



CONFERENCE MEMORANDUM

GA EPD
Regional WDCPs
Future Resource Assessments

B&V Project 164139
B&V File C-1.4
June 16, 2010

Meeting held on June 9, 2010, at 2:00 PM, in LaGrange City Hall.

Recorded by: M.A. Friedlander, J.M.Hawkins, S.L. Simpson

Attending: Middle Chattahoochee Water Council
Steve Davis, Harry Lange, Jeff Lukken, Joe Maltese, Denney Rogers,
Don Watson, Matt Windom, Jimmy Knight
GA EPD
Tim Cash, Wei Zeng
Black & Veatch
Mike Friedlander, Jim Hawkins, Steve Simpson
Georgia Water Planning & Policy Center
Kristin Rowles

Meeting Objective: *The purpose of the meeting was to review and discuss the surface water availability resource assessments for the initial future demand conditions without management practices and to review the set of future modeling scenarios including management practices.*

ACTION ITEMS

- [Committee] Provide the planning contractor's and EPD a finalized list of desired benchmarks and input regarding model assumptions.
- [EPD] Perform next model run based upon pending inputs from the committee
- [Jim Hawkins] Arrange inter-council meeting times for discussions regarding management practices and the shortfalls in the Flint basin
- [Matt Windom] Provide guidance and follow-up to committee members for soliciting feedback from communities/municipalities/utilities as the WDCP is developed
- [Committee] Review the results for shortfalls at the Heflin and Newell nodes and begin thinking about management practices.
- [Mike Friedlander] Develop percent exceedance curves based on benchmarks previously provided by Joe Maltese (see Attachment C. for committee meeting minutes dated April 2, 2010) and the output from the initial future surface water availability model.

Matt Windom opened by discussing information shared at the June 7th meeting held with EPD Director Allen Barnes and members of the Flint councils:

- Mr. Barnes stressed the importance of the Chattahoochee and Flint council engaging in the transfer of ideas and concerns in coming to a mutual agreement in the pursuit of their respective WDCP's. It was discussed and agreed that future committee participation with the Flint councils be arranged.
- The Director addressed the approach to resolving gaps by expressing that while the gaps do not necessarily need to be completely closed, sufficient progress needs to be made toward their resolution and that the gaps should not in any way be expanded. This rationale should be reflected in the WDCP.
- Regarding interbasin transfer, Matt described the Directors recognition that some utilities face greater challenges than others in operating without them.
- The WDCP's can include recommendations for further study where data needs are identified. The WDCP does not have to be bullet proof in that regard; however, acknowledgement of areas needing more study must be identified.

Matt pointed to the importance of council member outreach to communities, utilities, and municipalities as the WDCP is developed. Matt suggested directly contacting individuals to solicit their input. Jim Hawkins suggested that providing drafts of the WDCP chapters may be a viable way of soliciting such feedback. Joe Maltese thought that engaging the ad hoc group who reviewed initial municipal demands could help in meeting outreach goals.

Initial Future Model Run & The Gap at Bainbridge

Matt reported that Lower Flint-Ochlockonee members present at the meeting with Director Barnes were concerned about the size of the gap and its accuracy. Tim Cash responded by pointing out that despite our best efforts, a number that works for everyone will never be found and the council's must work to start closing those shortfalls.

Jeff Lukken asked how the gap was calculated. Steve Simpson replied that the 2050 forecasted demands applied to the simulated unimpaired flows. This resulted in a series of future simulated flows assuming the hydrologic conditions of the past 68 years were repeated. Under the unimpaired flow analysis an adjusted flow regime was determined based upon minimum instream protection values such as a calculated 7Q10 or an existing regulated flow requirement. If the simulated flow with 2050 water use forecasts fell below the target flow for a particular node, their difference was calculated and reported as a shortfall.

Jeff Lukken expressed that per the unimpaired flow analysis, the Chattahoochee and Flint basin contributions were approximately 50/50. The Flint may be showing a shortfall due to the lack of storage in that basin as compared to the Chattahoochee. Jim Hawkins added that it was in part due to the lack of storage and in part due to the effects of groundwater pumping on Flint flows.

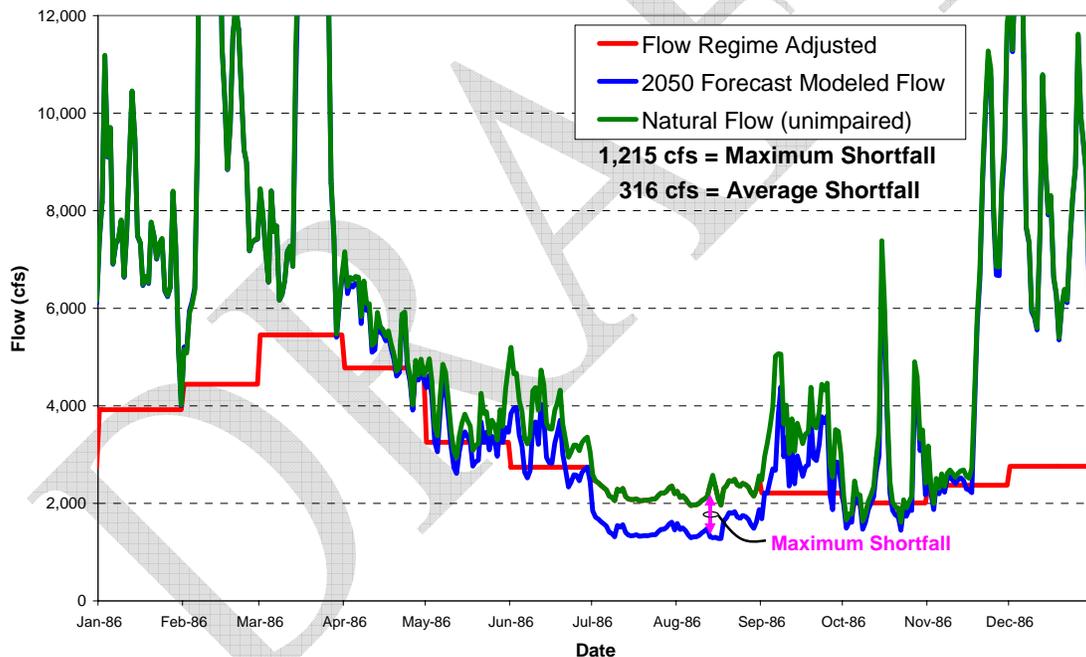
Joe Maltese expressed concern regarding the assumptions and inputs associated with the model with regards to numbers not validating the agricultural numbers projected in previous Biological Opinion documents. The agricultural forecasts produced by Dr. Hook were based off of a separate analysis which utilized permit, metering, and mapping data along with crop production estimates to generate a forecast. Furthermore, the values will

differ in that the modeled number also includes nursery and golf course irrigation demands as produced by Dr. Hook and Cliff Lewis of EPD, respectively.

Steve Simpson and Tim Cash expressed that the council's should focus on closing the average gap, not necessarily the maximum. In total, 11% of all 25,202 simulated days under the future water use conditions resulted in a shortfall at the Bainbridge node. The maximum shortfall observed is 1,215 cfs and the average shortfall is 316 cfs (refer to Figure 1). The reported average is not on an annual average basis, it reflects the average of all days when a shortfall will be observed (when the modeled flow falls below the adjusted flow regime, or target flow, the difference between the target flow and the low flow value defines the shortfall). The shortfall at Bainbridge was comprised of two major elements:

1. The flow gap due to lower basin water use (sum of water use by Albany, Newton, Milford, and Bainbridge nodes); and
2. The flow gap due to upper basin diversion in the Montezuma node.

Figure 1. Stream Flow at Flow at Bainbridge in the Flint River



ACF Initial Future Model Run Results

Jim Hawkins discussed the agenda and began by reviewing the ACF water quantity technical memo prepared by Wei Zeng describing results of the initial future model run. This initial model incorporated the 2050 water use forecasts and maintained operation of the federal reservoirs per the RIOP. No management practices were incorporated into this model. The Chattahoochee basin met all future demands with no observed flow shortfalls. None of the federal reservoirs fell below their relative conservation pools at any time during the flow simulations; however, as stated in the technical memorandum, portions of the future demand which are assumed to be withdrawn directly from the reservoirs without authorization are considered potential gaps. Figure 2, provided at the

end of these meeting minute, illustrates the ACF basin and the Planning Nodes which have been modeled.

- Water use at the Whitesburg Planning Node reflects 2050 forecasted consumptive water use from all major Chattahoochee gauging stations upstream, including: Buford Reservoir, Norcross, and Atlanta. The major water use up to the Whitesburg node is municipal. The municipal water demand forecast is summarized in the table below:

Summary of 2050 Municipal Forecasts up to Node Whitesburg		
2050 Annual Avg Municipal Water Demand, MGD	2050 Annual Avg Municipal Return, MGD	2050 Annual Avg Municipal Consumptive Use, MGD
797.9	610.5	187.4

- Water Use at the Columbus Planning Node reflects 2050 forecasted consumptive water use from the West Point Reservoir and Columbus nodes. The major water use from West Point Reservoir to Columbus is municipal. Consumptive use from thermoelectric power generation (Plant's Yates and Wansley) also contributes to overall consumptive use. The municipal and energy water demand forecasts are summarized in the table below:

Summary of 2050 Major Water Use Forecasts From West Point to Columbus			
2050 Annual Avg Municipal Water Demand, MGD	2050 Annual Avg Municipal Return, MGD	2050 Annual Avg Municipal Consumptive Use, MGD	2050 Annual Avg Thermoelectric Consumptive Use, MGD
100.6	22.6	77.9	42.3

- Water use at the Columbia Planning Node reflects 2050 forecasted consumptive water use from the Walter F. George and Columbia nodes. Water use is relatively low within these nodes; however, water users in Columbus return the majority of their flows to the Walter F. George node. This will change slightly as a result changes in operation associated with Fort Benning. These changes will be reflected in future model runs. The initial future condition model run municipal demand forecasts are summarized in the table below:

Summary of 2050 Municipal Forecasts from Walter F. George to Columbia		
2050 Annual Avg Municipal Water Demand, MGD	2050 Annual Avg Municipal Return, MGD	2050 Annual Avg Municipal Consumptive Use, MGD
2.24	59.86	-57.62

- Water use at the Woodruff Reservoir Planning Node reflects 2050 forecasted consumptive water use from the Woodruff Reservoir local drainage area (LDA). Water use in this LDA is primarily associated with industrial use which has very little overall consumptive use.

Discussion of the ACF results are summarized below.

- Joe Maltese received confirmation regarding Lake Seminole being modeled as a run of the river reservoir. Joe asked why, from a policy standpoint, a model

utilizing operational assumptions which aim to mimic the Corp's current operating plan be used.

- Jeff Lukken expressed concern that this model will maintain the status quo in not providing adequate protection to the other authorized purposes of the federal reservoirs including hydropower, recreation, fish & wildlife, and navigation. Both Joe and Jeff expressed that water consumption is not the only use of these reservoirs.
- Wei Zeng stated that a model does not represent a position. It is rather a representation of inputs and assumptions.
- Joe asked if gaps could be looked at in terms of meeting various uses.
- Steve Davis brought up the point that prioritizing between multiple uses would be difficult to assign within a model.
- Jeff Lukken encouraged reporting gaps as they are in terms of lake levels, FERC flow targets, etc.
- Steve Davis expressed that during the months of June and July of 2009, an extremely wet period, Columbus flow quantities had a high frequency of not meeting the average weekly 1350 cfs minimum flow per the Georgia Power FERC license.
- Matt Windom suggested that Joe and Jeff identify the breakpoints they believe lead to perceived gaps and provide them to the modelers.
- In Attachment C of the March 30, 2010 meeting minutes a list of modeling assumptions and breakpoints were provided by Joe with input from Steve Davis regarding flows past the Columbus node. Those breakpoints will be compared with the output from the initial future model run and exceedances established. This will be distributed to the entire committee.
- Tim Cash stated that applying a specific set of conditions within the framework of the state-wide model could be possible but those conditions need to be provided to EPD.
- Jim Hawkins suggested that we proceed with modeling the initial future model with management practices (scenario 5, refer to Table 1) and follow with a model run changing the operational assumptions (scenario 6, refer to Table 1).
- Wei reiterated that the model does not take a position on water policy. He stated that the council members should provide a description of assumptions they find unreasonable and to also look at the results of the latest model and identify the perceived gaps regarding other authorized uses.
- Jeff Lukken said they would provided objective levels.

It was asked how much navigation was still occurring in the basin. Joe Maltese replied that minimal navigation was occurring and that various dredging projects throughout the basin were upcoming.

It was asked how management practices in Alabama affect this model. Steve Simpson replied that current Alabama consumptive use has been input into the model. Those values were provided to EPD from Alabama via the USACOE as a mediator. Management practices will not be applied for Alabama demands.

Matt discussed the concern of presenting the Chattahoochee basin as having no flow gaps or shortfalls. Matt felt that such a statement would invite potential conflicts with regard to the growth of the communities within the council. Matt added that in Carroll County, the rate of growth projected by OPB fell short of their projections and that it

would be prudent to think of possibly factoring up the demands. Steve Davis replied that arbitrarily factoring up flows would be difficult to defend without adequate assumptions.

Joe expressed that the model used by Dr. Aries Geogekakus be used or shared with the group.

Joe shared a statement from the Upper Chattahoochee Riverkeeper that they hope to see the Middle Chattahoochee Water Planning Council incorporate fish and wildlife protection as a vital part of their plan. Steve commented that EPD will review that the WDCP supports the vision and the goals of the council.

ACT Initial Future Model Run Results

Steve Simpson reviewed the results of the ACT initial future model run which included 2050 demands without management practices. Figure 3, provided at the end of these meeting minute, illustrates the Tallapoosa basin and the Planning Nodes which have been modeled.

- The Heflin node experienced shortfalls for 6% of all simulated days and had an average shortfall of 6 cfs. The major water use in Heflin is municipal systems in Haralson County with only a small portion of the water use derived from agriculture. Council members will need to begin closing the gap at Heflin through selection of management practices. The Heflin node municipal water demand forecast is summarized in the table below:

Summary of 2050 Municipal Forecasts at Node Heflin		
2050 Annual Avg Municipal Water Demand, MGD	2050 Annual Avg Municipal Return, MGD	2050 Annual Avg Municipal Consumptive Use, MGD
4.4	0.6	3.7

- The Newell node also experienced shortfalls for 9% of all simulated days with an average shortfall of 18 cfs. Additionally, for 1% of all days modeled a demand shortage averaging 9 cfs was observed. This means that for those days, the simulated flow in the reach was insufficient to meet the modeled 2050 demands. Municipal water use is the primary water use and derives from Carroll and Douglas counties. Council members will need to begin closing the gap at Newell through selection of management practices. The Newell node municipal water demand forecast is summarized in the table below:

Summary of 2050 Municipal Forecasts at Node Newell		
2050 Annual Avg Municipal Water Demand, MGD	2050 Annual Avg Municipal Return, MGD	2050 Annual Avg Municipal Consumptive Use, MGD
21.9	6.7	15.2

Model Inputs

Steve Simpson and Mike Friedlander reviewed the input data utilized for the initial future run in the RBPT which are based upon 2050 forecasted demands. Changes in water use, water returns and surface water consumption to the Whitesburg node reflect the increased demands and change in the location of returns anticipated to occur in the

Metro district. For example, Tim Cash pointed out that all return flow for Dekalb County above 58 MGD would be returned to Whitesburg in the future.

Joe Maltese asked what the temporal and interannual variations described in the technical memorandum referred to. Wei explained that since the forecast included only a single annual average number, a factor to reduce or increase the forecasted average was applied depending on the time of year in the flow simulation. Factors were based on observed historical seasonal water use trends.

Joe asked if a flow target was established at the Columbia node to which Wei responded that no target flow was assumed in the model. Joe provided feedback that the Plant Farley may increase the number of units in the future which could lead to greater consumptive use. Joe asked where the Plant Yates and Wansley demands were located to which Mike replied that both are represented in the West Point node. The data input tables show only a water use for thermoelectric and no returns. Mike explained that only consumptive thermoelectric flows are reflected in the data input tables and are being shown in the water use columns. The same is true of Alabama demands.

Closing

Jim expressed the need to determine for Wei the inputs for the next round of modeling. To that end the committee members must provide specific input regarding the assumptions which are objective and some way quantifiable. These inputs must take into account the affects on the system as a whole.

Jim also asked the committee members how much of this current model they felt should be presented at CM6. Matt replied that we must share some of the results but did not want to present the Chattahoochee basin as being gap free. It is important to remember that while the model balances the reservoir levels, the use of those reservoirs as water supplies above and beyond authorization is a potential gap. Joe Maltese added that we should strive to create and understandable overview of the initial future assessment for a varied audience.

Jim ended by stating that 1-2 teleconferences may be arranged later this summer to engage the three councils in further dialog regarding closing the gaps at Montezuma and Bainbridge.

The discussion on management practices did not occur due to time constraints. This will be discussed in further detail at CM6.

Table 1. Revised Scenarios (Model Runs) Proposed for the ACF Surface Water Availability Assessment

ACF Resource Assessment Scenario		No human activity	Reservoirs Constructed (includes Evaporative Losses)	Consumptive Uses	Regulated Releases	Target Flows & Levels	Management Practices	Purpose
1	Unimpaired Flow Analysis	X						Understand and compare natural system to regulated
2	Run of the river with reservoirs, but no releases and no consumptive use	X	X					Understand impact of construction of reservoirs (evaporative losses affect flows)
3	Run of the river with reservoirs, no releases with consumptive uses		X	X				Understand impact of existing consumptive uses
4	Current State (Resource assessment as performed)		X	X	X			Understand current conditions and 2010 RIOP's
5	Future State		X	X	X	X		Estimate future conditions and 2010 RIOP's
6	Desired State		X	X	X	X	X	Estimate conditions with future needs and desired conditions and desired changes to the RIOP's

Figure 2. ACF Basin

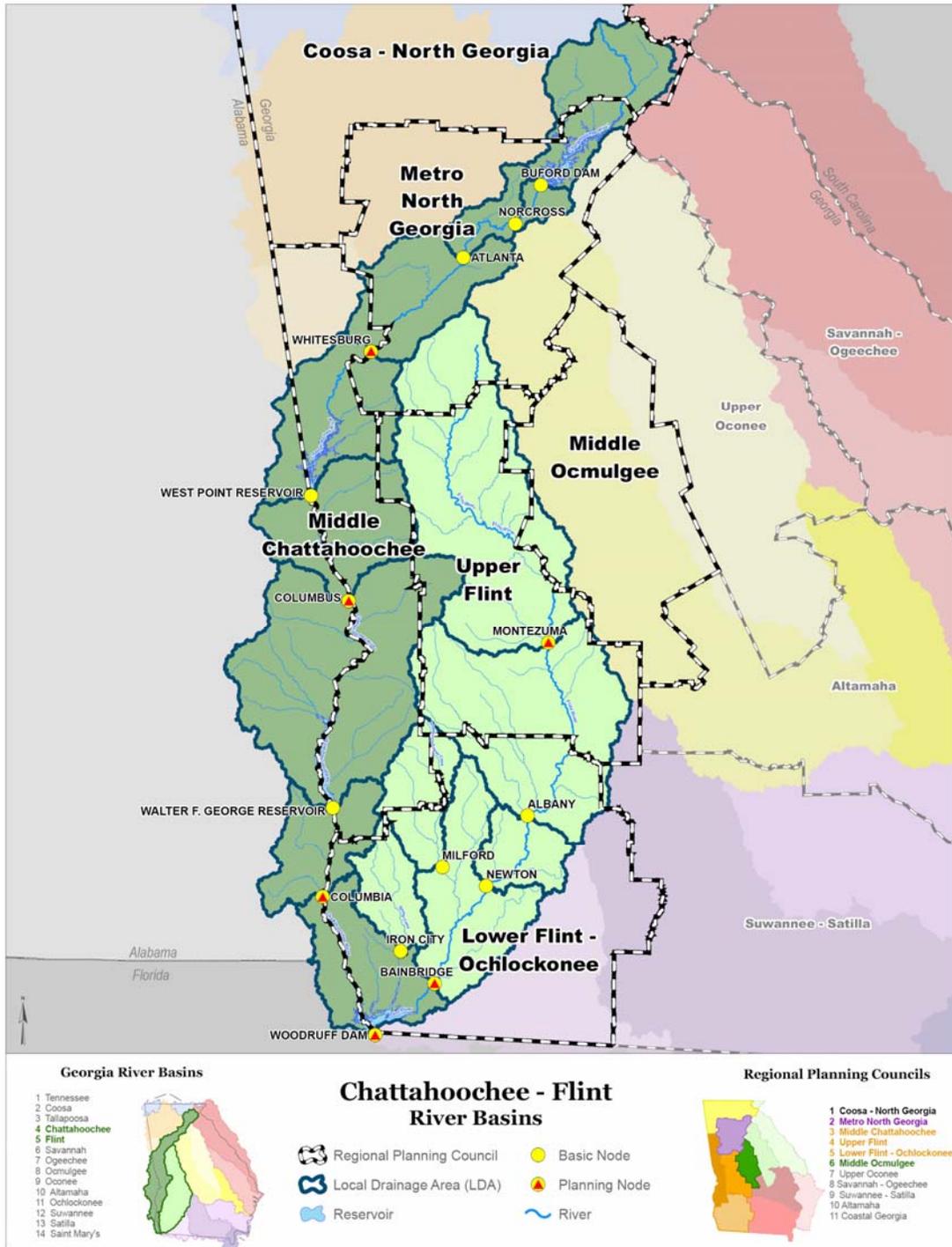


Figure 3. Coosa & Tallapoosa Basins

