



# Georgia's State Water Plan

## Lower Flint-Ochlockonee Water Council Meeting 7 September 13 -- Draft Agenda

### *Objectives:*

- 1) Committee efforts update
- 2) Water quantity and water quality management practices selection
- 3) Discuss WDCP drafts and development

8:30-9:00 a.m.	Registration
9:00-9:20	Welcome, Introductions, Chairman's Discussion, Adoption of Agenda, & Approval of June 15 Meeting Summary
9:20-9:30	Review of Council Goals
9:30-10:00	Water Development and Conservation Plan Review Committee Report (Sections 1-5 Draft)
10:00-10:45	Water Quantity Committee Report and Management Practice Selection Recommendations
10:45-11:00	Break
11:00-11:45	Water Quality Committee Report and Management Practice Selection Recommendations
11:45-12:00	Clean Water Act 319(h) Grant Opportunities
12:00-1:00p.m.	Lunch
1:00-1:45	Endangered Species Act Presentation by Sandy Tucker, USFWS
1:45-2:15	Groundwater Sustainable Yields Update
2:15-2:45	Conservation
2:45-3:00	Break
3:00-3:15	Water Development and Conservation Plan Sections 6-8 Development
3:15-3:30	Local Elected Official and Public Comments
3:30-3:45	Wrap Up/CM8 Preview/Council Meeting 7 Evaluation
3:45-4:30	Committee Discussions

To: Lower 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 6 on June 15, 2010

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The council meeting was held on June 15, 2010, in Colquitt. The list of attendees is attached. In addition to these minutes, all the presentations (slides) discussed in this meeting will be posted on the Lower Flint web portal (<http://www.flintochlockonee.org/>). The public sign-in sheet is included as an attachment.

### **Welcome, Introductions, and Chairman's Discussion**

Council Chair Richard Royal welcomed members and thanked everyone for attending. John Bridges provided the invocation. Council member and Mayor Jerry Chapman welcomed the council to Colquitt. Chairman Royal recognized Jaime Crozier from Representative Sanford Bishop's office and Russel Carlson from Lieutenant Governor Casey Cagle's office. Next, Richard discussed meetings he has been involved with since the last Council meeting:

*Joint Leadership Meeting – ACF Water Councils, May 10, 2010 (Meeting with Upper Flint and Middle Chattahoochee Chairs).* Richard said this meeting opened a dialogue among the ACF councils. He said Middle Chattahoochee was concerned that gaps in the Flint River are offset by existing reservoir storage capacity in the Chattahoochee basin, while the Upper Flint had concerns similar to those of the Lower Flint Ochlockonee with respect to ensuring protection of their agricultural economies. The Upper Flint has discussed considering replacing surface water for agriculture with groundwater as a management practice. Richard advised that he shared concerns over the lack of guidance, doubts about funding of reservoirs, and timely receipt of information. Richard said that the councils share frustration over the availability of information in a timely manner. Vice Chairman Hal Haddock, who was also at the meeting, also shared this concern and said he was concerned about meeting the deadline for the completion of the regional plan.

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June 7<sup>th</sup> Meeting with EPD Director Allen Barnes

On June 7<sup>th</sup>, water council chairs and vice chairs met with EPD Director Allen Barnes. Chairman Royal said he was reassured by Allen Barnes when he said that common sense must be used in the water planning process. He said Director Barnes said that we have to proceed based on the best available data at this time and acknowledged that the lateness of information has caused frustration. Chairman Royal said that Director Barnes is open to discussion of the modeling assumptions. Director Barnes told the council leaders that he is not sure that some gaps can even be closed, but he expects that the councils will work toward reducing gaps.

Chairman Royal said they plan to meet again on August 6<sup>th</sup> in Albany to discuss technical issues and concerns of the water council. Chairman Royal said he was impressed with the Director and that he felt the Director was genuine and listening to their concerns. Hal Haddock advised that he was looking forward to meeting with Barnes.

Next, Chairman Royal asked for approval of the agenda. With no objections, the agenda was approved. Next, Chairman Royal asked for approval of the last council meeting summary. Motion to approve was made by John Bridges, second by Jimmy Webb, and the Council approved the summary with no objections. Last, Chairman Royal thanked all the committees for their hard work.

Kristin Rowles made a few logistical announcements, including a request that council members review page two of their pre-meeting packets and ensure they were listed on the correct committee lists. She asked the members to notify her of corrections and additions for this list.

**Agricultural Meter Data Analysis Report**

Doug Wilson of the Georgia Water Planning and Policy Center (Center) provided an overview of recent efforts to analyze data from the agricultural metering program. Doug said the Center has recently received the metering data for 2008 and 2009. This data was made available to the Center based on a request by the chairs of the state House and Senate agricultural and environmental committees. He said that the Center will be sending the legislators that requested the data a report on analysis of the data in the near future. He noted that these legislators will decide how to release the data in the future. He noted that Senator Bulloch, who is a council member, was one of the legislators making the request.

Q. Are meters are still being installed?

Doug: Yes.

Q. Does the new data confirm Dr. Hook's estimates?

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Doug: Based on prior analysis, the 2007 data set is close to Dr. Hook's estimates, but the results are not yet complete on the new data. The 2007 data are probably the best comparison to the dry-year Hook estimates.

Looking ahead, Doug noted that there will be a lot of value in having this type of data, and good data collection, management, and analysis will help to make good on the \$20 million investment in the metering program. Council member Jimmy Webb said it was good to finally be getting this information and that the information will help us. He expressed frustration at the difficulty in getting the information. Jimmy noted the importance of this information to the council's decision making. Antonio Fleming from the GA Soil and Conservation Commission said that release of the data was a result of the commission's uncertainty that it was legally permitted to do so, but that now that the uncertainty had been addressed, the data had been released.

### **Assessment Forecasts Update**

Robert Osborne from Black and Veatch gave an update on water demand forecasts. Corrections have been made in several forecasts, and in some cases, the forecasts are still not complete (i.e., energy). For energy, the existing consumptive use has been used in the 2050 forecasts. The agricultural water demand forecasts have been revised and include forecasts for nursery operations, as well as current information for golf courses. Animal operations water use have been estimated but are not included in the model runs. Jerry Lee noted that the horticulture industry had worked with EPD and came to agreement on how to estimate current use and make forecasts for this industry.

Jimmy Webb asked whether agricultural use of surface water was really going to increase in the region. He said he did not think that surface water use by agriculture would increase, though groundwater probably would. It was noted that Hook's forecasts do include a small increase in agricultural water use. Woody Hicks (Tech Ad Hoc Committee) asked why agricultural demand would increase if there is such a big gap. Kristin Rowles responded that the demand side had not been adjusted based on management practices in the model runs to date; so far, we have just compared projects to resource availability without adjustment based on the modeling results. That step is where we are headed now.

### **Committee Efforts Updates**

Committee reports are included in the pre-meeting packet.

### **Water Quantity Committee**

Given the surface water availability model results, Committee Chair Jimmy Webb said that he is concerned about the perception of the gap at Bainbridge, especially by neighboring states. He also expressed concern that the gap is overestimated. He said that he knows there is a gap, but does not think it is as significant as the model indicates. He

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said that he believes natural gaps occur, but that Wei Zeng had told him that the model removes the effects of nature on the gap. Jimmy said that the council needs to show it is working to reduce the gap, but it does not have to completely close the gap.

Based on discussion of management practices so far, Jimmy reported that he believes we could replace some surface water withdrawals with groundwater withdrawal. He also thinks that agricultural technology innovations will help to substantially reduce water use by 2050. He noted that the last 10 years alone had brought amazing innovations. Jimmy said that Chairman Royal has said that irrigation cessation should be taken off the table. Jimmy also said that we need to consider reservoirs, and the committee has requested a model run to estimate storage needs to address the gap.

Q. Can we quantify improvements in water use over past 10 years in irrigation efficiency?

Kristin Rowles: We are working on that. Mark Masters will be surveying NRCS agents on this issue. We hope to come up with an estimate of the baseline for agricultural conservation practices in order to support estimation of potential savings that could yet be attained. Information in the strawman document shared with the committee is a start.

Doug Wilson: It is important to note that we can measure equipment changes for water conservation, but attaining water savings also requires behavioral change in the way a system is operated. As for the baseline, that is where we need to focus. It would be best to have a field survey on which to base that estimate.

#### Water Quality Committee

Jerry Lee said that so far the committee has mostly talked in generalities because enough data on water quality resource capacity is not yet available. Kristin noted that Steve would be reviewing some new water quality results today; these were just received from GA EPD in the past week.

#### Technical Ad Hoc Committee

This committee met on April 15 in Albany. The issues it considered were technical issues in the modeling work, including the assumption of 100% consumptive use by agriculture and the use of 7Q10 as the low-flow metric.

With respect to the assumption of 100% consumptive use by agriculture, John noted that the timing of returns and field conditions are important factors that cause variation. He said that selection of a specific figure could harm agriculture if it were incorrect. He said that as we increase the efficiency of agricultural water use, we increase the consumptive use of water by agriculture. He noted that during the committee meeting, Doug Wilson checked with a representative of the Florida Water Management Districts, and he reported the four of the five Florida districts use a 100% consumptive use assumption for agriculture. The committee recommended that, without a defensible alternative, this

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assumption should not be changed at this time, but the issue does warrant further research.

With respect to the use of 7Q10 as a low flow metric, the committee reached a similar conclusion. Without a defensible alternative metric, the committee could not recommend an alternative.

John said that the committee discussed a number of other issues, including: evaluation of the gap at a node in between Montezuma and Bainbridge, the definition and implications of the gap, and conditions in Spring Creek, which are not addressed in the model results.

Chairman Royal referred to an article recently circulated to the council in which it was stated that prior to the construction of Woodruff Dam, flows into Florida often went below 5000 cfs. Woody Hicks (committee member) said he would provide data for the council that would address this statement, which he stated was not completely correct.

### **Surface Water Availability Forecasts and Modeling Conditions**

Kristin reviewed the results of the recent surface water availability model runs. She said that the new analysis includes two model runs:

1. Revised Current Conditions: This updates the current conditions model run presented at the joint meetings in January. Revisions include changes to demand inputs, including Alabama demands, energy demands, and agricultural demands (based on revisions in Dr. Hook's estimates).
2. Baseline Future Conditions: This includes 2050 forecasted demand conditions with no new management practices applied.

Kristin noted that the process was still very active, and that further revisions were to be expected. The planning team had received these results only recently and were still reviewing them and making suggestions to EPD. These results are the best available at the current time, but further revisions will adjust these results.

Kristin presented the following results:

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**Surface Water Availability Model Results**  
**Revised Current Conditions and Initial Future Conditions**

**FLINT**

	Length of Shortfall(% of time)	Average Shortfall (cfs)	Long-term Average Flow (cfs)	Maximum Shortfall (cfs)	Corresponding Flow Regime (cfs)
<b>MONTEZUMA</b>					
Current	3%	1	339	94	623
2050	2%	1	3429	1	593
<b>BAINBRIDGE</b>					
Current	13%	361	7880	1376	2506
2050	11%	316	7981	1215	2506

**CHATTAHOOCHEE**

	Demand Shortage (cfs)	At-site Flow Requirement Shortage (cfs)	Minimum Reservoir Storage (acre-feet)	Minimum Percentage Reservoir Storage	Basin-wide Flow Requirement Shortage
<b>WHITESBURG</b>					
Current	0	0	539,960	50%	None
2050	0	0	471,867	43%	None
<b>COLUMBUS</b>					
Current	0	0	14,310	5%	None
2050	0	0	14,269	5%	None
<b>COLUMBIA</b>					
Current	0	0	30,816	13%	None
2050	0	0	64,924	27%	None
<b>WOODRUFF</b>					
Current	0	0	585,086 at Buford, WP, & WFG	36% at Buford, WP, & WFG	None
2050	0	0	551,060 at Buford, WP, & WFG	34% at Buford, WP, & WFG	None

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**Surface Water Availability Model Results**  
**Revised Current Conditions and Initial Future Conditions (cont.)**

**OCHLOCKONEE**

Scenario	Length of Shortfall (% of time)	Average Shortfall (cfs)	Long-term Average Flow (cfs)	Maximum Shortfall (cfs)	Corresponding Flow Regime (cfs)
<b>CONCORD</b>					
Current	9%	26	1107	60	68
2050	8%	34	1115	79	97
<b>QUINCY</b>					
Current	5%	5	264	11	11
2050	3%	6	291	12	12

Jimmy Webb noted the lack of a shortfall in the Chattahoochee and the ability to make up for flow shortfalls with reservoir storage. He said that we need to consider reservoirs on the Flint side.

Chairman Royal commented that he thought the reservoir in the Griffin was only using half of its storage. Woody Hicks said that he thought they were only using 20% of the reservoir's permitted withdrawal capacity. Woody also commented he was concerned with the modeling, that it was more hypothetical for the Upper Flint and based more in reality for the Lower Flint.

Council member John Bridges commented that he thought we are probably sending more water underground than we are aware of.

**Surface Water Quality Forecasts and Modeling Conditions**

Steve Simpson presented the surface water quality modeling results, which were received from GA EPD last week.

Steve showed some county by county maps which showed the current permitted municipal and infrastructure compared to the 2050 demand. This comparison shows that total existing permitted flows are similar to 2050 projections at a county level. Therefore, dissolved oxygen modeling results under permitted conditions should offer a reasonable approximation of conditions under 2050 projections.

Steve then showed the list of permits that were modeled for the Flint River Basin. Steve reminded the Council that it would be good for them to review it for corrections when

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they can download this presentation. Steve explained that the notes column in the list is helpful in understanding how each permit was modeled.

Steve then reviewed the proportion of stream reaches in the council in the various categories of available assimilative capacity and noted that the models gave us the expected results, that less assimilative capacity was available under permitted conditions than under existing conditions. Steve then reviewed the available assimilative capacity in a series of maps for the region.

Q. Council Member Jerry Lee asked to confirm that the model does NOT include non-point sources.

Steve said yes, the model does NOT include nonpoint sources.

Q. A Council Member asked if the DO standard changed, this would probably change some of the maps.

Steve said yes, however, the information they have so far does not indicate which stream segments would be affected by this change. In addition, the plan is scheduled to be completed before the DO standard revisions.

Q. Council Member TE Moye asked about how the Council would be affected by the proposed new Florida nutrient standard.

Steve commented that this could greatly affect both point and nonpoint sources. However, in the current draft the nutrients standards are expressed as time averages, so the exact effect is unclear at this time. GA EPD has commented on these draft standards.

Steve said that he was going to give this data to the Water Quality committee and then they would decide how to proceed.

### **Groundwater Sustainable Yields and Pumping Comparison**

Kristin said that these results were not yet available from GA EPD, but would be presented to the Water Quantity Committee when they become available.

Given that the council was ahead of schedule on the agenda, Kristin suggested that she cover the management practices update and WDCP Development before lunch. Chairman Royal agreed.

### **Management Practices Update**

Kristin presented slides from GA EPD on water conservation practices. She also distributed a hand-out of the water conservation guidance. The distributed hand-out replaces a prior version of the same document that was included in the pre-meeting packet. (It was updated after the packet was sent to the council.)

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In summary, the presentation and hand-out divide water conservation practices into four tiers as follows:

- **Tier ONE practices** – mandatory through rules or law (permittees)
- **Tier TWO practices** – options addressed through rule (permittees)
- **Tier THREE practices** – optional, basic (permittees and others)
- **Tier FOUR practices** – optional, beyond basic to help “close the gap” (permittees and others)

The presentation emphasized that water conservation is considered a priority management practice and should be included in the regional plans. The presentation cites existing and expected regulations related to water conservation and deriving from the Statewide Water Plan and the recently passed Water Stewardship Act, as well as the Water Conservation Implementation Plan.

The presentation noted that many water conservation goals and practices are available for consideration. Some are already required, and new requirements will be going into place in the coming months. For the regional councils, it is expected that the councils will decide which water conservation goals and/or practices are appropriate for their region and include them in the WDCP.

Next, Robert Osborne reported to the council that he had collected information on local plans for water resource management related projects through his recent phone calls to each of the council members. He thanked the council members for their input. He also noted that brochures were available for council members to use in informing their local counties and governments about the state water plan process.

### **WDCP Development**

Kristin referred the council members to pages 47-53 of the pre-meeting packet. This is a revised draft table of contents for the regional Water Development and Conservation Plan (WDCP). Kristin noted that this is a guideline for the council to follow in developing its plan. It can be adapted to regional conditions. She said that this document is an update of previous documents that the council has seen.

Kristin said that the most significant point to emphasize at this time is that it is now suggested that the plans be around 40 pages each, like the Statewide Water Plan. She noted that this would greatly limit the amount of detail that could be included in the plan itself. The planning contractors are to provide a draft of the plan to GA EPD August 15. This draft will include sections 1-5, which includes summaries of regional conditions, forecasts, and resource assessments. A second draft including sections 6-8 is to be provided to GA EPD October 15.

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In closing, Kristin said that it would be helpful to have a committee of council members to review the draft. Chairman Royal said he would consider that suggestion.

### **Next Meeting**

The Council selected September 8 as the date for the next council meeting and proposed Thomasville as the location. Steve Sykes will coordinate with Kristin about location details.

The Council broke for lunch at the Tarrer Inn. After lunch, the Chairman said that the Council would take local elected official and public comments, and then, conclude the full group meeting and break into committees for discussion of management practices.

### **Local Elected Officials and Public Comments**

Chairman Royal recognized Newton Cloud with the Spring Creek Watershed Partnership. Newton asked the Council if there was going to be metering of home wells. A Council Member responded that this use was pretty negligible and could not foresee metering of home wells. Newton was also concerned about the impact to endangered species, particularly in Spring Creek, which does not have a planning node summary. A council member responded that Spring Creek has run dry several times within his lifetime; another member stated that the Flint River Basin plan included actions aimed in part at addressing sensitive species.

Chairman Royal said Suzanne Brandt with Keep Decatur County Beautiful had to leave prior to the public comments.

David Reckford with the Flint River Basin Partnership Flint River basin next spoke to the Council. He explained the Flint River Basin Program is a conservation partnership between the Flint River Soil and Water Conservation District, the USDA Natural Resources Conservation Service and The Nature Conservancy. He volunteered to assist the Council in organizing a field day or any other way in showing them some cutting edge water conservation practices.

### **Wrap-Up and What to Expect Next Meeting**

The next Council meeting will be September 8 in Thomasville. There will be committee meeting in the interim. Kristin distributed an evaluation form and asked the members to complete them before leaving. The Council then broke up into the Water Quality and Water Quantity Committees to discuss management practice selection. Committee reports from these meetings are separate documents.

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**Attachment 1:**  
**Lower Flint Ochlockonee Water Planning Council**  
**Council Meeting Attendance – June 15, 2010**

**Council Members**

Steve Bailey

John Bridges

Jerry Chapman

Bob Hanner

Hal Haddock (Vice Chair)

John Heath

Huddy Hudgens

Gary Leddon

Jerry Lee

Chuck Lingle

George McIntosh

T.E. Moye

Mike Newberry

Richard Royal (Chair)

Steve Singletary

Howard Small

Steve Sykes

Jimmy Webb

**Council Members Not In Attendance**

John Bulloch (Ex-Officio)

Dean Burke

Jimmy Champion

Terry Clark

Josh Herring

Chris Hobby

Doyle Medders

Rick Moss

Greg Murray

Jim Quinn

**Planning Consultants**

Robert Osborne, B&V

Kristin Rowles, GWPPC

Steve Simpson, B&V

Doug Wilson, GWPPC

**Georgia EPD**

Tim Cash, Assistant Branch Chief

Bill Morris

Tommy Rumph

**Georgia State Agencies**

Antonio Fleming, Georgia Soil and  
Water Conservation Service

Bert Earley, GA Forestry Commission

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LOWER FLINT-OCHLOCKONEE  
WATER COUNCIL

Meeting #6, June 15, 2010

Local Elected Official Comment Sign-In

Name


Public Comment Sign-In

Name

<i>Newton Cloud Spring Creek Watershed Partnership</i>
<i>Guzanne Brandt Keep Decatur County Beautiful</i>
<i>David Reckford Flint River Basin Partnership</i>



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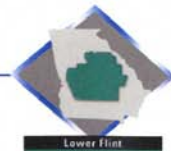


LOWER FLINT-OCHLOCKONEE  
 WATER COUNCIL

Meeting #6, June 15, 2010  
 Public Sign-In

Name	Organization
RYAN LEE	CANDIDATE HOUSE DIST 173
LaDon Collier	
Linton Thompson	Georgia Organic Solutions
Jimmie Loring	MAYOR Whigham
Kathleen Rugeley	UGA - Jones Ctr.
Jeffrey Harvey	GA FARM Bureau
Russel Carlson	Lt. Gov. Office
Jeff Nunnery	GFB
SARAH KESEY	S.W. GEORGIA R.C.
Janey Crozier	Congressman Bishop
Antonio Fleming	GASWCC
Newton Cloud	Spring Creek Watershed Partnership
Bert Earley	Georgia Forestry Commission
Mitch Williams	Georgia Pacific
Frank Yancey	NRCS/Golden Triangle RCD
David Burke	Oil-Dri Corp

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# **Lower Flint-Ochlockonee Water Council Regional Water Development and Conservation Plan Table of Contents**

**EXECUTIVE SUMMARY** {Target = 5 pages; Current Page Count = N/A}

**1. INTRODUCTION** {Target = 3 pages; Current Page Count = 1}

**1.1. The Significance of Water Resources in Georgia**

**1.2. Statewide Priorities**

**1.3. State and Regional Water Planning Process**

**1.4. The Lower Flint Regional Vision and Goals**

**2. THE LOWER FLINT-OCHLOCKONEE WATER PLANNING REGION**

{Target = 4 pages; Current Page Count = 4}

**2.1. History and Geography**

**2.2. Characteristics of Region**

**2.3. Local Policy Context**

**3. WATER RESOURCES OF THE LOWER FLINT-OCHLOCKONEE REGION**

{Target = 5 pages; Current Page Count = 8}

**3.1. Major Water Use in Region**

**3.2. Resource Assessments**

3.2.1. Surface Water Availability

3.2.2. Groundwater Availability

3.2.3. Surface Water Quality

**3.3. Ecosystem Conditions and Instream Uses**

3.3.1. 303(d) List and TMDLs

3.3.2. Wildlife and Fisheries Resources

3.3.3. Recreational Uses

**4. FORECASTING FUTURE WATER RESOURCE NEEDS** {Target = 6 pages;

Current Page Count = 4}

**4.1. Municipal Forecasts**

- 4.1.1. Population Projections
- 4.1.2. Municipal Water Forecasts
- 4.1.3. Municipal Wastewater Forecasts

#### **4.2. Industrial Forecasts**

- 4.2.1. Employment Projections
- 4.2.2. Industrial Water Forecasts
- 4.2.3. Industrial Wastewater Forecasts

#### **4.3. Agricultural Forecasts**

#### **4.4. Thermoelectric Power Production Water Demand Forecasts**

#### **4.5. Total Water Demand Forecasts**

### **5. COMPARISON OF AVAILABLE WATER RESOURCE CAPACITIES AND FUTURE NEEDS** {Target = 3 pages; Current Page Count = 4}

#### **5.1. Surface Water Availability Comparisons**

#### **5.2. Groundwater Availability Comparisons**

#### **5.3. Surface Water Quality Comparisons**

### **6. ADDRESSING WATER NEEDS AND REGIONAL GOALS** {6 pages}

Describes the selection of water management practices that address any gaps identified during the resource comparisons with a focus on sustainable water use.

#### **6.1. Identifying Water Management Practices**

- Existing Plans and Practices
- Selection of Management Practices and Evaluation Criteria
- Coordination Between Regions
- \* Challenges and uncertainties in water planning – includes proposals for addressing data and information needs (14.7.c.xi).

#### **6.2. Selected Water Management Practices for the Lower Flint-Ochlockonee Region**

- 6.2.1. Near-term Water Management Practices
- 6.2.2. Long-term Water Management Practices
- 6.2.3. Interregional Implications of Selected Management Practices

### **6.3. Fiscal Implications**

## **7. IMPLEMENTING WATER MANAGEMENT PRACTICES {6 pages}**

Summary of the water management practices and long-term implementation within the water planning region.

### **7.1. Implementation Responsibility**

Overall summary of permittees and GEFA grant/loan recipients who are responsible for implementation of water management practices.

### **7.2. Implementation Schedules**

Summary of the water management practices, timeframe for implementation (near-term and long-term), areas of the water planning region where the water management practice applies, and the specific permittees responsible for implementation.

### **7.3. Alignment with Other Plans**

Overall comparison of consistencies and differences between the Regional Water Plan and other regional and local plans (14.7.c.x).

### **7.4. Recommendations to State**

Recommendations for actions by the State that support implementation of the Regional Water Plan (14.7.c.xiii). Recommendations may include those related to future data collection (14.7.c.xi).

## **8. MONITORING AND REPORTING PROGRESS {2 pages}**

### **8.1. TBD Benchmarks (14.7.c.xii)**

### **8.2. TBD**

## **LIST OF FIGURES AND TABLES**

Figure 2-1: Lower Flint-Ochlockonee Water Planning Region

Figure 3-1: Water Supply by Source Type

Figure 3-2: Surface Water Use by Category

Figure 3-3: Groundwater Use by Category

Figure 3-4: Wastewater Treatment by Category

Figure 3-5: Available Assimilative Capacity Results from Dissolved Oxygen Assessment: Current Conditions

Figure: 4-1: Water users in 2010 and 2050 (AAD-MGD)

Figure 4-2: Total Water and Wastewater Forecasts (AAD-MGD)

Figure 5-1: Surface Water Availability Comparison

Figure 5-2: Groundwater Availability Comparison

Figure 5-3: Surface Water Quality (Assimilative Capacity) Comparison

Table 3-1: Summary Results  
Table 3-2: Groundwater Current Results

**LIST OF APPENDICES**

Appendix X: Livestock Water Use Estimates  
Appendix X: Groundwater Availability Resource Assessment – Map of Prioritized Aquifers  
Appendix X: 303(d)/305(b) List of Streams in the Lower Flint-Ochlockonee Water Planning Region  
Appendix X: Section 4 (OPB Population Projections, Per Capita Water Use, Municipal Forecasts, Wastewater Forecasts, Industrial Water/Wastewater Forecasts)  
Appendix X: Agricultural Forecast Results  
Appendix X: Modeling Assumptions for Diversions in the Upper Flint Basin

To: Lower Flint-Ochlockonee Water Planning Council

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

cc: Tim Cash, Assistant Branch Chief, GA EPD

Subject: Meeting Summary: Lower Flint-Ochlockonee Water Quantity Committee Meeting June 11, 2010

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**Attending:** Jimmy Webb, Richard Royal, Hal Haddock, Howard Small, Mike Newberry, T.E. Moye, Gary Leddon, Jimmy Champion, Chris Hobby, Mark Masters (GWPPC), Tim Cash (EPD), Bill Morris (EPD), Steve Simpson (B&V), Kristin Rowles (GWPPC), Mike Friedlander (B&V), Wei Zeng (EPD)

1. The meeting started with Richard Royal reporting on a meeting on June 7 between EPD Director Alan Barnes and Water Council chairs and vice chairs. He said Director Barnes is very reasonable, and with respect to identified gaps, Barnes asked that the councils apply common sense. He said that some gaps will never be closed. Richard noted that he had asked Director Barnes to a meeting in southwest GA on August 6.
2. Next, Steve Simpson walked the Council through the results from the recent surface water availability assessment model runs. These results were sent to the committee in advance of the meeting. The recent model runs include two scenarios: (1) revised current conditions, which reflect updated agricultural numbers, corrections to some specific input, new Alabama use numbers, and revised thermoelectric numbers for some nodes; and (2) 2050 forecasted conditions with no new management practices.

The tables below summarize the results for the Flint basin nodes.

Table 1. Summary of Montezuma Node

	Length of Shortfall(% of time)	Average Shortfall (cfs)	Long-term Average Flow (cfs)	Maximum Shortfall (cfs)	Corresponding Flow Regime (cfs)
Current	3%	1 0.6 mgd	3391 2192 mgd	94 61 mgd	623 403 mgd
2050	2%	1 0.6 mgd	3429 2217 mgd	1 0.6 mgd	593 383 mgd

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Table 2. Summary of Bainbridge Node

	Length of Shortfall(% of time)	Average Shortfall (cfs)	Long-term Average Flow (cfs)	Maximum Shortfall (cfs)	Corresponding Flow Regime (cfs)
Current	13%	361 233 mgd	7880 5094 mgd	1376 890 mgd	2506 1620 mgd
2050	11%	316 204 mgd	7981 5160 mgd	1215 785 mgd	2506 1620 mgd

The committee also reviewed Chattahoochee Basin results, which generally indicate that storage capacity can be used to avoid the development of shortfalls in flow.

Table 3. Summary of gap at Whitesburg Node

	Demand Shortage (cfs)	At-site Flow Requirement Shortage (cfs)	Minimum Reservoir Storage (acre-feet)	Minimum Percentage Reservoir Storage	Basin-wide Flow Requirement Shortage
Current	0	0	539,960	50%	None
2050	0	0	471,867	43%	None

Table 4. Summary of gap at Columbus Node

	Demand Shortage (cfs)	At-site Flow Requirement Shortage (cfs)	Minimum Reservoir Storage (acre-feet)	Minimum Percentage Reservoir Storage	Basin-wide Flow Requirement Shortage
Current	0	0	14,310	5%	None
2050	0	0	14,269	5%	None

Table 5. Summary of gap at Columbia Node

	Demand Shortage (cfs)	At-site Flow Requirement Shortage (cfs)	Minimum Reservoir Storage (acre-feet)	Minimum Percentage Reservoir Storage	Basin-wide Flow Requirement Shortage
Current	0	0	30,816	13%	None
2050	0	0	64,924	27%	None

Table 6. Summary of gap at Jim Woodruff Node

	Demand Shortage (cfs)	At-site Flow Requirement Shortage (cfs)	Minimum Composite Storage (acre-feet)	Minimum Percentage Composite Storage	Basin-wide Flow Requirement Shortage
Current	0	0	585,086 at Buford, WP, & WFG	36% at Buford, WP, & WFG	None
2050	0	0	551,060 at Buford, WP, & WFG	34% at Buford, WP, & WFG	None

Richard Royal asked about the inclusion of modeled diversion for reservoirs in the upper basin and whether that assumption was made on a year-round basis. Steve said that it was. Richard said that these conditions were not actually observed but just modeled. He said he did not understand why the assumed diversion was included in the model. Steve said the purpose was to look at what is possible given existing permits for those reservoirs.

Jimmy Webb asked if the future results included improvements in agricultural conservation and if perhaps that helped to explain the improvement in the shortfall at Bainbridge. Steve said that the 2050 results were based on Hook’s forecasts, which actually indicate a small increase for agricultural water use. He said that the 2050 forecasts however were for less severe drought conditions than those used in the current conditions model run and that might explain some of the difference.

Hal Haddock noted that the Chattahoochee side is subject to control by the Corps of Engineers, that storage in the Chattahoochee helps to address shortfalls there, and that the Flint does not have that kind of storage. He said that we need to address the ACF as a system. Wei Zeng (EPD) noted that it is possible that we could have storage in the future on the Flint side and that was something to consider.

Jimmy Webb asked Wei Zeng if he thought it was possible to close the Bainbridge gap. Wei answered that it depended upon the practices used.

Jimmy Webb said that he is concerned about the perception of the gap at Bainbridge by others, including those in neighboring states. Wei Zeng said that the model does not take a position but just provides information.

Jimmy Webb and Chris Hobby noted that they were confused as to whether the gap at Bainbridge needed to be fully closed. Richard Royal said that Director Barnes had indicated that the council needed to work toward reducing the gap. Jimmy Webb said that the council should do what it can to reduce the gap.

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Tim Cash said that while there are still questions about the model that may keep us from knowing the size of the gap precisely, the methods, data, and people involved in developing the model are good, and we know that there is a significant gap in the Flint. He said that we cannot wait to act on this gap. With respect to Jimmy's concern about perception of the gap, he said that what we have is not final, but that there is a need to move forward in the process and if we allow ourselves to wait until and not release results, we will not be able to move forward.

Jimmy Webb said that he believed that gaps can occur naturally in southwest Georgia and that conditions prior to irrigation still resulted in very low flows and dry creeks. Wei Zeng said that the model adjusts for natural conditions and gaps identified in the model are not caused by natural conditions.

Steve Simpson noted that some Middle Chattahoochee council have an opposite concern to Jimmy's; they are concerned of the perception of no gap in the Chattahoochee because they believe that the great fluctuations in lake levels in the model result in a gap in the ability of the system to support recreation.

3. Next, Kristin asked how the committee would like to see the results presented to the council next week. Jimmy Webb noted the importance of focusing on how we can best work on the gap. He said that he is not impressed by the model, but that it's the best that we've got and we need to show that we're working on the gap. Kristin noted that the council meeting agenda included a focus on management practices selection to address the gap.
4. Next, the committee discussed management practices. Kristin said that at the council meeting, the members would review a water conservation practices information prepared by EPD (and included in the pre-meeting packet). She also referred the committee to the strawman document on management practices that was sent to the committee and asked for comments.

Richard Royal said that it's ok to lay out some options at this time, but he doesn't think we are ready to select practices until we know what we need to do. Jimmy Webb said that potential water savings can only be estimated.

T.E. Moye said he would like to include the replacement of surface water withdrawal with groundwater wells where possible as a management practice to reduce impact on in-stream flows. Jimmy Webb said that he did not think it would be possible to get the yields he would need from groundwater to support his irrigation operation (10,000 gal./minute). He said that he does use a groundwater well with a yield of 400 gallons per minute to fill a smaller pond on his farm. He said that it would be possible to use groundwater as a substitute in some but not all areas.

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Jimmy Webb said that technological change would make a big difference by 2050, including innovations like drought resistant plants.

Kristin asked if the members could identify any practices in the strawman that should not be considered or that should be a top priority. Richard Royal said that irrigation cessation should be off the table.

Richard asked for more information on reservoirs, including estimates of the capacity needed to address gaps in the Flint. ***Kristin said that this could be requested as a future model run.***

5. The committee concluded the meeting with a discussion of the need to coordinate with other councils. The chairs and vice chairs of the Upper Flint, Middle Chattahoochee, and Lower Flint-Ochlockonee met in early May. Richard Royal said that the meeting started an important dialogue. He noted that the Lower Flint-Ochlockonee and the Upper Flint Councils have a lot in common and that all three councils recognize the need to work together.
6. The following were identified as follow-up items:
  - a. Request model run to estimate storage needs to address Flint shortfalls. (Planning Contractor)

To: Lower Flint-Ochlockonee Water Planning Council

From: Kristin Rowles, GWPPC

cc: Tim Cash, Assistant Branch Chief, GA EPD

Subject: Meeting Summary: Lower Flint-Ochlockonee Water Quantity Committee Meeting June 15, 2010

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This committee meeting was a break-out group at the June 15<sup>th</sup> meeting of the Lower Flint-Ochlockonee Water Council. Committee members present included: Jimmy Webb, Richard Royal, Jimmy Champion, Hal Haddock, Howard Small, Mike Newberry, T.E. Moye, Gary Leddon, Chris Hobby, Steve Bailey, and John Bridges.

First, Jimmy Webb asked about the guidance for Tier 4 practices referred to in the conservation slides during the council meeting. Kristin said that she would get more details on this guidance for the committee.

Next, the committee expressed concern about what EPD expected in the regional plan. They expressed concern that EPD would develop their own plan for the region. This concern was based in part on EPD Director Allen Barnes' statement to the chairs that EPD would prepare a plan if the council could not submit a plan that EPD could approve. This is the how the process is defined. The committee members referred to the Flint Plan process for the plan adopted in 2006. Several committee members that were on the advisory council for the 2006 plan said that the plan was changed by EPD at the end of the process and indicated the council's approval although the council did not approve of the changes made late in the process. Chairman Royal acknowledged this concern and reminded the group that we would be documenting the council's decisions in this process. He also stated that the council could present its plan to the public at the end of the process, and he also said he felt that Director Barnes would be fair with the council.

Kristin Rowles asked the committee to work through the strawman management practices document that they had started to discuss in the committee's previous meeting (June 11). She asked the committee to identify: (1) practices that were missing from the document, (2) practices in the document that should be "off the table", and (3) conditions and comments on practices in the document. By providing this input, Kristin can then revise the document for consideration as a base list for inclusion in the first draft of the regional water plan.

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With regard to the Demand Management practices in the strawman, the following points were made:

- Remove reference to drag socks. They are not used in Georgia.
- Irrigation suspension should only be used when the Flint River Drought Protection Act is implemented and funded. Keep irrigation suspension in the toolbox, but under these conditions.
- Irrigation suspension cost \$135 per acre in 2002. It would probably cost \$250-500 per acre at this time.
- Add reference to Variable Rate Irrigation (VRI) as an agricultural conservation practice.
- Irrigation Retirement should not a recommended practice. Take it off the table. It would cause great harm to the regional economy.
- Add a section on new agricultural technology, which is somewhat uncertain as to specific advances that will be made, but which can be anticipated to save water in the future.
- Add the following as a management practice: no net gain in permits affecting surface water flows. Hold current level of permitted use at status quo.
- Add reference to new Water Stewardship Act provisions regarding unused and inactive agricultural permits.
- The group discussed possible quantification of agricultural permits extensively. Quantification would involve a process of setting a permit limit based on some definition of reasonable use. With quantified permits, the level of agricultural water use could be evaluated more precisely and could be managed more directly. It was noted that in Florida, limits are placed on use by crop each year. Some did not want this option on the table. Others felt it should not be taken out of the toolbox at this time. It was noted that much better information is needed from the metering program before this can be considered. It was also noted that knowing in advance (pre-planting) what kind of limits would be in place during a growing season is critical. At that time, modifications can be made to planting plans. It was suggested that a local district be considered if this approach is used.

With respect to Supply and Flow Augmentation practices, the following points were made:

- Replacement of surface water withdrawals with groundwater withdrawals should be a management practice, but it should be supported with incentives.
- If a surface water permittee converts to a groundwater withdrawal, as a management practice to protect flows, it was noted that they should be able to maintain their status with respect to LIFO as they had prior to conversion. New groundwater permits are interruptible, and the committee felt that upon this type of conversion, the grandfathered conditions should be transferred so that the user could maintain their prior status.

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- Augmenting surface water flow with groundwater requires more study. It is expected that a significant amount of water would be lost rather than contribute to flows.
- Aquifer Storage and Recovery (ASR) could be used to support a new user, such as a new industry. It's a practice that should be in the toolbox in order to attract industry in the future, but it probably cannot be substantial enough to augment flows.
- Farm ponds should be in the toolbox.
- Inter-basin transfer should be in the toolbox.
- It was noted that an estimate of storage needed to close the gaps would be provided by GA EPD for the next meeting. The group discussed the expected opposition to a reservoir in the Flint Basin.

The date for the next meeting will be set when the schedule for the results on the storage estimates is known. The next meeting will be in-person at Jimmy Webb's barn. Kristin will prepare a revised version of the strawman for that meeting. It is expected that the meeting will be in early August (not Aug. 8 or 9 based on input from the committee).

To: Lower Flint-Ochlockonee Water Planning Council

From: Kristin Rowles, GWPPC

cc: Tim Cash, Assistant Branch Chief, GA EPD

Subject: Meeting Summary: Lower Flint-Ochlockonee Water Quantity Committee Meeting August 16, 2010

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This committee meeting was held at the Georgia Water Planning and Policy Center in Albany, GA on August 16, 2010 at 10am. The following committee members were present at the meeting: Jimmy Webb, Jimmy Champion, Hal Haddock, Howard Small, Gary Leddon, Steve Bailey, George McIntosh, Chuck Lingle, and Greg Murray. Also attending were Kristin Rowles (GWPPC), Steve Simpson (B&V), Tim Cash (GAEPD), Doug Wilson (GWPPC), and Mark Masters (GWPPC). Wei Zeng (GAEPD) joined the meeting by phone during the first part of the meeting.

First, Jimmy Webb and Hal Haddock reported on an August 6 meeting with GAEPD Director Allen Barnes. Both Webb and Haddock expressed concern about the discussion with the Director about closing the surface water availability gap at Bainbridge. While the Director noted that it might not be possible to completely close the gap, the council members in attendance were concerned that GAEPD and the Council might disagree about the extent to which it is possible to close the gap identified in the modeling results.

Next, Kristin told the committee about an upcoming meeting of the Chairs and Vice Chairs of the Upper Flint, Lower Flint-Ochlockonee, and Middle Chattahoochee councils on September 3.

Next, Kristin reviewed for the committee the results of the revised current and future assessments and the storage model run. Wei Zeng noted that revisions to the current and future conditions model runs reflected changed in the agricultural demand inputs and to some municipal water use inputs. He also noted that there was a systematic adjustment to the return rates to more closely match expected returns in a dry year; the previous return estimates were based on a wet year (2005).

It was noted that in the GAEPD technical memo dated 7/16/2010, there appeared to be an error in Table 1 in the Maximum Shortfall column for Montezuma (61 cfs should read 0.6 cfs).

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For the storage model run, Kristin referred to the 7/20/2010 technical memo from GAEPD. The estimated storage needed to offset flow shortfalls at Bainbridge is 162,223 acre-feet. Kristin noted that this amount only accounts for the flow shortfall and does not account for losses to evaporation or seepage or provide for other uses. Wei Zeng noted that the storage model run assumed no changes in current US Army Corps of Engineers operations on the Chattahoochee, and as a result, the storage added in the Bainbridge node in the model run does not significantly change the relative contributions of the Flint and Chattahoochee at Woodruff Dam. Wei noted that to realize benefits in terms of flow contributions downstream, beyond addressing the flow shortfall at Bainbridge, there would need to be changes in the operating plan, primarily with respect to power generation operations, on the Chattahoochee.

Steve Bailey noted his concerns about storage releases in the Chattahoochee Basin for flood control from November to March of each year. He believes that these releases adversely affect our ability to provide for environmental flows.

Wei Zeng noted that in late 2009, existing ACF reservoirs were full, and there was no capacity to store additional water.

The committee had no further questions about the model results and thanked Wei Zeng for his participation in the meeting.

Next, the committee reviewed the “Strawman” Management Practices document. Kristin reminded them it is still a draft document, but that today, the committee should prepare the document for presentation and discussion at the September meeting of the full council. The document was shared with the committee with “mark-up” notations so that they could see where changes had been made since the last version.

The following is a summary of the committee’s comments and decisions on changes to the draft document:

- Add Benchmark from Water Conservation Implementation Plan regarding agricultural water conservation.
- Modify sections on permit quantification and irrigation institutions to recommend evaluation.
- Add recommendation to evaluate storage options in the Flint.
- Clarify that Flint River Basin Plan permitting requirements apply only to post-2006 agricultural withdrawal permits.
- Remove the section on agricultural withdrawal permits.
- In the section on conversion of surface water to groundwater withdrawals, clarify that permit seniority should be maintained upon conversion.

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It was noted that model run results with management practices, both with and without storage, might be helpful to the committee.

At the conclusion of the strawman discussion, Kristin asked the committee about the geographic scope of their recommendations. She noted that the committee's discussions were usually focused on the Flint, but that similar shortfalls in surface water flows occurred in the Ochlockonee. The committee has reviewed the Ochlockonee results in the past. Similarly, Spring Creek is within the Council's region, but its condition is not captured in the results at the Bainbridge node. She asked the committee whether they intended to apply their recommendations throughout the region (beyond the Bainbridge node). The committee agreed that this was their intent.

Last, Kristin referred the committee to the slide presentation from Dr. Aris Georgakakos (GA Tech) presented to a committee of the Middle Chattahoochee Water Council. The presentation concerned evaluation of changes to the operating plan in the Chattahoochee in order to maintain West Point lake levels more consistently for recreation. The analysis demonstrated how this objective could be attained without significant impacts on downstream flows. The Middle Chattahoochee Council will be considering this material and possibly making related recommendations to the US Army Corps of Engineers regarding its Chattahoochee operations. At that time, the Middle Chattahoochee Council might seek support from the Flint councils for their proposal.

Kristin will revise the Strawman document and assist Jimmy Webb in preparing a presentation of the document for the September Council meeting. The meeting was adjourned.

*{NOTE: This is a draft document that reflects current committee discussion of Water Quantity Management Practices, to be discussed at the Council's September meeting.}*

## **6. ADDRESSING WATER NEEDS AND REGIONAL GOALS**

### **6.1 Identifying Water Management Practices**

### **6.2 Selected Water Management Practices for the Lower Flint-Ochlockonee Water Planning Region**

#### **6.2.1 Demand Management**

##### **6.2.1.1 Municipal and Industrial Water Conservation**

Guidance given to the water council by GA EPD on water conservation divided conservation practices into four tiers:

Tier ONE: Basic water conservation activities and practices that are currently required or general mandates that will certainly be included in upcoming amended rules.

Tier TWO: Conservation activities and practices that will be addressed in upcoming amended rules, but for which detailed requirements are uncertain.

Tier THREE: Basic water conservation practices for all water users that are not addressed in current or upcoming amended rules.

Tier FOUR: Additional water conservation practices that can be considered if a gap exists between current or future water supplies and the demands for the region.

***The Council recommends that non-farm water users in the region implement Tier One and Tier Two practices.*** These include the following:

- Submittal of water conservation plans by withdrawal permittees. Plans should include efforts to recue unaccounted-for water, implementation of water conservation programs, and long-range planning (391-3-6-.07 and 391-3-2-.04(11)).
- Limit landscape irrigation to the hours of 4pm to 10am, as required by Water Stewardship Act of 2010 (with exemptions) (12-5-7).
- Implement even-odd watering restrictions for non-irrigation outdoor water uses (391-3-30).
- Implement public car wash facility regulations, which require use of best management practices in lieu of above outdoor water use restrictions (391-31).
- Demonstrate progress toward water conservation goals or water efficiency standards (State Water Plan, Section 8).
- Submit annual reports on water use that report on water conservation activities and progress toward goals.
- Meet minimum standards and implement best practices identified by the International Water Association for drinking water providers (Water Stewardship Act, Section 3).

- Amend local building codes to require sub-metering in multi-tenant buildings, installation of high efficiency plumbing fixtures (toilets < 1.28 gallons per flush, urinals less than .5 gallons per flush, bathroom faucets less than 1.5 gallons per minute, kitchen faucets less than 2.0 gallons per minutes) in all new construction (after July 1, 2012), and installation of high-efficiency cooling towers in new construction (Water Stewardship Act, Sections 7, 8, and 9).

Regarding the demonstration of progress in water conservation, a permittee will have options to demonstrate progress to the 25 water conservation goals identified in the Water Conservation Implementation Plan or in the implementation of the 12 practices listed for municipal water providers or the nine practices listed for industrial water users in the Statewide Water Plan (Section 8).<sup>1</sup>

*The Council supports the use of Tier 3 and 4 practices through incentive programs in the region.*

#### **6.2.1.2 Agricultural Water Conservation**

Irrigators in the region use a mix of surface and ground water which have varying degrees of impact on streamflow depending on location, source and time of the year. The amount of water that can be saved via conservation depends on the suite of practices implemented. As a point of reference, assume a field irrigated with a high pressure, impact sprinkler center pivot. These systems were common in the early days of irrigation and are assumed to be 70-80% efficient. With a full conservation package conversion to low pressure and full drop nozzles, efficiency is estimated to increase to 90-95%. The efficiency of an irrigation system is defined as the volume of irrigation water beneficially used/volume of irrigation water applied \* 100. Efficiency estimates assume proper irrigation system design and management.<sup>2</sup> During a dry August, these efficiency upgrades could save between 0.00027 and 0.00067 cfs per acre for surface water irrigation and between 0.00013 and 0.00032 cfs per acre for ground water.<sup>3</sup> No concrete data exists on average age or efficiency levels of irrigation systems in Georgia. However, anecdotal evidence from regional irrigation suppliers and county extension agents suggests nearly half of the systems in use today already employ conservation measures in the form of low pressure, partial drop nozzles and end-gun shut-offs. Additionally, the Water Conservation Implementation Plan adopted by Georgia EPD in March 2010

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<sup>1</sup> See Appendix XX.

<sup>2</sup> Vickers, A. 2001. *Handbook of water use and conservation: homes, landscapes, businesses, industries, farms*. WaterPlow Press. pg. 333.

<sup>3</sup> The impact of groundwater withdrawals on surface water flows is estimated at 40% for all withdrawals. The Flint system model used by USGS and Dr. Wei Zeng uses a more precise estimation method that estimates the impact factor based on specific location of the withdrawal. The 40% factor is used here because the location specific factors were not available to us. 40% is the average impact calculated from summary information on groundwater withdrawals and groundwater impact inputs to the model presented by Dr. Zeng at the November 2009 Lower Flint-Ochlockonee Regional Water Council meeting.

provides a list of voluntary “Best Practices” to assist farmers in efficient irrigation management.<sup>4</sup>

If additional upgrades in conservation equipment could attain the savings estimated above on 50% of the acres (assuming that half of the systems already employ this equipment), then the following in-stream flow improvements could be attained at Bainbridge with 100% implementation of these measures on agricultural acreage<sup>5</sup> that affects the Bainbridge node (including agricultural acreage in the Upper Flint, Lower Flint-Ochlockonee, and Middle Chattahoochee region):

Surface Water:

Lower Bound Estimate:

$0.00027 \text{ cfs per acre} \times 141,791 \text{ acres} \times 50\% = 19.1 \text{ cfs}$

Upper Bound Estimate:

$0.00067 \text{ cfs per acre} \times 141,791 \text{ acres} \times 50\% = 47.5 \text{ cfs}$

Groundwater:

Lower Bound Estimate:

$0.00013 \text{ cfs per acre} \times 211,880 \text{ acres} \times 50\% = 13.8 \text{ cfs}$

Upper Bound Estimate:

$0.00032 \text{ cfs per acre} \times 211,880 \text{ acres}^6 \times 50\% = 33.9 \text{ cfs}$

Assumptions:

- Current implementation is 50%.
- Implementation increases to 100%.
- Impact of groundwater pumping on surface water is 40%. (See note 7.)

The distribution of agricultural acreage affecting the Bainbridge node is illustrated in Figure 6-1.<sup>7</sup>

***For agricultural water users, the Council supports the implementation of Tier 1 and 2 practices.*** These include:

- Implementation of conservation requirements under the Flint River Basin Plan (2006). [These requirements apply to all permits issues after March 2006 for](#)

<sup>4</sup> Georgia Department of Natural Resources Environmental Protection Division. *Georgia's Water Conservation Implementation Plan*. March 2010. pg. 46-53.

<sup>5</sup> Agricultural acreage affecting the Bainbridge node were provided in summary materials on the surface water availability resource assessment presented at November 2009 meetings of the regional water councils and at January 2010 joint regional water council meetings on the preliminary resource assessment results.

<sup>6</sup> Agricultural acreage affecting the Bainbridge node via groundwater withdrawals includes only acres physically located within the boundaries of the node. It is possible that some acres beyond the node affect the flows at Bainbridge, but this effect cannot be determined from available information, and the method used herein should provide a good estimate.

<sup>7</sup> Note that the map is based on subarea 4 withdrawals. Model inputs are based on a slightly different database, but for illustrative purposes, the map is a good approximation of the distribution of groundwater withdrawals in the region.

agricultural withdrawals using surface water or the Floridan aquifer. The requirements include the following (DNR Rules 391-3-28):

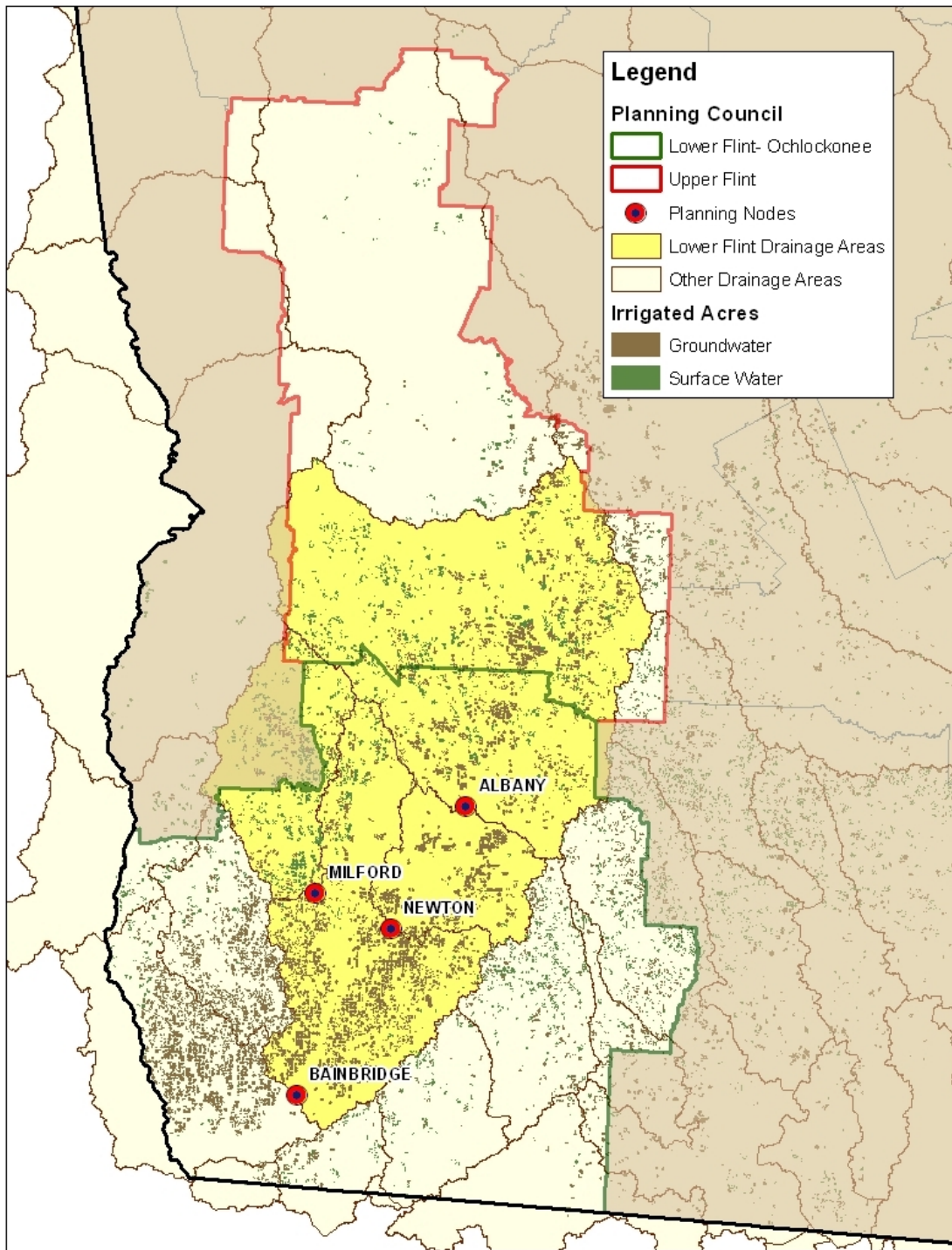
- End-gun shut off switches to prevent irrigation of non-cropped areas by center pivot systems,
  - Leak prevention and repair plans,
  - Pump-safety shutdown systems installed on center pivots,
  - Rain-gauge shut-off switches on travelers, solid set, or drip systems (these devices are not yet available as “off the shelf” items for agricultural irrigation purposes),
  - Low-flow protection requirements for streams with sensitive aquatic species (including a complete cessation of irrigation when surface flow falls below 25% average annual discharge in Ichawaynochaway and Spring Creek sub-basins or below 7Q10 in streams in the rest of the basin.)
- Compliance with forthcoming requirements (established by Water Stewardship Act of 2010) regarding active, inactive, and unused permits.

*Additionally, the Council supports implementation beyond Tier 2 through incentive programs, especially including cost-share funding available through the Soil and Water Conservation Districts and the Georgia Soil and Water Conservation Commission.* A variety of conservation practices is available to farmers, and in addition to the practices discussed above, some practices such as Variable Rate Irrigation, conservation tillage, irrigation scheduling, and drip irrigation are used by some agricultural operations in the region. The choice of practices is usually driven in large part by site-specific factors. Due to the variety of practices that a farmer may use and how the effectiveness of practices will vary based on field conditions and other factors, the Council prefers an approach to additional agricultural conservation that emphasizes flexibility and incentives. Therefore, the Council ~~would endorse~~ the following benchmark from the Georgia Water Conservation Implementation Plan as an objective for agricultural water conservation in the region:

By January 2012, all new, and by January 2020, all existing agricultural irrigation systems should have application efficiencies of 80% or greater.

A focus on a desired performance outcome will support increased conservation while allowing farmers to select what practices and approach will work best for their own operations. Practices that farmers can use to attain this benchmark include those discussed above (e.g., low-pressure/full drop nozzle systems, Variable Rate Irrigation, conservation tillage, irrigation scheduling, drip irrigation), as well as other conservation practices not listed here that best suit an individual farmer’s operation.

Figure 6-1: Irrigated Agricultural Acreage Affecting the Bainbridge Node



### 6.2.1.3 Agricultural Irrigation Suspension

In order to reduce projected shortfalls in flow on the Flint, at least some, if not a substantial amount, of irrigation suspension during dry years may be necessary. The amount will depend upon the implementation of augmentation and storage practices to provide water during dry periods.

Currently, the Flint River Drought Protection Act<sup>8</sup> is the only means of reducing irrigation demand in this part of the state, but it provides no mechanism for voluntary or involuntary management after a March 1 drought declaration deadline. Involuntary suspension could be enacted at anytime by the EPD Director (based on the Director's emergency powers), but it should be noted that any post-planting suspension will have much greater economic implications than pre-planting suspension. The March 1 deadline is intended to try to provide for a pre-planting assessment of the need for irrigation suspension in a coming growing season. However, it should be noted that some planting is already underway by March 1.

The following estimates the average amount of streamflow reduction from an acre of irrigated land in August (the month when agriculture water demand is highest) during a drought year.

Surface water – 0.0027 cfs  
Ground water – 0.0013 cfs<sup>9</sup>

The tables below (Tables 6-1 and 6-2) use these estimates to project potential benefits to streamflow at Bainbridge given various levels of irrigation suspension. Given that the impact estimates are based on assumption of dry-year, August (high agricultural demand) conditions, the projections in the tables are high end estimates of the potential benefit of irrigation suspension.

The Lower Flint-Ochlockonee Water Planning Council recognizes that in some years irrigation suspension may be needed in order to sustain in-stream flows in particularly dry periods. The Council makes the following recommendation regarding the use of irrigation suspension:

***Irrigation suspension should only be used through implementation of the Flint River Drought Protection Act, and irrigation suspension should only be pursued by voluntary means, which requires adequate funding to support implementation of the Act.***

<sup>8</sup> O.C.G.A. 12-5-540

<sup>9</sup> Assumptions used to calculate streamflow impact are consistent with those presented by Dr. Wei Zeng at the Lower Flint-Ochlockonee Council Meeting 4. Average use numbers for August, 1.90 acre inches for surface water and 2.25 acre inches for ground water, are consistent with data published by Dr. Jim Hook (UGA, Ag Water Pumping – 2005). It was assumed that only ground water pumping from the Upper Floridan aquifer within Sub Area 4 of the Dougherty Plain had any impact on streamflow. The percentage impact to the stream from ground water pumping varies across the region but was assumed to be 40% for this calculation.

Table 6-1: Surface Water Irrigation Suspension Impacts on Bainbridge Flows, Dry-Year August Estimates

% of Acreage Suspended	Acres Affecting Bainbridge Flows (in LFO & UF regions)	Estimated Impact per Acre Suspended (cfs/acre)	Flow Improvement Estimate (cfs)
10%	141,791	0.0027	38.3
20%	141,791	0.0027	76.6
25%	141,791	0.0027	95.7
50%	141,791	0.0027	191.4
75%	141,791	0.0027	287.1
100%	141,791	0.0027	382.8

Table 6-2: Groundwater Irrigation Suspension Impacts on Bainbridge Flows, Dry-Year August Estimates

% of Acreage Suspended	Acres Affecting Bainbridge Flows (in LFO & UF regions)	Estimated Impact per Acre Suspended (cfs/acre)	Flow Improvement Estimate (cfs)
10%	211,880	0.0013	27.5
20%	211,880	0.0013	55.1
25%	211,880	0.0013	68.9
50%	211,880	0.0013	137.7
75%	211,880	0.0013	206.6
100%	211,880	0.0013	275.4

#### 6.2.1.4 New Agricultural Irrigation and Water Conservation Technology and Innovation

Over the past several decades, irrigation efficiency has greatly improved due to innovations in equipment and practices. This trend is expected to continue as economic, environmental, and regulatory pressures to reduce the use of water and other inputs drive further innovation. Genetic modification of plants to increase drought tolerance is expected to provide substantial benefits in the coming decades. At this time, specific innovations, timeframes, or expected water savings cannot be predicted. The Council believes, however, that water conservation and efficiency will continue to increase as these innovations are realized in commercial agriculture.

#### ~~6.2.1.5 Agricultural Water Withdrawal Permitting~~

~~To limit the expansion of existing withdrawals for agriculture, the Lower Flint-Ochlockonee Water Council suggests that GA EPD implement the following restriction on new agricultural withdrawal permits in the region:~~

- ~~• New permits should result in no net increase in consumptive use of surface water or groundwater in the region.~~

#### ~~6.2.1.6~~ 6.2.1.5 Discussion of Demand Management Practices for Agriculture

The benefit from comprehensive implementation of conservation equipment on irrigation systems to streamflow at Bainbridge is estimated to be between 32.9 and 81.4 cfs. This benefit estimate assumes a baseline level of implementation of 50% for both surface water and groundwater supplied systems.

The benefit to streamflow that could be attained with irrigation suspension is 658.2 cfs. This benefit estimate assumes 100% suspension of irrigation, which would be a severe policy measure, especially if implemented post-planting. The regional economic impact would be dramatic. Voluntary suspension using the Flint River Drought Protection Act would have very high public costs. Implementation of the FRDPA in 2001 and 2002 had costs of \$4.5 million and \$5.2 million, respectively. Less than 15% of irrigation was suspended at that time. Recent changes in the FRDPA are expected to increase costs due to new targeting provisions in the revised implementing rules, and as a result, the public costs of voluntary suspension will be substantially higher.<sup>10</sup> Involuntary suspension would create very high levels of financial hardship for agricultural producers and the regional economy. The economic impact of irrigation suspension, voluntary or involuntary, would extend far beyond agricultural producers and have a severe negative impact on the regional economy. The magnitude of this impact should not be understated; it would be devastating to the region.<sup>11</sup>

The management of agricultural demand by regulators is limited in Georgia by several policy factors. The legal questions surrounding the regulation of demand management are complex, as a result, in part, of unclear legal precedent on the application of the regulated riparianism doctrine in periods of scarcity. To date, in Georgia and other eastern states, incidents of scarcity have been limited relative to western states where the water rights doctrine is based on priority of rights and not riparianism. These issues are beyond the scope of this document, but handled elsewhere. Difficulty in management will also likely arise due to the complexity created by multiple layers of permit requirements for agricultural water users in the state. Addressing the need for simplification, while ensuring the maintenance of fairness and effectiveness, will be a difficult task in policy design. This issue is also beyond the scope of this document, but described in detail in the following report:

[http://h2opolicycenter.org/pdf\\_documents/water\\_workingpapers/WP2007-001\\_final.pdf](http://h2opolicycenter.org/pdf_documents/water_workingpapers/WP2007-001_final.pdf)

<sup>10</sup> Rule 391-3-28.05(a).

<sup>11</sup> Litigation over irrigation suspension at this scale might also be an expected outcome.

Perhaps the most direct factor limiting agricultural demand management, however, is the lack of quantification of agricultural withdrawal permits. Permits are written to the capacity of the installed pump with an indication of the acreage that can be irrigated by that pump. However, these permit limits are well above actual use. Quantification of permits would allow for more precise and fair demand management. At this time, agricultural demand could not be reduced by a stated amount or percentage because a regulatory baseline against which to measure reductions is unknown. Thus, agricultural demand can only be managed by suspending on a permit by permit basis, not a portion thereof.

Given the implementation of the agricultural water use metering programs, quantification of permits is now possible. It has been implemented in other states. While it does not directly reduce demand, it would support more direct management of agricultural demand in periods of scarcity. It should be noted that quantification is a difficult process to implement and would require additional investment to monitor, report, and document this information; a full discussion of possible methods and challenges is beyond the scope of this document. *The Council recognizes that future quantification of permits may have some value as a long-term management option and recommends study of the costs and benefits of agricultural water withdrawal permit quantification in Georgia as a potential management option for the future.*

Another tool that would facilitate agricultural demand management is the establishment of agricultural irrigation institutions, such as irrigation districts. These structures could be used by farmers to share resources and develop common supply infrastructure. They might also be used to manage water demand among multiple operations and provide for some flexibility in management. *The Council recommends evaluation of the costs and benefits of the establishment of agricultural irrigation institutions in Georgia as a potential management option for the future.*

## **6.2.2 Supply and Flow Augmentation**

Shortfalls in attaining flow targets can be addressed through supply and flow augmentation practices. The use of augmentation practices would offset the need for demand management. Many augmentation practices have been discussed conceptually for the region, but very few have been explored with respect to feasibility and effectiveness. The use of any of these practices would require substantial up-front research and evaluation. The practices discussed here are those considered most likely to be feasible, but without more extensive study, their effectiveness is uncertain, and estimates below reflect this uncertainty.

### **6.2.2.1 Streamflow augmentation via direct pumping from aquifers**

In dry periods, it is believed that streamflow might be augmented through direct pumping of groundwater into surface water streams. Several factors limit the potential use of this practice.

First, possible well yields are an important consideration. In the Piedmont, well yields are generally insufficient and unpredictable enough to dismiss direct pumping of wells as a viable streamflow augmentation alternative. In the Coastal Plain, well yields are more predictable and often prolific. Here, streamflow augmentation might be an option. A number of aquifers underlie the Coastal Plain at varying depths. Some are very near the surface (Floridan in the Dougherty Plain), and some are thousands of feet below land surface.

Next, water quality varies not just from aquifer to aquifer but from location to location in the same aquifer as does yield, specific capacity, and lithology (which determines construction technique). Therefore, it is impossible to make a generic statement about the feasibility of augmenting streamflow by direct pumping from an aquifer unless the location is narrowed down to a few square miles. The impacts of groundwater quality and temperature on surface water must be evaluated to ensure that quality as well as quantity outcomes are desirable.

If adequate well yields, water quality, and construction factors are favorable, benefits to streamflow from augmentation are possible. *A well yielding 1,000 gallons per minute would provide 2.23 cfs flow to the receiving stream.* A 1,000 gallon per minute well is a respectable yield for a Coastal Plain well. Clearly, many such wells would be needed to attain substantial levels of augmentation (e.g., approximately 45 such wells to augment flows by 100 cfs, without considering the impacts of uninterrupted pumping discussed below). The cost of such wells would depend on site specific conditions.

Several additional considerations need to be evaluated with this practice. Uninterrupted pumping over an extended period is not recommended due to possible drawdown impacts, and therefore, multiple wells may be required to provide the yield of one well continuously. Furthermore, in a dry period, due to the high level of interconnection between surface water and the Floridan aquifer in the region, pumped groundwater for augmentation might be lost to the Floridan in substantial amounts.

Additionally, depleting one resource (groundwater) to supplement another (surface water) demands evaluation. In the Lower Flint-Ochlockonee region, where Upper Floridan Aquifer withdrawals have been estimated above sustainable yield levels in several HUC-12s, pumping from the Upper Floridan for augmentation would not be desirable. It would exacerbate groundwater availability concerns. Furthermore, it would adversely affect surface water flows through the interaction effect of the Floridan on surface water. Therefore, only other, deeper aquifers would need to be considered. It appears that the Claiborne might have adequate sustainable yields to support additional withdrawals, but yields from the Claiborne have not been assessed in the southern part of the Lower Flint-Ochlockonee region. Very little is known about the yield potential of the Claiborne south of Newton, GA. The few records available suggest that expected yields would be considerably less than those in the region's northern counties. The Clayton is another aquifer that could be considered, but there is currently a moratorium on new Clayton

withdrawals. Further information on the sustainable yield of the Clayton is expected later in the regional planning process.

*The Council supports further evaluation of the practice in order to support in-stream flows in dry periods.*

#### 6.2.2.2 Replacement of surface water withdrawals with groundwater withdrawals

In some places in the region, the replacement of surface water withdrawals with groundwater withdrawals might help to ease pressures on surface water systems. However, ~~the aquifer used as the replacement source~~ Environmental and financial factors will limit the implementation of this practice in the region. The use of the Floridan aquifer for this purpose will be limited by the potential adverse impacts that result from interconnectedness with the surface water system. The use of deeper aquifers (Claiborne, Clayton) will be limited by economic factors (e.g., cost of wells) and by environmental factors. The available sustainable yield of these aquifers appears to be limited or already exceeded. However, there still may be some sites where this practice could provide for some improvement in impacts to surface water systems, and therefore, *the Council supports the use of this practice, where site specific evaluation indicates that it is practical and will not harm surface water, groundwater, and other environmental resources.*

*The Council recommends that this practice be implemented with incentives. Furthermore, ~~in order to support this practice, the Council recommends that that for permittees that implement this practice, the affected permits will maintain their status, prior to conversion; for permittees transfer from surface to groundwater, their permit status not change;~~ grandfathered surface water withdrawal permits would be converted to groundwater withdrawal permits with the same regulatory status as before conversion with respect to conservation requirements, seniority, and potential interruption.*

#### 6.2.2.3 Aquifer Storage and Recovery(ASR)

Aquifer storage and recovery could be used in the region to withdraw and store surface water during periods of high flow and provide augmentation for flows or supply in dry periods. The yield potential of ASR projects can vary greatly depending on location, condition of the receiving aquifer and water quality considerations both for injected water and that returned to the stream. For a report on an ASR application specific to the Lower Flint River Basin, see:

[http://www.h2opolicycenter.org/pdf\\_documents/water\\_workingpapers/WP2006-005.pdf](http://www.h2opolicycenter.org/pdf_documents/water_workingpapers/WP2006-005.pdf)

As this report indicates, ASR is probably best suited to provide water supply storage. Its capability to provide for in-stream flow augmentation has not been directly evaluated, but

this application is probably not economically feasible due to treatment costs. The above study considered using a freshwater aquifer of very high quality to store water (i.e., Clayton Aquifer). To address concerns about groundwater protection, the above study evaluated the storage of water that is treated to drinking water standards before storage. Augmentation of flows with water of drinking water quality would likely not make economic sense.

***The Council supports the use of this practice as needed for future water supplies in the region. The Council recognizes the need for further evaluation of specific proposals for ASR in the region on a case-by-case basis and recommends that any such proposal be thoroughly evaluated for its environmental and other impacts.***

#### **6.2.2.4 Farm Ponds**

On-farm storage is an option for replacing direct pumping from surface streams or wells during the growing season. To minimize impact on flow conditions during drought, ponds would be constructed in non-drainage areas. Source water to supplement these ponds may be harvested during periods of high flow. Storage facilities would need to be constructed to meet estimated irrigation demand as well as account for evaporative loss throughout the crop year. To meet average drought year demand from surface water sources, 40.4 acre inches of storage would be required per acre of irrigated land.<sup>12</sup> Supplying the needs of an average 100 acre field would require 337 acre feet of storage. Where groundwater is not readily available in the region, many farmers use farm ponds to support irrigation, either in whole or in part. However, it should be noted that not all areas within the planning region are conducive for pond construction with *in situ* soils.

***The Council supports the continued development of farm ponds in the region through existing incentive programs from the Soil and Water Conservation Districts and the Georgia Soil and Water Conservation Commission.***

#### **6.2.2.5 Inter-basin Transfer**

Inter-basin transfer is often a controversial option, and it raises many concerns that greatly limit its feasibility or desirability. However, for illustrative purposes, an example is provided as to how this practice could be used to address flow shortfalls in the Flint. The closest river system from which to consider a transfer to the Flint is the Ocmulgee, which is approximately 27 miles east of the Flint at its closest point (near Fort Valley, GA). Review of flow data from the Ocmulgee at Hawkinsville, which is downstream of the potential withdrawal point, indicates that during drought conditions in August 2007, (when a transfer would be most likely to be needed to augment flow in the Flint), total Ocmulgee flow at that point in the river is roughly half of the maximum shortfall at Bainbridge. Transfers from the Ocmulgee during low-flow would necessarily be limited

<sup>12</sup> While application rates are much lower than 40.4 inches, there are substantial losses to evaporation. This estimate does not include any allowance for seepage from the pond, which varies greatly by location.

to levels that would protect that river's flows. While an inter-basin transfer option might remain viable for smaller-scale augmentation purposes, it does not appear that such a solution can significantly impact estimated gaps on the Flint. Moreover, political opposition to inter-basin transfers could greatly limit the viability of considering this option.

In effect, in the Flint, interbasin transfer from the Ocmulgee basin might be viewed as a reversal of upstream interbasin transfers from the ACF to the Ocmulgee. An alternative approach with a similar outcome could be to consider reversal of existing transfers out of the ACF system.

***The Council does not endorse such a proposal for an IBT at this time. However, the Council urges policymakers not to preclude IBT as an option for future water management in the region, as needed.***

#### **6.2.2.6 Reservoirs**

Additional storage in the Flint River basin could be used to offset flow shortfalls at Bainbridge. The resource assessment model was run to determine the amount of storage needed to offset flow shortfalls. The results indicate that 162,223 acre-feet of storage would be needed to do so. This amount accounts only for the volume needed to offset the flow shortfall. It does not include other volumes that would be necessary or that might be added to provide for additional purposes (e.g., recreation). For example, this amount does not include volume needed to offset evaporation or seepage. It does not include a "dead pool". According to the model results, in 2007, a reservoir of 162,223 acre-feet would have been emptied completely. Furthermore, it would not have completely offset the modeled flow shortfall because of evaporation and seepage losses. Therefore, this estimate is not a design estimate for this management practice.

For comparison, the reservoir proposed on Kinchafonee Creek in the early 1970's would have had a storage capacity of 125,000 acre-feet. The reservoir proposed for Sprewell Bluff would have had a capacity of 730,000 acre-feet, with 230,000 acre-feet allocated for flood control and 322,000 acre-feet allocated for power production.

***To address concerns about flow shortfalls in the Flint River, the Council recommends evaluation of reservoir storage options in the Flint River Basin that can provide for flow augmentation in dry periods. This evaluation should include assessment of feasibility, siting, costs, benefits, and environmental and economic impacts.***

6.2.2 Near-term Water Management Practices

6.2.3 Long-term Water Management Practices

6.2.4 Interregional Implications of Selected Management Practices

### **6.3 Fiscal Implications <PC>**

To: Lower Flint-Ochlockonee Water Planning Council

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

cc: Tim Cash, Assistant Branch Chief, GA EPD

Subject: Meeting Summary: Lower Flint-Ochlockonee Water Quality Committee Meeting June 15, 2010

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**Attending:** Jerry Lee, Chuck Lingle, Steve Sykes, Steve Simpson, B&V, Bert Earley, GA Forestry Commission, David Burke, Oil-Dri

1. The surface water quality dissolved oxygen results discussed in the council meeting were discussed. Steve will forward the technical memos to the committee for review.
2. The group reviewed the water quality management practices strawman document. Steve walked the group through the draft document. One section lists existing programs and practices already in place, the next section identifies best management practices that have been developed for various industries, the next section identifies additional data needs, and the fourth section documents additional considerations that may impact planning. The intent of the group is to update this document, to identify near and longer term water quality management practices.
3. The group discussed existing programs and practices, and discussed methods the council might use to encourage improving existing programs and practices. Specific items included adding stream buffers, wetlands permitting, air permitting, land use permitting to the identified list. Chuck Lingle suggested that a conservation land acquisition program be recommended with matching basis state funding to provide increased stream buffers for water quality purposes. Steve Sykes requested the link to the TMDL list for TMDL Plans review by the committee. Steve Simpson will forward this link.
4. The group discussed best management practices. The council requested that nursery BMPs and mining industry BMPs be added to the list. Jerry Lee will forward nursery BMPs, and David Burke will forward mining industry BMPs. Jerry Lee will research the coastal zone management plan for additional suggestions for water quality. The group discussed ways of increasing implementation of existing management practices. Bert Earley of the Georgia Forestry Commission provided the results of the survey GFC conducts every two years on BMP implementation. He also discussed the role of GFC in protecting water quality, including investigating complaints, offering the quality assurance program to assist the industry in BMP compliance. Steve will distribute this information to the committee.

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5. The committee discussed the need for additional information about implementation, including research from the Georgia Farm Bureau, ACCG for municipal stormwater, and NRCS for agricultural BMPs.
6. The committee discussed the need for additional water quality data in the region to provide the data for future updates of the plan.
7. The group discussed the potential impact of proposed Florida nutrient standards. The consensus was that the watershed modeling would likely show that nonpoint sources were the primary contributor to nutrients, and so nonpoint source reductions would be particularly important in the future. Chuck Lingle suggested that reduced phosphate detergents and reduced phosphorus in commercially available fertilizer be considered.
8. The group discussed the fact that improvements to existing programs and practices needed to be part of the recommended near-term water quality management practices, and that additional funding options need to be part of the recommended long-term water management practices.
9. The group will send Steve Simpson comments on the draft water quality management practices document; Steve will incorporate changes and redistribute the document for consideration by the committee.
10. The committee set the next meeting for July 15 at 1:30 p.m. Steve will forward an appointment request by email with a conference call in number for this meeting.

DRAFT

To: Lower Flint-Ochlockonee Water Planning Council

From: Steve Simpson, Black & Veatch

cc: Tim Cash, Assistant Branch Chief, GA EPD

Subject: Meeting Summary: Lower Flint-Ochlockonee Water Quality Committee Meeting July 15, 2010

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**Attending:** Jerry Lee, Chuck Lingle, Jim Quinn, Richard Royal, Steve Sykes, Tim Cash, GA EPD, Bill Morris, GA EPD, Steve Simpson, B&V

1. Jerry asked what was being done to coordinate among councils and plans. Steve advised that EPD is responsible for coordinating and is setting up a consistent review process for all councils; Tim and Bill are participating in council activities to ensure ongoing coordination during the process. Steve advised that different councils are approaching identifying management practices in slightly different ways; the LFO participated in a survey and are following this up by developing the management practices strawman. The Upper Oconee group chose to document potential options in a 14 page list; part of the reason for this is the watershed modeling results have been developed in this watershed, so there is perhaps an increased focus on specifics. Tim advised that he is working with all the councils in the ACF, including Metro North Georgia, and he believes efforts to date are coordinated.
2. The group reviewed the documents distributed since the last council meeting, including the forestry commission survey data, the water quality technical memorandum, the mining industry BMPs, and the updated water quality management practices strawman document. Jerry advised that he has the nursery BMPs, but that the document is copyrighted by a group that is no longer active and he is seeking copyright release.
3. Steve walked the group through the updated draft document. One section lists existing programs and practices already in place, the next section identifies best management practices that have been developed for various industries, the next section identifies additional data needs, and the fourth section documents additional considerations that may impact planning. The major changes in the document were to incorporate the committee's input on specific actions into the near and longer term water quality management practices section.
4. Chuck Lingle suggested that the document does not specifically address fecal coliform as a water quality parameter. The group discussed that there are several mechanisms to address fecal coliform, including measures to prevent impacts from domesticated animals and measures to reduce/improve stormwater runoff quality.

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5. The fact that parameters like fecal coliform are already addressed in TMDLs and TMDL Plans was discussed.
6. Jerry Lee Jerry noted the similarities of the LFO management practices strawman with the MCH and UFL, and suggested that the committee consider additional management practices identified by other councils. The committee discussed and agreed to add the following:
  - Improved enforcement of existing permits
  - Improved enforcement of erosion and sediment control regulations
  - Requiring adoption of the stormwater management manual
  - Improved implementation of best management practices

The committee discussed but did not agree to add the following:

- Elimination of land application systems
  - Reduction of permitted utilization of the assimilative capacity of our water resources by point discharges as treatment technologies improve
  - Additional state regulation requiring stormwater utilities
7. The committee discussed MCH additional what the group deliverable is and what it will look like. Steve suggested that the three page management practices strawman would function well as a committee report as recommended by the committee to the full LFO council for incorporation in the WDCP. The group discussed the appropriate level of detail, with a recognized balance between not wanting an overly broad or an explicitly detailed set of recommendations.
  8. Combined sewer overflows were discussed; some older municipalities such as Atlanta, Columbus, and Albany have combined sewers; the consensus of the group was that these discharges are already being addressed adequately.
  9. Steve asked what type of regional commissions review is ongoing. Bill advised that the regional commissions were reviewing local plans for items that relate to water quantity and quality that have the potential to interface with recommended actions under the WDCPs.
  10. Steve Sykes recommended that the council add encouraging local delegation of erosion and sediment control and local implementation of stormwater management; this could result in improved implementation and would be similar to sanitary sewer review delegation.
  11. The group discussed the TMDL process and the importance of followup. Steve Sykes asked about the schedule for delisting stream segments. EPD has a regular reporting schedule to update the 303D list to EPA; EPD will provide a brief summary of the process, including delisting.
  12. Jerry asked if the management practices strawman documents had been reviewed by Liz Booth. Steve said that while Liz and the other technical assessment leaders would be involved in the EPD plan review, this draft has not been routed to Liz or anyone else to review.
  13. The group discussed that agricultural land use was predominant in the LFO and that the plan should not regulate stormwater runoff from agricultural land use.

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14. Steve briefly discussed the recent memo prepared for EPD on the process of modeling the effects of management practices on water quality. Steve will distribute to the committee for review.

15. The group discussed the schedule and process going forward:

- August 15 – Council delivers a draft of sections 1-5 to EPD. This covers introduction, background material, vision and goals, forecasts, resource assessments, and gap analysis.
- October 15 – Council delivers a draft of sections 6-8 to EPD. This includes the management practices selected by the council for implementation.
- January 31, 2011 – Council delivers a recommended WDCP to EPD.

From a water quality committee perspective, a followup conference call meeting in August is needed to prepare the committee recommendations to the full council at the September meeting. Once watershed modeling results are received in November, there will be a short time frame to revise the water quality related management practices in the WDCP. While this is not ideal timing, it is felt that the recommended water quality management practices are on the right track regardless of the numeric results from the watershed models.

16. The committee meeting resulted in the following action items:

- Steve will develop a meeting summary and distribute to the committee
- Steve will incorporate changes in the strawman document and redistribute the document for consideration by the committee
- Steve will forward a memorandum on modeling the results of water quality management practices
- EPD will prepare a brief overview of the 303D/TMDL listing process; Steve will forward to the committee
- Jerry Lee will follow up on the nursery BMPs so this can be distributed
- Bill Morris will check on status of regional commission work to coordinate planning efforts and will forward example information received to date to inform planning

17. The committee set the next meeting for August 12 at 10:30 a.m. Steve will forward an appointment request by email with a conference call in number for this meeting.

To: Lower Flint-Ochlockonee Water Planning Council

From: Steve Simpson, Black & Veatch

cc: Tim Cash, Assistant Branch Chief, GA EPD

Subject: Meeting Summary: Lower Flint-Ochlockonee Water Quality Committee Meeting August 12, 2010

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**Attending:** Jerry Lee, Richard Royal, Steve Sykes, Tim Cash, GA EPD, Bill Morris, GA EPD, Kristin Rowles, GWPPC, Steve Simpson, B&V

1. The group reviewed the documents distributed since the last council meeting, including the summary of the last committee meeting, the water quality modeling technical memorandum, the nursery BMPs, the Southwest Georgia Regional Commission local plan coordination list, and the updated water quality management practices strawman document. An email with links to TMDL description and methodology was also distributed.
2. Steve walked the group through the updated draft document. One section lists existing programs and practices already in place, the next section identifies best management practices that have been developed for various industries, the next section identifies additional data needs, and the fourth section documents additional considerations that may impact planning. The major changes in the document, incorporating the committee's input on specific actions into the near and longer term water quality management practices section, were highlighted.
3. Jerry suggested referring to the Southwest Georgia Regional Commission local plan coordination list in section 6.1 of the strawman.
4. Cleanup needs in the funding paragraph were noted.
5. Jerry pointed out that the entire document is "soft", ie heavy on advocating for change with limited specific items. The group discussed the balance between requiring actions and the effort this mandates with desire to make changes to improve water quality.
6. The group discussed the adoption of stormwater management and the consensus direction was to "encourage" rather than "require" adoption of the stormwater management manual.
7. Jerry suggested incorporating specific mention of P2AD in the document and the group discussed ways to coordinate multiple agencies of state government to focus on water quality. The group agreed that a study of ways to apply state resources was a recommended short term action, with the long term action/goal of coordinating state resources

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8. The group discussed separating the improving compliance with BMPs and documenting compliance with BMPs to better highlight the documentation need. The group consensus was to add an item supporting the assessment of agricultural BMP implementation.
9. The group discussed the plan review process by EPD. The draft of chapters 1-5 have been reviewed by the Lower Flint plan review committee, changes are being made to incorporate feedback, and the document is being redistributed prior to sending the draft to EPD August 16. Similarly, a draft of chapters 6-8 will be reviewed by the plan review committee prior to sending the draft to EPD October 15. The intent of this schedule is to engage EPD review early to provide feedback prior to finalizing. The council's recommended plan is to be sent to GA EPD for review January 31, 2011. Changes to the entire document can be made until then.
10. The group discussed the recent memo prepared for EPD on the process of modeling the effects of management practices on water quality.
11. The committee meeting resulted in the following action items:
  - Steve will develop a meeting summary and distribute to the committee
  - Steve will incorporate changes in the strawman document and redistribute the document for consideration by the committee
  - Steve will help prepare a powerpoint file for presentation by Jerry at CM7
12. The committee did not set a next meeting date pending council action.

## **LOWER FLINT- OCHLOCKONEE WATER COUNCIL** **ADDRESSING WATER QUALITY NEEDS AND REGIONAL GOALS**

Water Quality is an extremely important consideration to stakeholders in the Lower Flint-Ochlockonee region to meeting the vision and goals defined by the Water Council. The LFO Water Council has appointed a water quality committee to consider current and anticipated conditions and to identify recommendations for management practices that the Council should consider. Water quality modeling for the state water plan consists of two main efforts; dissolved oxygen modeling using DOSAG to consider point source loadings to streams under critical low-flow, high temperature conditions, and watershed modeling to consider the combined effect of point and nonpoint sources, particularly for nutrients. In addition, the list of stream reaches designated as impaired and corresponding Total Maximum Daily Loads have been considered.

### **6.1. Identifying Water Management Practices**

Existing plans and practices are already in place that address water quality in the region. These include:

- Point discharges to surface water bodies are permitted by the state
- Land application system discharges are permitted by the state
- Impaired stream reaches that have been identified based on water quality monitoring have been identified. Total Maximum Daily Loads for associated parameters have been developed and plans have been developed to address the sources of impairment.
- Erosion and sediment control practices are regulated by the state or local governments
- Stream buffers required by the state
- Air permitting required by the state (for point sources)
- Pollution prevention efforts required by the state (such as emission controls, requirements for unleaded fuels)
- Land use permitting required by the state (such as for mining, landfills, etc)
- Wetlands disturbance permitting required by USACOE
- Local agency efforts related to water quality, as summarized in the Southwest Georgia Regional Commission 2010 list

In addition, much work has been done in the state on developing best management practices for various industries. These include:

- Manual for Erosion and Sediment Control in Georgia, Georgia Soil and Water Conservation Commission, 2000
- Best Management Practices for Georgia Agriculture, Georgia Soil and Water Conservation Commission, 2007
- Georgia's Best Management Practices for Forestry, Georgia Forestry Commission, 2009

- Georgia Stormwater Management Manual, GA DNR/ARC, 2001
- Georgia's Best Management Practices for Mining, Georgia Mining Association et al, 2008
- Water Quality/Quantity Best Management Practices for Florida Container Nurseries, Florida Nursery, Growers, and Landscape Association (FNGLA), 2007
- Georgia Better Back Roads Field Manual, Georgia Resource Conservation & Development Council, Inc, May 2009

Even with the work that has been done in the state and the region, there remain significant data and information needs to provide for future refinement of management practices. These include:

- Additional water quality data for water bodies in the region
- Additional information on the implementation of best management practices for industries in the region
- Coordination with other councils, particularly the Upper Flint, Middle Chattahoochee, and Metro North Georgia

While a majority of water quality trends and implications are generally well understood, there are substantial uncertainties in planning to meet water quality goals. Some of these uncertainties are regulatory in nature, and others are site specific in nature. Recognizing that the Water Development and Conservation Plan needs to move forward in spite of the uncertainty that exists, the Council has considered some of these uncertainties in the development of the plan, including:

- Future Florida nutrient standards and resulting requirements for Georgia permittees
- Potential regulatory changes, such as revisions to the state dissolved oxygen standard

The Council fully intends that adaptive management be employed in future revisions to the Lower Flint-Ochlockonee WDCP to ensure that the water quality needs in the region are balanced with other competing needs.

## **6.2. Selected Water Management Practices for the LFO Region**

The Water Quality Committee has reviewed and discussed management practices for water quality in the region and recommends the following to the Lower Flint-Ochlockonee Water Council for consideration.

### **6.2.1. Near-term Water Management Practices**

The LFO Water Council supports the following near-term water management practices to address water quality of the resources in the region:

- Improved enforcement of existing discharge permits
- Improved enforcement of erosion and sediment control regulations
- Supporting existing management plans and practices, such as the TMDL plans for specific stream reaches to address specific parameters
- Encourage industries to utilize P2AD, UGA Department of Agriculture, and other state resources
- Advocating for a study of methods for coordinating and applying existing state resources to comprehensively address water quality
- Advocating for the creation of a conservation land acquisition program, funded on a cost-share basis between the state and local communities, to acquire outright ownership in perpetuity land identified as having significant water quality benefits due to adjacency to water bodies, slope, current use/nutrient contribution, and other criteria
- Encourage adoption of the Georgia Stormwater Management Manual by local municipalities
- Increasing implementation of best management practices throughout the region for all industries
- Improving documentation of best management practices throughout the region for all industries
- Advocate for an scientific assessment of agricultural BMP implementation
- Encouraging delegation of erosion and sediment control review and inspection to local municipalities supported by professional engineering resources
- Improved water quality monitoring to provide the data for water quality improvements in the future (increased number of collection sites, increased monitoring frequency and parameters sampled)
- Continued coordination and cooperation with adjacent water councils

#### 6.2.2. Long-term Water Management Practices

The LFO Water Council supports the following long-term water management practices:

- Continuing existing activities and management practices recommended for near term (6.2.1)
- Apply coordinated state resources to address water quality
- Requiring local communities in the region to regulate via ordinance commercially available phosphate concentrations in fertilizers for lawn/residential use

- Requiring local communities in the region to regulate via ordinance commercially available phosphate concentrations in laundry and other retail detergents

#### 6.2.3. Interregional Implications of Selected Management Practices

The selected management practices all involve additional resources (time, effort, money). The costs of these programs should be shared equitably between the state, local jurisdictions, individuals, and industries. All of the recommended management practices should result in water quality improvements throughout the region, so no interregional implications (other than cost sharing) is anticipated.

### 6.3. Fiscal Implications

The Lower Flint-Ochlockonee Water Council, recognizing the need for implementation of short-term water quality related management practices, advocates increased state funding for GA EPD and other state agencies to allow the implementation of increased technical assistance to local communities, to increase water quality monitoring in the Flint River basin, and to improve the documentation of best management practice implementation. In addition, the Lower Flint-Ochlockonee Water Council recommends the creation of a conservation land program to acquire perpetual conservation rights to property for stream buffers on a cost share basis with local communities.

The Lower Flint Water Council, recognizing the need for additional long-term water quality related management practices, advocates that additional funding needs be defined to support implementation of long-term practices when the Regional WDCP is updated.

# **Georgia Department of Natural Resources**

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August 16, 2010

## **DRAFT MEMORANDUM**

TO: Regional Councils

THROUGH: Regional Planning Contractors

FROM: Bennett Weinstein  
Project Manager, State Water Plan Implementation

RE: Available Funding for Implementation of Nonpoint Source Pollution Management Practices in the Recommended Regional Water Plans

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This memo has been prepared to inform the Regional Water Planning Councils (Councils) of a funding opportunity to support the implementation of nonpoint source pollution management practices identified in the recommended Regional Water Development and Conservation Plans (Regional Water Plans). If a Council opts to take advantage of this voluntary opportunity, EPD will provide up to \$100,000 in non-competitive Section 319(h) funds to a specified funding recipient(s) in each Water Planning Region. EPD is making these funds available to encourage Council discussions about nonpoint source pollution impacts on water quality and to facilitate implementation of nonpoint source pollution management practices. These funds will be provided to a jurisdiction(s) identified by the associated Council to serve as recommended eligible funding recipient.

The information in this memo will guide the Councils (and their planning consultants) in the selection of an implementable nonpoint source pollution management project to be included in their recommended Regional Water Plan. Important eligibility and project selection criteria are provided below. If the Councils opt to take advantage of this funding opportunity EPD's Section 319(h) Grant Unit staff is available to support the Councils, ABCs, Liaisons and planning consultants in assisting the Councils in the development of these projects. Funds for these projects will be available by Fall 2011 and project recipients can expect to execute contracts and begin work by January 2012.

### **Eligibility Criteria**

In order to be eligible for this non-competitive funding, the nonpoint source pollution management implementation project identified in the Regional Water Plan and recommended by the Council to receive these funds must meet and follow all Section 319(h) funding requirements and guidelines as published in the 319(h) FY11 General Guidelines, in addition to the following criteria:

- The project must be included, or, at minimum, referenced in Sections 6, 7 and 8 in the Council's recommended Regional Water Plan. To allow for ease of review, approval and funding of the recommended project, the funding recipient identified by the Council must prepare a standard 319(h) application and work plan, prepared in accordance with 319(h) FY11 Grant Guidelines, to be included in the Regional Water Plan's supplemental materials;

- If the project is contained wholly within a single local jurisdiction in the Water Planning Region, the Council must identify the appropriate jurisdiction to serve as the funding recipient. If a project embraces multiple jurisdictions or is regional in nature, the Council must identify either the appropriate single jurisdiction or eligible regional entity (e.g. a Regional Commission, Georgia Soil and Water Conservation Commission, Georgia Forestry Commission, etc.) to serve as the funding recipient. Once the contract is executed, the funding recipient is permitted to select sub-contractors following the State's or that recipient's own federally approved procurement process;
- The funding recipient (and partners, if applicable) must demonstrate implementation commitment by providing a minimum of 40% in non-Federal matching funds or in-kind services for use in completion of the project;
- Project(s) and funding recipients recommended by the Council must adhere to appropriate Federal laws and requirements and may not use these funds to address any requirements of Federal permits or any related enforcement activities.

#### Project Selection Criteria

The nonpoint source pollution management implementation project (and funding recipient) recommended by the Council to receive these non-competitive funds must meet these criteria:

1. Project must address one or more of the following EPD priorities:
  - a. Stormwater Practices: Including, but not limited to, those practices that work with the landscape such as rain gardens, bio-swales, and constructed wetlands; or
  - b. Practices Designed to Remove Barriers to Low Impact Development: Including, but not limited to, preparation, adoption and/or revision of ordinances, and conducting active, intensive outreach to inform public and private stakeholders regarding available tools to promote the use of Low Impact Development practices; or
  - c. Practices Designed to Restore or Protect Impaired Streams: Including, but not limited to, establishing buffers beyond State minimum requirements, livestock exclusion, Level 1 and/or 2 stabilization, Rosgen stream restoration, and agricultural waste control; and
2. Project must implement practices to address waterbodies identified in the Assimilative Capacity Resource Assessments as having "Moderate," "Limited," or "None/Exceeded" Assimilative Capacity; and/or
3. Project must implement practices that work towards alleviating the criterion violated identified in the Section 303(d)/305(b) List of Waters; and/or
4. Project must implement practices identified in the nonpoint source management components of other existing relevant plans such as TMDL implementation plans, local Comprehensive Plans, or other watershed improvement or management plans (excluding plans associated with permit requirements). If the existing plan selected for implementation by the Council does not contain an actionable and fundable set of implementation actions, the Council must revise the existing plan, in accordance with EPD Guidance, in order to clarify and specify those actions the Council seeks to recommend for funding; and
5. Project must be designed to provide measures of project success and/or effectiveness such as estimates of load reductions achieved by the project, monitoring results showing improved water quality, data for use in Resource Assessment Models, ordinances passed, or other measures approved by EPD; and
6. Project must: a) have an implementation timeline no longer than 2 years, b) focus on HUC-10 or smaller watersheds if at all possible, and c) specifically identify the pollutant(s) to be addressed and the activities proposed to prevent, control and/or abate pollution.