

Georgia Department of Natural Resources

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MEMORANDUM

TO: Council Members

FROM: Tim Cash
Assistant Branch Chief
Chattahoochee and Flint River Basins

SUBJECT: Joint Water Planning Council Meeting
January 15, 2010
Americus, GA

DATE: February 11, 2010

On January 15, 2010, representatives of four Regional Water Planning Councils and the Metro North Georgia Water Planning District met at Georgia Southwestern State University in Americus, Georgia to review the draft groundwater and surface water availability and draft surface water quality resource assessments developed by the Environmental Protection Division (EPD). The following is a summary of the meeting.

1) Introduction

Tim Cash introduced the meeting facilitator Glenn Coyne (AECOM) and EPD attendees including, Linda MacGregor (Branch Chief, Watershed Protection Branch) and Cliff Lewis (Acting Assistant Branch Chief of the Suwannee, Satilla, St. Marys and Ochlockonee river basins). Tim also summarized the agenda and informed the attendees that there will be an opportunity for public comment at the end of the meeting.

The Council Chairs were invited to introduce themselves and their council:

Richard Royal, Chair of the Lower Flint –Ochlockonee Council – Mr. Royal is from Mitchell County and served on the Governors Water Contingency Task Force. The Lower Flint – Ochlockonee Council members primarily represent agriculture interests and agriculture is the primary water user. The Region sits on an aquifer that is abundant. Mr. Royal explained that many of the council members are not new to water planning, having participated in the Flint

River planning in the 1990's. During that planning effort, the region demonstrated that agricultural users were good stewards of the Region's water resources - protecting both quality and quantity. During the five year moratorium on well permits, the community became very supportive of water issues as demonstrated by the well metering program. Mr. Royal explained that it is important to the Lower Flint – Ochlockonee Council to have good information as a basis for planning decisions. The other members of the Council who were in attendance were introduced, including Hal Haddock the co-chair. The Upper Flint – Ochlockonee Council is well functioning, with almost all decisions receiving unanimous votes. The Upper Flint – Ochlockonee Council is looking forward to working with the other Councils, being good stewards, and developing a Regional Water Plan that protects our water resources.

Elmo Richardson, Chair of the Middle Ocmulgee Region Water Planning Council – Mr. Richardson is eager to hear the information that will be presented today and sharing it with the rest of the Council. Mr. Richardson is concerned that the population and employment forecasts are not finished yet, but eager to hear the resource assessments today. The Middle Ocmulgee Council is concerned that the Governor's Water Contingency Task Force considered pumping out of Lake Jackson to DeKalb County and is thankful that this option was not recommended in the Final Report. Most of the Middle Ocmulgee Council north of Macon relies on surface water and the Council from Macon south to Pulaski County relies on groundwater. Mr. Richardson thinks there is an abundant supply of water in the Council, but water quality is a concern. Mr. Richardson is looking forward to meeting other council members and receiving information on the resources.

Donald Chase, Chair of the Upper Flint Council– Mr. Chase welcomed everyone to the Upper Flint Water Planning Council. Sumter County and Augusta form the lower extent and the upper extent is Spalding County. Mr. Chase introduced Dick Morrow, the Mayor of Griffin and the Upper Flint Council co-chair. Mr. Chase recognized the other council members in attendance. There are many interests in the Council; from urban areas like Griffin, to agricultural areas. The spirit of cooperation within the Council has been incredible. Drafting a vision statement was not easy, but several members accepted the challenge and did a great job. Mr. Chase read the vision statement to the group. The vision statement was a major accomplishment for the Council because it represents the melding of the municipal and agricultural backgrounds of its membership. Mr. Chase looks forward to working together with the Upper Flint Council to create plans with local control that benefit the Region. It is very important to protect the water resources for the Lower Flint.

Matt Windom, Chair of the Middle Chattahoochee Council – Mr. Windom is anxious to hear the first real information that we can all digest and bring back to our councils. The Council is interested in determining how to use the information presented in the resource assessments to benefit our region as well as our neighboring regions. Mr. Windom emphasized the importance of the joint meeting bringing the Councils together. Mr. Windom introduced the other Council members in attendance and shared the Region's vision. Mr. Windom is proud of the goals developed to support the vision and encouraged other Councils to visit the Middle Chattahoochee website where they are posted. The Middle Chattahoochee Council wants to be good stewards, meet demands, and protect water resources. Mr. Windom is glad to be at the joint meeting and hopes to start communicating with the other Regions. The Regional Water

Plans need to be good for the whole state and Councils need to need to be mindful of neighboring water users. Typically, there is enough water but during drought Councils should work to conserve and meet water needs. There is some uncertainty in the Middle Chattahoochee regarding the impoundments in the Region and how these are used to meet needs downstream at the Florida line. Mr. Windom concluded by expressing his interest in talking with other councils.

Ellis Cadenhead, representing the Metro Water District – Mr. Cadenhead introduced the other Metro Water District members in attendance as well as Matt Harper, District staff. Mr. Cadenhead explained that the Metro Water District was the oldest District. The Metro Water District is not just the City of Atlanta but includes 15 counties, 91 cities, and 7 authorities. The Metro Water District was established by state law and from that law the board includes 16 elected officials and 10 members of the public. Mr. Cadenhead read the mission statement for the Metro Water District, developed in 2002 and referred attendees to the water planning rules that had been adopted by the Board. The Metro Water District is fully engaged in the State Water Plan process and will update the 2009 Plans as needed to be consistent with the State Water Plan process. The issues of concern for the Metro Water District include water availability, flooding, and drought which created the need for responsible water resource planning and management. The Metro Water District supports Governor Purdue and his leadership in addressing the legal challenges facing the State. The Metro Water District adopted the first integrated plans in 2003 and recently completed the first 5-year update in 2009. The Plans are enforced through very detailed EPD audits which are triggered by permits and GEFA loans. The Plans are available on the Metro Water District's website, www.northgeorgiawater.org. They include a very aggressive water conservation program that is integral to sustaining water supply. Mr. Cadenhead offered the Metro Water District's support and assistance to the Councils.

Mr. Cash acknowledged that since the Kickoff meeting, the Councils have made great progress. As evident by the Council introductions, they are all functioning well and have developed an identity through their vision and goals. The attendance at the joint meeting demonstrates their commitment to the planning process.

Mr. Cash introduced Mrs. MacGregor and some of the functions of the Water Protection Branch.

Mrs. MacGregor provided a welcome. The State Water Plan is an entirely new process. The State's leaders identified 300 people across the state to create Regional Water Plans that will determine how water is used. Getting started on such an important endeavor is no small task. The resource assessments presented today are an integral piece of the work the Councils will accomplish in 2010. Mrs. MacGregor passed along greetings from EPD Director, Allen Barnes. Director Barnes has met with several of the chairs and fully supports their efforts and the process.

Mrs. MacGregor read from the State Water Plan, "effective management requires a sound scientific foundation" best conducted at a regional level but this can also be conducted statewide. The resource assessments are statewide and not subdivided by Council boundaries. The resource

assessments are an evaluation of the water resources. The Council chairs asked to hear the resource assessments all together; which is why we are here together today. The best experts in the state have been working hard to produce the baseline resource assessments. These resource assessments will be the building block for the work of the Councils in 2010. Mrs. MacGregor explained that the resource assessments will be improved over time based on diverse input and future data collection efforts. While the resource assessments are very technical, the resource managers will try to speak in plain English. The presentations include some modeling language, so the Council members were urged to ask for clarifications as needed. Mrs. MacGregor hopes the meeting today facilitates conversations between Councils, at the beginning of the water resources planning process.

The resource assessments are on a regional scale. Some council members have more detailed studies; such as property well studies or local water/wastewater master plans. One of the recommendations in the Regional Water Plans could be more detailed studies in certain areas.

The resource assessment results will likely demonstrate what Council members already know because the models are calibrated to real conditions. There is groundwater available, there are groundwater/surface water interactions, and both point and non-point sources impact water quality. The assessments will, however, quantify what we know. These numbers may be refined or tweaked in the future. The resource assessments are discussions of the areas of concern.

Mrs. MacGregor reminded the Council members that the results are being presented at a joint meeting to encourage Councils to work together.

We are here today to begin to work together. During the introductions we started to hear about the issues facing each council; there are similarities but there also are some differences. Council chairs were thoughtful in suggesting this joint meeting.

The role of watershed protection branch in permitting; and there is a disconnect between permits and long range planning. The resource assessments are inputs to these planning efforts. There is no direct connection between the resource assessments and permitting activities; but there is a direct connection between your plan and permitting activities.

Mrs. MacGregor asked if there were questions from the audience.

Q: What is the formal process for moving the data to a higher level in the future? Will EPD continue to pay consultants to progress the data further? (Upper Flint)

A: In the short term, input will be collected at this meeting, upcoming council meetings, and through the official public comment process. EPD will revise the assessments as needed for use in the Councils work over 2010. The resource assessment tools have a life beyond 2010. In some cases, the additional data that is needed may take several years to collect. EPD staff will continue to use and improve the resource assessment tools.

Q: Some of the work is currently being done by consultants. Will they have long-term contracts?

A: Possibly. Contractors are currently acting as an extension of EPD staff due to the overwhelming volume of work. After the tools are developed, EPD may not need that level of

support. There currently are not long-term contracts but depending on needs in the future, there could be long-term contracts.

Q: It was suggested that EPD perform an independent review of the resource assessments by professionals that aren't EPD staff or employed by EPD. (Lower Flint-Ochlockonee)

A: It was recommended that a discussion of future actions or policy be held until following the presentation of the results.

Mrs. MacGregor thanked the Council members for their leadership and for the important work that the Councils will accomplish in 2010.

2) Draft Groundwater Availability Resource Assessment

Mr. Cash introduced Dr. Jim Kennedy, the State Geologist, who works for EPD and reports to the Director. Dr. Kennedy is overseeing CDM (resource contractor) and other EPD staff working on the groundwater resource assessment.

Dr. Kennedy provided an overview of the groundwater resources for the region, the Dougherty Plain and Claiborne Aquifers. The following questions were asked during the presentation.

Q: There are two different models used, MODFLOW and the USGS Dougherty Plain model. Will the sustainable yield be different because there are two different models? Why wasn't just one model used? Which of the models is better? (Lower Flint-Ochlockonee)

A: Dr. Kennedy explained that EPD started with existing models to limit the development costs. The first model was the existing USGS model of the Upper Floridan aquifer in the Dougherty Plain and the second model was a USGS regional model of aquifers in the Georgia Coastal Plain. The two models use different computer programs for solving the mathematical equations, and the models cannot be switched between programs. Both models were robust and neither model was more reliable than the other. The models were developed, data was input into the model, and then the results were compared to actual measured data (calibration). The models were adjusted until the results from the model reflected the actual measured data.

Q: The study area ends at Apalachicola Bay. Are there important interactions that should be considered? Interactions related to the estuary?

A: Dr. Kennedy explained that the regional Coastal Plain model extended into states beyond Georgia but that sustainable yield simulations were done only for the State of Georgia. The regional model included all withdrawals in the regional model boundary shown in the figure, but the study area limits for sustainable yield determinations were confined to aquifers within the State.

Q: Is the groundwater assessment model the same as the one used in the Flint River in the 1990's?

A: Dr. Kennedy clarified that EPD used the USGS 1996 model as a starting point for the regional Coastal Plain model, but EPD updated and modified that model. For example, EPD added the Upper Floridan aquifer to the model. The USGS model was selected because it has a large

extent and includes the aquifers that were prioritized by EPD for investigation. Some of the previous models of the Flint basin only focused on the Flint River and didn't have as wide of an extent and did not include other Coastal Plain aquifers prioritized for determination of sustainable yield, which is why the USGS 1996 model was selected for the regional Coastal Plain model. The model for the Upper Floridan aquifer in the Dougherty Plain was the one completed by the USGS for the March 2006 Flint River Basin Regional Water Development and Conservation Plan.

Q: Are all of the wells in Georgia now metered? What about wells in Alabama and Florida?

A: Within Georgia, all wells are not yet metered. Dr. Kennedy cannot answer whether wells in Florida and Alabama are metered.

Q: How do you get sustainable yield if the wells are not metered? Why do we not know about Alabama and Florida?

A: Where actual well data were not available, EPD estimated well usage based on available data. Well use for Florida and Alabama was similarly estimated.

Q: Can you please clarify the bullet "Recharge from surface water sources constrained to 40 percent of baseflow in order to maintain opportunities for surface water use"?

A: Dr. Kennedy explained that EPD wanted to ensure that groundwater withdrawals did not reduce flow in the streams to the point where streamflow was less than 40% of normal baseflows.

Q: The constraint to 40 percent of baseflow could be a substantial variable factor and influence availability. Correct?

A: Yes.

Q: Please explain the metric regarding well drawdown of 30 feet.

A: While actively pumping from a well, the drawdown will be much greater than 30 feet adjacent to the well. This metric sets a goal for the drawdown between wells; that the drawdown does not exceed 30 feet. For example, if there are two wells that are a half-mile apart, the drawdown between these wells should be less than 30 feet.

Q: How was the metric of 40% of baseflow selected?

A: The metric was selected from one of many studies published in scientific literature. The study from which the metric was selected is used elsewhere in the United States and utilizes relatively simple data that are readily available. The study indicated that reduction of streamflow by no more than 40% could maintain outstanding aquatic ecosystem health. The literature study actually was based on 40% of mean annual average flow; however the resource assessment used 40% of baseflow, which is smaller than and therefore more of a constraint than annual average flow.

Q: What is the definition of baseflow, is it annual average?

A: Baseflow is the streamflow maintained by groundwater discharge to the stream. Sometimes streamflows during the month with the lowest flows (typically September or October) are close to baseflow.

Q: The previous Flint River model said that the River would run dry, but it never did. Isn't modeling just a guess of the aquifer storage that is available underground?

A: The results of the groundwater resource assessments were arrived at using the best tools and doing the best job possible. The models were calibrated based on measured conditions and adjusted as needed to match measured conditions. Models are tools that should be used with best professional judgment to make decisions. For instance, models results were reviewed and overridden when they didn't make sense.

Q: What is the definition of potentiometric surface?

A: If you drill a well, the water will rise in the well to a certain level based on pressure. The potentiometric surface is the level to which water rises in the well.

Q: What depth did you use for the Claiborne Aquifer?

A: The exact number is in the model. The Clayton Aquifer is below the Upper Floridan aquifer in the Dougherty Plain. Because the Clayton Aquifer is below the Upper Floridan aquifer wells would need to be drilled deeper to reach the aquifer.

Q: What is the depth separation?

A: That question can be researched and answered.

Q: Can you confirm that slide 18 says there is water available to pump out of the Claiborne Aquifer? If so, that is good news.

A: Yes. Dr. Kennedy confirmed that there is a range of available sustainable yield in the Claiborne aquifer.

Q: What are the total permitted withdrawals for Claiborne Aquifer?

A: Dr. Kennedy does not have the exact number, but it is a lot bigger than 67 mgd. The model is based on the actual usage and not permitted usage.

Q: How do the councils find permitted withdrawal?

A: Mr. Cash stated that this information was being compiled from the EPD database.

Q: Isn't this information critical for the development of the Regional Plan?

A: These are baseline resource assessments and look at actual sustainable yield. The future resource assessments may include additional withdrawals associated with forecasted demands.

Q: Results are provided in million gallons per day. Does the model only report results for one 24-hour period?

A: No, the results represent the average daily use or average daily sustainable yield.

Q: What did EPD do where there is no metered data?

A: EPD used metered data where it was available and estimated use where metered data was not available.

Q: Permit numbers are similar to metered numbers, aren't they?

A: In some cases the permit value is close to the metered data, but in some cases it is different.

Q: Sustainable yield is what is withdrawn from the aquifer, but how is the recharge amount developed?

A: Recharge in the model depends on the geology of the aquifer. In some areas rainfall and recharge from streams is more important and in some areas the interaction between aquifers is more important. The Upper Floridan aquifer, for example, is a confined aquifer in many areas of the State and therefore is not hydrologically connected to streams so that aquifer recharge is due to leakage from adjacent aquifers. Rainfall and recharge from streams does contribute, however, to recharge for unconfined aquifers like the Upper Floridan aquifer in the Dougherty Plain. The models accounted for these variations.

Q: On slide 28, there is a large portion of the Claiborne aquifer that is not being studied that extends into Florida. This is an area with a rapidly growing population on the coast that could have a large influence. Are we missing a significant influence that is affecting our groundwater availability?

A: Dr. Kennedy explained that the Claiborne aquifer is so deep in this part of Florida, that wells mainly pull water from the Floridan aquifer and use very little water from the Claiborne aquifer. Similarly, the Cretaceous aquifer extends very deep and is too deep and too salty for use. Therefore, he does not believe the model is missing a significant influence from Florida.

3) Draft Surface Water Availability Assessment

Mr. Cash introduced Dr. Wei Zeng of the EPD, Watershed Protection Branch to present the draft surface water availability assessment for the Flint and Ochlockonee River Basins. The following questions were asked during Dr. Zeng's presentation.

Q: How were the model nodes selected? Were they selected primarily looking at geography or were population centers considered?

A: The nodes were selected primarily based on the availability of long-term stream flow records. Then EPD selected some additional stations at key points, such as reservoirs and gages located at the state line. EPD tried to establish nodes that did not split a water user's withdrawals and discharges such that they were in two different basins. EPD also tried to select nodes as close to the council boundaries as possible.

Q: What was the 70 year period?

A: 1939 – 2009

Q: The period of record did not pick up the 1920's drought?

A: Correct

Q: Is the flow at the Bainbridge node influenced by elevation (backwater effect) at Lake Seminole?

A: Yes, but USGS data accounts for that backwater effect, so these numbers should be reliable.

Q: What is the agriculture pumping component of the model?

A: The groundwater models indicate the reduction in surface water flows as a result of pumping.

Q: The groundwater assessment shows that when streamflow is reduced by 40%, there is an unacceptable impact. Is the 40% number being used throughout the state in this assessment?

A: In Dr. Kennedy's analysis he looked at a total of 8 criteria, not just stream flow. Surface flow reduction is only one of the unacceptable impacts.

Q: What percentage of streamflow reduction did you use? How did you get that number?

A: There are two parts to that question; first, how the system is loaded (withdrawals) and second, how the impact was calculated. The system is loaded with our best estimate of the amount of surface water and groundwater irrigation. The reduction caused by surface water irrigation is a one to one reduction in stream flow. The surface water reduction resulting from groundwater pumping was computed using USGS sub-area 4 groundwater model.

Q: What is the groundwater pumping impact of that number?

A: The total reduction in baseflow in the model is based on the combined impact of groundwater withdrawals and surface water withdrawals. The impacts on baseflow change from month to month. The combined impact is presented, but the impacts from groundwater and surface water withdrawals can be split.

Q: Does the model consider the proximity of groundwater wells to streams?

A: Yes, that is considered. The USGS model considers the permitted wells and the known pumping and then calculates the flux in the stream (reduction in baseflow). The flux from the aquifers to the river channels can be summed. The model can also be used to simulate river conditions if there are no demands (withdrawals) on the system. The surface water reduction is the difference between the two sets of model results.

Q: How is the gap measured at places where there are groundwater surface impacts?

A: In a USGS model, that is different than the surface water availability model. In this area, because of the complexities in the Dougherty Plain, the models have to be used together. The total amount of surface stream flow reduction is then used in gauging whether there is a gap in stream flow.

Q: There were some concerns about models being stacked.

A: The models are just calculators. An analogy, if you have different thermometers in different rooms, you will trust the results so long as the thermometers are calibrated. These models are calibrated.

Q: Why are we just looking at 70 year period? There is more data available and some pretty severe dry spells outside of the 70 year period. Are we missing important information? Are we missing information on Apalachicola?

A: The data set was selected because of the availability of continuous data. Prior to 1939, more assumptions are needed to fill data gaps. If you have to rely on reconstructed data, how much value does that give you? This approach is consistent with the state and US Army Corps efforts.

While there are droughts prior to the period of record, we are capturing most of the recent severe droughts. This modeling effort will continue in the future and we will continue to extend the period of record beyond the 70 year period.

Q: Curious to see what is happening in the Chattahoochee considering these results in the Flint.

A: The models are not run separately for the Chattahoochee and Flint Basins. The Chattahoochee and Flint results reflect interactions. This meeting is just covering the results for the Flint and the Chattahoochee results will be discussed at a future meeting.

Q: The model shows that there is a shortfall at Bainbridge, what does that mean? Do we have to make up the shortfall?

A: Mr. Cash explained that the model results identify the gaps. The Councils will determine the appropriate actions needed to meet current and future needs. The gap analysis process will begin with CM#5 and continue throughout 2010.

Q: How do you (Dr. Zeng) think that we should make up the shortfall? This is surface water and not groundwater. We have more groundwater in the Dougherty Plain. If as a result of the surface water shortfall we have to take acres out of irrigation that will affect our livelihood.

A: How you make up the shortfall is a discussion for your Council throughout the course of the calendar year.

Q: There were concerns that the Chattahoochee and Flint basins weren't both in attendance at the meeting.

A: The results for the Chattahoochee will be discussed at the February 1st joint meeting. The attendees at that joint meeting will include many of the same councils (Middle Chattahoochee, Upper Flint, Lower Flint-Ochlockonee). The results for the Chattahoochee and Flint basins can be discussed together at that meeting.

Q: Are the demand numbers used comparable those used in the groundwater assessment? Are they current instead of permitted? How are these numbers different?

A: Current withdrawals represent the amount of water that is withdrawn for municipal and industrial usage, presented as maximum monthly usage. For agriculture usage, there are two ways to look at how much water is used for irrigation. The groundwater assessment bases usage on the Hook study that identified monthly water use patterns based on a study between 1999 and 2003. For most users the permitted amount is much greater than the actual usage. The surface water quantity model, similar to the groundwater model, uses the actual water usage for the baseline resource assessment. In the future resource assessments, the usage will likely be higher and therefore there may be additional gaps. Agricultural wells are not permitted based on volume; they are permitted based on pump capacity. That permitted capacity cannot be translated into actual use.

Q: There is concern that the data from 2002-2003 used as the basis for monthly water use patterns does not account for more recent changes to improve the efficiency of pivot systems. The numbers in the model may be higher than current usage because of these new increased efficiencies.

A: We use the best available data to capture water demand. When new data become available,

we will use them.

Q: Over \$22 million has been spent on installing meters to track agricultural water usage. How has that data been used?

A: The metering data has been used to the extent possible. The meter data was used to verify the Jim Hook methodology. The one limitation of the meter data is that it provides one number for each metered system for one entire year. For some systems, there is telemetry data that provides the monthly pattern. It was difficult to take the metering data and spread it out over the irrigated acreage to develop the annual usage pattern. We tried our best to make a comparison between the application rate as investigated by Jim Hook and the metering data. For the groundwater use, application rates were very close. For surface water, Jim Hook application rates are a little lower than the metering data. The meter data wasn't available until late 2009. This is one area where the data may be adjusted; however, the difference will not impact whether or not there is a gap, just the extent of the gap.

Q: How do we make up the shortfall?

A: That is a policy question and will be the work completed by the Councils in 2010.

Q: Will the Governor make decisions related to the tri-state negotiations based on fact or negotiation?

A: Mr. Cash responded to this question and stated that he cannot speak for the Governor.

Comment: Griffin is the upstream water user in the Flint basin. Griffin uses water and then sends water downstream. Griffin uses approximately 13 mgd from our reservoir, and only pumps out of the Flint River into the reservoir to fill. Of the water withdrawn, Griffin returns 40% of the water to the River. In order to address the gaps, we need to know the volume of water returned to the river as well as the volume withdrawn.

Q: Agriculture is deemed 100% consumptive. Very little of the water consumption is evaporated, most of the water used returns to the aquifer especially in sandy areas. The returns from agriculture need to be factored into the formula.

A: In the short-term, there are no conclusive studies that provide a number that can be used in Georgia. There are studies out west and in Florida, but these numbers can't work in Georgia because of the soils. EPD is using 100% until a better number is available. It is a conservative number.

Prior to starting the surface water quality presentation, Mr. Cash provided some comments based on the morning discussion.

- EPD will provide as much permit data as possible at CM#5 as possible
- There will be a series of technical ad hoc meetings for anyone interested in gaining a better understanding of the detail of the models. This afternoon, there will be breakout sessions by Council. During that breakout session, Councils may want to identify persons to attend these technical ad hoc meetings. Suggested attendees may be staff, local university staff, modeling experts, or someone whose opinion the Council trusts.
- There were questions about third party objective review of the models and results. The Councils may identify people to attend the technical ad hoc meetings to get their

questions answered. There will be a public comments process as well and the results will be shared with the Councils.

4) Draft Surface Water Quality Assessment

Mr. Cash introduced Dr. Elizabeth Booth of the EPD Watershed Protection Branch. Dr. Booth then gave a presentation on the Draft Surface Water Quality Resource Assessment for the Flint and Ochlockonee River Basins. The following questions were asked during the presentation.

Q: There is an area where there are no colored streams? Why is there a big gap? Is there no data for these areas?

A: Dr. Booth explained that the model isn't completed yet.

Q: Are the results an average for entire year?

A: No, the model results are based on 2007 discharge data that is compared to instream flows with the model evaluated at 7Q10 (low flow conditions).

Q: On the scale, is the available DO the level above the state standard?

A: Yes, either above the state standard or above natural levels.

Q: Why aren't the results based on seasonal conditions, why aren't they year round?

A: The majority of the permits are based on 7Q10 and not seasonal. Typically, summer time is the most critical.

Q: Is the drop in dissolved oxygen because of Georgia Power?

A: The Lake Worth dam causes the drop in dissolved oxygen.

Q: Are you only looking at dissolved oxygen?

A: We are looking at DO and nutrients, there are no limits yet for emerging contaminants.

Q: Should we worry about our kids playing in the stream, skiing and swimming in the Lake based on the recent flood of the Atlanta wastewater treatment plant?

A: During high flows, there were releases from the plants. The bacteria die within three to four days after it hits oxygen. EPD sampled for several weeks and the elevated bacteria levels were gone after two to three days.

Q: What about methodology used to develop 7Q10?

A: The 7Q10 (low flow) was established in USGS books published in the 1980's. Occasionally, EPD will revise 7Q10 based on collected data. Impervious surfaces and urbanization have actually reduced 7Q10 in some areas.

Q: Land use patterns can have an impact on low flows.

A: EPD does not change 7Q10 for an active permit unless there is an upgrade. We do consider the land use patterns. More severe drought also has impacted 7Q10.

Q: What about organic pollutants?

A: Wastewater plants typically do this monitoring as part of the permitting process. EPD has monitored for organic pollutants in the past, but it is very expensive and the sampling did not find problems. EPD is adding some sites to monitor for pesticides and metals in urban areas; trying to target sampling to areas these pollutants can be expected. EPD monitors dissolved oxygen, pH, temperature, and fecal coliform bacteria at all sites. Mercury is monitored as part of fish consumption guidance (FCG). Because fish provide a longer trend, EPD maintains about 28 sites where fish are collected for that long-term monitoring.

Q: There are concerns over drugs eliminated through urine, such as estrogen. Are there any actions to determine if these concentrations are at dangerous levels?

A: There is no EPA level for these contaminants of concern yet. EPD will adopt any standards published by EPA. There was a USGS study looking at chemicals of concern and found that aspirin was the most prevalent legacy chemical in the Atlanta area.

Q: Thinking about the water planning process, if we are at a point where demand is equal to supply, when we forecast forward there will likely be a gap. How will that gap be managed? Surface water quality is related to surface water quantity; so does this mean that even if there is available surface water quantity, a permit may not be issued because of water quality?

A: The Councils will identify water management practices that will reduce the water quality impact to the stream. These practices may include maintaining baseflow, land application, siting wastewater treatment plants correctly, improve treatment standards, replacing wastewater ponds, stormwater management, and reuse.

Q: These options are very technical. How are Councils expected to make decisions?

A: These alternatives all go into a toolbox. The Councils don't need to understand the tool, but they need to understand how to use them to protect water resources. The planning contractors will support the Councils in providing the information to assist in making decisions.

Q: Isn't fecal coliform bacteria a principal pollutant leading to stream impairment?

A: Fecal coliform bacteria are generated by all warm blooded animals. The wastewater treatment plants are doing a great job. Some of the bacteria loads may be natural. A study in Glynn County found that high fecal coliform levels were due to birds and not leaking septic tanks, as expected. Over 50% of impaired streams in the state exceed the state standards for fecal coliform bacteria. EPD is evaluating a new e-coli standard.

Q: Does fecal coliform bacteria have anything to do with the "red streams" in the Ochlockonee?

A: No. The resource assessment shows that there is not assimilative capacity available in the Ochlockonee because of dissolved oxygen. The streams in the Ochlockonee are very flat and don't flow, therefore low dissolved oxygen levels are expected.

Q: In 1932, Crisp County built a hydroelectric dam. What is the objection to installing additional dams to provide both water and clean energy?

A: All options may be considered by the Council. The dam may aerate the stream below the dam.

Q: In the Flint basin, non-point source pollution is a big problem. We may have to reduce

wastewater discharges if non-point source pollution is not controlled. Agricultural interests in this basin far exceed other economic interests. Is nutrient trading an idea that we can consider?

A: Nutrient trading is a water management practice that could be considered.

Q: What is nutrient trading?

A: If a farmer puts nutrients on the farm and the municipality needs a discharge permit, the municipality will pay for nutrient reduction measures on the farm to make assimilative capacity available for the wastewater discharge.

Q: So it can be a win-win if it works correctly?

A: This is an option that Councils can consider as part of their Regional Water Plans. There are successful examples such as the Red Barn in Pennsylvania upstream of the Chesapeake Bay.

Q: There were questions regarding permits for industrial facilities near the Florida state line.

A: EPD cannot permit facilities that will cause or contribute to another states' water quality violation. Stricter limits may need to be placed on nutrient discharges near the Florida state line because they now have a nutrient standard.

Q: Wouldn't there be a load allocation process?

A: Yes. EPD cannot cause and/or contribute to water quality problems.

Q: There was a request for a map of the region that only shows the rivers and the county lines.

A: EPD can develop maps with perennial streams (not intermittent streams) for CM#5.

5) Discussion/Forum

Following the resource assessment presentations, Mr. Cash led a group discussion/forum for the council members on the commonalities and challenges for shared water resources. The question was posed to the group: What is it that you would like other council members know about your concerns or information that was presented? What are the issues that you have that you would like others to hear about?

Q: A Middle Chattahoochee Council member is concerned that data won't be available in time for the planning effort. Specifically, there is concern over the population and employment data.

A: If you wait until you have all of the data that you ever need, you have waited too long to plan. EPD is working to get data to the Councils as soon as possible.

Q: The Upper Flint expressed concerns that Council members would have to present the materials from these meetings at CM#5.

A: EPD will provide the technical information and presenters that the Councils need. Hopefully, having heard this data once, you will be able to bring along the other Council members.

Q: Council members asked if the same materials will be presented at the other 5 joint meetings.

A: The methodology at the meetings will be the same, but the results will be different.

Q: When will the results be back from the inorganic samples?

A: EPD just started the planning process for this sampling. The monitoring will start this month, and continue six times per year for metals and twice for pesticides. The data will be available a year from now on the EPD website (under instream water quality data).

Q: How do you determine whether a pesticide exceedance is from homeowners or farmers?

A: EPD determines a quantity, not a source. A tracking study can be performed to determine sources, such as monitoring at multiple bridges to determine where the problem originates.

Q: When and where will there be a dialogue between basins on the resource sharing?

A: Today is the start of that discussion.

Q: The Councils serve a 3 year term. When will we start to develop results? What will future Councils do?

A: We don't really have an answer now as to what future councils will do.

Q: How much technical material can the Councils absorb? How do we make decisions?

A: The resource assessments presented today provide data for planning. The planning contractors are available to assist Councils in developing the recommendations.

Q: We don't know from Bainbridge to Montezuma what we sending downstream from the Upper Flint to Lower Flint Councils. We do not know what we are sending downstream for them to use.

A: EPD picked the Montezuma node because it was closest to the border between the Councils. USGS picked stations long before the existence of Councils.

Q: If we provide sufficient water at the Montezuma gage, have we done our job?

A: We can estimate more precisely between gages if needed.

Comment: A bigger component of the demand in the Lower Flint is agriculture, so if the surface water flows from the Lower Flint to Florida aren't enough, the Lower Flint will use groundwater supplies. The Upper Flint needs to pass enough water along to Florida.

Comment : The Middle Chattahoochee discussed the surface water availability gap of 1300 cfs in the Flint. Where is this flow going to be made up? The Corps has already determined the flow based on the Federal Government's ruling that the three northern Federal lakes will make up the difference.

Comment: There are concerns about the biological opinion by the Fish and Wildlife Services (FWS) on the environmental needs in the Apalachicola. To satisfy requirements of the FWS threatened and endangered species, there are flow limits at the USGS gage. Congress didn't authorize these reservoirs for endangered species or flow augmentation. Three of the reservoirs have disappeared during dry weather. The Federal Government has already decided that the Middle Chattahoochee will make up the difference for low flows in the Flint, because there are impoundments in the Chattahoochee. Need to figure out how to balance the needs of both

basins. Industry and tourism in the Chattahoochee basin are important and agriculture in the Flint is important. It is important to develop a plan that works. Florida has stated a number for flows. Phase II of the trial has not started yet and we don't know if that number stands or what the courts may do.

Q: A Council member from the Lower Flint stated that it is not their position to have the Chattahoochee make up for shortfalls in flows from the Flint River.

A: The Corps made the decision. The Chattahoochee River is highly regulated and the Flint River is free flowing. Assimilative capacity plays an important role in this discussion. If the Corps creates an artificially low flow condition and that leads to an assimilative capacity problem, whose problem is this?

Comment: A member of the Metro Water District expressed concern because talking to a key Florida advisor seven or eight years ago, their opinion is that Atlanta must stop growing and farmers must stop irrigating. If water is needed in Florida, we have to take it out of Lanier because in the basin Lanier comprises 62% of the total storage. The Metro Water District Plans from 2003 and 2009 are strong and demonstrate great stewardship of our water resources. Other Councils may want to read these plans that demonstrate how we can best meet our ongoing needs. As Councils, you will also be developing solutions to meet your future needs, similar to the Metro Water District.

Comment: A member of the Upper Flint Council stated that the Governor's Task Force study shows that the only practical solution is the reclassification of Lake Lanier. He urged everyone in the room to lobby to their elected officials to get the Lake reclassified.

Q: Another member from the Upper Flint Council added that the Councils needed to come together. Is this the last joint meeting?

A: No, this is not the last joint meetings. One of EPD's key roles in the planning process is to support inter-Council coordination. There are five more joint meetings for this round that have been scheduled. Please let EPD know how remaining joint meetings or future round of joint meetings can be designed to be most helpful to you.

Comment: It will take several months for the Councils to reflect on this data and start to plan. After the Council has reflected, it will be helpful to talk to other Councils. The Upper Flint Council is very aware that our actions affect other Councils.

Q: A member of the Metro Water District asked how the Governor's activities in the next several months are going to impact the work of the Councils.

A: The Governor's Task Force is looking at actions that need to happen immediately. The Councils are looking at a 50 year planning horizon. While EPD doesn't know the outcome of the Governor's negotiations, he has stated that he is optimistic and there will be progress soon. As far as the Corps operations of the ACF, there is no simple answer to that question.

Q: A member of the Middle Ocmulgee Council stated that they were invited to the meeting today because they share the cretaceous aquifer with the other regions. The groundwater assessment

shows that there is plenty of groundwater available and no pumping problems in the region. Why was the Ocmulgee region invited to the meeting?

A: If additional water is needed in the future, the Middle Ocmulgee Council may look to groundwater as a source.

Q: A member of the Upper Flint Council stated that there are some inter- and intra- basin transfers in the region. How were these transfers considered in the model?

A: An interbasin transfer is when a straw takes water from one basin and returns it to another. Some counties straddle two basins and they have a distribution system that serves water to all customers, which isn't necessarily an interbasin transfer. The discussions really need to include consumptive use as well as interbasin transfers. All numbers (withdrawals and discharges) are captured in the models because they are current conditions. The withdrawals will be shown as a loss in the donor basin and a gain in the receiving basin.

Q: A member of the Upper Flint Council requested additional information on interbasin transfers for the Council as it straddles two basins. The Council would like to know if there are significant interbasin transfers they should consider.

A: EPD can provide a report to the Councils.

Comment: If there is an interbasin transfer between the Chattahoochee and Flint River basins, is it really an interbasin transfer, because it all ends up in Florida? Maybe this is a "pseudo" transfer versus a "real" transfer.

Q: There was a question about limitations on the groundwater withdrawals permitted in Florida.

A: The resource assessments are bigger scale and look at the entire State. The development of groundwater resources near Florida will need to be a more refined assessment and will have to consider the 2006 Flint River Plan.

6) Public Comment

Following the discussion/forum for council members, Mr. Cash opened the meeting for public comments. One person elected to make a comment.

Comment: Mr. Ben Mosley, GSWCC – The GSWCC is interested in closing the supply and demand gap. Conservation will play a major part in resolving these gaps. The Districts are very involved with education related to conservation. Mr. Mosley announced the 10th Annual Conference in Americus and mentioned that scholarships will be issued for agricultural producers. The Conference will include a tour of farms and their success stories. Also advanced irrigation management applications were being selected for research applicants. GSWCC is also involved in water quality improvement practices and often have funds available for BMPs that reduce nonpoint source pollution in impaired streams.