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Apalachicola-Chattahoochee-Flint Stakeholders

Sustainable Water Management Plan: **Metric Development Technical Memorandum**

JUNE 26, 2013

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Approved for general release by the Governing Board of ACF Stakeholders, Inc.
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Introduction and Purpose

The purpose of this memorandum was to provide background information for ACFS members to enable informed input about metric development for the sub-basin Caucus Meetings and to document the metric development process.

The metrics developed are reflected in the table summary in Appendix 1 and will be used in the SWMP process to assess the extent to which proposed water management alternatives may result in improved conditions for stakeholders in the ACF Basin. Use of these metrics in assessing water management alternatives does not mean stakeholders agree with each and all of the metrics proposed, but rather that the set of metrics taken together is what the ACFS is using to reflect stakeholder interests.

This process is defined as Task 2 in the overall schedule as shown on Figure 1.

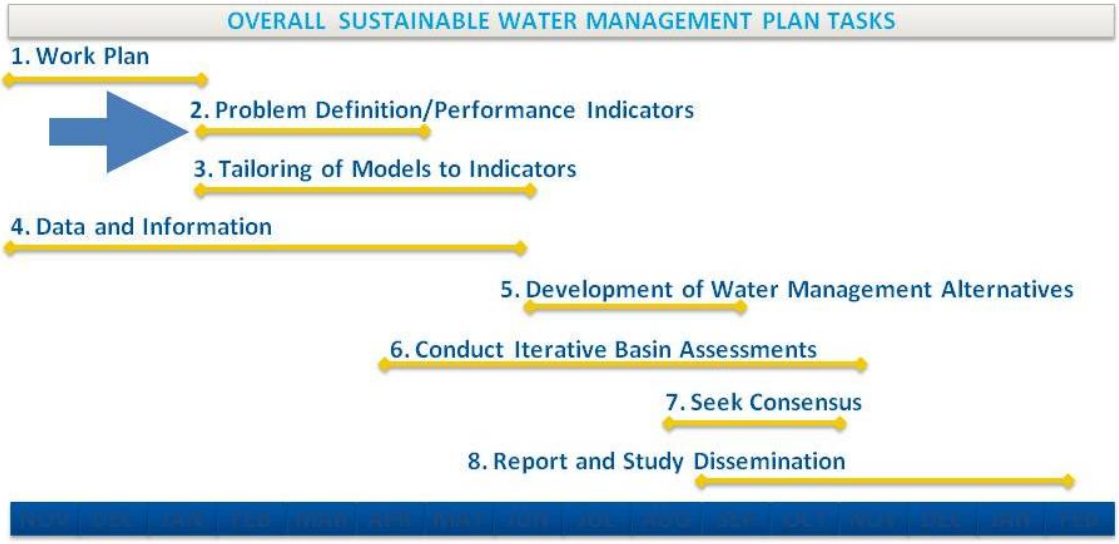


Figure 1 Overall Sustainable Water Management Plan Schedule

The relevant milestones as they relate to this Task include the following:

- Atkins submitted Data and Science Needs deliverable to the TOCWG on June 28, 2012.
- Sub-basin caucus meetings on metric development were held in July and August.
- Black & Veatch submitted revised Task 2 memorandum based on TOCWG input and Governing Board input on September 21, 2012.
- Atkins submitted final environmental inundation and flows deliverable to the TOCWG and caucuses.

- Sub-basin caucus meetings were held in fall 2012 to discuss performance metrics and water management alternatives. This included discussions on how environmental flows will be integrated into the modeling.
- Black & Veatch provides a revised Task 2 memorandum.
- Governing Board approves Task 2 memorandum. This approval will be a consensus decision regarding whether the breadth of stakeholder interests are represented in the list of performance metrics. This does not necessarily mean consensus agreement on the values of the performance metrics. Consensus development related to tradeoffs among performance metrics will come later when model results can inform the discussions.

The purpose of developing metrics is to measure the effectiveness of management alternatives. In general, metrics are a way to describe and compare what is important to ACFS members. For example, some members may be concerned with navigation and how often the river could support navigation. This, in essence, could be a metric at a specific point in the river. If this metric is chosen, this would allow model output to be formatted so differences between model scenarios could be clearly understood.

Some helpful definitions of terms used in the memorandum include the following:

Metrics are measures for evaluating the performance of a system. These can be quantitative or qualitative.

Preferences or Desired Operating Conditions are numeric, quantitative inputs to the model setting a desired physical condition at a specific geographic location. Rules can be programmed into the model to simulate management of the system to attempt to meet these preferences. The model may not always meet model preferences, for example, during times of drought. Model output will document whether these conditions have been met.

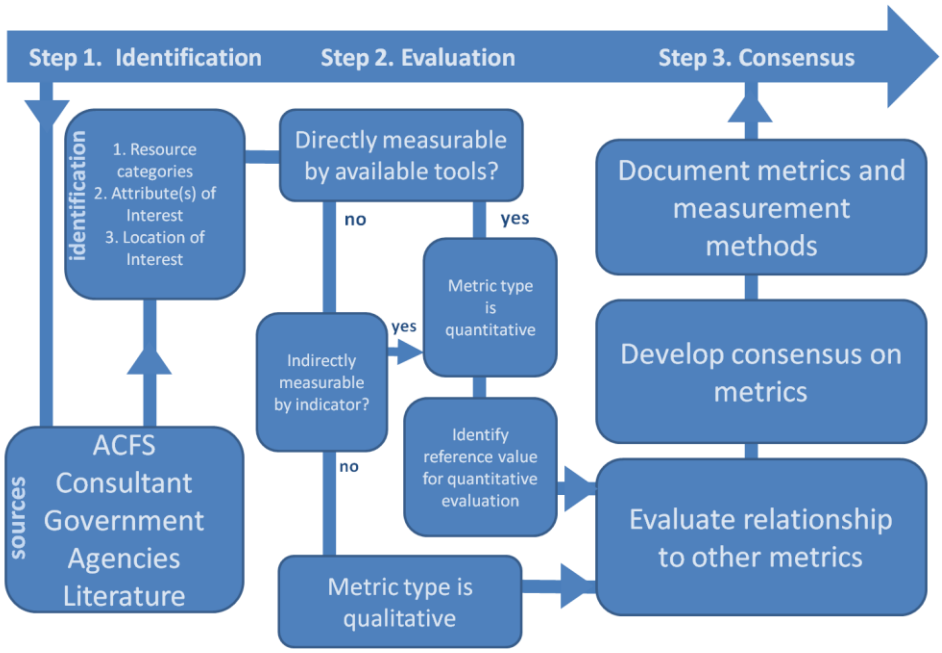
Performance criteria are a qualitative or statistically based measures at a specific geographic location. For example, a flow of 15,000 cfs or greater at Columbia node 95% of the time or greater between January and April could be a performance criteria. How well the system meets performance criteria for a particular modeled condition is determined by reviewing model output.

Model output refers to the predicted lake levels and flows at model nodes under specific time/inflow conditions. This information may be expressed in various graphical and tabular formats for comparison between modeled scenarios.

Approach for Metric Development

Metrics are to be developed by applying a three-step process presented in Figure 2.

Figure 2 Approach to Metric Development



This process encourages a common level of understanding by allowing input and shared understanding throughout the process. Input includes the following:

- Individual Members: Able to submit metrics.
- Caucus Members: Educate individual members and encourage identification and submission of metrics.
- TOCWG: Able to submit metrics, consider caucus input, and decide on alternatives to model.
- Consultant: Provided process memo, sample metrics, and followed up with committee to clarify metrics.

STEP 1 - IDENTIFICATION

The proposed river and reservoir model (ACF-DSS model) is the primary modeling tool that will be used in the plan. It simulates the river and reservoir response under different hydrologic, development, and management scenarios. Its overriding purpose is to objectively assess the tradeoffs associated with various water development, sharing, and management strategies that may interest the ACF Basin stakeholders individually or as an interdependent community. Tradeoffs exist within and across sectors.

Reservoir simulation requires the specification of regulation rules. Traditional reservoir regulation rules (such as those implemented in the USACE ResSim model)

determine reservoir release as a function of reservoir elevation, inflow, water and power demand, environmental flow requirements, time of the year, or some combination of these parameters.

Specific locations, called nodes, where a metric may be evaluated have already been determined as part of the Task 1 Work Plan memorandum. The following nodes are included in the ACF-DSS model:

- Chattahoochee
  - Buford Gage
  - Whitesburg
  - West Point Dam
  - Columbus
  - W. F. George Dam
  - Columbia
  - Chattahoochee
- Flint
  - Griffin
  - Carsonville
  - Montezuma
  - Albany
  - Bainbridge
- Apalachicola
  - Chattahoochee
  - Blountstown
  - Sumatra

In addition to node locations, each metric is to be identified by a resource category. ACFS's previously defined stakeholder interests will be used as the resource categories for each metric. These include the following:

1. Navigation
2. Recreation
3. Water Quality
4. Water Supply
5. Farm and Urban Agriculture
6. Industry and Manufacturing
7. Seafood Industry
8. Hydro Power
9. Thermal Power
10. Local government
11. Environment and Conservation
12. Business and/or Economic Development
13. Historic and Cultural
14. Urban Agriculture

ACFS members were able to identify metrics by each basin caucus. Individual sub-basin Caucus Meetings were held to identify how interests might be translated into metrics. A draft summary of performance metrics was compiled utilizing the existing development of performance metrics done by the ACFS Data-Needs-Sustainability Work Group in 2010. As preparation for the meeting, ACFS members were encouraged to verify if the metrics in the table reflect their interests. Also, ACFS members were encouraged to generate a list of their concerns and any supplemental studies which may be helpful for the caucus. The Table Summary of Performance Metrics (Appendix 1) was updated to include the input from the caucus meetings for subsequent use on the project.

STEP 2 – EVALUATION

Black & Veatch assisted the TOCWG in identifying whether metrics could be evaluated in a quantitative or qualitative fashion, or by the modeling performed for this project at all. A metric will be considered quantitatively if: a) direct evaluation is possible using model output or b) an indicator of the attribute of interest at the specified location can be developed using output data.

If a particular attribute of interest cannot be represented either directly in the model or through the development of an indicator, the potential performance of an attribute under various future scenarios will be discussed qualitatively. For example, instantaneous or hourly time step metrics, while important to specific stakeholders will not be addressed in the modeling for the SWMP.

Qualitative evaluations will vary in detail depending on the level of information available. Using this information and other information available from published reports and/or articles, the approach for evaluating each qualitative metric and the level to which a qualitative evaluation can be made was discussed with the TOCWG. Additional analysis of metrics other than flow, depth, or related water quantity is not included in the proposed work plan.

Methods for Quantifying Metrics

If a metric is identified as quantitative, the next step is to select a specific method for quantifying that metric. Two methods for quantifying metrics have been identified:

1. **Reference Value Method:** In many cases, comparing the attribute of interest at a particular location to a reference value (that may also be specific to the location of interest) informs the assessment of system reliability. The reference value then defines the method for quantifying the metric. Because the Study is addressing a wide range of basin resources in the ACF, no single method for quantifying reference values is applicable to all metrics.

   Some metrics may be quantified based on physical constraints in the river system. For example, the elevation of a facility's water intake represents a physical constraint and provides the reference value that can be used to quantify a metric in the Water Supply resource category. Other metrics may be quantified based on specific values that are prescribed in contracts and agreements between resource management agencies, Environmental Impact Statement (EIS), Biological Opinions issued by FWS, and other regulatory actions. For example, recommendations of flows for endangered species (as defined in a Biological Opinion) provide reference values that can be used to quantify metrics in the Environment and Conservation resource category.

   Additionally, some metrics may be quantified using an estimated need for a water-dependent resource. Estimated needs typically are developed by interested stakeholders or are defined within published reports and articles. For example, the projected demand for municipal, industrial, and agricultural water at a specific location can be used to quantify metrics in the Water Supply resource category.

2. **Relative Comparison:** In some cases, an informative reference value may not exist for some attributes of interest. In such cases, the attribute of interest is strictly compared across the range of future water supply and demand scenarios. For example, metrics related to flood control releases or

spills to manage reservoir levels do not have an associated reference value. In this case, metrics related to flood control releases or spills could be quantified through a comparative analysis between future scenarios.

STEP 3 - CONSENSUS

After the metrics were identified, a table summary of performance metrics was compiled and used as the primary tool to develop a shared understanding among stakeholders and ultimately consensus of the metrics. An updated version of the table summary is included at the end of this memorandum.

This summary table included example modeling output formats to increase stakeholder understanding about how results from iterative modeling runs under various scenarios will be compared against stakeholder-desired metrics.

It is important to note that consensus on metrics is defined as the occurrence when all interests are represented in the list of metrics to be used. Consensus does not mean agreement on particular performance criteria. Consensus building on the metrics will likely progress iteratively with general agreement on some metrics, while others may require stakeholders to review in more detail.

Basin Caucus Meetings

Four individual basin caucus meetings were held in July and August as input gathering sessions on performance metrics. The purpose of the meetings was to encourage discussion about the performance metrics table, identify informational needs, and evaluate individual metrics to ensure they are representative of interests in the caucus and ACFS. Four additional basin caucus meetings were held in November 2012 as additional input gathering sessions on performance metrics and to discuss water management alternatives.

The following sections provide an overview of these meetings. Individual meeting summaries with more detail are included in Appendix 3.

MIDDLE/LOWER CHATTAHOOCHEE CAUCUS MEETINGS

A Middle/Lower Chattahoochee Caucus Meeting was held on July 19, 2012, at the offices of LaGrange Troup Country Chamber of Commerce in LaGrange, Georgia. Another caucus meeting was held on November 13, at Columbus Water Works in Columbus, Georgia.

At both meetings, the Performance Criteria Identification Summary was used as a guide for discussion and input. After the second meeting, most metrics were established, with a few information follow up items:

- The caucus learned that the modeling done for the SWMP will not be at an hourly resolution, but answers regarding weekly potential hydropower generation can be calculated. A hydropower stakeholder conference call was held February 1; this group will provide more information at a later date.
- For the Georgia Power dams between West Point and Columbus, it was noted while there are FERC permit flow requirements, these requirements are contingent on adequate inflow; therefore, the modeling essentially shows inflow =outflow.

UPPER CHATTAHOOCHEE CAUCUS MEETINGS

An Upper Chattahoochee Basin Caucus Meeting was held on July 27, 2012, at the offices of Cobb County-Marietta Water Authority in Marietta, Georgia. Another caucus meeting was held on November 16, 2012, at Gwinnett County DWR offices in Lawrenceville, Georgia.

At both meetings, members used the Performance Criteria Identification Summary as a guide for discussion and input. After the second meeting, most metrics were established, with a few information follow-up items:

- The group would like recreation input from the National Park Service. Black & Veatch has followed up with the NPS, but no additional information has been provided to date.
- The caucus learned that the modeling done for the SWMP will not be at an hourly resolution, but answers regarding weekly potential hydropower generation can be calculated. A hydropower stakeholder conference call was held February 1; this group will provide more information at a later date.

Members provided example performance metric outputs, which are reference in the performance criteria summary and are included in Appendix 1.

APALACHICOLA CAUCUS MEETINGS

An Apalachicola Caucus Meeting was held on August 8, 2012, at the North Florida Research and Education Center. A second meeting was held at Callahan Restaurant in Blountstown, Florida on November 6, 2012.

At both meetings, members used the Performance Criteria Identification Summary as a guide for discussion and input. After the second meeting, most metrics were established, with a few information follow-up items:

- Members felt that the percentage of time tributaries "disconnect" from the river is important for water quality. This will not be provided by the modeling for the SWMP; this could be a recommendation in the Sustainable Water Management Plan for future research.
- Information of shellfish productivity and acreage of healthy oyster bars is needed. This will not be provided by the modeling for the SWMP; this could be a recommendation in the Sustainable Water Management Plan for future research.
- Members recognized that the Instream Flow Assessment by Atkins may provide additional metrics. How to utilize this information will be discussed further.
- Information on areal coverage of freshwater sea grass and maintenance of the 0.5 ppt isohaline is needed. This will not be provided by the modeling for the SWMP; this could be a recommendation in the Sustainable Water Management Plan for future research.
- Members were concerned about the elevation of the City of Port St. Joe water supply canal elevation; other metrics are believed to be more stringent, but the information will be sought by members.

- Members recognized that river flow, timing, durations, and variability impact the health of the bay, and information about this effect is desired. Information on river flow under various conditions using the 1939-2008 period of record conditions will be provided by the modeling for the SWMP; however, interpretation of impact on the estuary could be a recommendation in the Sustainable Water Management Plan for future research.

- Information on the Plant Sholz intake elevation was obtained and is in the performance metric table; however, press releases subsequently noted that Plant Sholz is slated for closing by July 2015.

Currently the Bay Assessment Ad-hoc committee is still reviewing possible metrics.

FLINT CAUCUS MEETINGS

A Flint Caucus Meeting was held on August 9, 2012, at Covey Rise near Camilla, Georgia. A second meeting was held at the Riverfront Resource Center in Albany, Georgia on November 5.

At both meetings, members used the Performance Criteria Identification Summary as a guide for discussion and input. After the second meeting, most metrics were established, with a few information follow-up items:

- Members felt more information was needed for recreation on Lake Blackshear and Lake Chehaw; however, as these lakes are operated to maintain level (inflow=outflow), recreation interests are maintained.

- Members noted that there was no wasteload allocation flow information for the Newton node; this is an information need for the future.

- More information is needed regarding the FERC permits for Lake Chehaw and Blackshear. Georgia Power provided information that the Flint River hydro project below Chehaw has no FERC requirements, but the project is run of the river, with inflow equal to outflow, maintaining elevation 181.8, +-0.5 feet. There is also a 10 cfs flow for Muckafoonee Creek, which is accomplished through a pipe and valve for releasing from June through August.

- More information is needed on Plant Mitchell water needs. Georgia Power provided information that Plant Mitchell has a 232 mgd withdrawal permit that is current through 2020. There are currently no flow permit requirements; the plant uses once through cooling. Plant Mitchell is planned for conversion to utilize biomass fuels, but this is currently on hold.

Appendix 1

Table Summary of Performance Metrics

Performance Metrics Identification Overall Summary

ACF Stakeholders
Last Updated : June 26, 2013

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Notes
Upper Chattahoochee	**Lanier**	Level	Not Applicable	Percent of Time Lanier Level is <1061, UC Caucus Metric 10 - Percent of Weeks March through Nov < Corps Identified Recreation Impact Levels	Concerns with lake level and water quality; generally better water quality with higher lake levels	UC Caucus Metrics 1-9	No Specific Criteria Identified	Metrics Linked to Water Supply	Not Applicable	Weekly minimum MWHr generation for each month	Not Applicable	Linked to Recreation	Percent of time the ramp rate in Lake Lanier is <1/2 foot per day April to June	Linked to Water Supply and Recreation	Linked to Recreation	Metrics Linked to Water Supply	See Upper Chattahoochee Basin Caucus Meeting July 27, 2012 notes for Performance Metrics example graphs. See attached numeric background information for the Hydro Power metric.
	Buford Gage	Flow	Not Applicable	Linked to Water Supply and Hydropower	GA DNR hatchery desired release = 550 cfs to keep nursery intake covered, DO, temp	UC Basin Caucus Metric 11 - Number of Days with Shortages of Withdrawals	No Specific Criteria Identified	Metrics Linked to Water Supply	Not Applicable	Weekly minimum MWHr generation for each month	Not Applicable	Linked to Water Supply, Water Quality, and Recreation	% change from the monthly mean & median UIF (all years)	Linked to Water Supply and Recreation	NPS concern is flooding inundation, NWS identified elevation 924	Metrics Linked to Water Supply	
	Norcross	Flow	Not Applicable	Percent of time >1500 cfs into Bull Sluice Lake (Atlanta Rowing Club); hourly variability is a concern	No Specific Criteria Identified	UC Basin Caucus Metric 11 - Number of Days with Shortages of Withdrawals	No Specific Criteria Identified	Metrics Linked to Water Supply	Not Applicable	Not Applicable	Not Applicable	Linked to Water Supply, Water Quality, and Recreation	Percent of time flow meets guidelines in FWS PAL Letter. Also, % of time flow > 6% reduction in flow on a monthly basis for dry years (6% reduction is from UIF_CMA median monthly flows of pre-dam years from IFA Analysis)*** % change from the monthly mean & median UIF (all years)	Linked to Water Supply and Recreation	NPS concern is flooding inundation, NWS identified 890 = 11,000 cfs	Metrics Linked to Water Supply	Recreational safety from hourly variations is a concern.
	Morgan Falls	Level/ Flow	Not Applicable	Percent of time level > elevation 864 (Atlanta Rowing Club Input)	No Specific Criteria Identified	UC Basin Caucus Metric 11 - Number of Days with Shortages of Withdrawals	No Specific Criteria Identified	Metrics Linked to Water Supply	Not Applicable	No Specific Criteria Identified	Not Applicable	Linked to Water Supply, Water Quality, and Recreation	No Specific Criteria Identified	Linked to Water Supply and Recreation	NPS concern is flooding inundation, NWS identified 867 = 12,000 cfs at Roswell; use % of time Morgan Falls level >866.5	Metrics Linked to Water Supply	Georgia Power operates Morgan Falls between 866 and 858 to reregulate Lanier releases to meet 750 cfs at Peachtree Creek; this is protective of thermal plant needs.
	Peachtree Creek (as measured at USGS Atlanta)	Flow	Not Applicable	% of time flow between 1000 and 1250 cfs for recreation (National Park Service)	750 cfs or greater throughout the year; releases to meet this flow with current discharge limits generally protective of DO and temperature	UC Basin Caucus Metric 12 - Percent of Days Below 750 cfs	No Specific Criteria Identified	Metrics Linked to Water Supply	Not Applicable	Not Applicable	Not Applicable	Linked to Water Supply, Water Quality, and Recreation	No Specific Criteria Identified	Linked to Water Supply and Recreation	NPS concern is flooding inundation, NWS identified 764 = 17,600 cfs at Atlanta	Metrics Linked to Water Supply	750 cfs is a current RIOP rule in the model********** Potential modeling of different flow rules, changing flow quantity and/or seasonal flow differences was discussed during Upper Chattahoochee Basin Caucus Meeting July 27, 2012
	Whitesburg	Flow	Not Applicable	% of time flow >2200 cfs for recreation based on 4 ft depth	% of time daily average 1000 cfs or greater, 7-day average 1350 cfs or greater	% of time daily average 1000 cfs or greater, 7-day average 1350 cfs or greater	No Numeric Criteria Identified	% of time daily average 1000 cfs or greater, 7-day average 1350 cfs or greater	Not Applicable	Not Applicable	Not Applicable	Not Applicable	% of time flow >2200 cfs for recreation based on 4 ft depth	Link to Thermal Power	No Numeric Criteria Identified	No Numeric Criteria Identified	Instantaneous minimum of 750 cfs desired; model will not provide information at this resolution

Performance Metrics Identification Overall Summary

ACF Stakeholders
Last Updated : June 26, 2013

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Notes
Middle & Lower Chattahoochee	**West Point**	Level	Not Applicable	% of time level April-October is 635 or above, 632.5 at all other times	% of time level April-October is 635 or above, 632.5 at all other times	% of time level April-October is 635 or above, 632.5 at all other times	No Numeric Criteria Identified	% of time level April-October is 635 or above, 632.5 at all other times	Not Applicable	No Numeric Criteria Identified	Not Applicable	Not Applicable	% of time level April-October is 635 or above, 632.5 at all other times	% of time level April-October is 635 or above, 632.5 at all other times	No Numeric Criteria Identified	No Numeric Criteria Identified	635 equals full pool.
	West Point Gage	Flow	Not Applicable	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	Not Applicable	Weekly minimum MWHr generation for each month	No Numeric Criteria Identified	No Numeric Criteria Identified	Percent of time flow meets guidelines in FWS PAL Letter	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	
	Columbus	Flow	Not Applicable	% of time daily average 1350 cfs or greater, 7-day average 1850 cfs or greater	% of time daily average 1350 cfs or greater, 7-day average 1850 cfs or greater	% of time daily average 1350 cfs or greater, 7-day average 1850 cfs or greater	No Numeric Criteria Identified	% of time daily average 1350 cfs or greater, 7-day average 1850 cfs or greater	Not Applicable	No Numeric Criteria Identified	Not Applicable	% of time daily average 1350 cfs or greater, 7-day average 1850 cfs or greater	% of time daily average 1350 cfs or greater, 7-day average 1850 cfs or greater	% of time daily average 1350 cfs or greater, 7-day average 1850 cfs or greater	No Numeric Criteria Identified	No Numeric Criteria Identified	Instantaneous minimum of 800 cfs desired; model will not provide information at this resolution. 2000-3000 cfs desired for recreation at Columbus, particularly on weekends when West Point is not operating hydropower.
	W.F. George	Level	% of time > 187.5 feet, December through May	% of time level April-October is 190 or above, 187.5 at all other times	Not Applicable	Not Applicable	No Numeric Criteria Identified	% of time level April-October is 190 or above, 187.5 at all other times	Not Applicable	Not Applicable	Not Applicable	Not Applicable	% of time level April-October is 190 or above, 187.5 at all other times	% of time level April-October is 190 or above, 187.5 at all other times	Historic Chattahoochee and USF archeologist concern over flooding and erosiion of historic sites, % of time level is 190 or above	No Numeric Criteria Identified	Historic Chattahoochee and USF archeologist concern over flooding and erosion of historic sites from Phenix City south
	W.F. George	Flow	Not Applicable	Not Applicable	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	Not Applicable	Weekly minimum MWHr generation for each month	No Numeric Criteria Identified	No Numeric Criteria Identified	Meet flow guidelines in FWS PAL Letter. Also, % of time flow > 6% reduction in flow on a monthly basis for dry years (6% reduction is from UIF_CMA median monthly flows of pre-dam years from IFA Analysis)	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	
	Andrews	Level	% of time >101.9 feet, December through May	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	No Numeric Criteria Identified	
	Columbia	Flow	Not Applicable	% of time daily average 2000 cfs or greater, 7-Day average 2000 cfs or greater	% of time daily average 2000 cfs or greater, 7-Day average 2000 cfs or greater	Not Applicable	No Numeric Criteria Identified	% of time daily average 2000 cfs or greater, 7-Day average 2000 cfs or greater	Not Applicable	Not Applicable	% of time daily average 2000 cfs or greater, 7-Day average 2000 cfs or greater, elevation >74.5 ft for Plant Farley	% of time daily average 2000 cfs or greater, 7-Day average 2000 cfs or greater	Not Applicable	% of time daily average 2000 cfs or greater, 7-Day average 2000 cfs or greater	No Numeric Criteria Identified	No Numeric Criteria Identified	
	Woodruff	Level	% of time level April-October 77.5 or greater, 76.5 at all other times	% of time level April-October 77.5 or greater, 76.5 at all other times	% of time level April-October 77.5 or greater, 76.5 at all other times	% of time level April-October 77.5 or greater, 76.5 at all other times	No Numeric Criteria Identified	% of time level April-October 77.5 or greater, 76.5 at all other times	Not Applicable	Not Applicable	% of time level April-October 77.5 or greater, 76.5 at all other times	% of time level April-October 77.5 or greater, 76.5 at all other times	Not Applicable	% of time level April-October 77.5 or greater, 76.5 at all other times	No Numeric Criteria Identified	No Numeric Criteria Identified	Desired flow contribution 50% from Chattahoochee and Flint basins; % of flow from each basin for each month July through December in the 25% lowest rain years

Performance Metrics Identification Overall Summary

ACF Stakeholders
Last Updated : June 26, 2013

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Notes
Flint	**Griffin**	Flow	Not Applicable	See note.	% of time flow <18 cfs wasteload allocation flow from GA EPD. See Note.	% of time flow <60 cfs Griffin Still Branch permit minimum flow	No specific numeric criteria identified	% of time above wasteload allocation flow of 18 cfs	Not Applicable	Not Applicable	Not Applicable	Linked to Water Supply & Water Quality	% of time flow is more than 15% below cumulative UIF average daily flow between Feb 15-Jun 15 and more than 30% below at other times. ***% of time Flow> monthly 7Q10+80% . Use UIF dataset to calculate the monthly 7Q10 since 1974.	Linked to Water Supply & Water Quality	Linked to Recreation	Linked to Water Supply & Water Quality	Clayton County used a 20-year minimum flow of 12.7 mgd per flow records for their recent waste load allocation evaluation into the Flint at Flint River Road in Jonesboro. The Caucus wants to incorporate Lake Horton, Lake Kedron, and Lake Peachtree into the model in the future for more detailed flow information.
	Carsonville	Flow	Not Applicable	% of time >600 cfs weekly average daily flow March through October	% of time flow <110 cfs wasteload allocation flow from GA EPD.	No specific numeric criteria identified	% of time flow <180 cfs from permitted ag withdrawals near Carsonviile	% of time above wasteload allocation flow of 110 cfs	Not Applicable	Not Applicable	Not Applicable	Linked to Water Supply & Water Quality	% of time flow is more than 15% below cumulative UIF average daily flow between Feb 15-Jun 15 and more than 30% below at other times. ***% of time Flow> monthly 7Q10+80% . Use UIF dataset to calculate the monthly 7Q10 since 1974.	Linked to Water Supply, Water Quality, and Recreation	Linked to Recreation	Linked to Water Supply & Water Quality	Demonstrate flow variability and low flow duration at node.
	Montezuma	Flow	Not Applicable	% of time flow is less than 700 cfs for boating March through October	% of time flow <317 cfs wasteload allocation flow from GA EPD.	No specific numeric criteria identified	% of time flow <180 cfs from permitted ag withdrawals near Carsonviile	% of time above wasteload allocation flow of 317 cfs	Not Applicable	Not Applicable	Not Applicable	Linked to Water Supply & Water Quality	% of time flow is more than 15% below cumulative UIF average daily flow between Feb 15-Jun 15 and more than 30% below at other times. ***% of time Flow> monthly 7Q10+80% . Use UIF dataset to calculate the monthly 7Q10 since 1974.	Linked to Water Supply, Water Quality, Recreation, and Farm Agriculture	Linked to Recreation	Linked to Water Supply & Water Quality	One SW ag withdrawal between Carsonville and Montezuma with low flow protection exists.
	Albany	Flow	Not Applicable	Lake Blackshear and Lake Chehaw are operated as run of the river which provides level for recreation	% of time flow <1000 cfs for wasteload allocation based on USGS pre-1974 7Q10	No specific numeric criteria identified	No specific numeric criteria identified	% of time above 1000 cfs	Not Applicable	Lake Blackshear and Lake Chehaw are operated as run of the river; Lake Chehaw operated to maintain elevation 181.8+-0.5 feet; no specific numeric criteria identified	Not Applicable	Linked to Water Supply & Water Quality	% of time flow is more than 15% below cumulative UIF average daily flow between Feb 15-Jun 15 and more than 30% below at other times***Also, % of time flow > 6% reduction in flow on a monthly basis for dry years (6% reduction is from UIF_CMA median monthly flows of pre-dam years from IFA Analysis)***% of time Flow> monthly 7Q10+30% . Use UIF dataset to calculate the monthly 7Q10 since 1974.	Linked to Water Supply & Water Quality	Linked to Recreation	Linked to Water Supply & Water Quality	Groundwater withdrawals accounted for in model as a surface water withdrawal based on USGS Groundwater/Surface water impact.
	Newton	Flow	Linked to level in Woodruff	% of time flow is less than 1000 cfs	Informational Need: % of time flow > wasteload allocation flow	No specific numeric criteria identified	No specific numeric criteria identified	% of time above wasteload allocation flow	Not Applicable	Not Applicable	Plant Mitchell has a 232 mgd withdrawal permit but uses once through cooling; protected by other metrics	Linked to Water Supply & Water Quality	% of time flow is more than 15% below cumulative UIF average daily flow between Feb 15-Jun 15 and more than 30% below at other times*** Also, % of time flow > 6% reduction in flow on a monthly basis for dry years (6% reduction is from UIF_CMA median monthly flows of pre-dam years from IFA Analysis)***% of time Flow> monthly 7Q10+30% . Use UIF dataset to calculate the monthly 7Q10 since 1974.	Linked to Water Supply & Water Quality	Linked to Recreation	Linked to Water Supply & Water Quality	Groundwater withdrawals accounted for in model as a surface water withdrawal based on USGS Groundwater/Surface water impact. ********** Informational need for future research is reduction in flows from Radium Springs, particularly during Memorial Day-Labor Day recreation season (related to historic & cultural and recreation)
	Bainbridge	Flow	Linked to level in Woodruff	% of time >900 cfs weekly average daily flow	% of time flow <2300 cfs for wasteload allocation based on USGS pre-1974 7Q10	No specific numeric criteria identified	No specific numeric criteria identified	% of time above 2300 cfs	Not Applicable	Not Applicable	Not Applicable	Linked to Water Supply & Water Quality	% of time flow is more than 15% below cumulative UIF average daily flow between Feb 15-Jun 15 and more than 30% below at other times *** Also, % of time flow > 6% reduction in flow on a monthly basis for dry years (6% reduction is from UIF_CMA median monthly flows of pre-dam years from IFA Analysis)***% of time Flow> monthly 7Q10+30% . Use UIF dataset to calculate the monthly 7Q10 since 1974.	Linked to Water Supply & Water Quality	Linked to Recreation	Linked to Water Supply & Water Quality	Groundwater withdrawals accounted for in model as a surface water withdrawal based on USGS Groundwater/Surface water impact.

Performance Metrics Identification Overall Summary

ACF Stakeholders
Last Updated : June 26, 2013

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Notes
Apalachicola	**Chattahoochee**	Flow	See Note.	% of time > 45' msl level at Chattahoochee Landing by month (16,000 cfs). See Note for recreational navigation.	% of time tributaries "disconnect" from river, however, no specific numeric criteria identified	Not Applicable	% of time Blountstown gage is >7 feet (15,800 cfs) in the month of February to flood tupelo trees	Not Applicable	Linked to Chattahoochee recreation gage criteria; floodplain detritus necessary for organic material for shellfish productivity	% of time <77' level at Woodruff	% of Time >5,000 cfs, % of time elevation is >38 ft MSL for Plant Scholz; note Plant Scholz scheduled for closing July 2015	% of time <77' level at Woodruff	Comparison of pre & post dam flow. Also, % of time flow > 6% reduction in flow on a monthly basis for dry years (6% reduction is from UIF_CMA median monthly flows of pre-dam years from IFA Analysis)	% of time <77' level at Woodruff	Linked to Recreation interests. Desire to minimize flow surges and impact on Indian mounds, confederate emplacements, and artifact preservation	Not Applicable	Percent of time Commercial Navigation: Jan - May (Normal) = 18,000 cfs, Jan - May (Dry) = 16,000, Feb- April (Drought) = 16,000 cfs **********Percent of time Recreational Navigation: Jun - Dec (Normal) = 14,000 cfs , Jun-Aug & Dec (Dry) = 10,000 cfs ,Sept- Nov (Dry)= 8,000 cfs, Jun-Aug & Dec (Drought) = 8,000 cfs , Sept - Nov (Drought) =6,500 cfs ********** Note: navigation criteria to be evaluated based on performance during specific hydrologic inflow conditions (years) provided by Dan Tonsmiere. **********Percent of flow contribution from Chattahoochee and Flint basins (Middle Chattahoochee) ******** FWS PAL letter flow guidelines will be reviewed.
	Blountstown	Flow	Linked to Chattahoochee gage criteria	% of time >5 feet (~11,600 cfs) on Blountstown gage (Duck ponds between Wewahitcha & Sumatra)	% of time tributaries "disconnect" from river, however, no specific numeric criteria identified	Not Applicable	Not Applicable	Not Applicable	% of Time > 15 feet gage (38,300 cfs) (oyster fishery shutdown) and % of time level > 7 feet gage (15,800 cfs) for freshwater flow to the bay	Not Applicable	Not Applicable	Not Applicable	% of time flow > 6% reduction in flow on a monthly basis for dry years (6% reduction is from UIF_CMA median monthly flows of pre-dam years from IFA Analysis)	Not Applicable	Linked to recreation interests. Desire to minimize flow surges and erosion of historic sites.	Linked to Recreation	Percent of time monthly average flows are between 14,000 and 18,000 cfs February through May and between 10,000 and 16,000 cfs June through January in a non-drought year. Percent of time monthly average flows are <14,000 cfs February through May and <8,000 cfs June through January in a drought year.
	Sumatra	Flow	Linked to Chattahoochee gage criteria	Linked to Chattahoochee gage criteria	% of time tributaries "disconnect" from river, however, no specific numeric criteria identified	City of Port St. Joe water supply canal elevation, but no specific numeric criteria received	Linked to adequate stream flows for other uses	Not Applicable	Informational need: Productivity of Shellfish	Not Applicable	Not Applicable	Not Applicable	Also, % of time flow > 6% reduction in flow on a monthly basis for dry years (6% reduction is from UIF_CMA median monthly flows of pre-dam years from IFA Analysis)	Not Applicable	Linked to recreation interests. Desire to minimize flow surges and erosion of historic sites.	Not Applicable	Historic Chattahoochee and USF archeologist concern over flooding and erosion of historic sites from Sumatra north to Phenix City.
	Apalachicola Estuary			Recreational fishery from Destin to Tampa		Not Applicable	Not Applicable	Not Applicable	7,500 acres of healthy oyster bars	Not Applicable	Not Applicable	Related to recreation	Areal coverage of freshwater seagrass; maintain location of 5 ppt isohaline	Not Applicable	Not Applicable		The estuary is not a node in the river model; however, metrics for the estuary will be related to environment and seafood industry stakeholders. Metrics may relate to river flow at Sumatra. Currently this effort is being led by the Bay Assessment Ad-hoc committee. The Sustainable Water Management Plan for the ACF Basin will include an assessment of how suggested WMAs can contribute to the freshwater needs of the Apalachicola River, Floodplain and Bay. Although the estuary is not a node in the river model, ACFS is seeking a method for evaluating the impacts of freshwater flows at the Sumatra node on salinity, oysters and possibly other indicators.

Legend

Evaluation using model output
Additional information needed

BLACK & VEATCH
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In association with
Georgia Tech Georgia Water Resources Institute

SEPA FIRM ENERGY BY PROJECT MWH/Week

Month	Buford	West Point	George
Jan	1,181	1,171	3,613
Feb	1,449	3,888	4,667
Mar	1,487	2,666	4,916
Apr	865	2,469	4,487
May	1,203	1,134	3,043
Jun	1,615	1,758	3,229
Jul	1,949	1,579	3,568
Aug	2,528	1,264	3,306
Sep	2,048	1,049	2,395
Oct	1,225	893	2,088
Nov	954	875	2,267
Dec	783	1,557	3,496

Southeastern Power Administration

Typical Hydropower Schedule

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
00:00 - 01:00												
01:00 - 02:00												
02:00 - 03:00												
03:00 - 04:00												
04:00 - 05:00												
05:00 - 06:00												
06:00 - 07:00												
07:00 - 08:00												
08:00 - 09:00												
09:00 - 10:00												
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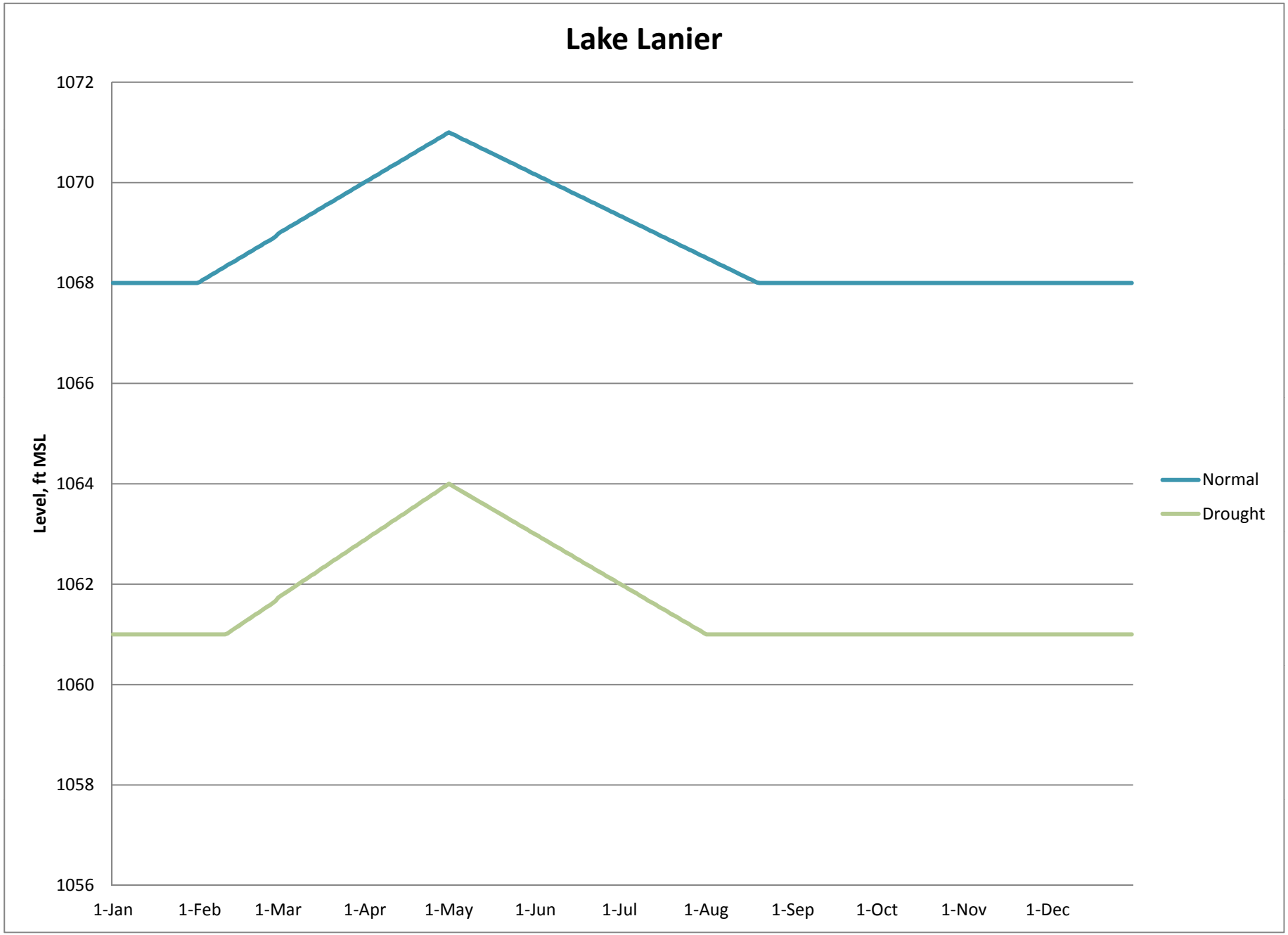
17:00 - 18:00												
18:00 - 19:00												
19:00 - 20:00												
20:00 - 21:00												
21:00 - 22:00												
22:00 - 23:00												
23:00 - 24:00												
TOTAL												

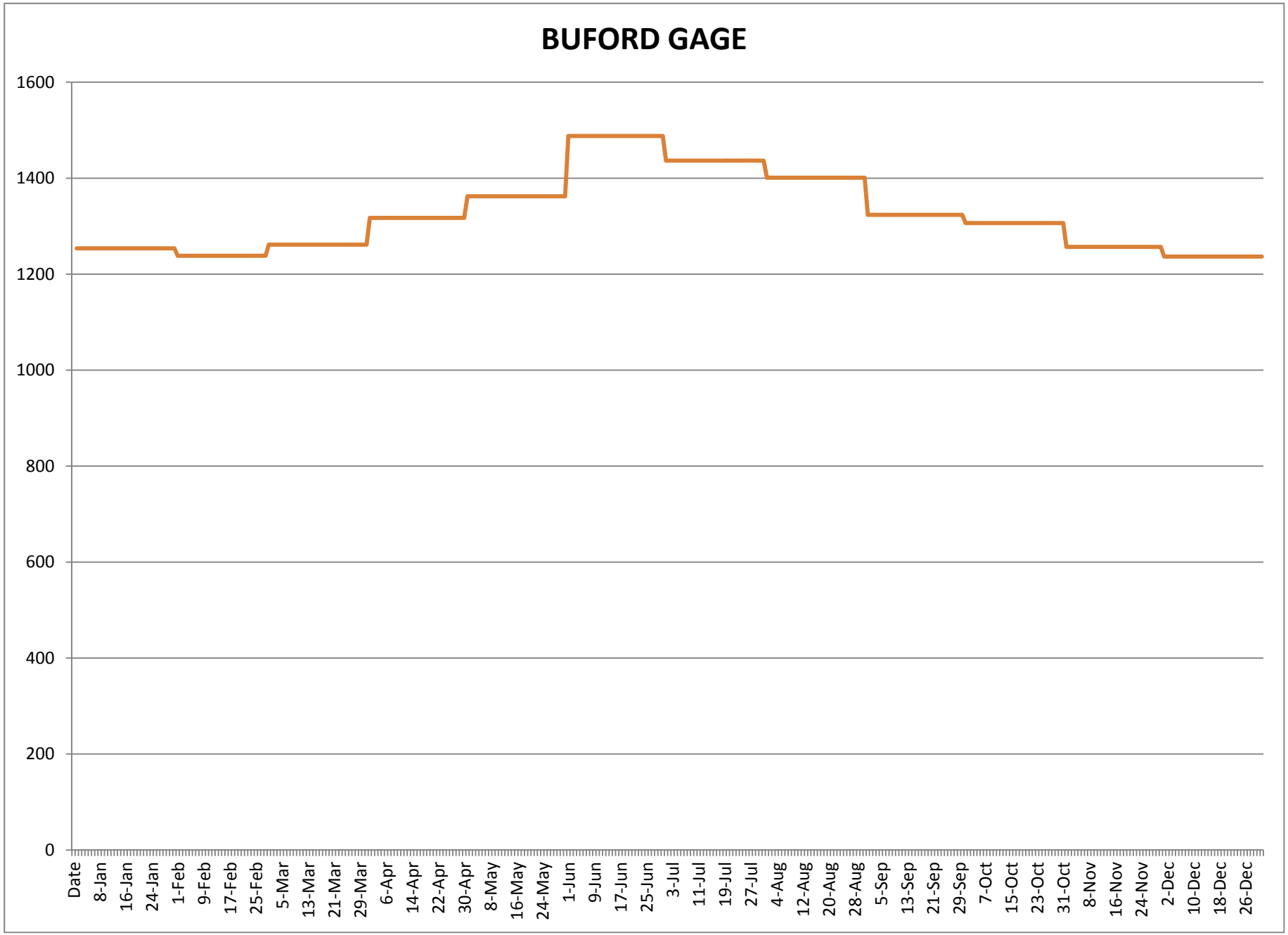
Scheduled Hydropower

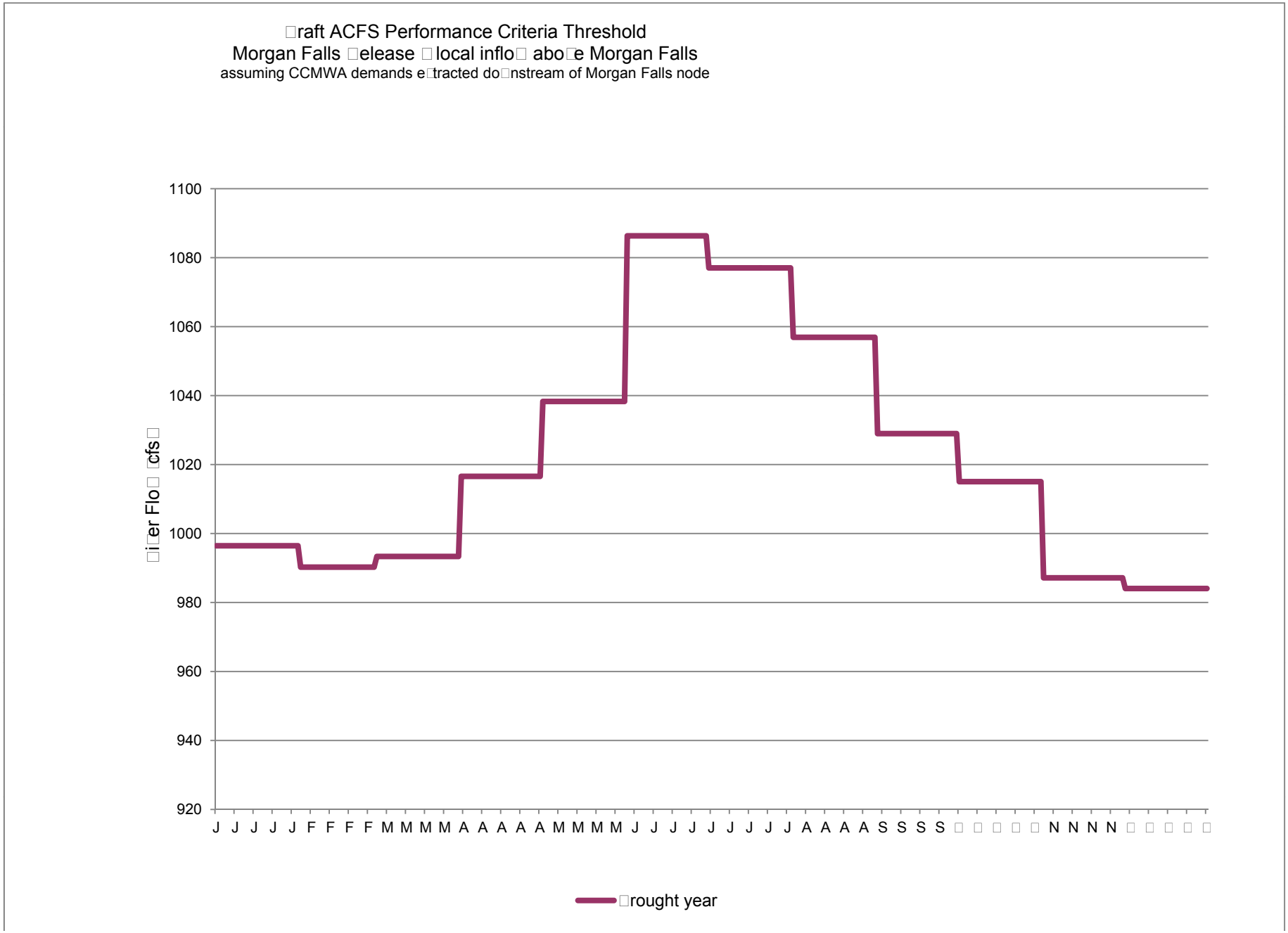
All generation is scheduled on weekdays except daily minimum flow releases

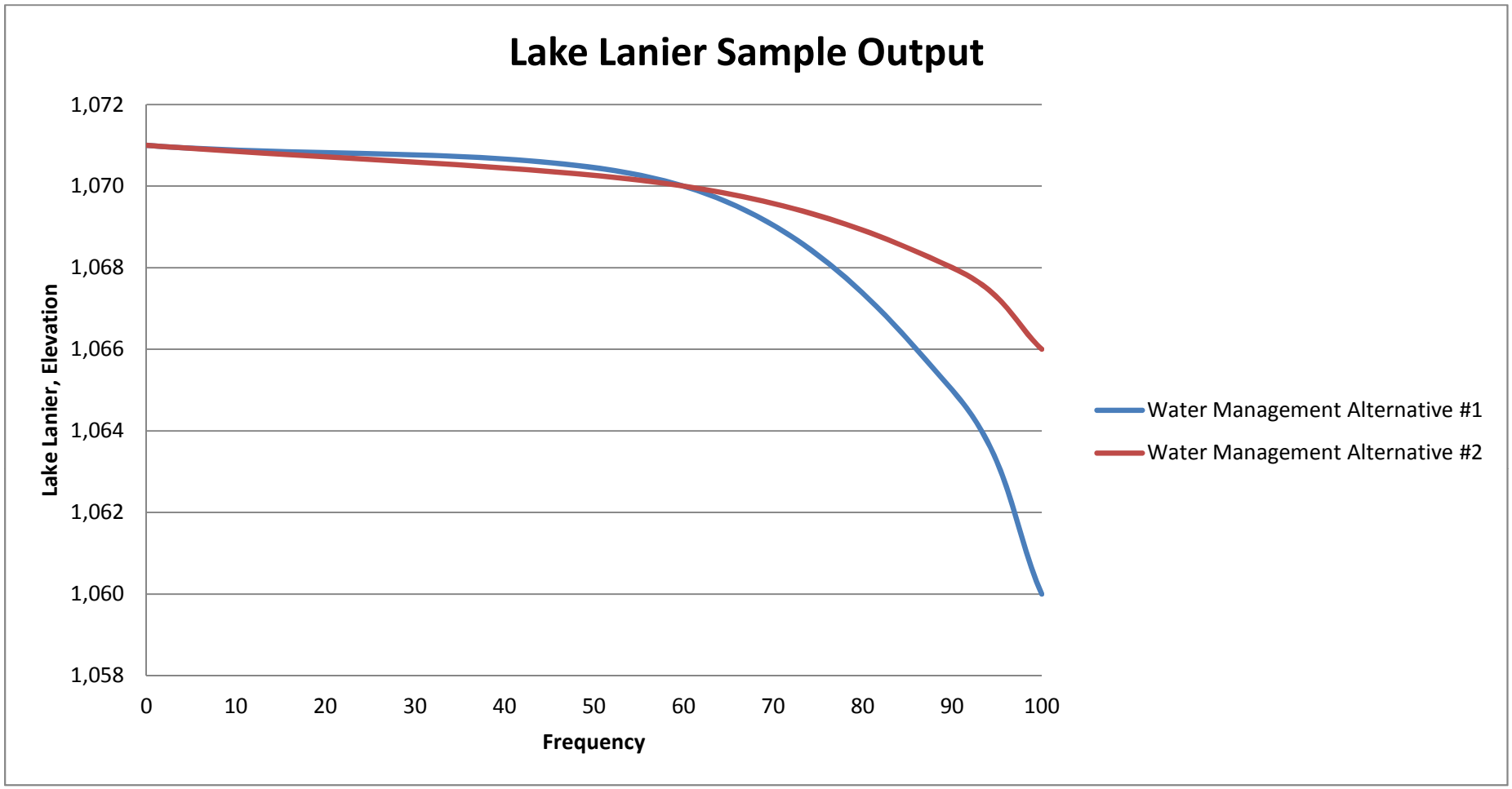
Appendix 2

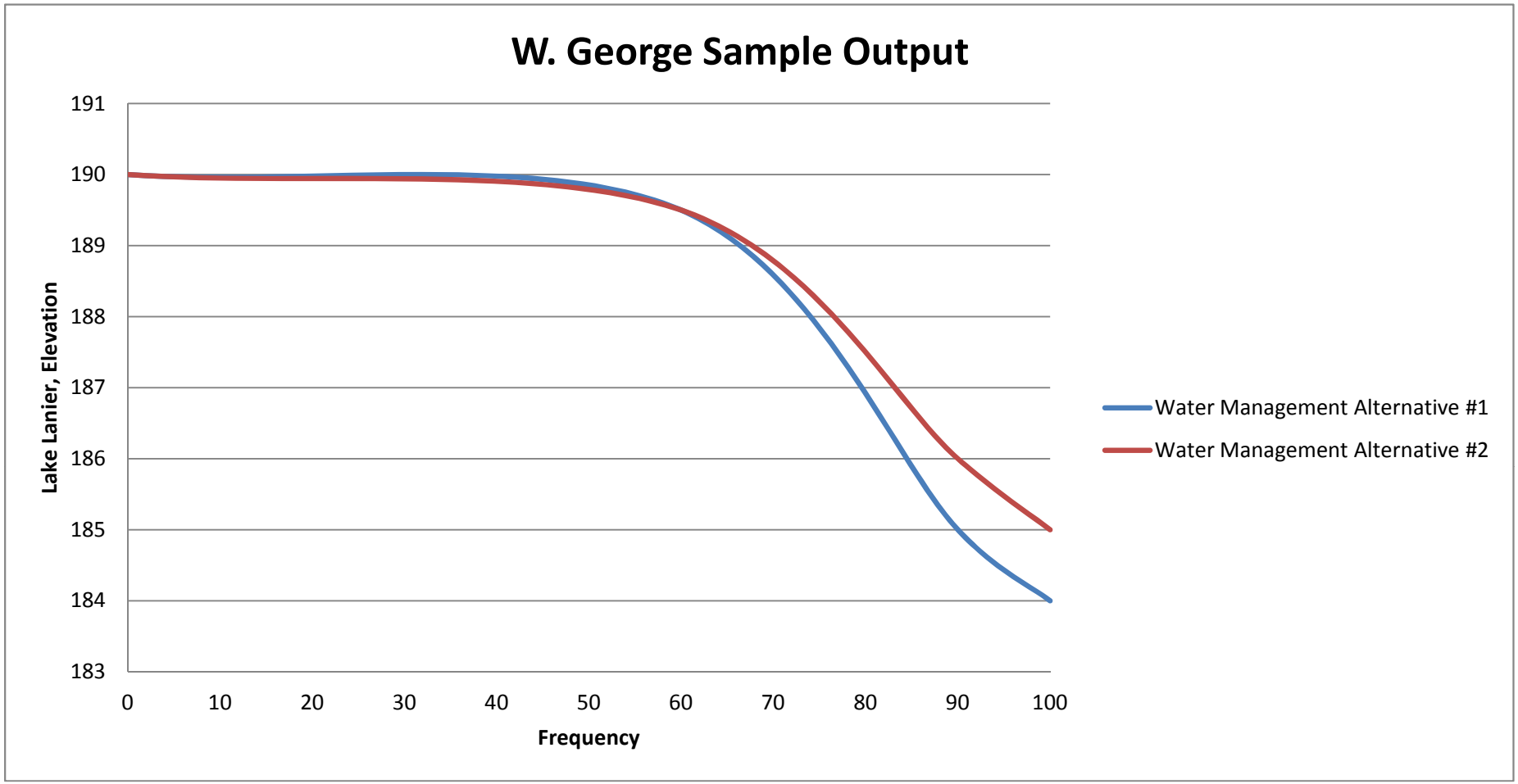
Model Output Examples



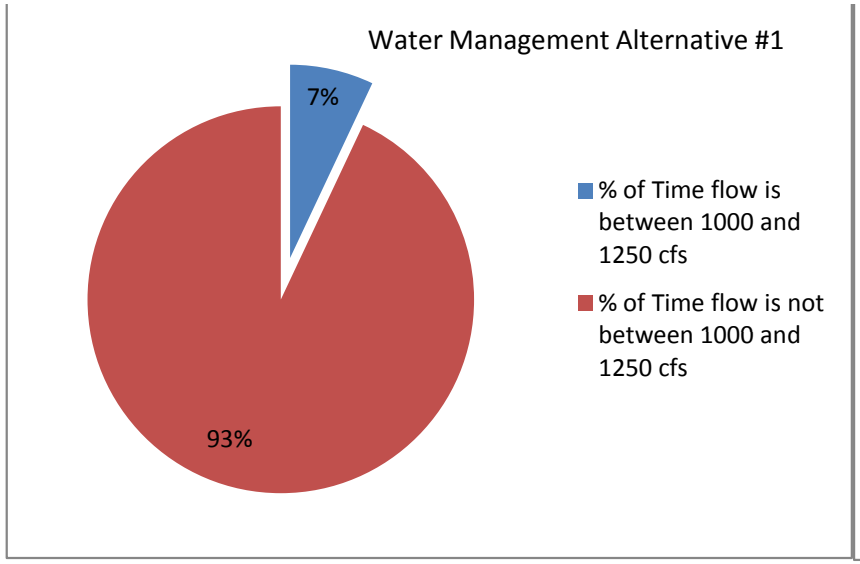


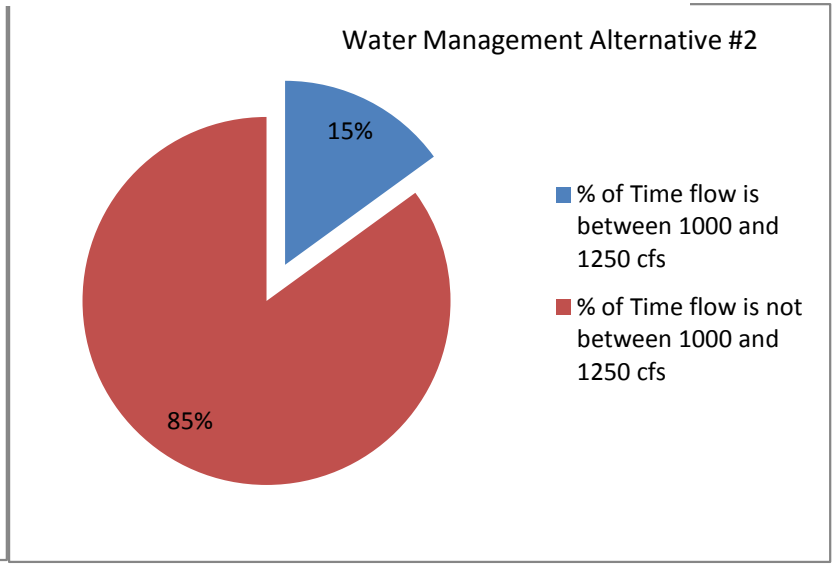




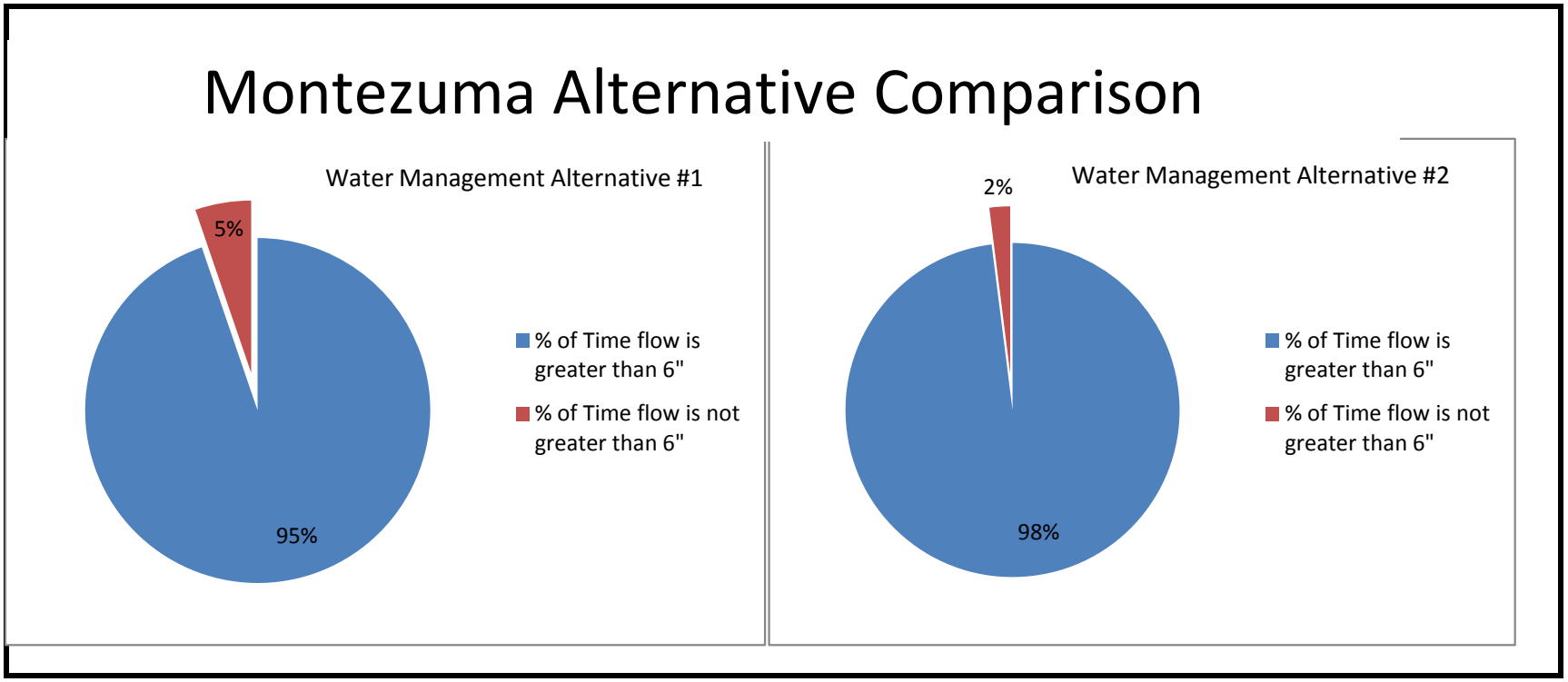


Peachtree Creek Alternative Comparison





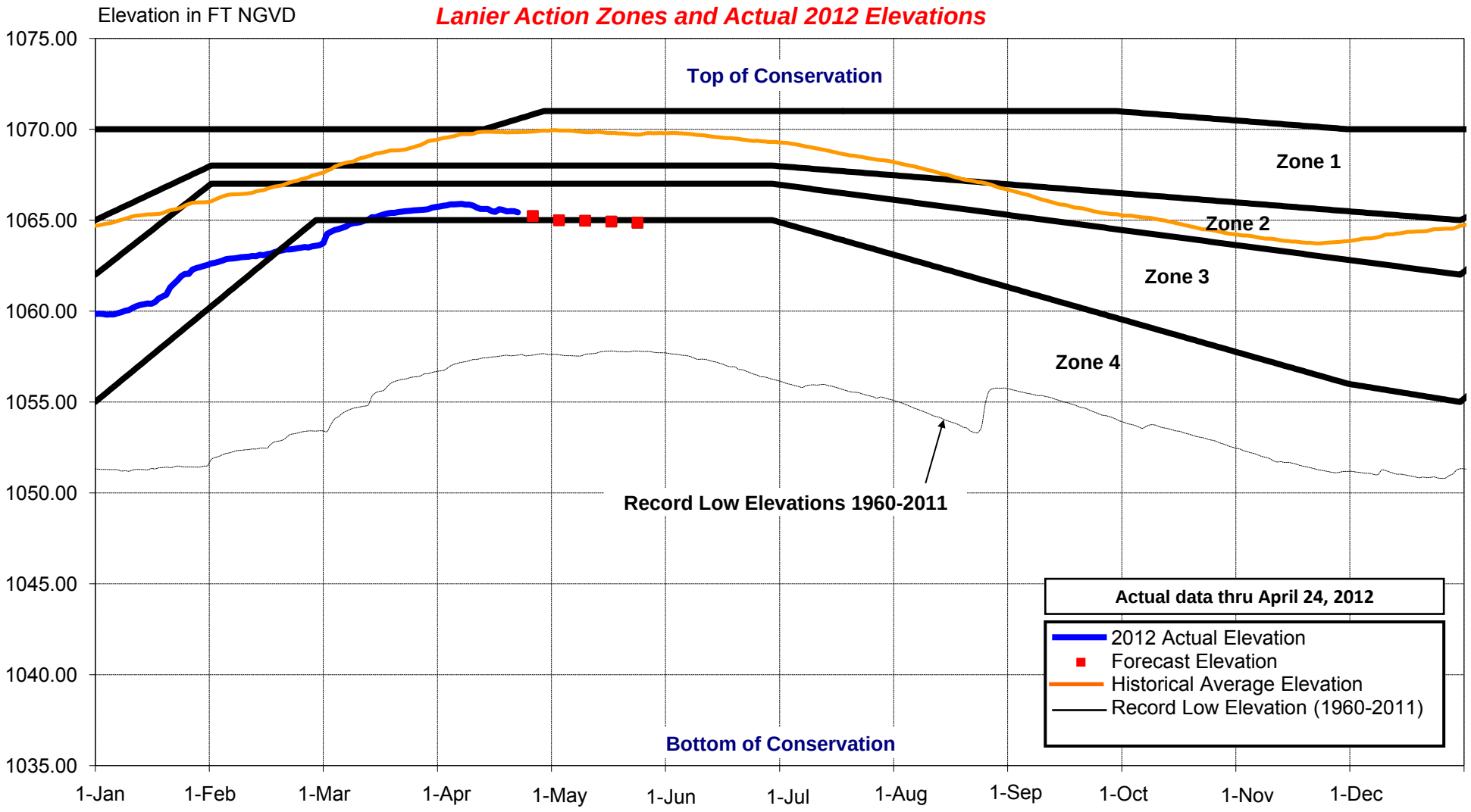
Montezuma Alternative Comparison



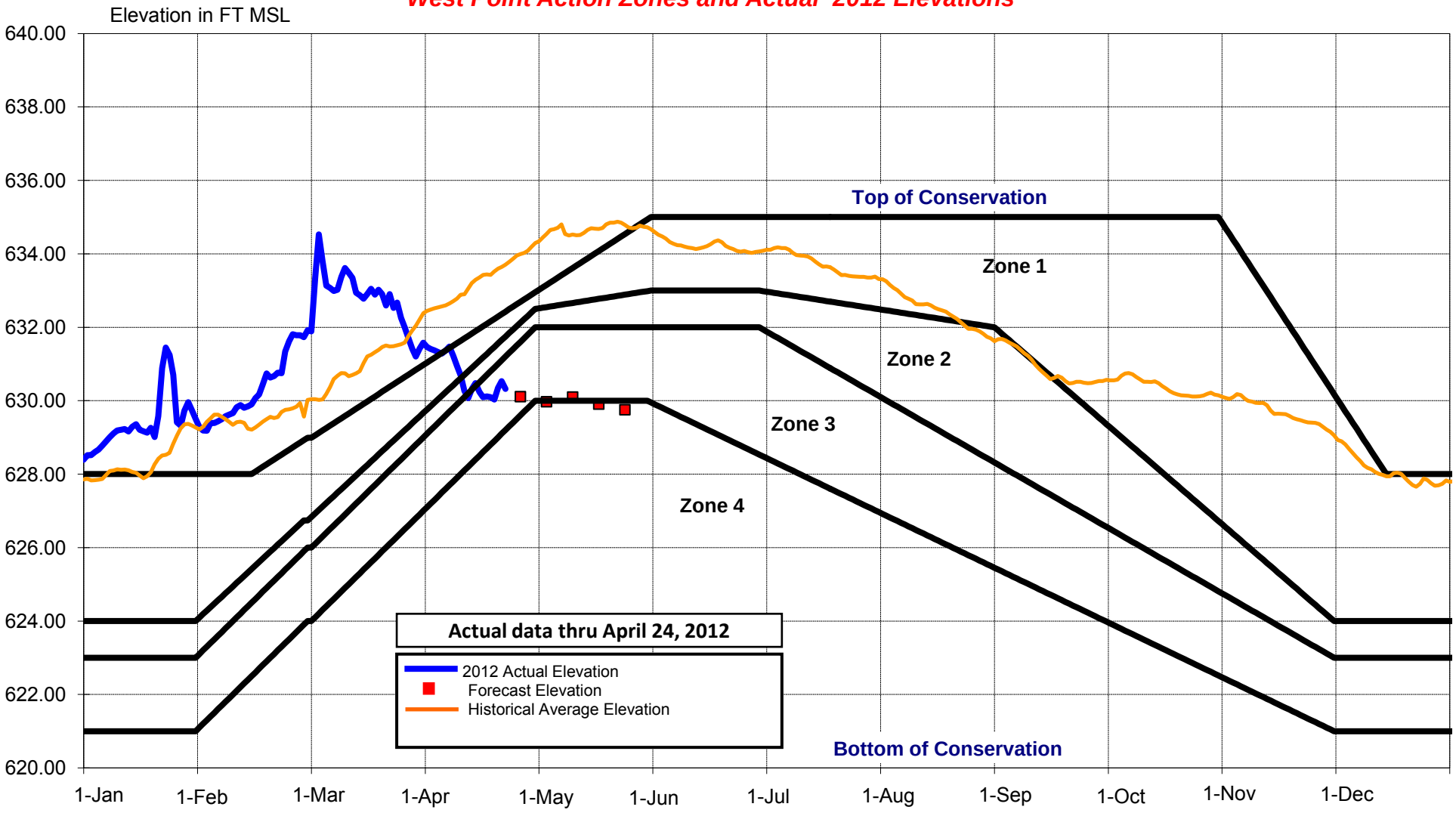
USACE RIOP SUMMARY

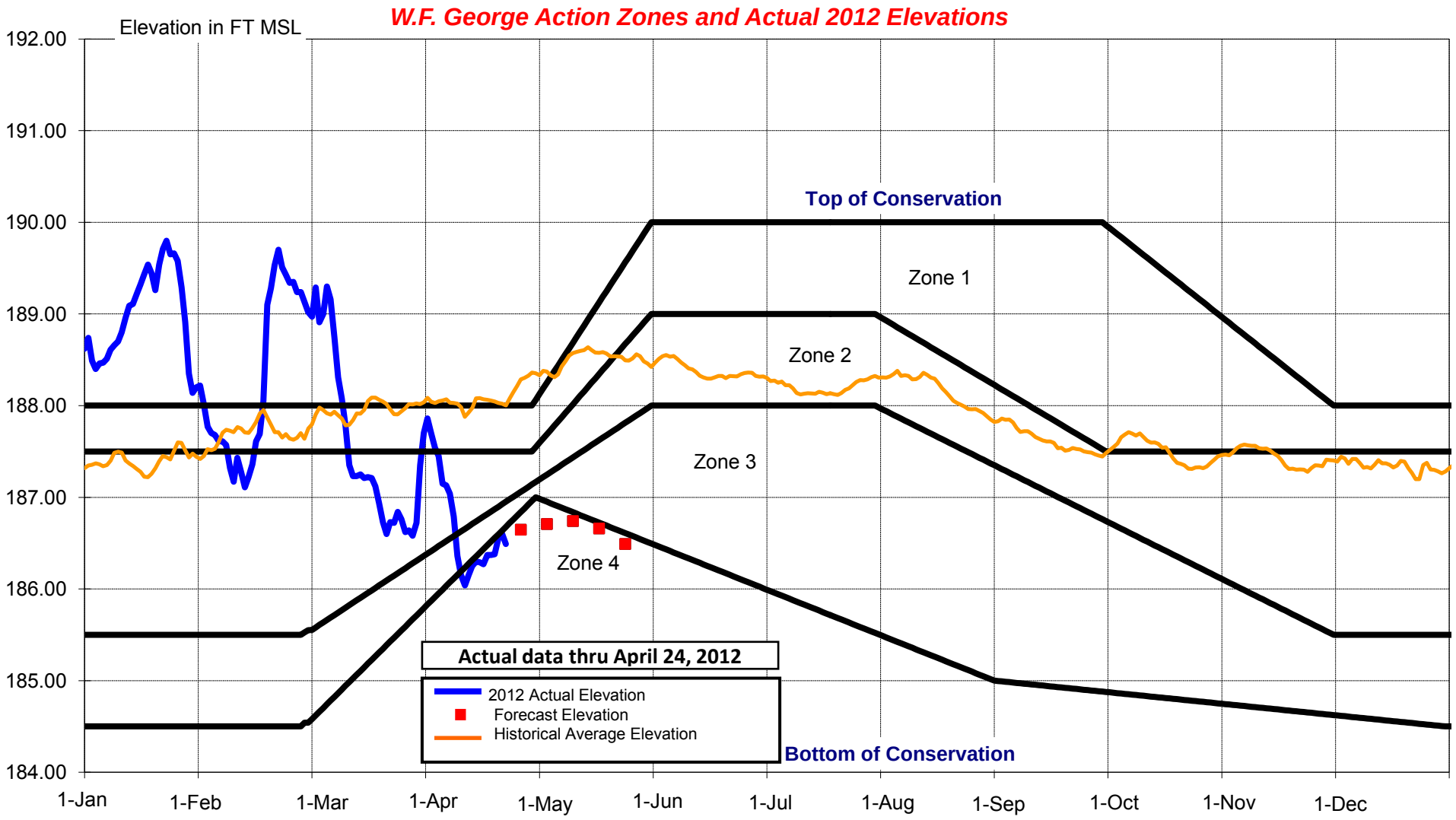
ACF Stakeholders
Last Updated : April 30, 2012

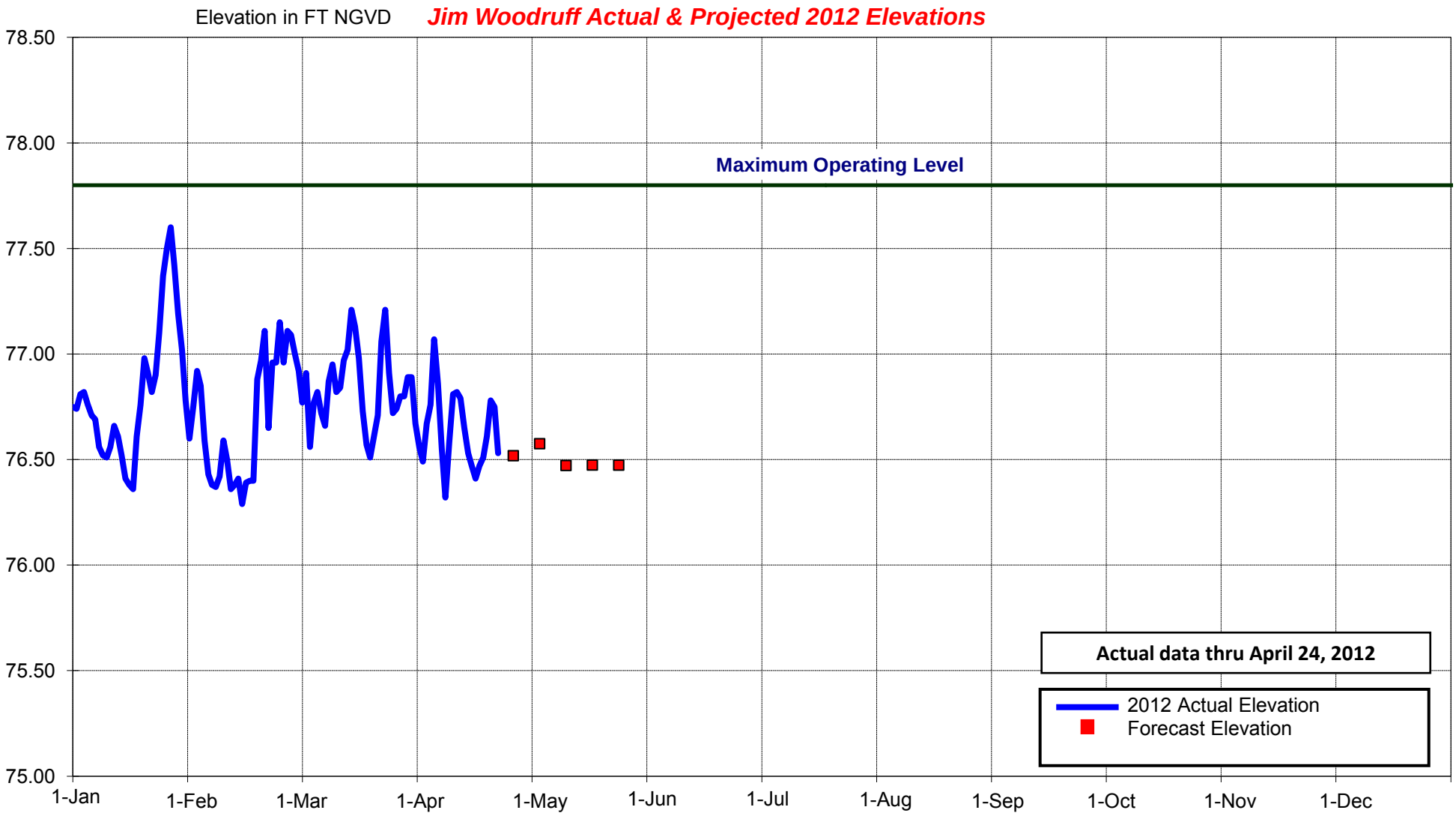
Node / Gage	Minimum Release	Action Levels	Flow Schedule	Environmental Flow	Ramp Schedule	Notes
anier	600 cfs	http ater.sam.usace.army.mil acfframe.htm				
Peachtree Creek	750 cfs					650 cfs minimum flo under drought conditions
West Point	670 cfs	http ater.sam.usace.army.mil acfframe.htm				
W.F. eorge		http ater.sam.usace.army.mil acfframe.htm				
Andre s						Normal pool 102 MS
Woodruff		http ater.sam.usace.army.mil acfframe.htm	See Woodruff Seasonal elease raphs	0.5 feet dra do n during spa ning season C SAM S P 1130-2-9	See Woodruff elease imits	Normal pool 77 MS
ACF asin Composite Storage		http ater.sam.usace.army.mil ACFconstorage.pdf				

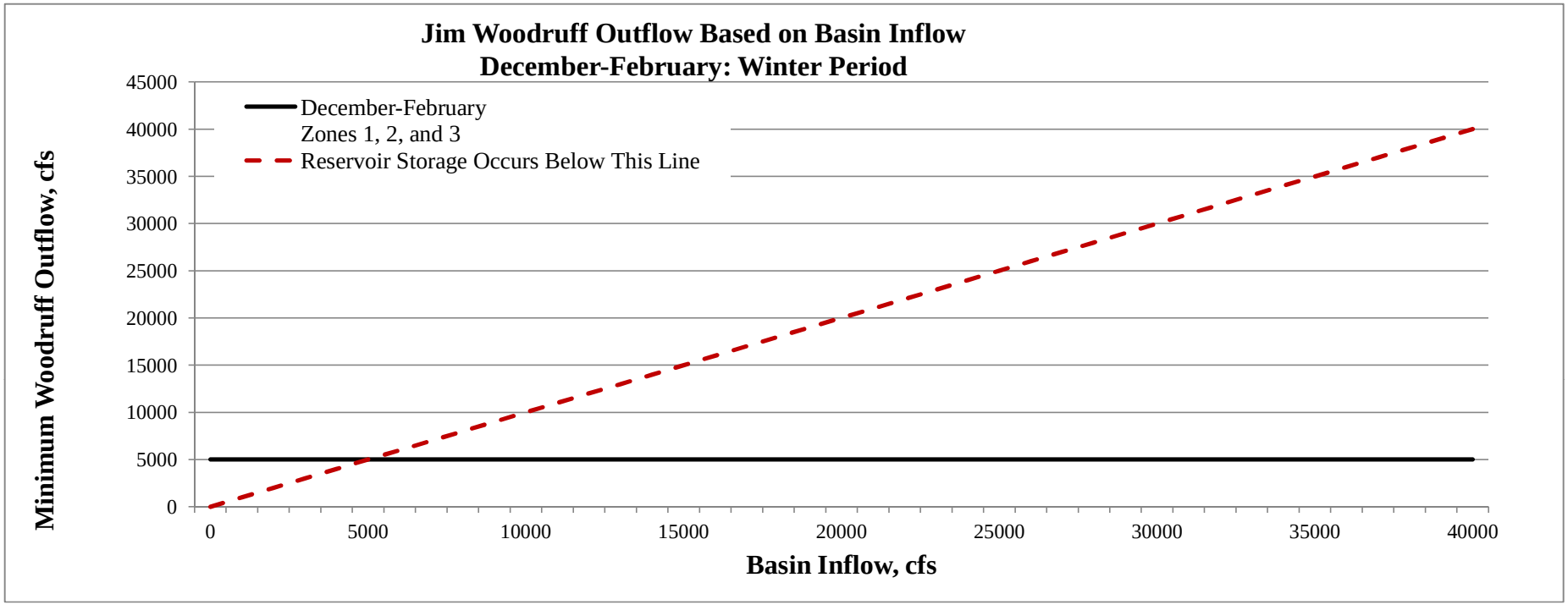


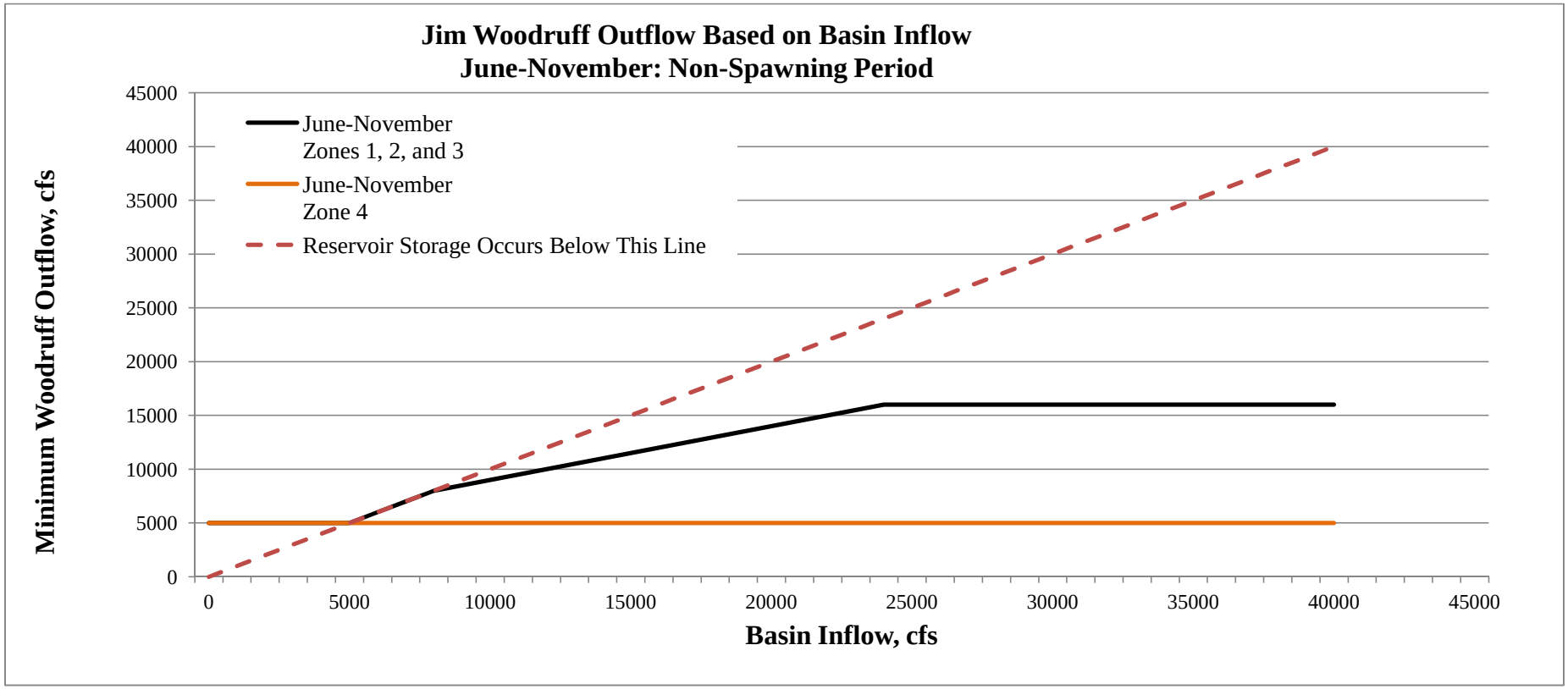
West Point Action Zones and Actual 2012 Elevations

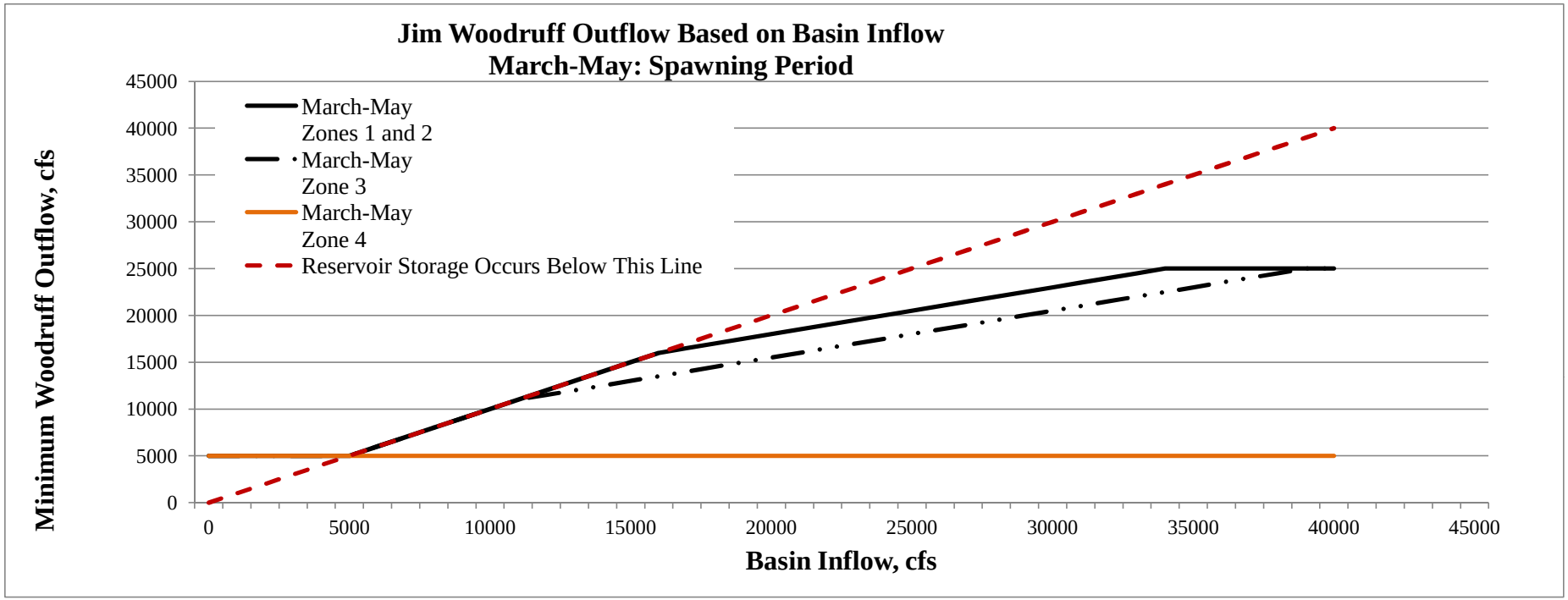












Appendix 3

Summer Caucus Meeting Summaries

Apalachicola Caucus Meeting: August 8, 2012 – Performance Metrics for the SWMP/IFA

An Apalachicola Caucus Meeting was held on August 8, 2012, at the North Florida Research and Education Center. Those in attendance included the following:

Members Attending

- Lee Garner
- Kal Knickerbocker
- Darrell Smith
- David Wright
- John Alter
- Chad Taylor
- Dan Tonsmeire
- Shannon Lease
- Nick Commerford
- Shannon Hartsfield
- Brad Moore
- Steve Leitman
- Homer Hirt
- Betty Webb
- David McLain
- Bill McCartney

Consultants:

- Kristin Rowles, Technical Coordinator
- Steve Simpson, Black & Veatch
- Robert Osborne, Black & Veatch

Marty Kelly and Pam Latham from Atkins joined the meeting by phone. In addition to this summary, the meeting agenda, meeting sign-in sheet, and revised Performance Criteria Identification Summary are attached.

Welcome & Introductions

Dave McLain welcomed everyone and acknowledged the lunch sponsors, including six counties in the region. Kristin Rowles welcomed everyone and asked everyone to introduce themselves. After introductions, she noted that this meeting is a first step in the performance metrics development process. Kristin presented the meeting objectives as follows:

- Learn about performance metrics and their use in the SWMP/IFA process
- Discuss the performance metrics table – fill in blanks where we can and make needed modifications
- Identify information needs
- Evaluate if the table entries are representative of interests in the caucus and ACFS

Kristin said that in December, the Governing Board (GB) would make a decision to proceed with the list of performance metrics for modeling. At that time, agreement on the performance metrics list would be a decision that all stakeholder interests were expressed in the list. She noted that it would not necessarily mean agreement on the values of the individual performance metrics. She said consensus development related to tradeoffs among performance metrics would come later when model results could inform the discussions. She explained that in this meeting, the focus would be to document the preferences of stakeholder interest groups.

Kristin said the criteria will be incorporated in the model development and the analysis of modeling results; revisions will occur through the process of further discussion of performance metrics in the fall and through the process of building stakeholder consensus during the iterative model runs.

Kristin asked if anyone had questions or comments. Comments included the following:

- Steve Leitman asked when ACFS would evaluate tradeoffs among interests and performance metrics. Kristin said that the consideration of tradeoffs and negotiation over performance metrics levels would come as the modeling proceeds and informs the discussion. She noted the process was designed not to try to force the decision too early in the process. She said it was important for members to be able to make informed decisions.
- Chad Taylor noted that there were several members at the meeting that were from the Florida Agriculture Extension today.
- Dave McLain noted he was leery about the use of the word consensus. He stated he was not sure how filling out squares is consensus. He believes that the word consensus implies agreement on the value of various performance metrics and not just that they are representative of all interests. Brad Moore said he had discussed this part of the project with someone who had experience in this type of work. Brad was encouraged to think of alternatives as “better” or “worse” rather than in terms of “absolutes” at this stage of the project. Bill McCartney noted, however, there are some absolutes in the basin.

Presentation on Performance Metrics & Review of existing Performance Metrics

Steve Simpson gave a brief overview of the Approach to Metric Development Technical Memorandum, which was distributed to the caucus members in advance of the meeting. He noted that the latest revision (June 28, 2012) included definitions of terms and other information for clarification as requested by ACFS Technical Oversight and Coordination Work Group (TOCWG) members.

Steve explained the overall approach for metric development. Steve noted there has been some discussion in previous caucus meetings about the definitions of constraints and performance criteria. Steve explained performance criteria are a measure at a specific location and used to evaluate model output. On the other hand, constraints are variable inputs to the model which set a desired physical condition at a location. He noted the Upper Chattahoochee caucus meeting discussed the use of the word “preferences” in lieu of “constraints” or “needs”. Steve reminded the members that this meeting

was not the last chance to modify the performance metrics. He noted Black & Veatch will submit a revised Task 2 Performance Metric memorandum in September, 2012. This will included a new section that details the results of the caucus meetings. Steve said Atkins will submit a final environmental flows deliverable to the TOCWG and caucuses for review on October 12, 2012. Afterwards, additional sub-basin caucus meetings will be held in October to review Atkins final environmental flows deliverable. This will include discussions on how environmental flows will be integrated into the SWMP modeling and performance metrics. The overall conclusion of this task is targeted for December, when the Governing Board will consider approval of the Task 2 memorandum from B&V, including agreement that the proposed list of performance metrics for use in SWMP modeling is fully representative of interests in ACFS.

Steve asked if there were any questions or comments so far. Comments included the following:

- Dan Tonsmeire questioned the word imbalances in the memorandum. Steve noted that this was a generalized term.
- Dan Tonsmiere asked if performance metrics could be changed later. Steve answered that yes, they can be.
- One member asked about the weekly model time step and how we will understand or assess variability that occurs within a week. Steve explained there were different levels of accuracy of all the variables in model from hourly to weekly to monthly. Steve said that, given the varying temporal accuracy of inputs, weekly average flows are appropriate for planning without implying a level of accuracy that is beyond the level of data detail. Within the weekly average time step, managing flows to minimize high and low flows is a matter of proper operation. Additionally, the RES-SIM model runs to be conducted will provide model results at a daily timestep.
- Chad asked if we would be able to assess a change such as the reduction of agricultural demand by 15%. Steve noted this could be a water management alternative. Our process includes evaluating the outcomes with varying demands which would need to be estimated based on the management practices selected.

Kristin asked Marty Kelly from Atkins to discuss the Apalachicola Bay evaluation. She noted that Atkins will provide a recommendation for the evaluation of the effect of flows on estuarine ecology on August 15th.

Marty discussed existing models for the bay, including hydrodynamic models and statistical/regression based models. Shannon Hartsfield questioned whether the model would cover the entire bay. Marty said that the hydrodynamic model covers the full bay, but he was unsure about the extent of the statistical/regression models. Marty noted that a major question is whether the statistical/regression model will support evaluation at time and places that ACFS wants to know about. He noted that the statistical/regression model would be less expensive.

Dan Tonsmiere asked if both model approaches would allow for the consideration of how flows affect the bay ecology. Marty answered yes; the models will allow for “what-if” scenarios with respect to flows to be evaluated for their impacts on ecology. Dan Tonsmiere said that in addition to evaluating bay

health with respect to the needs of oysters as a target species, it would also be useful to understand impacts on nutrient levels. After additional discussion about an appropriate flow regime, Marty confirmed that Atkins would provide a recommendation about how to proceed with assessing the effect of flows on Apalachicola Bay on August 15th.

Next, Kristin asked Steve to continue the discussion about the performance metric identification summary. Steve stressed the central focus of the performance metrics memo to be the performance metric identification summary. A larger 11X17 version was handed out to members. He noted the summary was broken out by sub-basin caucus, nodes, and stakeholder interests. He said this summary will be a primary communication handshake between the modelers and the stakeholders. Steve noted the legend located at the bottom of the summary table.

Next, Steve Simpson explained that the basis for most of the metrics already included on the summary was the work from the ACFS Data Needs and Sustainability Work Group in 2010. Steve noted that the input of the members is needed to review and make sure the numbers are still appropriate. Steve explained that during the Middle and Lower Chattahoochee and Upper Chattahoochee Caucus meetings there were some items that were noted as "Not Applicable" or "No Specific Numeric Criteria Identified". Steve said that not every box needs to have a metric, but that the desire is to make sure that all of the stakeholder interests are represented. He said that today the group would review, modify, and add specific entries into the summary table.

Discussion on Summary Table

Next, the committee discussed each node in the Performance Metric Identification Summary. Edits to the summary are included in the revised handout attached to the meeting summary. For several parameters, the 2010 input from the Data Needs and Sustainability Workgroup was reviewed and incorporated. Some of the discussion points from this exchange are bulleted below.

- Dan Tonsmiere provided desired commercial navigation metrics for the Chattahoochee node (Percent of time Commercial Navigation: Jan - May (Normal) = 18,000 cfs, Jan - May (Dry) = 16,000, Feb- April (Drought) = 16,000 cfs) and linked both Blountstown and Sumatra nodes to this criteria. Dan will provide more specific numbers to address dry, drought, and normal years for this analysis.
- Dan Tonsmiere provided desired recreational navigation metrics for the Chattahoochee node (Percent of time Recreational : Jun - December (Normal) = 14,000 cfs, June-August and December = 10,000 cfs and Sept-Nov = 8,000 cfs (Dry), June-August and December = 8,000 cfs and Sept-Nov = 6,500 cfs (Drought) and linking both Blountstown and Sumatra nodes to this criteria. Dan will provide the dry, drought, and normal years for this analysis.
- 47-49' is needed at the boat dock near the Chattahoochee gage to support boat recreation. We need to confirm that the dock elevation gage correlates directly to the USGS Chattahoochee gage. Steve Leitman will check on this.
- Port St. Joe needs 3-5 MGD for consumptive use.
- Hydropower needs at the Woodruff gage were thought to be good, but should be confirmed with SEPA.

- Do not refer to navigation "windows" but to seasons. "Windows" implies active management for navigation.
- Members felt that Urban Agriculture metrics were not applicable for all nodes; however, Bill McCartney will check Wewahitchka.
- Members noted that no specific numeric criteria were identified for farm agriculture.
- Members suggested that there was an information need to confirm intake elevation of Gulf Power Plant Sholtz.
- Steve Leitman asked if there can be additional notes added to the tables. For example, append PAL letters to the table. Steve Simpson noted this was a good suggestion.
- Shannon Hartsfield noted that shellfish beds are closed to fishing based on bacterial levels when river level is above 15 ft stage at the Blounstown gage. After some discussion, this was added as a metric for the seafood industry for the Blountstown gage.
- Members discussed needs versus wants with these metrics. Dave McLain commented that the IFA will provide additional metrics
- Metrics for historic/cultural are linked to other uses/interests in this region. Chad Taylor will noted that Nancy White has indicated that some flow pulses can be a problem for archeological resources in the region, especially releases for navigation windows.
- Bill McCartney will confirm on Industry and Manufacturing metrics at the Apalachicola gages.
- Dan Tonsmiere said he does not really like the PAL requirements from USFWS as metrics and would prefer metrics that demonstrate the loss in flow from pre-dam to current conditions.
- The group requested that Apalachicola Bay be listed on the summary and noted that while the bay is not a flow node and is not in the river model, bay health is an important performance metric.

DISCUSSION OF NEXT STEPS AND WRAP-UP

Kristin asked if anyone could think of a stakeholder interest group or individual who could not attend the meeting but who should be reached out to gain their input. Kristin thanked the group for their input and participation, and the meeting was adjourned.

ACTION ITEMS

- Additional information is needed to describe a metric based on % of time tributaries "disconnect" from the river.
- Chad Taylor will research the connection of inundation of the floodplain for tupelo trees and subsequent bee production.
- The intake elevation of Gulf Power Plant Scholtz needs to be confirmed
- Bill McCartney to check Wewahitchka as it relates to the Blountstown gage for urban agriculture.

- Steve Leitman will confirm that the dock elevation gage correlates directly to the USGS Chattahoochee gage.
- Bill McCartney will confirm on Industry and Manufacturing metrics at the Apalachicola gages.
- Dan Tonsmiere will provide more specific numbers for recreation and navigation to address dry, drought, and normal years for this analysis.

BLACK & VEATCH

ACFS Apalachicola Basin Caucus 8/8/2012

Name	Organization	E-mail
Stephen Simpson	Black & Veatch	simpsonSL@bv.com
Robert R. Osborne	" "	osborneRR@bv.com
Lee Garner	City of Chattahoochee	citymgr@fairpoint.net
Kal Knickerbocker	FDACS	Knickek@doacs.fl.us
Darrell Smith	FDACS - water Policy	Darrell.Smith@freshfromflorida
David Wright	UF	wright@ufl.edu
Steven Peterson	Jackson County Chamber	treeman@phonl.com
Chad Taylor	Jackson BOCC	CCT@phonL.com
Dan Tonsmeire	Apalachicola Riverkeeper	Dan@ApalachicolaRiverk
Shannon Lease	Apalachicola Riverkeeper	shannon@ApalachicolaRiver-org
Kristin Rowles		
Nick Comerford	UF	nbc@ufl.edu
Shannon Hartsfield	Oysterman	Shannonaber@yahoo.com
Brad Moore	ACFS	Bmoorejess@Gosats.com
Steve Leitman	FSU/TUC	leitman@fsu.ne
Homer Hirt	App. Caucus	hirtfam@gmail.c
Betty Webb	City Of Apalachicola	bettywebb@cityofapalachicol
David McLain	Caucus Coordinator	FIRSTRESPONSE@FAIRPOINT.
Bill McCartney	ACFS - Excom/AS-BC	billmccartney22@yahoo.com

www.bv.com

ACF Stakeholders
Apalachicola Caucus
Meeting on Performance Metrics

August 8, 2012
1:00PM to 5:00PM Eastern

North Florida Research and Education Center
(Directions: http://nfrec.ifas.ufl.edu/locations_quincy.shtml**)**

DRAFT AGENDA

Meeting Objective: To initiate the process of developing a list of performance indicators for the Sustainable Water Management Plan by learning about, reviewing, modifying and amending the prior-developed ACFS list of performance indicators and identifying information needs for metric development.

Agenda Topics	***Meeting Materials***
1. Welcome & Introductions (Kristin Rowles, 10 minutes)	Meeting Agenda
2. Overview on Performance Metric Process: Questions & Answers (Kristin Rowles, 15 minutes)	
3. Update on Approach to Evaluation of Impacts of Freshwater Inflow on Bay (Atkins/Kristin Rowles, 25 minutes)	
4. Presentation on Performance Metrics: What they are, how they will be used, approach to development, schedule for incorporating environmental flows information (Black & Veatch, 50 minutes)	Performance Metrics Technical Memorandum_062812
BREAK (15 minutes)	
5. Review of existing list of performance metrics: What is missing, what should be changed (Black & Veath/Kristin Rowles, 40 minutes)	Performance Metrics Technical Memorandum_062812: Pages 8-9 (see page 6 for link to 11 x 17 version)
6. Discussion: Does the list represent the interests of my caucus? (Kristin Rowles, 30 minutes)	
7. Discussion of next steps: Information needs, follow-up steps (Kristin Rowles, Black & Veatch, 25 minutes)	
8. Wrap-Up and Adjournment (15 minutes)	

Performance Criteria Identification Summary

ACF Stakeholders
Last Updated : ~~**April 30, 2012**~~ August 8, 2012

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Output Figure	Notes
Upper Chattahoochee	Lanier	Level		Variable average level, see graph Lake Lanier	Variable average level, see graph Lake Lanier	Variable average level, see graph Lake Lanier						Variable average level, see graph Lake Lanier						Figure	
	Buford Gage	Flow		Monthly variable average daily flow, see graph Buford		Monthly variable average daily flow, see graph Buford													
	Norcross	Flow											Meet flow guidelines in FWS PAL Letter						
	Morgan Falls	Flow		Storage adjustment is -250 cfs on weekends and +100 cfs on weekdays	Monthly variable average daily flow, see graph Morgan Falls	Monthly variable average daily flow, see graph Morgan Falls				Storage adjustment is -250 cfs on weekends and +100 cfs on weekdays		Monthly variable average daily flow, see graph Morgan Falls							
	Peachtree Creek	Flow			750 cfs constant (normal), 650 cfs (drought)	750 cfs constant (normal), 650 cfs (drought)						750 cfs constant (normal), 650 cfs (drought)	% of time flow between 1000 and 1250 cfs for recreation (National Park Service)					Figure	
Middle & Lower Chattahoochee	Whitesburg	Flow	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs		Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs		Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	% of time flow >2200 cfs for recreation based on 4 ft depth	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs				
	West Point	Level	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times		April-Sept 635, 632.5 at all other times		April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times				
	West Point Gage	Flow											Meet flow guidelines in FWS PAL Letter						
	Columbus	Flow	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs		Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs		Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs				
	W.F. George	Level	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times		April-Sept 190, 187.5 at all other times		April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times			Figure	
	W.F. George	Flow	% of Time 9 ft Navigation is Supported										Meet flow guidelines in FWS PAL Letter						
	Andrews	Level	% of Time 9 ft Navigation is Supported																
	Columbia	Flow	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs		Daily average 2000 cfs, 7-Day average 2000 cfs		Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs				

Performance Criteria Identification Summary

ACF Stakeholders
Last Updated : ~~April 30, 2012~~ August 8, 2012

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Output Figure	Notes
	Woodruff	Level	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times		April-Sept 77.5, 76.5 at all other times		April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	Six-inch flow depth for fish passage	April-Sept 77.5, 76.5 at all other times				Desired flow contribution 50% from Chattahoochee and Flint basins (Middle Chattahoochee)
Flint	Griffin	Flow											Six-inch flow depth for fish passage					
	Carsonville	Flow	250 cfs annual average daily flow, 100 cfs 1-day minimum	250 cfs annual average daily flow, 100 cfs 1-day minimum	Unimpaired daily 7Q10 plus 30%								Six-inch flow depth for fish passage					
	Montezuma	Flow											Six-inch flow depth for fish passage				Figure	
	Albany	Flow											Six-inch flow depth for fish passage					
	Newton	Flow											Six-inch flow depth for fish passage					
	Bainbridge	Flow											Six-inch flow depth for fish passage					
Apalachicola	Chattahoochee	Flow	See Note.	% of time > 48' msl level at Chattahoochee Landing by month, See Note for recreational navigation	Informational Need : % of time tributaries "disconnect" from river	N/A	Informational Need: Inundation of flooplain for tupelo trees and subsequent Bee Production	N/A	Liinked Seafood to Chattahoochee recreation gage criteria; floodplain detritus necessary for organic material for shellfish productivity	% of time 56' - 77' level at Woodruff	Informational Need: Need to confirm Intake Elevation of Gulf Power Plant Sholtz	% of time 56' - 77' level at Woodruff	Comparison of pre & post dam flow : Requires Further Discussion	% of time 56' - 77' level at Woodruff	Linked to Recreation interests. Desire to minimize flow surges to minimize impact on Indian mound preservation	N/A		Percent of time Commercial Navigation: Jan - May (Normal) = 18,000 cfs, Jan - May (Dry) = 16,000, Feb- April (Drought) = 16,000 cfs **********Percent of time Recreational Navigation: Jun - Dec (Normal) = 14,000 cfs , Jun-Aug & Dec (Dry) = 10,000 cfs ,Sept- Nov (Dry)= 8,000 cfs, Jun-Aug & Dec (Drought) = 8,000 cfs , Sept - Nov (Drought) =6,500 cfs ********** Note: navigation criteria to be evaluated based on performance during specific hydrologic inflow conditions (years) provided by Dan Tonsmiere. **********Percent of flow contribution from Chattahoochee and Flint basins (Middle Chattahoochee) ******** FWS PAL letter flow guidelines will be reviewed.
	Blountstown	Flow	Linked to Chattahoochee gage criteria	Linked to Chattahoochee gage criteria	Informational Need : % of time tributaries "disconnect" from river	N/A	N/A	N/A	% of Time > 15 ft. above flood level	N/A	N/A	N/A	IFA Seasonal Water Flow (Atkins)	N/A	N/A	Bill McCartney to check Wewahitchka		
	Sumatra	Flow	Linked to Chattahoochee gage criteria	Linked to Chattahoochee gage criteria	Informational Need : % of time tributaries "disconnect" from river	Informational Need : City of Port St. Joe water supply canal elevation (Dan Tonsmiere)	Linked to adequate stream flows for other uses	N/A	Informational need: Productivity of Shellfish	N/A	N/A	N/A	IFA Seasonal Water Flow (Atkins)	N/A	N/A	N/A		
	Apalachicola Estuary	N/A																The estuary is not a node in the river model; however, metrics for the estuary will be related to environment and seafood industry stakeholders. Metrics may relate to river flow at Sumatra.

Legend

Evaluation using Model Output
Additional information needed
Revision to constraint as stated needed

Model Operational Sequence

1 Meet all numeric constraints, operational rules, withdrawals, permit requirements

Performance Criteria Identification Summary

ACF Stakeholders
Last Updated : ~~April 30, 2012~~ Aug 8 2012

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Output Figure	Notes
2	Meet all operational rules, withdrawals, permit requirements																	
3	Meet withdrawals and permit requirements																	
4	Meet permit requirements																	
5	Permit requirements not met																	

Flint Caucus Meeting: August 9, 2012 – Performance Metrics for the SWMP/IFA

A Flint Caucus Meeting was held on August 9, 2012, at Covey Rise near Camilla, Georgia. Those in attendance included the following:

Members Attending

- Jim Poff
- Richard Greuel
- Tim Thoms
- John Heath
- Vince Falcione
- Jimmy Davis
- Marilyn Royal
- Ellis Cadenhead
- Todd Massey
- Mark Masters
- Woody Hicks
- Gordon Rogers
- David Dixon
- Robin Singletary
- Brad Moore
- Charles Stripling

Consultants:

- Kristin Rowles, Technical Coordinator
- Steve Simpson, Black & Veatch
- Robert Osborne, Black & Veatch
- Charles DeCurtis, Atkins

In addition to this summary, the meeting agenda, meeting sign-in sheet, and revised Performance Criteria Identification Summary are attached.

Welcome & Introductions

Kristin welcomed everyone and asked them to introduce themselves. After introductions, Kristin said that today was the first step in the performance metrics development process. She noted it would be an informational and input gathering meeting on performance metrics. Later discussion will support consensus building and the incorporation of environmental flows information in to the performance metrics, after work is completed by Atkins in October. Kristin presented the meeting objectives as follows:

- Learn about performance metrics and their use in the SWMP/IFA process
- Discuss the performance metrics table – fill in blanks where we can and make needed modifications
- Identify information needs

- Evaluate if the table entries are representative of interests in the caucus and ACFS

Kristin explained that in this meeting, the focus would be to document the preferences of stakeholder interest groups. She noted that it may be difficult to come up with metrics in some cases today, and we may identify some informational needs. She said agreement on the performance metrics is not needed at this time. The criteria will be incorporated in the model development and the analysis of modeling results; revisions will occur through the process of further discussion of performance metrics in the fall and through the process of building stakeholder consensus during the iterative model runs.

Kristin said that for the performance indicators, the decision in December by the Governing Board (GB) would address whether the GB members feel that all interests are represented in the list of performance metrics. She noted that it will not necessarily indicate consensus agreement on the values of the performance metrics. Consensus development related to tradeoffs among performance metrics will come later when model results can inform the discussions.

Next, Kristin asked if there were any questions or comments. Charles Stripling noted that the caucus has 100% attendance today, and he also noted while several caucus members have agricultural ties, the caucus does not have someone that truly fills the agricultural slot for the caucus.

Presentation on Performance Metrics & Review

Steve Simpson gave a brief overview of the Approach to Metric Development Technical Memorandum, which was distributed to the caucus members in advance of the meeting. He noted that the latest revision (June 28, 2012) included definitions of terms and other information for clarification as requested by ACFS Technical Oversight and Coordination Work Group (TOCWG) members.

Steve explained the overall approach for metric development. He said that sub-basin caucus meetings on metric development are being held in July and August. He noted Black & Veatch will submit a revised Task 2 Performance Metric memorandum in September, 2012. This will included a new section that details the results of the caucus meetings.

He reminded the members that this meeting was not the last chance to modify the performance metrics. Steve said Atkins will submit a final environmental inundation and flows deliverable to the TOCWG and caucuses for review in October, 2012. Afterwards, additional sub-basin caucus meetings will be held in October to review Atkins' final environmental flows deliverable. This will include discussions on how environmental flows will be integrated into the SWMP modeling. The overall conclusion of this task is targeted for December, when the Governing Board will consider approval of the Task 2 memorandum from B&V, including the proposed list of performance metrics for use in SWMP modeling.

Steve noted there has been continued discussion about the definitions of and differences between model constraints and performance criteria. Steve explained that performance criteria are a measure at a specific location and used to evaluate model output. On the other hand, model constraints are configured in the model to set a desired physical condition at a specific location. Steve noted there was

some discussion at the Upper Chattahoochee Caucus meeting that the term "preferences" be used in lieu of "constraints" or "needs".

Tim Thoms asked if there aren't actual constraints in the basin. Steve noted there were some structural constraints such as intake elevations. Steve noted that changing the definition of constraint does not change the way the model runs. Ellis Cadenhead asked if we were going to consider water moratoriums. Steve advised that this was a water management alternative example.

Several members expressed concern that they do not quite understand performance metrics. Steve reassured that this was ok and today would help to get more comfortable with the metrics and models. Steve noted that a model is a mathematical balance and the operation is similar to balancing a checkbook. He sketched a rough draft of the model on a flip chart and noted variables such evaporation, and reservoirs, demands. Next, he discussed how the impact of groundwater withdrawals are incorporated into the model.

Steve stressed the central focus of the performance metrics memo is the performance metric identification summary. A larger 11X17 version was passed out to members. He noted the summary is broken out by sub-basin caucus, nodes, and stakeholder interests. He said this summary will be a primary communication point between the modelers and the stakeholders. Steve noted the legend located at the bottom of the summary table.

Next, Steve Simpson explained that the basis for most of the metrics already included on the summary was the work of the ACFS Data Needs and Sustainability Work Group in 2010. Steve noted that the input of the members is needed to review and make sure the numbers are still appropriate. Steve explained that during the other caucus meeting there were some items that were noted as "Not Applicable" or "No Specific Numeric Criteria Identified". Steve said that not every box needs to have a metric, but that the desire is to make sure that all of the stakeholder interests are represented. He said that today the group would review, modify, and add specific entries into the summary table.

Brad Moore noted that when he talked with someone that has been through these exercises before, they encouraged thinking of results in terms of metrics as "better" or "worse" rather than as absolutes.

Discussion on Summary Table

Next, the committee discussed each node in the Performance Metrics Identification Summary. Edits to the summary are included in the revised handout attached to the meeting summary. For several parameters, the 2010 input from the Data Needs and Sustainability Workgroup was reviewed. Some of the discussion points from this exchange are bulleted below.

- Members felt there was more research need to incorporate Lake Horton, Kedron, and Peachtree in the model for the Griffin node for the recreation interest.
- Members noted that navigation was not applicable for most of their nodes of interest.
- Members discussed wasteload allocation and applied this parameter as metrics in water quality.
- Homer Hirt and Billy Houston should be asked if there is an appropriate metric for commercial navigation at Bainbridge.
- Gordon Rogers said that 500-600 cfs is needed for recreation above Carsonville.

- For Montezuma, a recreation metric might be set based on May 2012 gage readings plus 150-200 cfs.
- Members asked for more information about how water supply reservoirs above Griffin will be modeled.
- Steve explained how groundwater withdrawals are accounted for in the model as a surface water withdrawal.
- Members suggested that the minimum flow for the Weyerhauser wastewater treatment discharge could be a water quality metric.
- David Dixon offered to find out if a certain level of inflow is needed for Lake Chehaw.
- Members identified a community concern related to recreation and historic/cultural at Radium Springs. Gordon, Woody, and David Dixon will check into flow needs related to this concern.
- Members discussed flow depth for shoal bass passage and agreed more information was needed, but identified the percent of time a 10-12" depth during spawning February 15-June 15 and 6" depth at other times was achieved was a desired performance criteria. It was noted that the IFA may not be able to tell us the flows needed to attain this depth at these times, but it was recommended that Atkins contact Auburn University researchers that have researched this habitat need to determine whether flow needs can be estimated.
- Members requested a copy of the draft Water Demands Technical Memo.
- For agriculture, members noted that many smaller users will not be included in the water demands estimate for agriculture. Mark Masters noted that demand figures are available at the county level for some smaller users.
- Gordon Rogers noted there is a permitted agricultural withdrawal from the mainsteam of the Flint near Carsonville, and the permit for this withdrawal includes a minimum flow threshold. This might be used to set an agricultural metric. There is another near the Montezuma gage. The threshold is 25% annual average discharge level for permits issued after 1993.
- Ellis Cadenhead offered to ask Crisp County Power about its flow needs for Lake Blackshear operations.
- David Dixon offered to look into flow needs for Plant Mitchell operations.
- Members discussed concerns with the issue of flow split between the Chattahoochee and the Flint
- Concerns about the performance metric suggested by the Mid/Lower Chattahoochee Caucus to evaluate the relative flow contribution of the Chattahoochee and Flint Rivers were discussed by the group. Woody Hicks said his analysis shows that the historical flow contribution is 36-43% for the Flint. Gordon Rogers, Charles Stripling, and Woody Hicks all noted concerns about how this metric would be measured and how it would be used in the analysis and noted specific concerns with calculation of the metric.

DISCUSSION OF NEXT STEPS AND WRAP-UP

Kristin asked if anyone could think of a stakeholder interest group or individual who could not attend the meeting but who should be reached out to gain their input. Charles Stripling noted that there was not a specific attendee representing agriculture, but that he believed that agriculture interests were adequately considered by the group present.

Kristin thanked the group for their input and participation, and the meeting was adjourned.

ACTION ITEMS

- Gordon Rogers to investigate permitted agricultural needs for Carsonville and Montezuma.
- Gordon Rogers was to investigate flows needed for Montezuma gage as they relate to recreation.
- Gordon Rogers to research flow to provide Lake Blackshear and Lake Chehaw levels for recreation.
- FERC permits for Lake Blackshear and Lake Chehaw need to be checked (Ellis Cadenhead or David Dixon).
- Members asked for more information about how water supply reservoirs above Griffin will be modeled (B&V).
- Homer Hirt and Billy Houston should be asked if there is an appropriate metric for commercial navigation at Bainbridge.
- David Dixon offered to find out if a certain level of inflow is needed for Lake Chehaw.
- Gordon, Woody, and David Dixon will check into flow needs for Radium Springs.
- Kristin will send out a copy of the draft Water Demands Technical Memo to caucus members.
- Ellis Cadenhead offered to ask Crisp County Power about its flow needs for Lake Blackshear operations.
- David Dixon offered to look into flow needs for Plant Mitchell operations.
- Research is needed to address recreation interest needs for Lake Horton, Kedron, and Peachtree in the model for the Griffin node.
- Atkins will be asked to contact Auburn University researchers that have researched this shoal bass habitat needs to determine whether flow needs can be estimated.

stakeholders

Working together to share a common resource.

August 9, 2012
Meeting Sign-In Sheet

1. Stephen Simpson / Black & Veatch
2. Jim Poff / Clayton Co. H_2O Auth.
3. Richard Greuel
4. TIM THOMS
5. John Heath
6. VINCE FALCIONE
7. Jimmy DAVIS
8. [illegible]
9. Robin Singletary
10. ROBERT OSBORNE / B+V
11. Brad Moore
12.
13.
14.
15.
16.
17. Ellis Cadenhead
18.
19. Todd Massey
20.
21. Mark Masters
22.
23. Charles DeCurtis
24.
25. Woody Hicks
26.
27. Gordon Rogers
28.
29. David Dixon
30.

ACF Stakeholders
Flint Caucus
Meeting on Performance Metrics

August 9, 2012
1:00PM to 5:00PM Eastern

Covey Rise Plantation

DRAFT AGENDA

Meeting Objective: To learn about, review, and if necessary modify and amend existing list of performance indicators.

Agenda Topics	*Meeting Materials*
1. Welcome & Introductions (Kristin Rowles, 10 minutes)	Meeting Agenda
2. Presentation on Performance Metrics: What they are, how they will be used, approach to development, schedule for incorporating environmental flows information (Black & Veatch, 50 minutes)	Performance Metrics Technical Memorandum_062812
3. Review of existing list of performance metrics: What is missing, what should be changed (Black & Veath/Kristin Rowles, 50 minutes)	Performance Metrics Technical Memorandum_062812: Pages 8-9 (see page 6 for link to 11 x 17 version)
BREAK (15 minutes)	
4. Discussion: Does this list represent the interests of my caucus? (Kristin Rowles, 45 minutes)	
5. Discussion of next steps: Information needs, follow-up steps (Kristin Rowles, Black & Veatch, 45 minutes)	
6. Wrap-Up and Adjournment (15 minutes)	

Performance Metrics Identification Summary

ACF Stakeholders
Last Updated : August 13, 2012

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Output Figure	Notes
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	Norcross	Flow											Meet flow guidelines in FWS PAL Letter					
	Morgan Falls	Flow		Storage adjustment is -250 cfs on weekends and +100 cfs on weekdays	Monthly variable average daily flow, see graph Morgan Falls	Monthly variable average daily flow, see graph Morgan Falls				Storage adjustment is -250 cfs on weekends and +100 cfs on weekdays		Monthly variable average daily flow, see graph Morgan Falls						
	Peachtree Creek	Flow			750 cfs constant (normal), 650 cfs (drought)	750 cfs constant (normal), 650 cfs (drought)						750 cfs constant (normal), 650 cfs (drought)	% of time flow between 1000 and 1250 cfs for recreation (National Park Service)				Figure	
Middle & Lower Chattahoochee	Whitesburg	Flow	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs		Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs		Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs	% of time flow >2200 cfs for recreation based on 4 ft depth	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs				
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	West Point Gage	Flow											Meet flow guidelines in FWS PAL Letter					
	Columbus	Flow	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs		Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs		Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs				
	W.F. George	Level	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times		April-Sept 190, 187.5 at all other times		April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times			Figure	
	W.F. George	Flow	% of Time 9 ft Navigation is Supported										Meet flow guidelines in FWS PAL Letter					
	Andrews	Level	% of Time 9 ft Navigation is Supported															

Performance Metrics Identification Summary

ACF Stakeholders
Last Updated : August 13, 2012

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Output Figure	Notes
	Columbia	Flow	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs		Daily average 2000 cfs, 7-Day average 2000 cfs		Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs				
	Woodruff	Level	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times		April-Sept 77.5, 76.5 at all other times		April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times				Desired flow contribution 50% from Chattahoochee and Flint basins (Middle Chattahoochee)
Flint	Griffin	Flow	N/A	Informational Need: Desire to incorporate Lake Horton, Kedron, Peachtree in model	Informational Need: % of time flow > wasteload allocation flow	% of time flow < Lake Horton or Griffin permitted withdrawal levels	No specific numeric criteria identified	% of time above wasteload allocation flow	N/A	N/A	N/A	Linked to Water Supply & Water Quality	12" flow depth during Feb 15-Jun 15 spawining, six-inch flow depth for shoal bass passage at other times	Linked to Water Supply & Water Quality	Linked to Recreation	Linked to Water Supply & Water Quality		
	Carsonville	Flow	N/A	% of time >600 cfs weekly average daily flow	% of time flow > Unimpaired monthly historic 7Q10 average daily flow and/or 100 cfs	No specific numeric criteria identified	Informational Need: % of time flow <permitted ag withdrawals near Carsonviile (Gordon Rogers)	% of time above wasteload allocation flow	N/A	N/A	N/A	Linked to Water Supply & Water Quality	12" flow depth during Feb 15-Jun 15 spawining, six-inch flow depth for shoal bass passage at other times	Linked to Water Supply, Water Quality, and Recreation	Linked to Recreation	Linked to Water Supply & Water Quality		Demonstrate flow variability and low flow duration at node.
	Montezuma	Flow	N/A	Informational Need: Gordon Rogers to research flow	Informational Need: % of time flow > Weyheuser wasteload allocation flow	% of time flow < Weyerhauser permitted withdrawal	Informational Need: % of time flow <permitted ag withdrawals near Montezuma	% of time above wasteload allocation flow	N/A	N/A	N/A	Linked to Water Supply & Water Quality	12" flow depth during Feb 15-Jun 15 spawining, six-inch flow depth for shoal bass passage at other times	Linked to Water Supply, Water Quality, Recreation, and Farm Agriculture	Linked to Recreation	Linked to Water Supply & Water Quality		
	Albany	Flow	N/A	Informational Need: Gordon Rogers to research flow to provide Lake Blackshear and Lake Chehaw levels for recreation	Informational Need: % of time flow > wasteload allocation flow	No specific numeric criteria identified	No specific numeric criteria identified	% of time above wasteload allocation flow	N/A	Information Need : Check FERC Permit for Lake Blackshear/Lake Chehaw	N/A	Linked to Water Supply & Water Quality	12" flow depth during Feb 15-Jun 15 spawining, six-inch flow depth for shoal bass passage at other times	Linked to Water Supply & Water Quality	Linked to Recreation	Linked to Water Supply & Water Quality		Groundwater withdrawals accounted for in model as a surface water withdrawal based on USGS Groundwater/Surface water impact.
	Newton	Flow	Linked to level in Woodruff	Informational need for shoal passage	Informational Need: % of time flow > wasteload allocation flow	No specific numeric criteria identified	No specific numeric criteria identified	% of time above wasteload allocation flow	N/A	N/A	Information Need : Check Plant Mitchell needs	Linked to Water Supply & Water Quality	12" flow depth during Feb 15-Jun 15 spawining, six-inch flow depth for shoal bass passage at other times	Linked to Water Supply & Water Quality	Linked to Recreation	Linked to Water Supply & Water Quality		Groundwater withdrawals accounted for in model as a surface water withdrawal based on USGS Groundwater/Surface water impact. ********** Informational need for future research is reduction in flows from Radium Springs, particularly during Memorial Day-Labor Day recreation season (related to historic & cultural and recreation)
	Bainbridge	Flow	Linked to level in Woodruff	% of time >900 cfs weekly average daily flow	Informational Need: % of time flow > wasteload allocation flow	No specific numeric criteria identified	No specific numeric criteria identified	% of time above wasteload allocation flow	N/A	N/A	N/A	Linked to Water Supply & Water Quality	12" flow depth during Feb 15-Jun 15 spawining, six-inch flow depth for shoal bass passage at other times	Linked to Water Supply & Water Quality	Linked to Recreation	Linked to Water Supply & Water Quality		Groundwater withdrawals accounted for in model as a surface water withdrawal based on USGS Groundwater/Surface water impact.

Performance Metrics Identification Summary

ACF Stakeholders
Last Updated : August 13, 2012

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Output Figure	Notes
Apalachicola	Chattahoochee	Flow	% of Time 9 ft Navigation is Supported									Meet flow guidelines in FWS PAL Letter						Desired flow contribution 50% from Chattahoochee and Flint basins (Middle Chattahoochee)
	Blountstown	Flow	% of Time 9 ft Navigation is Supported									IFLLA Seasonal Water Flow (Atkins)						
	Sumatra	Flow	% of Time 9 ft Navigation is Supported									IFLLA Seasonal Water Flow (Atkins)						

Legend

Evaluation using Model Output
Additional information needed
Revision to constraint as stated needed

Model Operational Sequence

1 Meet all numeric constraints, operational rules, withdrawals, permit requirements
2 Meet all operational rules, withdrawals, permit requirements
3 Meet withdrawals and permit requirements
4 Meet permit requirements
5 Permit requirements not met

Middle/Lower Chattahoochee Caucus Meeting: July 19, 2012 – Performance Metrics for the SWMP/IFA

A Middle/Lower Chattahoochee Caucus Meeting was held on July 19, 2012, at the offices of Lagrange Troup Country Chamber of Commerce in Lagrange, Georgia. Those in attendance included the following:

Members Attending

- Jim Phillips
- Billy Turner
- Mike Criddle
- Paige Estes
- Billy Mayes
- James Emery
- Brad Moore
- Billy Houston
- Carole Rutland
- Roger Martin
- Mitch Reid
- Greg Elmore
- Pam Dohney (by phone)

Consultants:

- Kristin Rowles
- Steve Simpson, Black & Veatch (B&V)
- Robert Osborne, Black & Veatch

In addition to this summary, the meeting agenda and the revised Performance Criteria Identification Summary are attached.

Welcome & Introductions

Jim Phillips, caucus chair, welcomed everyone to the meeting and introduced Kristin Rowles, who is moderating the Sustainable Water Management Plan (SWMP)/Instream Flow Analysis (IFA) process for ACFS. Kristin thanked everyone for giving up their afternoons for this important meeting, and she asked everyone to introduce themselves. After introductions, Kristin said that this would be a learning and input gathering meeting on performance metrics. She noted that it is a first step in the performance metrics development process. Later discussion will support consensus building and the incorporation of environmental flows information in to the performance metrics (when that work is completed by Atkins in October). Kristin presented the meeting objectives as follows:

- Learn about performance metrics and their use in the SWMP/IFA process
- Discuss the performance metrics table – fill in blanks where we can and make needed modifications
- Identify information needs
- Evaluate if the table entries are representative of interests in the caucus and ACFS

Jim Phillips noted that Dick Timmerberg, Steve Davis, and Colin Martin were not able to join this meeting today. Kristin asked the group to think about what interests might not be represented in the discussion in order to support additional input gathering through follow-up calls with members and interest groups.

Presentation on Performance Metrics & Review of existing Performance Metrics

Robert Osborne gave a brief overview of the Approach to Metric Development Technical memorandum, which was distributed to the caucus members in advance of the meeting. He noted that the latest revision was submitted June 28th. This version addresses previous concerns and comments from the ACFS Technical Oversight and Coordination Work Group (TOCWG) members.

Next Robert noted the overall schedule for this work. He said that Sub-basin caucus meetings on metric development are to be held in July and August. He noted Black & Veatch will submit a revised Task 2 Performance Metric memorandum on September 21, 2012. This will included a new section that details the results of the caucus meetings.

He reminded the members that this meeting was not the last chance to modify the performance metrics. Robert said Atkins will submit a final environmental inundation and flows deliverable to the TOCWG and caucuses for review on October 12, 2012. Afterwards, additional Sub-basin caucus meetings will be held beginning October 15th to review Atkins final environmental flows deliverable. This will include discussions on how environmental flows will be integrated into the SWMP modeling. The overall conclusion of this task is targeted for December, when the Governing Board will consider approval of the Task 2 memorandum from B&V, including the proposed list of performance metrics for use in SWMP modeling.

Kristin reminded the caucus members that for the performance indicators, the decision in December by the Governing Board (GB) would be a consensus decision regarding whether the GB members felt that all interests were represented in the list of performance metrics. She noted that it would not necessarily mean consensus agreement on the values of the performance metrics. Consensus development related to tradeoffs among performance metrics would come later when model results could inform the discussions. Members did not have questions or concerns about this approach.

Next, Steve Simpson explained the Performance Criteria Identification Summary which was included in the Performance Metrics Memorandum. A larger 11X17 version was passed out to members. He noted the summary was broken out by caucus, nodes, and stakeholder interest. He says this summary will be a primary communication point between the modelers and the stakeholders.

Next, Steve Simpson explained that the basis for most of the metrics already included on the summary was the work of the ACFS Data Needs and Sustainability Work Group in 2010. Steve noted members needed to make sure the numbers still are appropriate. Steve said not every box is filled out and not every box has to have a metric. He said that for blank boxes, the group may choose to fill it in, leave it blank, or state that there no numeric criteria have been established.

Kristin asked Steve to distinguish between constraints and performance criteria. Steve explained performance criteria are a measure at a specific location and used to evaluate model output. On the other hand, constrains are inputs to the model which set a desired physical condition at a location.

Jim Phillips asked about grey shaded cells on the summary. Steve referred the members to the legend at the bottom of the table and explained that grey meant it was a performance criteria, to be evaluated using model output

Next the committee discussed each node in the Performance Criteria Identification Summary. Edits to the summary are included in the revised handout attached to the meeting summary. Main discussion points by interest are summarized for each node below. Refer to the attached revised Performance Criteria Identification Summary for further reference.

WHITESBURG NODE, FLOW

Navigation

Members felt that navigation was not applicable at this node. Noted N/A in the summary.

Recreation

Members suggested replacing the contents of this block with that from the Environment & Conservation block. They requested more information about National Park Service reference.

Water Quality

Members felt the metric was still appropriate.

Water Supply

Members felt the metric was still appropriate.

Farm Agriculture

Members agreed that this block should be "no numeric criteria identified".

Industry & Manufacturing

Members were unsure whether to edit this metric, because there was no information to support edits. Members agreed to defer for more information

Seafood Industry

Members felt that seafood metric was not applicable. Noted N/A in block.

Hydro Power

Billy Mayes stated concern that the model did not take into account efficiency of individual turbines. Kristin noted there may a need for a follow-up discussion with this interest group metric.

Thermal Power

Members discussed the need to review the existing metric with George Martin of Georgia Power. Members agreed to defer for more information

Local government

Members felt that local government metric was not applicable. Noted N/A in block.

Environment & Conservation

Members agreed to defer for more information pending the completion of the environmental flows work.

Business & Economic Development

Members felt this metric should match the thermal power metric.

Historic & Cultural

Members indicated that this should be "no numeric criteria identified".

Urban Agricultural

Members indicated that this should be "no numeric criteria identified".

WEST POINT NODE, LEVEL

Navigation

Noted N/A in block.

Recreation

Members felt this metric was still appropriate.

Water Quality

Members felt this metric was still appropriate.

Water Supply

Members felt this metric was still appropriate.

Farm Agriculture

Members agreed that this block should be "no numeric criteria identified".

Industry & Manufacturing

Members felt this metric was still appropriate.

Seafood Industry

Members said that this interest was not applicable at this node. Noted N/A in block.

Hydro Power

Members felt this metric was still relevant.

Thermal Power

Members felt that thermal power was not applicable. Noted N/A in block.

Local government

Members felt that this metric was not applicable. Noted N/A in block.

Environment & Conservation

Members felt this metric was still relevant.

Business & Economic Development

Members felt this metric was still appropriate.

Historic & Cultural

Members indicated that this should be "no numeric criteria identified".

Urban Agricultural

Members indicated that this should be "no numeric criteria identified".

WEST POINT GAGE, FLOW

At this node, flow applies only to environment and conservation. The metric listed is based on the USFWS Planning Aid Letters. Kristin will provide the letters for member reference.

COLUMBUS, FLOW

Navigation

Members felt that navigation was not applicable. Noted N/A in summary.

Recreation

Members felt this metric was still relevant. Billy Turner also noted that the new whitewater course on the Chattahoochee. He noted a reference to this was needed.

Water Quality

Members felt this metric was still relevant.

Water Supply

Members felt this metric was still relevant.

Farm Agriculture

Members agreed that this block should be "no numeric criteria identified".

Industry & Manufacturing

Members felt this metric was still relevant. Pam Dohney, Mead Westvaco concurred.

Seafood Industry

Members said that this interest was not applicable at this node. Noted N/A in block.

Hydro Power

Members agreed to defer for more information. Kristin noted there may a need for a follow-up discussion with this interest group metric.

Thermal Power

Members felt this metric was still relevant and addressed needs for the thermal power plant at Oliver.

Local government

Members felt this metric was still relevant.

Environment & Conservation

Members felt that the listed metric was not relevant to environment and conservation. Members agreed to defer for more information pending the completion of the environmental flows work.

Business & Economic Development

Members felt this metric was still relevant.

Historic & Cultural

Members indicated that this should be "no numeric criteria identified".

Urban Agricultural

Members indicated that this should be "no numeric criteria identified".

W.F. GEORGE, LEVEL

Navigation
Members felt that the listed criteria was not needed for navigation because the channel is deep in the lake. However, the need for dredging at Bully Creek was noted. It was suggested that the metric could be 184 feet.

Recreation
Members felt this metric was appropriate.

Water Quality
Members felt that a water quality metric was not applicable. Noted N/A in block.

Water Supply
Members felt that a water supply metric was not applicable. Noted N/A in block.

Farm Agriculture
Members agreed that this block should be "no numeric criteria identified".

Industry & Manufacturing
Members changed this metric to 184.5 feet after discussion with Pam Dohney.

Seafood Industry
Members said that this interest was not applicable at this node. Noted N/A in block.

Hydro Power
Members agreed to defer for more information. Kristin noted there may a need for a follow-up discussion with this interest group metric.

Thermal Power
Discussed the need to review the existing metric with George Martin, Georgia Power.

Local government
Members felt that this metric was not applicable for this interest. Noted N/A in block.

Environment & Conservation
Members felt this metric was still appropriate.

Business & Economic Development
Members felt this metric was still appropriate.

Historic & Cultural
Members indicated that this should be "no numeric criteria identified".

Urban Agricultural
Members indicated that this should be "no numeric criteria identified".

W.F. GEORGE, FLOW

Navigation
Members felt that navigation was not applicable. Noted N/A in block.

Recreation
No Change.

Water Quality
No Change.

Water Supply
No Change.

Farm Agriculture
Members agreed that this block should be "no numeric criteria identified".

Industry & Manufacturing
Discussion about 1850 cfs 7 day average as a metric. Members needed to check with Army Corps of Engineers and MeadWestVaco.

Seafood Industry
Members felt that a seafood metric was not applicable. Noted N/A in block.

Hydro Power
Discussed the need to review the existing metric with George Martin, Georgia Power.

Thermal Power
No change.

Local government
No Change.

Environment & Conservation
Kristin to provide FWS PAL reference as a meeting follow-up.

Business & Economic Development
No Change

Historic & Cultural
Members agreed that this block should be "no numeric criteria identified".

Urban Agricultural
Members agreed that this block should be "no numeric criteria identified".

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ANDREWS, LEVEL

Navigation

Billy Houston was to investigate navigation requirements for the group. There was some discussion about a new hydro facility.

Recreation

No Change.

Water Quality

No Change.

Water Supply

No Change.

Farm Agriculture

Members agreed that this block should be "no numeric criteria identified".

Industry & Manufacturing

No Change.

Seafood Industry

No Change.

Hydro Power

No Change.

Thermal Power

No Change.

Local government

No Change.

Environment & Conservation

No Change.

Business & Economic Development

No Change.

Historic & Cultural

Members agreed that this block should be "no numeric criteria identified".

Urban Agricultural

Members agreed that this block should be "no numeric criteria identified".

COLUMBIA, FLOW

Navigation
Members felt that navigation was not applicable. Noted N/A in block.

Recreation
Members felt this metric was still appropriate.

Water Quality
Members felt this metric was still appropriate.

Water Supply
Members felt that water supply metric was not applicable. Noted N/A in block.

Farm Agriculture
Members agreed that this block should be "no numeric criteria identified".

Industry & Manufacturing
Members felt this metric was still appropriate. There was discussion regarding whether this was protective of Georgia Pacific.

Seafood Industry
Members felt that seafood was not applicable at this node. Noted N/A in block.

Hydro Power
Members felt this metric was still appropriate.

Thermal Power
Members felt this metric was still appropriate.

Local government
Members felt this metric was still appropriate.

Environment & Conservation
Members felt that this existing metric was not applicable for this interest. Noted N/A.

Business & Economic Development
Members felt this metric was still appropriate.

Historic & Cultural
Members indicated that this should be "no numeric criteria identified".

Urban Agricultural
Members indicated that this should be "no numeric criteria identified".

WOODRUFF, LEVEL

NOTE: Generally members felt like they would like to discuss these performance metrics further after the Apalachicola Caucus provides input. It was noted that the Lake Seminole Homeowners group is associated with the Apalachicola Caucus, and they would have input to this node.

Also, there was a discussion of including a metric to indicate the relative contributions of flow at Woodruff from the Flint Basin and Chattahoochee Basins. The desire was expressed by some members that RIOP requirements be met 50% by each basin. The group discussed the design of such a metric with respect to timing and climatic conditions. The caucus would like for model output to include reporting on a metric of this type.

Navigation

Members felt this metric was still appropriate.

Recreation

Members felt this metric was still appropriate.

Water Quality

Members felt this metric was still appropriate.

Water Supply

Members felt this metric was still appropriate.

Farm Agriculture

Members agreed that this block should be "no numeric criteria identified".

Industry & Manufacturing

Members felt this metric was still appropriate.

Seafood Industry

Members felt that seafood was not applicable. This was marked as N/A.

Hydro Power

Members felt this metric was still appropriate.

Thermal Power

Members felt this metric was still appropriate.

Local government

Members felt this metric was still appropriate.

Environment & Conservation

Members felt that this existing metric was not applicable. Noted N/A in block.

Business & Economic Development

Members felt this metric was still appropriate.

Historic & Cultural

Members indicated that this should be "no numeric criteria identified".

Urban Agricultural

Members indicated that this should be "no numeric criteria identified".

ADDITIONAL NOTES FROM DISCUSSION OF PERFORMANCE CRITERIA IDENTIFICATION SUMMARY

The following summarizes additional areas covered in discussion of the performance criteria identification summary by the caucus:

- The caucus is interested in learning whether the SWMP model can consider hydro power efficiencies. They suggested consulting Mark Crisp for additional information.
- For the Georgia Power dams between West Point and Columbus, it was noted that there are no numeric criteria identified except that inflow =outflow.
- It was suggested that George Martin of Georgia Power be consulted to determine whether a node is needed for Georgia Power hydro projects relative to their ability to meet their FERC license requirements.
- The primary performance metric for commercial navigation is the % of time that a 9' channel is available at the Chattahoochee gage.
- Recent water demand data from the USACOE (June 2012) indicates greater than 100% returns in many months. More information is needed to interpret this data, particularly if it will be used in the SWMP model. Kristin noted that the B&V report on water demands would be available next week.

DISCUSSION OF NEXT STEPS AND WRAP-UP

Kristin detailed the next steps generated from this meeting. These steps included the following:

- Kristin will organize a smaller group conference call to discuss the hydropower metrics.
- Billy Houston will investigate to find the water level at Andrews Dam which would support navigation
- Kristin will distribute the USFWS Planning Assistance Letter (PAL) to members for their reference.
- Kristin will distribute the National Park Service report to members for their reference.
- Middle/Lower Chattahoochee Caucus will discuss these metrics further after completion of the IFA and after Apalachicola Caucus provides its input, particularly on Woodruff Node. Fall caucus meetings are being planned.

There were no further questions or discussion items, and the meeting was adjourned.

ACF Stakeholders
Middle Chattahoochee Caucus
Meeting on Performance Metrics

July 19, 2012
1:00PM to 5:00PM Eastern

LaGrange Troup Country Chamber of Commerce
111 Bull Street, LaGrange, GA 30240

DRAFT AGENDA

Meeting Objective: To learn about, review, and if necessary modify and amend existing list of performance indicators.

Agenda Topics	*Meeting Materials*
1. Welcome & Introductions (Kristin Rowles, 20 minutes)	Meeting Agenda
2. Presentation on Performance Metrics: What they are, how they will be used, approach to development, schedule for incorporating environmental flows information (Black and Veatch, 50 minutes)	Performance Metrics Technical Memorandum_062812
3. Review of existing list of performance metrics: What is missing, what should be changed (Kristin Rowles, 50 minutes)	Performance Metrics Technical Memorandum_062812: Pages 8-9 (see page 6 for link to 11 x 17 version)
BREAK (15 minutes)	
4. Discussion: Does this list represent the interests of my caucus? (Kristin Rowles, 45 minutes)	
5. Discussion of next steps: Information needs, follow-up steps (Kristin Rowles and Black and Veatch, 45 minutes)	
6. Wrap-Up and Adjournment (15 minutes)	

Performance Criteria Identification Summary

ACF Stakeholders
Last Updated : April 30, 2012

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Output Figure	Notes
Upper Chattahoochee	Lanier	Level		Variable average level, see graph Lake Lanier	Variable average level, see graph Lake Lanier	Variable average level, see graph Lake Lanier						Variable average level, see graph Lake Lanier					Figure	
	Buford Gage	Flow		Monthly variable average daily flow, see graph Buford		Monthly variable average daily flow, see graph Buford												
	Norcross	Flow											Meet flow guidelines in FWS PAL Letter (Qualitative)					
	Morgan Falls	Flow		Storage adjustment is -250 cfs on weekends and +100 cfs on weekdays	Monthly variable average daily flow, see graph Morgan Falls	Monthly variable average daily flow, see graph Morgan Falls				Storage adjustment is -250 cfs on weekends and +100 cfs on weekdays		Monthly variable average daily flow, see graph Morgan Falls						
	Peachtree Creek	Flow	N/A		750 cfs constant (normal), 650 cfs (drought)	750 cfs constant (normal), 650 cfs (drought)						750 cfs constant (normal), 650 cfs (drought)	% of time flow between 1000 and 1250 cfs for recreation (National Park Service)				Figure	
Middle & Lower Chattahoochee	Whitesburg	Flow	N/A	% of time flow >2200 cfs for recreation based on 4 ft depth (Deferred for More Information from NPS)	Instantaneous minimum 750 cfs,minimum daily average 1000 cfs, minimum 7-Day average 1350 cfs	Instantaneous minimum 750 cfs,minimum daily average 1000 cfs, minimum 7-Day average 1350 cfs	No Numeric Criteria Identified	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs (Deferred for More Information)	N/A	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs (Deferred for More Information)	Instantaneous minimum 750 cfs, daily average 1000 cfs, 7-Day average 1350 cfs (Deferred for More Information)	N/A	% of time flow >2200 cfs for recreation based on 4 ft depth (Deferred for More Information from NPS)	Link to Thermal Power	No Numeric Criteria Identified	No Numeric Criteria Identified		
	West Point	Level	N/A	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	No Numeric Criteria Identified	April-Sept 635, 632.5 at all other times	N/A	April-Sept 635, 632.5 at all other times	N/A	N/A	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	No Numeric Criteria Identified	No Numeric Criteria Identified		635 equals full pool.
	West Point Gage	Flow	N/A				No Numeric Criteria Identified		N/A				Meet flow guidelines in FWS PAL Letter		No Numeric Criteria Identified	No Numeric Criteria Identified		
	Columbus	Flow	N/A	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs. Columbus Whitewater Park may have some future needs.	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	No Numeric Criteria Identified	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	N/A	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs (Deferred for more information)	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs (Deferred for more information)	Instantaneous minimum 800 cfs, daily average 1350 cfs, 7-Day average 1850 cfs	No Numeric Criteria Identified	No Numeric Criteria Identified		
	W.F. George	Level	% of time > 184 feet	April-Sept 190, 187.5 at all other times	N/A	N/A	No Numeric Criteria Identified	April-Sept 190, 184.5 at all other times. Need more information	N/A	April-Sept 190, 187.5 at all other times. Need more information	April-Sept 190, 187.5 at all other times. Need more information.	N/A	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	No Numeric Criteria Identified	No Numeric Criteria Identified	Figure	
	W.F. George	Flow	N/A				No Numeric Criteria Identified	More Information Needed	N/A	Need more information.			Meet flow guidelines in FWS PAL Letter		No Numeric Criteria Identified	No Numeric Criteria Identified		
	Andrews	Level	More Information needed				No Numeric Criteria Identified								No Numeric Criteria Identified	No Numeric Criteria Identified		
	Columbia	Flow	N/A	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	N/A	No Numeric Criteria Identified	Daily average 2000 cfs, 7-Day average 2000 cfs	N/A	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	Daily average 2000 cfs, 7-Day average 2000 cfs	N/A	Daily average 2000 cfs, 7-Day average 2000 cfs	No Numeric Criteria Identified	No Numeric Criteria Identified		

	Woodruff	Level	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	No Numeric Criteria Identified	April-Sept 77.5, 76.5 at all other times	N/A	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	N/A	April-Sept 77.5, 76.5 at all other times	No Numeric Criteria Identified	No Numeric Criteria Identified		Desired flow contribution 50% from Chattahoochee and Flint basins (Middle Chattahoochee)
Flint	Griffin	Flow											Six-inch flow depth for fish passage					
	Carsonville	Flow	250 cfs annual average daily flow, 100 cfs 1-day minimum	250 cfs annual average daily flow, 100 cfs 1-day minimum	Unimpaired daily 7Q10 plus 30%								Six-inch flow depth for fish passage					
	Montezuma	Flow											Six-inch flow depth for fish passage				Figure	
	Albany	Flow											Six-inch flow depth for fish passage					
	Newton	Flow											Six-inch flow depth for fish passage					
	Bainbridge	Flow											Six-inch flow depth for fish passage					
Apalachicola	Chattahoochee	Flow	% of Time 9 ft Navigation is Supported										Meet flow guidelines in FWS PAL Letter (Qualitative)					Desired flow contribution 50% from Chattahoochee and Flint basins (Middle Chattahoochee)
	Blountstown	Flow	% of Time 9 ft Navigation is Supported										IFLLA Seasonal Water Flow (Atkins)					
	Sumatra	Flow	% of Time 9 ft Navigation is Supported										IFLLA Seasonal Water Flow (Atkins)					

Legend

Evaluation using model output
Additional information needed
Revision to constraint as stated needed

Model Operational Sequence

1 Meet all numeric constraints, operational rules, withdrawals, permit requirements
2 Meet all operational rules, withdrawals, permit requirements
3 Meet withdrawals and permit requirements
4 Meet permit requirements
5 Permit requirements not met

Upper Chattahoochee Caucus Meeting: July 27, 2012 – Performance Metrics for the SWMP/IFA

An Upper Chattahoochee Basin Caucus Meeting was held on July 27, 2012, at the offices of Cobb County-Marietta Water Authority in Marietta, Georgia. Those in attendance included the following:

Attendees

- Stan Brinkley
- Paula Capece
- Brad Currey
- Don Dye
- Laura Hartt
- Steve Haubner
- Chad Knudsen
- Jim McClatchey
- George McMahon
- Kathy Nguyen
- Glenn Page
- Tim Perkins
- Kelly Randall
- Wilton Rooks
- Jerri Russell
- Pat Stevens
- George Taylor

Consultants:

- Kristin Rowles
- Michael Friedlander, Black & Veatch
- Robert Osborne, Black & Veatch
- Steve Simpson, Black & Veatch

In addition to this summary, the meeting agenda, meeting sign-in sheet, list of metrics provided by Steve Haubner and Pat Stevens, and revised Performance Criteria Identification Summary are attached.

Welcome & Introductions

Kristin welcomed everyone, thanked them for giving up their time and participating in this important meeting, and asked everyone to introduce themselves. Pat Stevens expressed her objection to the presence of federal employee at the meeting (Paula Capece, National Park Service). Kristin said that Paula was an invited guest of Sally Bethea and Laura Hartt and that Kristin had asked the caucus chair if this would be ok. Pat Stevens said that is not consistent with ACFS policy on the involvement of government agencies. Wilton Rooks noted that he thought it was consistent with the policy of having outside resources review documents and that NPS was invited as an observer only.

After introductions, Kristin said that this would be a learning and input gathering meeting on performance metrics. She noted that it is a first step in the performance metrics development process. Later discussion will support consensus building and the incorporation of environmental flows information in to the performance metrics (when that work is completed by Atkins in October). Kristin presented the meeting objectives as follows:

- Learn about performance metrics and their use in the SWMP/IFA process
- Discuss the performance metrics table – fill in blanks where we can and make needed modifications
- Identify information needs
- Evaluate if the table entries are representative of interests in the caucus and ACFS

Kristin explained that in this meeting, the focus would be to document the preferences of all stakeholder interest groups. In response to a question, she said that decision-making should not be needed in today's meeting because it will be focused on discussion and information gathering. Agreement on the performance metrics is not needed at this time. The criteria will be incorporated in the model development and the analysis of modeling results; revisions will occur through the process of further discussion of performance metrics in the fall and through the process of building stakeholder consensus during the iterative model runs.

Kristin said that for the performance indicators, the decision in December by the Governing Board (GB) would be a consensus decision regarding whether the GB members felt that all interests were represented in the list of performance metrics. She noted that it would not necessarily mean consensus agreement on the values of the performance metrics. Consensus development related to tradeoffs among performance metrics would come later when model results could inform the discussions.

Presentation on Performance Metrics & Review of existing Performance Metrics

Steve Simpson gave a brief overview of the Approach to Metric Development Technical Memorandum, which was distributed to the caucus members in advance of the meeting. He noted that the latest revision (June 28, 2012) included definitions of terms and other information for clarification as requested by ACFS Technical Oversight and Coordination Work Group (TOCWG) members.

Steve explained the overall approach for metric development. He said that sub-basin caucus meetings on metric development are being held in July and August. He noted Black & Veatch will submit a revised Task 2 Performance Metric memorandum in September, 2012. This will included a new section that details the results of the caucus meetings.

He reminded the members that this meeting was not the last chance to modify the performance metrics. Steve said Atkins will submit a final environmental inundation and flows deliverable to the TOCWG and caucuses for review on October 12, 2012. Afterwards, additional sub-basin caucus meetings will be held in October to review Atkins final environmental flows deliverable. This will include

discussions on how environmental flows will be integrated into the SWMP modeling. The overall conclusion of this task is targeted for December, when the Governing Board will consider approval of the Task 2 memorandum from B&V, including the proposed list of performance metrics for use in SWMP modeling.

Steve stressed the central focus of the performance metrics memo to be the performance criteria identification summary. A larger 11X17 version was passed out to members. He noted the summary was broken out by sub-basin caucus, nodes, and stakeholder interests. He said this summary will be a primary communication point between the modelers and the stakeholders. Steve noted the legend located at the bottom of the summary table.

George McMahon asked about Figure 2, Approach to Metric Development; Steve noted in response that there is an extra "yes connector" from the Quantitative metric box that will be deleted in a future revision.

Next, Steve Simpson explained that the basis for most of the metrics already included on the summary was the work from the ACFS Data Needs and Sustainability Work Group in 2010. Steve noted that the input of the members is needed to review and make sure the numbers are still appropriate. Steve explained that during the Middle and Lower Chattahoochee Caucus meeting there were some items that were noted as Not Applicable or No Specific Numeric Criteria Identified. Steve said that not every box needs to have a metric, but that the desire is to make sure that all of the stakeholder interests are represented. He said that today the group would review, modify, and add specific entries into the summary table.

Laura Hartt asked about Instream Flow Assessment (IFA) and how it would be incorporated. Steve acknowledged that the assessment work is ongoing and that upon completion it would be vetted to the ACFS and ultimately incorporated into the modeling and analysis as performance metrics. This will occur after the completion of the IFA by Atkins in October. Depending on the format of the IFA results, the performance metrics based on the IFA could be either numeric criteria that support rules written into the model or evaluation criteria used for evaluation of model output under different scenarios.

Steve Haubner was asked if the group was limited to one performance criteria per node per stakeholder interest. The group discussed that multiple criteria can be used.

Kristin asked Steve to distinguish between constraints and performance criteria. Steve explained performance criteria are a measure at a specific location and used to evaluate model output. On the other hand, constrains are inputs to the model which set a desired physical condition at a location. Pat Stevens reiterated her strong concern and request that the term "preferences" be used in lieu of "constraints" and expressed disappointment that this is the third time she has raised this concern, yet the terminology has not yet been changed. Pat's concern is that the term constraint implies a legal requirement or statutory rule when in actuality it reflects a stakeholder preference. Pat does not think that this is not appropriate. Kelly Randall agreed and said that Pat's view is held by many stakeholders. Steve Simpson advised that revised terminology has not yet been adopted in the interest of attempting to communicate that some performance metrics are able to be expressed numerically in a way that can

be included by rule in the model and other performance metrics can be evaluated based on the modeled output. Kristin said that it would be advisable to review these terms.

Jim McClatchey commented there are actual "constraints", i.e. , physical limits in the infrastructure within the ACF Basin. George McMahon asked what rules are explicitly in the model. George explained that a hydrologic model is based on a set of physical rules used to capture how a system functions and that constraints in the modeling sphere are a means of placing conditions upon a variable which influences certain mathematical based objective(s).

Wilton Rooks agreed this may be just terminology; however, he suggested that "constraints" could be subdivided into legal and/or physical "constraints" (for example the current RIOP operation of the federal reservoirs) and "preferences". Jerri Russell noted and expressed concern that constraints will be ordered ahead of others in the modeling rules and that some constraints will mask the effects of other factors in the model. George Taylor stated that the whole point of using a term is for common understanding. Kristin Rowles noted that the questions at hand address both the terminology used and the modeling approach. Steve Simpson noted this was a good discussion. He noted ACFS-DSS has rules similar to HEC-RES-SIM to reflect the storage, outflow, ramping, and other RIOP parameters. Steve noted the operational rules order is presented below the legend on the Performance Criteria Summary. The order shown on the summary is what is suggested, but is open for discussion and input.

Jerri Russell said there may be preferable to use fewer rules and preferences in the model and rely more heavily on performance criteria to evaluate model output Steve Simpson noted this group had the ability to change the parameters. Steve Haubner asked if all of the measures in the summary table were rules and expressed a preference that the model be utilized with less "constraints" or rules to provide better information. He referred to a hand-out he distributed, "Water Supply Performance Metrics, July 26, 2012", for an example to illustrate how various parameters can be analyzed from model output without being an explicit rule within the model. Steve Simpson replied that this is exactly the type of analysis that is to be performed in many cases, specifically for those metrics shaded grey in the summary table.

George McMahon asked the group how to get from performance indicators to changing the rules of the RIOP. He said the groups needs to focus on the rules and how releases are made.

Jim McClatchey asked if it was possible to reduce the amount of evaporation in the model. He asked if evaporation could be a performance criteria. Steve Simpson said yes, but the best way to model this reduction would need to be discussed with Dr. Georgakakos.

Pat Stevens discussed the handout distributed by Haubner. It was prepared for the meeting and offered several performance criteria to incorporate for analysis of model output. Steve Simpson said that the statistics for these performance criteria could all be generated from model output data. Steve Haubner added that the model should indentify if a point is reached where we cannot meet all of our demands and include the frequency of such shortfalls.

Laura Hartt asked if the model can accept seasonal inputs. Steve Simpson indicated that it was possible, and the table currently includes some seasonal flow/level regime preferences. This was illustrated in the graphics indicating Lake Lanier level and the Buford gage flow preferences.

Kristin noted the need for B&V to discuss the issues raised regarding the treatment of performance metrics in the model with Dr. Georgakakos and to propose recommendations to ACFS on how to address concerns within ACFS as to what is hard-coded into the model as a "constraint" or "preference" and alternatively what is used to evaluate model output.

Discussion on Summary Table

Next, the committee discussed each node in the Performance Criteria Identification Summary. Edits to the summary are included in the revised handout attached to the meeting summary. For several parameters, the 2010 input from the Data Needs and Sustainability Workgroup was reviewed. Some of the discussion points from this exchange are bulleted below.

- Members felt that navigation metrics were not applicable for all nodes.
- Members felt that seafood metrics were not applicable for all nodes.
- Members noted that no specific numeric criteria were identified for farm agriculture.
- Members suggested that industry and manufacturing metrics were linked to water supply metrics in this area.
- At the Lanier node, Wilton Rooks expressed concern that the monthly average graph in the memo needed review.
- The performance criteria offered in the hand-out by Haubner and Stevens were discussed and can be incorporated into the performance metrics.
- Jerri Russell said that later in the process there may be a need for metrics that address equity among regions and interests.
- Pat Stevens requested the detailed excel file that supports the 2010 Data Needs and Sustainability Work Group's entries to the table.
- The wording of the Environment and Conservation category was discussed. Conservation in this sense refers to habitat/ecological conservation as opposed to using less water.
- Laura Hartt will research and provide additional input on desired Historic & Cultural and Water Quality metrics.
- For hydropower generation, George Taylor advised that four hours per day, five days per week is standard utilization for hydro facilities. George will check on metrics for hydropower, specifically for Lake Lanier (flow).
- Kelly Randall will research and provide additional feedback on Buford gage flow related water quality metrics after checking with GA DNR with regard especially to the needs of the hatchery below the dam.
- The Fish and Wildlife Service PAL Letter was discussed for the Norcross node. The group agreed that the minimum flow intra-annual curves make sense for analysis; however, many in the group found the table with high flow guidelines for pre-Buford Dam periods impractical and dangerous. Laura Hartt said that she will review the suggested high flow guidelines from the environmental interest group perspective.
- A discussion of whether to keep the Morgan Falls node ensued. Pat Stevens noted Morgan Falls does not have much storage and provides only marginal re-regulation of flows. The group discussed deleting the Morgan Falls node from the table, pending further input from George

Martin with GA Power on thermal power metrics (Chad Knudsen to coordinate), and Laura Hartt on recreation and environment & conservation metrics at this node.

- Peachtree Creek was discussed. It was agree that 750 cfs should be used as the model rule, and the metric would be the percent of time 750 cfs is achieved.

DISCUSSION OF NEXT STEPS AND WRAP-UP

Kristin asked if anyone could think of a stakeholder interest group or individual who could not attend the meeting but who should be reached out to gain their input. Kelly Randall suggested Gwinnett County was not present, but that he would be in contact with them regarding the discussions that had taken place. Caucus member Steve Cannon was not present and should be consulted by B&V for input on historic and cultural performance metrics in this sub-basin.

Next, the caucus approved by consensus that Steve Haubner will replace Tim Perkins as an alternate for the Upper Chattahoochee Caucus on the TOCWG.

Kristin thanked the group for their input and participation, and the meeting was adjourned.

ACTION ITEMS

- Kristin will distribute spreadsheet requested by Pat Stevens with detailed information to support the Data Needs and Sustainability Work Groups metrics.
- B&V will contact Steve Cannon for input on historic and cultural performance metrics in the sub-basin.
- Laura Hartt will review the PAL high flows guidelines for the Norcross node from the environmental interest group perspective.
- Kelly Randall will check with GA DNR regarding water quality metrics for the Buford gage.
- Wilton Rooks and B&V will review the Lanier graphs in the technical memo for accuracy.
- Laura Hartt will research and provide additional input on desired Historic & Cultural (she will check with the National Park Service) and Water Quality metrics.
- George Taylor will check on metrics for hydropower, specifically for Lake Lanier (flow).
- Chad Knudsen will consult with George Martin of GA Power on thermal power metrics at Morgan Falls node (to see if one is needed).
- Laura Hartt will gather additional input on recreation and environment metrics at Morgan Falls node.
- B&V will discuss the issues raised regarding the terminology and treatment of performance metrics in the model with Dr. Georgakakos and to propose recommendations to ACFS on how to address concerns within ACFS as to what is hard-coded into the model as a “constraint” or “preference” and alternatively what is used to evaluate model output.
- Kristin will add Steve Haubner to the TOCWG e-mail list.

Upper Chattahoochee Caucus Meeting
July 27, 2012

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1	Chad Knudsen	cgknudse@Southernco.com
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6	Mike Friedlander	friedlanderm@bv.com
7	Robert Osborne	
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ACF Stakeholders
Upper Chattahoochee Caucus
Meeting on Performance Metrics

July 27, 2012
1:00PM to 5:00PM Eastern

Cobb County-Marietta Water Authority

DRAFT AGENDA

Meeting Objective: To learn about, review, and if necessary modify and amend existing list of performance indicators.

Agenda Topics	*Meeting Materials*
1. Welcome & Introductions (Kristin Rowles, 10 minutes)	Meeting Agenda
2. Presentation on Performance Metrics: What they are, how they will be used, approach to development, schedule for incorporating environmental flows information (Black & Veatch, 50 minutes)	Performance Metrics Technical Memorandum_062812
3. Review of existing list of performance metrics: What is missing, what should be changed (Black & Veath/Kristin Rowles, 50 minutes)	Performance Metrics Technical Memorandum_062812: Pages 8-9 (see page 6 for link to 11 x 17 version)
BREAK (15 minutes)	
4. Discussion: Does this list represent the interests of my caucus? (Kristin Rowles, 45 minutes)	
5. Discussion of next steps: Information needs, follow-up steps (Kristin Rowles, Black & Veatch, 45 minutes)	
6. Wrap-Up and Adjournment (15 minutes)	

Performance Metric Identification Summary

ACF Stakeholders
Last Updated : April 30, 2012

Caucus	Node / Gage	Metric	Navigation	Recreation	Water Quality	Water Supply	Farm Agriculture	Industry & Manufacturing	Seafood Industry	Hydro Power	Thermal Power	Local Government	Environment & Conservation	Business & Economic Development	Historic & Cultural	Urban Agriculture	Output Figure	Notes
Upper Chattahoochee	anier	e el	Not Applicable	Percent of Time anier e el is less than 1061 C Caucus Metric 10 - Percent of Weeks March through No Corps dentified ecreation mpact e els	Jerri ussell and aura artt to research potential metrics ith A N	C Caucus Metrics 1-9	No Specific Criteria dentified	Metrics inked to Water Supply	Not Applicable	eorge Taylor to pro ide input	Not Applicable	Percent of Time anier e el is less than 1061	aura artt to research Corps ake Management for ass guidelines	inked to Water Supply and ecreation	aura artt to discuss metrics it h NPS	Metrics inked to Water Supply	See UC Caucus Performance Metrics example graphs	pper Chattahoochee asin Caucus Meeting July 27, 2012
	anier utflo	Flo	Not Applicable	No Specific Criteria dentified	No Specific Criteria dentified	Metrics linked to Peachtree Creek Water Supply Metric	No Specific Criteria dentified	Metrics inked to Water Supply	Not Applicable	eorge Taylor to pro ide input on hours of generation or other metric 4 hours day 5 d is historical baseline	Not Applicable	Metrics inked to Water Supply	No Specific Criteria dentified	No Specific Criteria dentified	No Specific Criteria dentified	Metrics inked to Water Supply		Additional metric dicussed during pper Chattahoochee asin Caucus Meeting July 27, 2012
	uford age	Flo	Not Applicable	T - or- inked to Water Supply and ydropo er	elly andall to erify ith A N hatchery-elease desired 500 cfs to keep nursery intake co ered, , temp	Metrics linked to Peachtree Creek Water Supply Metric	No Specific Criteria dentified	Metrics inked to Water Supply	Not Applicable	Not Applicable	Not Applicable	inked to Water Supply, Water uality, and ecreation	Metrics inked to ecreation	inked to Water Supply and ecreation	aura artt to discuss metrics it h NPS	Metrics inked to Water Supply		
	Norcross	Flo	Not Applicable	No Specific Criteria dentified	No Specific Criteria dentified	Metrics linked to Peachtree Creek Water Supply Metric	No Specific Criteria dentified	Metrics inked to Water Supply	Not Applicable	Not Applicable	Not Applicable	inked to Water Supply, Water uality, and ecreation	Percent of time flo meets guidelines in FWS PA etter ualitati e	inked to Water Supply and ecreation	aura artt to discuss metrics it h NPS	Metrics inked to Water Supply		
	Morgan Falls - **Slated for Deletetion pending hydropower/recreation feedback)**	Flo	Not Applicable	T - or- inked to Water Supply and ydropo er	No Specific Criteria dentified	No Specific Criteria dentified	No Specific Criteria dentified	Metrics inked to Water Supply	Not Applicable	No Specific Criteria dentified	Not Applicable	Monthly ariable a erage daily flo , see graph Morgan Falls	Metrics linked to recreation	inked to Water Supply and ecreation	aura artt to discuss metrics it h NPS	Metrics inked to Water Supply		
	Peachtree Creek	Flo	Not Applicable	of time flo bet een 1000 and 1250 cfs for recreation National Park Ser ice	750 cfs constant	C asin Caucus Metric 12 - Percent of ays elo 750 cfs	No Specific Criteria dentified	Metrics inked to Water Supply	Not Applicable	Not Applicable	Not Applicable	inked to Water Supply, Water uality, and ecreation	inked to ecreation	inked to Water Supply and ecreation	aura artt to discuss metrics it h NPS	Metrics inked to Water Supply		C asin Caucus Metric 11 - Number of ays ith Shortages of Withdra als Potential modeling of different flo rules, changing flo uantity and or seasonal flo differences as discussed during pper Chattahoochee asin Caucus Meeting July 27, 2012

Middle □ □er Chattahoochee	Whitesburg	Flo□	□nstantaneous minimum 750 cfs, daily a□erage 1000 cfs, 7-□ay a□erage 1350 cfs	□nstantaneous minimum 750 cfs, daily a□erage 1000 cfs, 7-□ay a□erage 1350 cfs	□nstantaneous minimum 750 cfs, daily a□erage 1000 cfs, 7-□ay a□erage 1350 cfs	□nstantaneous minimum 750 cfs, daily a□erage 1000 cfs, 7-□ay a□erage 1350 cfs		□nstantaneous minimum 750 cfs, daily a□erage 1000 cfs, 7-□ay a□erage 1350 cfs		□nstantaneous minimum 750 cfs, daily a□erage 1000 cfs, 7-□ay a□erage 1350 cfs	□nstantaneous minimum 750 cfs, daily a□erage 1000 cfs, 7-□ay a□erage 1350 cfs	□nstantaneous minimum 750 cfs, daily a□erage 1000 cfs, 7-□ay a□erage 1350 cfs	□ of time flo□ □2200 cfs for recreation based on 4 ft depth	□nstantaneous minimum 750 cfs, daily a□erage 1000 cfs, 7-□ay a□erage 1350 cfs				
	West Point	□e□el	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times		April-Sept 635, 632.5 at all other times		April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times	April-Sept 635, 632.5 at all other times				
	West Point □age	Flo□											Meet flo□ guidelines in FWS PA□ □etter □□ualitati□e□					
	Columbus	Flo□	□nstantaneous minimum 800 cfs, daily a□erage 1350 cfs, 7-□ay a□erage 1850 cfs	□nstantaneous minimum 800 cfs, daily a□erage 1350 cfs, 7-□ay a□erage 1850 cfs	□nstantaneous minimum 800 cfs, daily a□erage 1350 cfs, 7-□ay a□erage 1850 cfs	□nstantaneous minimum 800 cfs, daily a□erage 1350 cfs, 7-□ay a□erage 1850 cfs		□nstantaneous minimum 800 cfs, daily a□erage 1350 cfs, 7-□ay a□erage 1850 cfs		□nstantaneous minimum 800 cfs, daily a□erage 1350 cfs, 7-□ay a□erage 1850 cfs	□nstantaneous minimum 800 cfs, daily a□erage 1350 cfs, 7-□ay a□erage 1850 cfs	□nstantaneous minimum 800 cfs, daily a□erage 1350 cfs, 7-□ay a□erage 1850 cfs	□nstantaneous minimum 800 cfs, daily a□erage 1350 cfs, 7-□ay a□erage 1850 cfs	□nstantaneous minimum 800 cfs, daily a□erage 1350 cfs, 7-□ay a□erage 1850 cfs				
	W.F. □eorge	□e□el	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times		April-Sept 190, 187.5 at all other times		April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times	April-Sept 190, 187.5 at all other times			Figure	
	W.F. □eorge	Flo□	□ of Time 9 ft Na□igation is Supported										Meet flo□ guidelines in FWS PA□ □etter □□ualitati□e□					
	Andre□s	□e□el	□ of Time 9 ft Na□igation is Supported															
	Columbia	Flo□	□aily a□erage 2000 cfs, 7-□ay a□erage 2000 cfs	□aily a□erage 2000 cfs, 7-□ay a□erage 2000 cfs	□aily a□erage 2000 cfs, 7-□ay a□erage 2000 cfs	□aily a□erage 2000 cfs, 7-□ay a□erage 2000 cfs		□aily a□erage 2000 cfs, 7-□ay a□erage 2000 cfs		□aily a□erage 2000 cfs, 7-□ay a□erage 2000 cfs	□aily a□erage 2000 cfs, 7-□ay a□erage 2000 cfs	□aily a□erage 2000 cfs, 7-□ay a□erage 2000 cfs	□aily a□erage 2000 cfs, 7-□ay a□erage 2000 cfs	□aily a□erage 2000 cfs, 7-□ay a□erage 2000 cfs				
	Woodruff	□e□el	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times		April-Sept 77.5, 76.5 at all other times		April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times	April-Sept 77.5, 76.5 at all other times				□esired flo□ contribution 50□ from Chattahoochee and Flint basins □Middle Chattahoochee□
Flint	□riffin	Flo□											Si□-inch flo□ depth for fish passage					
	Carson□ille	Flo□	250 cfs annual a□erage daily flo□, 100 cfs 1-day minimum	250 cfs annual a□erage daily flo□, 100 cfs 1-day minimum	□nimpaired daily 7□10 plus 30□								Si□-inch flo□ depth for fish passage					
	Monte□uma	Flo□											Si□-inch flo□ depth for fish passage				Figure	
	Albany	Flo□											Si□-inch flo□ depth for fish passage					
	Ne□ton	Flo□											Si□-inch flo□ depth for fish passage					
	□ainbridge	Flo□											Si□-inch flo□ depth for fish passage					
Apalachicola	Chattahoochee	Flo□	□ of Time 9 ft Na□igation is Supported										Meet flo□ guidelines in FWS PA□ □etter □□ualitati□e□					□esired flo□ contribution 50□ from Chattahoochee and Flint basins □Middle Chattahoochee□
	□lountsto□n	Flo□	□ of Time 9 ft Na□igation is Supported										□F□□A Seasonal Water Flo□ □Atkins□					

	Sumatra	Flo□	□ of Time 9 ft Na□igation is Supported										□F□□A Seasonal Water Flo□ □Atkins□					

Legend

	□ualitati□e metric
	Additional information needed
	□e□ision to constraint as stated needed

Model Operational Sequence

1 Meet all numeric constraints, operational rules, □ithdra□als, permit re□uirements
2 Meet all operational rules, □ithdra□als, permit re□uirements
3 Meet □ithdra□als and permit re□uirements
4 Meet permit re□uirements
5 Permit re□uirements not met

Water Supply Performance Metrics, July 26, 2012

Purpose	#	Title	Format	Comments/Details
Assessing Occurrence of Desirable Lake Conditions	1	Percent of Years Lake Lanier is at Full Pool (1071') by May 1	bar graph	
	2	Percent of Weeks Above 90% Refill Probability Threshold	bar graph	Annual Refill is Defined as Full Pool on May 1 with a 1/4 ft tolerance (1070.75') Threshold Varies With Time of Year and Basin Operations
Assessing Occurrence of Unacceptable Lake Conditions	3	Minimum Lake Lanier Stage Each Day of the Year	365 day graph	
	4	Percent of Weeks with Critical Levels in Lake Lanier	stacked bar graph	Weeks in WCP/RIOP Zone 4 (red) and Zone 3 (orange)
Assessing Overall Lake Conditions	5	Lake Lanier Stages	frequency distribution	
Assessing Rate of Drawdown	6	Monthly Rate of Decrease in Lake Lanier	frequency distribution	Lanier should be taken down gradually
	7	Percent of Years with Perceived Critical Conditions	bar graph	Two or More Consecutive Months of Rapid Stage Reductions (>1.5 ft/month) in Lake Lanier; 1.5 ft/month selected based on historical data (2003-2011)
Assessing Equity Among Projects	8	Percent of Years Reservoir is at Full Pool on May 1: Lanier, West Point, W.F. George	bar graph	
	9	Days to refill: Lanier, West Point, W.F. George	frequency distribution	Number of Days between Yearly Minimum Stage and Full Pool
	10	Percent of Weeks with Recreation Impact, March 1 to November 30: Lanier, West Point, W.F. George	stacked bar graph	Recreation Impact Levels 1 (yellow), 2 (orange), 3 (red) are shown
Ensuring Water Supply Needs are Met	11	Number of Days with Shortages to the Metro Atlanta Region	bar graph	It is important to verify that demands are being met in simulations
	12	Percent of Days in Violation of the Peachtree Creek Minimum Flow Requirement	bar graph	This metric uses the daily minimum flow requirement for each alternative (not necessarily 750 cfs)

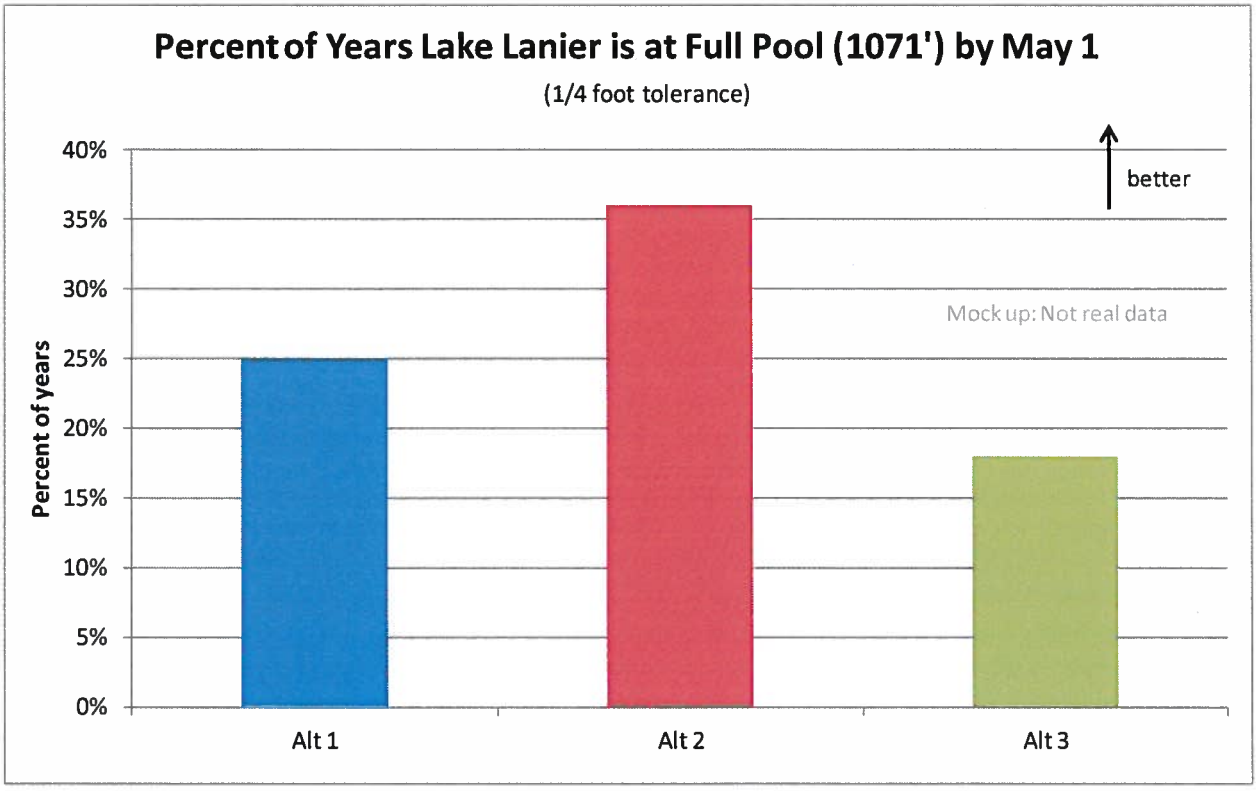

Figure 1. Water supply performance metric #1

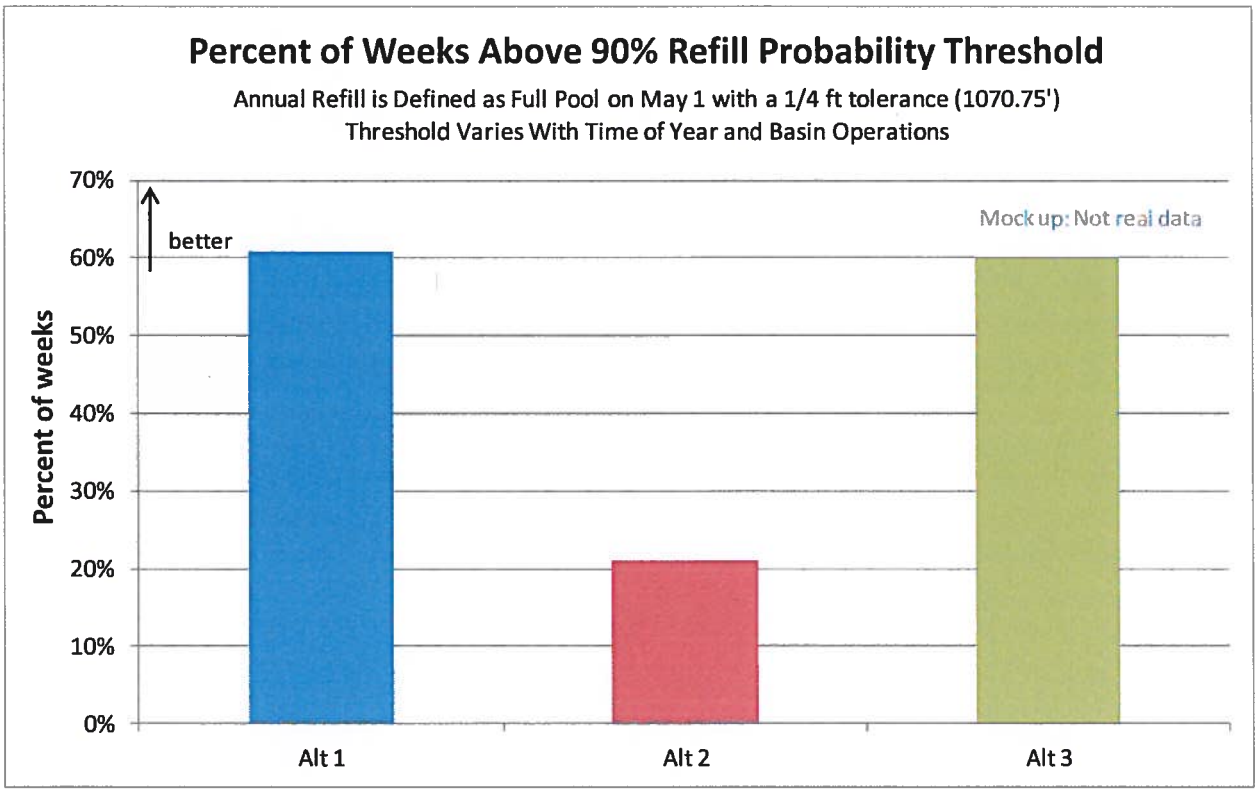

Figure 2. Water supply performance metric #2. See last page for details.

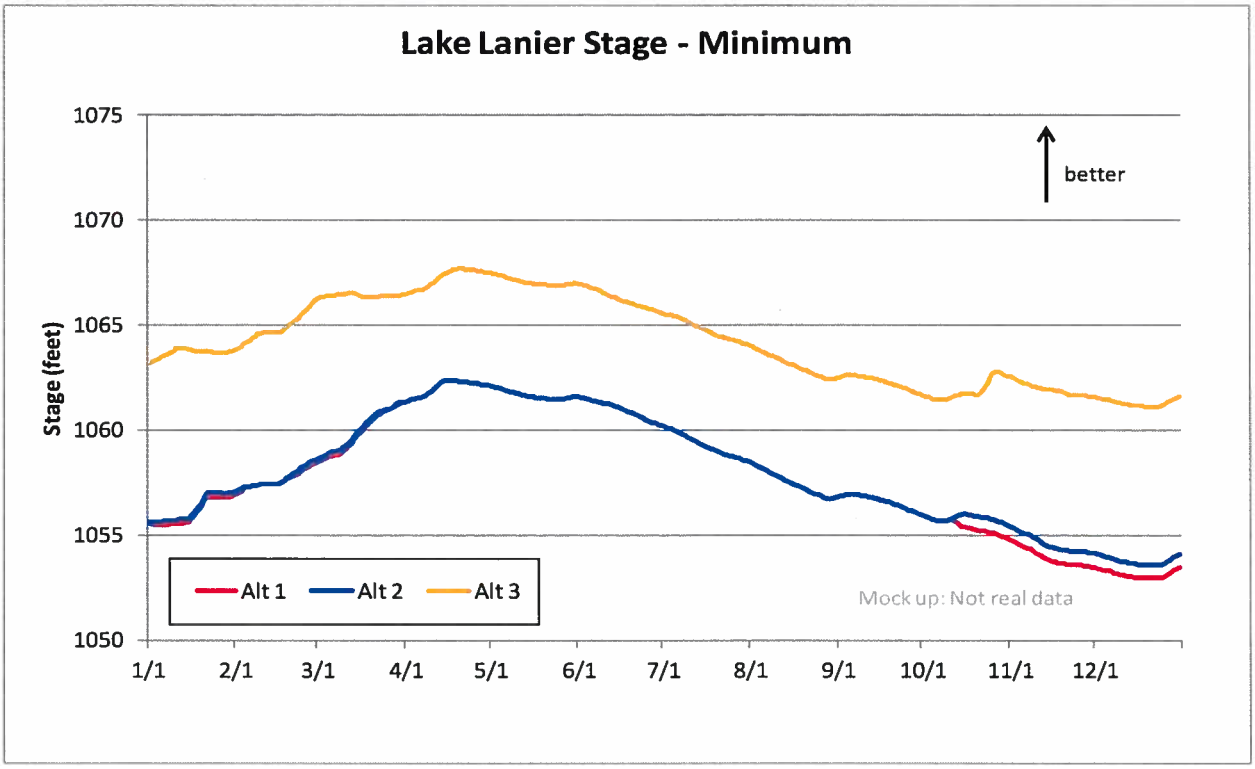

Figure 3. Water supply performance metric #3

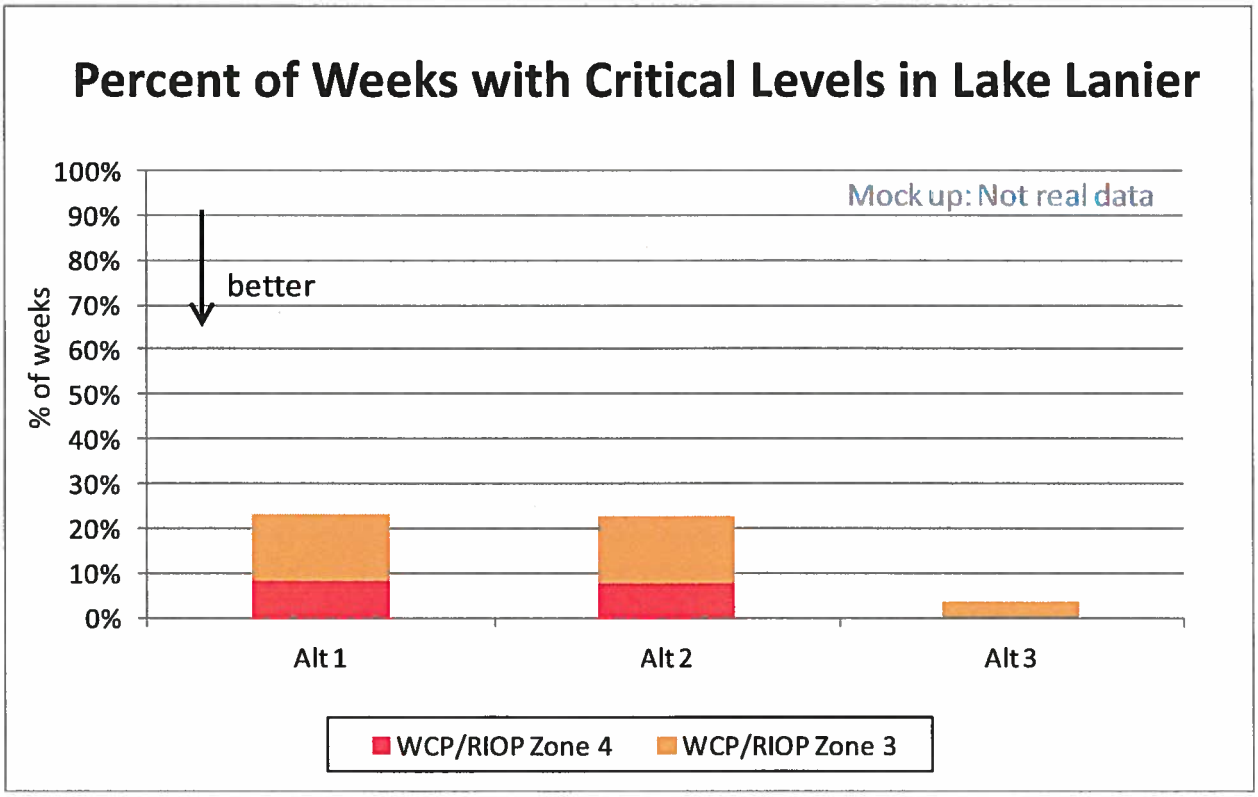

Figure 4. Water supply performance metric #4

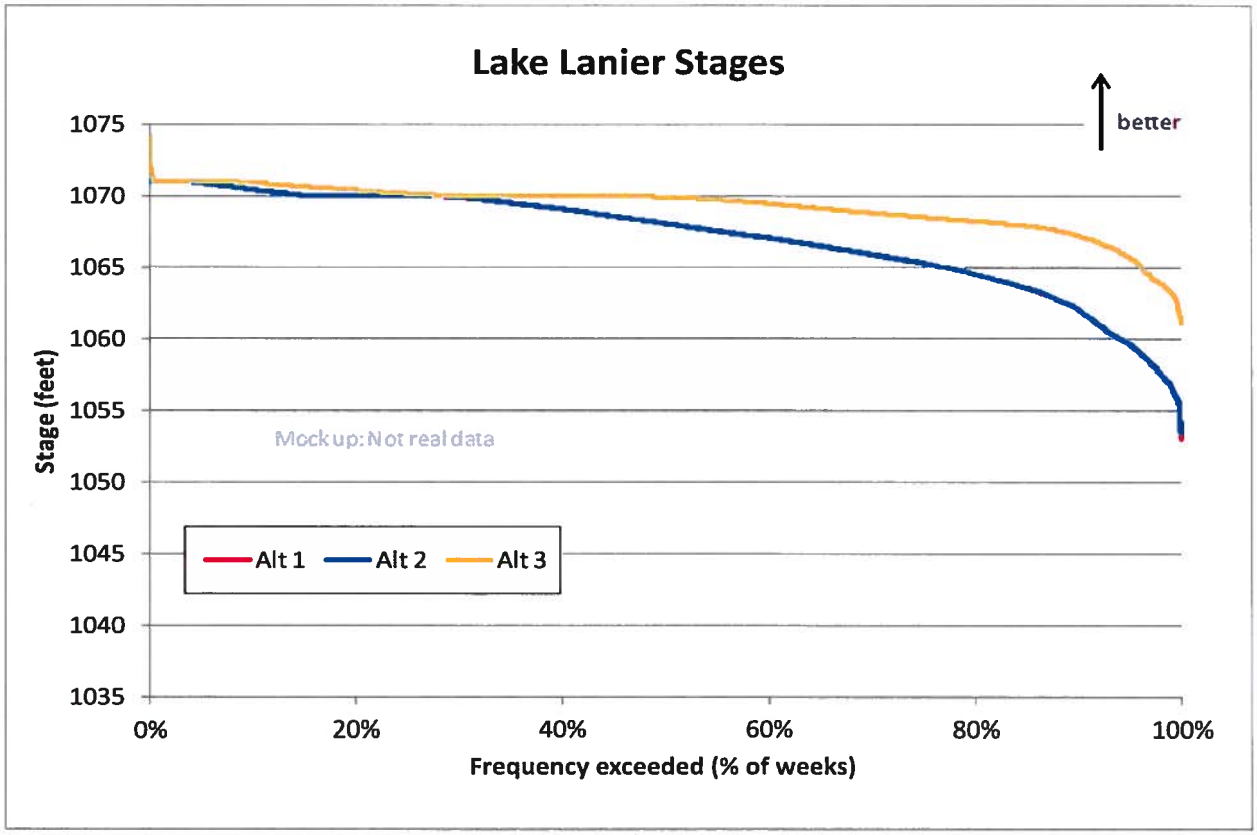

Figure 5. Water supply performance metric #5

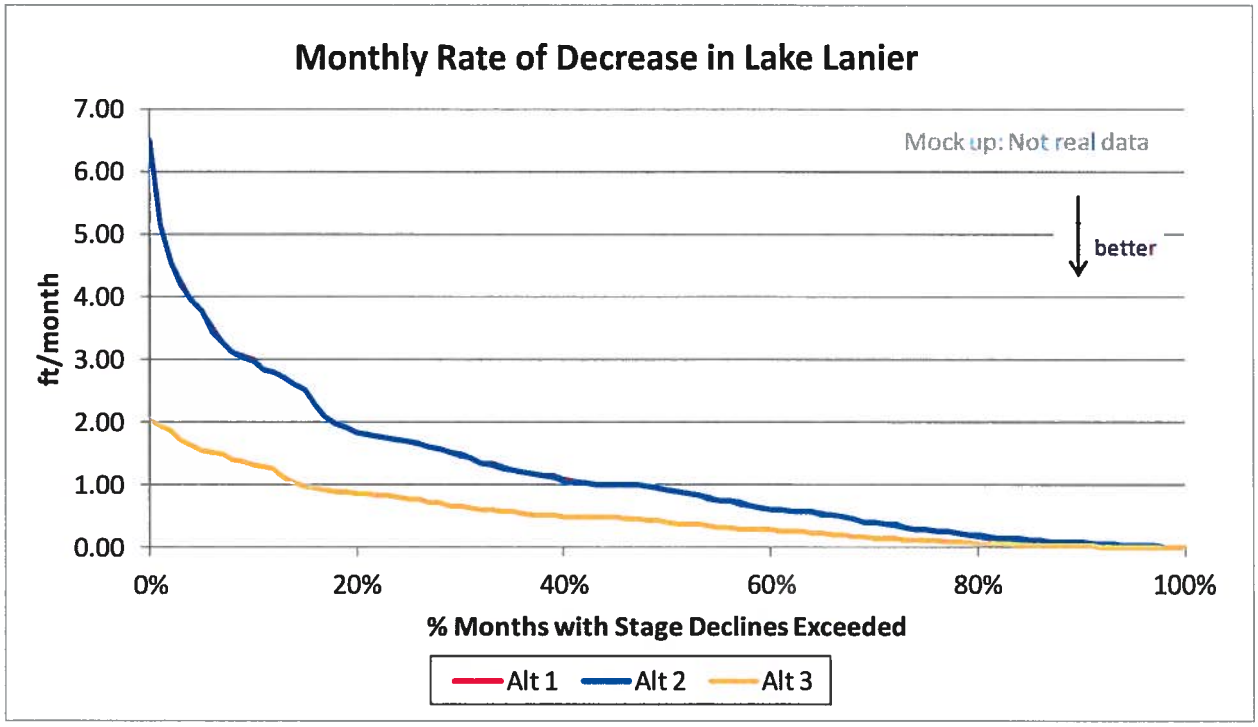

Figure 6. Water supply performance metric #6

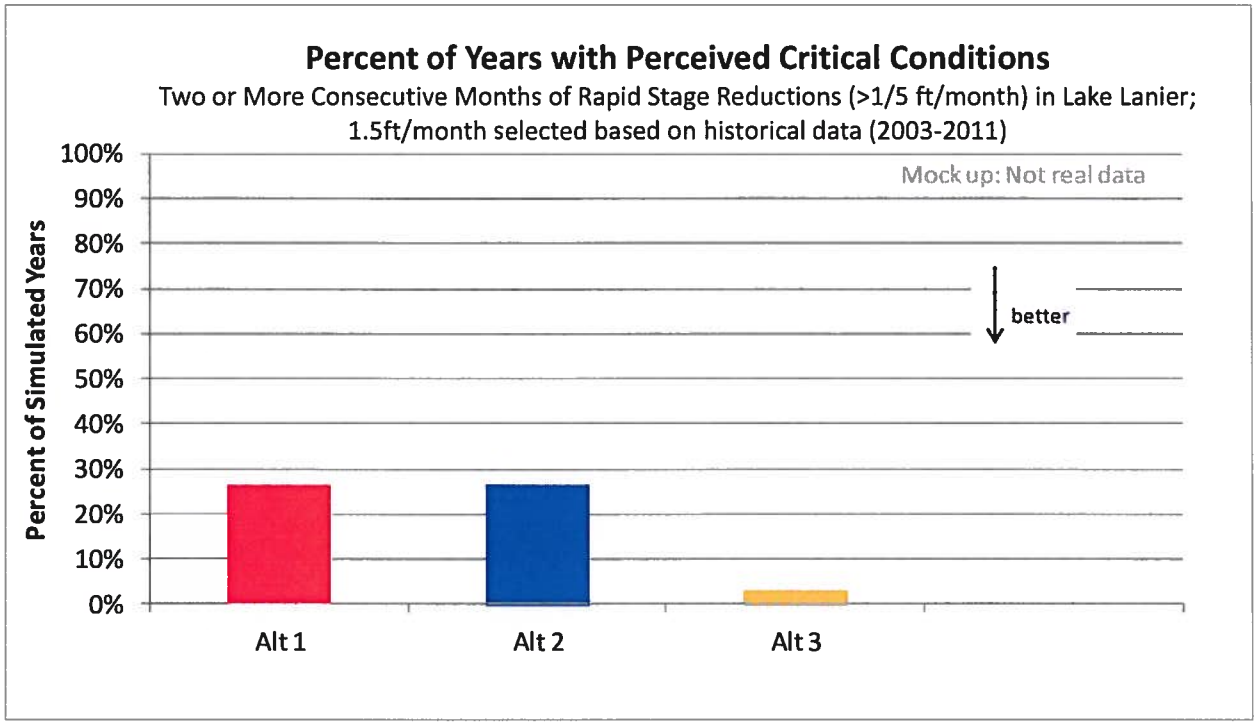

Figure 7. Water supply performance metric #7

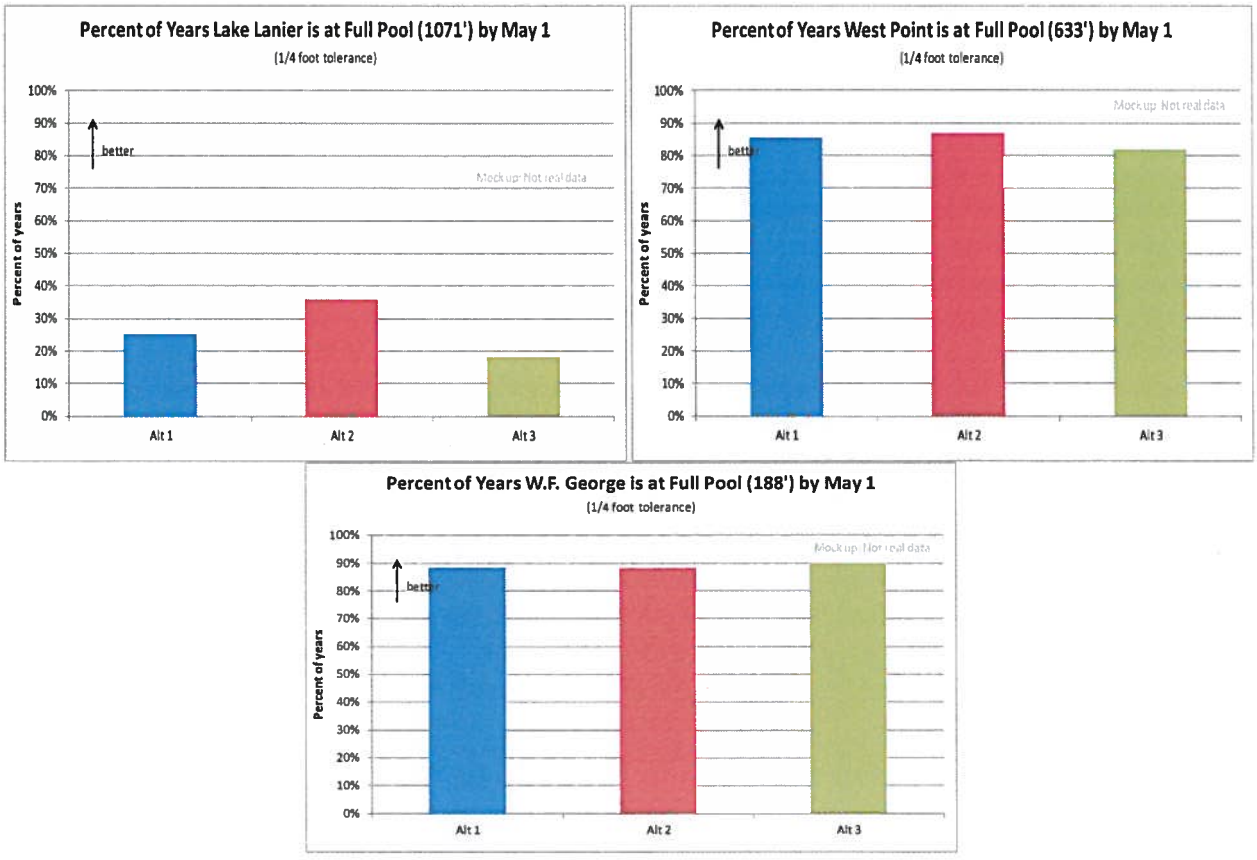

Figure 8. Water supply performance metric #8

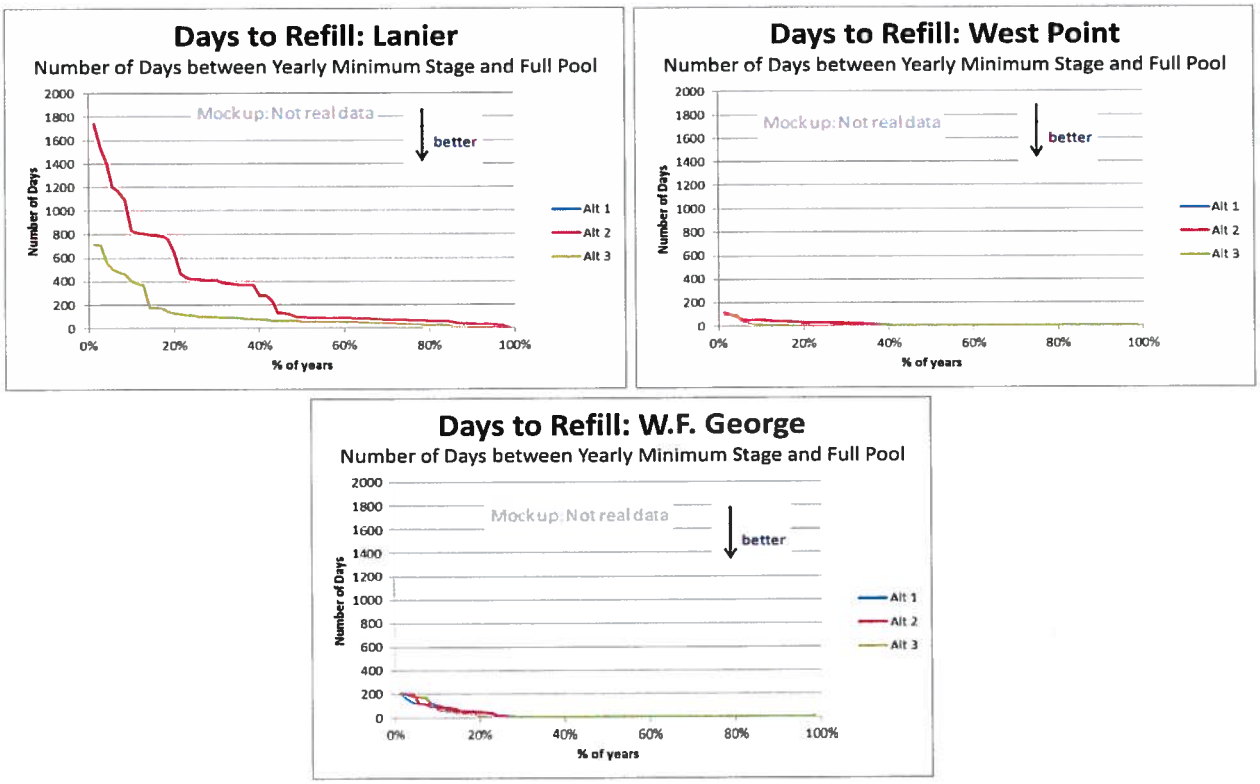

Figure 9. Water supply performance metric #9

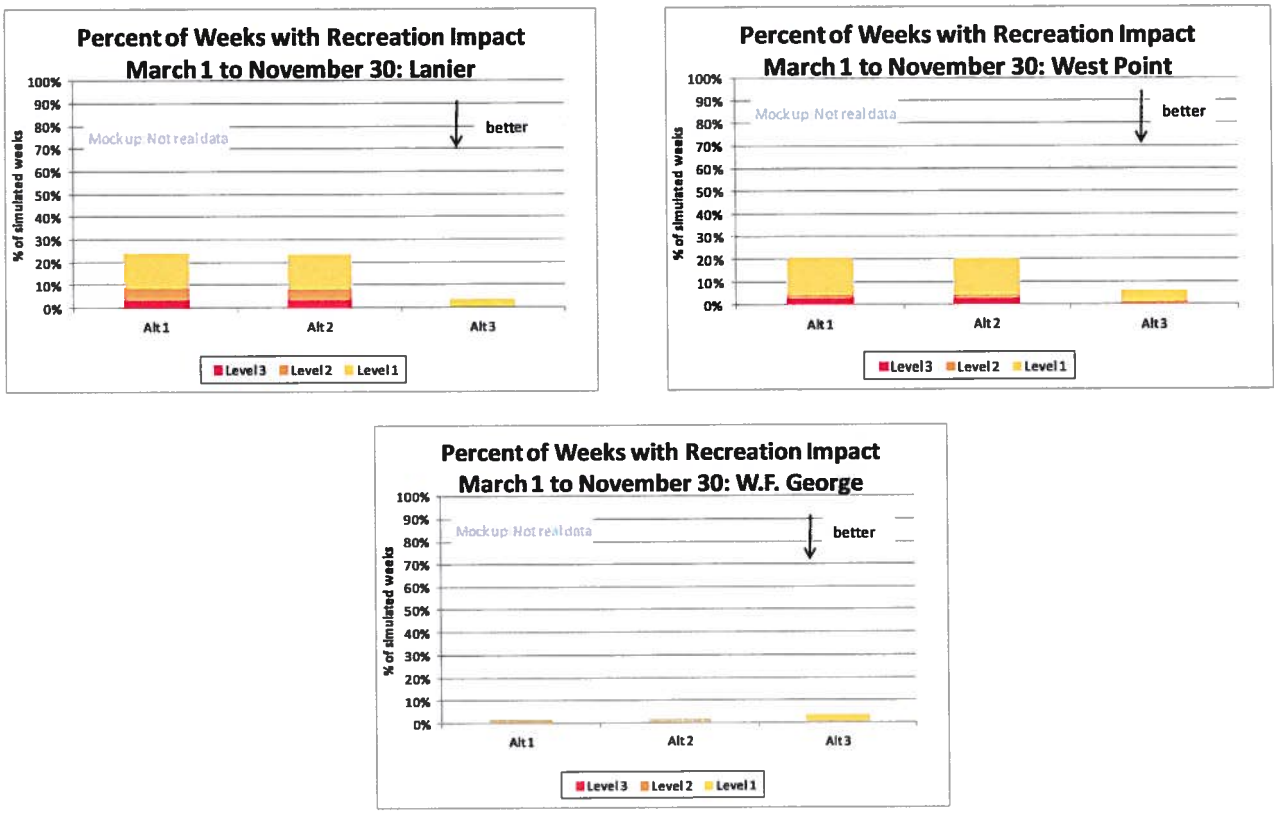

Figure 10. Water supply performance metric #10

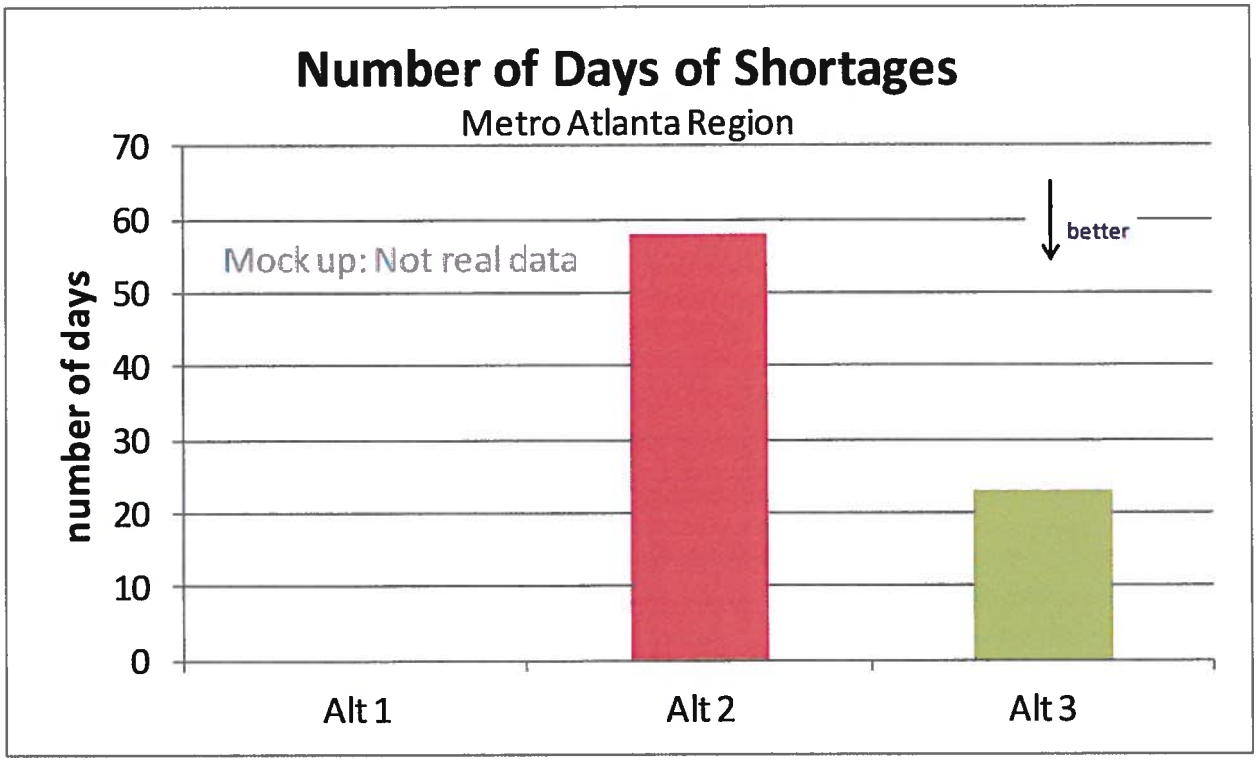

Figure 11. Water supply performance metric #11

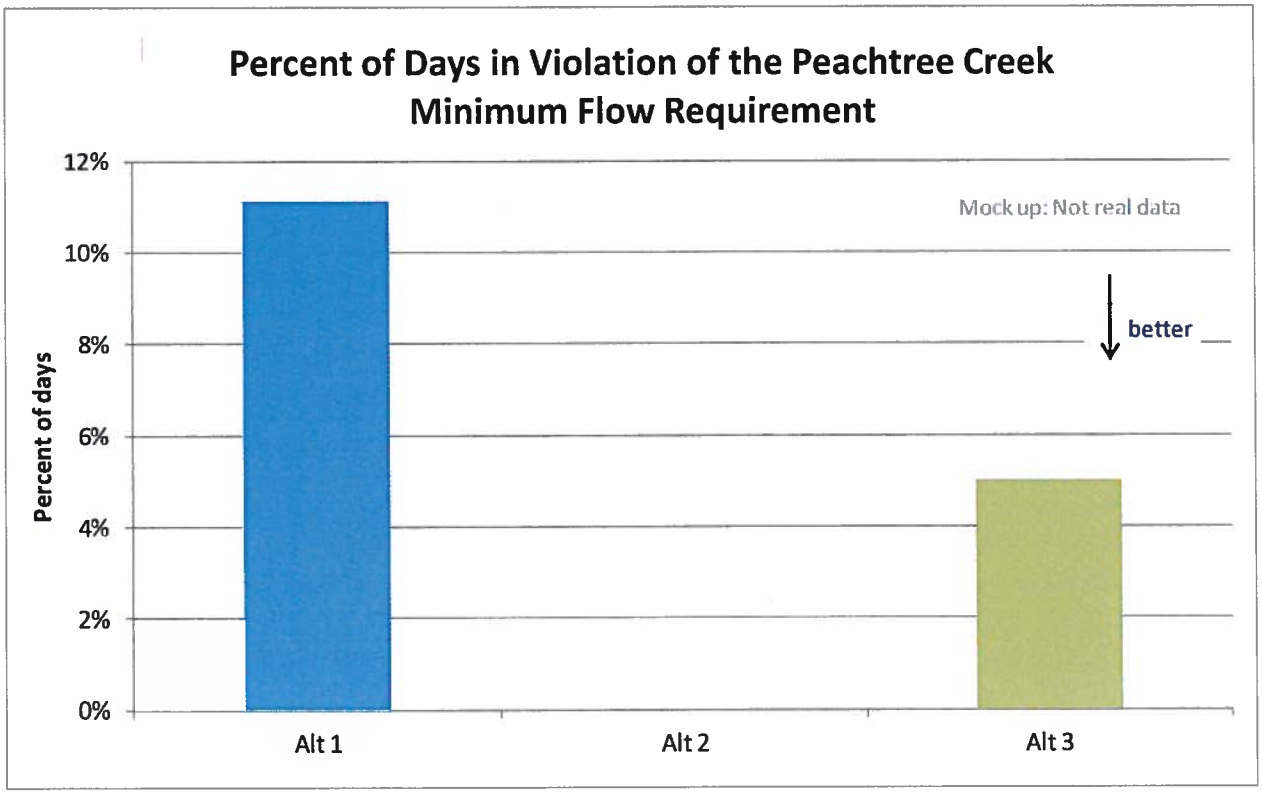

Figure 12. Water supply performance metric #12

Performance Metric #2 details

A simulation model of the ACF basin under RIOP operations was used to determine the 90% refill probability stage on the first day of each month. This was done by determining the initial conditions stage in Lake Lanier that results in 90% refill under historical hydrology (1940-2008). The resulting curve is shown below.

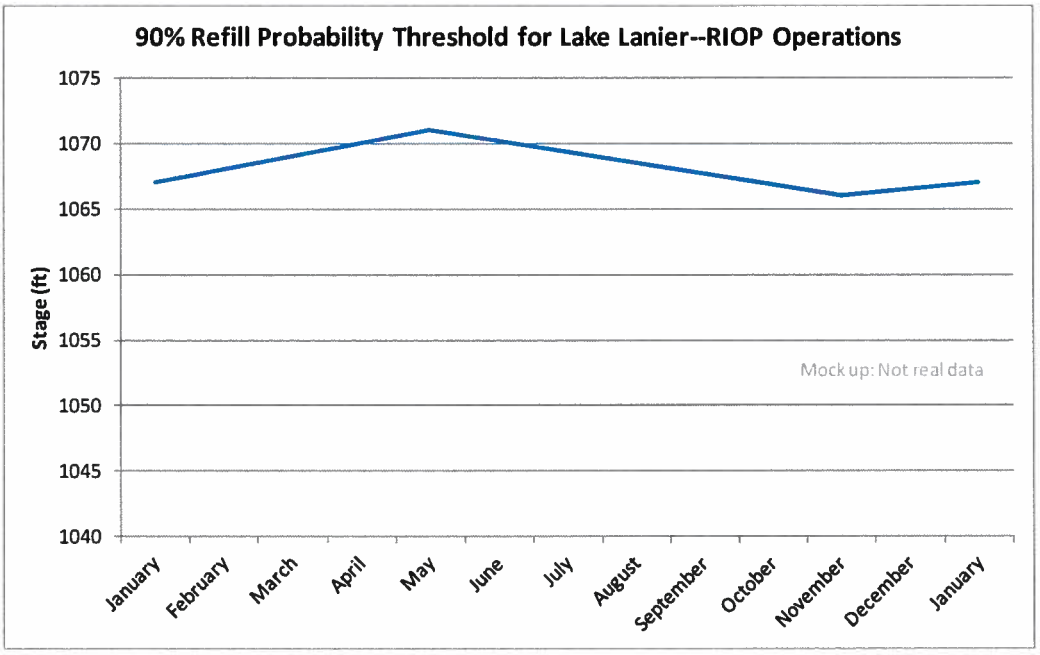

Figure 13. 90% refill probability threshold for Lake Lanier under RIOP operations, used in performance metric #2

If alternatives developed by the stakeholder group result in large changes to the operations of Lake Lanier, this curve should be recreated in a simulation model of the operations in that alternative.