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March 23, 2010

To: Upper Flint Water Planning Council

From: Kristin Rowles, Black & Veatch and Steve Simpson, Black & Veatch

cc: Tim Cash, Assistant Branch Chief, GA EPD

Subject: Meeting Summary: Council Meeting 5 on March 19, 2010

The council meeting was held on March 19, 2010, at Lake Blackshear Resort & Golf Club. The list of attendees is attached. In addition to these minutes, all the presentations (slides) discussed in this meeting will be posted on the Upper Flint web portal (http://www.upperflint.org/).

Welcome, Introductions, and Chairman's Discussion

Council Chair Donald Chase stated that a quorum was present. Donald thanked everyone for attending and reminded everyone that they lost a council member, Kip Purvis, since the last Council Meeting. Donald Chase led a moment a silence for Kip Purvis. Council member Randall Starling provided the invocation.

Donald Chase welcomed the Council to Cordele, reviewed the meeting agenda, and directed the Council's attention to the CM4 Meeting summary in the premeeting packet. Council Vice-Chair Dick Morrow made a motion to approve the Council Meeting 4 meeting summary. Mike Beres seconded this motion, and the Council Meeting 4 meeting summary was approved by unanimous consensus.

Chair/Vice Chair Elections

Kristin told the council that it was time to hold the council's annual Chair and Vice Chair elections. Randall Starling made a motion to keep Donald Chase as Chair and Dick Morrow as Vice-Chair. Hays Arnold seconded the motion. The council approved the motion by acclamation. Donald and Dick both thanked the Council.

Goals: Committee Report

The Chair of the Vision and Goals Committee, Cliff Arnett, was absent, and so committee member Randall Starling reviewed the draft goals developed by the Vision and Goals committee at its meeting on 1/13/2010.

These goals were the following:

1. Lead the development and implementation of water resource policy in this region and work together with the state and federal government and with the other regional councils to ensure that the welfare and needs of our region are met.
2. Enhance the public's understanding of water resources and provide stakeholders with an opportunity for input into regional water policy.
3. Maintain and strive to improve the quality and quantity of our water resources in order to protect natural ecosystems and public health
4. Manage water resources sustainably through the three "C's" – conserving, capturing and controlling water – in order to provide for the needs of all water users in the region (agriculture, utilities, residential, industry, and recreation).
5. Sustain the region's aquifers and surface waters in a way that will continue to support the economic activities of the Upper Flint region and the economy of the State of Georgia.
6. Ensure that actions taken by this Council do not impede the agriculture and forestry based economy of this region.

Dick said that the committee's work was excellent, but he was concerned that the Goal number 6 did not address the economic lifeblood of the northern part of the region, where agriculture is less prominent and industrial development is desired. After some discussion, Randall Starling made a motion to address Dick Morrow's concern. He moved that Goal #6 be revised to read as follows:

6. Ensure that actions taken by this Council do not impede the industrial, agriculture, and forestry based economy of this region.

The motion was seconded by Charles Rucks. The motion was approved by the council.

Agricultural Water Use Forecasts: Committee Report

Jim Reid, Chair of the Committee, asked Kristin to review progress on the agricultural water use forecasts. Kristin reminded the council that the committee was created last fall when the council first reviewed the agricultural water use forecasts from Dr. Jim Hook. The purpose of the committee was to address areas where the council was concerned about agricultural water uses that were not included in the forecasts.

Other councils had similar concerns and created similar committees. Kristin said that to maintain consistency across regions, a statewide effort was initiated to address data gaps for animal operations. She noted that Jeffrey Harvey from the Farm Bureau led this effort and was assisted by Mark Masters (Georgia Water Planning and Policy Center), Mark Risse (UGA), and representatives of various agricultural commodity groups. This group focused on the development of estimates of water use by various types of animal

operations across the state. The estimates were developed by determining per animal water use numbers and then multiplying by the population of these types of animals in each county in the state. Kristin referred to the agricultural water forecasts web page for a report including the actual estimates for animal operations. She also referred to a brief paper included in the pre-meeting packet that described the methods used in this effort. She distributed an updated version of the hand-out that included the methods used for nursery operations as well as animal operations. Tim Cash reminded the council that most animal operations do not use more than 100,000 gallons a day (the threshold for a withdrawal permit).

Kristin described the efforts to develop estimates of water use by nursery operations. A similar approach was used to that for animal operations, including academic advisors and commodity organizations. Kristin noted that a similar approach was taken to address water use by golf courses that have agricultural withdrawal permits.

Kristin noted that how the data from these efforts would be incorporated into the planning process was another area of discussion for the committee and the ad hoc groups that worked on the additional estimates. She explained the estimates broke out into several categories:

1. Dr. Hook's estimates: These estimates address water use by the major agricultural water uses in the state, primarily crop agriculture. These estimates are forecasted through 2050 and divided regionally in a manner that supports their use in the resource assessment models, and these estimates will be included in the resource assessment models.
2. Animal operations water use estimates: These estimates are a "snapshot" of current use by these types of operations. They are divided by county. They do not include forecasts, and they are not dividable along the geographic regions used in the resource assessment models. Therefore, these estimates are not to be used in the resource assessment models, but provided instead to support the council's understanding of water use by these types of operations in the region.
3. Nursery water use estimates: These estimates will be forecasted through 2050, but they are not geographically dividable along the geographic regions used in the resource assessment models. However, industry representatives noted that only a handful of nursery operations (about 20% of them) account for about 80% of the water use by this sector in the state. Therefore, it was decided that the estimates for the individual permitted operations (which can be geographically assigned as needed for the resource assessment model) will be included in the resource assessment models.
4. Golf courses with agricultural permits: These will be handled like the estimates for animal operations.

Dick Morrow commented below Montezuma in the Upper Flint region, there is a lot of agriculture. He asked whether the primary water source for agriculture in the Upper Flint region is surface water. Mark Masters noted that while crop agriculture in this area uses surface water (with greater dependence on groundwater lower in the Flint Basin), commodity group leaders had informed him that most animal operations are dependent upon groundwater.

Brant Keller commented that the council needs to be following the legislature and to examine the recent water conservation bill passed by the General Assembly. Kristin agreed that it was important to follow, and she noted that it regarded management practices and that we would talk more about it later in the day.

Jim Reid thanked Mark Masters and Jeffrey Harvey for their hard work. Jim made the following motion:

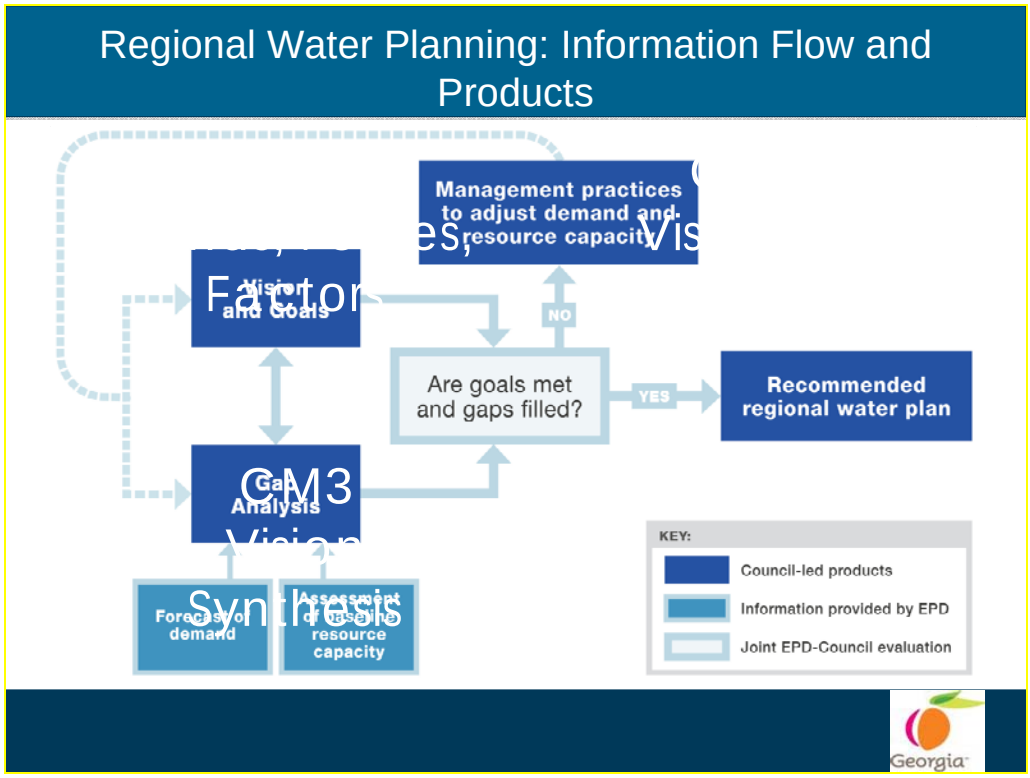
> The Agriculture Water Demand Subcommittee would like to propose a motion that the Council acknowledge the water use data compiled and presented by Mark Masters of the Flint Water Policy Center titled, "Water for Georgia's Livestock & Nurseries" (hand-out revised version to Council). This data was reviewed, accepted, and/or submitted by the affected commodity groups. This data will be incorporated into the resource assessment modeling as practical (i.e., for large permitted nursery operations), and otherwise is available to the council as information that will inform the development of our regional water plan.

This motion was approved unanimously by the Council.

Resource Assessment Overview

Kristin reviewed the overall planning process as the context for the discussion of the resource assessments, and she reviewed the calendar for the planning process.

Kristin said that synopses for the draft resource assessments for current conditions were due to be released very soon (before the end of March). She said that she would notify the council members when the synopses are available. At that time, a public comment period on the draft assessments will begin. She said that based on input from council members, comments received, and the scientific and technical advisory committee, EPD would refine the draft assessments as needed. She noted that the councils would be using the draft resource assessments to begin the initial selection of management practices.



PRODUCTS	REGIONAL WATER PLANNING COUNCIL ACTIVITIES SCHEDULED
Regional vision and goals	April 2009 – September 2009
Assessment of baseline resource capacity	November 2009 – March 2010
Forecasts of demand	February 2009 – March 2010
Gap analysis (i.e. comparison of resources and demands to identify gaps)	January 2010 – October 2010
Water management practices to adjust demand and resource capacity	January 2010 – January 2011
Recommended regional water plan	January 2011 – June 2011

Next, Kristin asked Council members for comments and observations about the joint council meetings that they had attended in January and February. The draft resource assessment results were presented at these meetings.

Dick Morrow said that he is concerned that the Flint is lacking water quality assessment results at this time and that the results may come in so late in the year that it will be very difficult for the Council to address them. He also expressed concern that Montezuma is the only Flint planning node in the Upper Flint region and therefore information on the condition of the surface water availability was limited. In addition, this node is located north of the southern boundary of the council.

Charles Rucks commented that there are additional flow gages in the region with many years of data. Brant Keller advised that there are two gages near Griffin and two others that are financially supported by Griffin. Brant Keller expressed concern that water quality assessment results were also based on limited data. He expressed concern that the Upper Flint might be required to implement BMPs throughout the region to address water quality concerns that are well downstream, and the financial impact of this on municipalities.

Kristin said that the council will need to have a water quality committee ready to act quickly in the fall as results become available to the council. She also noted that due to the location of the planning nodes on the Flint, it would be very important to work with the Lower Flint-Ochlockonee Council on shared issues. Donald Chase said that due to the ties between the Chattahoochee and Flint, it would be important to work with both the Lower Flint-Ochlockonee and the Middle Chattahoochee Councils.

Tim Cash (GA EPD) said that the resource assessment synopses would provide more information on why the planning nodes were selected as they are. He acknowledged concerns about the location of the Montezuma gage (not at the edge of the region), but he noted that it was a gage that had 70 years of data and that supported a regional scale analysis. He noted that budget limitations were also an important driver in what level of detail could be attained, but he said that the approach is using the best available methodology and data.

Kristin noted that the location of planning nodes was in part also driven by the need to keep withdrawals and discharges by the same entity in the same node. She also noted that although Montezuma is not at the bottom edge of the region, it does provide a breaking point at which the dominant water uses are quite different upstream and downstream, and this might be helpful as we proceed with planning.

Lamar Perlis asked how the Tri-State water litigation would affect the planning process. Kristin said that it would be hard to predict, and it may not happen within the timeframe of this plan, but that if a litigation decision or negotiated agreement does happen this

year, the Council would probably want to adapt its plans accordingly. Dick Morrow expressed the opinion that the current legislative activity concerning water may assist the state in negotiations.

Next, Kristin reviewed the approach for today's meeting:

- Review resource assessments
- Discus results, gaps, information needs
- Prepare for future assessments
- Plan for committee work
- Discuss management practices
- Review forecasts

Then, she presented what would happen in the coming months before the next council meeting:

- Follow-up on questions and comments on resource assessments
- Committee work:
  - Decide on future assessment inputs
  - Select management practices to evaluate
  - Review draft plan
- Next Council Meeting (June): Future assessments, management practice refinement

She asked that the council members consider the following as they listened to the draft resource assessment results today:

- What information do we need to complete our review and understanding of the current resource assessments?
- What do the results of the current resource assessments mean for our region?
- How will we organize our efforts to select inputs and management practices for the assessment of future conditions?

Water Quality Resource Assessment

Steve Simpson presented this assessment from the modeling work led by Dr. Liz Booth of GA EPD. Steve explained that surface water quality modeling is about determining the assimilative capacity of waterbodies modeled. Steve explained that water quality models were developed to show us the current status of the available assimilative capacity based on current discharges. Violations of the water quality standards indicate there are unacceptable impacts that need to be addressed.

Steve included in his presentation results from all four joint meetings in which Upper Flint council members participated: Flint, Chattahoochee, Altamaha/Ocmulgee/Oconee, and Satilla/Suwanee/St. Mary's.

Steve presented a map which shows the surface water quality models that are being developed to look at dissolved oxygen on the Flint, Ochlockonee, and Chattahoochee Rivers. These models were developed for those waterbodies that currently have wastewater treatment plant discharges on them. Determining assimilative capacity is dependent on different parameters and requires information on the streamflow, in-stream water quality, wastewater discharges, water withdrawals, existence of land application systems, weather information, land use, stream hydrology, topography, and the state's water quality standards.

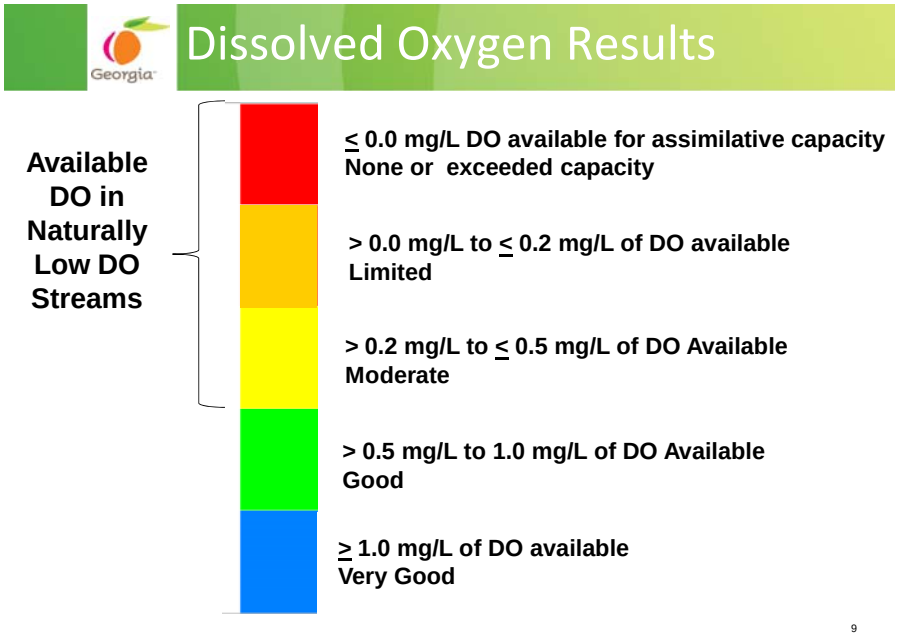
Next, he explained some key aspects of the methodology used to develop the water quality models. These included:

- Two sets of models are planned. The first set evaluates dissolved oxygen due to discharges under critical conditions; this modeling is mostly completed. The second set evaluates the impacts of point and non point sources from nutrient loadings, primarily nitrogen and phosphorus.
- The dissolved oxygen models were run with existing discharges and critical, low flow, high temperature conditions.
- The watershed and lake models will account for nutrient sources from both wastewater discharges and nonpoint source stormwater runoff based on various land uses.
- Unacceptable impacts for the water quality assessment are identified if in-stream water quality does not meet state standards.
- The assimilative capacity assessment is not the same as the 303(d) list of impaired waters or total maximum daily loads because this assessment is only looking at dissolved oxygen and nutrients; the 303(d) list assesses other parameters such as solids, bacteria, metals, etc.

Steve noted that these models were checked to ensure that they represent real world conditions both through discussions with experts on the Scientific and Technical Advisory Panel and through model calibration with comparisons of model results to real world streamflow and in-stream dissolved oxygen levels.

Steve explained the state cold water fishing standard that applies to Georgia's streams that have been designated as either primary or secondary trout stream is a daily average of 6.0 mg/L, not less than 5.0 mg/L. The freshwater fishing standard for dissolved oxygen is a daily average of 5.0 mg/L, not less than 4.0 mg/L. This standard applies in areas of the state that support warm water fish species. Steve noted most of the Council's area must meet with warm water fish standard.

Steve showed a color scale that was used to show dissolved oxygen that is available above the water quality standard in the streams that were modeled:



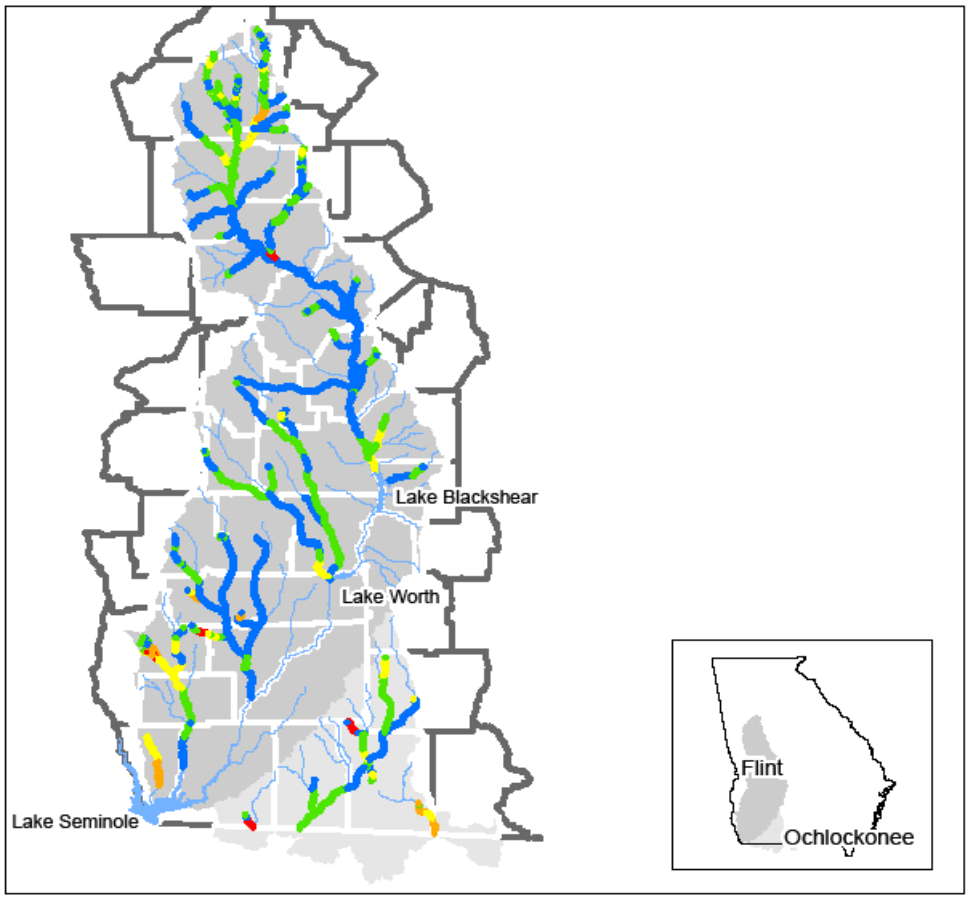
Stream segments that have no available assimilative capacity under critical low flow (7Q10), high temperature conditions are red. Those with DO levels in excess of state water quality standards are blue. Naturally low DO waters that have a natural DO below 5.0 mg/L in the summer time will typically be in the yellow to red range.

Steve then showed a series of images of the modeling results for the streams in the Upper Flint region for which results are currently available. The Flint Basin results are included below. Steve noted that as you move south toward Albany, the results show more in the moderate range than upstream. Steve noted that as you look at these maps, you can observe where there is greater potential to expand point sources discharges (i.e., in the blue and green areas).

Steve said that in the Flint Basin, a lot of modeling work for water quality remains to be done. The models for nutrients have not yet been completed; this work had a later start date based on state budget constraints. Steve said that this is not the only council that is currently lacking some water quality assessment results.

Steve said that the Council will need to continue to watch the development of nutrient standard in Florida, by the US EPA, and that the outcome of this process could affect the Flint Basin. The US EPA is developing nutrient standards for free flowing streams and lakes in Florida as a result of a federal lawsuit under the Clean Water Act. If promulgated as proposed, these criteria will require increased control of nutrients in Georgia waters.

Steve noted that where water quality in the region is good, the Council has the option to protect waters as Significant Natural Resource Waters. This designation can be used to increase the level of protection for a waterbody.



The Council discussed the impact of nutrients in lakes and the mechanism through which nutrient loading results in decreased DO levels. Harold Fallin informed the council that nutrients promote algal growth; algae uptake carbon dioxide and generate oxygen, but when the algae dies, the decaying organic material results in oxygen demand and thus lower dissolved oxygen levels. Brant Keller commented that more nonpoint source control was needed in general.

A council member asked if there are technologies that can increase dissolved oxygen in water. Steve advised that there were, but these technologies are limited by cost and scale. Harold Fallin noted that typically it is less expensive to control nutrient loadings rather than to reaerate water with low dissolved oxygen. He noted the importance of controlling pollutant inputs (e.g., nutrients, pesticides). He said that the overall effect of nonpoint sources is more dynamic in urban areas. Randall Starling said it is not always good to introduce high levels of DO (through technology). He also noted that the state is reviewing the current DO standard, as it applies in areas with naturally low DO.

Steve said that the slides from his presentation will be available online on the council's web portal (www.upperflint.org).

Surface Water Availability Resource Assessment

Kristin Rowles presented this resource assessment of work led by Dr. Wei Zeng of GA EPD. She explained that the state had divided the state into six study basins:

- ACF: Apalachicola-Chattahoochee Flint
- ACT: Alabama-Coosa-Tallapoosa
- OOA: Oconee-Ocmulgee-Altamaha
- OSSS: Ochlocknee-Suwannee-Satilla-St. Marys
- SO: Savannah-Ogeechee
- TN: Tennessee

Kristin included in her presentation results from two of the four joint meetings in which Upper Flint council members participated: Flint and Chattahoochee. For the other two joint meetings in which Upper Flint members participated (Altamaha/Ocmulgee/Oconee and Satilla/Suwanee/St. Mary's), results will be available in the draft resource assessment synopses, which will soon be available on the state water planning website.

She said that the surface water availability assessments were done to figure how much water we have relative to how much water we need – for both off-stream (consumptive uses) and in-stream (flow regime) needs.. She emphasized the models were for broad scale regional planning, not for individual permitting decisions.

Kristin said that the models use available existing data and build upon existing studies. The models allow us to evaluate current and future conditions and scenarios. At this time, we are reviewing the assessment of current conditions, and we will begin looking at future scenarios later today. The inputs to the models include: unimpaired flow data representing conditions over 70 years; current water use data (withdrawals, discharges, consumptive use); and flow regime parameters based on:

- US Army Corps of Engineers Modified Interim Operation Plan (for Chattahoochee)
- State Interim In-stream Flow Protection Policy (protects monthly 7Q10 or natural inflow, whichever is lower)

Kristin said that the 7Q10 is the seven-day low stream flow that statistically would be expected to occur once every ten years.

She then described how the desired flow regime was determined and gaps were assessed for non-regulated streams (i.e., no reservoirs):
Step 1 – Determine monthly 7Q10 for each of the unregulated Planning Nodes

Step 2 – Determine unimpaired or "natural" flow for a node by removing man-made effects on flow observed at that node for the 70 year period
Step 3 – Develop Flow Regime by taking the less of the two
Step 4 – Identify gaps between availability and demand by comparing the Flow Regime to modeled stream flow assuming all water demands are being met.

The results are expressed as a function of whether the desired flow regime is met when all off-stream water demands are being met. A summary of results at different nodes are shown in the table below.

For regulated systems like the Chattahoochee, the assessment models have some additional inputs and the results are expressed a bit differently. These models consider:

- Are off-stream consumptive use demands met?
- Are at-site release requirements met?
- Are downstream federal flow targets met?
- When all of the above are accomplished, is there residual storage in conservation pool? (Results are expressed in terms of the residual storage in the conservation pool.)

Summary of Surface Water Availability Resource Assessment Results
(See PowerPoint presentation for the associated graphs)

Unregulated River Systems				
Length of Shortfall (% of time)	Average Shortfall (cfs)	Long-term Average Flow (cfs)	Maximum Shortfall (cfs)	Corresponding Flow Regime (cfs)
Montezuma in the Flint Basin				
2%	<1 (0.6 MGD)	3,392 (2192MGD)	1 (0.6 MGD)	593 (383 MGD)
Bainbridge in the Flint Basin				
12%	314 (203 MGD)	7,920 (5120 MGD)	1202 (777 MGD)	2506 (1620 MGD)
Regulated River Systems				
Demand Shortage (cfs)	At-site Flow Requirement Shortage (cfs)	Minimum Reservoir Storage (acre-feet)	Minimum Percentage Reservoir Storage	Basin-wide Flow Requirement Shortage
Whitesburg in the Chattahoochee Basin				
0	0	539,600 at Lanier	48% at Lanier	None

Columbus in the Chattahoochee Basin				
0	0	14,226 at West Point	5% at West Point	None
Columbia in the Chattahoochee Basin				
0	0	11,872 at W.F. George	5% at W.F. George	None
Chattahoochee Gage in the Apalachicola Basin				
0	0	565,698 At Lanier, West Point & W.F. George	34% At Lanier, West Point & W.F. George	None

Dick Morrow expressed concern that the assessment for this region is based on only one gage. He also commented that what he took away from the results is that we are ok for now, but will be limited in terms of future growth.

Donald Chase commented that the shortfall at Bainbridge is similar in magnitude to use by the metropolitan Atlanta or by farmers in the Flint Basin. He noted that there is a need to put the numbers in perspective.

Brant Keller asked how accurate the 620' elevation as the bottom of the conservation pool in the graphs regarding West Point Lake. He noted that sedimentation might affect this level and as a result change the safe yield calculation. Steve advised that sedimentation would reduce inactive storage; Tim Cash offered to confirm this with Wei Zeng.

Kristin summarized the results by saying that there are no apparent gaps in the Chattahoochee, which can be operated through the release of storage water to achieve flow targets. In the Flint, there are gaps at both Montezuma and Bainbridge, but the shortfall at Bainbridge is much larger. Donald Chase noted that he had heard comments at the joint meetings regarding concern that the Chattahoochee is being used to make up for shortfalls on the Flint.

Dick Morrow mentioned that interbasin transfers are relatively common in Georgia. Tim Cash noted that the definition of interbasin transfers can vary widely.

Charles Rucks said that the water gage near his home has 40 years worth of data, and it would be worth considering in the planning process to see what flows are like at the top end of the region. Kristin said this is something we could look at.

Lunchtime Presentation by Crisp County Power Commission

While the council had lunch, Steve Rentfrow of the Crisp County Power Commission gave an informative presentation about Lake Blackshear and its operation by the Crisp County Power Commission.

Groundwater Resource Assessment Presentation

The groundwater resource assessment was conducted under the leadership of Dr. Jim Kennedy, state geologist. It was presented at this meeting by Nils Thompson, a hydrogeologist with Leggette, Brashears, & Graham, part of the Black and Veatch team for this project. Nils advised that this presentation was a shortened and more council specific version of what was recently presented by Dr. Kennedy during the joint meetings. He explained that he would provide an overview of groundwater sustainable yield modeling results, review the process for modeling sustainable yields, and present sustainable yield results for aquifers in the council area.

Nils reviewed the groundwater characteristics for the region. Next, he explained that sustainable yield was the amount of groundwater that could be withdrawn without causing unwanted results. He noted that sustainable yield metrics were different for different aquifers and that different sustainable yield metrics would result in different sustainable yields.

Then, Nils reviewed the assessment results. For the crystalline rock aquifer in the northern part of the region, he noted that while more groundwater is available from the crystalline rock aquifer than is currently being withdrawn, it would be hard to find sufficient water-bearing fractures in the crystalline rock aquifer to develop the full range of sustainable yield. He said that north of the fall line, water budget calculations were completed for an example basin within the crystalline rock aquifer of the Piedmont and extrapolated to the rest of the aquifer region.

For the coastal plain aquifers south of the fall line, aquifers were assessed using various numerical groundwater flow models. Nils said that the Claiborne & Upper Floridan aquifers were modeled by zooming into portions of the regional Coastal Plain model originally built by the USGS.

Other important points about the coastal plain models included:

- Models were run to represent withdrawals during a dry year.
- Sustainable yield is for the entire extent of the modeled aquifer.
- The baselines for sustainable yield modeling were estimated or are actual current withdrawals (not permitted capacities). Municipal & industrial withdrawals were obtained from data reported to EPD by permittees.

- Un-permitted domestic & commercial withdrawals (estimated by USGS to have been about 12% of total state-wide groundwater use during 2005) were taken from USGS data.
- Agricultural withdrawals were estimated using a combination of USGS & EPD data, & the 2004 Agricultural Water Pumping Study.
- The model runs increased withdrawals from existing wells & hypothetical new wells in individual prioritized aquifers (one at a time).

GA EPD established the following metrics for model simulations used to determine sustainable yields:

1. Drawdowns of groundwater levels in the pumped aquifer do not exceed 30 ft. between pumping wells.
2. Recharge from surface water sources constrained to 40% of baseflow to maintain opportunities for surface water use.
3. Reduction in aquifer storage does not go beyond a new base level.
4. Groundwater levels are not lowered below the top of a confined aquifer.
5. The ability of the aquifer to recover to baseline groundwater levels between periods of higher pumping during droughts is not exceeded.

Nils showed maps of the simulated drawdown in different aquifers due to increased withdrawals. Nils explained that sustainable yields in portions of the Coastal Plain are plentiful, but not necessarily where current withdrawals are located. For projected areas that may need to rely on sustainable groundwater yields, a detailed well-field analysis is required.

A council member asked whether monitoring wells used to assess drawdown. Nils noted that this would be included in the synopsis report from the state geologist

Donald Chase commented that based on the models used, it appears that unless there is a huge amount of growth, the Upper Flint does not have a problem. Nils responded that while that is true, location of groundwater withdrawals is important and increased withdrawals could cause problems in particular areas. The relationship between groundwater and surface water in the lower part of the Flint Basin is critical in some areas, and withdrawals of groundwater can have a significant impact on surface water flows.

Existing Gap Discussion

Kristin said first she would like to review the discussion of comments on the resource assessments:

- Concern about the limited number and location of planning nodes in the surface water availability model

- Council members would like to review data from flow gages at top and bottom of region.
- Sedimentation in Chattahoochee reservoirs might affect the safe yield determinations for the conservation pools in the lakes (Steve Simpson reported that Wei Zeng confirmed that sedimentation is assumed to affect only inactive storage below the conservation zone; the USACOE is reportedly doing an updated bathymetric survey of all its reservoirs as part of the operating plan update)
- Some of the water quality resource assessment results will be coming in late in the year and will be difficult to respond to in a timely manner.
- Political and external factors (e.g., new water conservation legislation, Tri-State water litigation) have important implications for the plan.

Kristin said that the planning consultant team would get back to the council on items requiring follow-up.

Next, Kristin summarized the results of the resource assessments:

- **Surface Water Availability:** In the Montezuma node, we are able to meet needs and desired flow regime for the most part now, but future growth is a concern. In the Bainbridge node, there is a significant shortfall that will require cooperation with our neighboring council in the lower part of the basin.
- **Groundwater:** The results indicate that we are well below sustainable yield levels, but the location of withdrawals is critical.
- **Surface Water Quality:** From the information that we have currently, we know that there are some reaches with DO concerns. We await the results of the watershed models.

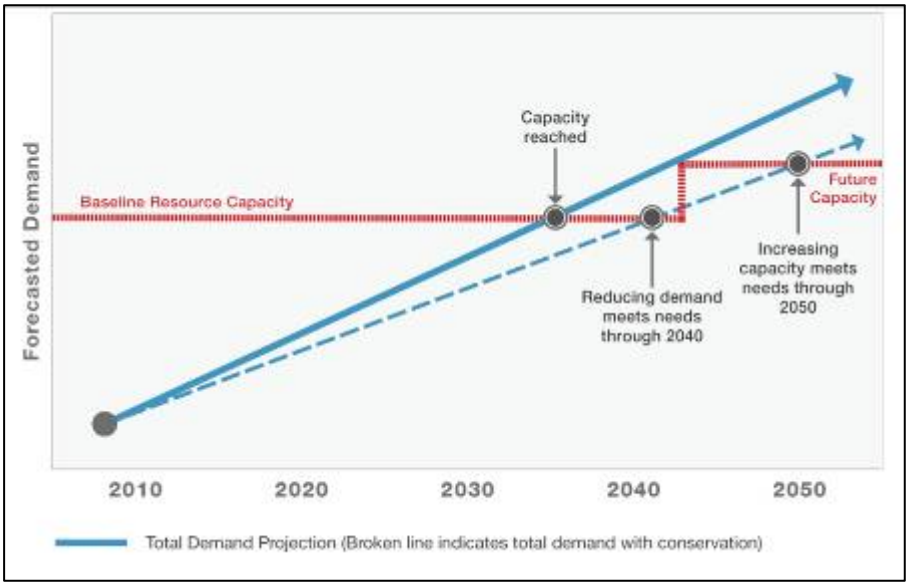
Baseline and Future Resource Assessment Council Input

Kristin commented that the point of the next section of the agenda is to prepare the council members for the next steps in the planning process. She said that the resource assessment synopses would soon be released, and she would notify the council members when the synopses are available. The synopses will be posted on the state water planning website: www.georgiawaterplanning.org. There will be a 60 day public comment period. Georgia EPD will consider all comments, provide responses, and make necessary revisions.

The council will use preliminary baseline resource assessments to begin the initial selection of management practices. The input needs from the council for the future resource assessment model runs are outlined in the following chart. Kristin said that determining these inputs would be the work of committees, using the demand forecasts and a first cut selection of management practices. The first run of the future resource assessment models is to be discussed at the next council meeting.

Resource	Scale of Assessments	Required inputs (active Council participation)
Surface water availability	Local Drainage Area	Withdrawals (mgd) Storage (mg) Returns (%) Interbasin transfers (mgd)
Groundwater availability	Aquifer unit	Withdrawals (mgd) Location
Assimilative capacity	Stream reach or lake	Surface water availability assessment inputs Discharge (mgd) Location

Kristin discussed how selecting management practices could either decrease demand or increase the resource capacity using the following graph. She noted that the resource assessments tell us what the resource capacity is (red line), while the demand forecasts tell us what we need (blue line). When the blue line crosses the red line, there is a gap.



Kristin walked through an example of how a committee could approach the development of the future resource assessment inputs for the Montezuma node. She demonstrated the assessment of future demand and the adjustment of demand with management practices.

She noted the need to consider the recent water conservation legislation as the council developed a portfolio of management practices to be assessed.

Next, Kristin talked about how the future assessments and management practice selection would be approached for water quality. She noted that the approach will be slightly different due to the scale of the assessment; it will focus on the level of sub-watersheds and stream reaches. At this level, the council will evaluate current and future concerns, assess the source of pollutants causing those concerns, and select management practices accordingly. She reviewed some management practices that might be used to address point sources (e.g., advanced wastewater treatment, reuse, watershed based permitting, water quality credit trading, implementation of existing TMDL plans) and nonpoint sources (e.g., agricultural nutrient management plans, improved stormwater management, enforcement of sediment and erosion control laws, and implementation of existing TMDL plans).

Next, Kristin said that the management practice selection process would be iterative, with repeated rounds of refinement and re-assessment. The future conditions for the first model run would be considered at the next council meeting, and before then, the council would need to complete the work of providing GA EPD with inputs for the model run (noted above). Kristin suggested the use of committees to complete this work.

Donald Chase led a discussion regarding appointment of committees. It was decided to appoint two committees at this time: Water Quality and Water Quantity. The Water Quantity committee will address both the groundwater and surface water availability assessments. There will probably be a need for a Draft Plan Review Committee after the next council meeting when draft plan sections will begin to get developed.

The following committees were appointed:

Water Quality: Beth English, Harold Fallin, Joel Wood, Raines Jordan, Bill Sawyer, and Brant Keller

Water Quantity: Donald Chase, Randall Starling, Cliff Arnett, Jim Reid, Buddy Leger, Dick Morrow, Jack Holbrook, Terrell Hudson, and Michael Bowens

Kristin will be in touch with the committees to get them started in a week or two. Additional appointments might be made from members not present at today's meeting.

Water Development and Conservation Plan Table of Contents

Kristin reviewed the draft table of contents for the regional plan. A copy is included in the pre-meeting packet. She noted sections where the council can make

recommendations for changes in state policy and for the improvement of the information base for future water planning.

Management Practices Survey and Decision Criteria

Kristin reviewed the management practices survey results. There were fourteen respondents. She reviewed the results for each criterion. Overall, cost criteria were rated higher than the other criteria. Then she reviewed the result for the management practices. The category "Water Demand Management Practices" was rated highest by respondents. Kristin noted that the survey results could be used by the council as they developed weights for criteria to be used to evaluate portfolios of management practices.

Dick Morrow commented that urban areas are subject to a big hammer when it comes to practices. Other uses are not as subject to regulation. Brant Keller noted that some of the practices listed in the survey are not useful in this region. He also noted that farms are not subject to water quality regulation, as urban areas are.

Dick Morrow noted frustration with new requirements for low flow toilets in the recently passed state water conservation legislation. He said that this approach may not be appropriate for all situations.

Municipal and Industrial Water Use Forecast

Rob Osborne led the review of the draft water and wastewater projections. He advised that GA OPB has recently released statewide population projections. The B&V team has drafted forecasts of municipal water withdrawal need and water returns. Robert Osborne explained the preliminary forecasts sectors, which included municipal, industrial, agricultural, and energy water use. Rob reviewed the county-by-county assumptions and forecasts for municipal and industrial water demand and wastewater generation. Don Chase commented that the municipal forecasts show a significant increase in the future.

A council member questioned why some industrial discharges were greater than the withdrawals. Steve advised that in some cases, industrial users store water in onsite ponds which also collect stormwater; so regulated discharges may be a combination of stormwater and process water.

Energy water use was discussed as ongoing. To date, existing and projected Georgia Power only water uses through 2017 have been compiled. Dick Morrow questioned the amount of water use by different energy producers. Steve advised that different types of energy producers and different types of cooling systems result in a range of water use for individual facilities in this sector.

Local Elected Officials and Public Comments

There were no comments offered.

Wrap-Up and What to Expect Next Meeting

The Council selected Thursday, June 10 for its next meeting. The meeting will be held in Oglethorpe. Kristin reminded the council members that she would be in touch soon regarding committee meetings. The meeting was adjourned.

Attachment 1:
Upper Flint Water Planning Council
Council Meeting Attendance – March 19, 2010

Council Members

Hays Arnold
Mike Beres
Michael Bowens
Gene Brunson
Donald Chase
Mike Donnelly
Beth English
Harold Fallin
Jack Holbrook
George Hooks
Terrell Hudson
Raines Jordan
Brant Keller
Buddy Leger
Dick Morrow
Lamar Perlis
Gary Powell
Jim Reid
Charles Rucks
Bill Sawyer
Randall Starling
Joel Wood

Council Members Not In Attendance

Clifford Arnett
Greg Barineau
Tommy Burnsed
William Culpepper
Eddie Freeman
George Hooks
Lynmore James
Frank Keller

Planning Consultants

Robert Osborne, B&V
Kristin Rowles, GWPPC
Steve Simpson, B&V
Nils Thompson, LBG

Georgia EPD

Tim Cash, Assistant Branch Chief
Bill Morris

Georgia State Agencies

Ben Mosely, Georgia Soil and Water Conservation Service