,186	7,585	12,522	23,445	51,182
2	L18-G42-PL	23,287	29,144	38,188	32,599	19,625	21,448	17,439	14,712	12,186	7,585	12,522	23,445	51,182
3	L18-G42-WTP	23,287	29,144	38,188	32,599	19,625	21,448	17,439	14,712	12,186	7,585	12,522	23,445	51,182
4	L30-G30-PT	23,287	29,143	38,188	32,621	19,623	21,425	17,414	14,711	12,186	7,585	12,549	23,445	51,181
5	L30-G30-PL	23,287	29,143	38,188	32,621	19,623	21,425	17,414	14,711	12,186	7,585	12,549	23,445	51,182
6	L30-G30-WTP	23,287	29,143	38,188	32,621	19,623	21,425	17,414	14,711	12,186	7,585	12,549	23,445	51,182
7	L43-G17-PT	23,285	29,144	38,188	32,627	19,623	21,457	17,387	14,711	12,186	7,585	12,522	23,445	51,181
8	L43-G17-PL	23,285	29,144	38,188	32,627	19,623	21,453	17,389	14,711	12,186	7,585	12,522	23,445	51,181
9	L43-G17-WTP	23,285	29,144	38,188	32,627	19,623	21,453	17,389	14,711	12,186	7,585	12,522	23,445	51,181
10	L43-W17-PT	23,288	29,144	38,188	32,665	19,625	21,433	17,444	14,712	12,186	7,586	12,480	23,445	51,181
11	L43-W17-PL	23,288	29,144	38,188	32,665	19,625	21,434	17,444	14,712	12,186	7,588	12,478	23,445	51,181

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.4%	0.3%	-1.0%	0.2%	-0.2%	0.1%	-1.6%	-1.8%	-0.4%	-1.3%	-3.1%	-0.2%	0.5%
Proposed	L18-G50-PT	-0.4%	0.3%	-1.3%	0.4%	-0.2%	-0.1%	-1.1%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
1	L18-G42-PT	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.4%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
2	L18-G42-PL	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.4%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
3	L18-G42-WTP	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.4%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
4	L30-G30-PT	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.0%	-1.5%	-1.8%	-0.4%	-1.3%	-2.7%	-0.2%	0.5%
5	L30-G30-PL	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.0%	-1.5%	-1.8%	-0.4%	-1.3%	-2.7%	-0.2%	0.5%
6	L30-G30-WTP	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.0%	-1.5%	-1.8%	-0.4%	-1.3%	-2.7%	-0.2%	0.5%
7	L43-G17-PT	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.7%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
8	L43-G17-PL	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.7%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
9	L43-G17-WTP	-0.4%	0.3%	-1.3%	0.4%	-0.2%	0.1%	-1.7%	-1.8%	-0.4%	-1.3%	-2.9%	-0.2%	0.5%
10	L43-W17-PT	-0.4%	0.3%	-1.3%	0.6%	-0.2%	0.0%	-1.4%	-1.8%	-0.4%	-1.3%	-3.3%	-0.2%	0.5%
11	L43-W17-PL	-0.4%	0.3%	-1.3%	0.6%	-0.2%	0.0%	-1.4%	-1.8%	-0.4%	-1.3%	-3.3%	-0.2%	0.5%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	-0.4%	0.2%	0.0%	-0.2%	0.5%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	-0.4%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	-0.4%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	-0.4%	0.2%	0.0%	0.0%	0.2%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	-0.4%	0.2%	0.0%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.4%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	-0.4%	0.2%	0.0%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.4%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	-0.4%	0.2%	0.0%	-0.1%	0.1%	0.0%	0.0%	-0.1%	0.4%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	-0.4%	0.3%	0.0%	0.0%	-0.1%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	-0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	-0.4%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.1%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	-0.4%	0.4%	0.0%	-0.1%	0.3%	0.0%	0.0%	0.0%	-0.2%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	-0.4%	0.4%	0.0%	-0.1%	0.3%	0.0%	0.0%	0.0%	-0.2%	0.0%	0.0%

Jim Woodruff Dam Discharge
Wet Year Analysis - 2005

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	28,982	19,692	26,038	36,953	76,717	21,403	24,266	56,043	30,713	13,672	11,965	12,245	18,149
No Action	L60	28,864	19,709	26,062	36,995	76,675	21,362	23,890	55,602	30,471	13,479	11,905	12,150	18,144
Proposed	L18-G50-PT	28,865	19,710	26,059	36,998	76,676	21,366	23,884	55,607	30,468	13,481	11,905	12,155	18,144
1	L18-G42-PT	28,865	19,710	26,059	36,998	76,675	21,366	23,883	55,607	30,468	13,480	11,905	12,155	18,144
2	L18-G42-PL	28,865	19,710	26,059	36,998	76,675	21,366	23,883	55,607	30,468	13,480	11,905	12,155	18,144
3	L18-G42-WTP	28,865	19,710	26,059	36,998	76,675	21,366	23,883	55,607	30,468	13,480	11,905	12,155	18,144
4	L30-G30-PT	28,865	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,480	11,905	12,155	18,144
5	L30-G30-PL	28,865	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,480	11,905	12,155	18,144
6	L30-G30-WTP	28,865	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,480	11,905	12,155	18,144
7	L43-G17-PT	28,864	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,479	11,905	12,155	18,144
8	L43-G17-PL	28,864	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,479	11,905	12,155	18,144
9	L43-G17-WTP	28,864	19,710	26,060	36,998	76,675	21,365	23,883	55,607	30,467	13,479	11,905	12,155	18,144
10	L43-W17-PT	28,863	19,710	26,061	36,996	76,675	21,361	23,888	55,602	30,471	13,479	11,905	12,141	18,144
11	L43-W17-PL	28,863	19,710	26,061	36,996	76,675	21,361	23,888	55,602	30,471	13,479	11,905	12,140	18,144

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.5%	-0.8%	-0.8%	-1.4%	-0.5%	-0.8%	0.0%
Proposed	L18-G50-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
1	L18-G42-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
2	L18-G42-PL	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
3	L18-G42-WTP	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
4	L30-G30-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
5	L30-G30-PL	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
6	L30-G30-WTP	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
7	L43-G17-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
8	L43-G17-PL	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
9	L43-G17-WTP	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.7%	0.0%
10	L43-W17-PT	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.9%	0.0%
11	L43-W17-PL	-0.4%	0.1%	0.1%	0.1%	-0.1%	-0.2%	-1.6%	-0.8%	-0.8%	-1.4%	-0.5%	-0.9%	0.0%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%

Jim Woodruff Dam Discharge
Drought Year Analysis - 1988

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	13,373	19,505	23,405	24,786	18,669	11,960	7,513	8,361	6,076	10,235	9,144	10,785	10,487
No Action	L60	13,287	19,252	23,178	24,954	18,743	11,585	7,847	8,068	6,024	9,383	9,846	10,778	10,216
Proposed	L18-G50-PT	13,290	19,288	23,178	24,954	18,743	11,586	7,845	8,068	6,024	9,383	9,846	10,778	10,216
1	L18-G42-PT	13,290	19,284	23,178	24,954	18,743	11,586	7,845	8,068	6,024	9,383	9,846	10,778	10,216
2	L18-G42-PL	13,290	19,284	23,178	24,954	18,743	11,586	7,845	8,068	6,024	9,383	9,846	10,778	10,216
3	L18-G42-WTP	13,290	19,284	23,178	24,954	18,743	11,586	7,845	8,068	6,024	9,383	9,846	10,778	10,216
4	L30-G30-PT	13,289	19,279	23,178	24,954	18,743	11,584	7,848	8,068	6,024	9,383	9,846	10,778	10,216
5	L30-G30-PL	13,289	19,277	23,178	24,954	18,743	11,584	7,848	8,068	6,024	9,383	9,846	10,778	10,216
6	L30-G30-WTP	13,289	19,277	23,178	24,954	18,743	11,584	7,848	8,068	6,024	9,383	9,846	10,778	10,216
7	L43-G17-PT	13,290	19,289	23,178	24,954	18,743	11,585	7,847	8,068	6,024	9,383	9,846	10,778	10,216
8	L43-G17-PL	13,290	19,283	23,178	24,954	18,743	11,585	7,847	8,068	6,024	9,383	9,846	10,778	10,216
9	L43-G17-WTP	13,290	19,283	23,178	24,954	18,743	11,585	7,847	8,068	6,024	9,383	9,846	10,778	10,216
10	L43-W17-PT	13,287	19,252	23,178	24,954	18,743	11,585	7,847	8,068	6,024	9,383	9,846	10,778	10,216
11	L43-W17-PL	13,287	19,252	23,178	24,954	18,743	11,585	7,847	8,068	6,024	9,383	9,846	10,778	10,216

Percent Change in Average Daily Flow from Baseline Conditions

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.6%	-1.3%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
Proposed	L18-G50-PT	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
1	L18-G42-PT	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
2	L18-G42-PL	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
3	L18-G42-WTP	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
4	L30-G30-PT	-0.6%	-1.2%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
5	L30-G30-PL	-0.6%	-1.2%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
6	L30-G30-WTP	-0.6%	-1.2%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
7	L43-G17-PT	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
8	L43-G17-PL	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
9	L43-G17-WTP	-0.6%	-1.1%	-1.0%	0.7%	0.4%	-3.1%	4.5%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
10	L43-W17-PT	-0.6%	-1.3%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%
11	L43-W17-PL	-0.6%	-1.3%	-1.0%	0.7%	0.4%	-3.1%	4.4%	-3.5%	-0.9%	-8.3%	7.7%	-0.1%	-2.6%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Jim Woodruff Dam Discharge
Drought Year Analysis - 2001

Average Daily Flow (cfs)														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	16,325	14,350	12,940	57,848	32,339	9,333	17,772	11,130	8,983	8,024	7,340	7,493	8,025
No Action	L60	16,200	14,277	12,585	57,771	32,267	9,472	17,663	10,744	8,980	7,850	7,182	7,182	8,087
Proposed	L18-G50-PT	16,209	14,261	12,661	57,816	32,267	9,473	17,662	10,744	8,980	7,850	7,182	7,181	8,088
1	L18-G42-PT	16,211	14,262	12,660	57,814	32,267	9,473	17,662	10,744	8,979	7,877	7,182	7,181	8,088
2	L18-G42-PL	16,209	14,262	12,661	57,815	32,267	9,473	17,662	10,744	8,980	7,850	7,182	7,181	8,088
3	L18-G42-WTP	16,209	14,262	12,661	57,815	32,267	9,473	17,662	10,744	8,980	7,850	7,182	7,181	8,088
4	L30-G30-PT	16,212	14,259	12,669	57,829	32,267	9,473	17,662	10,744	8,979	7,877	7,182	7,181	8,088
5	L30-G30-PL	16,212	14,259	12,669	57,829	32,267	9,473	17,662	10,744	8,979	7,876	7,182	7,181	8,088
6	L30-G30-WTP	16,212	14,259	12,669	57,829	32,267	9,473	17,662	10,744	8,979	7,876	7,182	7,181	8,088
7	L43-G17-PT	16,212	14,260	12,665	57,826	32,267	9,473	17,662	10,744	8,979	7,877	7,182	7,181	8,088
8	L43-G17-PL	16,212	14,259	12,667	57,829	32,267	9,473	17,662	10,744	8,979	7,876	7,182	7,181	8,088
9	L43-G17-WTP	16,212	14,259	12,667	57,829	32,267	9,473	17,662	10,744	8,979	7,876	7,182	7,181	8,088
10	L43-W17-PT	16,206	14,272	12,613	57,785	32,268	9,473	17,662	10,744	8,979	7,877	7,182	7,181	8,088
11	L43-W17-PL	16,206	14,271	12,615	57,786	32,268	9,473	17,662	10,744	8,979	7,877	7,182	7,182	8,088

Percent Change in Average Daily Flow from Baseline Conditions														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	-0.8%	-0.5%	-2.7%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-2.2%	-2.2%	-4.2%	0.8%
Proposed	L18-G50-PT	-0.7%	-0.6%	-2.2%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-2.2%	-2.2%	-4.2%	0.8%
1	L18-G42-PT	-0.7%	-0.6%	-2.2%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
2	L18-G42-PL	-0.7%	-0.6%	-2.2%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-2.2%	-2.2%	-4.2%	0.8%
3	L18-G42-WTP	-0.7%	-0.6%	-2.2%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-2.2%	-2.2%	-4.2%	0.8%
4	L30-G30-PT	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
5	L30-G30-PL	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
6	L30-G30-WTP	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
7	L43-G17-PT	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
8	L43-G17-PL	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
9	L43-G17-WTP	-0.7%	-0.6%	-2.1%	0.0%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
10	L43-W17-PT	-0.7%	-0.5%	-2.5%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%
11	L43-W17-PL	-0.7%	-0.5%	-2.5%	-0.1%	-0.2%	1.5%	-0.6%	-3.5%	0.0%	-1.8%	-2.2%	-4.2%	0.8%

Percent Change in Average Daily Flow from No Action Alternative														
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.1%	-0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.1%	-0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.1%	-0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.1%	-0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.1%	-0.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.1%	-0.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.1%	-0.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.1%	-0.1%	0.6%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.1%	-0.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.1%	-0.1%	0.7%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	0.0%	0.0%	0.0%

Jim Woodruff Dam Discharge
Drought Year Analysis - 2008

Average Daily Flow (cfs)

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	14,615	16,650	26,884	24,233	18,798	7,700	5,587	6,165	12,706	10,355	8,080	10,256	28,329
No Action	L60	14,637	16,755	26,961	24,273	18,527	8,111	5,460	5,887	12,618	10,294	8,575	10,154	28,363
Proposed	L18-G50-PT	14,639	16,780	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
1	L18-G42-PT	14,636	16,754	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
2	L18-G42-PL	14,637	16,755	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
3	L18-G42-WTP	14,637	16,755	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
4	L30-G30-PT	14,638	16,773	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
5	L30-G30-PL	14,638	16,771	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
6	L30-G30-WTP	14,638	16,771	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
7	L43-G17-PT	14,638	16,771	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
8	L43-G17-PL	14,638	16,771	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
9	L43-G17-WTP	14,638	16,771	26,961	24,273	18,528	8,111	5,459	5,888	12,619	10,293	8,575	10,154	28,363
10	L43-W17-PT	14,634	16,720	26,961	24,273	18,529	8,109	5,460	5,887	12,619	10,294	8,575	10,154	28,363
11	L43-W17-PL	14,638	16,769	26,961	24,273	18,529	8,109	5,460	5,887	12,619	10,294	8,575	10,154	28,363

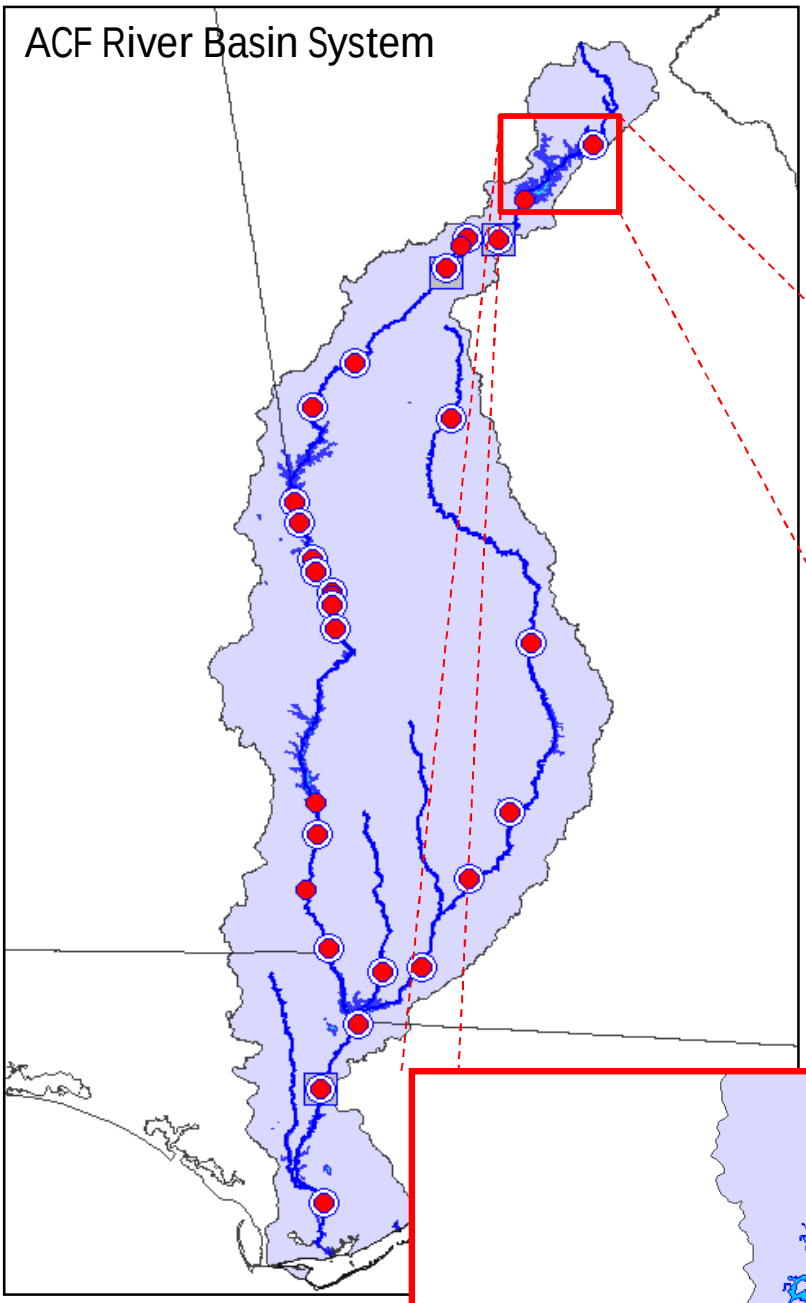
Percent Change in Average Daily Flow from Baseline Conditions

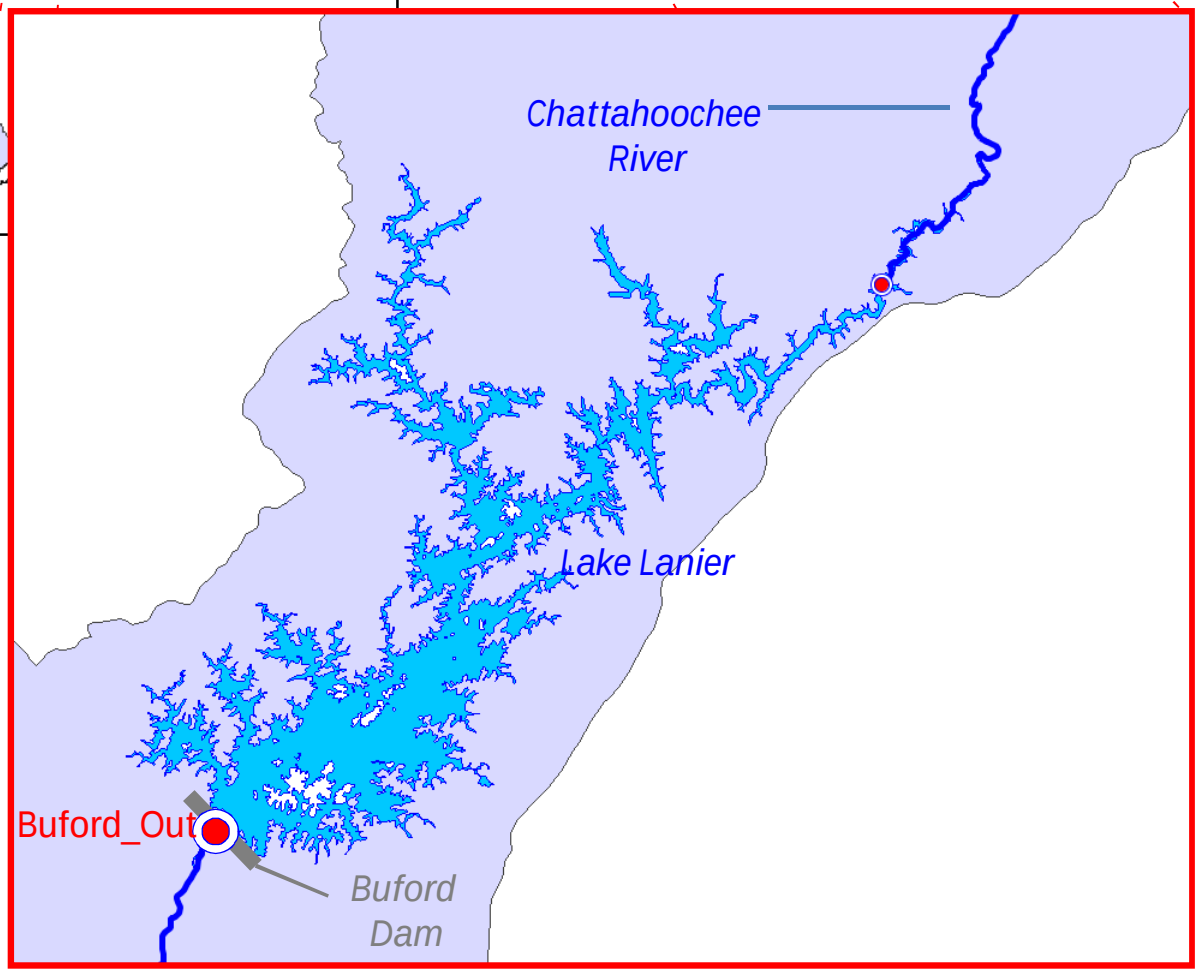
Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	0.1%	0.6%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
Proposed	L18-G50-PT	0.2%	0.8%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
1	L18-G42-PT	0.1%	0.6%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
2	L18-G42-PL	0.1%	0.6%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
3	L18-G42-WTP	0.1%	0.6%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
4	L30-G30-PT	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
5	L30-G30-PL	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
6	L30-G30-WTP	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
7	L43-G17-PT	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
8	L43-G17-PL	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
9	L43-G17-WTP	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
10	L43-W17-PT	0.1%	0.4%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%
11	L43-W17-PL	0.2%	0.7%	0.3%	0.2%	-1.4%	5.3%	-2.3%	-4.5%	-0.7%	-0.6%	6.1%	-1.0%	0.1%

Percent Change in Average Daily Flow from No Action Alternative

Alternative #	Alternative ID	Annual	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	--	--	--	--	--	--	--	--	--	--	--	--	--
No Action	L60	--	--	--	--	--	--	--	--	--	--	--	--	--
Proposed	L18-G50-PT	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
1	L18-G42-PT	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
2	L18-G42-PL	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
3	L18-G42-WTP	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
4	L30-G30-PT	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
5	L30-G30-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
6	L30-G30-WTP	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
7	L43-G17-PT	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
8	L43-G17-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
9	L43-G17-WTP	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
10	L43-W17-PT	0.0%	-0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
11	L43-W17-PL	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Buford Dam
Hydropower Analysis Results





Buford Dam Energy Generation
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Generation (Mwh)

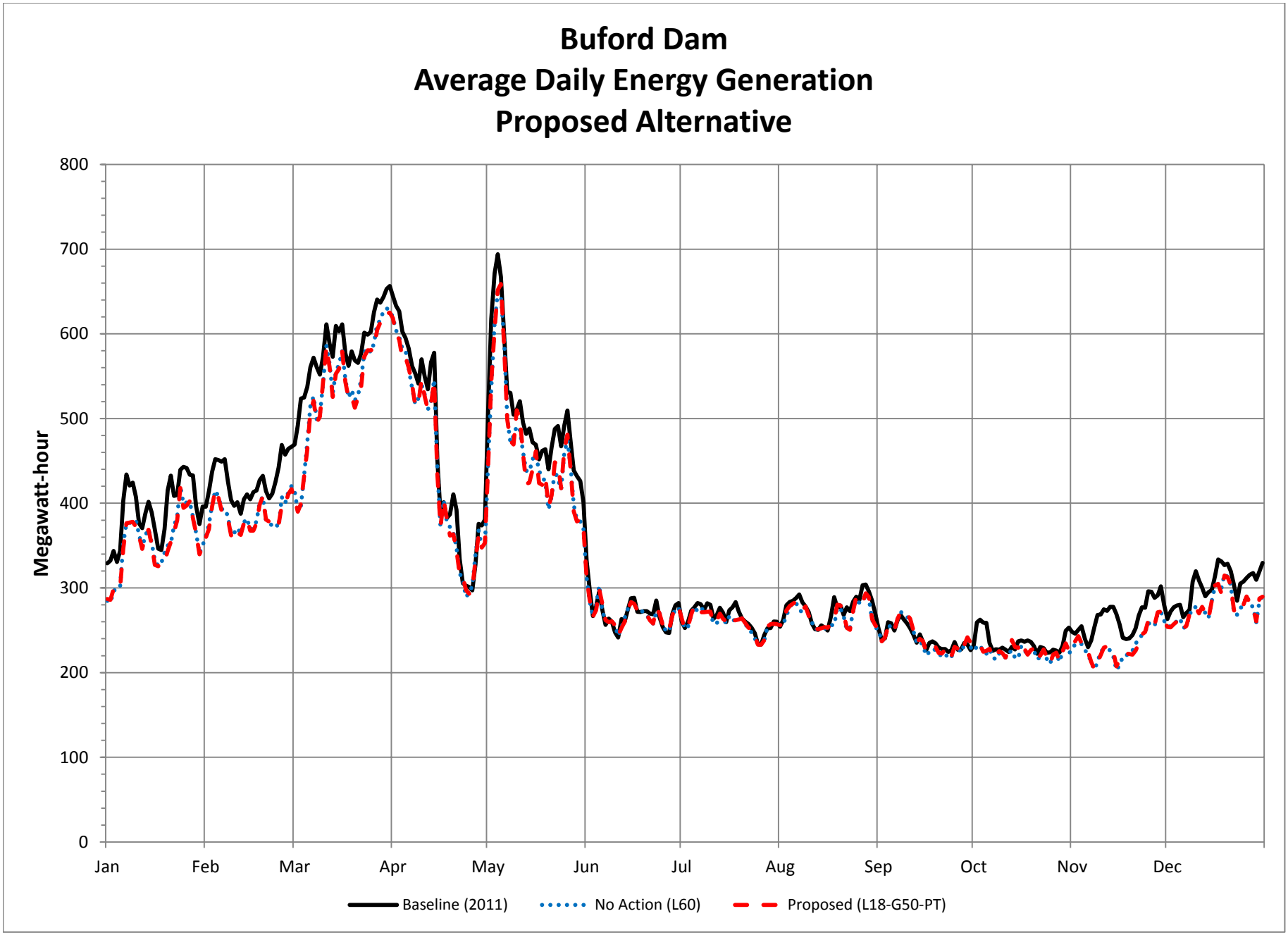
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	392	426	586	461	505	270	265	275	241	235	265	302
No Action	L60	354	386	543	442	466	268	259	267	239	222	234	277
Proposed	L18-G50-PT	352	384	539	440	466	268	260	268	240	225	235	277
1	L18-G42-PT	352	384	539	440	466	268	260	268	240	225	235	277
2	L18-G42-PL	352	384	539	440	466	268	260	268	240	225	235	277
3	L18-G42-WTP	352	384	539	440	466	268	260	268	240	225	235	277
4	L30-G30-PT	353	384	540	441	465	268	260	268	240	225	235	277
5	L30-G30-PL	353	384	540	441	465	268	260	267	240	225	235	277
6	L30-G30-WTP	352	384	540	441	465	268	260	267	240	225	235	277
7	L43-G17-PT	353	384	540	440	466	268	259	267	240	224	235	277
8	L43-G17-PL	353	384	540	440	466	268	259	268	240	224	235	277
9	L43-G17-WTP	353	384	540	440	466	268	259	268	240	224	235	277
10	L43-W17-PT	354	386	543	441	465	268	259	267	239	222	234	277
11	L43-W17-PL	354	386	543	442	465	267	259	267	239	222	234	277

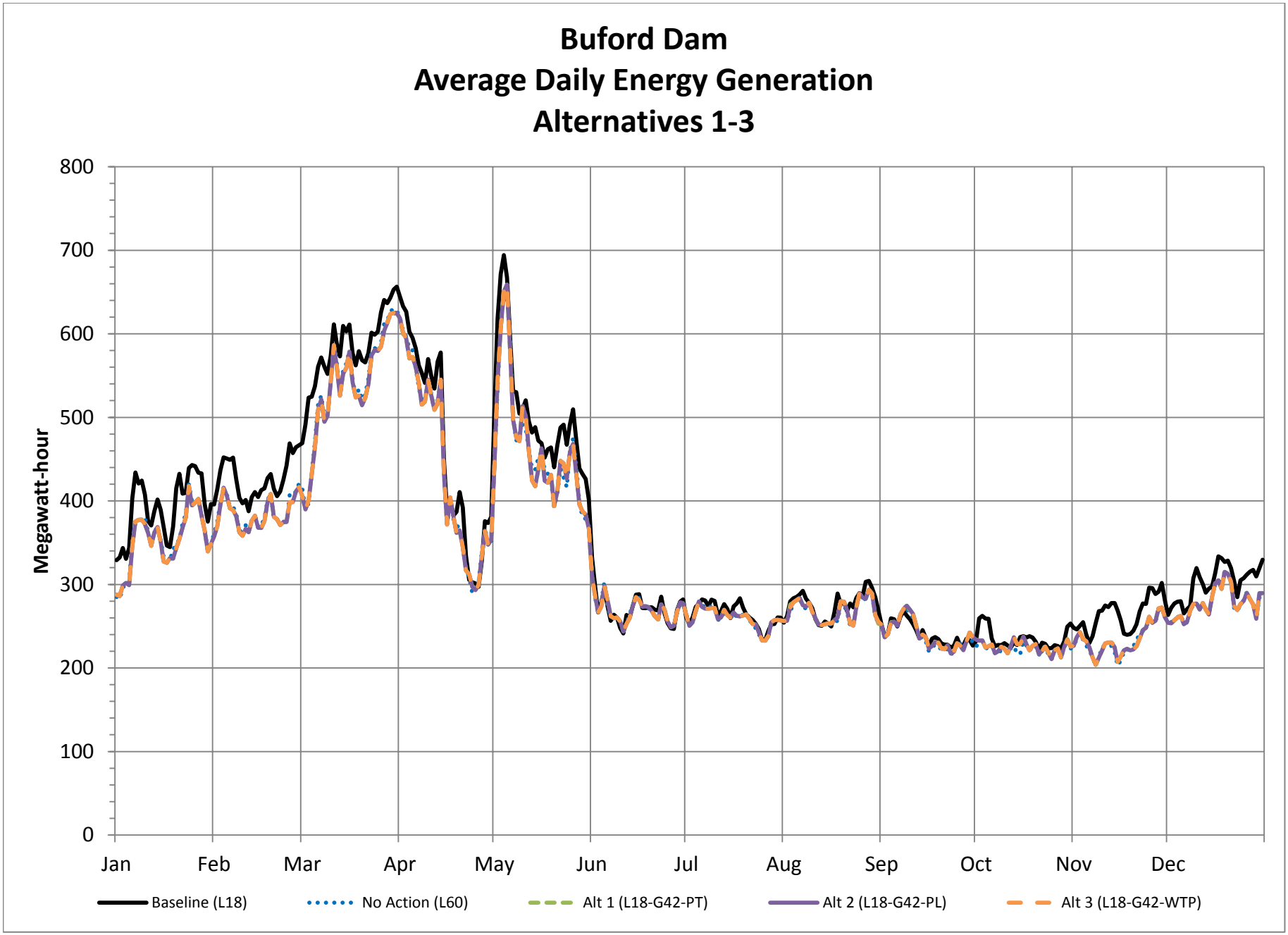
Minimum Daily Generation (Mwh)

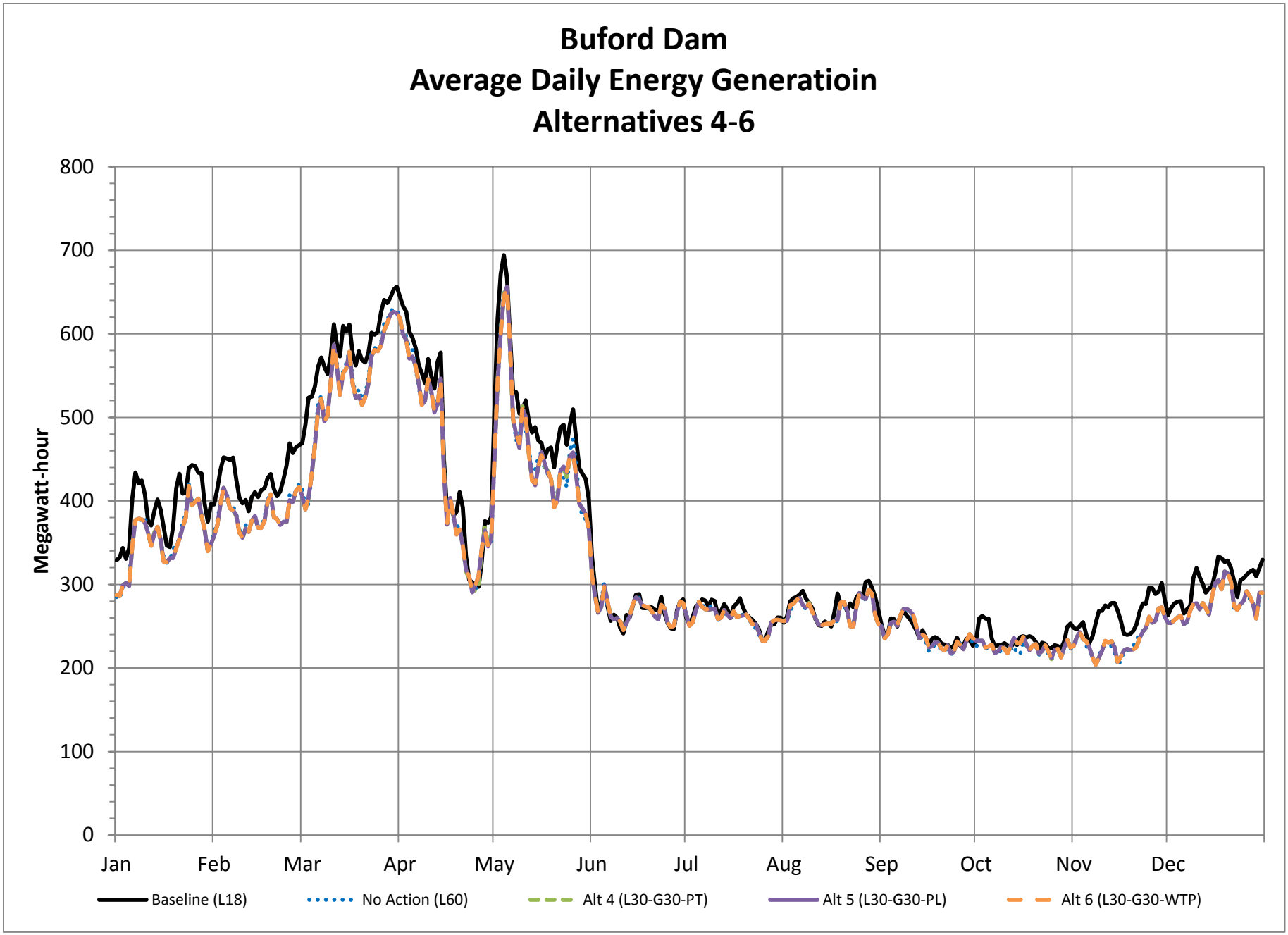
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	-	-	-	-	-	-	-	-	-	-	-	-
No Action	L60	-	-	-	-	-	-	-	-	-	-	-	-
Proposed	L18-G50-PT	-	-	-	-	-	-	-	-	-	-	-	-
1	L18-G42-PT	-	-	-	-	-	-	-	-	-	-	-	-
2	L18-G42-PL	-	-	-	-	-	-	-	-	-	-	-	-
3	L18-G42-WTP	-	-	-	-	-	-	-	-	-	-	-	-
4	L30-G30-PT	-	-	-	-	-	-	-	-	-	-	-	-
5	L30-G30-PL	-	-	-	-	-	-	-	-	-	-	-	-
6	L30-G30-WTP	-	-	-	-	-	-	-	-	-	-	-	-
7	L43-G17-PT	-	-	-	-	-	-	-	-	-	-	-	-
8	L43-G17-PL	-	-	-	-	-	-	-	-	-	-	-	-
9	L43-G17-WTP	-	-	-	-	-	-	-	-	-	-	-	-
10	L43-W17-PT	-	-	-	-	-	-	-	-	-	-	-	-
11	L43-W17-PL	-	-	-	-	-	-	-	-	-	-	-	-

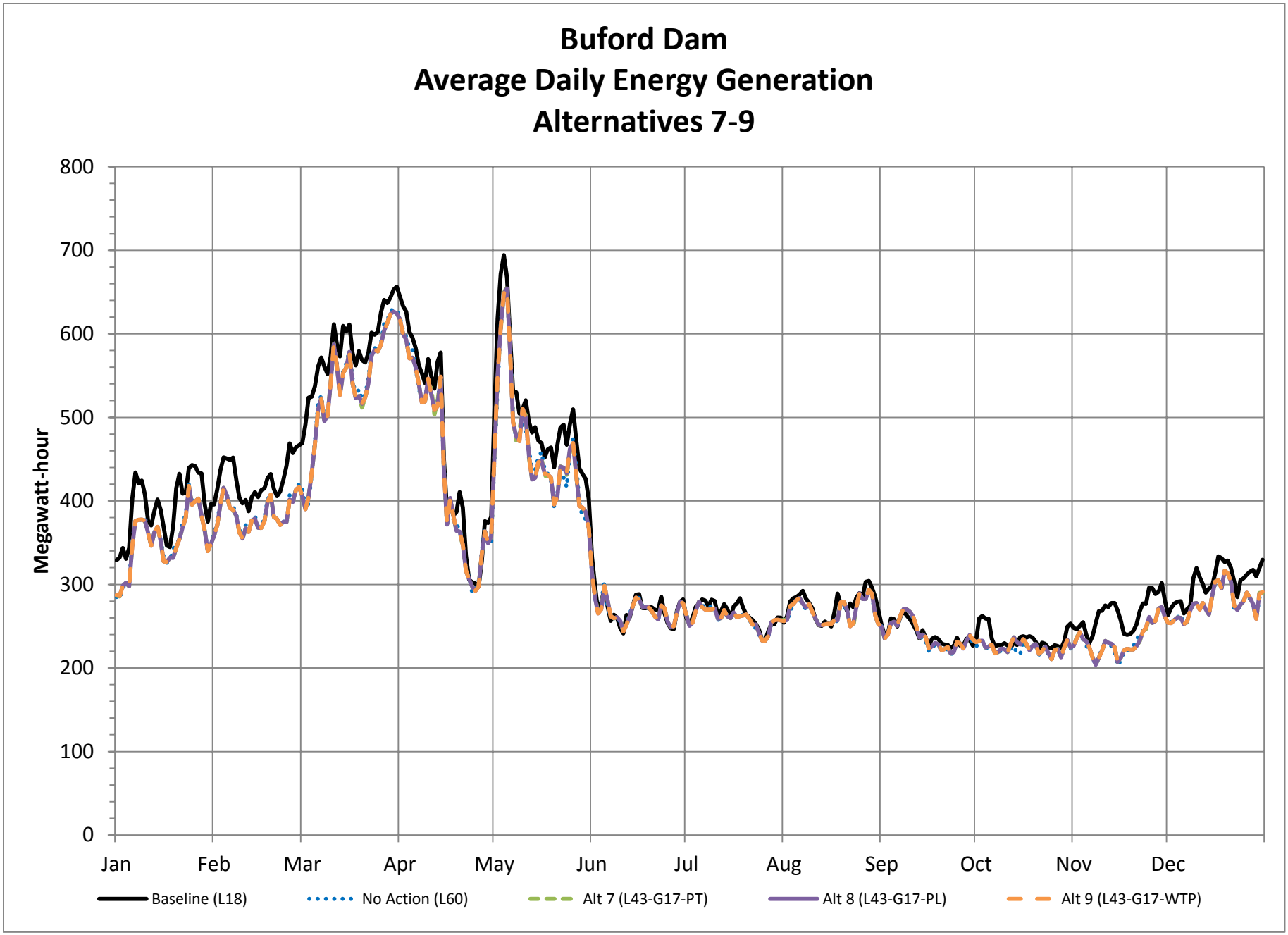
Maximum Daily Generation (Mwh)

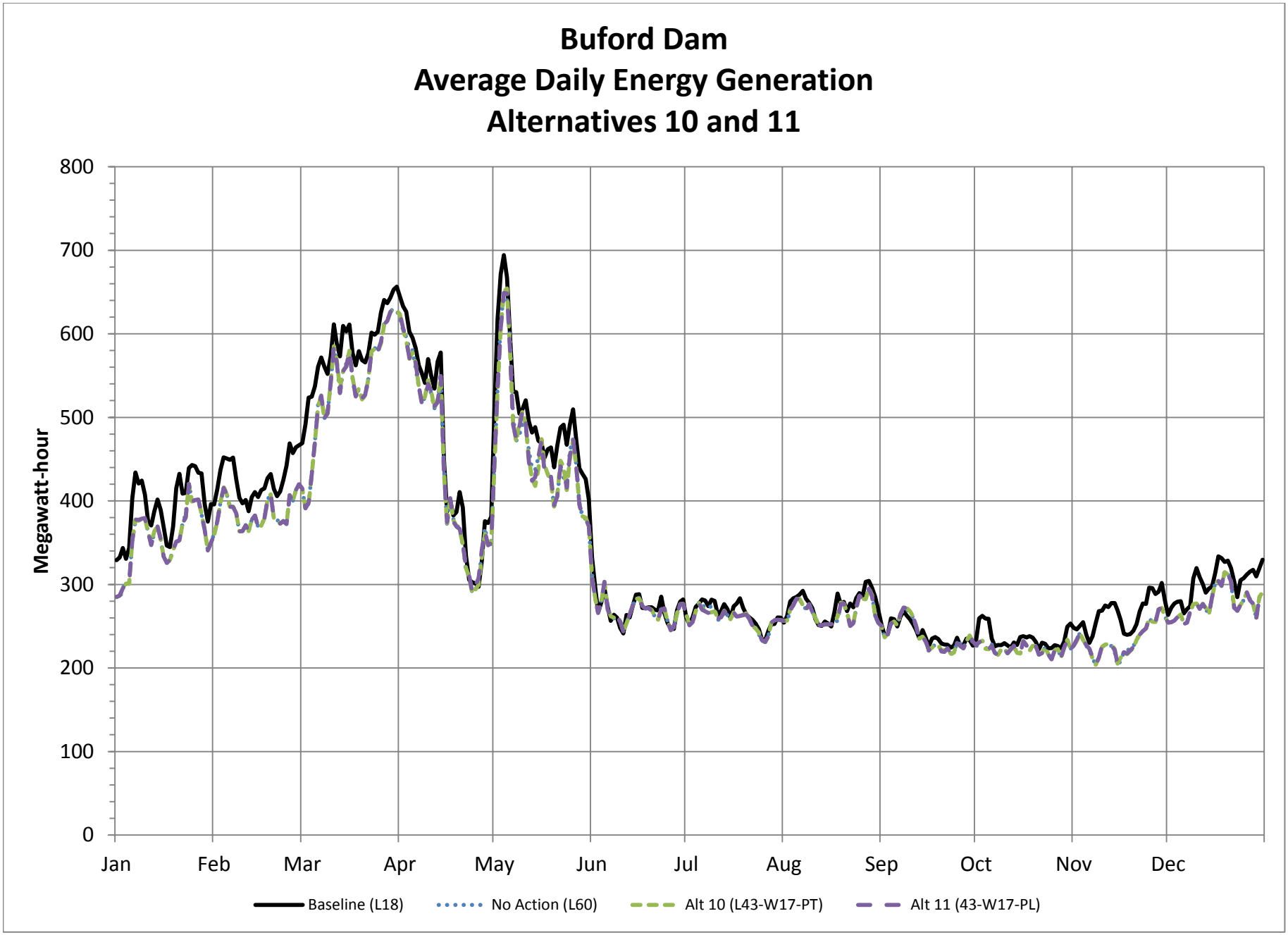
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	2,578	2,555	2,561	2,570	2,537	2,426	1,910	2,570	2,128	2,550	2,179	2,538
No Action	L60	2,564	2,537	2,560	2,570	2,537	2,502	1,883	2,563	2,096	824	2,217	2,535
Proposed	L18-G50-PT	2,559	2,537	2,558	2,570	2,536	2,144	1,871	2,562	2,106	1,101	2,216	2,534
1	L18-G42-PT	2,559	2,537	2,558	2,570	2,536	2,145	1,871	2,562	2,105	993	2,216	2,534
2	L18-G42-PL	2,559	2,537	2,558	2,570	2,536	2,145	1,871	2,562	2,105	997	2,216	2,534
3	L18-G42-WTP	2,559	2,537	2,558	2,570	2,536	2,145	1,871	2,562	2,105	997	2,216	2,534
4	L30-G30-PT	2,559	2,537	2,558	2,570	2,536	2,148	1,871	2,562	2,104	1,083	2,216	2,534
5	L30-G30-PL	2,559	2,537	2,558	2,570	2,538	2,149	1,871	2,562	2,104	1,076	2,216	2,534
6	L30-G30-WTP	2,559	2,537	2,558	2,570	2,536	2,149	1,871	2,562	2,104	1,076	2,216	2,534
7	L43-G17-PT	2,559	2,537	2,558	2,570	2,536	2,137	1,870	2,562	2,103	1,134	2,216	2,534
8	L43-G17-PL	2,559	2,537	2,558	2,570	2,536	2,137	1,870	2,562	2,103	1,134	2,216	2,534
9	L43-G17-WTP	2,559	2,537	2,558	2,570	2,536	2,137	1,870	2,562	2,103	1,134	2,216	2,534
10	L43-W17-PT	2,564	2,537	2,560	2,570	2,537	2,502	1,886	2,563	2,099	821	2,217	2,535
11	L43-W17-PL	2,564	2,537	2,560	2,570	2,537	2,502	1,886	2,563	2,099	821	2,217	2,535


Buford Dam
Average Daily Energy Generation
Proposed Alternative
Megawatt-hour
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (2011)
No Action (L60)
Proposed (L18-G50-PT)

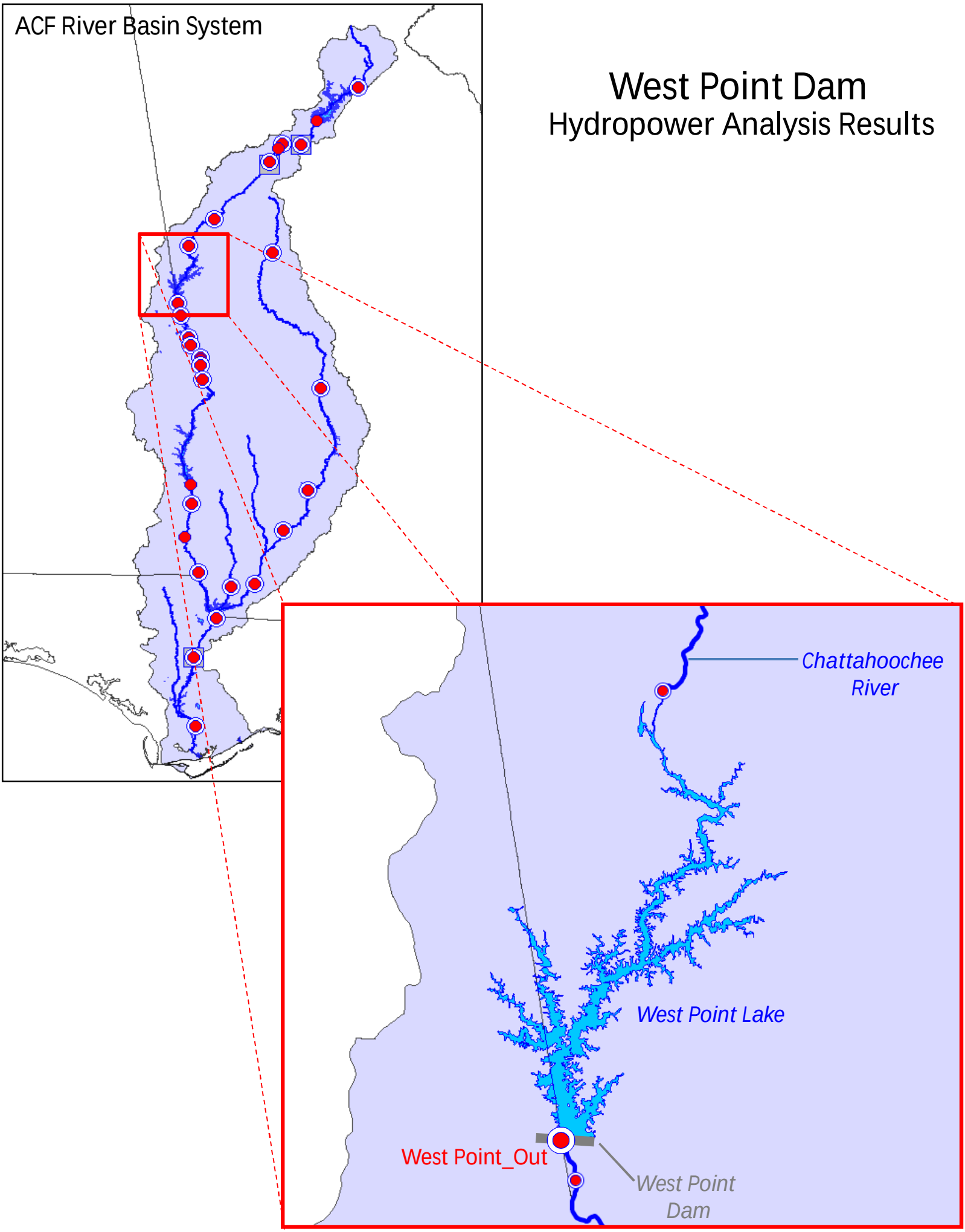

Buford Dam
Average Daily Energy Generation
Alternatives 1-3
Megawatt-hour
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)


Buford Dam
Average Daily Energy Generatioin
Alternatives 4-6
Megawatt-hour
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)


Buford Dam
Average Daily Energy Generation
Alternatives 7-9
Megawatt-hour
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)


Buford Dam
Average Daily Energy Generation
Alternatives 10 and 11
Megawatt-hour
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 10 (L43-W17-PT)
Alt 11 (43-W17-PL)

West Point Dam
Hydropower Analysis Results

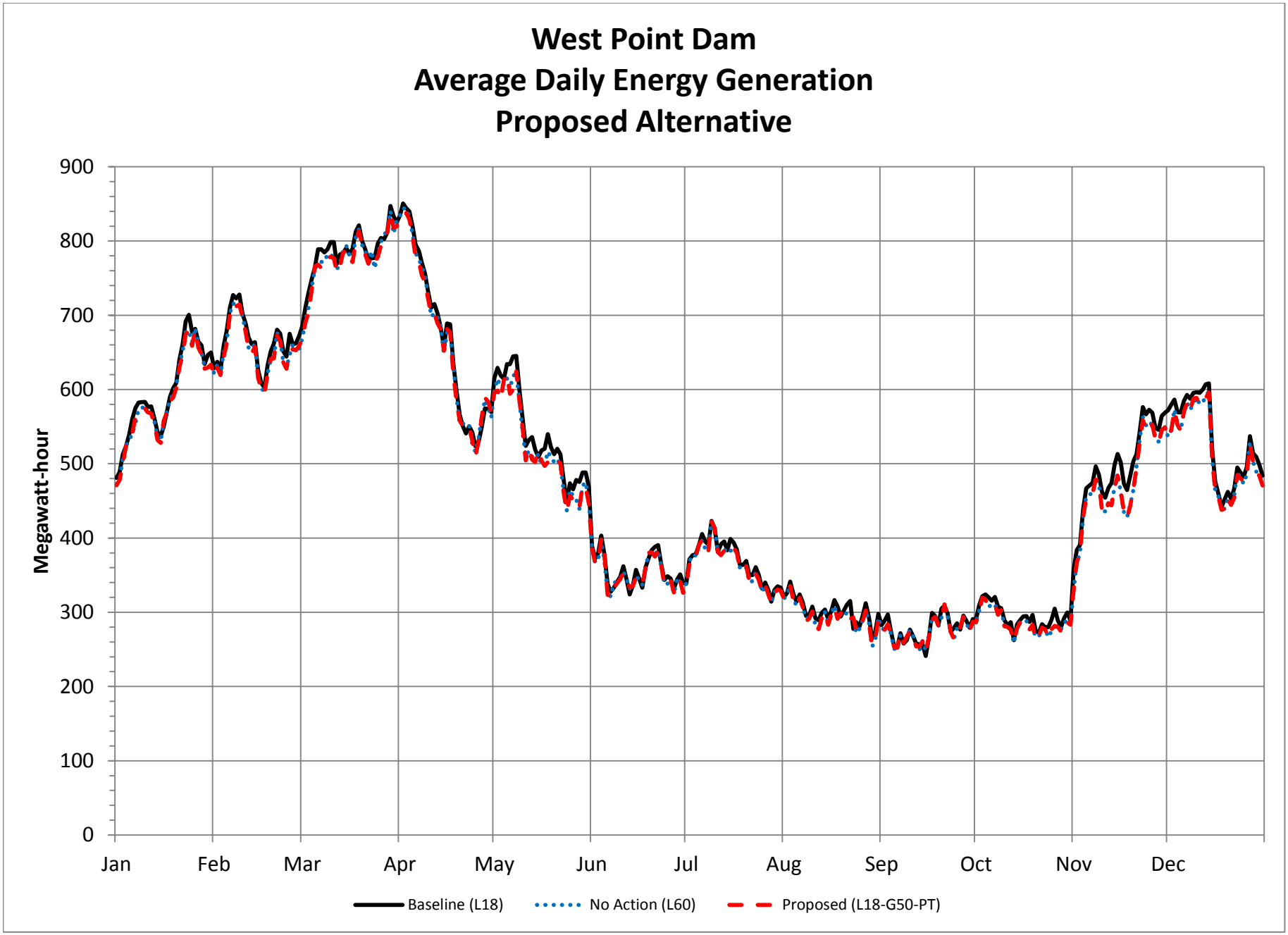


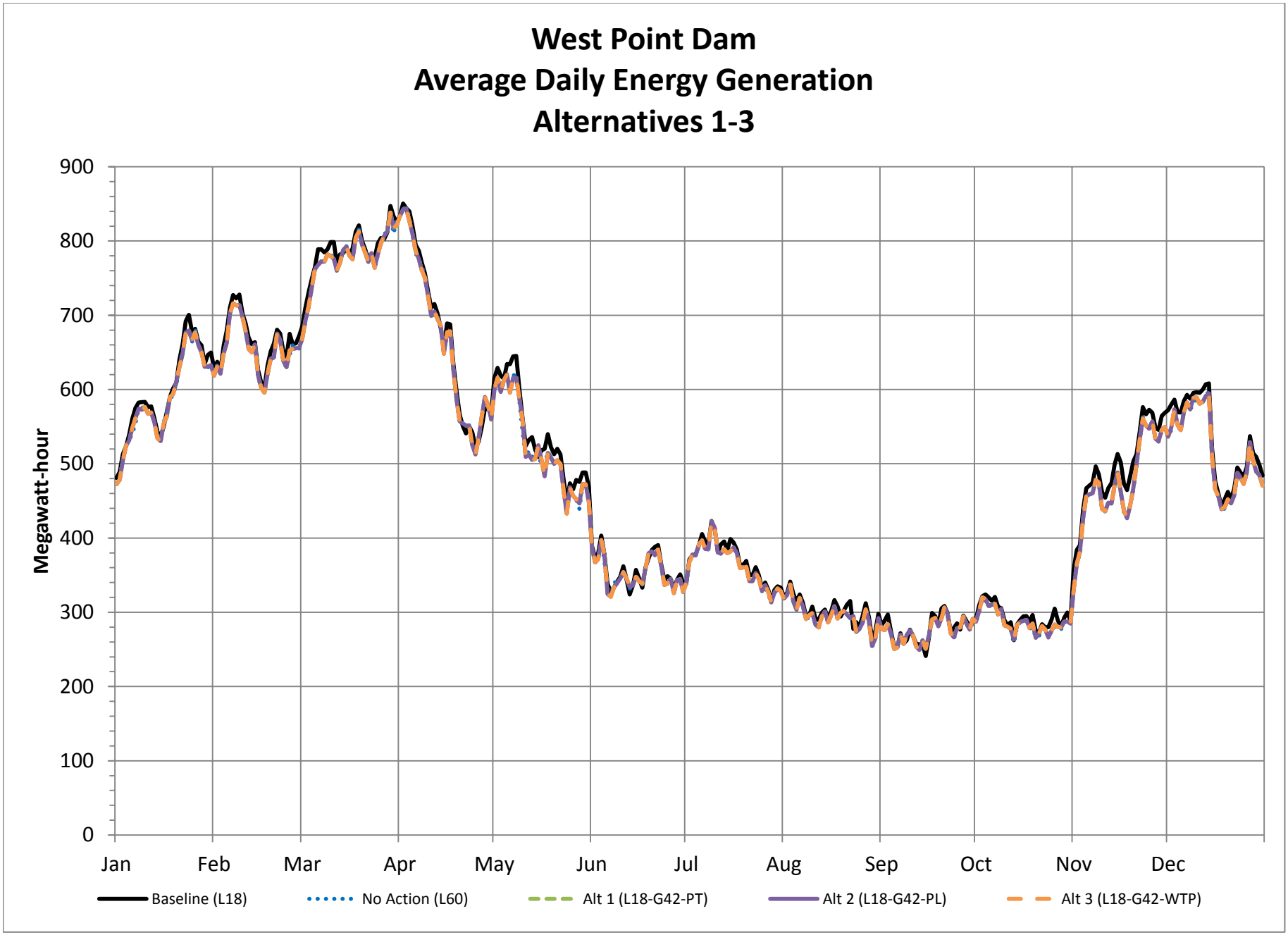
West Point Dam Energy Generation
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

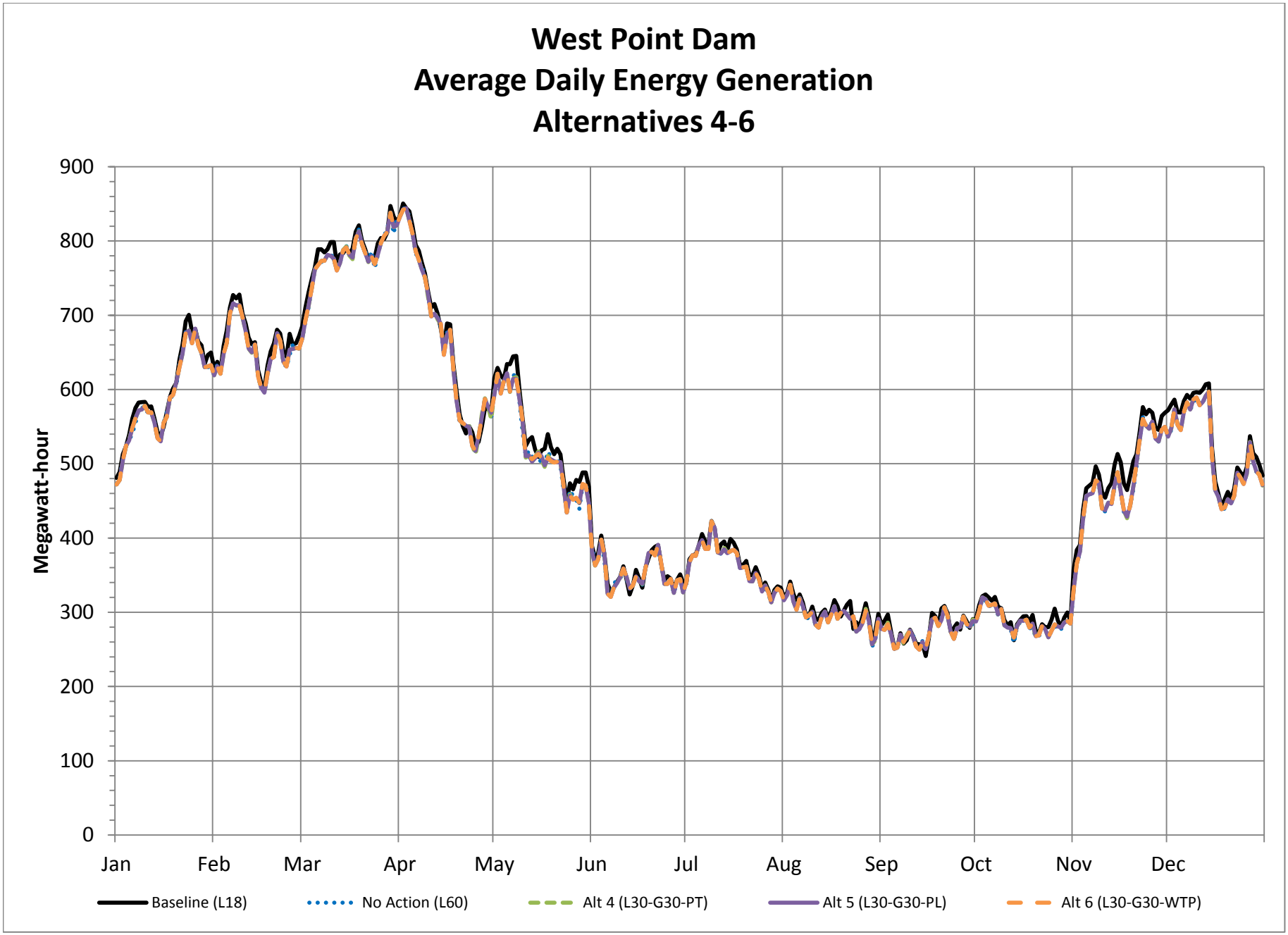
Average Daily Generation (Mwh)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	597	664	789	669	538	354	370	301	278	294	497	530
No Action	L60	588	654	781	665	522	351	365	295	275	287	476	518
Proposed	L18-G50-PT	588	654	780	664	522	351	365	295	275	288	476	518
1	L18-G42-PT	588	654	780	664	522	351	365	295	275	288	476	518
2	L18-G42-PL	588	654	780	664	522	351	365	295	275	288	476	518
3	L18-G42-WTP	588	654	780	664	522	351	365	295	275	288	476	518
4	L30-G30-PT	588	654	780	664	521	351	365	295	275	288	476	518
5	L30-G30-PL	588	654	780	665	521	351	365	295	275	288	476	518
6	L30-G30-WTP	588	654	780	665	521	351	365	295	275	288	476	518
7	L43-G17-PT	588	654	780	664	522	351	365	295	275	288	476	518
8	L43-G17-PL	588	654	780	664	522	351	365	295	275	288	476	518
9	L43-G17-WTP	588	654	780	664	522	351	365	295	275	288	476	518
10	L43-W17-PT	588	654	781	665	521	351	364	295	275	287	475	517
11	L43-W17-PL	588	654	781	665	521	351	364	295	275	286	476	518

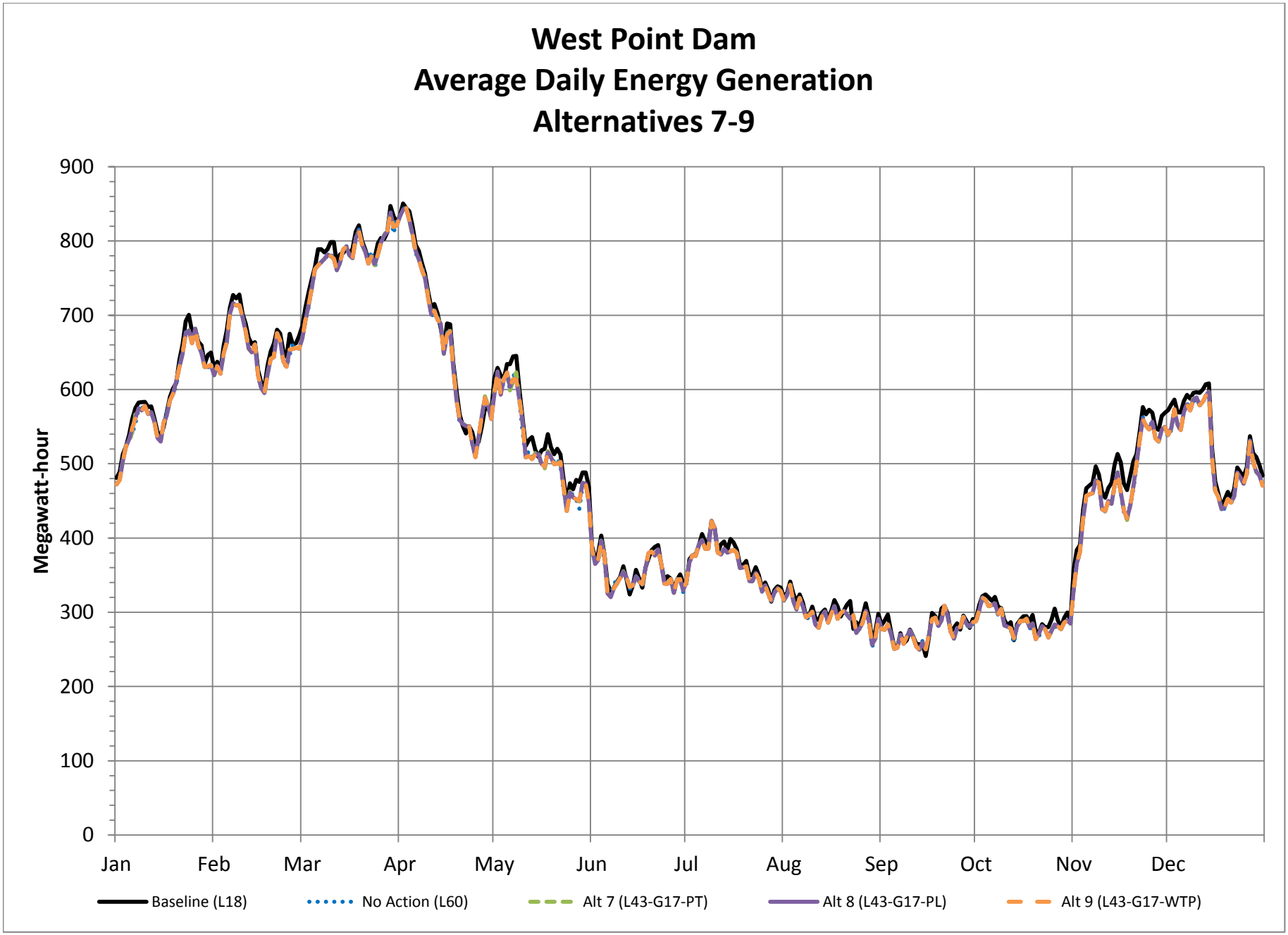
Minimum Daily Generation (Mwh)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	-	-	-	-	-	-	-	-	-	-	-	-
No Action	L60	-	-	-	-	-	-	-	-	-	-	-	-
Proposed	L18-G50-PT	-	-	-	-	-	-	-	-	-	-	-	-
1	L18-G42-PT	-	-	-	-	-	-	-	-	-	-	-	-
2	L18-G42-PL	-	-	-	-	-	-	-	-	-	-	-	-
3	L18-G42-WTP	-	-	-	-	-	-	-	-	-	-	-	-
4	L30-G30-PT	-	-	-	-	-	-	-	-	-	-	-	-
5	L30-G30-PL	-	-	-	-	-	-	-	-	-	-	-	-
6	L30-G30-WTP	-	-	-	-	-	-	-	-	-	-	-	-
7	L43-G17-PT	-	-	-	-	-	-	-	-	-	-	-	-
8	L43-G17-PL	-	-	-	-	-	-	-	-	-	-	-	-
9	L43-G17-WTP	-	-	-	-	-	-	-	-	-	-	-	-
10	L43-W17-PT	-	-	-	-	-	-	-	-	-	-	-	-
11	L43-W17-PL	-	-	-	-	-	-	-	-	-	-	-	-

Maximum Daily Generation (Mwh)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,798	1,811	1,932	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,854
No Action	L60	1,799	1,814	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
Proposed	L18-G50-PT	1,800	1,810	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
1	L18-G42-PT	1,800	1,810	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
2	L18-G42-PL	1,800	1,810	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
3	L18-G42-WTP	1,800	1,810	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
4	L30-G30-PT	1,800	1,810	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
5	L30-G30-PL	1,800	1,810	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
6	L30-G30-WTP	1,800	1,810	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
7	L43-G17-PT	1,800	1,810	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
8	L43-G17-PL	1,800	1,810	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
9	L43-G17-WTP	1,800	1,810	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
10	L43-W17-PT	1,799	1,811	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856
11	L43-W17-PL	1,799	1,811	1,931	2,038	2,052	2,052	2,052	2,052	2,052	2,052	2,052	1,856


West Point Dam
Average Daily Energy Generation
Proposed Alternative
Megawatt-hour
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Proposed (L18-G50-PT)

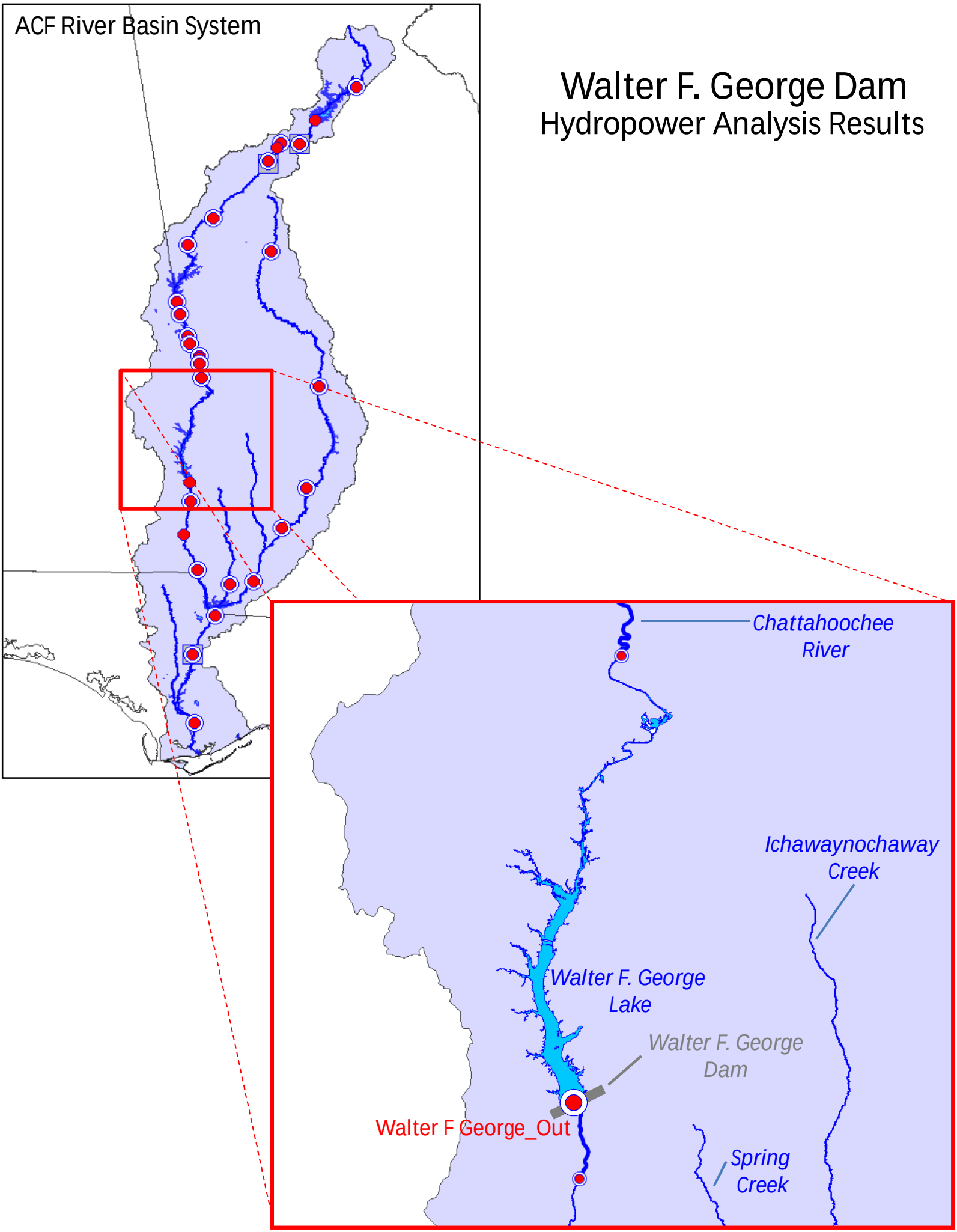

West Point Dam
Average Daily Energy Generation
Alternatives 1-3
Megawatt-hour
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)


West Point Dam
Average Daily Energy Generation
Alternatives 4-6
Megawatt-hour
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)


West Point Dam
Average Daily Energy Generation
Alternatives 7-9
Megawatt-hour
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)

West Point Dam
Average Daily Energy Generation
Alternatives 10 and 11
Megawatt-hour
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 10 (L43-W17-PT)
Alt 11 (43-W17-PL)

Walter F. George Dam
Hydropower Analysis Results



Walter F. George Dam Energy Generation
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

Average Daily Generation (Mwh)

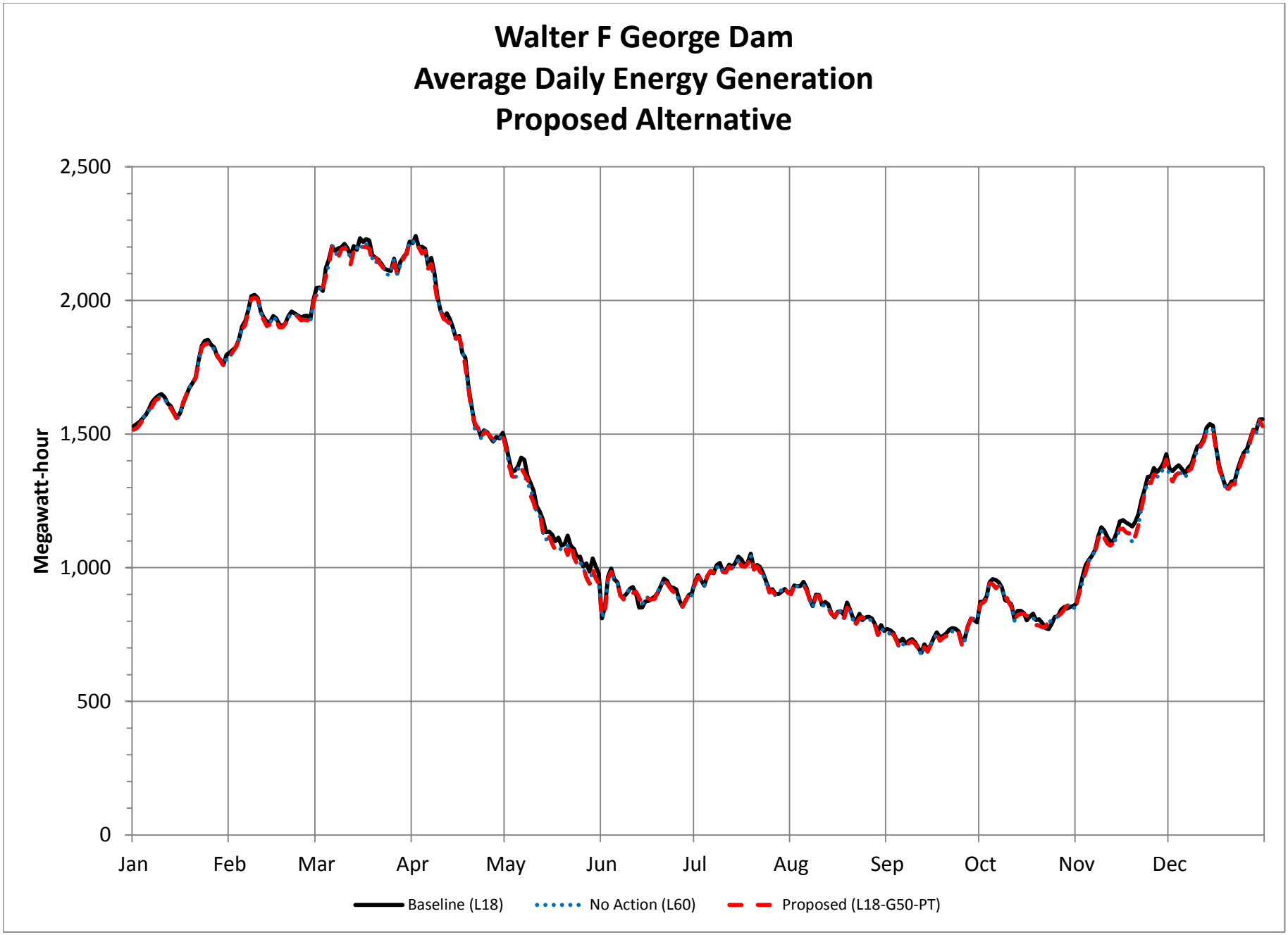
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,678	1,929	2,164	1,817	1,173	904	976	848	745	850	1,178	1,421
No Action	L60	1,673	1,922	2,154	1,811	1,145	902	972	842	738	846	1,156	1,409
Proposed	L18-G50-PT	1,673	1,921	2,154	1,809	1,146	902	972	843	738	847	1,157	1,409
1	L18-G42-PT	1,673	1,921	2,154	1,809	1,146	902	972	843	738	847	1,157	1,409
2	L18-G42-PL	1,673	1,921	2,154	1,810	1,146	902	972	843	738	847	1,157	1,409
3	L18-G42-WTP	1,673	1,921	2,154	1,810	1,146	902	972	843	738	847	1,157	1,409
4	L30-G30-PT	1,673	1,921	2,154	1,810	1,145	903	972	842	738	847	1,157	1,409
5	L30-G30-PL	1,673	1,921	2,154	1,810	1,145	903	972	842	738	848	1,157	1,409
6	L30-G30-WTP	1,673	1,921	2,154	1,810	1,145	903	972	842	738	848	1,157	1,409
7	L43-G17-PT	1,673	1,921	2,154	1,809	1,146	902	972	842	738	847	1,157	1,409
8	L43-G17-PL	1,673	1,921	2,154	1,810	1,146	902	972	842	738	847	1,157	1,409
9	L43-G17-WTP	1,673	1,921	2,154	1,810	1,146	902	972	842	738	847	1,157	1,409
10	L43-W17-PT	1,673	1,922	2,154	1,810	1,144	903	972	842	738	846	1,156	1,408
11	L43-W17-PL	1,673	1,922	2,154	1,811	1,145	902	971	842	738	846	1,156	1,409

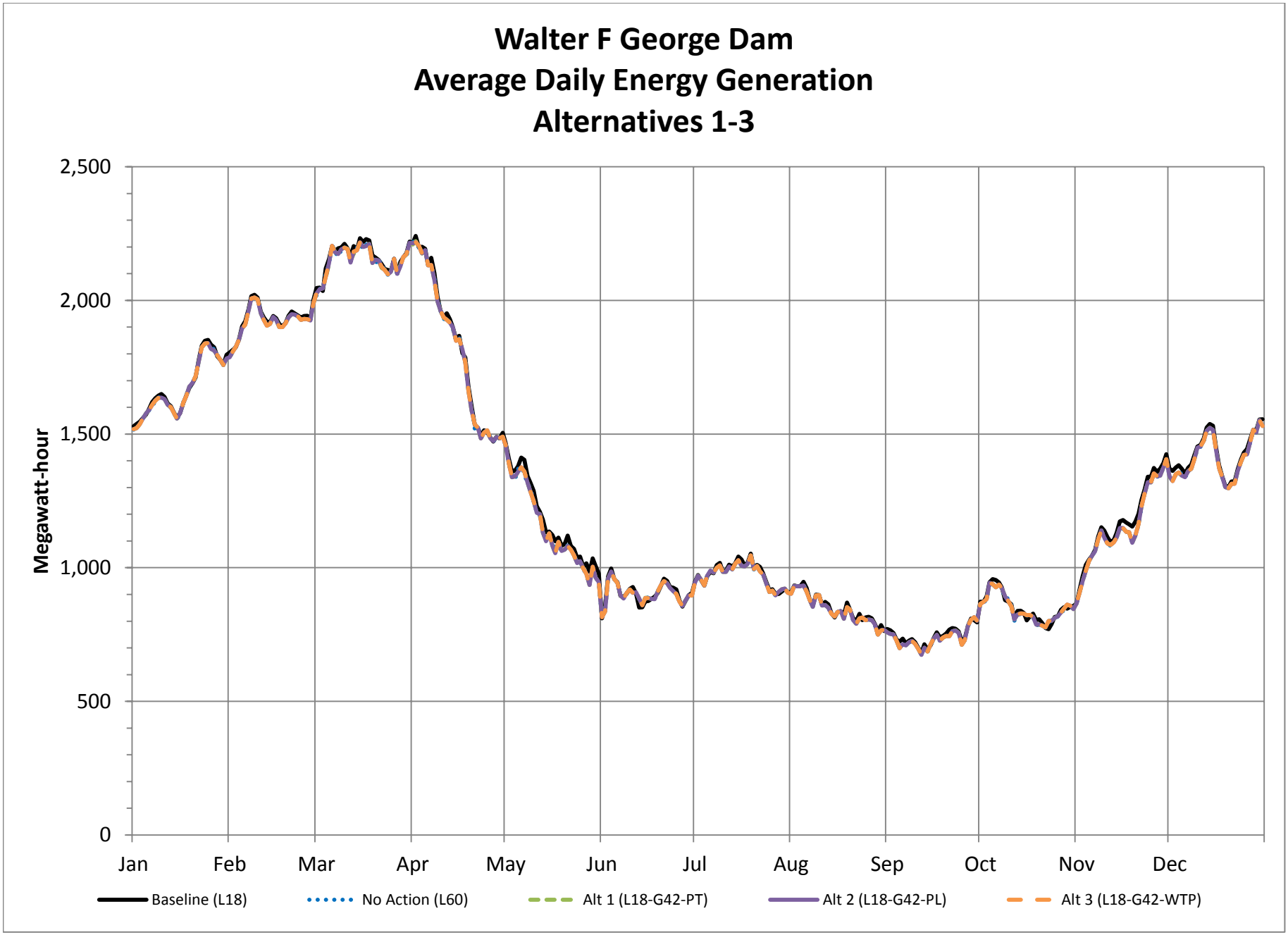
Minimum Daily Generation (Mwh)

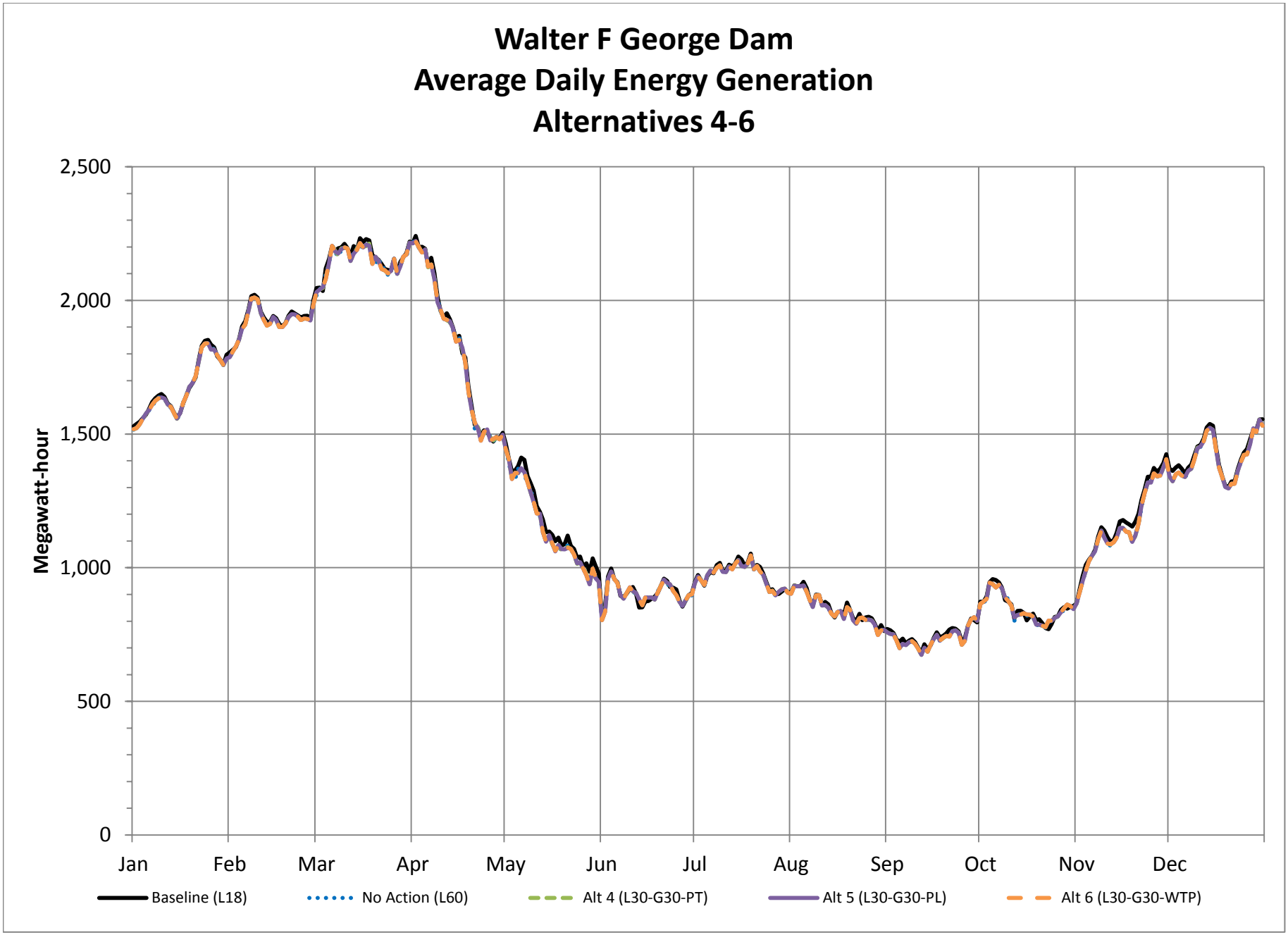
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	-	382	441	-	-	-	-	-	-	-	-	-
No Action	L60	-	348	441	-	-	-	-	-	-	-	-	-
Proposed	L18-G50-PT	-	348	441	-	-	-	-	-	-	-	-	-
1	L18-G42-PT	-	348	441	-	-	-	-	-	-	-	-	-
2	L18-G42-PL	-	348	441	-	-	-	-	-	-	-	-	-
3	L18-G42-WTP	-	348	441	-	-	-	-	-	-	-	-	-
4	L30-G30-PT	-	348	441	-	-	-	-	-	-	-	-	-
5	L30-G30-PL	-	348	441	-	-	-	-	-	-	-	-	-
6	L30-G30-WTP	-	348	441	-	-	-	-	-	-	-	-	-
7	L43-G17-PT	-	348	441	-	-	-	-	-	-	-	-	-
8	L43-G17-PL	-	348	441	-	-	-	-	-	-	-	-	-
9	L43-G17-WTP	-	348	441	-	-	-	-	-	-	-	-	-
10	L43-W17-PT	-	348	441	-	-	-	-	-	-	-	-	-
11	L43-W17-PL	-	348	441	-	-	-	-	-	-	-	-	-

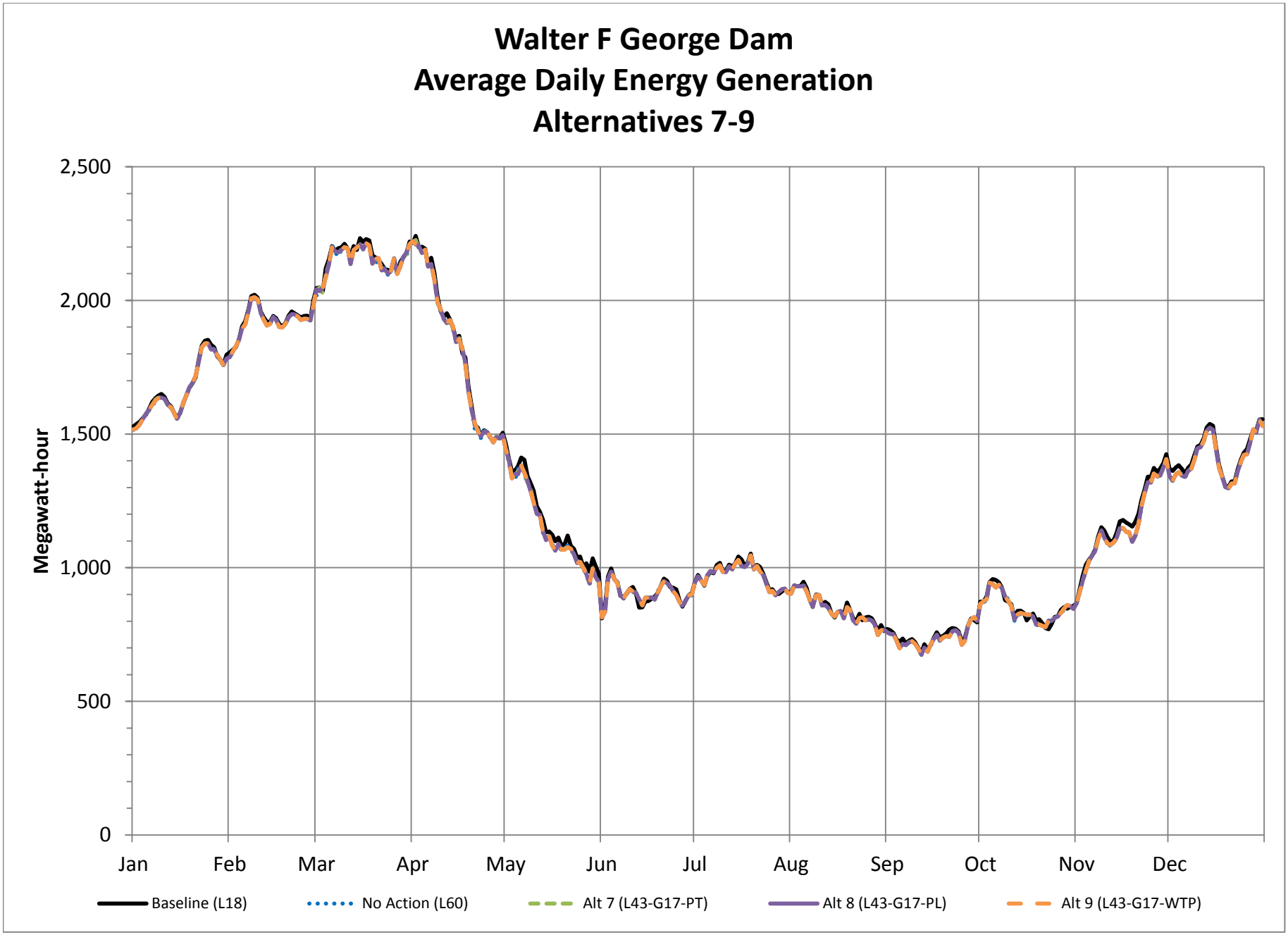
Maximum Daily Generation (Mwh)

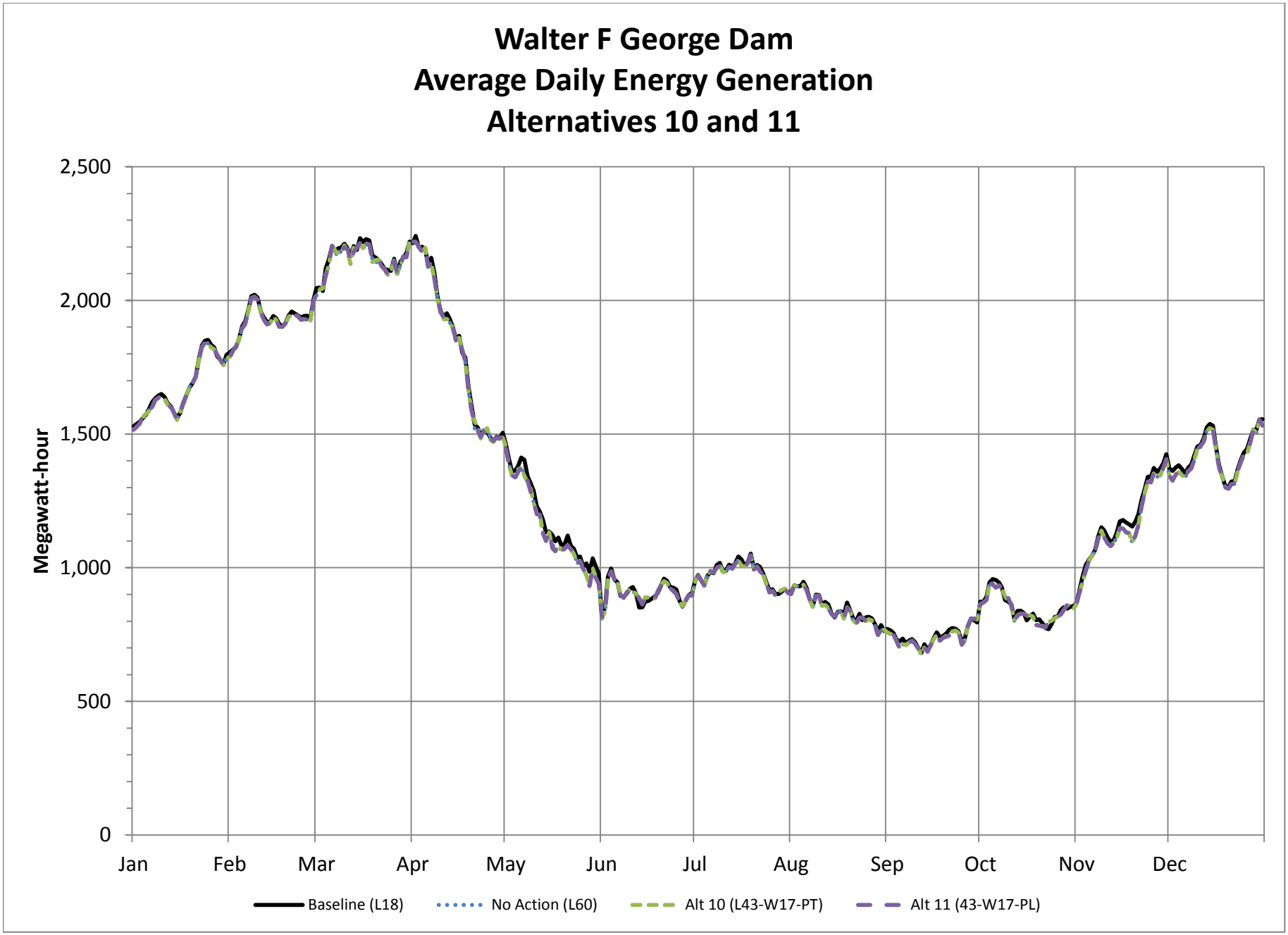
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	4,007	4,000	4,022	4,022	3,822	3,878	4,022	3,892	3,767	3,844	3,765	4,022
No Action	L60	4,007	4,002	4,022	4,022	3,832	3,886	4,022	3,744	3,786	3,856	3,744	4,022
Proposed	L18-G50-PT	4,004	4,002	4,022	4,022	3,842	3,889	4,022	3,731	3,788	3,850	3,744	4,022
1	L18-G42-PT	4,004	4,002	4,022	4,022	3,836	3,889	4,022	3,731	3,789	3,853	3,744	4,022
2	L18-G42-PL	4,004	4,002	4,022	4,022	3,836	3,889	4,022	3,731	3,789	3,853	3,744	4,022
3	L18-G42-WTP	4,004	4,002	4,022	4,022	3,836	3,889	4,022	3,731	3,789	3,853	3,744	4,022
4	L30-G30-PT	4,004	4,002	4,022	4,022	3,836	3,888	4,022	3,728	3,793	3,862	3,744	4,022
5	L30-G30-PL	4,004	4,002	4,022	4,022	3,836	3,888	4,022	3,728	3,793	3,862	3,744	4,022
6	L30-G30-WTP	4,004	4,002	4,022	4,022	3,836	3,888	4,022	3,728	3,793	3,862	3,744	4,022
7	L43-G17-PT	4,005	4,002	4,022	4,022	3,835	3,888	4,022	3,727	3,794	3,871	3,744	4,022
8	L43-G17-PL	4,005	4,002	4,022	4,022	3,835	3,888	4,022	3,745	3,794	3,872	3,744	4,022
9	L43-G17-WTP	4,005	4,002	4,022	4,022	3,835	3,888	4,022	3,745	3,794	3,872	3,744	4,022
10	L43-W17-PT	4,009	4,002	4,022	4,022	3,831	3,887	4,022	3,744	3,783	3,856	3,744	4,022
11	L43-W17-PL	4,009	4,002	4,022	4,022	3,831	3,887	4,022	3,744	3,784	3,866	3,744	4,022


Walter F George Dam
Average Daily Energy Generation
Proposed Alternative
Megawatt-hour
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Proposed (L18-G50-PT)

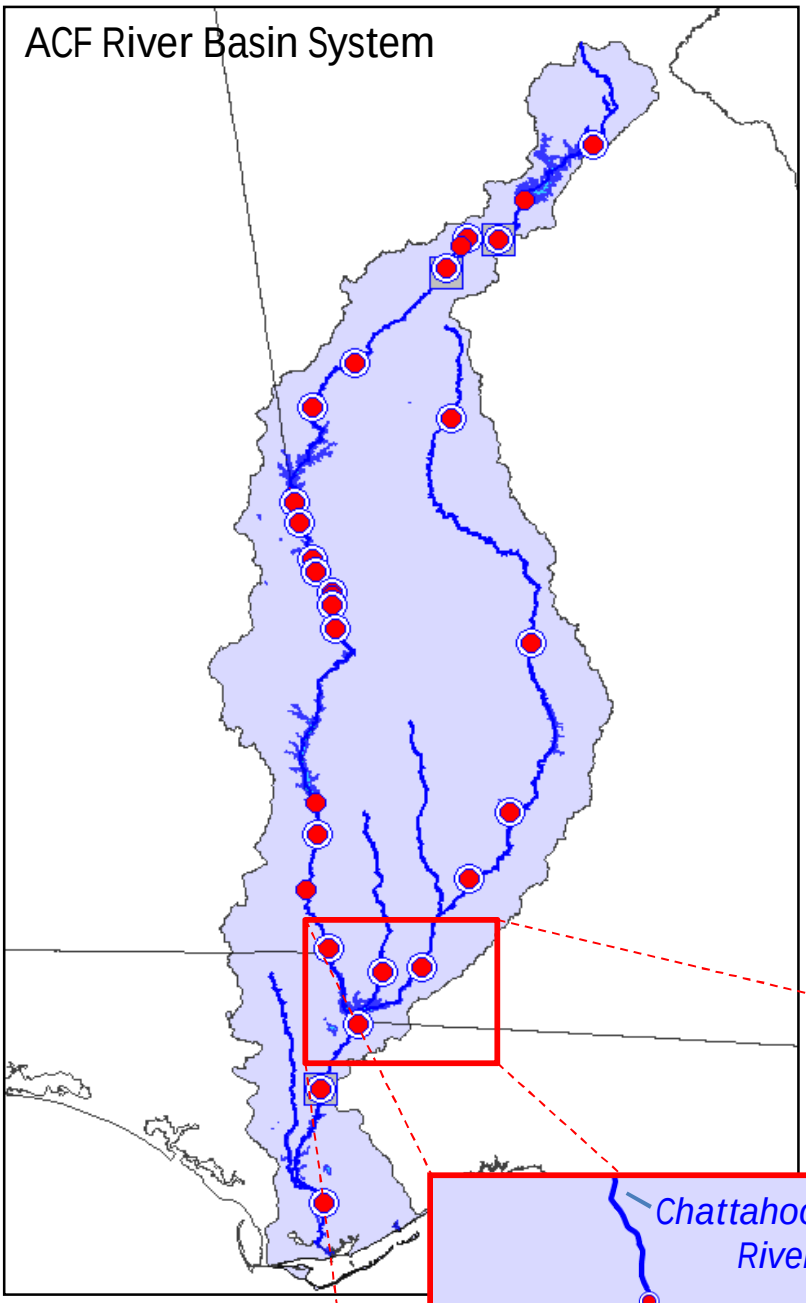

Walter F George Dam
Average Daily Energy Generation
Alternatives 1-3
Megawatt-hour
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)

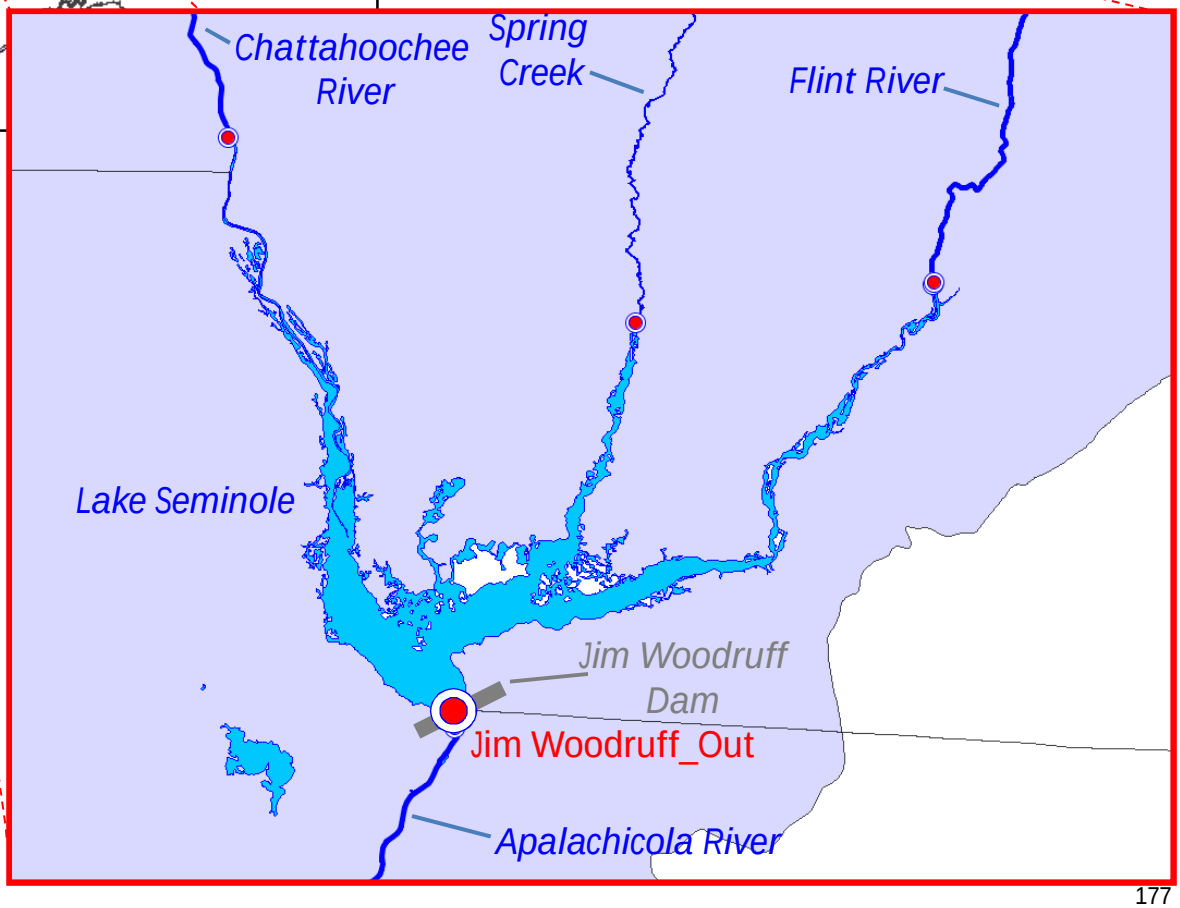

Walter F George Dam
Average Daily Energy Generation
Alternatives 4-6
Megawatt-hour
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)


Walter F George Dam
Average Daily Energy Generation
Alternatives 7-9
Megawatt-hour
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)


Walter F George Dam
Average Daily Energy Generation
Alternatives 10 and 11
Megawatt-hour
2,500
2,000
1,500
1,000
500
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 10 (L43-W17-PT)
Alt 11 (43-W17-PL)

Jim Woodruff Dam
Hydropower Analysis Results



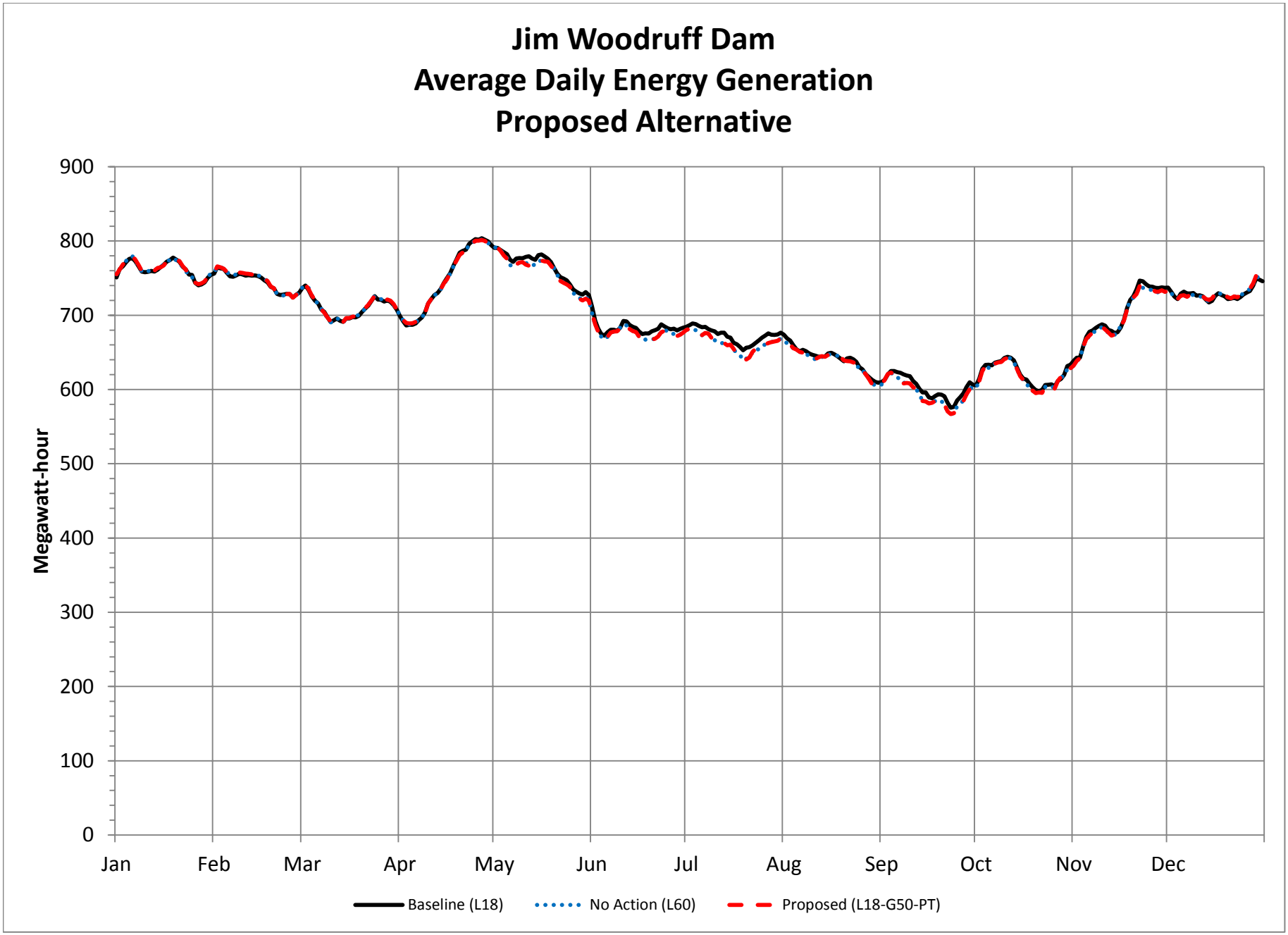


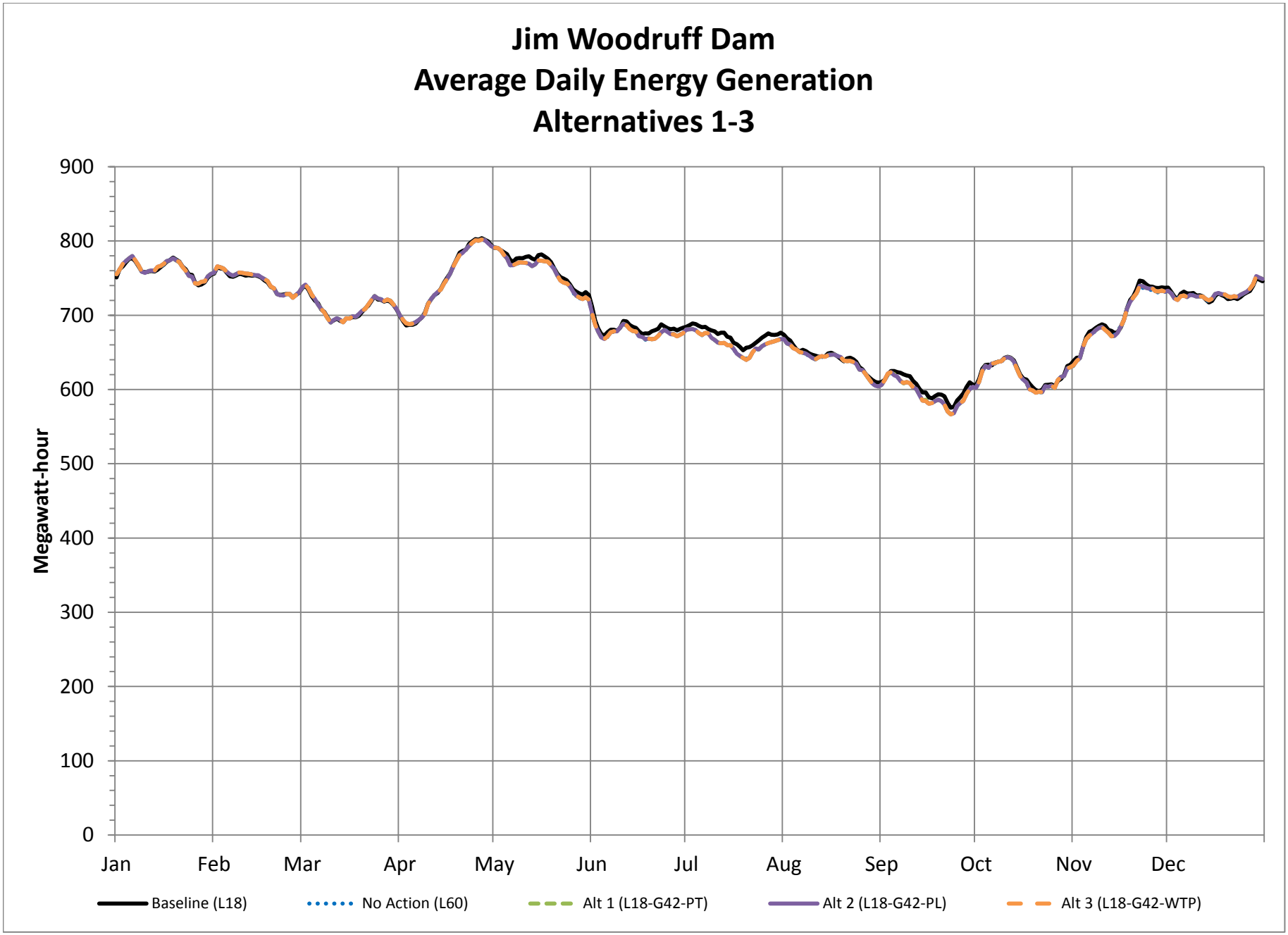
Jim Woodruff Dam Energy Generation
73-Year Period of Analysis (January 1, 1939- December 31, 2011)

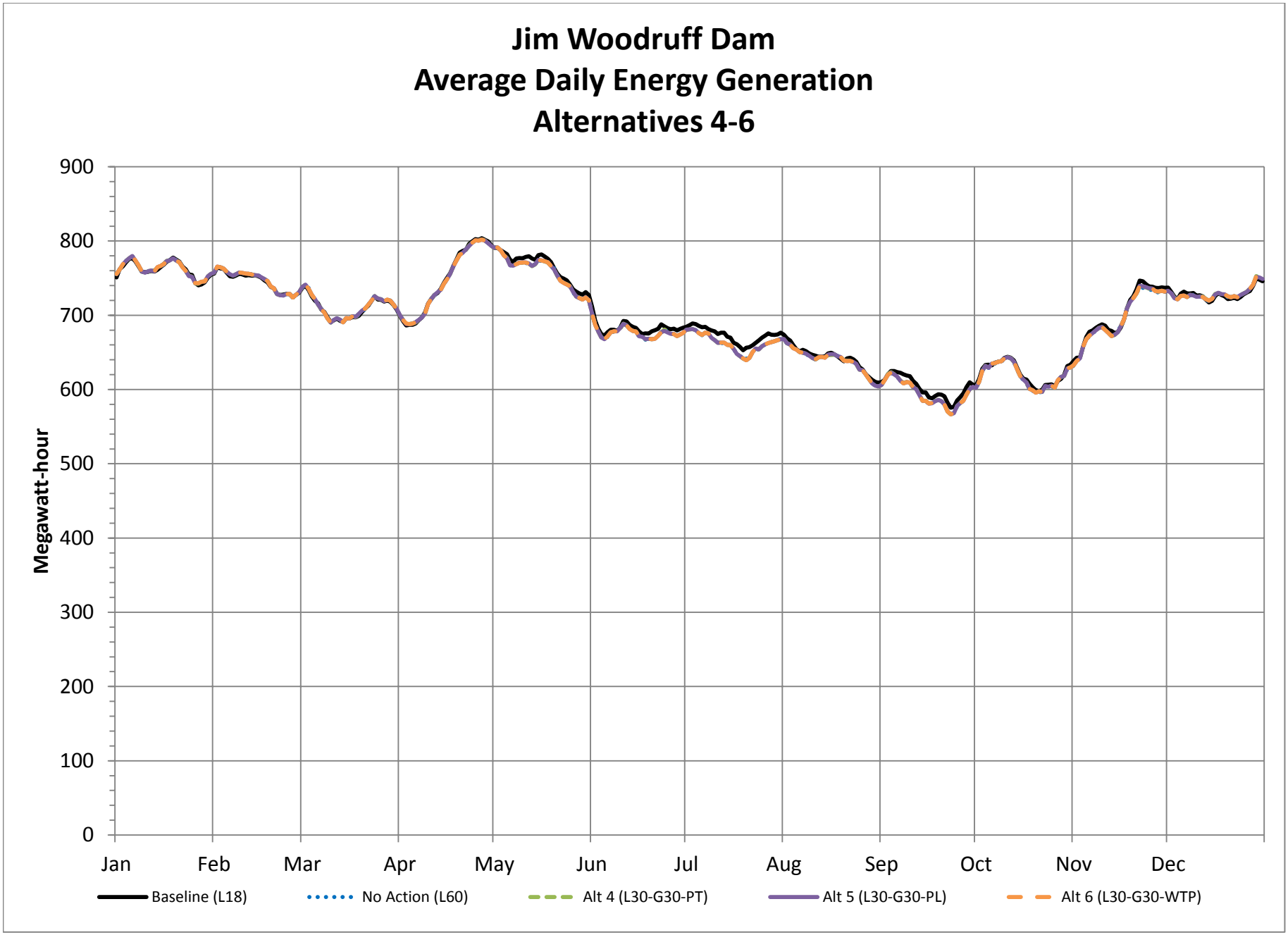
Average Daily Generation (Mwh)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	392	426	586	461	505	270	265	275	241	235	265	302
No Action	L60	354	386	543	442	466	268	259	267	239	222	234	277
Proposed	L18-G50-PT	352	384	539	440	466	268	260	268	240	225	235	277
1	L18-G42-PT	352	384	539	440	466	268	260	268	240	225	235	277
2	L18-G42-PL	352	384	539	440	466	268	260	268	240	225	235	277
3	L18-G42-WTP	352	384	539	440	466	268	260	268	240	225	235	277
4	L30-G30-PT	353	384	540	441	465	268	260	268	240	225	235	277
5	L30-G30-PL	353	384	540	441	465	268	260	267	240	225	235	277
6	L30-G30-WTP	352	384	540	441	465	268	260	267	240	225	235	277
7	L43-G17-PT	353	384	540	440	466	268	259	267	240	224	235	277
8	L43-G17-PL	353	384	540	440	466	268	259	268	240	224	235	277
9	L43-G17-WTP	353	384	540	440	466	268	259	268	240	224	235	277
10	L43-W17-PT	354	386	543	441	465	268	259	267	239	222	234	277
11	L43-W17-PL	354	386	543	442	465	267	259	267	239	222	234	277

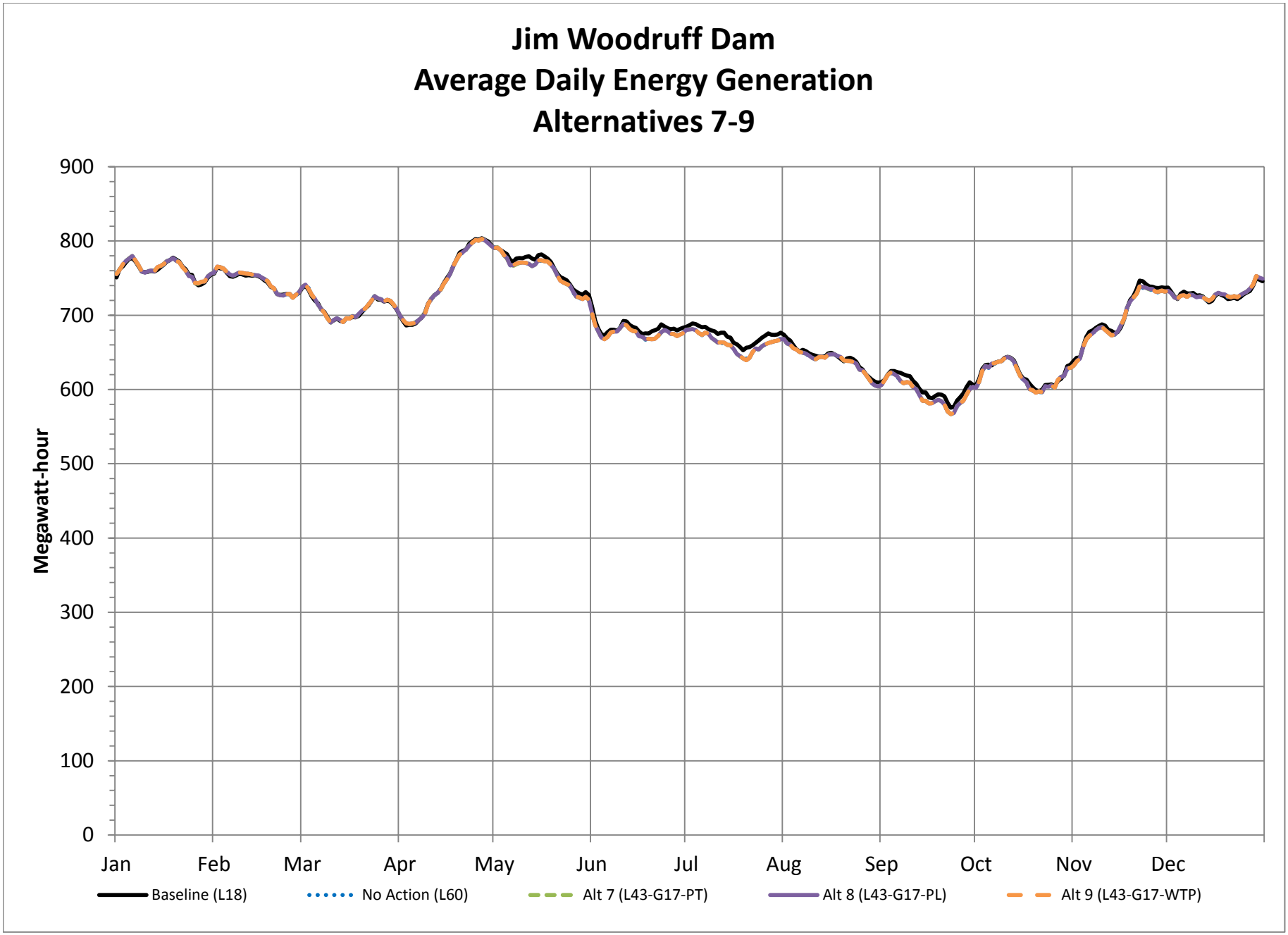
Minimum Daily Generation (Mwh)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	-	-	56	-	-	-	70	287	-	-	286	157
No Action	L60	-	-	54	-	-	-	-	-	-	-	-	-
Proposed	L18-G50-PT	-	279	-	214	-	286	-	286	-	285	-	178
1	L18-G42-PT	-	-	-	-	-	-	-	-	-	-	-	-
2	L18-G42-PL	279	-	54	-	286	-	71	-	285	-	257	-
3	L18-G42-WTP	-	-	-	-	-	-	-	-	-	-	-	-
4	L30-G30-PT	-	279	-	214	-	286	-	286	-	285	-	-
5	L30-G30-PL	-	-	-	-	-	-	-	-	-	-	-	-
6	L30-G30-WTP	279	-	54	-	286	-	71	-	285	-	257	-
7	L43-G17-PT	-	-	-	-	-	-	-	-	-	-	-	-
8	L43-G17-PL	-	279	-	214	-	286	-	286	-	285	-	178
9	L43-G17-WTP	-	-	-	-	-	-	-	-	-	-	-	-
10	L43-W17-PT	-	-	54	-	286	-	71	-	285	-	257	-
11	L43-W17-PL	-	-	-	-	-	-	-	-	-	-	-	-

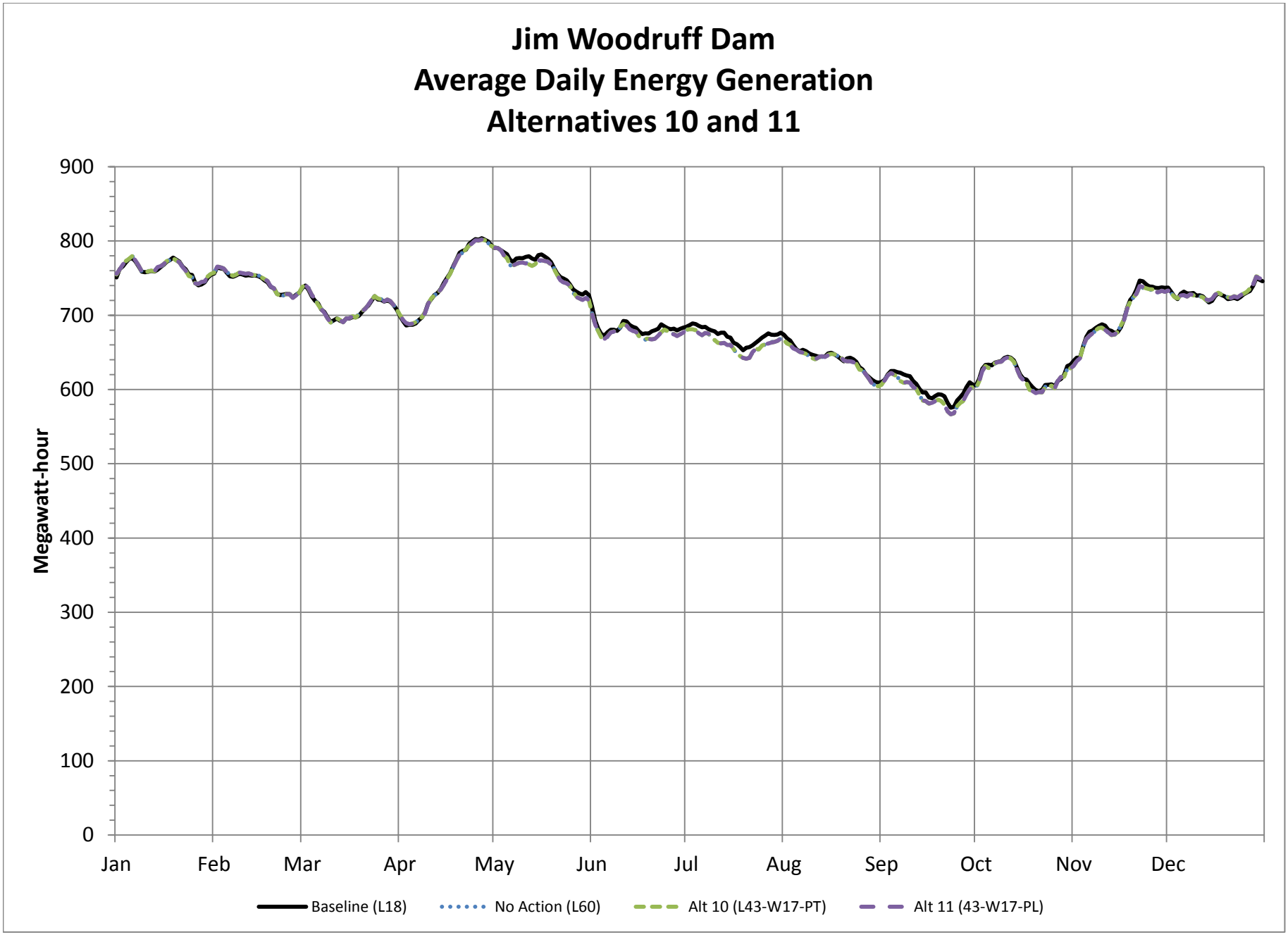
Maximum Daily Generation (Mwh)													
Alternative #	Alternative ID	January	February	March	April	May	June	July	August	September	October	November	December
Baseline	L18	1,032	975	981	985	975	1,032	977	981	975	975	975	975
No Action	L60	979	975	975	977	975	990	975	975	975	975	975	980
Proposed	L18-G50-PT	979	975	977	977	978	990	975	976	975	975	975	979
1	L18-G42-PT	979	975	975	977	976	990	975	975	975	975	975	979
2	L18-G42-PL	979	975	975	977	978	990	975	975	975	975	975	979
3	L18-G42-WTP	979	975	975	977	978	990	975	975	975	975	975	979
4	L30-G30-PT	979	975	975	977	976	1,026	975	975	975	975	975	979
5	L30-G30-PL	979	975	975	977	976	990	975	975	975	975	975	975
6	L30-G30-WTP	979	975	975	977	976	1,026	975	975	975	975	975	979
7	L43-G17-PT	979	975	975	977	976	990	975	975	975	975	975	979
8	L43-G17-PL	979	975	975	977	976	990	975	975	975	975	975	979
9	L43-G17-WTP	979	975	975	977	976	990	975	975	975	975	975	979
10	L43-W17-PT	979	975	975	977	976	990	976	975	975	975	975	980
11	L43-W17-PL	979	975	975	977	976	990	976	975	975	975	975	980


Jim Woodruff Dam
Average Daily Energy Generation
Proposed Alternative
Megawatt-hour
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Proposed (L18-G50-PT)


Jim Woodruff Dam
Average Daily Energy Generation
Alternatives 1-3
Megawatt-hour
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 1 (L18-G42-PT)
Alt 2 (L18-G42-PL)
Alt 3 (L18-G42-WTP)


Jim Woodruff Dam
Average Daily Energy Generation
Alternatives 4-6
Megawatt-hour
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 4 (L30-G30-PT)
Alt 5 (L30-G30-PL)
Alt 6 (L30-G30-WTP)


Jim Woodruff Dam
Average Daily Energy Generation
Alternatives 7-9
Megawatt-hour
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 7 (L43-G17-PT)
Alt 8 (L43-G17-PL)
Alt 9 (L43-G17-WTP)


Jim Woodruff Dam
Average Daily Energy Generation
Alternatives 10 and 11
Megawatt-hour
900
800
700
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Baseline (L18)
No Action (L60)
Alt 10 (L43-W17-PT)
Alt 11 (43-W17-PL)

Glades Reservoir DEIS

APPENDIX R

WATER QUALITY

TECHNICAL MEMORANDUM – WATER QUALITY ANALYSIS

TECHNICAL MEMORANDUM – LLRM MODEL OF PROPOSED GLADES AND WHITE CREEK RESERVOIRS

October 2015

Introduction

To	Richard Morgan, Katie Freas (US Army Corps of Engineers)	Pages	22
CC			
Subject	Water Quality Analysis		
From	Tai Yi Su, P.E. (AECOM)		
Date	June 18, 2015		

This technical memorandum analyzes the water quality affected environment associated with the proposed Glades Reservoir in Hall County, Georgia. This memorandum was prepared as part of the Draft Environmental Impact Statement (EIS) for Reservoir, as proposed in the Hall County 404 permit application (Permit Application SAS-2007-00388).

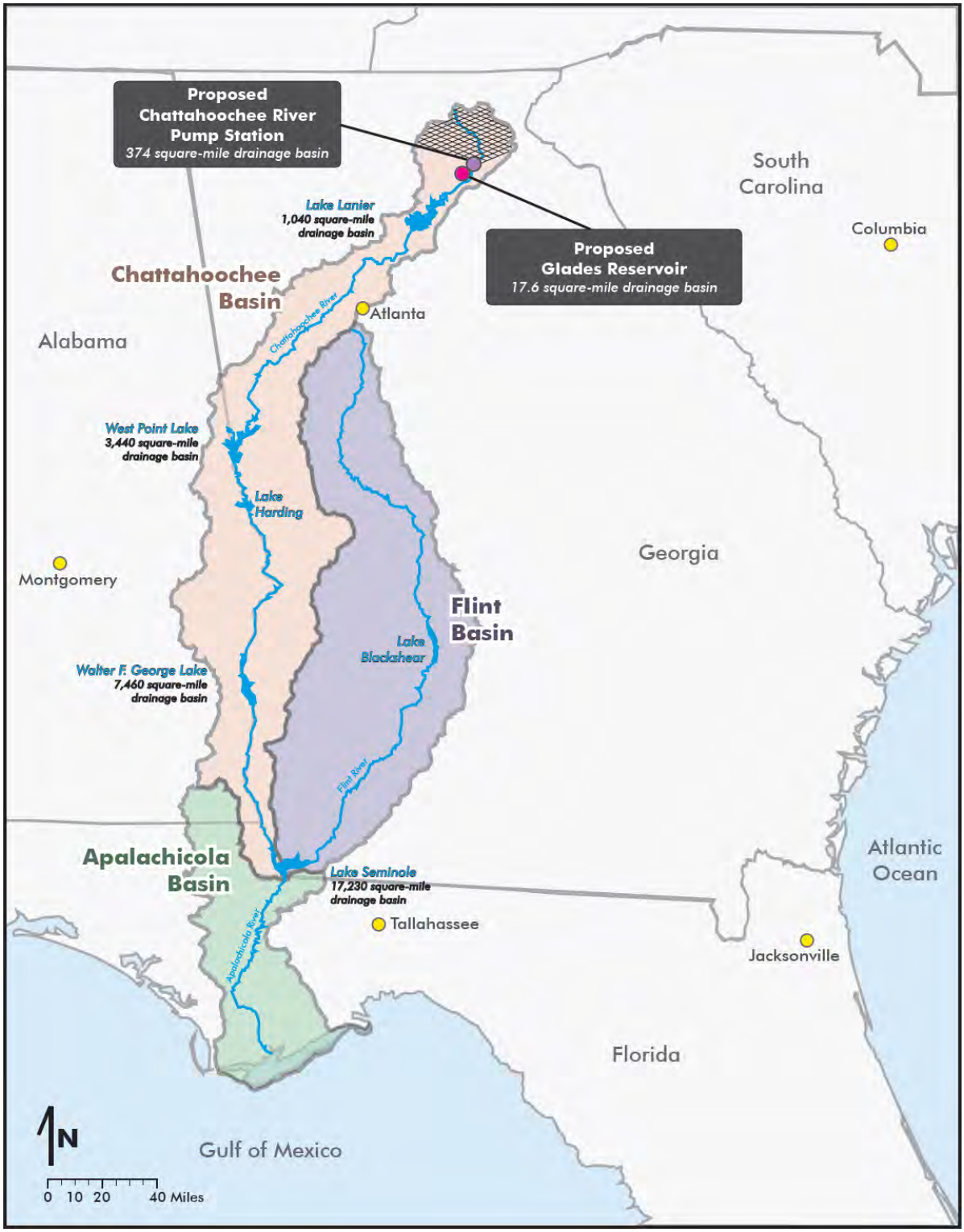
For the purpose of this EIS, the affected environment is the headwaters of the Apalachicola-Chattahoochee-Flint (ACF) River Basin. The affected environment depicts conditions, as they exist, in accordance with the most recent available data for each resource.

General Description of Resources

The proposed Glades reservoir is located on Flat Creek, a tributary to the Chattahoochee River, North of Lake Lanier. The proposed reservoir is located in the very northern tip of the ACF River Basin, along Flat Creek, as is shown in **Figure 1**. The Flat Creek basin drains approximately 17.6 square miles above the proposed dam. The Glades reservoir is proposed to operate as a pumped-storage reservoir with source water from Flat Creek and from an intake on the Chattahoochee River above Lake Lanier. The Chattahoochee River has a 374 square mile drainage basin above the proposed intake location.

Within this TM, the water quality affected environment of the Chattahoochee River, Flat Creek, and Lake Lanier will be reviewed.

Figure 1. ACF Basin



Land Use

The 2008 Georgia Land Use Trends (GLUT) Land Cover layer for was obtained for the project area from the Natural Resources Spatial Analysis Laboratory (State of Georgia 2008). According to the Laboratory, this is the most recent data available for this region. Using these data, ACF basin-wide land use was compiled. The Georgia Land Use Trends 2008 data set addresses the entire ACF Basin, including those areas in Alabama and Florida. The major land cover uses are categorized as beaches/dunes/mud, water, developed, barren land, forested land, golf courses, pasture and row crops (i.e., agricultural), and wetlands. The overall proportions of these land cover categories in the ACF Basin and in Hall County specifically are illustrated in **Table 1** and **Figures 2** and **3**. Chapter 3 and Chapter 4 of the Glades Draft EIS details the land use per alternative. Definitions of each Land Cover category are presented below.

Table 1 - ACF Basin and Hall County Current Land Use

Land Use Classification[1]	Hall County	ACF Basin
Beaches/Dunes/Mud	0.5%	0.2%
Water	8%	3%
Developed (urban or built-up land)	19%	11%
Barren	5%	4%
Natural forested upland (forested lands)	48%	48%
Pasture and Row Crop	19%	21%
Wetlands	0.7%	13%

1. Source: GLUT 2008

Beaches, dunes, and mud includes open sand, sandbars, sand dunes, mud - natural environments as well as exposed sand from dredging and other activities

Water includes lakes, rivers, ponds, ocean, industrial water, and aquaculture.

Developed land is urban or built-up land, which includes residential, commercial, institutional, industrial, transportation (e.g., roads, railways, airports), and recreational land uses.

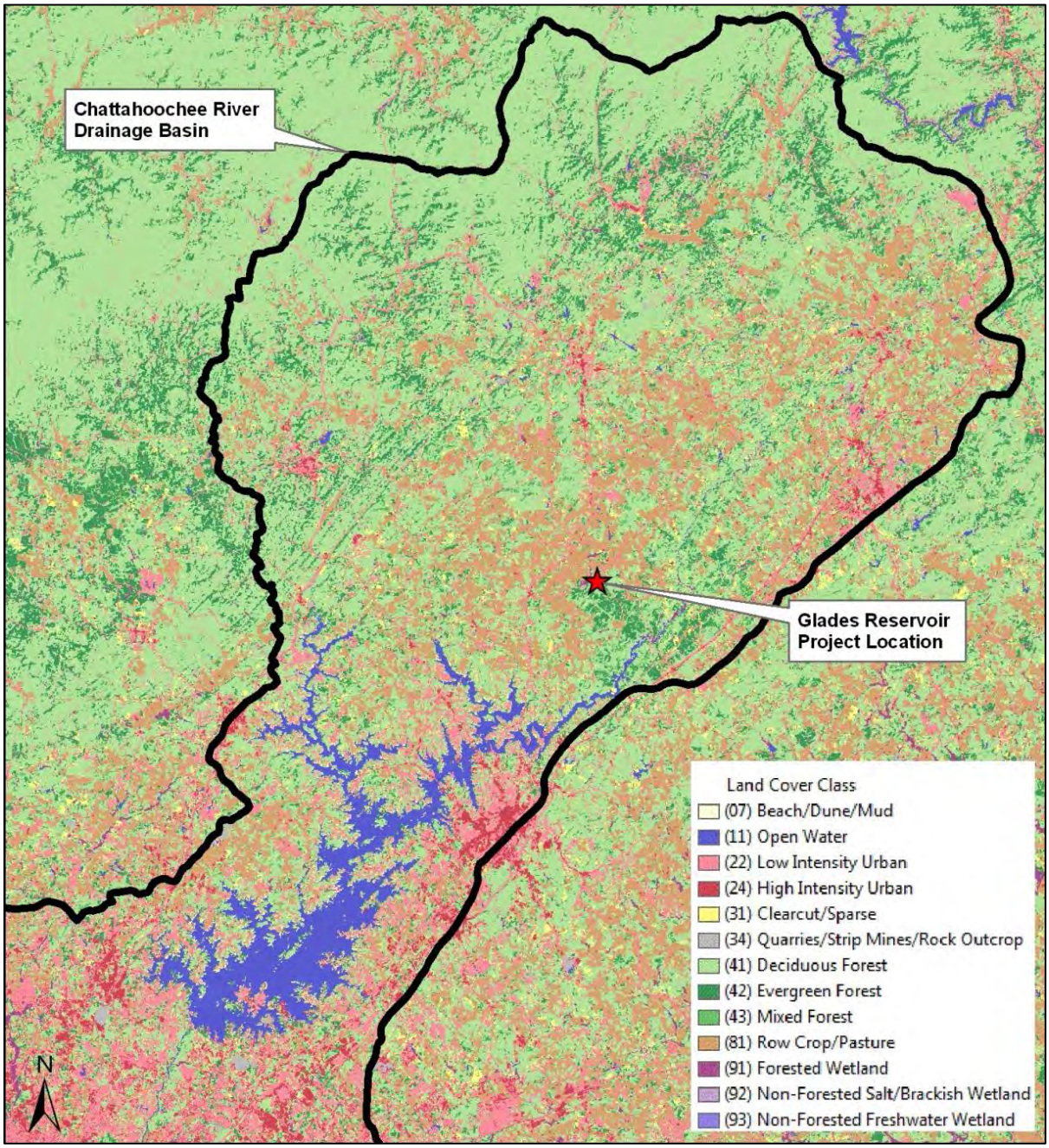
Barren lands include areas of exposed rock and soil from industrial uses, gravel pits, landfills, rock outcrops, and mountain tops.

The *forested* land use category includes deciduous forest (tree species that shed foliage in response to seasonal change), evergreen forest (tree species that maintain their foliage all year), and mixed forest. Forested land is the predominant land use in the ACF Basin and in Hall County, accounting for about 48 percent of land use.

Pasture and *row crops* is the second most predominant land use in the ACF Basin. This land use category includes row crops, orchards, vineyards, groves, horticultural businesses, pasture, and non-tilled grasses.

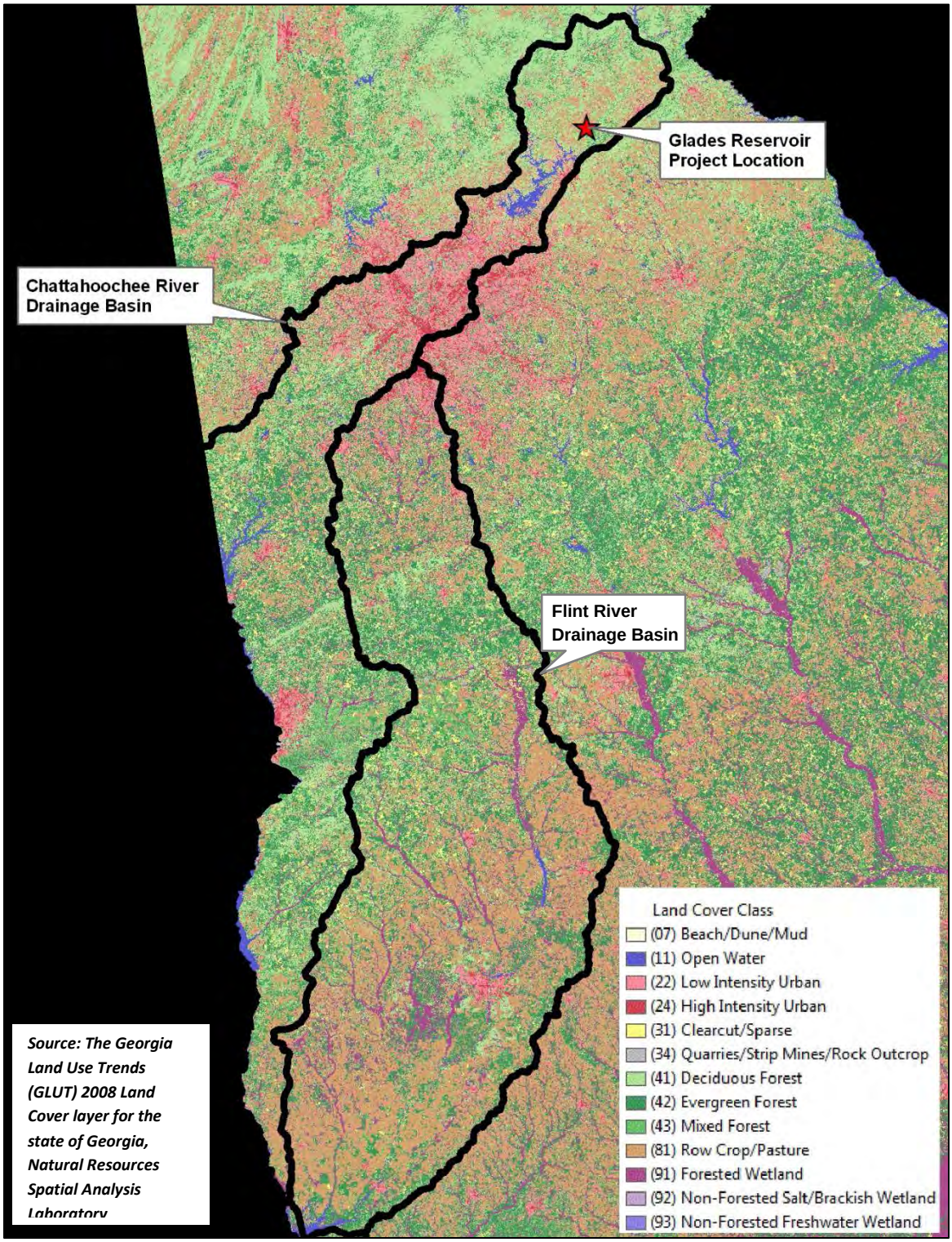
Wetlands include forested, salt marsh, brackish, and freshwater marsh wetlands.

Figure 2. Land Use Surrounding Proposed Project



Source: The 2008 Georgia Land Use Trends (GLUT) Land Cover layer for the state of Georgia, Natural Resources Spatial Analysis Laboratory (State of Georgia 2008).

Figure 3. Land Use Surrounding Proposed Project



Precipitation

The mean annual rainfall in the Chattahoochee River Basin generally ranges from above 55 in/yr to up to 66 in/yr in certain locations. **Figure 4** depicts the average monthly rainfall at NOAA Station COOP:093621 in Gainesville, Georgia to provide an indication of the seasonal variation of precipitation near the proposed project.

Figure 4. Average Monthly Precipitation, Gainesville, GA (1900 – 2012)

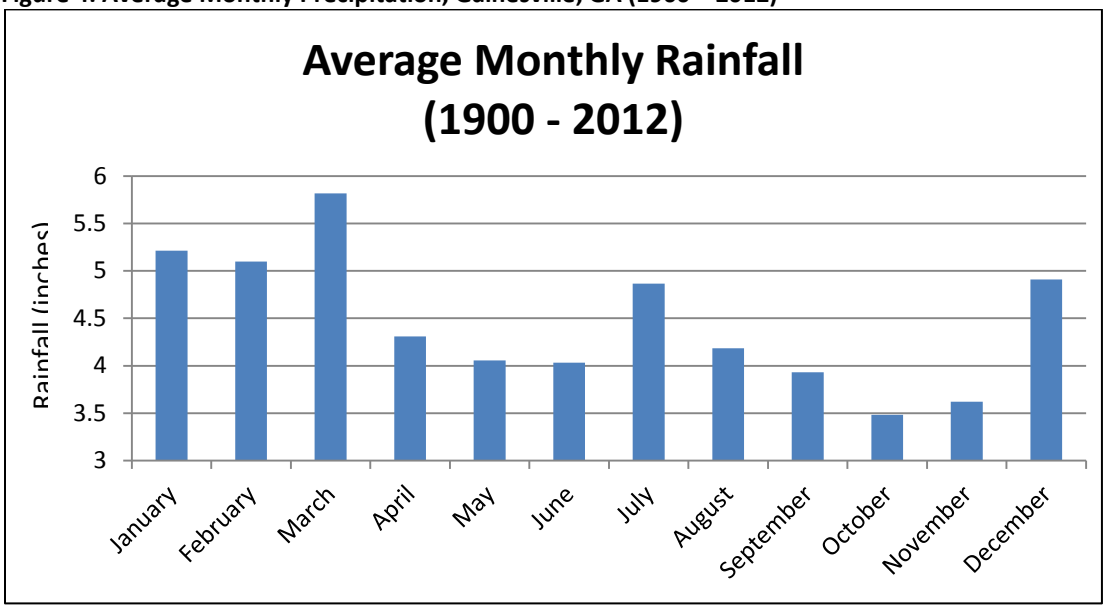
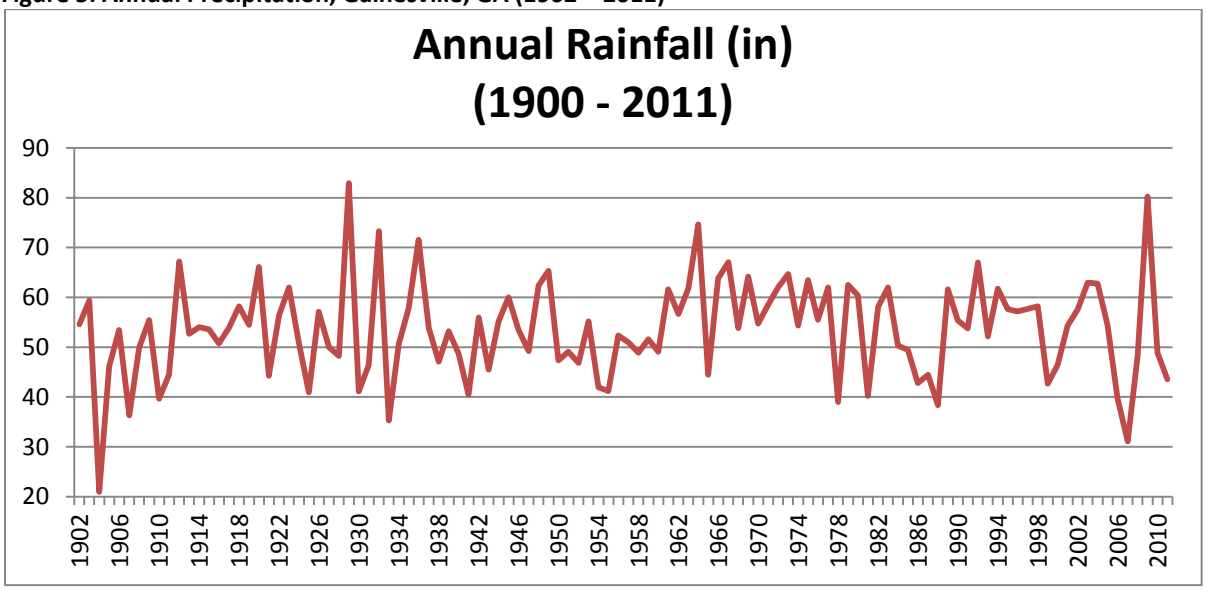


Figure 5 tracks the annual rainfall totals at the same station from 1902 – 2011. The highest recorded rainfall occurred in 1929, when this station received a total of 82.9 inches of rainfall, and the lowest recorded rainfall occurred in 1905 when this station received a total of 46.1 inches.

Figure 5. Annual Precipitation, Gainesville, GA (1902 – 2011)



Applicable Water Quality Standards

Georgia Rules and Regulations 391-3-6-.03: Water Use Classifications and Water Quality Standards stipulates designated uses for state waterbodies. These designated uses correspond to instream water quality standards.

Georgia water use designated uses include: Drinking Water Supplies, Recreation, Fishing, Wild River, Scenic River, and Coastal Fishing.

The Waterbody designated uses for the streams included in this affected environment analysis are indicated in **Table 2.**

Table 2. Waterbody Designated Use

River Segment	Designated Use
Chattahoochee River	
Upstream Jasus Creek	Recreation
Jasus Creek to GA HWY 17, Helen	Recreation
GA HWY 17, Helen to SR 255	Recreation
SR 255 to Soquee River	Recreation
Soquee River to Mossy Creek	Recreation
Mossy Creek to Lake Lanier	Recreation
Buford Dam to Dicks Creek	Drinking Water Supply, Recreation
Dicks Creek to Johns Creek	Drinking Water Supply, Recreation
Johns Creek to Morgan Falls Dam	Drinking Water Supply, Recreation
Morgan Falls Dam to Peachtree Creek	Drinking Water Supply, Recreation
Peachtree Creek to Utoy Creek	Fishing
Utoy Creek to Pea Creek	Fishing
Pea Creek to Wahoo Creek	Fishing
Wahoo Creek to Franklin	Fishing
West Point Dam to Johnson Island	Drinking Water Supply, Fishing
Oliver Dam to N. Highland Dam	Fishing
N. Highland Dam to Upatoi Creek	Fishing
Upatoi Creek to Chattahoochee/Stewart Co. Line	Fishing
Chattahoochee/Stewart Co. Line to Hannahatchee Creek	Fishing
Hannahatchee Creek to Hatchechubbee Creek	Fishing
Downstream W.F. George Dam	Fishing
Downstream Fort Gaines to Lake Andrews	Fishing
Lake Andrews Lock & Dam to US Hwy 84	Fishing
US Hwy 84 to Lake Seminole	Recreation
Lake Lanier	
Lake Lanier	Recreation and Drinking Water
Flat Creek	
Headwaters to Chattahoochee River	Fishing

The Georgia Water Quality Standards define the above designated uses as follows.

- Drinking Water Supply - "Those waters approved as a source for public drinking water systems permitted or to be permitted by the Environmental Protection Division. Waters

classified for drinking water supplies will also support the fishing use and any other use requiring water of a lower quality."

- Recreation - "general recreational activities such as water skiing, boating, and swimming, or for any other use requiring water of a lower quality, such as recreational fishing."
- Fishing – "Propagation of Fish, Shellfish, Game and Other Aquatic Life; secondary contact recreation in and on the water; or for any other use requiring water of a lower quality"

Water quality standards for Georgia water bodies based on their designated use are included in **Table 3**. Waterbodies that do not meet these criteria are identified by states as impaired under section 305(b) of the Water Pollution Act of 1972 as amended and by USEPA under section 303(d) of the Water Pollution Act of 1972 as amended.

In addition to standard water quality guidelines, both Alabama and Georgia have also developed site-specific criteria. These requirements include chlorophyll-a, total phosphorus, total nitrogen and additional dissolved oxygen requirements. **Table 4** details the site-specific criteria for waterbodies in the ACF Basin for Georgia and Alabama.

Table 3 - Georgia Water Quality Standards

Fecal Coliform Bacteria	Dissolved Oxygen	pH	Temperature	
Drinking Water Supply (not treated drinking water)				
May–Oct: Not to exceed 200 colonies/100 mL as geometric mean	Designated Trout Streams: 6 mg/L daily average, and no less than 5 mg/L at all times	6.0 - 8.5	< 90 °F	No increase >5°F above intake temperature. For Estuarine waters, no increase >1.5°F
Nov–April: Not to exceed 1,000/100mL as geometric mean, and not to exceed 4,000 colonies/100 mL for any sample	For Supporting Warm Water Species of Fish: 5 mg/L daily average, and no less than 4 mg/L at all times			Primary Trout or Smallmouth Bass Waters: no elevation allowed Secondary Trout Waters: no increase >2°F
Recreation				
Coastal waters: Not to exceed 100 colonies/100 mL	Designated Trout Streams: 6 mg/L daily average, and no less than 5 mg/L at all times	6.0 - 8.5	< 90 °F	No increase >5°F above intake temperature. For Estuarine waters, no increase >1.5°F
Other: Not to exceed 200 colonies/100 mL	For Supporting Warm Water Species of Fish: 5 mg/L daily average, and no less than 4 mg/L at all times			Primary Trout or Smallmouth Bass Waters: no elevation allowed Secondary Trout Waters: no increase >2°F
Fishing				
May–Oct: not to exceed 200 colonies/100 mL as geometric mean	Designated Trout Streams: 6 mg/L daily average, and no less than 5 mg/L at all times	6.0 - 8.5	< 90 °F	No increase >5°F above intake temperature. For Estuarine waters, no increase >1.5°F
Nov–April: Not to exceed 1,000/100mL as geometric mean, and not to exceed 4,000 colonies/100 mL for any sample	For Supporting Warm Water Species of Fish: 5 mg/L daily average, and no less than 4 mg/L at all times			Primary Trout or Smallmouth Bass Waters: no elevation allowed Secondary Trout Waters: no increase >2°F

Table 4 - Site-specific Standards in Georgia and Alabama in the ACF Basin

State	Waterbody Name	Chlorophyll *a*	Other
Proposed Glades Reservoir Impact Area			
Georgia	Lake Sidney Lanier Tributaries		Annual total phosphorus loading: Not to exceed 178,000 lbs at the Chattahoochee River at Belton Bridge Road, 118,000 lbs at the Chestatee River at GA Hwy 400, and 14,400 lbs at Flat Creek at McEver Road
Georgia	Lake Sidney Lanier	April – October: average of monthly samples not to exceed 5 µg/L upstream of Buford Dam forebay, 6 µg/L upstream from Flowery Branch confluence, 7 µg/L at Browns Bridge Rd, 10 µg/L at Bolling Bridge on the Chestatee River, and 10 µg/L at Lanier Bridge on the Chattahoochee River more than once in five years	pH: 6.0 – 9.5
			Total nitrogen: Not to exceed 4 mg/L as nitrogen in the photic zone
			Phosphorus: total lake loading not to exceed 0.25 lb/ac-ft of lake volume per volume/year
			Fecal coliform: Apply "Recreation" criteria (see Table 3)
			Dissolved oxygen: 5.0 mg/L daily average, and no less than 4.0 mg/L at all times
			Termperature: Apply "Recreation" criteria (see Table 3)
Remaining ACF Basin			
Georgia	West Point Lake Tributaries		Annual total phosphorus loading: Not to exceed 11,000 lbs at Yellow Jacket Creek at Hammet Road, 14,000 lbs at New River at Hwy 100, and 1,400,000 lbs at Chattahoochee River at U.S. 27
Georgia/ Alabama	West Point Lake	April - October: average of monthly samples not to exceed 24 µg/L at the LaGrange Water Intake and 22 µg/L upstream from Dam in the Forebay more than once in five years	pH: 6.0 - 9.5
			Total nitrogen: Not to exceed 4 mg/L as nitrogen in the photic zone
			Phosphorus: Total lake loading not to exceed 2.4 lb/acre-foot of lake volume per year
			Fecal coliform: Apply "Fishing" criterion from US 27 at Franklin to New River, and "Recreation" criterion from New River to West Point Dam (see Table 3)
			Dissolved oxygen: 5.0 mg/L daily average, and no less than 4.0 mg/L at all times
			Temperature: Apply "Recreation" criteria (see Table 3)
Georgia	Walter F. George Lake Tributaries		Annual total phosphorus loading: monitored at Chattahoochee River at Hwy 39, and not to exceed 2,000,000 lb
Georgia/ Alabama	Walter F. George Lake	April – October: average of monthly samples not to exceed 18 µg/L at mid-river at U.S. Hwy 82 or 15 µg/L at mid-river in the dam forebay more than once in five years	pH: 6.0 - 9.5
			Total nitrogen: Not to exceed 3 mg/L as nitrogen in the photic zone
			Phosphorus: Total lake loading not to exceed 2.4 lb/acre-foot of lake volume per year
			Fecal coliform: Apply "Fishing" criterion from GA Hwy 39 to Cowikee Creek, and "Recreation" criterion from Cowikee Creek to Walter F. George Dam (see Table 3)
			Dissolved oxygen: No less than 5.0 mg/L daily average, and no less than 4.0 mg/L at all times
			Temperature: Apply "Recreation" criteria (see Table 3)

Potentially Affected Waterbodies

For the purpose of this EIS, the potentially affected water bodies will include the Chattahoochee River, Flat Creek, and Lake Lanier. Each water body is described in more detail below.

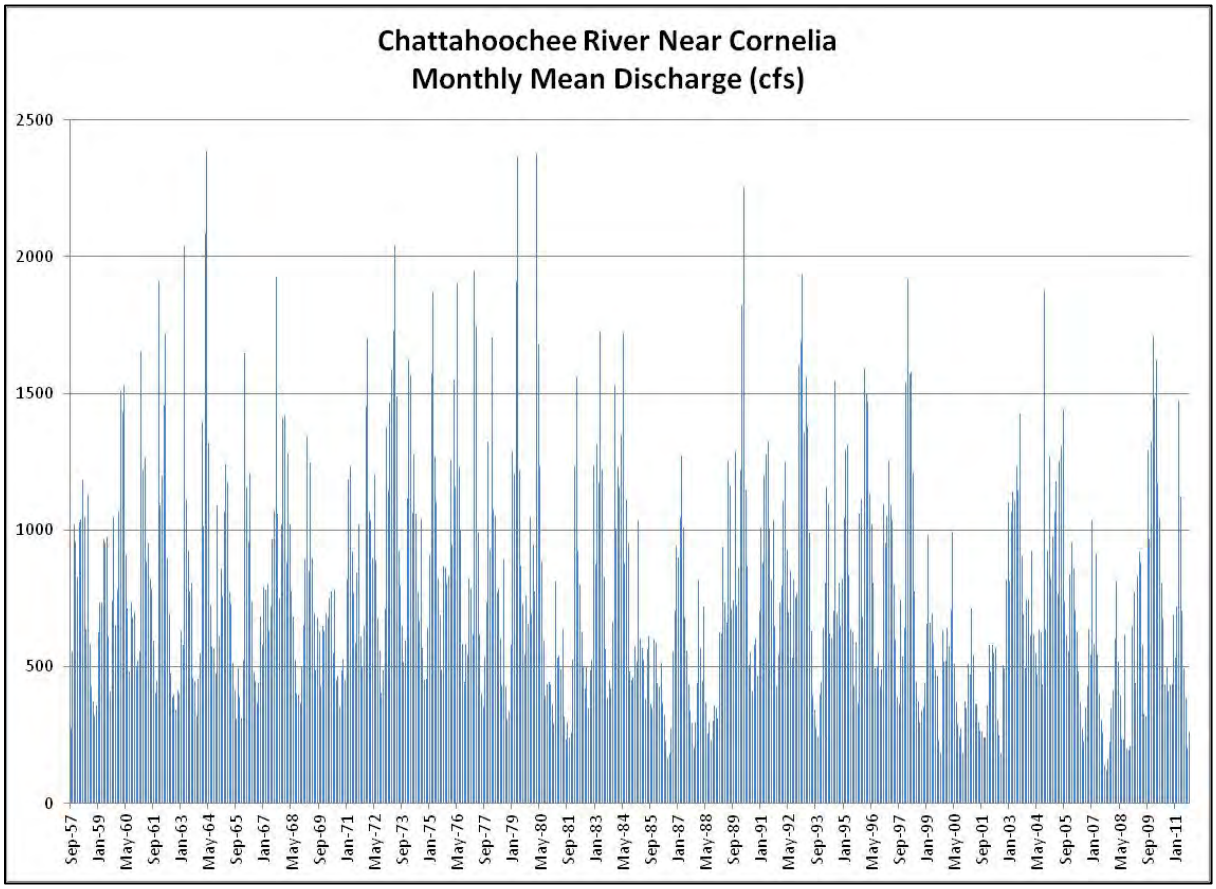
Chattahoochee River

The Blue Ridge Mountains in north Georgia contain the headwaters for the Chattahoochee River. The River begins in north east Georgia, near the westernmost tip of South Carolina, and extends over 430 miles across the state where it joins with the Flint River at the southwest corner of Georgia and becomes the Apalachicola River.

The Chattahoochee River is free-flowing only in the headwaters upstream of Lake Lanier, the remainder of the River is controlled by dams, that provide for navigational use of the river, release water for the production of hydroelectric power generation, temporary storage of water for flood damage reduction, and other purposes.

The capacity of the Chattahoochee River within its banks varies along the river's length. The capacity is about 10,000 cfs between Lake Lanier and Norcross, about 18,000 cfs from Atlanta to Whitesburg, and about 47,500 cfs near West Point and Columbus (USACE, Mobile District 1997).. The highest monthly average flows occur in the late winter/early spring months of February to April, which is typically the rainy season. Through late spring and summer, lower precipitation and high evapotranspiration combine to reduce river flows. The lowest average monthly flows typically occur at the end of the summer in September. The monthly Chattahoochee River flow near the proposed pump station location is included in **Figure 6**.

Figure 6 Average Monthly Flow on the Chattahoochee near Proposed Water Intake at Duncam Bridge Road



Source: USGS 1201030102 – Chattahoochee River at Duncan Bridge Road near Cornelia, GA

While the Chattahoochee River serves as a major drinking water source for Georgia, there are no direct withdrawals from the Chattahoochee within Hall County above Lake Lanier. Excerpts from Georgia Environmental Protection Division's (EPD) Non - Farm Surface Water Withdrawal Permit List (Revised April 2012) are included in **Appendix A** for reference, which details the extent of other withdrawals on the Chattahoochee downstream of Lake Lanier. Additionally, permitted NPDES Discharges within Hall County are included in **Appendix B.**

Water quality data are available at various USGS Gage locations along the Northern Chattahoochee River, see **Figure 7** for gage locations and **Figure 8** for a chart of available data at each location.

Figure 7 – USGS Gage Locations on the Northern Chattahoochee River

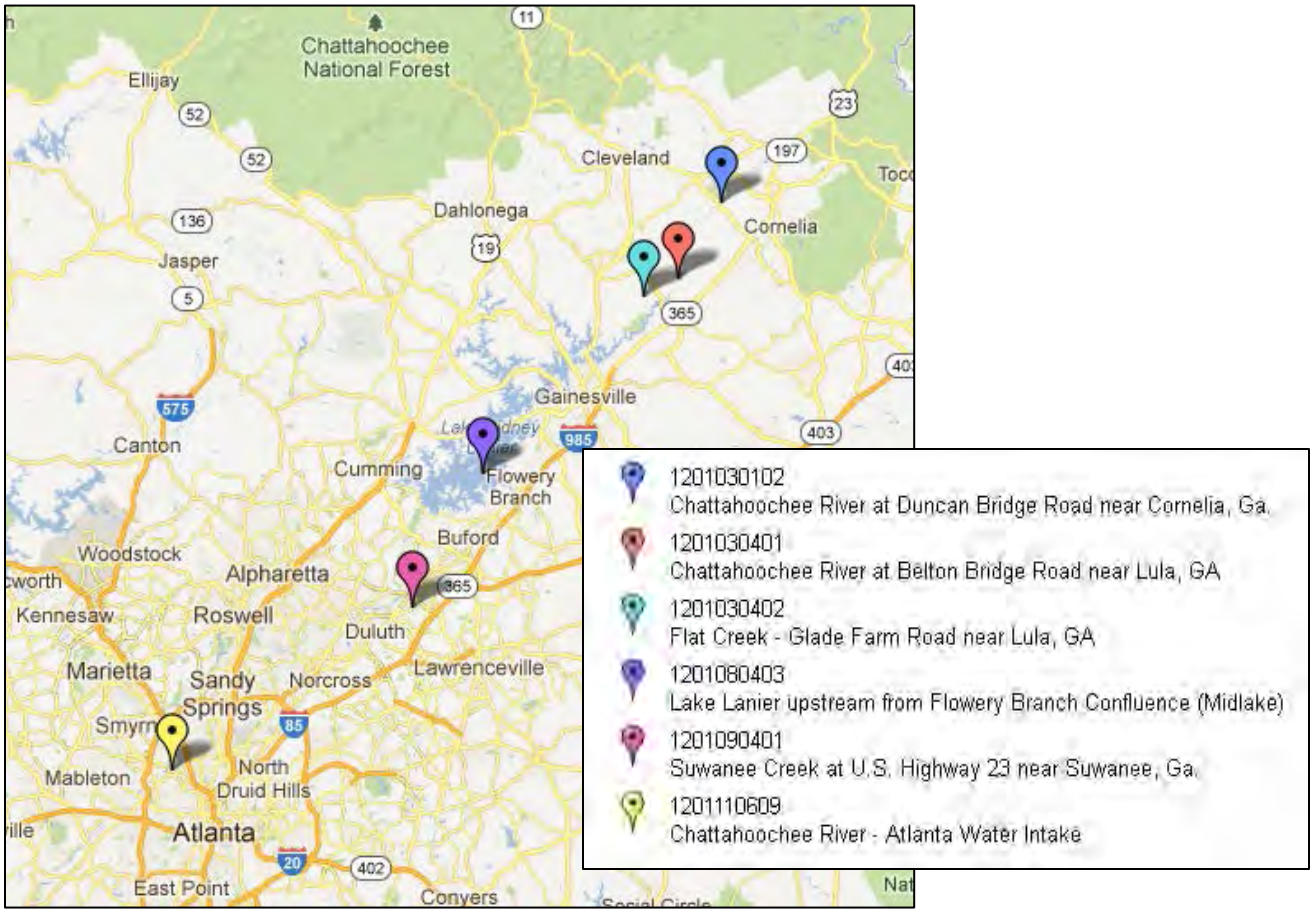
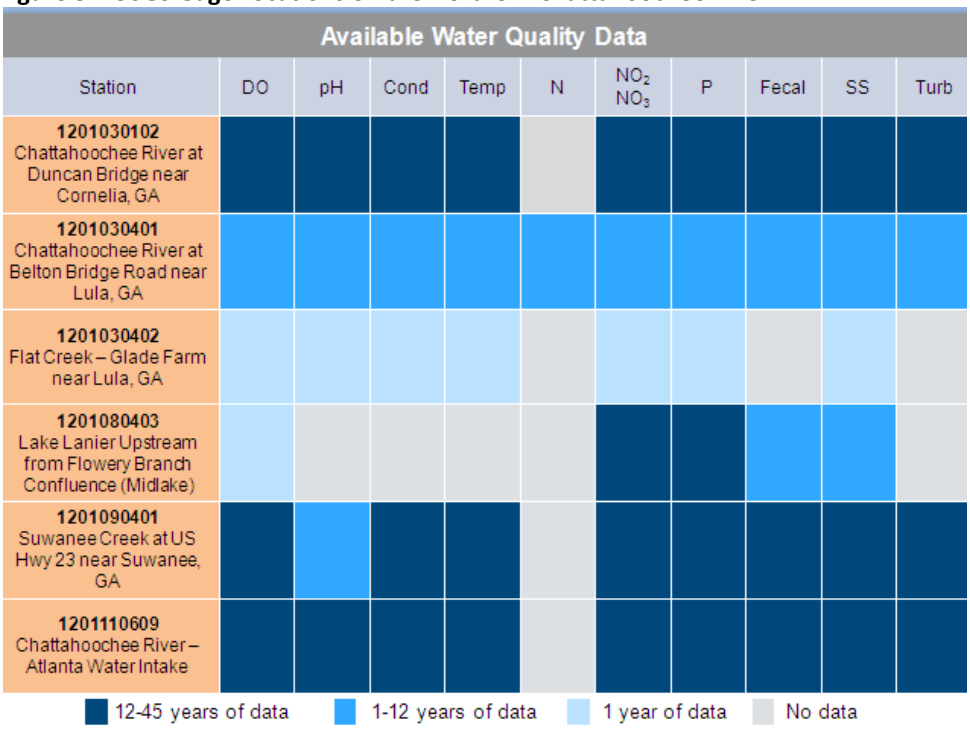
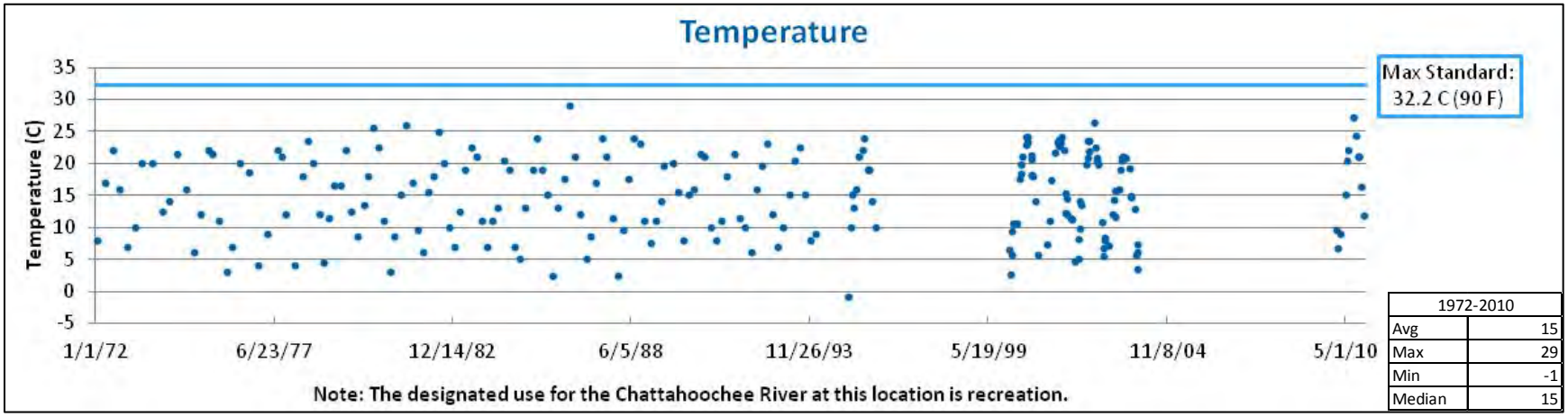


Figure 8 – USGS Gage Locations on the Northern Chattahoochee River



Measured levels for Temperature, Dissolved Oxygen, Phosphorus, Suspended Solids, and Turbidity are shown in **Figures 9-13**. Where applicable Water Quality Standards exist, these standards are also plotted for comparison to the measured results.

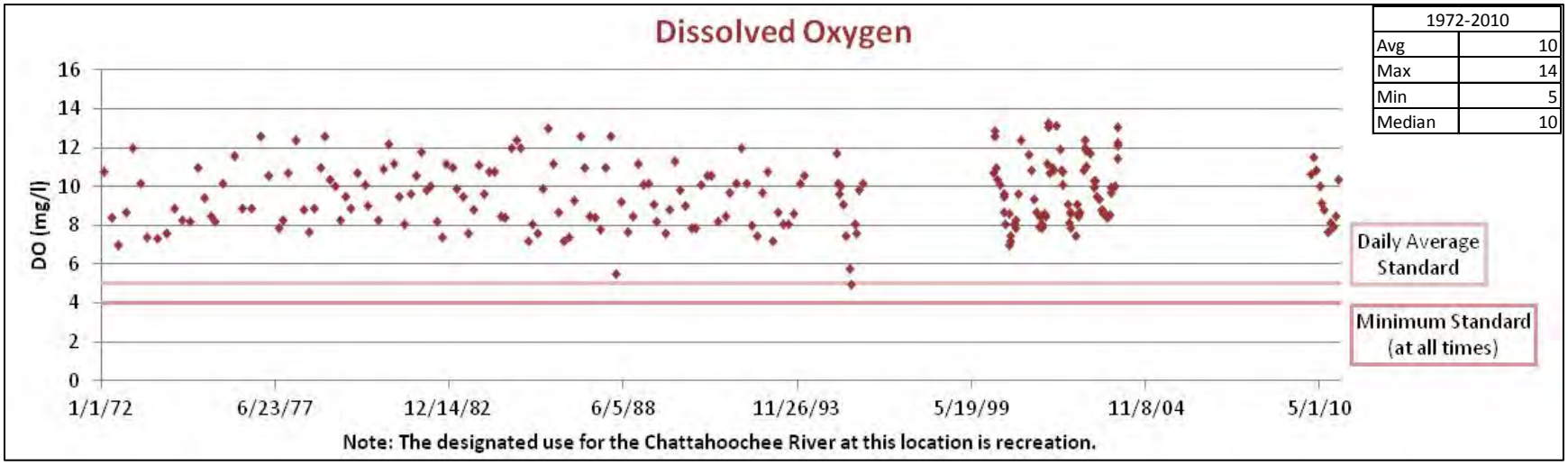
Figure 9 - Temperature on the Chattahoochee River at Duncan Bridge Road near Cornelia, GA



1972-2010	
Avg	15
Max	29
Min	-1
Median	15

Source: 1201030102 – Chattahoochee River at Duncan Bridge Road near Cornelia, GA

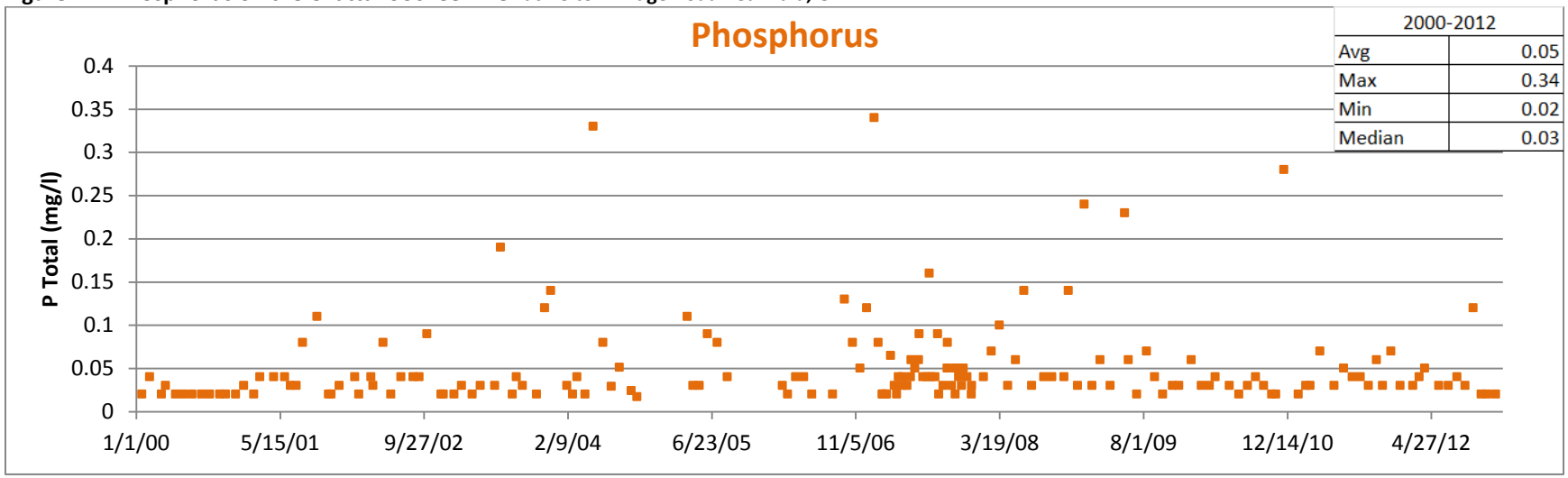
Figure 10 - Dissolved Oxygen on the Chattahoochee River at Duncan Bridge Road near Cornelia, GA



1972-2010	
Avg	10
Max	14
Min	5
Median	10

Source: 1201030102 – Chattahoochee River at Duncan Bridge Road near Cornelia, GA

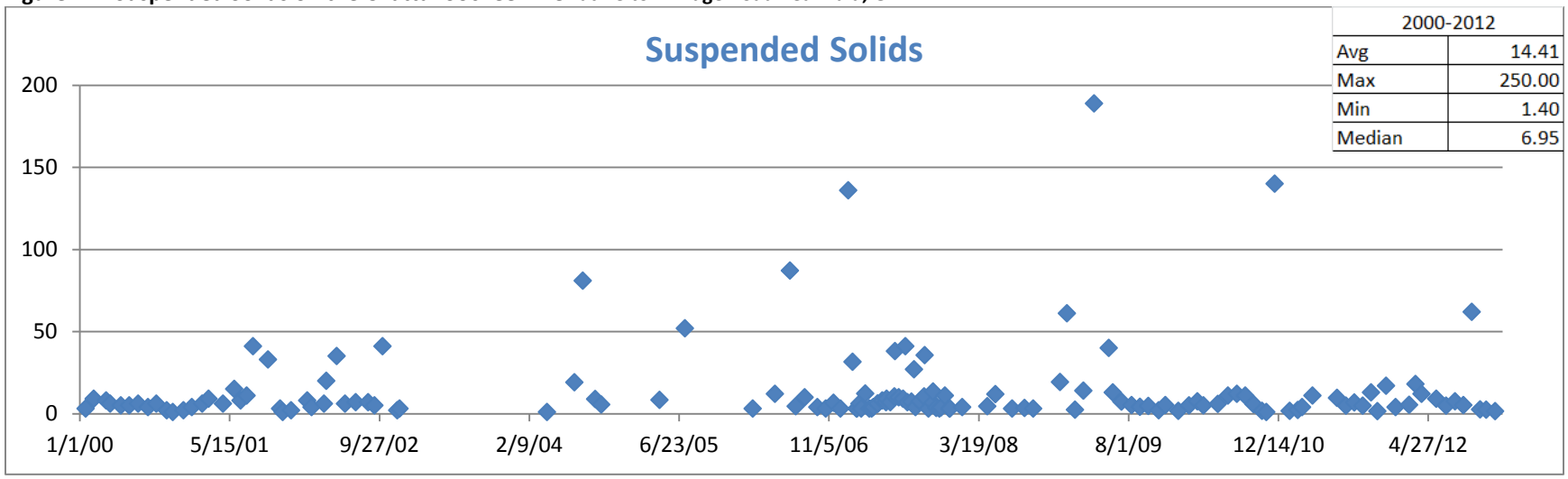
Figure 11 - Phosphorus on the Chattahoochee River at Belton Bridge Road near Lula, GA



2000-2012	
Avg	0.05
Max	0.34
Min	0.02
Median	0.03

Source: 1201030401 – Chattahoochee River at Belton Bridge Road near Lula, GA

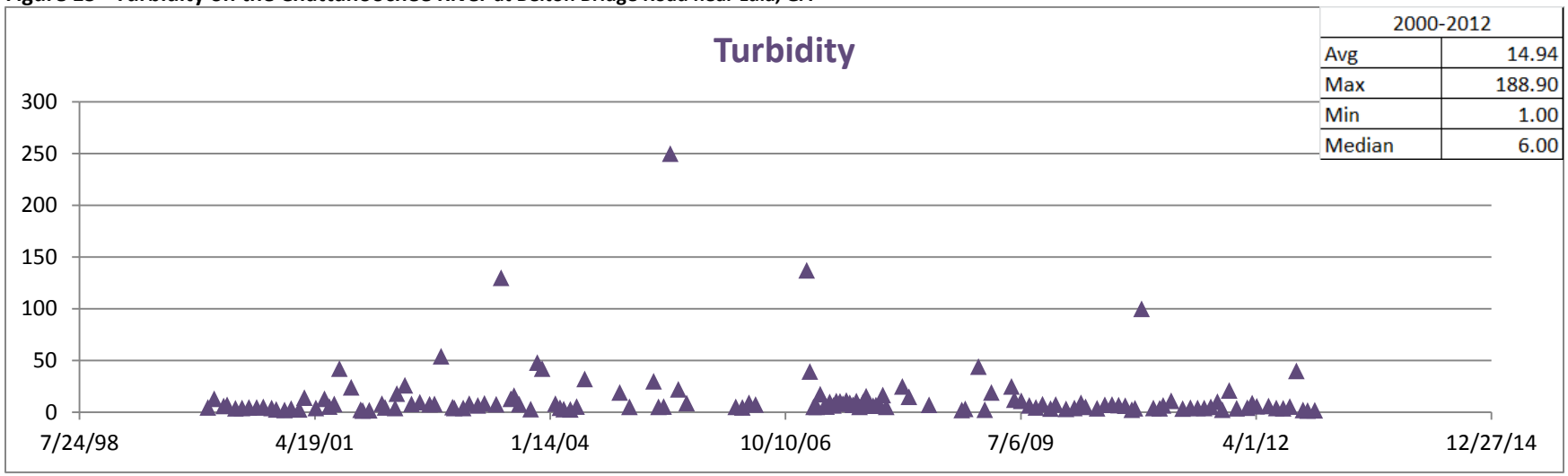
Figure 12 - Suspended Solids on the Chattahoochee River at Belton Bridge Road near Lula, GA



2000-2012	
Avg	14.41
Max	250.00
Min	1.40
Median	6.95

Source: 1201030401 – Chattahoochee River at Belton Bridge Road near Lula, GA

Figure 13 - Turbidity on the Chattahoochee River at Belton Bridge Road near Lula, GA



	2000-2012
Avg	14.94
Max	188.90
Min	1.00
Median	6.00

Source: 1201030401 – Chattahoochee River at Belton Bridge Road near Lula, GA

Based on the failure of streams to meet their specified designated uses, 172 miles of stream segments in the upper Chattahoochee Basin (upstream of Lake Lanier) have been included on the 305(b)/303(d) list as impaired. Thirty-two (32) of these miles are located on the main stem, while the remainder are small headwater tributaries. Total Maximum Daily Load Assessments (TMDLs) must be developed for all impaired waterbodies. TMDLs identify sources of impairment, the necessary reductions to the sources, and methods to implement the reductions. A summary of published 2012 303(d)/305(b) listings and the associated TMDL status is included in **Table 5** for all Upper Chattahoochee Basin Tributaries. These listed streams are also mapped in **Figure 14**. A comprehensive list of Impaired waters for the ACF basin can be found in the **Appendix C**.

Table 5 - Impaired waters - Chattahoochee River and Tributaries, upstream of Lake Lanier

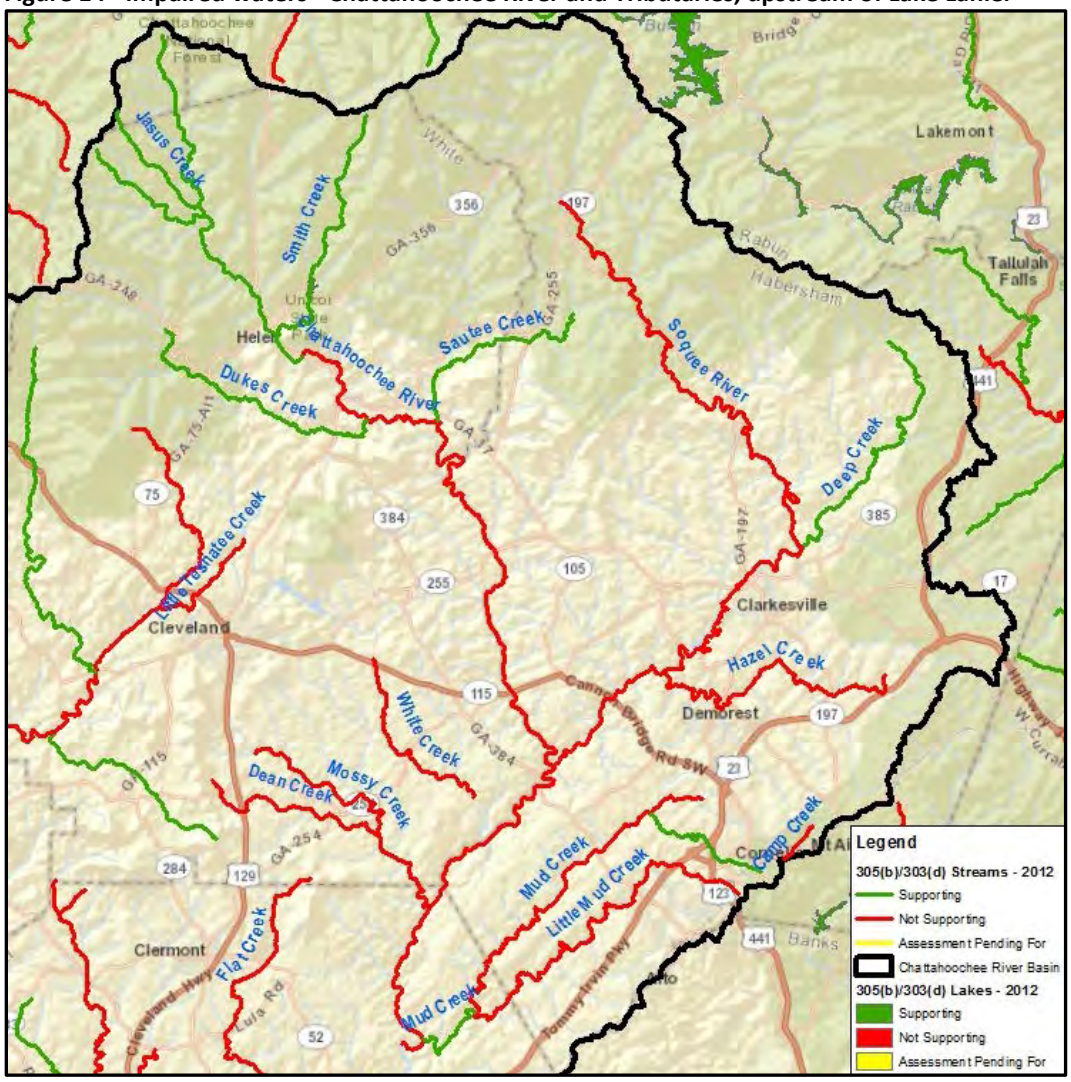
Location	County	Criterion Violated	Potential Causes	Extent	TMDL Status
Balus Creek					
Gainesville	Hall County	Fecal coliform	Urban Runoff	3 miles	TMDL completed FC 2003.
Big Creek					
Hall County	Hall County	Fecal coliform	Nonpoint	2 miles	TMDL completed FC 1998.
Camp Creek					
North Tributary to Wells Pond Tributary	Habersham County	1,1,2 - Trichloroethane	Residual from Industrial Source	1 mile	Data from EPD's Hazardous Waste Branch. Facility under a corrective action plan.
Chattahoochee River					
Ga. Hwy. 17, Helen to SR255	White/ Habersham County	Fecal coliform, Biota impacted (fish community)	Urban Runoff	8 miles	TMDL completed FC 2003.
SR255 to Soquee River	White/ Habersham County	Fecal coliform	Nonpoint	11 miles	TMDL completed FC 1998.
Soquee River to Mossy Creek	Habersham/ White/ Hall County	Fecal coliform	Nonpoint	5 miles	TMDL completed TWR 2003. TMDL completed FC 2008.
Mossy Creek to Lake Lanier	Hall County	Fecal coliform	Nonpoint	8 miles	TMDL completed FC 2008. TMDL completed TWR 2003.
Dean Creek					
Headwaters to Mossy Creek	White County	Biota impacted (fish community)	Nonpoint	5 miles	TMDL completed Bio F 2008.
East Fork Little River					
Downstream Hwy 52 to Lake Lanier	Hall County	Fecal coliform	Nonpoint	6 miles	TMDL completed FC 2008.
Flat Creek					
Headwaters, Gainesville to Lake Lanier	Hall County	Fecal coliform, Biota impacted (fish community)	Urban Runoff	6 miles	TMDL completed FC 2003. TMDL completed Bio F 2008.
Flowery Branch					
Hall County	Hall County	Fecal coliform	Nonpoint	1 mile	TMDL completed FC 1998.
Hazel Creek					
Reservoir No. 12 to Law Creek	Habersham County	Biota impacted (fish community)	Nonpoint	4 miles	TMDL completed Bio F 2008.
Little Mud Creek					

Location	County	Criterion Violated	Potential Causes	Extent	TMDL Status
Headwaters to Mud Creek	Habersham/ Hall County	Fecal coliform	Nonpoint	11 miles	TMDL completed FC 2008.
Little Tesnatee Creek					
Freeman Creek to u/s Hwy. 129	White County	Biota impacted (fish community)	Nonpoint	3 miles	
Longwood Park Creek					
Gainesville	Hall County	Fecal coliform	Urban Runoff	1 mile	TMDL completed FC 1998.
Mossy Creek					
Totherow Rd. near Clermont to Chattahoochee River	White/ Hall County	Fecal coliform	Nonpoint	7 miles	TMDL completed FC 1998.
Mud Creek					
Headwaters to Little Mud Creek	Habersham/Hall County	Fecal coliform, Biota impacted (fish community)	Nonpoint	13 miles	TMDLs completed FC & Bio F 2008.
North Fork Balus Creek					
Gainesville	Hall County	Fecal coliform	Urban Runoff	2 miles	TMDL completed FC 2003.
Slaughterhouse Creek					
Gainesville	Hall County	Fecal coliform	Urban Runoff	1 mile	TMDL completed FC 1998.
Soquee River					
Goshen Creek to SR 17, Clarkesville	Habersham County	Biota impacted (fish community)	Nonpoint	29 miles	TMDL completed FC 2003.
SR17, Clarkesville to Chattahoochee River	Habersham County	Fecal coliform	Urban Runoff	6 miles	TMDL completed FC 2008.
South Fork Balus Creek					
Gainesville	Hall County	Fecal coliform	Urban Runoff	2 miles	TMDL completed FC 1998.
South Fork Limestone Creek/Limestone Creek					
Headwaters to Limestone Creek Arm of Lake Lanier	Hall County	Fecal coliform, Biota impacted (fish community)	Urban Runoff, Nonpoint	2 miles	TMDL completed FC 1998. TMDL completed Bio F 2008.
Tesnatee Creek					
U/S Hwy 129 to Town Creek, Cleveland	White County	Fecal coliform	Urban Runoff	5 miles	TMDL completed FC 2003.
Town Creek to Chestatee River	White/ Lumpkin County	Fecal coliform	Nonpoint	5 miles	TMDL completed FC 2003.
Tributary to Limestone Creek					
Breneau Lake to Limestone Creek	Hall County	Fecal coliform	Urban Runoff, Nonpoint	1 mile	TMDL completed Bio F 2008. TMDL completed FC 1998.
Tributary to West Fork Little River					
Headwaters to West Fork Little River in Clermont	Hall County	Fecal coliform	Nonpoint	1 mile	TMDL completed FC 1998.
Turner Creek					
Headwaters to	White County	Biota impacted (fish	Nonpoint	6 miles	TMDL completed Bio F

Location	County	Criterion Violated	Potential Causes	Extent	TMDL Status
Tesnatee Creek		community)			2008.
West Fork Little River					
Headwaters to above Lake Lanier	White/ Hall County	Fecal coliform	Nonpoint	11 miles	TMDL completed FC 1998.
White Creek					
Headwaters to Webster Lake, Cleveland	White County	Biota impacted (fish community & macroinvertibrates)	Nonpoint	6 miles	TMDL completed Bio M 2003. TMDL completed Bio(F) 2008.

[1] Based on Georgia's 2012 Integrated 305(b)/303(d) Report (Water Quality in Georgia 2010-2011). At the time of drafting this memo the draft 2014 list is available, however per discussion with EPD, the published 2012 was used for this evaluation.

Figure 14 - Impaired waters - Chattahoochee River and Tributaries, upstream of Lake Lanier



Additional details about the Completed TMDLs including percent reduction required in listed streams is included in **Table 6**. A comprehensive list of TMDLs completed for the ACF basin can be found in the **Appendix D**.

Table 6 - Completed TMDLs - Chattahoochee River basin, upstream of Lanier

Waterbody	Pollutant of Concern	Percent Reduction Required	TMDL Completed
Dean Creek	Sediment (biota impacted)	68.34%	January 2008
Hazel Creek	Sediment (biota impacted)	59.56%	January 2008
Mud Creek	Sediment (biota impacted)	55.46%	January 2008
White Creek	Sediment (biota impacted)	63.86%	January 2008
White Creek	Sediment	60%	February 2003
Hazel Creek	Sediment	75%	February 2003
Soquee River to Lake Lanier	Mercury	Loading must be less than 2.3 kg/yr (Lake Lanier headwater)	February 2003
Chattahoochee River (Soquee River to Mossy Creek)	Fecal coliform	96%	November 2008
Chattahoochee River (Mossy Creek to Lake Lanier)	Fecal coliform	89%	November 2008
Little Mud Creek	Fecal coliform	58%	November 2008
Mud Creek	Fecal coliform	58%	November 2008
Soquee River	Fecal coliform	77%	November 2008

Flat Creek

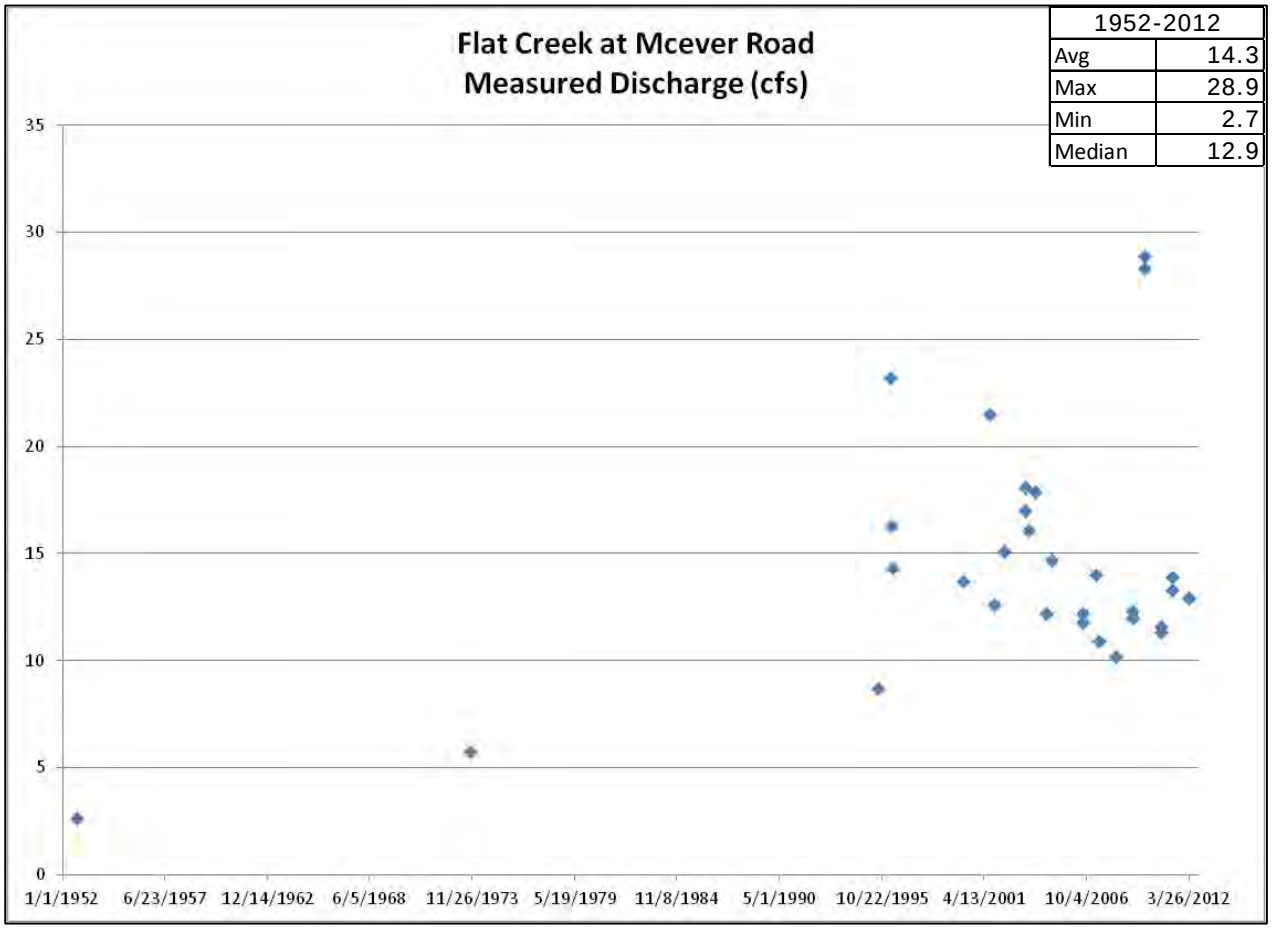
Flat Creek is a tributary to Lake Sidney Lanier, and is the proposed location for the Glades Reservoir. Flat Creek has a drainage basin of approximately 18 square miles, comprises around 9 miles of stream from its headwaters to its confluence with Lake Lanier. The Flat Creek basin is nearly 54 percent forested, and has over 33 percent agricultural use. Urban land use makes up less than nine (9) percent of the watershed. There are currently no permitted surface water withdrawals on Flat Creek.

The drainage area for the proposed Glades Reservoir is estimated to be 17.6 square miles. The proposed dam would impound an approximately 850-acre reservoir at a normal pool elevation of 1180 feet mean sea level (MSL) and provide 11.7 billion gallons of water storage capacity.

Very limited USGS gage data are available for Flat Creek. The only historical flow records were USGS measured flows at Flat Creek at McEver Road near Gainesville, but these records are inconsistent and sporadic from 1952 to 2012 (see **Figure 15**).

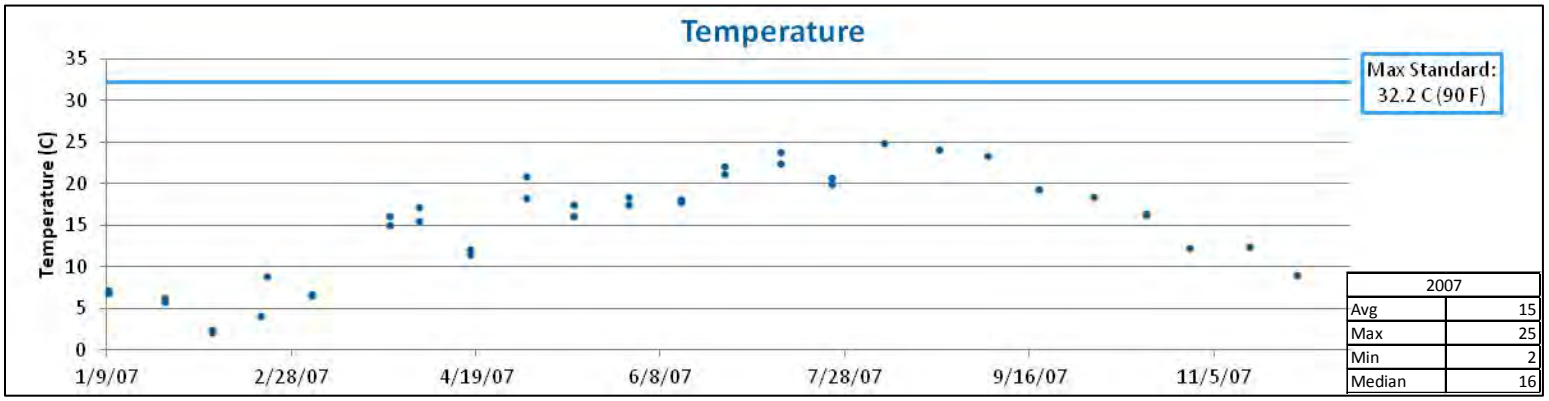
Water Quality data are also limited for Flat Creek, but available Temperature and Dissolved Oxygen measurements have been plotted in **Figures 16** and **17**. These measured levels are plotted with the appropriate Georgia State Water Quality standard for comparison purposes.

Figure 15 - Flat Creek Discharge at McEver Road, near Gainesville, GA



Source: 2334140 – Flat Creek at McEver Road, near Gainesville, GA

Figure 16 - Temperature on Flat Creek - Glade Farm near Lula, GA

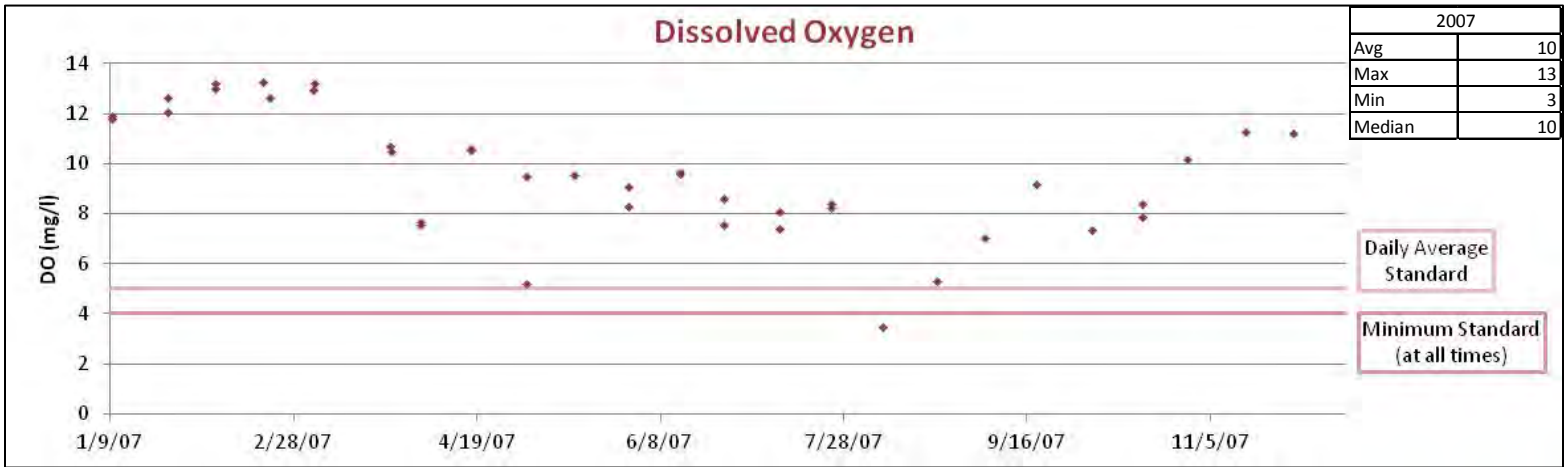


2007	
Avg	15
Max	25
Min	2
Median	16

Source: 1201030402 – Flat Creek – Glade Farm near Lula, GA

Note: 2007 data only due to availability

Figure 17 - Dissolved Oxygen on Flat Creek – Glade Farm near Lula, GA



2007	
Avg	10
Max	13
Min	3
Median	10

Source: 1201030402 – Flat Creek – Glade Farm near Lula, GA
Note: 2007 data only due to availability

Based on the failure Flat Creek to meet its designated use of fishing, six (6) miles of it is included on the 305(b)/303(d) list. A summary of 303(d)/305(b) listings and the associated TMDL status is included in **Table 7,** and additional details about the TMDLs are provided in **Table 8.**

Table 7- Impaired Water – Flat Creek

Location	County	Criterion Violated	Potential Causes	Extent	TMDL Status
Flat Creek					
Headwaters, Gainesville to Lake Lanier	Hall County	Fecal coliform, Biota impacted (fish community)	Urban Runoff	6 miles	TMDL completed FC 2003. TMDL completed Bio F 2008.

Table 8- Completed TMDLs – Flat Creek

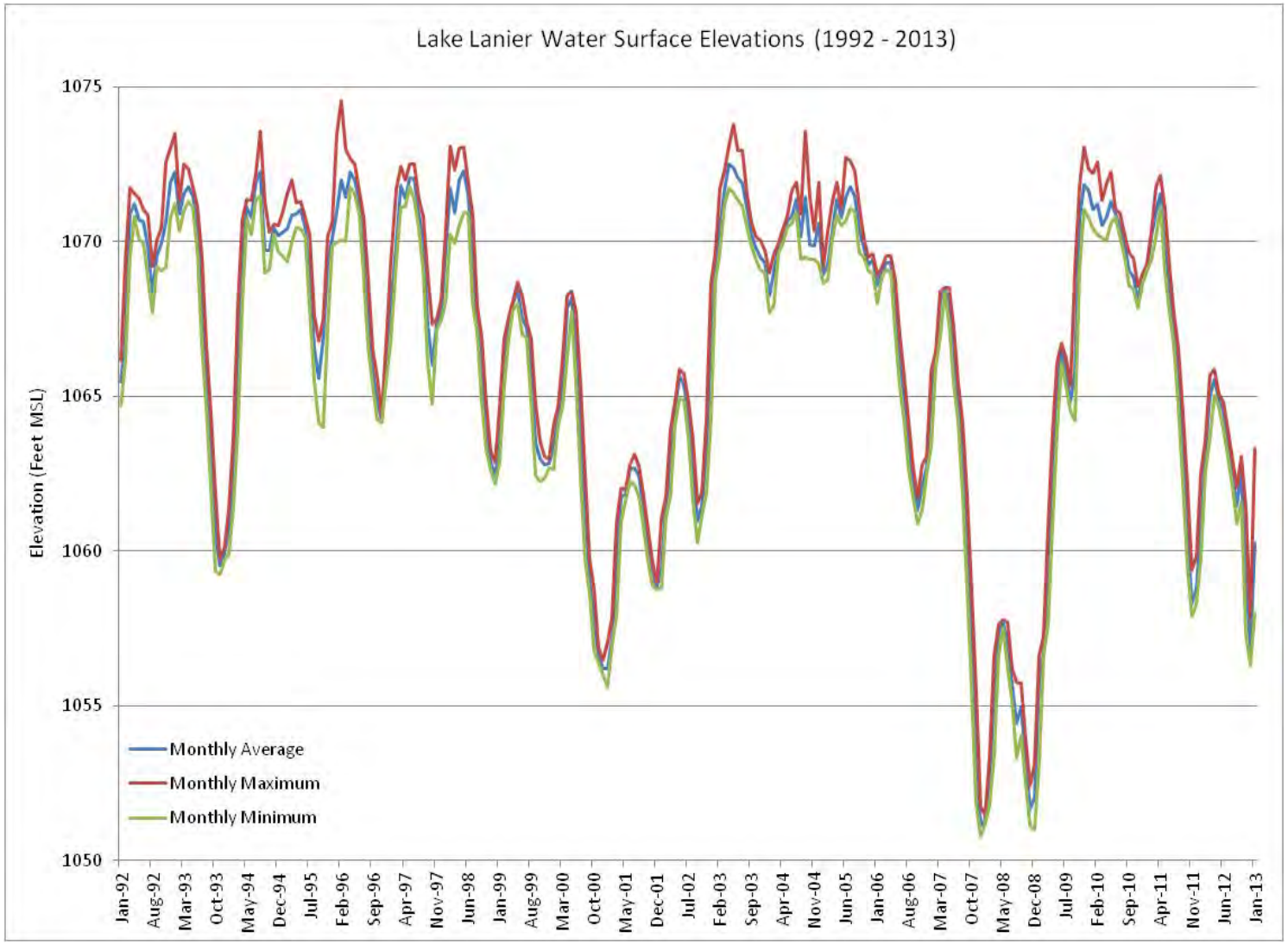
Segment	Pollutant of Concern	Percent Reduction Required	TMDL Completed
Headwaters, Gainesville to Lake Lanier, Hall Co. (6 miles)	Fecal coliform	83%	November 2008 (revised from 2003)
Headwaters near Clermont to Lake Lanier (Partially Supporting - 9 miles)	Sediment (biota impacted)	27.71%	January 2008
Headwaters, Gainesville to Lake Lanier (Not Supporting - 6 miles)	Sediment (biota impacted)	71.70%	January 2008

Lake Lanier

Lake Sidney Lanier is located on the Chattahoochee River approximately 48 mi northeast of Atlanta. Lanier is a man-made lake impounded by Buford Dam with a 59 square mile footprint. Lake Lanier waters are designated as Recreation waters in Georgia Environmental Protection Division's (EPD's) water quality classification system. Waters designated for recreation are used predominately for general recreational activities such as water skiing, boating, and swimming. Lake Lanier has the highest annual recreational visitation of all the Corps lakes in the ACF Basin, more than 7.5 million visitors per year, and its shoreline is highly developed.

The Lake Lanier has a maximum depth of 156 feet and a conservation pool of 1,070 - 1,071, however, the lake level fluctuates significantly over time, dependent primarily upon basin inflows but also influenced by project operations, evaporation, withdrawals, and return flows. Historic lake levels are presented in **Figure 18**. The record high elevation for the lake under flood conditions was elevation 1,077.2 ft MSL (April 1964) and the lowest level was 1,050.8 ft, experienced in December 2007 under extreme drought conditions.

Figure 18 – Lake Lanier Water Surface Elevations

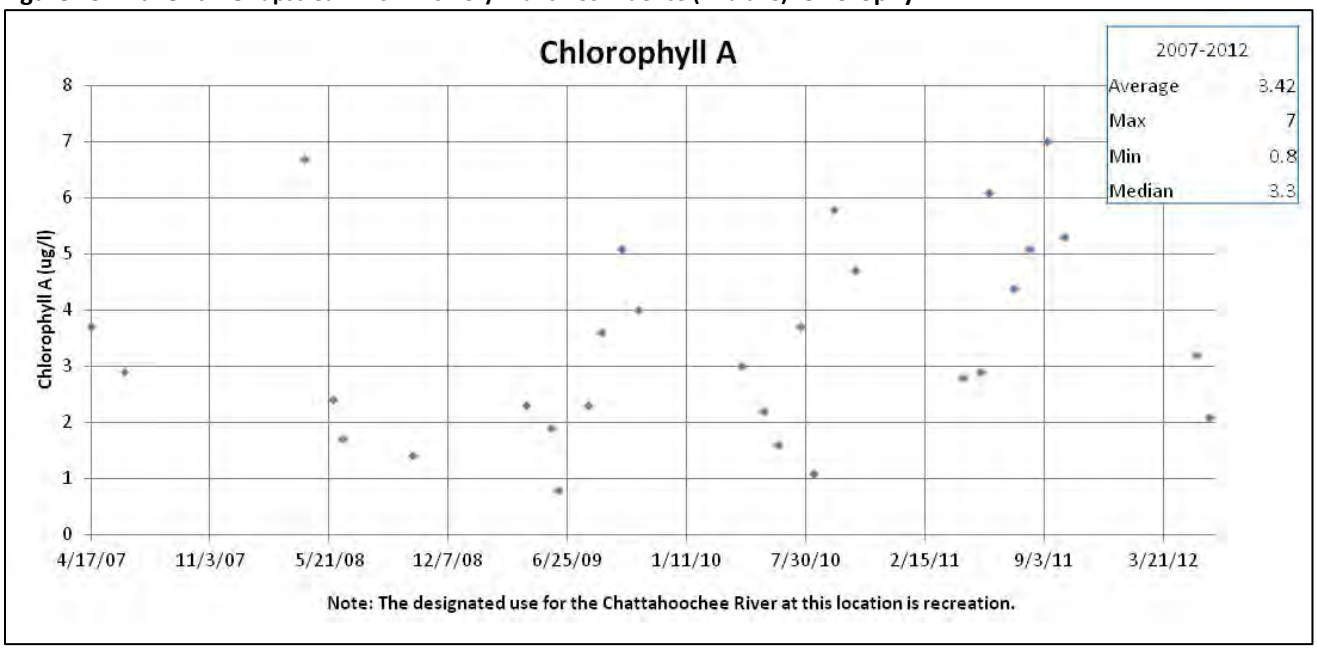


Source: Corps, Midnight Pools at Buford, http://water.sam.usace.army.mil/gage/bufelev.htm

There is currently a water quality impairment identified in Lake Lanier (at Browns Bridge Road SR 369) per Georgia 2012 303(d) list for chlorophyll *a*. Potential causes for this impairment is listed as nonpoint source and urban runoff. In 2006, Georgia EPD listed three segments of Lake Lanier on the State's 303(d) list for not meeting the chlorophyll *a* water quality standard. These included Lanier Bridge, Browns Bridge, and Flowery Branch. Water quality monitoring in Lake Sidney Lanier (Lake Lanier) by Georgia EPD has indicated exceedance of the water quality standard for chlorophyll *a* at times since 2001, and a chlorophyll *a* TMDL Study was completed in 2007.

Chlorophyll *a* level from Lake Lanier are shown in **Figure 19**. Per the Georgia site specific water quality standards, in the April through October timeframe, the threshold level is 5 µg/L, which can only be exceeded once in five years.

Figure 19 – Lake Lanier upstream from Flowery Branch Confluence (Midlake): Chlorophyll A



Source: EPD Station 1201080403 – Lake Lanier upstream from Flowery Branch Confluence (Midlake)

Due to levels of Chlorophyll *a* 5,952 acres of Lake Lanier have been included on the 305(b)/303(d) list as impaired. This segment is located in Forsyth and Hall County around Browns Bridge Road (SR 369). A Lake Lanier segments through Hall County, and their listing status, is shown in **Table 9 and Figure 20**.

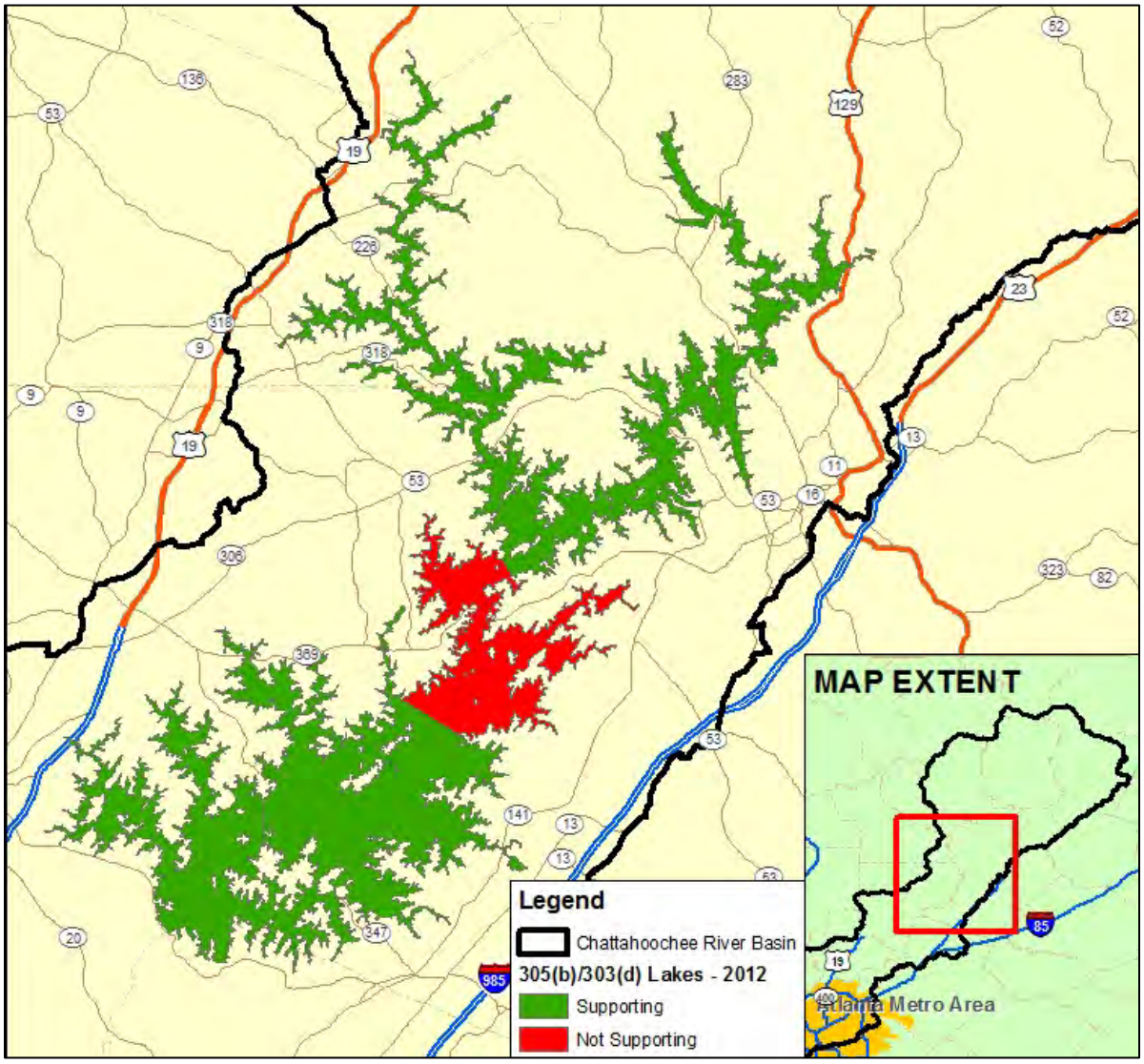
Table 9. 303(d)/305(b) Listing Status – Lake Lanier

Location	County	Designated Use Compliance Status	Criterion Violated[1]	Extent[2]
Little River Branch	Hall County	Supporting	N/A	2,044 acres
Bolling Bridge	Hall/Forsyth/Dawson County	Supporting	N/A	5,119 acres
Lanier Bridge Road (SR53)	Hall/Forsyth County	Supporting	N/A	4,928 acres
Dam Pool	Gwinnett/Hall/Forsyth County	Supporting	N/A	7,232 acres

Browns Bridge Road (SR 369)	Forsyth/Hall County	Not Supporting	Chlorophyll a	5,952 acres
Flowery Branch	Forsyth/Hall County	Supporting	N/A	11,584 acres

1. Dissolved oxygen, temperature and pH are within allowable limits at all locations within the Lake.
2. Extent is the acreage affected within that reach of the lake.
3. Source: Georgia EPD.

Figure 20 – Lake Lanier Chlorophyll A, 303(d) listing



For other water quality standards, including dissolved oxygen, total nitrogen, and pH, Lake Lanier is in compliance with Georgia's standards.

Lake Lanier has served as a primary water supply source and discharge location for much of the North Georgia Region, including the cities of Cumming and Gainesville, and Gwinnett and Hall County. Active surface water withdrawal permit for Lake Lanier are included in **Table 10** and permitted wastewater discharges are shown in **Table 11**.

Table 10 - Surface Water Withdrawal Permits in Hall County (April 2012)

River Basin	Permit Holder	Permit Number	Source Water	Permit Limit Max Day (MGD[1])	Permit Limit Monthly Average (MGD)
Chattahoochee	Buford, City of	069-1290-04	Lake Sidney Lanier	2.5	2
Chattahoochee	Gainesville, City of	069-1290-05	Lake Sidney Lanier	35	30
Chattahoochee	LLI Management Company, LLC	069-1205-01	Lake Sidney Lanier	0.6	0.6
Chattahoochee	LLI Management Company, LLC (Pineisle)	069-1205-02	Lake Sidney Lanier	0.6	0.6

1. MGD = Million Gallons per Day

Table 11 - Permitted Wastewater Discharges in Hall County

River Basin	Permit Holder	Plant Name	Permit Limit Monthly Average (MGD-MGD)
Chattahoochee	Flowery Branch, City of	Flowery Branch WPCP	2.05
Chattahoochee	Gainesville, City of	Flat Creek WRF	12
Chattahoochee	Gainesville, City of	Linwood WRF	0.6
Chattahoochee	Hall County Government	Lula WRF	0.375

References:

- Georgia Rules and Regulations 391-3-6-.03 Water Use Classifications and Water Quality Standards. Adopted by Board of Natural Resources March 23, 2011. Approved by US EPA March 15, 2012
- The Georgia Land Use Trends (GLUT) 2008 Land Cover layer for the state of Georgia
    - Originator: Natural Resources Spatial Analysis Laboratory
    - Publication_Date: 20100101
    - Publication_Time: Unknown
    - Title: Georgia Land Use Trends Land Cover of Georgia 2008
    - Geospatial_Data_Presentation_Form: raster digital data
    - Publication_Information:
    - Publication_Place: Athens, GA
    - Publisher: Natural Resources Spatial Analysis Laboratory, University of Georgia
    - Online_Linkage: http://narsal.uga.edu
    - NPDES Wastewater Discharge Permit List, GA EPD, 4/16/2008, http://www.gaepd.org/Files_XLS/regcomm/wpb/NPDESFacilityLocationActiveMay2008.xls
- List of Farm (Agricultural) Water Withdrawal Permits within the State of Georgia [Revised: 11 January 2012]
    - Farm Water Withdrawal Permit List (Excel Format) [Revised April 2012] http://www.gaepd.org/Files_XLS/regcomm/wpb/GAEPD_FarmWithdrawalPermitList_Jan2012.xls
    - Non - Farm Surface Water Withdrawal Permit List (Excel Format) [Revised April 2012] http://www.gaepd.org/Files_XLS/regcomm/wpb/GAEPD_NonFarm_SurfaceWithdrawalPermitList_March2011.xls
- Total Maximum Daily Load Evaluation For Twenty-Five Stream Segments in the Chattahoochee River Basin For Sediment (Biota Impacted). The Georgia Department of Natural Resources, January 2008 (http://www.gaepd.org/Files_PDF/techguide/wpb/TMDL/Chattahoochee/EPD_Final_Chattahoochee_BioSediment_TMDL_2008.pdf)
- TOTAL MAXIMUM DAILY LOAD (TMDL) For Sediment In the Upper Chattahoochee River Basin White Creek And Hazel Creek, February 2003. EPA Region 4 (http://www.gaepd.org/Files_PDF/techguide/wpb/TMDL/Chattahoochee/EPA_Chattahoochee_River_Basin_Sediment_TMDL.pdf)
- Total Maximum Daily Load Evaluation for Nine Stream Segments in the Chattahoochee River Basin for Fecal Coliform. The Georgia Department of Natural Resources, January 2008 (http://www.gaepd.org/Files_PDF/techguide/wpb/TMDL/Chattahoochee/EPD_Final_Chattahoochee_Fecal_TMDL_2008.pdf)

- Corps, Midnight Pools at Buford, http://water.sam.usace.army.mil/gage/bufelev.htm

Appendix A:
Permitted Surface Water Withdrawals on the Chattahoochee River

Permit Holder	Permit Number	County	Source Water	Permit Limit Max day (Millions of Gallons/Day)	Permit Limit Monthly Average (Millions of Gallons/Day)
Yellow Pine Energy Company	030-1295-04	Clay	Chattahoochee River	2.65	2.65
Cobb Co - Marietta Water Authority	033-1290-01	Cobb	Chattahoochee River	87.00	87.00
Georgia Power Co - Plant McDonough	033-1291-03	Cobb	Chattahoochee River	394.00	394.00
Georgia Power Co - Plant Yates	038-1291-02	Coweta	Chattahoochee River	720.00	700.00
Dekalb Co Public Works - Water & Sewer	044-1290-03	Dekalb	Chattahoochee River	140.00	140.00
Georgia Pacific Cedar Springs, LLC	049-1295-01	Early	Chattahoochee River	144.00	115.00
Homestead Energy Resources, LLC	049-1295-02	Early	Chattahoochee River	16,130.00	16,130.00
Longleaf Energy Associates, LLC	049-1295-03	Early	Chattahoochee River	27.00	25.00
Atlanta Athletic Club	060-1209-02	Fulton	Chattahoochee River	0.86	0.43
Atlanta, City of	060-1291-01	Fulton	Chattahoochee River	180.00	180.00
Atlanta-Fulton Co. Water Res. Commission	060-1207-02	Fulton	Chattahoochee River	90.00	90.00
Perimeter Terminal LLC	060-1290-08	Fulton	Chattahoochee River	0.25	0.25
Baldwin, City of	068-1201-04	Habersham	Chattahoochee River	4.00	3.00
Chat Valley Water Supply District	072-1291-04	Harris	Chattahoochee River	8.00	5.80
Georgia Power Co - Plant Wansley	074-1291-06	Heard	Chattahoochee River	116.00	116.00

Heard County Water Authority	074-1291-08	Heard	Chattahoochee River	0.55	0.55
Continental Carbon	106-1225-07	Muscogee	Chattahoochee River	0.90	0.66
Eagle & Phenix Hydroelectric Project, Inc.	106-1225-04	Muscogee	Chattahoochee River	1,694.00	1,694.00
Eagle & Phenix Mills, LLC	106-1293-07	Muscogee	Chattahoochee River	1.40	1.30
Fort Benning	026-1225-01	Muscogee	Chattahoochee River	12.00	10.00
Southern Power Co - Plant Franklin	106-1225-08	Muscogee	Chattahoochee River	31.50	31.50
West Point, City Of	141-1292-02	Troup	Chattahoochee River	2.10	1.80

Appendix B:
Permitted NPDES Discharges in Hall County

NPDES ID	Permit Name	Facility Type Desc	Location Address	City	County Name	Zip
GA0024198	CHATTAHOOCHEE BAY	PRIVATELY OWNED FACILITY	6568 LIGHTS FERRY ROAD	FLOWERY BRANCH	HALL	30542
GA0022471	CHATTAHOOCHEE COUNTRY CLUB	PRIVATELY OWNED FACILITY	3000 CLUB DRIVE	GAINESVILLE	HALL	30503
GA0049051	CINNAMON COVE CONDOMINIUMS	PRIVATELY OWNED FACILITY	6500 GAINES FERRY ROAD	FLOWERY BRANCH	HALL	30542
GAU010527	CRYSTAL FARMS INC.	PRIVATELY OWNED FACILITY	4900 WINDER HWY	FLOWERY BRANCH	HALL	30502
GA0023043	DIXIE MHP	PRIVATELY OWNED FACILITY	3605 TITSHAW DR.	GAINESVILLE	HALL	30504
GAU010432	DUTCH QUALITY HOUSE	PRIVATELY OWNED FACILITY	3456 OLD OAKWOOD RD.	OAKWOOD	HALL	30503
GAU020080	FIELDALE FARMS CORP. (LAS)	MUNICIPAL or WATER DISTRICT	5136 THOMPSON BRIDGE RD	BALDWIN	HALL	30511
GA0031933	FLOWERY BRANCH WPCP	MUNICIPAL or WATER DISTRICT	5572 ATLANTA HIGHWAY SOUTH	FLOWERY BRANCH	HALL	30542
GA0020168	GAINESVILLE (LINWOOD DRIVE)	MUNICIPAL or WATER DISTRICT	500 LINWOOD DR	GAINESVILLE	HALL	30503
GA0021156	GAINESVILLE FLAT CR WPCP	MUNICIPAL or WATER DISTRICT	2641 OLD FLOWERY BRANCH RD.	GAINESVILLE	HALL	30504
GAU010362	GLIDDEN COMPANY	PRIVATELY OWNED FACILITY	HALL COUNTY	OAKWOOD	HALL	30566
GA0027049	GLOVER & BAKER MHP	PRIVATELY OWNED FACILITY	3515 CASPER DRIVE	GAINESVILLE	HALL	30506
GA0046698	HANSON AGGREGATES SE, INC	PRIVATELY OWNED FACILITY	100 CRESCENT CENTER PKWY	GAINESVILLE	HALL	30501
GA0024015	HIGHLANDS MOBILE HOME VILLAGE	PRIVATELY OWNED FACILITY	2335 ATHENS HIGHWAY	GAINESVILLE	HALL	30501
GA0049891	HILLS AND PARKS, LLC	PRIVATELY OWNED FACILITY	3311 INDIAN TRAIL ROAD	GAINESVILLE	HALL	30501
GA0049387	LAFARGE AGGREG-FRIENDSHIP Q	PRIVATELY OWNED FACILITY	FRIENDSHIP QUARRY	BUFORD S	HALL	30518

GA0049891	LAKESIDE MOBILE HOME COMMUNITY	PRIVATELY OWNED FACILITY	3311 INDIAN TRAIL ROAD	GAINESVILLE	HALL	30501
GA0049115	LLI MGMNT CO -LK LANIER ISLAND	PRIVATELY OWNED FACILITY	RESORT - WPCP	LAKE LANIER ISLANDS	HALL	30518
GA0024767	LULA WPCP	MUNICIPAL or WATER DISTRICT	HALL COUNTY	LULA	HALL	30554
GA0034886	NORTH HALL HIGH SCHOOL	PRIVATELY OWNED FACILITY	MT. VERNON ROAD	GAINSVILLE	HALL	30505
GA0023469	SHADYGROVE MHP-FLOWERY BRANCH	PRIVATELY OWNED FACILITY	3545 WALLIS ROAD	FLOWERY BRANCH	HALL	30542
GAU030807	SPOUT SPRINGS REUSE FACILITY	PRIVATELY OWNED FACILITY	1950 SULLIVAN RD.	ATLANTA	HALL	30337
GA0046191	TERRELL A PHILYAW CO., INC	PRIVATELY OWNED FACILITY	P.O. BOX 1214	GAINESVILLE	HALL	30503
GA0032697	WAUKA MTN ELEM SCH	PRIVATELY OWNED FACILITY	GEORGIA HWY 11 AND 52	CLERMONT	HALL	30503
GA0027120	WHITE SULFUR ELEM. SCHOOL	PRIVATELY OWNED FACILITY	3255 MONTGOMERY DR.	GAINESVILLE	HALL	30501
GA0034908	WOODY ACRES MHP	PRIVATELY OWNED FACILITY	3540 GILLELAND EXTENSION	GAINESVILLE	HALL	30503
GAU010595	WRIGLEY JR. COMPANY	PRIVATELY OWNED FACILITY	P.O. BOX 4181	FLOWERY BRANCH	HALL	305424181

Appendix C:

Impaired mainstems, major tributaries, and lakes in the ACF Basin[1]

Reach Name	Reach Location	Violation	Potential Causes	TMDL Status
Upper Chattahoochee River to Whitesburg, GA				
Chattahoochee River	GA Hwy 17, Helen to SR 255	Fecal coliform, biota impacted (fish community)	Urban runoff/urban effects	Completed for fecal coliform in 2003
Chattahoochee River	SR 255 to Soquee River	Fecal coliform	Nonpoint/unknown sources	Completed for fecal coliform in 1998
Chattahoochee River	Soquee River to Mossy Creek	Fecal coliform	Nonpoint/unknown sources	Completed for TWR in 2003, for fecal coliform in 2008
Chattahoochee River[2]	Mossy Creek to Lake Lanier	Fecal coliform	Nonpoint/unknown sources	Completed for fecal coliform in 2008, for TWR in 2003
Chestatee River	Tate Creek to Tesnatee Creek	Fecal coliform	Nonpoint/unknown sources	Completed for fecal coliform in 1998
Chattahoochee River	Dicks Creek to Johns Creek	pH	Nonpoint/unknown source, urban runoff/urban effects	
Chattahoochee River	Johns Creek to Morgan Falls Dam	Fecal Coliform	Urban Runoff/Urban Effects	Completed for fecal coliform in 2008
Chattahoochee River	Morgan Falls Dam to Peachtree Creek	Fecal coliform, fish consumption (PCBs)	Urban runoff/urban effects	Completed for fecal coliform and fish consumption (PCBs) in 2003
Peachtree Creek	I-85 to Chattahoochee River, Atlanta	Fecal coliform	Urban runoff/urban effects, combined sewer overflow	Completed for fecal coliform in 2003
Chattahoochee River	Peachtree Creek to Utoy Creek	Fecal coliform, fish consumption (PCBs)	Combined sewer overflow, urban runoff/urban effects	Completed for temperature, fecal coliform, and fish consumption (PCBs) in 2003
Sweetwater Creek	U/S Pine Valley Rd to Noses Creek	Fecal coliform	Urban runoff/urban effects	Completed for fecal coliform in 2003
Sweetwater Creek	Noses Creek to Chattahoochee River	Fecal coliform	Urban runoff/urban effects	Completed for fecal coliform in 2003
Chattahoochee River	Utoy Creek to Pea Creek	Fecal coliform, fish consumption (PCBs)	Urban runoff/urban effects, combined sewer overflow	Completed for fecal coliform and fish consumption (PCBs) in 2003
Chattahoochee	Pea Creek to Wahoo	Fecal coliform, fish	Urban runoff/urban	Completed for fecal coliform and

River	Creek	consumption (PCBs)	effects	fish consumption (PCBs) in 2003
Lower Chattahoochee River to Jim Woodruff Dam				
West Point Lake[2]	Troup and Heard counties	Fish consumption (PCBs)	Nonpoint/unknown source, urban runoff/urban effects	Completed for fish consumption (PCBs) in 1998
Harding Lake	Bartletts Ferry, Harris County	Fish consumption (PCBs)	Nonpoint/unknown sources	Completed for fish consumption (PCBs) in 1998
Goat Rock Lake	Harris County	Fish consumption (PCBs)	Nonpoint/unknown sources	Completed for fish consumption (PCBs) in 1998
Oliver Lake	Near Columbus	Fish consumption (PCBs)	Nonpoint/unknown sources	Completed for fish consumption (PCBs) in 1998
Chattahoochee River	Oliver Dam to North Highland Dam	Fish consumption (PCBs)	Urban runoff/urban effects	Completed for fish consumption (PCBs) in 2003
Chattahoochee River	North Highland Dam to Upatoi Creek	Fecal coliform, fish consumption (PCBs)	Urban runoff/urban effects	Completed for fecal coliform and fish consumption (PCBs) in 2003
Chattahoochee River	Upatoi Creek to Chattahoochee/ Stewart County line[3]	Fecal coliform[3]	Urban runoff/urban effects[3]	Completed for fecal coliform in 2003
Patuala Creek	Headwaters to Clear Creek	Biota impacted (fish & macroinvertebrate community)	Nonpoint/unknown sources	Completed for fish in 2003
Pataula Creek[2]	Hodchodkee Creek to W.F. George Lake	Fecal coliform	Nonpoint/unknown sources	Completed for fecal coliform in 2003
Chattahoochee River	Downstream W.F. George Dam	Dissolved oxygen, fecal coliform	Dam release for DO, nonpoint/unknown sources for FC	Completed for dissolved oxygen in 2000 and for fecal coliform in 2003
Flint River to Jim Woodruff Dam				
Flint River	Hartsfield Airport to Hwy 138	Fecal coliform, biota impacted (macroinvertebrate community)	Urban runoff/urban effects	Completed for fecal coliform in 2003
Flint River	Hwy 138 to N. Hampton Road	Fecal coliform	Urban runoff/urban effects	Completed for fecal coliform in 2003

[1] Based on Georgia's 2012 Integrated 305(b)/303(d) Report (Water Quality in Georgia 2010-2011). At the time of drafting this memo the draft 2014 list is available, however per discussion with EPD, the published 2012 was used for this evaluation.

[2] Denotes segment that directly feeds into a Corps lake or is in a Corps lake.

[3] Removed from listing (i.e. Supporting Designated Uses) per EPD's 2012 305(b)/303(d) list

Appendix D:

Completed TMDLs for mainstems, major tributaries, and lakes in the ACF Basin

Waterbody	Pollutant of Concern	Percent Reduction Required	TMDL Completed
Chattahoochee River Basin, Georgia	Sediment (biota impacted)	Various (25 segments, including Lake Lanier headwater reaches), from 0 to 96%	January 2008
Chattahoochee River Basin, Georgia	Sediment (biota impacted)	Various (31 segments, including W.F. George headwater reach), from 0 to 35%	January 2003
Chattahoochee River Basin (Big Creek, Orr Creek, Park Branch, Utoy Creek), Georgia	Copper	N/A	January 2003
Chattahoochee River Basin (Cedar Creek, Clear Creek, Ollie Creek), Georgia	Dissolved oxygen	LA: 0% WLA: Percent reduction not applicable, since there is not a permitted point source.	January 2003
Chattahoochee River Basin, Georgia	Fecal coliform	Various (79 segments, including Lake Lanier and West Point Lake headwater reaches), from 0 to 99%	November 2008
Chattahoochee River Basin, Georgia	Fecal coliform	Various (9 stream segments), from 52 to 96%	January 2008
Chattahoochee River Basin, Georgia	PCBs in fish tissue	(7 segments) 99.2%	January 2003
Upper Chattahoochee River to Whitesburg, Georgia			
Chattahoochee River at Atlanta, Georgia (Peachtree Creek to Utoy Creek)	Temperature	100% reduction from Plants Atkinson and McDonough 0% reduction from R.L. Sutton, R.M. Clayton, and South Cobb facilities	January 2003
Chattahoochee River Basin (Utoy Creek), Georgia	Zinc	N/A	January 2003
Chattahoochee River Basin (White Creek and Hazel Creek), Georgia	Sediment	Various (2 segments), 60% and 70%	February 2003
Chattahoochee River (Soquee River to Lake Lainer), Georgia	Mercury	Loading must be less than 2.3 kg/yr (Lake Lanier headwater)	February 2003
Chattahoochee River Basin (Chestatee River), Georgia	Fecal Coliform	60% base flow, 30% for urban areas, 99% for agricultural areas, 0% for forested areas	February 1998
Chattahoochee River Basin (Big Creek Watershed), Georgia	Fecal Coliform	70% for agricultural areas, 0% for base flow, barren, urban and forested areas	February 1998
Lower Chattahoochee River to Jim Woodruff Dam			
Chattahoochee River Basin (Flat Shoal Creek Watershed), Georgia	Fecal Coliform	40% for agricultural areas, 0% for urban, barren, and forested areas	February 1998
Chattahoochee River Basin	Fecal Coliform	0%	February 1998

(Hannahatchee Creek Watershed), Georgia			
Chattahoochee River Basin (Lake Walter F. George – Steward, Quitman, and Clay Counties), Georgia	PCBs	0%, no PCBs currently used in Georgia	February 1998
Chattahoochee River Basin (Lake Walter F. George – Upstream Hwy 82), Georgia	PCBs	0%, no PCBs currently used in Georgia	February 1998
Chattahoochee River Basin (West Point Lake – Troup and Heard Counties), Georgia	PCBs	0%, no PCBs currently used in Georgia	February 1998
Chattahoochee River Basin (West Point Dam, W.F. George Dam)	Dissolved Oxygen Below Dams	N/A, federal agencies release higher oxygenated water from dams	November 2000
Flint River to Jim Woodruff Dam			
Flint River Basin (Wasp Creek), Georgia	Sediment (Biota Impacted)	0%	January 2008
Flint River Basin, Georgia	Sediment (Biota Impacted)	Various (28 segments), 0% to 41%	January 2003
Flint River Basin (Flint River upstream of Hartsfield Airport, Mud Creek, Sullivan Creek), Georgia	Copper	N/A	January 2003
Flint River Basin (Albany By-Pass Pond), Georgia	DDE/DDD in Fish Tissue	99.6%	January 2003
Flint River Basin (Beaver Creek, Big Slough, Dry Creek, Fish Pond Drain, Flat Creek, Gulley Creek, Spring Creek, White Oak Creek), Georgia	Dissolved Oxygen	Various (8 segments, including Lake Seminole headwater reaches), 0% to 67% for LA, 0% to 74% for WLA	January 2003
Flint River Basin, Georgia	Fecal Coliform	Various (6 segments), 13.5% to 73.5%	January 2008
Flint River Basin, Georgia	Fecal Coliform	Various (28 segments), 1% to 96%	February 2003
Flint River Basin (Spring Creek), Georgia	Lead	N/A	January 2003
Flint River Basin (Flint River upstream of Hartsfield Airport, Mud Creek, Spring Creek) , Georgia	Zinc	N/A	January 2003
Flint River Basin (White Oak Creek Watershed, near Alvaton)	Fecal Coliform	0%	February 1998
Flint River Basin (White Oak Creek Watershed, near Newnan)	Fecal Coliform	99% in base flow	February 1998
Flint River Basin (Potato Creek Watershed)	Fecal Coliform	85% in base flow	February 1998
Flint River Basin (Kinchafoonee Creek	Fecal Coliform	60% for base flow and agricultural	February 1998

Watershed)		areas	
Flint River Watershed (Kincafoonee Creek)	Mercury	31%	February 2003
Flint River Basin (Chickasawhatchee Creek Watershed)	Fecal Coliform	94% baseflow, 25% agricultural areas, 50% barren and urbanized areas	February 1998
Flint River Basin (Ayocks Creek Watershed)	Fecal Coliform	60% for agricultural areas	February 1998
Flint River Basin (Lake Seminole)	Chlordane	0%, no chlordane currently used in Georgia	February 1998
Flint River Basin (Lake Seminole)	PCBs	0%, no PCBs currently used in Georgia	February 1998

DK Water Resource Consulting LLC

To:	Tai Yi Su (AECOM)
Subject:	LLRM Model of Proposed Glades and White Creek Reservoirs
Date:	8/5/2015

1.0 Introduction

Glades Reservoir and White Creek Reservoir are alternative proposed pumped-storage reservoir to be constructed on Flat Creek in Hall County, Georgia, and White Creek in White County, Georgia, respectively. Both Flat Creek and White Creek are tributaries to the Chattahoochee River in the Upper Chattahoochee River Basin. The reservoir sites are being considered as part of many water supply alternatives being evaluated for meeting Hall County's projected 2060 water demand.

The primary sources of water to Glades Reservoir will be the portion of the Flat Creek watershed that drains to Glades Reservoir above the proposed dam (4,203 hectares or 10,386 acres) and the water pumped to the reservoir from the Chattahoochee River. Similarly, White Creek Reservoir will receive water from the portion of the White Creek watershed upstream of the proposed dam (2,638 hectares or 6,519 acres) and water pumped from the Chattahoochee River. This analysis was completed to predict the water quality in the Glades and White Creek Reservoirs once constructed. Modeling of the proposed reservoirs was completed using the Lake Loading Response Model (LLRM). The LLRM model is a spreadsheet based model. The watershed model within LLRM predicts annual export of nutrients from the watershed to the reservoir from land cover and hydrology. The lake response model uses predicted watershed loads and empirical relationships from the literature to predict the annual average of typical eutrophication related parameters such as total phosphorus (TP), chlorophyll *a,* and Secchi Transparency. These predictions are used to assess the likely surface water quality of the reservoirs. LLRM is then used to assess alternate scenarios such as reduced or increased pumping rates from the Chattahoochee, changes in future land use in the watershed, or implementation of watershed best management practices (BMPs) for control of phosphorus.

The LLRM model is of an appropriate scale to evaluate a range of differing land management and operational scenarios to inform an Environmental Impact Statement (EIS). The empirical approach used by LLRM requires fewer data than many more complicated multi-dimensional models. Many of the data required to run models more complex models are not available for the proposed Glades and White Creek Reservoirs as the reservoirs do not yet exist. The empirical relationships used by LLRM were developed using large datasets of lakes and reservoirs. These relationships were used to estimate a standard set of trophic parameters for the proposed Glades and White Creek reservoirs under a variety of pumping scenarios from the Chattahoochee River. These parameter predictions can then be used, in part, to distinguish alternatives in the EIS.

The model uses watershed hydrology, watershed nutrient export coefficients and other sources of water and nutrients such as atmospheric deposition, internal loading from sediments, waterfowl, point sources and septic systems to develop estimates of water and nutrient loading. These loading estimates were then entered into a series of empirical equations to predict water quality parameters in the proposed reservoirs. Although light or other nutrients such as nitrogen can play an important role at times, phosphorus is typically the nutrient in shortest supply in inland lakes and reservoirs (Schindler 1977, Wetzel 2001, Cooke, et al 2005) and therefore phosphorus availability is likely to be the primary limiting factor for biologic productivity in the Glades and White Creek reservoirs. Phosphorus concentrations in the reservoirs will be directly related to all measures of trophic state such as; chorophyll *a*, Secchi transparency and the frequency of algal blooms.

Phosphorus concentrations in the two reservoirs are expected to be very closely linked with parameters that describe trophic state. The empirical relationship predicting in-reservoir phosphorus concentration developed by Reckhow (1988) for southeastern U.S. lakes and reservoirs was used to predict in-reservoir phosphorus concentrations for Glades and White Creek. These predicted concentrations were then used to predict an array of related trophic state parameters for the reservoirs. Increases in TP in the Glades and White Creek reservoirs are expected to result in an increase in chlorophyll a concentrations (measure of phytoplankton biomass), a decrease in Secchi transparency and an increase in the likelihood that the reservoirs will experience hypoxia in the hypolimnion (Cooke et al. 2005). Hypoxia increases the potential for iron and manganese to be released from the sediments and hydrogen sulfide to form leading to potential aesthetic and taste and odor problems in drinking water (Wagner 2014). Although oxygen, iron, manganese and hydrogen sulfide concentrations are not estimated in LLRM, inferences about them can be made from other estimated trophic parameters.

2.0 LLRM Model of the Proposed Glades and White Creek Reservoirs

The current TP loading to the proposed Glades and White Creek reservoirs was assessed using the LLRM methodology (AECOM 2009), which is a land use export/lake response model developed for use in lake and reservoir management.

The direct and indirect nonpoint sources of water and TP to the proposed Glades and White Creek reservoirs include:

- Atmospheric deposition (direct precipitation to the reservoirs)
- Surface water base flow (dry weather tributary flows, including any groundwater seepage into streams from groundwater)
- Stormwater runoff (runoff draining to tributaries or directly to the reservoir)
- Waterfowl (direct input from resident and migrating birds)
- Direct groundwater seepage
- Water pumped from the Chattahoochee River

Hydrologic Inputs and Water Loading

Calculating TP loads to the proposed reservoir requires estimation of the sources of water to the proposed Glades and White Creek reservoirs. The three primary sources of water are: 1) atmospheric direct precipitation; 2) runoff, which includes all overland flow to the tributaries and direct drainage to each reservoir; and 3) baseflow, which includes all precipitation that infiltrates and is then subsequently released to surface water in the tributaries or directly to each reservoir (i.e., groundwater). Baseflow is roughly analogous to dry weather flows in streams and direct groundwater discharge to the ponds. For scenarios that include pumping of water from the Chattahoochee River, those water volumes are added to Glades or White Creek reservoirs as water discharged directly to the reservoir or a point water load. The baseline annual water budget, estimated based on current land use and hydrology, is broken down into its components in Table 1-1.

- Precipitation - Mean annual precipitation was assumed to be representative of a typical hydrologic period for the watershed. The annual precipitation value was estimated from historic data obtained from US Climate data for Gainesville, Georgia covering the time period 1981-2010. For the proposed Glades and White Creek watersheds, 1.35 m (53.15 in) of annual precipitation was used.
- Runoff - For each land use category, annual runoff was calculated by multiplying mean annual precipitation by basin area and a land use specific runoff fraction. The runoff fraction represents the

portion of rainfall converted to overland flow. This was compared to the standard water yield for this area.

- Baseflow - The baseflow calculation was calculated in a manner similar to runoff using a baseflow fraction for each land use. The baseflow fraction represents the portion of rainfall converted to baseflow. This water generally enters the reservoir or a tributary stream via groundwater discharge.

The hydrologic budget was calibrated to a representative standard water yield for Georgia. The standard water yield was estimated from USGS gage 2335000 for the Chattahoochee at Norcross near the proposed reservoirs.

Table 1-1: Estimated Baseline Annual Water Budgets

WATER BUDGET	Glades	White Creek
	m^3/yr	m^3/yr
Atmospheric Deposition	4,671,000	2,567,730
Watershed Runoff	13,951,660	9,203,740
Watershed Baseflow	19,679,170	11,907,600
Total	38,301,840	23,679,070

Note: based on current land use and without pumping from the Chattahoochee River

2.1 Nutrient Inputs

Land Use Export

The proposed Glades and White Creek reservoirs watershed boundaries were delineated using Geographic Information System (GIS). Land uses within each watershed were determined using 2008 Georgia Land Use Trend (GLUT) Project land cover data (University of Georgia, 2008). These data represent the most current land use data available for the proposed Glades and White Creek watersheds.

The TP load for each watershed was calculated using export coefficients for each land use type selected from a range presented in ENSR (2009). The watershed loading in the model can be adjusted based upon proximity to the reservoir, soil type, presence of wetlands, and attenuation provided by BMPs for water or nutrient export mitigation. Watershed loads that entered Glades via Flat Creek were assigned a slightly higher attenuation value (20%) than loads that entered Glades via the direct watershed (10%) The higher attenuation for the Flat Creek subwatershed accounts for the distance between the load origin and Glades and the possibility of settling and uptake in Flat Creek before entering Glades Reservoir. Unlike Glades where inputs were split between direct and indirect, all inputs to White Creek were considered direct and an attenuation factor of 15% was used (average of direct and indirect as used in Glades). This accounts for both sources close to the proposed reservoir and sources further away from the proposed reservoir as the watershed was not further split into direct and indirect subwatersheds. The watershed load (baseflow and runoff) was combined with direct loads (atmospheric, waterfowl and Chattahoochee River inputs) to calculate TP loading to each reservoir. Watershed land use is summarized in Table 1-2.

Atmospheric Deposition

Nutrient inputs from atmospheric deposition were estimated based on TP coefficients for direct precipitation. The atmospheric load of 0.25 kg/ha/y includes both the mass of TP in rainfall and the mass in dryfall (Wetzel, 2001). The sum of these masses is carried by rainfall. The coefficient was then multiplied by the reservoir area (ha) in order to obtain an annual atmospheric deposition TP load.

Waterfowl

Total phosphorus load from waterfowl was estimated using a TP export coefficient and an estimate of annual mean waterfowl population. It was estimated that an annual average of 50 waterfowl will reside on Glades Reservoir and on White Creek Reservoir. The TP export coefficients used for waterfowl is 0.56 kg/waterfowl/y. Predicted waterfowl loadings of nutrients are very small relative to watershed loads.

Table 1-2: Land use categories by subwatersheds (2008 land use data)

	Area (Hectares)		
	Glades[1]		White Creek[2]
Land Use	**Direct Drainage**	**Hall Brook**	**Direct Drainage**
Beach Dune/Mud	1.4	2.9	4.3
Open Water	3.5	10.9	16.8
Low Intensity Urban	59.3	285.7	284.8
High Intensity Urban	3.2	31.0	33.9
Clearcut/Sparse	26.0	73.0	60.7
Quarries/Strip Mines/Rock Outcrop	0.0	2.3	0.0
Deciduous Forest	588.6	663.1	879.5
Evergreen Forest	446.4	132.2	90.0
Mixed Forest	186.7	101.6	113.7
Row Crop/Pasture	297.1	1,208.3	1,138.7
Forested Wetland	0.4	78.6	15.9
Non-Forested Freshwater Wetland	0.0	1.1	0.0
Total	**1,612.6**	**2,590.6**	**2,638.3**

[1]The watershed for Glades was split into water draining to Flat Creek before draining into Glades Reservoir and water draining directly into Glades Reservoir.

[2]Note that the entire watershed discharged to the proposed White Creek Reservoir was considered direct drainage because of the relatively small total drainage area and tributary streams.

Internal Loading

It is currently unknown whether the proposed Glades or White Creek reservoirs will stratify and if they do stratify whether there will be substantial phosphorus release from the bottom sediments. Since the reservoir sites will be cleared and grubbed, and organic soils will be removed exposing inorganic soils, it is unlikely that there will be significant sediment oxygen demand as the reservoirs are initially filled. As a result, internal loading of nutrients to each reservoir was assumed to be zero. Any internal load to either reservoir that may occur in the future is likely to be small relative to the watershed load; however, it is likely that much of this load will occur in the mid-summer to early fall time period when watershed inputs are low. Should these internal loads occur, they may play an important role in the growth of algae in Glades and White Creek reservoirs, particularly during the late summer.

2.2 Phosphorus Loading Assessment Summary

The overall watersheds of the proposed Glades and White Creek reservoirs consists of a mixture of rural, agricultural, residential and urban land uses. These developed land use categories typically exhibit abundant nutrient sources (and therefore relatively high nutrient export coefficients for the water bodies) due to soil disturbance, application of fertilizers and the presence of impervious cover which allows phosphorus

in runoff to remain mobile. The developed areas of the watershed tend to yield a large portion of the nutrient load to the reservoirs. By contrast, natural land covers such as forest and wetland have lower nutrient export due to lower runoff and increased infiltration and uptake. TP loads were estimated based on literature values of runoff and groundwater land use export coefficients. The estimated watershed load to each reservoir, coupled with direct sources of phosphorus, was input into a series of empirical models that provided predictions of in-reservoir TP concentrations, chlorophyll *a* concentrations, algal bloom frequency and water clarity. TP was predicted based on the empirical relationship developed by Reckhow (1988) for southeastern US lakes and reservoirs. All other predictions were based on these predicted TP concentrations. In a typical application of the model, the estimated load and reservoir concentration predictions would be compared to measured reservoir concentrations. However, since the reservoirs do not currently exist, this step could not be taken. The model predictions could be verified once the reservoir is built and monitoring data describing loading and reservoir concentrations are available. Predicted in reservoir TP concentrations for Glades and White Creek reservoirs were within the range of concentrations reported by Reckhow (1988) in the dataset of 70 Southeastern US lakes and reservoirs.

The estimated existing TP loads to the proposed Glades and White Creek reservoirs by source is presented in Table 1-3. Table 1-3 also includes estimated loads in 2050 using projected 2050 land use data. Loading from the watershed was overwhelmingly the largest source of phosphorus to each proposed reservoir without the inclusion of water from the Chattahoochee River. If water from the Chattahoochee is added to the proposed reservoirs, the pumped water becomes a significant source of phosphorus. This is discussed further below as a part of the discussion of pumping alternatives.

Table 1-3: Sources of total phosphorus load to proposed Glades and White Creek Reservoirs.

	LLRM Predicted TP Loads to Glades and White Creek Reservoirs			
	Glades		**White Creek**	
	Current Conditions	**2050 Conditions**	**Current Conditions**	**2050 Conditions**
Loads To Reservoir	**TP (KG/YR)**			
Atmospheric	86.5	86.5	47.6	47.6
Internal	0	0	0	0
Waterfowl	27.8	27.8	27.8	27.8
Watershed	1542.1	2114.0	1195.1	1612.5
Chattahoochee River Pumping	0	0	0	0
Total Reservoir Load	**1656.4**	**2228.3**	**1270.5**	**1687.9**
TP Load per Unit Reservoir Surface Area (KG/HA)	**4.8**	**6.4**	**6.6**	**8.9**

2.3 Phosphorus Loading Assessment Limitations

While the analysis presented above provides a reasonable accounting of sources of TP loading to the proposed Glades and White Creek reservoirs, there are several limitations to the analysis:

- Precipitation varies among years and hence hydrologic loading will vary. This may greatly influence TP loads in any given year, given the importance of runoff to loading.
- Spatial analysis has innate limitations related to the resolution and timeliness of the underlying data. Land uses were aggregated into classes which were then assigned export coefficients; variability in export within classes was not evaluated or expressed.

- TP export coefficients as well as runoff/baseflow exports were representative but also had limitations as they were not calculated for the study water body, but rather are regional estimates.
- Water quality data for the proposed Glades and White Creek reservoirs do not exist, restricting calibration of the model.

2.4 Reservoir Response to Phosphorus Loads

TP load outputs from the LLRM Methodology were used to predict in-reservoir TP concentrations using an empirical model developed by Reckhow (1988) for southeastern United States reservoirs. This empirical model estimates TP from system features, such as TP load from the watershed, depth and detention time of the waterbody. The current load generated from the export portion of LLRM was used in this model equation to predict annual mean in-reservoir TP. The mean predicted TP concentrations from this model were within the range of observed values from other southeastern reservoirs. Input factors in the export portion of the model, such as export coefficients and attenuation, were adjusted based on experience with other watersheds with similar characteristics. Because this empirical model accounts for a degree of TP loss to the reservoir sediments, the reservoir concentrations predicted by the empirical model are lower than those predicted by a straight mass-balance where the mass of TP entering the reservoir is equal to the mass exiting the reservoir without any retention. Also, the empirical model is based on relationships derived from many other lakes and reservoirs. As such, it may not apply accurately to any one waterbody, but provide an approximation of predicted reservoir TP concentrations and a reasonable estimate of the direction and magnitude of change that might be expected if loading is altered (for example by projecting land use change to 2050 or adding water and phosphorus from the Chattahoochee River). The empirical modeling results for Glades and White Creek reservoirs under both current conditions and in 2050 with and without water augmentation from the Chattahoochee are presented in Tables 1-4 and 1-5.

2.5 Trophic State Metrics

Equations within LLRM were used to predict a number of metrics related to trophic state (Tables 1-4 and 1-5). These include mean annual Secchi transparency, mean annual chlorophyll *a*, peak chlorophyll *a* and the probability of an algal bloom with a chlorophyll *a* concentration greater than 15 *u*g/L in the summer. These metrics suggest that under current watershed conditions after filling, Glades reservoir would exhibit low (oligotrophic) to moderate (mesotrophic) productivity (Table 1-4). Conditions in 2050 would be similar however productivity would be somewhat higher, closer to mesotrophic. Under all scenarios where Chattahoochee River water is added to the Glades Reservoir, trophic state metrics suggest that the reservoir would be more productive than without the addition of Chattahoochee River water. Water quality under scenarios which involve the largest transfers of water is predicted to be moderately productive (mesotrophic) exhibiting 20-20% higher algal growth and a nearly 10% reduction in water clarity relative to scenarios that do not involve river water transfers to Glades. Nearly all of the increase in productivity is attributable to the relatively high phosphorus concentrations currently observed in the Chattahoochee River (a mean of 50.7 *u*g/L from 2002 through 2012 at USGS station 1201030401 at Belton Bridge). Under scenarios that involve transfer of lower amounts of water from the Chattahoochee, productivity is predicted to be elevated relative to no-transfer alternatives but will not be as high as predicted with large transfers of water from the Chattahoochee.

The proposed White Creek Reservoir under current conditions would be substantially more productive than the proposed Glades Reservoir (Table 1-5). Trophic metrics suggest that the proposed White Creek Reservoir would be mesotrophic to eutrophic without inputs from the Chattahoochee River. The proposed reservoir would also be mesotrophic to eutrophic under all scenarios evaluated that included the addition of water pumped from the Chattahoochee River, however, the in-reservoir phosphorus concentrations would not be much different than concentrations without the addition of river water because the concentrations in the river water are relatively close to the concentrations predicted for the reservoir without river inputs. The watershed of the proposed White Creek Reservoir has a larger proportion of agricultural and developed (urban) land compared to the watershed for the proposed

Glades Reservoir which results in higher predicted phosphorus export from the watershed to the proposed reservoir. This increased phosphorus load is predicted to fuel substantial algal growth in the proposed White Creek reservoir with some summer algal blooms.

2.6 Future Conditions with Watershed Management

Estimated TP loading and in-reservoir concentrations are more than sufficient to substantial algal growth in the proposed Glades and White Creek reservoirs particularly under scenarios including projected future land use changes in the watershed. In order to evaluate the potential influence of watershed BMPs for phosphorus, modeling scenarios were run assuming percentage reduction in the watershed portion of the load to both the Glades Reservoir watershed and the White Creek Reservoir watershed. Improvements in the Chattahoochee River watershed that reduce in-river phosphorus concentrations would be expected to yield benefits to Glades and White Creek as well, particularly when river water is pumped to Glades; however, due to the size of the Chattahoochee watershed, these potential reductions are not considered here. While improvement may be seen with lesser reduction and reductions beyond these may result in further improvement in the proposed Glades and/or White Creek reservoirs, these levels were chosen to provide a readily apparent improvement in water quality that might be achievable with very aggressive watershed management.

Estimates of the impact of a 30% reduction in watershed nutrient export on Glades reservoir total phosphorus concentration and trophic state metrics are presented in Table 1-6. Glades watershed loading reductions result in substantial reductions in both phosphorus concentrations and related trophic state metrics in Glades when coupled with scenarios that do not involve transfer of water from the Chattahoochee River to Glades. Under river water transfer scenarios, watershed loading reductions to Glades result in more modest reductions in phosphorus concentrations and trophic metric parameters in Glades. Watershed phosphorus load reductions are projected to be more effective in reducing reservoir phosphorus concentrations under scenarios that involve transfer of lower amounts of water from the Chattahoochee River.

Estimates of the impact of a 30% reduction in watershed nutrient export on White Creek reservoir total phosphorus concentration and trophic state metrics are presented in Table 1-7. White Creek watershed loading reductions result in substantial reductions in both phosphorus concentrations and related trophic state metrics in White Creek when coupled with scenarios that do not involve transfer of water from the Chattahoochee River to White Creek Reservoir. Under river water transfer scenarios, watershed loading reductions to White Creek result in more modest reductions in phosphorus concentrations and trophic metric parameters in White Creek. As in Glades, watershed phosphorus load reductions are projected to be more effective in reducing reservoir phosphorus concentrations under scenarios that involve transfer of lower amounts of water from the Chattahoochee River to White Creek. All of the watershed reduction scenarios evaluated for White Creek yield predicted TP concentrations in White Creek reservoir that are sufficient to result in substantial algal growth and a frequency of occurrence of algal blooms (chlorophyll a greater than 15 ug/l) of approximately 1 to 7 % of the time.

Table 1-4: Proposed Glades Reservoir modeled nutrient loading summary under current conditions and in 2050.

Input Parameters (annual average)	Glades Reservoir Predictions using LLRM															
	No River Inputs		Alternatives with River Inputs													
			Applicant		1		2 and 3		4		5 and 6		7		8 and 9	
	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions
River Volume Transferred to Glades (m^3/yr)	0	0	47,298,600	47,298,600	36,096,300	36,096,300	40,107,000	40,107,000	19,776,900	19,776,900	23,787,600	23,787,600	2,489,400	2,489,400	6,361,800	6,361,800
Mean Total Phosphorus (TP) concentration of river water (*u*g/L)	0	0	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7
Predicted Parameters (annual average)																
TP Load to Glades (kg/yr)	1656	2228	4054	4626	3487	4058	3690	4262	2659	3231	2862	3434	1783	2355	1979	2551
Water Load to Glades (m^3/yr)	38,301,836	38,032,075	85,600,436	85,330,675	74,398,136	74,128,375	78,408,836	78,139,075	58,078,736	57,808,975	62,089,436	61,819,675	40,791,236	40,521,475	44,663,636	44,393,875
Mean Annual TP (*u*g/L) (SE Reservoirs, Reckhow 1988)[1]	12	15	15	16	14	16	14	16	13	15	14	15	12	15	13	15
Mean Secchi Disk Transparency (m) (Oglesby and Schaffner 1978)	3.4	3.0	2.9	2.8	3.0	2.8	3.0	2.8	3.1	2.9	3.1	2.8	3.4	3.0	3.3	2.9
Mean Chlorophyll *a* (*u*g/L) (mean of 5 general lake models)	3.8	4.9	5.0	5.6	4.8	5.4	4.9	5.5	4.4	5.2	4.5	5.3	3.9	4.9	4.1	5.0
Peak Chlorophyll *a* (*u*g/L) (mean of 3 general lake models)	13.8	17.4	17.7	19.6	17.0	19.2	17.3	19.3	15.8	18.4	16.2	18.6	14.1	17.5	14.6	17.7
Probability of Summer Bloom (Chl *a* > 15 *u*g/L) (Walker 1984 & 2000)	0.1%	0.6%	0.7%	1.3%	0.6%	1.1%	0.6%	1.2%	0.4%	0.9%	0.4%	1.0%	0.2%	0.7%	0.2%	0.7%
Flushing Rate (flushes/yr)	0.86	0.86	1.93	1.93	1.68	1.67	1.77	1.76	1.31	1.30	1.40	1.40	0.92	0.91	1.01	1.00

[1] Calculation of Mean Annual TP based on Reckhow (1988), All other reservoir calculations are a function of this calculated TP.

Table 1-5: Proposed White Creek Reservoir modeled nutrient loading summary under current conditions and in 2050.

Input Parameters (annual average)	White Creek Reservoir Predictions using LLRM					
	No River Inputs		With River inputs			
	Current Conditions	2050 Conditions	9.8 MGD Current Conditions	9.8 MGD 2050 Conditions	11.6 MGD Current Conditions	11.6 MGD 2050 Conditions
River Volume Transferred to White Creek (m^3/yr)	0	0	13,549,403	13,549,403	16,038,069	16,038,069
Mean Total Phosphorus (TP) concentration of river water (*u*g/L)	0	0	50.7	50.7	50.7	50.7
Predicted Parameters (annual average)						
TP Load to White Creek (kg/yr)	1270	1688	1957	2375	2084	2501
Water Load to White Creek (m^3/yr)	23,679,067	23,494,545	37,228,470	37,043,948	39,717,136	39,532,614
Mean Annual TP (*u*g/L) (SE Reservoirs, Reckhow 1988)[1]	20	24	21	24	22	24
Mean Secchi Disk Transparency (m) (Oglesby and Schaffner 1978)	2.3	2.0	2.2	2.0	2.2	2.0
Mean Chlorophyll *a* (*u*g/L) (mean of 5 general lake models)	7.6	9.7	8.1	9.6	8.2	9.7
Peak Chlorophyll *a* (*u*g/L) (mean of 3 general lake models)	26.1	32.9	27.9	32.8	28.1	32.8
Probability of Summer Bloom (Chl *a* > 15 *u*g/L) (Walker 1984 & 2000)	5.3%	13.0%	7.0%	12.9%	7.3%	12.9%
Flushing Rate (flushes/yr)	1.84	1.83	2.90	2.88	3.09	3.08

[1] Calculation of Mean Annual TP based on Reckhow (1988), All other reservoir calculations are a function of this calculated TP.

Table 1-6: Estimated reservoir response to a 30% watershed nutrient export reduction in the proposed Glades Reservoir.

	Glades Reservoir Predictions using LLRM															
	No River Inputs		Alternatives with River Inputs													
			Applicant		1		2 and 3		4		5 and 6		7		8 and 9	
Input Parameters (annual average)	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions	Current Conditions	2050 Conditions
River Volume Transferred to Glades (m^3/yr)	0	0	47,298,600	47,298,600	36,096,300	36,096,300	40,107,000	40,107,000	19,776,900	19,776,900	23,787,600	23,787,600	2,489,400	2,489,400	6,361,800	6,361,800
Mean Total Phosphorus (TP) concentration of river water (*u*g/L)	0	0	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7	50.7
Predicted Parameters (annual average)																
TP Load to Glades (kg/yr)	1194	1594	3592	3992	3024	3424	3227	3628	2197	2597	2400	2800	1320	1720	1516	1917
Water Load to Glades (m^3/yr)	38,301,836	38,032,075	85,600,436	85,330,675	74,398,136	74,128,375	78,408,836	78,139,075	58,078,736	57,808,975	62,089,436	61,819,675	40,791,236	40,521,475	44,663,636	44,393,875
Mean Annual TP (*u*g/L) (SE Reservoirs, Reckhow 1988)[1]	10	12	14	15	13	14	13	14	12	13	12	14	10	12	11	12
Mean Secchi Disk Transparency (m) (Oglesby and Schaffner 1978)	4.0	3.5	3.1	3.0	3.2	3.0	3.2	3.0	3.4	3.2	3.4	3.1	3.9	3.4	3.8	3.4
Mean Chlorophyll *a* (*u*g/L) (mean of 5 general lake models)	2.9	3.7	4.5	4.9	4.2	4.7	4.3	4.8	3.8	4.4	3.9	4.5	3.0	3.8	3.2	4.0
Peak Chlorophyll *a* (*u*g/L) (mean of 3 general lake models)	10.7	13.5	16.1	17.5	15.2	16.8	15.5	17.1	13.6	15.6	14.1	15.9	11.2	13.8	11.8	14.3
Probability of Summer Bloom (Chl *a* > 15 *u*g/L) (Walker 1984 & 2000)	0.0%	0.1%	0.4%	0.7%	0.3%	0.5%	0.3%	0.6%	0.1%	0.3%	0.2%	0.4%	0.0%	0.1%	0.0%	0.2%
Flushing Rate (flushes/yr)	0.86	0.86	1.93	1.93	1.68	1.67	1.77	1.76	1.31	1.30	1.40	1.40	0.92	0.91	1.01	1.00

[1] Calculation of Mean Annual TP based on Reckhow (1988), All other reservoir calculations are a function of this calculated TP.

Table 1-7: Estimated reservoir response to a 30% watershed nutrient export reduction in the proposed White Creek Reservoir.

	White Creek Reservoir Predictions using LLRM					
	No River Inputs		With River inputs			
Input Parameters (annual average)	Current Conditions	2050 Conditions	9.8 MGD Current Conditions	9.8 MGD 2050 Conditions	11.6 MGD Current Conditions	11.6 MGD 2050 Conditions
River Volume Transferred to White Creek (m^3/yr)	0	0	13,549,403	13,549,403	16,038,069	16,038,069
Mean Total Phosphorus (TP) concentration of river water (*u*g/L)	0	0	50.7	50.7	50.7	50.7
Predicted Parameters (annual average)						
TP Load to White Creek (kg/yr)	912	1204	1599	1891	1725	2017
Water Load to White Creek (m^3/yr)	23,679,067	23,494,545	37,228,470	37,043,948	39,717,136	39,532,614
Mean Annual TP (*u*g/L) (SE Reservoirs, Reckhow 1988)[1]	16	20	19	21	19	21
Mean Secchi Disk Transparency (m) (Oglesby and Schaffner 1978)	2.7	2.4	2.5	2.2	2.4	2.2
Mean Chlorophyll *a* (*u*g/L) (mean of 5 general lake models)	5.6	7.3	6.8	7.9	6.9	8.0
Peak Chlorophyll *a* (*u*g/L) (mean of 3 general lake models)	19.8	25.1	23.5	27.2	24.0	27.5
Probability of Summer Bloom (Chl *a* > 15 *u*g/L) (Walker 1984 & 2000)	1.4%	4.4%	3.3%	6.3%	3.6%	6.6%
Flushing Rate (flushes/yr)	1.84	1.83	2.90	2.88	3.09	3.08

[1] Calculation of Mean Annual TP based on Reckhow (1988), All other reservoir calculations are a function of this calculated TP.

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