

Mike Beatty Commissioner

MEMORANDUM

TO:

Arnettia Murphy

Georgia Department of Natural Resources

Environmental Protection Division 2 Martin Luther King Jr. Drive

Suite 1152, East Tower Atlanta, GA 30334

FROM:

James R. Frederick, Director

Office of Planning & Quality Growth

Georgia Department of Community Affairs

DATE:

April 2, 2010

The Office of Planning and Quality Growth has reviewed the draft water resource assessments for groundwater availability, surface water availability and surface water quality (assimilative capacity) produced as components of the Georgia Comprehensive Statewide Water Management Plan. The Department of Community Affairs (DCA) understands and values the need to enhance and protect water quality and water availability within the State of Georgia. Our comments are offered to assist the Environmental Protection Division in maximizing implementation of this plan.

To that end, the Office of Planning and Quality Growth is of the opinion that theses sources of water (surface water, aquifers, groundwater recharge areas, et. al) should be protected from hazardous water and toxic substances that contaminate water and makes it unsafe for human consumption and from excessive withdrawals that compromise the long-term sustainability of the human communities and natural systems of our state.

Last year, our board passed revised regional planning rules that establish specific requirements and procedures which require each of the State's twelve regional commissions to identify Regionally Important Resources, develop a Regional Resource Management Plan for their protection and management, and conduct regional review of development activities that could potentially impact them. Several of the State's regional commissions have already begun the process of implementing these rules and within the next few years, all the State's regions will be covered (Please contact the Office of Planning and Quality Growth for Regional Planning Deadlines).

We recommend that EPD actively involve itself in the efforts undertaken by each Regional Commission pursuant to DCA's Rules for Regional Planning. Such a multi-agency collaborative approach could meaningfully strengthen the state's position in managing these crucial assets upon which we all depend.

If you have any questions, or need further clarification, please call Renetta Hobson at 404-679-

JF/rh

3111.







COBB COUNTY WATER SYSTEM

Customer Services Facility 660 South Cobb Drive Marietta, Georgia 30060-3105 (770) 423-1000 www.cobbwater.org Stephen D. McCullers, P.E.

DIVISIONS:
Business Services
Customer Services
Engineering & Records
Stormwater Management
System Maintenance
Water Protection

Ms. Linda MacGregor
Branch Chief, Watershed Protection
GA Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Dr.
Suite 1152, East Tower
Atlanta, GA 30334

June 23, 2010

Ms. MacGregor:

Cobb County Water System appreciates all of the work that went into the water quality and availability resource assessments. We also appreciate the opportunity to review them and submit our comments.

We recognize how essential it is to model where we are in order to make accurate long term management decisions. The resource assessments are an essential first step. It is because we recognize the importance of these assessments to the future management of the state's valuable water resources that we felt it was necessary to bring some of our concerns to your attention.

Enclosed are Cobb County Water System's comments on the three resource assessments. If you wish to discuss any of this further please feel free to contact me at 770-419-6338 or Kathy Nguyen at 770-419-6244. Again, we appreciate all of the time and effort that went into this project.

Sincerely,

Stephen D. McCullers, P.E.

Director

Cobb County Water System

660 South Cobb Dr.

Marietta, GA 30060

Cobb County's Comments on Resource Assessments 06/23/10

Groundwater Assessment Comments:

"An underlying assumption of the method is that surface watershed and groundwater basin cover the same area making them appropriate for unconfined surficial aquifers"

This assumption is questionable in the Piedmont where the surficial aquifer is fractured rock that is highly variable in location and productivity. Because of this location variability it is unlikely that a contiguous shared geographical watershed / groundwater basin is possible at least as defined by area recharge. It is more possible that the groundwater basin is significantly smaller and its effect on streamflow and ability to recharge are highly variable and location dependent.

"The increase of impermeable cover within a basin would result in a decrease in recharge to groundwater and a subsequent decrease in stream base flow."

This is the exact situation within the Piedmont region. The majority of the geology within the Piedmont is granite bedrock and is itself impermeable except where cracks and fissures are present. Additionally, there is no mention of current accounting for the level of impermeable surface as inputs in the model process. It would seem these affects would have to be considered when estimating the potential yield from these sources.

"Daily streamflow data from the period 1989 – 2008 for the Middle Oconee River (Piedmont) and Chattahoochee River (Blue Ridge) were used to calculate the mean annual streamflow and baseflow and a range of streamflow and baseflow reduction amounts (40% to 60%) were evaluated. The 50% mid-level streamflow was chosen as the criterion to estimate the net amount of groundwater available for use in both basins. Using the 40% streamflow reduction amount (60% of flow remains in the Review Draft Synopsis of Groundwater Availability Assessment March 2010 Georgia State-wide Water Management Plan S-15 stream) in the Piedmont basin resulted in a situation in which current consumption already exceeded the sustainable yield."

With the reductions in streamflows experienced during the 2007-2009 drought, a benchmark of a 40% reduction in flows would potentially have a significant impact on surface water flows and impoundments at dry times. A benchmark of 40% reduction in base streamflow for an area primarily dependent upon surface water is unacceptably risky for meeting both human and ecological demands on those streams.

"The water budgets show that more groundwater is available from the crystalline rock aquifer than is currently being withdrawn. It might be difficult to find sufficient water-bearing fractures in the crystalline rock aquifer to develop the full range of sustainable yield, however."

The availability referred to above is highly variable as discussed previously. In order for groundwater to be a considered supply it must be in a usable location for a utility and be reliable. The dependency on fluctuating water tables for the crystalline rock aquifer recharge makes the location, reliability, and sufficiency a potentially undependable source.

General Comment: the impact of a potential 40% reduction in base streamflow at the headwaters of the river basin is going to be far more significant than a 40% reduction further down the basin where streamflow is greater and less constrained.

Surface Water Availability Comments:

"Unimpaired flows rather than observed flows were applied in this study because of the need for a common benchmark with the effect of water withdrawals and other management activities removed."

This seems like a very unreasonable basis to analyze gaps in resources. We are modeling from a false starting point; potentially invalidating the results.

"The methodology employed in this study prioritizes water uses over satisfying flow regime, meaning that water use is curtailed only when streamflow is insufficient, irrespective of flow regime violations."

This assumption is the exact opposite of the actual operation of Federal Projects. Some in stream flow targets are adjusted back slightly to a level designated in the operating plans of the affected Federal Projects. These alterations in flow regime targets are triggered by composite storage benchmarks. Instream flow regimes are not abandoned in the management of Federal Projects. This was clearly evidenced during the 2007-2009 drought.

"For regulated and semi regulated nodes, when upstream reservoir physical storage is sufficient to meet flow regimes as well as consumptive uses, shortfalls in availability are assumed to be zero, even if no storage allocated in the reservoir for water supply. Following this rule, neither flow regime nor water demand shortfall would be simulated to occur as long as conservation storage remains in the reservoir."

This is a highly unrealistic view. Storage that is not allocated for water supply cannot be assumed as available for meeting a demand when access to that supply will be unavailable for that demand. In a gap analysis, it seems unreasonable to assume "no gap" because storage exists that by law can't be used to meet the assumed purpose.

"The July 2009 federal court ruling on use of Lake Lanier is not considered because of the subjective nature in identifying its effect on reservoir operations."

This decision cannot be ignored in a true resource gap analysis. At a minimum the decision should have been modeled along with the current conditions modeled.

"The first is to use all water availability to meet demands and allow any shortfall to express itself in not meeting instream flow requirements."

This is not how these systems are operated. They are actually operated to meet the downstream flow targets at various levels triggered by benchmarks of composite storage. Water use curtailments will be required if those targets are not being met. Especially those targets associated with ESA requirements.

General Comment: Water efficiency and conservation are priority practices as outlined in the State Water Plan. Assessments that potentially fail to acknowledge the potential gaps in available supply, by modeling idealized conditions, may result in a failure to consider any conservation or efficiency practices when preparing regional plans.

Water Quality Assessment

- 1. In general, this synopsis report is really that, just a synopsis. It takes an extremely large amount of data and attempts to provide a visual representation to the point that it is difficult to determine if there is a problem or where a problem may occur. For example, if you look at Figure 3-2, one would assume that there is basically no problem with capacity in the Chattahoochee River Watershed and therefore, there should not be a problem in regards to DO in the issuance of NPDES permits.
- 2. Figure 1-1 indicates that the RIV 1 model was used on the Savannah River but this model is not discussed with the other models on pages 3 and 9. RIV 1 was mentioned in the presentations which were given to the councils earlier this year.
- 3. There is also a mention of a REV 1 model in Section 2.6. Is this the same as RIV 1?
- 4. Figure 3-4 indicates that there is zero dissolved oxygen capacity available (or capacity has been exceeded) in Carters Lake, a portion of Lake Allatoona, and Lake Acworth (we are not aware of any direct discharges to Lake Acworth). This is also shown in Figures B-6 and B-7.
- 5. Table 4-2 appears to miss a model prediction in 2004 for station 14302001.
- 6. In the discussion on lake results in Section 4.3, there are no data tables on actual nitrogen loadings presented. It might be helpful.
- 7. In the discussion on reaeration in Section A.1.7, there appears to be an error on line 5 under the equation. 1 cfs probably should be 10 cfs.
- 8. In Section A.1.8, on Critical Conditions, it states that data was "adjusted, as needed". What exactly does this mean as it indicates that field data is not reliable?
- 9. In Section A.1.8, on Natural Conditions, it states that "all other model parameters remained the same unless background levels of CBOD and NBOD were abnormally high in the calibration model then these parameters were reduced to typical background levels". Is it possible that the background levels are normally higher than typical?
- 10. We understand that modeling is both a science and an art, however; when one reads Section A.2.14, one can only wonder how good the final data is when point after point is "adjusted" to reach a desired or typical value.
- 11. We would suggest not using SOD (referring to Summary of the Day Station) in Figures A-3 and A-4 as SOD is referenced earlier (A.1.6) as Sediment Oxygen Demand.
- 12. In Section B.1 thru B.6, it is recommended that the detailed results be relabeled. For example, there are five B.3's and we would suggest they be relabeled as B.3.1 thru B.3.5.
- 13. Figure B-13 and B-13 (B-13.3 and B-13.4) are the same but the detailed results are very different. An explanation would be helpful.
- 14. In the detailed results in Section B.1 thru B.6, it is not possible to determine if the problems are the result of point source, non-point source discharges, or natural conditions.

- 15. Section B.7 shows widely different assimilative capacity for DO in Brunswick harbor for the years 2001 thru 2007, yet there is no rationale given for the difference. Without an explanation, how is it possible for this information to be used in the allocation of resources?
- 16. Section C.1 presents the Watershed Results for nitrogen and phosphorus from the LSPC model in pounds per acre per year for the watershed. However point source discharges are not shown so it is not possible to determine if problems are due to point or non-point sources.

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Donald C. Mabry, Chair A. Max Bacon, Vice-Chair David A. Austin, Secretary Charlie N. Crowder, Member



Irvan A. "Van" Pearlberg, Member Earl E. Smith, Member G. Woody Thompson, Jr., Member Glenn M. Page, P.E., General Manager

June 30, 2010

Ms. Linda MacGregor
Branch Chief, Watershed Protection
GA Department of Natural Resources
Environmental Protection Division
2 Martin Luther King Jr. Dr.
Suite 1152, East Tower
Atlanta, GA 30334

Ms. MacGregor:

Cobb County-Marietta Water Authority is pleased to offer our comments on the Water Resource and Water Quality Assessments.

Our staff worked with Cobb County Water System staff to review the assessments, and we present the same comments.

Thank you for the work EPD has put into this effort so far, and for the opportunity to review the draft assessments.

Respectfully,

Glenn M. Page, PÆ

cc:

Jim Parsons Kathy Nguyen Ernie Earn Steve McCullers

Comments on Resource Assessments Cobb County-Marietta Water Authority June 30, 2010

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Comments on State Water Plan Resources Assessments Pat Stevens Metropolitan North Georgia Water Planning District

Groundwater Assessment -

The "Groundwater Availability Assessment" provides estimates of groundwater in select prioritized aquifers of Georgia. The Metropolitan North Georgia Water Planning District (Metro Water District) is primarily in the Piedmont Physiographic Province, though there is a portion of Bartow and Paulding Counties in the Valley and Ridge Province. As recognized in the Review Draft "Synopsis Report Groundwater Availability", a characteristic of the Piedmont Province is crystalline rock at depth. A water budget approach was used to estimate sustainable yields in the crystalline rock aquifer.

The "modified Tennant Method was used to develop values for sustainable yield" for these water budget analyses. Essentially, this method develops an acceptable "stream flow reduction" as the target for groundwater availability. The report states that "conservative" assumptions/criteria were used with this approach to evaluate groundwater availability. The target "stream flow reduction" was 20 percent of the difference between: 1) the 40, 50 or 60 percent of the average annual flow and; 2) the mean "most severe" monthly (September) flow. This resulted in an estimate of groundwater availability for the study watershed of as much as 15.8 cfs (Table S-3).

As stated in the report:

"As withdrawals are increased, groundwater will initially come from storage until steady state conditions are reached at a new equilibrium of recharge, withdrawals, and natural discharges. Sources of recharge can include leakage from other aquifers and geologic units, recharge from surface waters, and rainfall."

Essentially, our understanding of the water budget technique is that if all remains constant (recharge, withdrawals and municipal/industrial discharges) the surface water flow could potentially be reduced at all times by as much as 15.8 cfs. During critical periods (7-day 10-year low flow(7Q10)), the flow in the study watershed would be reduced to 4.2 cfs by subtraction from the 20 cfs 7Q10 flow (Table S-3). Unlike the Coastal Plains Physiographic Province, the Piedmont aquifers are not receptive to artificial recharge by injection of stormwater and/or treated wastewater.

The municipalities in the Piedmont rely heavily on surface water for their drinking water supply as well as assimilative capacity for discharge of their treated wastewater. A reduction in the streamflow of this magnitude (75 %) during critical periods would potentially compromise the ability to maintain the integrity of "ecological, environmental, and hydrological" resources.

As evidenced in the recent drought (2006-2008), municipalities in the Piedmont experienced reduced stream flow and many groundwater wells in the southeast were going "dry". Municipalities in the Metro Water District require dependable and sustainable surface water as a source of drinking water and assimilative capacity. As recognized in the report:

"It might be difficult to find sufficient water-bearing fractures in the crystalline rock aquifer to develop the full range of sustainable yield..."

As a result of Metro Water District dependence on surface water, the inability to artificially recharge the aquifers in the Piedmont, and the unreliable nature of the crystalline rock aquifer, we request that

Groundwater Availability Assessment more clearly state something to the effect that "groundwater should not be relied on as a primary source of drinking water in the Piedmont". Further, this assessment illustrates the tremendous impact that the pumping of groundwater in the Piedmont can have on the surface water resources. It is recommended that any request for ground water withdrawal for community water supplies should evaluate the impacts of the requested withdrawal with the cumulative impacts of all groundwater withdrawals in the watershed and planning area on the surface water and ecological resources.

Surface Water Availability Assessment

The municipalities in the Metro Water District rely heavily on surface water for their drinking water supply as well as assimilative capacity for discharge of their treated wastewater. We understand that the objective of the assessment was to "assess surface water availability relative to current municipal, industrial, agricultural, and thermal power water uses throughout Georgia." Though we understand that the models used for the assessment were intended for broad scale regional planning purposes as opposed to individual permitting decisions, we are not completely clear as to how these results will be used in the ensuing "Future Assessment (Planning)" phase of the plan.

A simplifying assumption used in the assessment that is a concern to the Metro Water District

• "Current" water uses are not the current permitted withdrawal limits, but are assumed to be represented by maximum observed monthly net reach water use, aggregated across all use categories, from 2002 through 2007.

We agree that this is a reasonable approach and benchmark to analyze existing conditions/operations and the impacts of existing usage on the resource. The information provided in the assessment was informative and showed that with current usage and operations there are no significant shortfalls of availability in the Metro Water District.

However, the next steps in the planning process should take into account existing permits and future needs. In growing communities the orderly protection of public health requires water supply reservoirs, permits and major infrastructure to be in place many years before the date the actual need occurs. There is a tremendous lead time and huge public investment involved in preparing for adequate water supply. Water systems in the Metro Water District have invested heavily in the infrastructure to withdraw, treat and distribute drinking water at the permit limits.

Current Assimilative Capacity Assessment

We understand from the summary report and our knowledge of the district's watersheds that the assimilative capacities presented in the assessment are the result of varying levels of effort. We noticed that the results of the Lake Allatoona and Lake Weiss TMDLs have been incorporated in the current assessment and that the Lanier TMDL and potentially others will be incorporated into the planning document at a later date. Although not stated, we believe that the detailed study conducted on the Chattahoochee River in the late 1990s and early 2000s was also incorporated. The results indicate that a stretch of the Chattahoochee River from Buford Dam to just downstream of Suwanee Creek has minimal or no assimilative capacity. Since there are no

wastewater treatment facilities (WTF) that discharge treated wastewater into this stretch of river, the low dissolved oxygen (DO) must be the result of historically low DO in the water released from Buford Dam/Lake Lanier. However, it is our understanding that the Corps of Engineers (COE) completed a project in 2006 that provided venting of the waters being released through the Buford Dam turbines. The venting should result in an increase in the DO to approximately 6.0 mg/l, though we are unsure if more recent DO data have been collected on this stretch of the river. Does this planning document reflect the increase in the DO concentrations as a result of the turbine venting project?

CHRIS CLARK
COMMISSIONER

DAN FORSTER DIRECTOR

June 29, 2010

MEMORANDUM

TO:

Arnettia Murphy

FROM:

John Biagi

Mike Harris

SUBJECT:

Comments on Draft Water Resource Assessments

Thank you for the opportunity to review and provide comments on the three Draft Water Resource Assessments developed by EPD as part of the Statewide Water Planning process. Representatives from the Fisheries Management and Nongame Conservation Sections have been attending the Water Planning Council meetings and will continue to be available to EPD as resources during the statewide water planning process.

Our comments are attached and organized by individual Resource Assessment: Groundwater Availability, Surface Water Availability, and Surface Water Quality (Assimilative Capacity). Please contact Patti Lanford at one of the following numbers should you have questions or need clarification regarding these comments: 770-761-3011 or 404-276-0591.

JB:pl

Attachments

I. Comments on the Groundwater Availability Resource Assessment

General:

- 1. The type of 7Q10, while assumed in most cases to refer to the monthly 7Q10, should be specified whenever mentioned.
- --The effects of groundwater withdrawals on stream flows in regard to aquatic organisms are not clearly addressed. Those effects appear to be addressed only in order to determine the levels of surface water withdrawals that can be supported for off-stream use.
- --The Dougherty Plain Model was calibrated to October 1999 conditions. Although this period of the drought did represent the lowest stream baseflow, it also correlated with the end of the growing season and thus, as you stated on p. S-25, groundwater withdrawal rates may have been lower than typical withdrawal rates. As a result, sustainable yields may be exceeded and not reflected in the model.

In addition, reduced precipitation during the drought probably resulted in higher than normal demand on the aquifer. During this period, many ecologically sensitive streams were dried or experienced extremely low flows for prolonged periods, resulting in significant mortality of endangered mussels.

Regarding the statement that "excessive drawdown of the aquifer does not appear to be a major concern because the rivers would recharge the aquifer under increased withdrawal scenarios" (also on p. S-25), it is important to take into account the highly connected nature of the Upper Floridan Aquifer to streams and rivers in the Lower Flint River Basin. For instance, some springs in the lower Flint temporarily lose function as thermal refuges for striped bass as warmer river water enters these cool-water groundwater inflows. While aquifers are known to recharge from rivers, it appears that smaller streams also recharge the aquifer under increased withdrawal scenarios, exacerbating the drying of these sensitive streams and threatening the persistence of aquatic species. Recharge from tributaries will likely result in significant negative impacts, resulting in conditions similar to those experienced during the droughts of the early and late 2000s.

II. Comments on the Surface Water Availability Resource Assessment

General:

---The type of 7Q10, while assumed in most cases to refer to the monthly 7Q10, should be specified whenever mentioned, and

--- The spelling of Ochloconee should be standardized throughout the document.

- P. 1. Is the number of planning nodes, 39, sufficient for Water Planning Council (WPC) members to address stream flows in smaller rivers and streams? Our concern is that the planning areas are too large to adequately address questions of water availability. In addition, in systems that are mostly regulated, the unregulated portions of those systems will function in entirely different ways that are not likely to be addressed under the current planning node strategy.
- P. 2. Although this resource assessment and the Groundwater Availability resource assessment both indicate that the effects of surface water and groundwater on each other are taken into account, it is unclear in either document how that occurs. Could you include demonstrations/examples showing how that takes place?
- P. 3. Regarding regulated and semi-regulated nodes, the meaning of the following statement is unclear: "In the absence of such requirements at any node, there is no required flow regime". Do you then revert to "unimpaired flow", monthly 7Q10, or some other metric?
- P. 4. Table 1. Consider separating the Ochlockonee and Suwannee basins (both drain to the Gulf) from the Satilla and St. Marys basins (both drain to the Atlantic Ocean). Topography, stream morphology, hydrology, geology, and land use are significantly different in the Gulf slope versus Atlantic slope systems.
- P. 5. "Removal of all human influences is not practical because they either have not been recorded or are not readily quantifiable (i.e., the effects of changing land uses on runoff and stream flow)." There is a body of primary literature documenting the effects of changing land use on runoff and stream flow. Perhaps it could be examined and used to remove that important human influence from your unimpaired flows.
- P. 8. Figure 2-1. It appears there are planning nodes outside the state's boundary (e.g., Lake Keowee, Helflin, Quincy). Are neighboring states supplying adequate water demand data to be used at these nodes?
- P. 10. The following statement is difficult to understand: "Agricultural water use data aggregate direct surface and effective surface withdrawals from groundwater pumping".
- P. 19. The description of the River Basin Planning Tool indicates that it can be run for different levels of "instream flow protection reliability". This might be more directly stated so that Water Planning Council members clearly understand that the models can be run for a broad range of flow protection scenarios.
- P. 19. Regarding the non run-of-river reservoirs listed at the bottom of the page (Lakes Jackson, Oconee, Sinclair, Nottely, Chatuge, Blue Ridge, Jocassee, and Keowee), it is unclear how you are modeling current conditions if "the operational plans for these non-run-of-river reservoirs are not known to this study".
- Pp. 32-33. Also, the Augusta Diversion Dam was omitted from the description of the Savannah basin, and should be covered.

In some cases, modeling indicates that rivers will go dry at the planning nodes under current demands (e.g., Claxton, Figures E-4-3 through E-4-5). Can management practices selected by the Water Planning Councils include more stringent requirements for water conservation during low flow periods?

III. Comments on the Surface Water Quality (Assimilative Capacity) Resource Assessment

General:

- ---The type of 7Q10, while assumed in most cases to refer to the monthly 7Q10, should be specified whenever mentioned, and
- --- The spelling of Ochloconee should be standardized throughout the document.
- P. 3. To what area does the "coastal fishing DO standard" apply? How will you determine if "the biological community is not adversely affected"?
- P. 4. In the table, does the sum of river miles across a row equal the total river miles for that river basin? Or does the sum only represent the river miles assessed? It would be helpful to know the total river miles in each river basin. Also, if six lakes in Georgia have lake standards, why are results only available for Lakes Jackson and Allatoona?
- P. 5. Of the five water bodies on this page, standards are only given for Lake Allatoona. Standards can be located later in the document, but it would be helpful to know what they are as the nutrient results are summarized. Also, nutrient standards for Lake Jackson seem high (e.g., the total annual phosphorus loading standard is 5.5 lbs/ac-ft). If so, using Lake Jackson's standards as surrogates for Lakes Oconee and Sinclair may allow nutrient loadings in those reservoirs to be higher than their actual assimilative capacity.
- P. 9. The GA Dosag model was developed by EPD. Who developed the GaEst, LSPC and EFDC (public domain) models?

Figures for Dissolved Oxygen results in Chapter 3 (pp. 12-14) and detailed in Appendix B (pp. 4-26) indicate that DO assimilative capacity analyses occurred relatively less frequently in the Tennessee basin, the lower Chattahoochee basin, and the upper Savannah basin. Is that an accurate assessment and if so, why were those areas sampled with less intensity?

P. 24. Since nutrient values for Lakes Oconee and Sinclair are being compared to standards for Lake Jackson, it may be more appropriate in Tables 4-12 through 4-19 to replace "N/A" with some indication of the Lake Jackson standards.

Appendix A, p. 5. The GA Dosag model allows the user to choose whether to use the depth variable or not for each branch. However, both Sediment Oxygen Demand

calculations and the Dobbins-O'Conner reaeration equation require a reach depth. If the user chooses not to use the depth variable, it is unclear how the fixed reach depth is determined.

Appendix A, p. 7. It is unclear how the default values of 2 mg/L for DO and 17.4 mg/L for NH3 were selected in cases where NPDES permits did not contain DO or NH3 limits.

Appendix A, p. 7. The description and assumptions presented for the Natural Conditions Model need to be explained further in order to clarify the appropriateness of the model.

Appendix A, p. 9. Were channel geometry characteristics for the LSPC model collected in the field? These are difficult measurements to collect correctly and would not likely be useful if derived remotely.

Appendix B, pp. 25 and 26. It appears that the last two figures for B-13 are the same section of the Satilla River with different results.

Ms. Amettia Murphy Georgia Dept. of Natural Resources Environmental Protection Division 2 Martin Luther King Jr. Drive Suite 1152, East Tower Atlanta, Georgia 30334 June 22, 2010

Dear Ms. Murphy

On behalf of the approximately 800 members of the West Point Lake Coalition as well as the LaGrange-Troup County Chamber of Commerce, I am submitting the following comments re: the draft water resource assessments:

- 1). The Planning Process has totally ignored the importance of tourism to the state of Georgia. Tourism is the #2 industry in the state and the reservoirs are a major contributing factor to the overall tourism economic impact with over 16,417,000 visitor days to the four federal reservoirs on the Chattahoochee. Currently, DNR, the parent agency of EPD, is investing \$2,000,000 in West Point Lake as part of the Governor's GO FISH Program! B.A.S.S., the No. 1 bass fishing organization in the country, has just committed to bring their Elite Series, their top level, to West Point Lake in May of 2011. What does DNR and B.A.S.S. see and understand that EPD does not? It is incomprehensible that the state would proceed with water planning and totally ignore recreation, the need for water to maintain lake elevations, and the economic impact of the federal reservoirs to the state's overall prosperity.
- 2) The Planning Process continues with no mention of studies to determine the impact on the environment or the eco systems in the ACF Basin as a result of the state's modeling plan.
- 3) The Planning Process has failed drastically to factor in and respect the congressionally mandated authorizations for the federal reservoirs on the ACF System in spite of Judge Magnusson's rulings. Judge Magnusson stated unequivocally that congressional authorizations should be honored early and throughout the planning process and should NOT be ignored. Congressional authorizations are not mere suggestions but strong mandates!
- 4) The Planning Process is void of any analysis of stakeholders' wants vs. needs. Common sense dictates that this is a critical early step prior to any modeling runs. How can the state run a model without accurate inputs? Major stakeholders needs have to be determined and then validated. Once all the needs are verified, the state must ascertain that each need is based on the respective stakeholder being a good steward of the water resource; specifically, is each stakeholder doing all they can do to minimize their need and protect the resource?

2.

- 5) There has yet to be a resource assessment for the Chattahoochee River presented to the Middle Chattahoochee Planning Council.
- 6) The state Planning Process continues to move ahead although critical information is missing and the foundation of the planning process is both flawed and shaky! For example, the Corps of Engineers, the agency responsible for managing the ACF System, is currently developing a comprehensive Revised Water Control Plan; yet there has been no indication that the state is coordinating with the Corps of Engineers. The state Planning Process should be based on the Corps Revised Water Control Plan. Can someone explain why the state is spending millions of taxpayer dollars to model a system that they do not control? The four major reservoirs on the Chattahoochee are "federal" reservoirs built with "federal" tax dollars, and managed & maintained by "federal" agencies!
- 7) The state Planning Process fails to utilize all available storage in the ACF System. The federal reservoirs are nearly drained during times of drought while the storage in Georgia Power reservoirs is untouched.
- 8) All reservoirs and lakes on the Chattahoochee should managed in a balanced manner, fair and equitable to all stakeholders, and based on percent of conservation storage remaining.
- 9) Water quantity is being studied and defined in a vacuum. Water quantity studies should be done concurrently with water quality studies as water quantity and water quality are intertwined and cannot be separated. Yet the process at planning moves forward absent water quality information.

Sincerely,

Dick Timmerberg

Executive Director

West Point Lake Coalition

CC: Mayor Jeff Lukken, LaGrange

CC: Chairman Ricky Wolfe, Troup County

CC: Ms. Page Estes, Chamber of Commerce CC: Patrick Crews, WPLAC



















Director F. Allen Barnes

Georgia Department of Natural Resources Environmental Protection Division 2 Martin Luther King Jr. Drive Suite 1152, East Tower Atlanta, GA 30334

June 30, 2010

RE: Draft Water Resource Assessments

Dear Director Barnes:

We are writing on behalf of the Altamaha Riverkeeper, Coosa River Basin Initiative, Flint Riverkeeper, Georgia River Network, Ogeechee Riverkeeper, Satilla Riverkeeper, Savannah Riverkeeper, and Upper Chattahoochee Riverkeeper, collectively representing over 10,000 Georgians who fish, boat, hunt, own property and small businesses, operate manufacturing facilities, and otherwise rely on healthy aquatic ecosystems to ensure we have enough clean water for ourselves and future generations. We appreciate this opportunity to comment on the three draft resource assessments Georgia's Environmental Protection Division (EPD) has prepared pursuant to the State Water Plan. We submit the following comments, questions, and concerns for your consideration. We also appreciate the hard work that EPD staff and your contractors have put into the planning process thus far.

Our comments and recommendations regarding the draft water resource assessments, critical components of Georgia's emerging state water plan, are described below in four primary areas.

- Lack of integration among assessments
- Deficiencies of surface water availability assessments
- Deficiencies of ground water availability assessments
- Deficiencies of assimilative capacity assessments.

We also have provided comments on three additional outstanding issues: population projections, economic growth projections and responsibilities of the Governor's Office of Planning and Budget.

Generally, we are very concerned that the draft assessments are not accompanied by the technical and scientific documents needed to fully evaluate them, thereby making it difficult for us and the public to conduct a thorough review.

Lack of Integration among Assessments

We first note a lack of integration among all three assessments. The lack of integration is significant—for example, the ground water availability assessments assume we have sufficient groundwater supplies largely premised on the assumption that surface water supplies for the purpose of recharge are unlimited. Similarly, the surface water availability assessments effectively assume that drawdown of groundwater will not impact surface water supplies, even though the science presented to the water planning councils explicitly shows that this is not the case.

With respect to water quality, the assessments essentially ignore the impacts that reduced surface water and ground water availability may have on water quality. The water quality assessments mention TMDLs in passing but choose instead to focus on the presence or absence of assimilative capacity. The only semblance of integration between water quantity and quality is found in the use of 7Q10 or the lowest observed flow to determine gaps in surface water availability. In reality, applying 7Q10 is an academic exercise at best, because low flows in Georgia's free flowing streams have been declining for decades due to increasing withdrawals, impervious surfaces, channelization, and global temperatures. Rather, scientific consensus views the use of 7Q10 to determine the absolute minimum base flow sufficient to protect water quality as inadequate in virtually every context.

Deficiencies of Surface Water Availability Assessments

The surface water availability assessments for the Chattahoochee River presume use of Lake Lanier to meet water supply needs in spite of the recent federal judicial decision to the contrary. Thus, these assessments simply do not mirror legal reality. Even if we were to reach an allocation agreement with our neighboring states, we have no guarantee that Georgia's allocation will remain as high as it is now. We strongly recommend that EPD rerun these assessments assuming no use of Lake Lanier for water supply, as well as assuming lesser reliance on Lanier compared to that which is currently used, to account for such uncertainties.

The surface water availability assessments for the Flint River contain gross inaccuracies. Due to the importance of various aquifer inputs to the system, the choice of gauging stations for baseline assessments is critical. In the Flint, at the fall line, inputs from aquifers begin. A few miles downstream, they constitute a large and ever increasing component of base flow. Choosing to site a gauge downstream of the fall line sets an artificially high baseline for the base flow. The mathematical implications of this are obvious, particularly when modeling or predicting "gaps" that must be accounted for and resolved. In the case of the Flint, there is an available gauge situated immediately upstream of the fall line (at Carsonville), and it was not used. The justification for this was that the time series at Carsonville is not equivalent to the gauge further downstream, and indeed gauges all over the state. Yet, the time series at Carsonville is quite extensive. This is a case of poor judgment by the modelers because the error introduced by copious aquifer inputs to base flow far outweighs that introduced by using a shorter time series. When management options are being considered or debated, it is important for those giving their time to serve on the Regional Water Planning Councils responsible for the Flint's resources to have accurate assessments available for their and for the contractors' consideration.

The surface water availability assessments for the Altamaha, the Chattahoochee, and the Savannah contain assumptions addressing management of reservoirs (other than Lanier) that, while physically possible, are not culturally and economically, and therefore politically, viable. Specifically, it is assumed that reservoirs such as Jackson, Strom Thurmond, Hartwell, West Point (and many others) are fully drawn down to "conservation pool" levels. Although perhaps commendable in that staff have established such a modeling input as one boundary of their output, given the inevitable pushback on this issue from lakeside and lake-use constituencies, modeling of flow/volume availability should have presented a suite of reservoir-pool usage for council members to consider. This was not done.

Moreover, all of the assessments assume that water supply is unlimited as long as the surface water flows do not drop below what are effectively already stressed, low flow conditions (i.e., minimum monthly 7Q10 or daily cumulative unimpaired flows, whichever is less). In fact, the assessments go so far as to admit that water for water supply was prioritized over satisfying flow regime and that water use would be curtailed only when flows were insufficient to meet water use regardless of actual flow regime violations. This admission indicates that the health of the natural system was ignored; if so, EPD must explain and justify this decision.

As you are aware, the Clean Water Act requires more than mere preservation of the status quo; the state must work toward restoration of water quality, including flows, necessary to sustain designated uses. We further note that these draft assessments appear to ignore the recovery requirements of the Endangered Species Act, which go beyond simply avoiding jeopardy to actually conserving federally protected species.

In order to restore Georgia's waters to swimmable, fishable standards and to conserve the state's imperiled species, we strongly recommend that EPD fully engage its own Science and Engineering Advisory Panel (SEAP), the U.S. Fish and Wildlife Service (FWS), the National Oceanic and Atmospheric Administration (NOAA), the U.S. Environmental Protection Agency (EPA), the U.S. National Park Service (NPS), and fish and wildlife experts within EPD itself to identify interim flow targets and hydrological operations protective of these federally-mandated ecological needs. These ecological flows serve as a surrogate for natural constraints on the system, constraints that *must* be taken into account prior to allocating water for consumptive purposes.

Finally, we note that the energy forecasts have yet to be completed. We have learned from Georgia Power, which is preparing these forecasts, that it will not be providing basin- or district- level forecasts for future energy demand; rather, it will be providing a state-wide analysis. This approach is unacceptable for obvious reasons. In order to determine surface (and to a lesser extent, groundwater) availability within each planning district, the energy forecasts must be performed at the same scale as other demand forecasts. Accordingly, we strongly urge EPD to secure an independent contractor to perform the necessary district-level energy forecasts.

Deficiencies of Ground Water Availability Assessments

We appreciate the recognition of the vertical and horizontal connection between aquifer systems and surface water systems. However, as noted above, there is a disconnect between the assumptions and modeling of these systems. While recognizing the interconnection between these systems, we must also connect the use, availability, and other assumptions made in the modeling of these systems.

By EPD's own admission, the upper and lower ranges of sustainable yield in each of the prioritized aquifers were set arbitrarily. As a consequence, these ground water assessments provide little support for any conclusions drawn concerning subterranean-resource sustainability or the adequacy of resulting surface water flows. While EPD's technical staff admits that these target yields are arbitrary, staff also admit that rerunning the models with more scientifically defensible values is not feasible due to budgetary constraints. This is unacceptable. Clearly, these models must be rerun with other parameter values, if for no other reason than to perform the rudimentary sensitivity analysis scientists traditionally perform in conjunction with even the most basic models.

Furthermore, while the assessment notes a vertical hydraulic connection between aquifers, the modeling frequently fails to consider usage in groundwater layers other than the priority ones that were modeled. In fact, in specific instances, the modeling assumes increases in use of these priority systems while holding usage in aquifer systems steady. The reality is that if conditions require increased pumping in one system, this increase is likely across aquifers. This failure could result in more dramatic aquifer draw downs and impacts on surface water systems than the current models indicate.

Finally, the modeling is significantly flawed in that it fails to consider new withdrawals permitted by the Georgia Environmental Protection Division since 1999. For example, a new coal fired power plant has been permitted that, if built, will consume up to 16 million gallons of water a day under low flow conditions from 15 wells in the Sandersville area from the Cretaceous system. This failure to model such a significant user and the impact on this already stressed system raises serious questions as to the legitimacy of the findings.

Overall, the assumptions made on ground water usage are highly flawed and illogical. We believe that any management or permitting decisions made on these models could be determined to be arbitrary and capricious.

Deficiencies of Assimilative Capacity Assessments

First, we note the obvious, unexplained delay in completing the assimilative capacity assessments for Lake Lanier and the Chattahoochee River. Given the need to understand the current status of water quality in the Apalachicola-Chattahoochee-Flint (ACF) river basin *before* reaching a reallocation agreement that does not further impair our waters, we find this omission to be a glaring one. Please explain and justify the delay.

Other water quality issues aside, we note that these assessments do not address all of the water quality impacts associated with wastewater and other discharges, because the models are limited in scope to dissolved oxygen, chlorophyll a, and nutrients, but ignore other key parameters including fecal coliform, sediment, pesticides, metals, temperature, and pH. This is also in contradiction to the repeated assertion of the predecessor Georgia A Water Planning Council that "one size does not fit all," which practically became a mantra when used in obtaining legislative consent for the current planning effort by the Regional Water Planning Councils.

As with the surface water availability assessments, these assimilative capacity documents also ignore the restorative and anti-degradation requirements of the Clean Water Act. Perhaps more troubling is EPD's recognition of this deficiency—EPD staff acknowledge that their modeling approach is suboptimal but point to budgetary constraints as their rationale for refusing to correct the deficiency and rerun these assessments to reflect legal and scientific reality.

Rather than modeling the status quo, we strongly urge EPD to rerun these assessments assuming instead incremental improvements in water quality, in consultation with SEAP, EPA, and other appropriate water quality experts to determine what the appropriate increments should be. Furthermore, EPD should commit to reducing limits on permits for withdrawals from and discharges to impaired waters until those waters have been adequately restored through the TMDL program or a comparable program.

Other Outstanding Issues

Population projections are unreliable

The projections of future regional population changes have been criticized for inaccuracy in most, if not all, of the Regional Water Planning Councils that have received them. In several (perhaps most) councils, projections were seen as too low, while in some other councils, projections for certain counties were analyzed and finally understood to be mere projections of previous growth patterns. In the latter cases, counties that had seen prison populations increase in previous decades were credited with additional prison expansions for no discernible reason.

In some cases, the county-by-county approach to projecting population growth within the rigid boundaries of the planning regions ignores economic geography. As a result, projections for less densely populated counties such as Wayne tend to understate future growth, while projections for adjacent, nearly built-out counties like Glynn tend to overstate future growth in spite of the dearth of buildable real estate for such new growth. The failure to integrate projections for economic and population growth across

the already poorly located boundaries of the regional councils makes the projections, thus far, of very limited utility to this planning process.

Economic growth projections are also dubious

Similarly, economic projections for those same water councils were so poor as to be rejected as useless, and were to be replaced by projections for specific high water consumption industrial sectors. The list provided for those included "oil and gas" which is not an industry of any notable size in Georgia apart from a few smaller asphalt refineries.

The previously cited failure to provide regional analysis of the largest single continuous user of water, thermoelectric power production, is particularly unhelpful in assisting the regional councils to develop management plans, since they must now speculate concerning the effect the largest user may have on local supplies during periods of low flows.

Economic analysis that looks at regional and local population, income and public sector investment (such as transportation investment) and which shows the relationships of those factors to previous rates of growth (and decline) would be very useful to the councils in the development of their management plans. The lack of any economic information on water dependent outdoor recreation, such as fishing, boating, even hunting, and "eco-tourism" is a significant omission in the information with which the councils must work.

Use of the Office of Planning and Budget for development of statistical information remains puzzling.

When the water councils first had their initial meetings in their regions, it was announced that the Office of Planning and Budget would be responsible for the generation of the statistical information on population and economic forecasting for the water planning process. This was something of a surprise to observers of state government, who viewed that agency, a part of the Office of the Governor, as an administrative unit almost entirely dedicated to the development of the state budget. That it would receive this additional workload during a period of considerable budget stress, occasioned by steady declines in state revenues, was a surprise.

The fact that the population and economic forecasts were initially faulty, and that corrected versions of them were not made available to the councils on a schedule that conformed to the timetables set for their work was not surprising in light of the OPB's ordinary, routine duties, but it does raise the question of why this agency was chosen

for this task when other academic and private sector providers could have make the required projections. In all likelihood, this was not a decision made by EPD; however, we would appreciate any comments on this decision.

We hope you will carefully consider the issues we have raised and look forward to discussing these and other issues concerning the state water planning effort when we meet with you on July 15. Meanwhile, if you have any questions, please do not hesitate to contact Laura Hartt (Upper Chattahoochee Riverkeeper) at 404-452-9828, x 15.

We look forward to continuing the dialogue.

Sincerely,

Sally Bethea Sally Bethea

Upper Chattahoochee Riverkeeper

Atlanta, GA

Also on behalf of

Deborah Sheppard

Altamaha Riverkeeper

Darien, GA

Gordon Rogers

Flint Riverkeeper

Albany, GA

Chandra Brown

Ogeechee Riverkeeper

Statesboro, GA

Tonya Bonitatibus

Savannah Riverkeeper

Augusta, GA

Joe Cook

Coosa River Basin Initiative

Rome, GA

April Ingle

Georgia River Network

Athens, GA

Bill Miller

Satilla Riverkeeper

Woodbine, GA

Cc: Arnetia Murphy

Regional Water Planning Council Chairs



United States Department of the Interior

Fish and Wildlife Service

105 West Park Drive, Suite D Athens, Georgia 30606 Phone: (706) 613-9493 Fax: (706) 613-6059

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Coastal Sub Office 4980 Wildlife Drive Townsend, Georgia 31331 Phone: (912) 832-8739

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June 30, 2010

Ms. Arnettia Murphy Georgia Department of Natural Resources Environmental Protection Division 2 Martin Luther King Jr. Drive Suite 1152, East Tower Atlanta, Georgia 30334

Dear Ms. Murphy:

The U.S. Fish and Wildlife Service (Service) is herein providing comments regarding the Georgia Environmental Protection Division's (EPD) draft assessment reports released in March 2010. These comments address content of three synopsis reports: Synopsis Report of Surface Water Availability Assessment, Synopsis Report of Current Assimilative Capacity Assessment and Synopsis Report of Groundwater Availability Assessment. Georgia is home to a number of federally-listed species, many of them aquatics that are found in no other place in the universe. You can find a current list of threatened and endangered species on our office web site; http://athens.fws.gov. Our comments are provided in accordance with provisions of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et seq.) to further the conservation of fish and wildlife resources and their habitat, including federally-listed threatened and endangered species.

A key use of the assessment reports appears to be as a tool for the basin councils as they plan for future water use and the residential, municipal, agricultural, commercial or other entities associated with that water use. Assuming this purpose is accurate, the assessment reports are of minimal use. The reports are not related to each other and the results are not placed in useful context. For example, the surface water assessment gives a clear impression that much more water could be withdrawn; however, there is no discussion of potential impacts to assimilative capacity if the maximum sustainable yields are withdrawn. There is no guidance on critical aspects of water management such as an unacceptable quantity of water withdrawal, potential impacts to downstream neighbors, potential impacts from upstream neighbors, disadvantages of withdrawing certain quantities from certain sources and/or under certain seasonal conditions, or benefits of leaving water for instream purposes. Alarmingly, there is no mention of water conservation. Our concern is that the reports are likely to convince the basin councils that water

availability in most all of the State is not problematic and, therefore, planning for water use that sustains human and natural communities in not a priority need.

The fundamental purpose of the assessments is not clear based on information in and associated with the reports. The draft assessments state intent to determine capacity "without unacceptable degradation" and meet demands while complying with "provisions of current state or federal policy". Additionally, the accompanying memorandum to the assessments states intent to meet demands for water supply and waste discharge "without unreasonable impact", while a handout posted to the EPD website claims an intent to avoid "unwanted results". With investigation, current State and Federal policy can be understood; however, the definitions of the other phrases are not provided. Given other statements in the reports (see additional comments below), the level of impacts that is acceptable to EPD seems to be any amount that does not preclude future use of a particular water source and does not violate current water quality standards. From the Service's perspective, such policy will facilitate violation of the Clean Water Act and the Endangered Species Act because water withdrawals will not be designed to protect instream flows for native fish, mussels and other aquatic organisms.

An important aspect of water management that is not addressed is monitoring of use and impacts. Water users should be required to document the amount of water they use and water quality parameters in the water bodies affected by the water withdrawals. Without consistent and prolonged monitoring, neither the councils nor EPD will be able to confirm that water supplies are being sustained in an appropriate manner.

Specific Comments

Surface Water Availability Assessment – The assessment is an estimate of all the water that could be withdrawn with no precautions regarding protection of instream resources or the impacts associated with withdrawals. On page 20 is a statement that seems to foretell the EPD policy that is being offered to the councils. When preparing the assessment, a decision was made to not be protective of instream resources in lieu of acknowledging the full capacity of available water. As another agency mandated to protect natural resources, the Service finds this statement confounding because managing water use at full capacity will thwart efforts by EPD to protect and prevent degradation of aquatic resources. The assessment provides no discussion of the disadvantages of ignoring the value of maintaining instream flows.

It is not clear how water needs were estimated to make the determinations regarding shortages of water. Additionally, water conservation does not appear to have been incorporated into the determinations of demands and available water. Finally, the assessment articulates a water shortage where river reaches are not impounded while, with rare exception, impoundments satisfy all projected water needs. The information as portrayed provides a not-so-subtle message that a basin's water availability concerns can be simply met by building a reservoir. While reservoirs can be solutions for water management issues, they are destructive to natural systems and have other disadvantages that should be considered during any water planning efforts.

Ground Water Availability Assessment – The assessment is independent of the surface water availability assessment in that there appears to be no recognition that withdrawing surface water to extremes and withdrawing ground water to extremes would not be sustainable.

A key assumption in the ground water assessment is that reducing aquifers by 30 feet or surface water by 40% below current conditions is acceptable. There is no explanation of how this number was derived, why it is acceptable or the disadvantages of reducing an aquifer level by such a large depth. Reduction of current flows by 40% is a significant alteration of instream flows in any year. During low flow years, such a reduction will exacerbate drought conditions and contribute to death and injury of listed species such as the freshwater mussels of the Flint basin.

On page S-25, the report states that pulling large quantities of water from the Upper Floridan aquifer is not problematic because surface waters will recharge the aquifer. It is factual, particularly, in the lower Flint basin, that surface and ground water sources are often closely connected, but the report does not make the connection in a manner that recognizes that surface and ground water sources being used at the same time can be quickly over-allocated.

The limits this document suggests as appropriate for ground water withdrawals are those that preclude surface water use. Again, there is no information regarding the disadvantages of removing such large volumes of water from their natural systems, including impacts to native aquatic species, assimilative capacity, stream geomorphological processes or other natural stream functions.

Current Assimilative Capacity Assessment – The assessment is independent of the surface water availability assessment in that assimilative capacity will be considerably compromised where surface water is withdrawn to extreme lows. The conclusion that the streams and rivers have extra assimilative capacity is contrary to the State's 303(d) list for certain basins, and does not account for dry years when the average flows that permitted discharges are based on are not present.

In summary, the draft assessment reports are unlikely to be useful to the basin councils as the documents are currently written. Furthermore, if the councils base their decisions on these documents, it is likely that water quality and at-risk species (i.e., threatened and endangered species) will not be protected. Please direct any questions or comments to me at the above address or telephone 706-613-9493 ext. 230.

Sincerely,

Sandra S. Tucker Field Supervisor

Sandre & Tucker

cc: file

USFWS -- Panama City, FL USFWS -- Ft. Benning, GA USFWS -- Townsend, GA



Florida Department of Environmental Protection

Bob Martinez Center 2600 Blair Stone Road Tallahassee, Florida 32399-2400 Charlie Crist Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole Secretary

June 11, 2010

Linda MacGregor Chief, Watershed Protection Branch Georgia Environmental Protection Division 4220 International Parkway, Suite 101 Atlanta, Georgia 30354



Dear Ms. MacGregor:

The Florida Department of Environmental Protection, in coordination with the Northwest, Suwannee River, and St. Johns River Water Management Districts, recently reviewed the three draft water resource assessments (Surface Water, Ground Water, and Assimilative Capacity) which are posted on the Georgia Water Planning website for public review and comment. We greatly appreciate the opportunity to review the assessments, and would like to strengthen our cooperative efforts for the surface and groundwater basins that are shared between our two states.

Prior to submitting detailed comments explaining our concerns, we would like the opportunity to meet with you and appropriate staff to get a better understanding of your approach to the analysis and to identify and discuss the primary issues of concern to Florida. Based on our initial review, we are very concerned that the aquatic ecosystems of our shared streams and rivers are not being provided adequate protection, and that groundwater withdrawals in Florida are not being considered when evaluating existing and proposed conditions. We would also like to discuss what information or data we may be able to provide to assist you in your analysis. As a preliminary matter, I will note that during our review, we did not have access to the detailed technical reports and models on which the assessments were based. Access to that information would greatly facilitate our understanding and review.

We would anticipate including staff from the Florida DEP, the Suwannee River Water Management District, and the St. Johns River Water Management District in such a meeting. Recognizing the ongoing litigation and negotiations related to the ACF basin, it is our intent that the meeting would not include any discussion on the ACF watershed. If this is acceptable to you, perhaps you could propose a meeting location south of Atlanta to reduce the travel time for the Florida participants.

Please contact me (Janet.Llewellyn@dep.state.fl.us), or my assistant, Yvonne Zola (850/245-8676 <u>Yvonne.Zola@dep.state.us</u>) to let us know if you are available to meet, and we can identify a mutually convenient date and location.

Ms. Linda MacGregor June 11, 2010 Page 2

We look forward to working with the State of Georgia to ensure healthy water resources for both people and the environment in our shared watersheds.

Sincerely,

Janet G. Llewellyn

Director

Division of Water Resource Management

JGL/yz

cc: Jerry Brooks, DEP, Division of Environmental Assessment and Restoration David Still, Executive Director, Suwannee River Water Management District Kirby Green, Executive Director, St. Johns River Water Management District Environmental Affairs Bin 10221 241 Ralph McGill Boulevard NE Atlanta, Georgia 30308-3374



June 24, 2010 CERTIFIED MAIL

Arnettia Murphy
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STATE WATER PLAN

SYNOPSIS REPORT SURFACE WATER AVAILIBILITY ASSESSMENT,
SYNOPSIS REPORT CURRENT ASSIMILATIVE CAPACITY ASSESSMENT,
SYNOPSIS REPORT GROUNDWATER AVAILABILITY ASSESSMENT

Georgia Power Comments

Dear Ms. Murphy:

As a vested stakeholder in sound long term water resource management in the State of Georgia, Georgia Power appreciates the opportunity to comment on the Subject draft synopsis reports. Georgia Power is aware of the importance of developing these reports as the baseline for future water resource management decisions and, accordingly, offers the following comments aimed at helping to achieve an accurate and defendable assessment of the state's current water resources.

GENERAL COMMENTS

In general, the reports provide a great deal of useful information, and go a long way towards establishing the scientific foundation for the next phases of State Water Plan implementation. Georgia Power believes it is important to point out, however, that the reports are highly technical in nature and do not lend themselves to layman interpretation. This likely renders the reports less useful to policymakers and other professionals who may lack the expertise to interpret and apply the reports in the manner required by the State Water Plan. As a result, state water planning may be left in the hands of a group of highly skilled experts. Moreover, the reports' supporting documents, which are intended to be highly technical and help explain the synopsis reports, are not all available for review at this time. Georgia Power therefore reserves the right to comment further on the reports after it has had an opportunity to review the supporting technical documents.

Once the draft synopsis reports and the supporting technical documents have been made available for review and comment, Georgia Power anticipates that EPD will issue subsequent report iterations and Final reports that reflect stakeholder input. Subsequent steps for the reports are less clear, as the reports do not explain how they will be managed over time; in particular, how they are to be amended, at what frequency and by whom. It is also unclear how the reports will be implemented in conjunction with the State Water Plan projections, forecasts, subsequent allocations, management practice selection and ultimately, the regional water development and conservation plans. Georgia Power respectfully requests that EPD clarify and map out these next steps and include a description of them in the Final versions of the reports.

Finally, Georgia Power asks that the reports themselves specifically address the interrelatedness of the three resources assessed – surface water availability, assimilative capacity, and groundwater. It is critical that these water resources be considered holistically when planning water management. While in some instances the reports reference the other resources, there is no detailed discussion of direct impacts. In addition, the planning process should document what the reports have revealed about the connectivity of the resources, and require consideration of how decisions about one of the resources will impact the other two. Doing so will be instrumental in ensuring a sustainable approach to managing the state's water resources.

Surface Water Availability Assessment

As EPD is aware, water resources are vital to Georgia Power's core business activities, including hydropower generation. Below is background information on the company's hydropower operations (which identifies its interests as a hydropower reservoir stakeholder) followed by our specific comments on the draft synopsis report Surface Water Availability Assessment.

Georgia Power as a Hydropower Reservoir Stakeholder

Most Georgia Power hydropower reservoirs were built in the early 20th century to provide electricity across the state, culminating in the construction of Wallace Dam on the Oconee River in 1978. Today these hydropower projects continue to provide a reliable, renewable and clean source of green energy for Georgia's citizens at a reasonable cost. Georgia Power's hydropower reservoirs are non-federal projects developed with private funding, owned and operated by Georgia Power. They are regulated and licensed by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act (FPA) and are subject to a host of other statutory and regulatory requirements. Georgia Power's reservoirs are operated and regulated to provide both power and non-power benefits: They generate steady base load or peaking power while providing recreation; fish, aquatic and wildlife resources and habitat; endangered species habitat; shoreline and land management; cultural resource protection and other benefits.

As part of licensing non-federal hydropower projects under the FPA, and in compliance with the National Environmental Policy Act and other federal statutes, FERC balances all

water resource interests in a way that is consistent with the public interest. Limited storage is allocated in consideration of reservoir levels, seasonably variable instream flows, recreation flows and other operational and environmental factors. Any change to a hydropower project to operate for water supply would impact the balancing of all benefits and would require FERC approval. For example, water supply reservoir operations can substantially lower or fluctuate reservoir elevation, affecting power and non-power benefits, including peaking power capabilities. Attempts to impose water supply obligations would interfere with FERC licensed activities, could negate Georgia Power's investment in storage capacity and could impose upon consumers the cost of more expensive replacement sources of power. As such, Georgia Power reservoirs should not be considered water supply sources for state water planning purposes.

Comments

- Page 1 (first paragraph). The report states that the study compares water supply and water demand as the basis for assessment of the amount of water that can be consumed "without substantially altering the flow regime and opportunities for upstream and downstream uses supported by the flow regime." The report never explains what it means by "substantially altering the flow regime."
- Page 1. The report defines "unimpaired flows" as historically observed flows with
 effects of reservoir regulation, reservoir surface precipitation and evaporation, and the
 water consumed by municipal and industrial, thermal power and agricultural water
 uses removed." The report does not explain what it means by "effects of reservoir
 regulation."
- Page 2 (first paragraph under Flow Regimes). The report states that "minimum flow requirements used in the analysis, whether monthly or daily, were drawn from Georgia's interim in-stream flow protection strategy or from the reservoir release policies applicable to federal and non-federal reservoirs. All input in regard to potential flow regimes were refined by EPD to be consistent with existing DNR rules and accommodate existing water-use permits stream flow regulation effects of large storage reservoirs operated by the Corps, Tennessee Valley Authority, and non-federal hydroelectric power producers. These inferences are predicated on the assumption that federal and non-federal reservoirs are operated in accordance with existing federal policy or Federal Energy Regulatory Commission (FERC) license requirements, respectively." This paragraph needs to be clarified. The report does not explain how the potential flow regimes were refined by EPD and the report should explain the inferences that are predicated on the assumptions expressed.
- Page 3 (first paragraph under Water Availability Measures). The report states that the "methodology employed in this study prioritizes water use over satisfying flow regime, meaning that water use is curtailed only when stream flow is insufficient, irrespective of flow regime violations." The report's assumption that certain water is available when for all practical purposes it is unavailable may result in underestimating a basin's potential shortfall.

- Page 3 (third paragraph under Water Availability Measures). The report states that "[f]or regulated and semi regulated nodes, when upstream reservoir physical storage is sufficient to meet flow regimes as well as consumptive uses, shortfalls in availability are assumed to be zero, even if no storage is allocated in the reservoir for water supply....Storage represents aggregate total conservation storage within the reach, i.e. the sum of federal and non-federal reservoir storage between planning nodes." In this context, assuming zero shortfalls in water allocation/availability when no storage is present is very misleading to the layman reader. This assumption could lead to serious overestimation of water availability. Georgia Power reservoir storage should not be assumed to be available for state water planning purposes.
- Page 4 (last paragraph). The report states "the methods and procedures applied to the
 current gap analysis are robust and flexible, and are highly adaptable to future water
 use assessments and water management planning." The report does not simply
 explain the methods and procedures and how they were used in the context of
 developing the draft assessment.
- Page 5 (first paragraph). As noted earlier, the assessment "evaluates the amount of water that can be consumed during dry periods without substantially altering the flow regime and the opportunities for instream and downstream use supported by that flow regime." Again, the report does not explain what it means by "substantially altering."
- Page 5 (second paragraph). The report states that "[r]emoval of all human influences is not practical because they either have not been recorded or are not readily quantifiable (i.e., the effects of changing land uses on runoff and stream flow)....Thus, while flows developed in this study are not entirely unimpaired in the literal sense, they do capture the major reversible human influences." The recognition that certain human influences "are not readily quantifiable" should not preclude some attempt to take them into account. In particular, eliminating from consideration the impact of changing land uses on stormwater runoff and streamflow may result in an unrealistic picture of water use in the state. It may also result in disproportionately attributing impacts to the human influences that are included in the assessment: reservoirs, water withdrawals and wastewater returns, and some groundwater pumping. At a minimum, the assessment should include a more robust discussion of why the impact of changing land uses on stormwater runoff and streamflow "are not readily quantifiable."
- Page 6 (Section 1.2). The report states that assessments for "future conditions will be performed in the spring of 2010 at 10-year intervals between 2010 and 2050. Regional Water Planning Councils, with assistance from the Georgia Environmental Protection Division and the Regional Planning Contractors will identify the stream reaches with the most critical water availability gaps. An analysis of the gaps and their locations in the water planning region will inform the Regional Water Planning Councils' initial selection of management practices (i.e., strategies that when implemented will help close the gaps)." The spring assessments of future conditions have not been adequately discussed. What is the status of the spring assessments of future conditions and how will the regional councils' future assessments be

- coordinated in a consistent manner with them and the synopsis assessment? A detailed road map of this organic assessment process would be very helpful.
- Page 14 (fourth paragraph). The report states that "water availability for regulated and semi regulated nodes is determined by compliance with a select set of criteria. These criteria are "average demand shortage, average at-site flow requirement short fall, minimum reservoir storage (shown both in terms of volume and percent of storage), and average basin-wide flow requirement shortfall." These terms have not been fully explained/defined.
- Page 17 (Section 5.4). Similar to Section 7.1 regarding federal reservoirs and for background purposes, the report should include a description of non-federal/private power reservoir purposes: our reservoirs generate steady base load or peaking power while providing recreation; fish, aquatic and wildlife resources and habitat; endangered species habitat; shoreline and land management; cultural resource protection and other benefits.
- Page 19 (Section 7, third paragraph). The report states "The July 2009 federal court ruling on use of Lake Lanier is not considered because of the subjective nature of identifying its effect on reservoir operations." Disregarding the 2009 ruling in this context is misleading to the reader as it assumes reservoir storage may be available for water supply in the future underestimating a basin's potential shortfall.
- Page 21 (Section 7.1). The report states that "federal reservoirs operate for multiple purposes, including flood control, water supply, hydropower, navigation, water quality, recreation, and aquatic habitat and species protection." This statement describes the function of federal reservoirs in general, not just in the ACF basin, and should be included in Section 5.3 Flow Regulation by Federal Reservoirs.

Synopsis Report Surface Water Assimilative Capacity Assessment

Comments

- Page 3 (first paragraph). The report states that the assessment "was used to determine the capacity of Georgia's surface waters to absorb pollutants without 'unacceptable degradation' of water quality." The report never explains what constitutes unacceptable degradation of water quality. The document goes on to point out that Assimilative Capacity is defined as "the amount of contaminant load that can be discharged to a specific water body without exceeding water quality standards or criteria." Is this intended to establish what constitutes unacceptable degradation? Put another way, how does the assessment recognize acceptable degradation?
- Page 3 (second paragraph). The report states that the "current assimilative capacity results focus on dissolved oxygen, nutrients, specifically nitrogen and phosphorus, and chlorophyll-a." The document does not explain why these particular parameters are focused on at the exclusion of others.

- Page 3 (second paragraph). The report states "[r]esults are currently only available
 for Lake Jackson and Lake Allatoona." The report does not provide additional
 information on if or when results for the other four lakes (for which there are lakespecific standards) will be available.
- Page 4 (second paragraph). The report refers to "1992 Georgia Lake Law." A reference citation is not provided in Section 5.0 in this regard. It does not appear that this was the official name of the statute, which was enacted in 1990, not 1992.
- Page 4 (third paragraph). The report presents a table showing available assimilative capacity (in river miles) for different river basins based on the applicable Georgia dissolved oxygen standards. The table shows different categories including the following: none or exceeded, limited, moderate, good, very good. No explanation is provided for the different category cut-off points or how they were established.
- Page 5 (second paragraph). EFDC models were developed for lakes Allatoona,
 Jackson, Oconee and Sinclair. The report does not explain why these lakes were
 chosen. Furthermore, there are no lake-specific standards for Lake Oconee and Lake
 Sinclair. However, the report compares the results from Lake Oconee and Lake
 Sinclair to the standards for Lake Jackson without any explanation. This can be very
 misleading without specific qualification.
- Page 6 (first paragraph). The conclusion states that 76% of the river miles evaluated for dissolved oxygen have "good" to "very good" assimilated capacity for dissolved oxygen. It explained that this means these streams have greater than .5 milligrams per liter (mg/L) of dissolved oxygen above the standard and or natural dissolved oxygen levels and they are likely be able to assimilate additional wastewater discharges in the future. The report does not explain how it determines that .5 mg/L above the standard constitutes good to very good assimilative capacity. Similarly, the report explains that 24% of stream miles have "moderate" to "no" assimilative capacity, and explains that this means "these streams have .5 mg/L or less available dissolved oxygen." Again, the report does not explain how it has determined that .5 mg/L or less available dissolved oxygen (assuming this means .5 mg/L or less below the water quality standards) constitutes moderate to no assimilative capacity.
- Page 6 (first paragraph). The report states that "many of these streams have greater than 0.5 mg/L of dissolved oxygen above the standard and/or natural dissolved oxygen levels and will likely to be able to assimilate additional wastewater discharges in the future; although, downstream effects will still need to be evaluated." The report does not explain what it means by "downstream effects will still need to be evaluated."
- Page 6 (last paragraph). The report states that "the Lake Sinclair model indicates that
 the lake was in good condition; however, the Lake Oconee draft results indicate that
 Lake Oconee may have a chlorophyll-a issue that will need to be accessed further."
 This conclusion seems premature given that Lake Sinclair and Oconee do not have a
 chlorophyll-a standard.

- Page 11 (sixth paragraph). Figure 3-1 presents a scale that presents dissolved oxygen results (Very good ≥ 1 mg/L of DO available, Good > .5 mg/L to 1 mg/L of DO available, etc.). The report provides no scientific explanation for these categorical conclusions.
- Page 21 (Section 4.3.2). Table 4-7 shows the calibrated modeled growing season average chlorophyll levels for Lake Jackson. The report states that "the bolded values indicate the locations and years where the model predicted the lake did not meet its chlorophyll-a standards." However, there are no such locations and years. This language should be struck from the report or clarified. This same reference is made regarding tables 4-9 and 4-10.
- Page 26 (Section 4.3.4). The document acknowledges that there are no lake specific standards for Lake Sinclair. However, the results for chlorophyll-a, total nitrogen, and the total phosphorus loadings are compared to the standards for Lake Jackson. No specific explanation is provided for this comparison.
- Appendix B, Figure B-1 on page 3 again provides a description of the dissolved oxygen results scale. No scientific basis is provided for the various categories.

Synopsis Report Groundwater Availability Assessment

Comments

- Page S-3 (second paragraph). The report states that "Sustainable yield simulations
 did not include increased withdrawals from the portions of aquifers in Alabama,
 Florida, and South Carolina." In order to be as realistic as possible, the simulations
 should include some level of increased withdrawal from those states (similar to the
 consideration of withdrawals in Alabama and Florida made on page S-26).
- Page S-3 (first bullet). The report states that one of the selected sustainable yield
 criteria of allowable groundwater drawdown from current conditions is "streamflow
 reductions from current conditions of 40 percent or less." The report does not explain
 why this percentage is an appropriate starting point for the analysis for streamflow
 reductions.
- Page S-7 (Section 1.2, fourth paragraph). One of the criteria on which Georgia
 aquifers were prioritized was "acceptability of impacts due to increased groundwater
 withdrawals." The report does not define "acceptability" or specify what impacts
 would be considered acceptable.
- Page S-8 (fourth paragraph). The report states that "the overarching concept to be evaluated is whether an increase in recharge...or a decrease in discharge causes unwanted results." The report does not define "unwanted results" or what would constitute "unwanted results."

- Page S-9 (Section 2.1.3, first paragraph). The report states that "metrics were selected to constrain recharge from surface water sources in order to maintain opportunities for surface water use." The report does not define "surface water use" or explain whether it includes uses other than surface water withdrawals.
- Page S-25 (last paragraph). In describing the Dougherty Plain modeling approach, the report states that "the critical sustainability metric in the Dougherty Plain area was the potential impact to base flows of the river system. Because there is a significant degree of connection between the Upper Floridan aquifer and the rivers in this part of Georgia, excessive drawdown of the aquifer does not appear to be a major concern because the rivers would recharge the aquifer under increased withdrawal scenarios." The report should include more comprehensive consideration of the potential effects of groundwater withdrawals throughout Georgia on surface water quantity and quality, and how those effects would impact those resources.

Georgia Power appreciates ongoing dialogue with the State Water Plan leadership and anticipates continued transparent inclusive consultation at the Region Council level to address future water resource planning at local, state and federal levels. If you have questions or comments please feel free to contact me directly at (404) 506-7026 or tdblaloc@southernco.com, or George Martin of my staff at (404) 506-1357 or gamartin@southernco.com.

Sincerely:

Tanya D. Blalock

Environmental Affairs Water Programs Manager

cc:

F. Allen Barnes, Esq.
Director
Georgia Environmental Protection Division
Georgia Department of Natural Resources
2 MLK Jr. Drive
Suite 1152, East Tower
Atlanta, Georgia 30334

June 30, 2010

Mr. Allen Barnes
Director, Georgia Environmental Protection Division
2 Martin Luther King Jr. Drive
Suite 1152
Atlanta, GA 30334

RE: Draft Water Resource Assessments

Compréhensive Statewide Water Management Plan

Dear Director Barnes:

The Georgia Water Alliance (GWA), a coalition of over 40 business, local government, utility, agricultural and water system manager interests, was founded more than four years ago to provide a collaborative forum for these statewide entities to build consensus and to provide focused input into the development and implementation of the Statewide Water Management Plan (State Water Plan).

In March 2010, the Georgia Environmental Protection Division (GEPD) released for comment the draft water resource assessments for water quality, surface water and groundwater quantity. In general, these assessments provide ample information regarding the health and availability of Georgia's 14 river basins. These baseline assessments will support the planning of each regional water council as they work toward development of draft Water Development and Conservation Plans (WDCP). GWA has reviewed the draft assessments, along with the limited information related to the methodology used. Given that these projections will inform and guide regional water plans, we are submitting the following comments and observations to you.

Water Resource Assessments

There are three major issues with the draft Water Resource Assessments (WRA) as presented on the State Water Planning website.

- 1) Data and assumptions used for models are unclear and undefined.
- Use of current demand versus permitted limits ignores planning and investment.
- 3) Correlation between inputs and results is not clearly expressed.

Page Two

RE: GWA Comments, Water Resource Assessments

Data and Assumptions

The assumptions and data used in running the models have not been clearly delineated to allow for technical review by peers of the results generated by the models. A cursory review of the assessments raises the following questions as examples of this issue:

- 1. How and why was consumptive use determined and handled for wastewater land application sites, agricultural applications, and septic tanks? This issue is not clearly discussed, defined or supported with technical basis.
- 2. How were daily withdrawals and returns aggregated and applied on a daily basis across the ~70 years of record? More specifically, were monthly municipal and industrial withdrawals/returns applied to the entire flow period based on average monthly withdrawals/returns or actual daily flow? Was the highest withdrawal day used? These issues are not obvious and require additional explanation.
- 3. How were the data sets on industrial, municipal, agricultural and energy demands, developed over the course of the last two years for the Regional Water Councils, incorporated into the modeling? Section 7 of the Surface Water Resource Assessment indicates data from 2002 to 2007 was used for the modeling and this six year data set has not been presented to or reviewed with the Regional Water Councils for accuracy or applicability. Incidentally, Section 3 indicates that data going back 10 to 20 years where available was used for the modeling.
- 4. How was the unimpaired flow regime determined for years prior to the availability of withdrawal and return records? In addition, how were data gaps filled during early periods of record and is the data relevant? An explanation of the technical analysis and policy rationale for flow regime targets being based on synthesized "unimpaired" monthly 7Q10 flows and select historic low flow years, and how this synthesized unimpaired strategy compares with monthly 7Q10 flows based on the last 20 years or so of actual record and application of the non-depletable flow strategy for withdrawals would be helpful. These issues and others have not been fully explained.

In addition, the Draft Surface Water Resource Assessment indicates that more information regarding modeling and how the data was used is available in the Draft Unimpaired Flow Data Report, but this report has not been put on the website for general review. Further, it is not clear in the Surface Water Resource Assessment why some reservoirs were not modeled or included in the analysis, other than the statement that operational rules were not readily available for the particular reservoir.

Page Three

RE: GWA Comments, Water Resource Assessments

Recommendation: Complete data sets, assumptions and policy decisions need to be provided with both technical and non-technical formats before draft plans are created. A clear and transparent process will allow for adequate peer review and ensure the outcomes are technically sound.

Current Demand vs. Permitted Limits

The second major issue is that modeling current demand (or discharges in the case of the Surface Water Quality Assessments) against stream flows using historic water demand data (or current pollutant loads) fails to account for the significant financial investment in infrastructure necessary to support, maintain and utilize permitted capacity. These investments underwrite the economies of the regions in question and may have been made many years ago based on previous forecasts of growth as well as the need to provide for peak demands, drought proof regions and provide for minimum in-stream flows. By basing the demand forecasts on actual historic numbers and comparing those numbers to the availability of the resource, you run the risk of penalizing water suppliers, industries or other entities which have already invested in water infrastructure to meet current and future demands. It is also not clear how the impact of peak demands have been included in the evaluation or "gap analysis" of demand versus resource availability.

Unless you take away the permitted capacity, thereby penalizing those entities who have made significant investments, you underestimate the current stress on the water resources in the gap analysis by not accounting for additional water that an entity is already permitted to withdraw and supply. Entities which have made these investments will be actively advertising for or seeking new customers to which to supply that water or ways to efficiently utilize that water in order to repay those investments. Thus, operations who have invested in water infrastructure will ultimately need to sell or use that water resource to recover the dollars invested.

Recommendation We believe that the starting point for the water quantity and water quality resource assessments needs to be based on permitted capacity for municipal and industrial water and wastewater systems — unless actual recent historic demands exceed that permitted capacity, in which case the larger of the two numbers should serve as the starting point. Future potential growth should then be added to those permitted capacity numbers moving forward.

Correlation between Inputs and Results

Finally, the presentation of the results and what they mean in simple terms is lacking for all of the resource assessments. For example, if a planning node is below the required stream flow for some period of time, what is that occurrence frequency and what are the real consequences

Page Four

RE: GWA, Water Resource Assessments

in terms of required water resources. Regional Water Councils will have a hard time extracting the meaning of the results when it comes to identifying real management strategies without some simple, high level summaries of what the actual impacts are expected to be. The information, as presented, does not provide to the layman an understanding of whether or not the results are issues they must manage or not.

Recommendation: Develop and publish summary documents in practical terms.

In conclusion, we believe it is important to note that the WRA and associated documents are highly technical in nature and do not lend themselves to layman interpretation. As stated in our introductory remarks, in general these assessments provide ample information regarding the health and availability of Georgia's 14 river basins. These baseline assessments will support the planning of each regional water council as they work toward development of draft Water Development and Conservation Plans (WDCP). The reports become less useful to policymakers and other professionals who may lack the expertise to interpret and apply the reports in the manner required by the state water plan. As a result, state water planning is left in the hands of a small group of highly skilled experts. Moreover, the reports' supporting documents, which are intended to be highly technical and help explain the synopsis reports, are not all available for review at this time.

Last, when considering regional planning as described in the State Water Plan, these reports should also specifically address the interrelatedness of the three resources assessed — surface water availability, assimilative capacity, and groundwater. Doing so will be instrumental in ensuring a sustainable approach to managing the state's water resources. Until such time that all data and supporting documentation is available, the Georgia Water Alliance reserves its right to comment further on this issue.

Sincerely,

THE GEORGIA WATER ALLIANCE

cc: Ms. Arnettia Murphy

Mr. Chris Clark

DNR Board Members

Please direct responses to these comments to the Georgia Water Alliance, c/o Ms. Katie Kirkpatrick, Vice President — Environmental Policy, Metro Atlanta Chamber of Commerce, 235 Andrew Young International Boulevard, NW, Atlanta, GA 30303 or kkirkpatrick@macoc.com



Mr. Allen Barnes
Director, Georgia Environmental Protection Division
2 Martin Luther King Jr., Drive
Suite 1152
Atlanta, GA 30334

RE: Unimpaired Flows
Comprehensive Statewide Water Management Plan

Dear Director Barnes:

The Georgia Water Alliance is a broad coalition of stakeholders representing business, local government, water service providers, utilities and agribusiness interests. The Georgia Water Alliance (Alliance) was formed in 2006 to provide a unified voice during the development and implementation of Georgia's Comprehensive Statewide Water Management Plan (State Water Plan). We fully support the legislature's water policy statement that "Georgia manages water resources in a sustainable manner to support the state's economy, to protect public health and natural systems, and to enhance the quality of life for all citizens."

On June 30, 2010, the Alliance submitted questions and concerns to GEPD regarding the draft water resource assessments available for comment through public notice. Of particular interest was the use of unimpaired instream flows and the impact on outcomes in various models. Members of the Alliance met with GEPD staff on September 1, 2010 to discuss this issue in detail and we appreciate their time and input. Many of our questions were answered at that meeting, but we remain very concerned about the lack of clarity on GEPD's proposed use of unimpaired flows. The Alliance committed at the meeting to provide our continuing concerns in writing for your consideration.

Background

The draft water resource assessment uses calculated "unimpaired flow" data sets as the basis for establishing the dry-year flow-regime requirement. Unimpaired flows are calculated by adjusting historic observed streamflow records by removing historic effects of reservoir regulation and evaporation, water supply withdrawals, wastewater returns, agricultural withdrawals, thermal power use, and groundwater pumping that



affect streamflow. In other words, the unimpaired flow concept relies on back-calculated sets of hypothetical historic streamflow records that would have been observed between 1939 and 2007 had there been no historic human activities to alter such "natural" streamflows.

<u>Concern</u>

The Alliance remains very concerned that use of unimpaired flows in the water resource assessment will become an EPD permitting requirement replacing the 2001 DNR policy on instream flow protection which utilizes real streamflow data.

At our meeting, GEPD staff explained that the intent of the water resource assessment is to provide general guidance on the future availability of water. GEPD also stated that the specific gap numbers generated are not intended for current or future water withdrawal permit decisions. However, GEPD stated that the connection between planning and permitting is unclear.

Future surface water withdrawal permitting decisions will be made by EPD staff and, if appealed, by administrative law judges. We can, unfortunately, foresee a future decision requiring use of virtual unimpaired flows rather than real streamflows on the basis that the water resource assessment is part of the State Water Plan and that the Plan supersedes previous DNR policy.



Suggested Action

While we would prefer that the draft water resource assessment be changed by replacing the unimpaired flow calculations with real streamflow calculations, we do have another important suggestion for incorporation into the final water resource assessment. The final water resource assessment should contain a clear discussion on the use of unimpaired flows and the use of the assessment. This discussion should <u>definitively state</u> that the assessment is for general planning purposes only and is not to be used for permitting decisions. Also, the discussion should verify that the 2001 DNR policy, using real streamflows, is operative until such time it is changed by the DNR Board.

Big Picture

Our suggestion above is focused solely on the use of unimpaired flows in future permitting decisions. But, in the big picture, a broader issue should be considered for all aspects of the State Water Plan. For the purposes of water withdrawal permitting, the Alliance is concerned that GEPD or judges will interpret all portions of the plan (i.e. the 2008 plan, the EPD planning guidance subsequent to 2008 and all portions of the final Regional Water Plans) as equivalent to State law. Based on our involvement in the development of the State Water Plan, it was never intended for the entire plan, as described above and which contains broad statements, preliminary planning numbers and assumptions, to be law or to be equivalent to law.

In closing, the Georgia Water Alliance appreciates the opportunity to provide our concerns on this important matter. Important because it could result in practices, policies or rulings that may not be supportable and that may inadvertently negatively impact the State's economy and may diminish future opportunities. We appreciate your consideration and look forward to hearing back from you.

Sincerely,

THE GEORGIA WATER ALLIANCE

cc: Nap Caldwell

Gail Cowie

Please direct inquiries about the Georgia Water Alliance, c/o Ms. Katie Kirkpatrick, Vice President – Environmental Policy, Metro Atlanta Chamber of Commerce, 235 Andrew Young International Boulevard, NW, Atlanta, GA 30303 or kkirkpatrick@macoc.com.

COMMENTS SUBMITTED VIA WEB

SURFACE WATER

Email * lager@dishmail.net
Name * Les Ager
County *
Pulaski County
Home Water Planning District/Region
Middle Ocmulgee Water Planning Region
Comments *

The Surface Water Availability Assessment did not adequately define the need for instream flow for the purpose of wildlife conservation and recreation. The report stated that EPD interim flow policy was used in the models and therefore assumed to be an accurate assumption of the needs of wildlife. However, the interim policy in use by EPD has no apparent biological rationale and has not been studied in Georgia. In particular, research conducted and reported by DNR, WRD in 1995 (A recommended method to protect instream flows in Georgia, Evans & England) recommended a different instream flow based on the available literature and work in the state. It is also flawed logic to use instream flows for a subbasin node as an indicator of ecological conditions upstream of that node. I suggest that EPD use one of the alternative methods indicated in the above referenced report to account for instream flow needs rather than an unverified antiquated method with no ecological basis.

Email * pstevens@atlantaregional.com
Name * Pat Stevens
County *

County *
Fulton County
Home Water Planning District/Region
Metropolitan North Georgia Water Planning District
Organization
Metropolitan North GA Water Planning District
Organization Type
state/federal government
Comments *

Surface Water Availability Assessment

The municipalities in the Metro Water District rely heavily on surface water for their drinking water supply as well as assimilative capacity for discharge of their treated wastewater. We understand that the objective of the assessment was to "assess surface water availability relative to current municipal,"

industrial, agricultural, and thermal power water uses throughout Georgia." Though we understand that the models used for the assessment were intended for broad scale regional planning purposes as opposed to individual permitting decisions, we are not completely clear as to how these results will be used in the ensuing "Future Assessment (Planning)" phase of the plan.

A simplifying assumption used in the assessment that is a concern to the Metro Water District are:

• "Current" water uses are not the current permitted withdrawal limits, but are assumed to be represented by maximum observed monthly net reach water use, aggregated across all use categories, from 2002 through 2007.

We agree that this is a reasonable approach and benchmark to analyze existing conditions/operations and the impacts of existing usage on the resource. The information provided in the assessment was informative and showed that with current usage and operations there are no significant shortfalls of availability in the Metro Water District.

However, the next steps in the planning process should take into account existing permits and future needs. In growing communities the orderly protection of public health requires water supply reservoirs, permits and major infrastructure to be in place many years before the date the actual need occurs. There is a tremendous lead time and huge public investment involved in preparing for adequate water supply. Water systems in the Metro Water District have invested heavily in the infrastructure to withdraw, treat and distribute drinking water at the permit limits.

Email * mary davis@tnc.org
Name * Mary Davis
County *
DeKalb County
Home Water Planning District/Region
Metropolitan North Georgia Water Planning District
Organization
The Nature Conservancy
Organization Type
non-profit
Comments *

Rivers and streams of Georgia are home to a globally significant array of fish, mussels, crayfish, and other life. Environmental flows – the natural seasonal and inter-annual variations of water levels in rivers and streams – are critical to maintenance of these rich aquatic ecosystems. Every aspect of the lives of these animals and plants is cued by and inextricably tied to the high and low flows of our rivers. With recent droughts and increasing demands for water by rampant population growth, it is very clear that, even in this water rich part of the world, water is a limited resource and maintenance of

environmental flows is threatened.

Georgia's state water management plan is one of the best in the nation — and in fact, in the world. It should benefit the state as water resources become more difficult to manage. The comprehensive approach that ties plans for future water use with a regulatory program to manage human use in balance with natural aquatic needs is a model for sustainable resource management. The watershed-based resource assessments bring science and predictability to the process. We support the effort and look forward to answers to our concerns and questions below about the resource assessments.

SURFACE WATER AVAILABILITY ASSESSMENT:

While a good water management framework is in place, the implementation of the plan is based on an outdated instream flow policy that allows excessive water withdrawals and the endangerment of Georgia's natural wealth.

The importance of natural flow regimes to the ecological integrity of rivers has been established in the scientific community for decades. Georgia's interim instream flow guidelines are based on protection of thresholds of flow. As demands for water supply grow under this policy, the natural variability of flows is reduced and, as demonstrated by the Chattahoochee River, water levels become 'flat-lined'. If the natural pulses of flow in a river can be likened to a heartbeat, to 'flat-line' the flow in a river is to restrict the life that should exist in that river. Instream flow policies need to be scientifically based and protective of the state resources that are put in the trust of the state as stewards.

Georgia's interim instream flow policy was due to be updated in 2006. Georgia's state water management plan is being implemented, and communities are planning their futures based on outdated information. Over-allocation of water is a threat to Georgia's resources that can be avoided. We strongly urged you to protect Georgia's rich aquatic resources by taking two steps:

- 1. Direct Georgia Wildlife Resources Division to begin revising the interim instream flow guidelines by developing the studies about how the ecology of our streams and rivers are harmed with altered flows and
- 2. Direct EPD to work with the Regional Water Management Councils to allocate water resources as conservatively as possible in anticipation of the new instream flow policy and improved protection of the state's aquatic resources.

GROUNDWATER

Email *

Ice12xxx@yahoo.com

Name *

R Johnston

County *

Glynn County

Home Water Planning District/Region Coastal Georgia Water Planning Region

Comments *

The report describes results of an evaluation of groundwater sustainability by providing tables and maps listing results of model simulations and water budget analysis. Unfortunately, it does not provide any details on the uncertainty of the analysis or calibration of models. It is presented as, "trust me" here's the results. This evaluation has significant ramifications for the development of water resources in Georgia and deserves to be evaluated fully by the public. Simply stating that a panel of five experts of varying technical expertise (funded by EPD) looked at the results is insufficient; independent review is critical.

Sustainable Yield Criteria

Several criteria are listed; however, inadequate justification is provided for why certain threshold values were selected:

- •Drawdown in the pumped aquifer "not exceed 30 feet between pumping wells"—Does this mean that drawdown cannot exceed 30 feet at any location in the model domain? The criteria states that limiting to 30 feet would "decrease the potential for creating sinkholes" and could "minimize effects of increased withdrawals on other wells." What type of effects on other wells? Why was 30 feet selected as a basis for this criteria (seems arbitrary)?

 •Changing an aquifer from confined to unconfined conditions—This is a reasonable criteria which can be evaluated by a model. On page S-21, the criteria states, "Avoid drawing water table down to within 10 feet of the top of a confined aquifer to avoid creating unconfined aquifer conditions." In reality this is a potentiometric surface and not a water table. Was this criteria of 10 feet applied for the other model evaluations in other parts of the state?

 •Minimize impacts to streamflow—The "Tennant method" (1976) is given as the basis for the amount of allowable streamflow reduction, but no supporting argument is given as to why EPD believes this is a reasonable level for protection of streams.
- •There are no criteria listed for saltwater intrusion. This is a critical factor in the coastal area.

Model Analysis

The most glaring omission is the lack of discussion regarding model development and subsequent calibration. What were the boundary conditions, cell size, layering, and hydraulic properties of layers? How were flows along the telescoped model boundaries handled? This information is central to evaluation of whether "real world" parameters were assigned to the models, and if model assumptions are reasonable. There is a saying regarding models, "garbage in = garbage out." Absolutely no information is offered to support the model development. As such, the results cannot be accepted. The USGS does an excellent job of documenting their results and the associated uncertainty. Suggest taking a look at their numerous reports on the subject at: http://ga.water.usgs.gov/publications.html. Once details on model development and calibration are provided, then the adeq uacy of the analysis can be evaluated.

There is mention of "hypothetical groundwater withdrawals" from "uniformly distributed wells." Does this mean that pumpage was applied into each model cell for the various scenarios? If not, how were locations selected and where were they placed?

- •Northwestern Georgia Model—No details provided of model development. There are many assumptions made when trying to simulate a highly cavernous karst system, limiting the accuracy of model results. This information must be presented, or the simulation results rejected. The streamflow evaluation criteria for this area is different than for the Piedmont-Blue Ridge, but no reason is given for this difference.
- •Dougherty Plain Model—This is the one model that actually has a good description of model development and calibration, since it was based on a USGS report by Jones and Torak (2006): http://pubs.usgs.gov/sir/2006/5234/. This report should be cited and a brief summary provided.
- •Coastal Plain Modeling—Transient simulation is mentioned, but details of model development are never described. Variations based on seasonal differences in rainfall are mentioned, which suggests that the uppermost layer is actively simulated via applied recharge. Such simulations are highly complex, subject to limitations of the data used, and the grid size of the model. Documentation is inadequate to evaluate the quality of the model simulation. For many of the drawdown maps, it appears that drawdown extends to the model boundary. This is a limitation, that affects model results and needs to be described adequately.

Water-Budget Analysis

A water budget equation is mentioned, but never shown in the report. Specific in/out components of the budget are mentioned; however the sources of information used to derive this information is not provided. Values for each component of the budget need to be presented for each basin, together with associated uncertainty of each parameter so the adequacy of the analysis can be evaluated. A table listing these values should suffice.

On page S-14, "Daily streamflow data......were used to calculate mean annual streamflow and baseflow.."—How was baseflow determined? Were hydrograph separation techniques applied? Whatever method that was used needs to be described and results of the analysis presented.

In Table S-3, column "c", net groundwater consumption is mentioned, but how this value was estimated is never described.

Email * pstevens@atlantaregional.com

Name * Pat Stevens

County * '

Fulton County

Home Water Planning District/Region

Metropolitan North Georgia Water Planning District

Organization

Metropolitan North GA Water Planning District

Organization Type

state/federal government

Comments *

Groundwater Assessment -

The "Groundwater Availability Assessment" provides estimates of groundwater in select prioritized aquifers of Georgia. The Metropolitan North Georgia Water Planning District (Metro Water District) is primarily in the Piedmont Physiographic Province, though there is a portion of Bartow and Paulding Counties in the Valley and Ridge Province. As recognized in the Review Draft "Synopsis Report Groundwater Availability", a characteristic of the Piedmont Province is crystalline rock at depth. A water budget approach was used to estimate sustainable yields in the crystalline rock aquifer.

The "modified Tennant Method was used to develop values for sustainable yield" for these water budget analyses. Essentially, this method develops an acceptable "stream flow reduction" as the target for groundwater availability. The report states that "conservative" assumptions/criteria were used with this approach to evaluate groundwater availability. The target "stream flow reduction" was 20 percent of the difference between: 1) the 40, 50 or 60 percent of the average annual flow and; 2) the mean "most severe" monthly (September) flow. This resulted in an estimate of groundwater availability for the study watershed of as much as 15.8 cfs (Table S-3).

As stated in the report:

"As withdrawals are increased, groundwater will initially come from storage until steady state conditions are reached at a new equilibrium of recharge, withdrawals, and natural discharges. Sources of recharge can include leakage from other aquifers and geologic units, recharge from surface waters, and rainfall."

Essentially, our understanding of the water budget technique is that if all remains constant (recharge, withdrawals and municipal/industrial discharges) the surface water flow could potentially be reduced at all times by as much as 15.8 cfs. During critical periods (7-day 10-year low flow(7Q10)), the flow in the study watershed would be reduced to 4.2 cfs by subtraction from the 20 cfs 7Q10 flow (Table S-3). Unlike the Coastal Plains Physiographic Province, the Piedmont aquifers are not receptive to artificial recharge by injection of stormwater and/or treated wastewater.

The municipalities in the Piedmont rely heavily on surface water for their drinking water supply as well as assimilative capacity for discharge of their treated wastewater. A reduction in the streamflow of this magnitude (75 %) during critical periods would potentially compromise the ability to maintain the integrity of "ecological, environmental, and hydrological" resources.

As evidenced in the recent drought (2006-2008), municipalities in the Piedmont experienced reduced stream flow and many groundwater wells in the southeast were going "dry". Municipalities in the Metro Water District require dependable and sustainable surface water as a source of drinking water and assimilative capacity. As recognized in the report:

"It might be difficult to find sufficient water-bearing fractures in the crystalline rock aquifer to develop the full range of sustainable yield..."

As a result of Metro Water District dependence on surface water, the inability to artificially recharge the aquifers in the Piedmont, and the unreliable nature of the crystalline rock aquifer, we request that Groundwater Availability Assessment more clearly state something to the effect that "groundwater should not be relied on as a primary source of drinking water in the Piedmont". Further, this assessment illustrates the tremendous impact that the pumping of groundwater in the Piedmont can have on the surface water resources. It is recommended that any request for ground water withdrawal for community water supplies should evaluate the impacts of the requested withdrawal with the cumulative impacts of all groundwater withdrawals in the watershed and planning area on the surface water and ecological resources.

Email * JME@eggi.com
Name * James Emery
County *
Forsyth County
Home Water Planning District/Region
Metropolitan North Georgia Water Planning District
Organization
Emery & Garrett Garrett Groundwater, Inc.

Organization Type engineering Comments *

Emery & Garrett Groundwater, Inc. (EGGI) is a firm focused entirely on the development, management, and protection of groundwater resources. We have performed a substantial number of groundwater resource investigations throughout Georgia, particularly in the Piedmont region of north Georgia. We do believe that this study grossly underestimates the availability of groundwater resources in fractured bedrock aquifers that underlie north Georgia. Our investigations which have been performed for numerous County water authorities and for the Atlanta Regional Planning Commission (1996) indicated that as much as 100 million gallons per day or more could be developed from just the ten counties surrounding Atlanta (Emery & Garrett Groundwater, Inc. report entitled, "Regional Water Supply Source Evaluation – Groundwater Resource Feasibility Review," Conducted for the Atlanta Regional Commission, August 1996).

In fact, we believe groundwater resources should be promoted by EPD and the State of Georgia as part of the long-term solution to supplementing existing surface water supplies. Groundwater development combined with water resource conservation can, in our professional opinion, provide up to 20-25% of the entire future water supply needs of north Georgia. We request that the EPD reassess the availability of groundwater resources in this north Georgia region.

With regard to specific remarks related to the Synopsis Report for Groundwater Availability Assessment (herein, Assessment), a portion of Georgia's State-Wide Water Management Plan, Emery & Garrett Groundwater, Inc. (EGGI) submits the following comments regarding the conclusions offered in that document.

Comments on Section 2: Sustainable Yield Approach

- Section 2 of the Assessment (Page S-8) states that, "Recharge from surface water sources were constrained to 40 percent of baseflow in order to maintain opportunities for surface water use." The percent of baseflow to be used for this fundamental metric is an important policy decision for the State with great impact on both groundwater and surface water management. However, the Assessment appears to treat it as a variable for different types of aquifers, presenting different percentages of different streamflows. For instance, in the Paleozoic Rock Aquifer, the metric was modified to 10% of the baseflow and in the Crystalline Rock it was considered 50% of annual streamflow. This is confusing and suggests that the modelers were modifying fundamental metrics to arrive at preconceived notions of how much water is available in each aquifer type. If there is a reasonable justification for modifying the metric for different aquifer types, then it should be clearly explained in the text.
- · Section 2.1.3 includes the statement, "Metrics were selected to constrain recharge from surface water sources in order to maintain opportunities for surface water use." This statement suggests a subjective judgment was made regarding the need to maintain surface water flows at the expense of groundwater. It goes on to say that, "baseflows used to constrain surface water recharge to groundwater were baseflows generated by the model and not baseflows determined from stream hydrographs." We

question why the EPD would not use actual baseflow data (one of the few data sets that provide reality to the model), rather than relying on synthetic data. At a minimum, there should be a discussion of how the actual and synthetic data compare.

- · In Section 3.2 of the Assessment, the text describes an "even more stringent or conservative estimate of sustainable yield, allowing only 20% of the difference between the mean September flow and the Tennant reduction category." The justification for this extremely conservative calculation is stated as, "the limited ability of the Crystalline-Rock aquifers in the Piedmont and Blue Ridge to provide water." But it is that very ability that has determined the natural streamflow in the Piedmont and Blue Ridge streams. Any inhibition in the ability of an aquifer to provide water is intimately represented by the natural flow duration curve of the streams draining that aquifer. There is no justification for arbitrarily allowing only one-fifth of the available water to be considered.
- · Also in Section 3.2, the discussion goes on to say that the 50% mid-level streamflow was chosen as the "criterion to estimate the net amount of groundwater available." But this criterion was chosen because the "40% streamflow reduction amount in the Piedmont Basin resulted in a situation in which current consumption already exceeded the sustainable yield." The authors did not consider that reasonable "given the negative net groundwater consumption in the basin," so they arbitrarily made the criterion the 50% mid-level streamflow, presumably because it allowed for a preconceived volume of groundwater to be made available. There needs to be a more objective appraisal for the calculation of available groundwater and surface water resources.

Thank you for the opportunity to respond to the proposed EPD groundwater availability/water supply management plan, "Synopsis Report for Groundwater Availability Assessment" (review draft dated March 2010).

Respectfully submitted,
James M. Emery, President
Emery & Garrett Groundwater, Inc.

Email * mary davis@tnc.org

Name * Mary Davis

County *

DeKalb County

Home Water Planning District/Region

Metropolitan North Georgia Water Planning District

Organization

The Nature Conservancy

Organization Type

non-profit

Comments *

Rivers and streams of Georgia are home to a globally significant array of fish, mussels, crayfish, and

other life. Environmental flows – the natural seasonal and inter-annual variations of water levels in rivers and streams - are critical to maintenance of these rich aquatic ecosystems. Every aspect of the lives of these animals and plants is cued by and inextricably tied to the high and low flows of our rivers. With recent droughts and increasing demands for water by rampant population growth, it is very clear that, even in this water rich part of the world, water is a limited resource and maintenance of environmental flows is threatened.

Georgia's state water management plan is one of the best in the nation — and in fact, in the world. It should benefit the state as water resources become more difficult to manage. The comprehensive approach that ties plans for future water use with a regulatory program to manage human use in balance with natural aquatic needs is a model for sustainable resource management. The watershed-based resource assessments bring science and predictability to the process. We support the effort and look forward to answers to our concerns and questions below about the resource assessments.

GROUNDWATER AVAILABILITY ASSESSMENT:

Our concerns about the groundwater assessments lie in the metrics to assess sustainable yield. These metrics result in the perception that groundwater resources have not already been seriously depleted.

- 1. Drawdowns of groundwater levels in the pumped aquifer do not exceed 30 feet between pumping wells
- a. We know that groundwater levels have been drawn down across the state under current withdrawal levels. Many springs are no longer flowing. The Floridan aquifer near Tifton, for example, has declined an average of one foot per year for 30 years. Many homeowners and farms have had to drill deeper wells to reach water. It continues to decline long after the drought has passed. This metric does not account for the fact that the safe yield of many aquifers has already been exceeded. An additional decline of 30 feet in these areas of the states will have disastrous impacts on water availability.
- b. The reason for the 30 foot threshold is not explained and seems arbitrary. Please give the source of this metric.
- 2. Recharge from surface water sources were constrained to 40 percent of baseflow in order to maintain opportunities for surface water use (modified to 10 percent of baseflow in the Paleozoic rock aquifer and 40 percent of streamflow in the crystalline rock aquifer)
- a. Limits of recharge from surface water sources are good. It is not clear how the 10 and 40% of streamflow thresholds were determined. There is a strong body of literature that shows that a 40% decline in baseflow has negative impacts on the health of aquatic fauna.
- b. A better metric than an absolute amount of recharge would be an increase of no more than 10% of current recharge levels due to groundwater withdrawals. This would take into account the more local conditions and keep recharge within limits with lower risk of impacting aquatic habitats.
- 3. Reduction in aquifer storage does not go beyond a new base level

- a. This metric does not allow for an understanding of where the existing base level lies. In many areas of the state, the base level is already lowered with withdrawals that exceed safe yield. A better metric would allow for recovery of currently lowered base levels.
- 4. Groundwater levels are not lowered below the top of a confined aquifer; and
- a. It is not clear why the top of a confined aquifer was chosen as a threshold. Many confined aquifers are the source of springs. Does this threshold allow for springflow?
- 5. The ability of the aquifer to recover to baseline groundwater levels between periods of higher pumping during droughts is not exceeded.
- a. The ability of the aquifers to recover in many parts of the state are already exceeded. The results of the assessments do not reflect this. The results show that groundwater is not limited, with the exception of the coast and Flint basin. These results do not support other observations.

ASSIMILATIVE CAPACITY

Email: pstevens@atlantaregional.com

Name: Pat Stevens County: Fulton County

Home Water Planning District/Region: Metropolitan North Georgia Water Planning District

Organization: Metropolitan North GA Water Planning District

Organization Type: state/federal government

Comments: Current Assimilative Capacity Assessment

We understand from the summary report and our knowledge of the district's watersheds that the assimilative capacities presented in the assessment are the result of varying levels of effort. We noticed that the results of the Lake Allatoona and Lake Weiss TMDLs have been incorporated in the current assessment and that the Lanier TMDL and potentially others will be incorporated into the planning document at a later date. Although not stated, we believe that the detailed study conducted on the Chattahoochee River in the late 1990s and early 2000s was also incorporated. The results indicate that a stretch of the Chattahoochee River from Buford Dam to just downstream of Suwanee Creek has minimal or no assimilative capacity. Since there are no wastewater treatment facilities (WTF) that discharge treated wastewater into this stretch of river, the low dissolved oxygen (DO) must be the result of historically low DO in the water released from Buford Dam/Lake Lanier. However, it is our understanding that the Corps of Engineers (COE) completed a project in 2006 that provided venting of the waters being released through the Buford Dam turbines. The venting should result in an increase in the DO to approximately 6.0 mg/l, though we are unsure if more recent DO data have been collected on this stretch of the river. Does this planning document reflect the increase in the DO concentrations as a result of the turbine venting project?



Kirby B. Green III, Director • David W. Fisk, Assistant Executive Director

4049 Reid Street • P.O. Box 1429 • Palatka, FL 32178-1429 • (386) 329-4500 On the Internet at floridaswater.com.

November 29, 2010

Arnettia Murphy Georgia Department of Natural Resources **Environmental Protection Division** 2 Martin Luther King Jr. Drive Suite 1152, East Tower Atlanta, Georgia 30334

RE: Comments on the Georgia Draft Water Resource Assessments

Dear Ms. Murphy:

The St. Johns River Water Management District appreciated the opportunity to meet with Georgia Environmental Protection Division in Valdosta on September 21, 2010 to discuss water supply planning issues in Georgia and Florida. The meeting highlighted past and the need for continued cooperation between Florida and Georgia in water supply planning and demonstrated that both Georgia and Florida have similar water supply planning goals. Based on the September 21st meeting, the following are the St. Johns River Water Management District's understanding of the outcomes:

- The St. Johns River Water Management District will review surface water reports and associated data provided by Georgia
- The St. Johns River Water Management District will provide groundwater demand quantities for Georgia groundwater models
- The next coordination meeting is schedule for December 9, 2010 in Valdosta,
- Continue to coordinate on data sharing, water supply planning activities and common issues

In the spirit of cooperation, the St. Johns River Water Management District would like to provide comments on the Georgia Draft Water Resource Assessments for consideration by your agency.

As a general comment, the documents we reviewed lack sufficient detail to perform a comprehensive review. For example, for surface water available, there were statements about whether there were shortfalls or not; however, it was not clearly stated as to the data used, the analysis, and the amount of shortfalls or the amount of water available. There are other examples in the other assessments. The supporting technical reports were not available which hinder the review of the assessments.

Ms. Arnettia Murphy November 29, 2010 Page 2

Additionally, there appeared to be a lack of environmental resource criteria in the analyses. For example, the criteria for groundwater availability seem to rely heavily on well interference and stream baseflow reductions. Depending upon the results of the groundwater modeling, we would be concerned about impacts to other water resource related systems, such as wetlands or springs.

Attached is a summary of comments by assessment for your consideration. Additionally, the St. Johns River Water Management District would like to receive the groundwater flow model(s) outputs for changes in potentiometric surfaces for modeled aquifers in South Georgia and North Florida to incorporate into our groundwater flow models to assess the impact to natural systems in Florida.

The St. Johns River Water Management District appreciates the opportunity to provide comments to Georgia for consideration as part of Water Resource Assessments being finalized. We have enjoyed a productive working relationship with the Georgia Environmental Protection Division as part of the District's Water Supply Planning process and will continue to coordinate water supply planning and other issues with you.

Should you or your staff have questions related to the comments provided, please contact Dr. David Hornsby at (386) 312-2371 or email dhornsby@sirwmd.com.

Sincerely,

Used Conga Son Harold A. Wilkening III, P.E., Director Department of Resource Management

cc: David Trimble, DEP
Jerry Brooks, DEP
Janet Llewellyn, DEP
Jon Dinges, SRWMD
John Good, SRWMD
Angela Chelette, NWFWMD
Kirby Green, SJRWMD
Tom Bartol, SJRWMD

Summary comments/recommendations on Georgia Draft Water Resource Assessments

Draft Groundwater Availability Assessment

- Definition of new base level is needed
- · Clarification needed on the 30 ft drawdown criteria
- Clarification needed on how and where baseflow/induced recharge was determined
- Clarification needed on the modification to the Tennant method.
- Clarification needed on streamflow reduction metrics in the Dougherty Plain and Coastal Plain model
- Clarification needed on the aquifer recovery criteria
- Changing an aquifer from confined to unconfined needs to be qualified
- Need to provide a list of assumptions for the determination of sustainable yield for different aquifers
- Clarification needed on the benchmark condition
- Need to include model uncertainty not just spatial uncertainty in the range of sustainable yield
- Assumption that "Because there is a significant degree of connection between the Upper Floridan aquifer and the rivers in this part of Georgia, excessive drawdown of the aquifer does not appear to be a major concern because the rivers would recharge the aquifer under increased withdrawal scenarios" may be an issue
- Drawdown contour maps look like they are affected by the lateral boundary conditions applied to the models used. How do the lateral boundary conditions effect drawdown results, the simulated baseflow reductions, and the estimates of sustainable yield?
- It appears that withdrawals from the Floridan aquifer system in coastal Georgia and northern Florida that are located within the EPD regional model were not considered in the analysis. This appears to be a significant deficiency in the analysis
- The aquifer's ability to produce water should not solely be the over-riding factor for determining sustainable yield
- The actual sustainable yield would be less than reported because the constraints used would be affected by 1) pumping in areas within the model domain that were not included in the analysis and 2) pumping in those states outside of the model domain that could affect the assigned lateral boundary conditions.
- How was the Floridan aquifer system conceptualized?
- The lack of information regarding the conceptualization, design and calibration of the groundwater models mentioned in the report makes it impossible to fully understand the results that are presented.

- If the aquifers within the regional coastal plain model are connected hydraulically, then determining sustainable yield separately for each aquifer does not have any meaning
- Georgia has used sustainability metrics that don't appear to relate to specific water resource constraints

Draft Surface Water Availability Assessment

- The hydrologic regime, based on a monthly 7Q10 statistic is generally slightly less than flow conditions associated with the 90th percentile of exceedence flows for each month. Such a hydrologic regime tends to "flat line" a river system if the "surplus" water can be extracted or held in reservoirs.
- There is no direct relation between 7Q10 and aquatic life protection. According
 to the Annear and others (2002), the 7Q10 should never be used to make
 instream flow prescriptions for riverine stewardship.
- The use of "average" condition criteria or the use of period-of-record duration curve statistics (an averaging process) may result in the loss of biologically relevant information associated with several hydrologic components (e.g., duration, return interval, seasonality, and rate of change.
- The instream flow protection criteria used for this report are not likely protective of the ecology of river systems. Thus, water availability is like to be overestimated.
- Consumptive use of water, based on the protection criteria (e.g., 7Q10), might allow for the removal of too much water from river reaches in Georgia, resulting in insufficient flows in the downstream portions of these rivers in Florida.
- These Florida systems might not have sufficient flow regimes to protect these systems from "significantly harmful withdrawals" as cited in 373.042 and 373.0421, Florida Statutes. That is, Georgia water use might result in no additional water withdrawals from these rivers in Florida or could result in the need for "restoration plans" in the Florida portions of these rivers.
- No water use data are provided. It was mentioned that the data are what is currently available with gaps filled.
- Clarification needed on Unimpaired Flow method.
- Clarification needed on the development and use of the Georgia Water Resources Institute River Basin Planning Tool.

Draft Surface Water Quality (Assimilative Capacity) Assessment

- Limited information in the report to evaluate the model used.
- The use of assimilative capacity in the context of assessing the condition of Georgia's water bodies could be dangerously interpreted as an invitation to allowing increased development and nutrient/dissolved oxygen (DO) loading into those waterbodies exhibiting good water quality.
- The assumption that the number of septic tanks per unit area is constant, regardless of development intensity, is obviously false.



DON QUINCEY, JR. Chairman Chiefland, Florida

N. DAVID FLAGG Vice Chairman Gainesville, Florida

CARL E. MEECE Secretary/Treasurer O'Brien, Florida

ALPHONAS ALEXANDER Madison, Florida

C. LINDEN DAVIDSON Lamont, Florida

> RAY CURTIS Perry, Florida

HEATH DAVIS Cedar Key, Florida

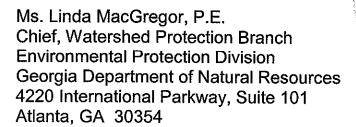
JAMES L. FRALEIGH Madison, Florida

GUY N. WILLIAMS Lake City, Florida

DAVID STILL Executive Director Lake City, Florida

SUWANNEE RIVER WATER MANAGEMENT DISTRICT

October 28, 2010



Subject: Comments on the Georgia Draft Water Availability

Assessments

Dear Ms. MacGregor:

The Suwannee River Water Management District (District) appreciates this opportunity to provide comments on the Draft Groundwater and Surface Water Availability Assessments. The attached comments are based upon District staff review.

Furthermore, we are including the following action items and comments based upon discussions at the September 21, 2010, meeting in Valdosta. The District found the meeting very informative, and we look forward to working closely with the Georgia EPD.

1. There is a need to include current and projected Florida groundwater demands into the Regional Georgia EPD Groundwater model, and Sub-Regional Upper Floridan Aquifer Model so that the sustainable yield of the Upper Floridan aquifer may be better understood. In fact, it is desirable to also include current and projected demands from Alabama and South Carolina.

This may be an area in which we could jointly fund further study through the National Academy of Sciences, United States Geological Survey, or other multistate organization. Please let us know if we may assist you by providing the District's groundwater demands.

Water for Nature, Water for People

- The District looks forward to meeting with the GA EPD to discuss water conservation alternatives for all water use types. Perhaps this can be part of the agenda for our December 9, 2010, meeting.
- 3. The potentiometric surface of the Upper Floridan aquifer has declined 10 to 20 feet in north Florida over the last 50 to 60 years. We feel strongly that the District, GA EPD, and the St. Johns River Water Management District should work together to identify the causes of the decline, and to suggest and implement strategies to prevent further degradation of the groundwater resource. Our studies have also predicted that further decline in Upper Floridan aquifer groundwater levels will cause harm to our surface water systems, including the Suwannee, Alapaha, and Withlacoochee Rivers and associated springs.

Thank you for considering our comments. We look forward to your responses. If you have any questions, please call me at 386.362.1001.

Sincerely,

David Still, P.E.

Executive Director

/dd

attachments

cc: Janet Llewellyn, FDEP Kirby Greene, SJRWMD

Suwannee River Water Management District Comment and Review of the Georgia Environmental Protection Division Draft Report entitled: Synopsis Report Groundwater Availability Assessment (Draft March 2010)

The Suwannee River Water Management District (District) has reviewed the draft report prepared by the Georgia Environmental Protection Division (GEPD) in March 2010 entitled Synopsis Report Groundwater Availability Assessment (Groundwater Assessment). The Groundwater Assessment presents the results of an evaluation of the availability of groundwater resources in select prioritized aquifers in south Georgia. One of the prioritized aquifers, the Upper Floridan aquifer (UFA), is of particular interest to the District since it serves as the primary source of water for consumptive use for all water use types throughout the District's jurisdictional area. Please consider the District's following comments.

General Comment: The District is currently involved in preparing a District-wide Water Supply Assessment. A draft version of the Water Supply Assessment (WSA) was provided to the GEPD at a meeting between the GEPD, District, and St. Johns River Water Management District on September 21, 2010. The WSA is required by Chapter 373, Florida Statutes, and is updated every five years. The WSA projects District-wide population and water demands for a 20-year planning horizon; therefore, we are currently projecting to year 2030.

A very important purpose of the Water Supply Assessment is to identify areas where water resources are impacted or are projected to be impacted during the 20-year planning period. Preliminary results of the Water Supply Assessment have indicated that current and projected regional groundwater pumpage (both within and beyond the District boundaries) will affect the District's statutory requirement to provide reasonable and beneficial uses of water to our constituents. Part of this conclusion is based on long term groundwater level data that indicate statistically significant downward trends in UFA monitor wells in the area of concern. Given that the vicinity of Valdosta, Georgia, is a recharge area for the UFA, and that groundwater in the UFA flows from the recharge area into the northern portion of our District, we are concerned that the ranges of sustainable yields cited for the UFA (and perhaps to a lesser degree the Claiborne aquifer) in the Groundwater Assessment may further exacerbate projected impacts to water resources in our District.

Comment 1 (Page S-1, first paragraph): regarding the sentence: "A report was also produced providing more detailed information on each modeling effort, including model development, calibration, and sustainable yield analysis." Access to this document would be extremely helpful to aid the District in our evaluation of the Groundwater Assessment. Following review of the report, the District will be able to provide the GEPD more specific and useful feedback and comment. We respectfully request that the GEPD provide the District a copy of the report. Without the benefit of reading this report prior to submittal of our comments, the following comments are short on specifics and general in nature.

<u>Comment 2 (Page S-1, last paragraph)</u>: regarding the sentence: "Sustainable yields were determined using numerical modeling simulations with various combinations of withdrawals from existing wells and, where applicable, from hypothetical new wells" (emphasis added). It would be helpful to understand the basis for selection of the various combinations of withdrawals from existing wells and hypothetical wells (i.e., location, withdrawal rate, etc.).

<u>Comment 3 (Page S-3, second paragraph)</u>: Why didn't the sustainable yield simulations in the regional Coastal Plain model domain include increased withdrawals from outside Georgia for withdrawals in the UFA? It is a major concern to the District that perhaps the GEPD did not adequately assess potential impacts to the UFA in Florida if the estimated sustainable yield limits were realized in the future (over 1

billion gallons per day total for the SC, GA, and EC Plain prioritized aquifers, or an increase of approximately 400 mgd to 560 mgd over baseline withdrawals – see Figures S-19a and S-20a).

<u>Comment 4 (page S-3, second paragraph)</u>: Why were baseline withdrawals estimated on actual current withdrawals and not permitted capacities? Were permittees allowed to "grow into" their permitted capacities in future years? Perhaps a brief explanation of the GEPD water use permitting process would help us understand the estimation of baseline withdrawals (i.e., are users issued permits with average and maximum withdrawal rates [day / month / year], do the permits provide a duration of use, etc.).

<u>Comment 5 (page S-3, third paragraph)</u>: The third paragraph states that increasing withdrawals in one prioritized aquifer would increase recharge from other aquifers. Therefore, is it assumed that the "confining units" between the aquifers in the Coastal Plain are leaky, and therefore, in hydrologic contact with one another to some degree? If yes, then how can the sustainable yield be modeled / predicted for aquifers "withdrawing separately" (see Table S-1)?

<u>Comment 6 (page S-3, first bullet)</u>: Please comment and provide detail on how the criteria for assessment of sustainable yield were developed (i.e., allowable groundwater drawdown of 30 feet or less between pumping wells and streamflow reductions from current conditions of 40 percent or less).

Comment 7 (page S-7, Section 1.2): The UFA is one of several "prioritized aquifers" identified by the GEPD. Section 1.2 presents the criteria that were used to designate prioritized aquifers, including: 1) existing evidence of adverse impacts due to withdrawals from the aquifer and 2) forecasts suggesting significant increases in demands placed on the aquifer. Given these two criteria, is a modeled estimate of sustainable yield for the UFA sufficient to adequately predict future impacts to water availability and natural systems both within Georgia and into north Florida? Also, please explain how the predicted impacts in the UFA due to increased groundwater withdrawals are "acceptable."

<u>Comment 8 (page S-31, second to last paragraph)</u>: It appears that there is connectivity between aquifers in the Coastal Plain (in descending order, UFA, Claiborne, and Cretaceous). It is unclear how productive each of these aquifers is (in other words, the degree to which they are pumped). We agree with the conclusion of this paragraph that the cumulative effect of simultaneous withdrawals from these aquifers (assumed to be true) could result in drawdowns of more than 30 feet and more than 40 percent recharge from streamflow.

<u>Comment 9 (page S-33, last paragraph)</u>: Is it valid to increase withdrawals only in areas where there are relatively little current withdrawals? Is it possible that there are minor current withdrawals in those areas because there is little to no current or projected demand in those areas?

Comment 10 (Figures S-10a and S-10b, and S-12a and S-12b): If the current withdrawals were increased from existing wells throughout the UFA Model domain (including Florida), arguably the drawdown would increase both spatially and in depth over what's depicted in the figures. The District is seeing this type of impact (based on actual groundwater level data and preliminary modeling results) due to regional pumpage beyond our northeastern boundary. Our preliminary analysis indicates that the increased drawdown is impacting our water resources, including river flows, lake levels, and spring flows.

Comment 11 (Section 5.5, page S-45): The District concurs with the GEPD's statement that increased withdrawals occur at the same time in more than one Coastal Plain aquifer, and therefore, also concurs with the GEPD's simulation of the potential impacts of combined withdrawals in all prioritized aquifers on the overall range of sustainable yields. Of particular interest related to this combined withdrawal simulation is Figures S-19a and S-20a. Drawdown influences are projected to occur in the UFA extending into Florida. Of special concern is that for the maximum sustainable yield increase over baseline

withdrawals (Figure S-20a), drawdown is predicted to extend into northeast Florida and within the District in the area that is currently of special concern to us due to regional pumpage of the UFA (see Comment 3 and Comment 10). If current and future withdrawals are considered for existing wells within the entire UFA Model domain, the predicted degree and extent of drawdown in the UFA may extend further into our District.

<u>Comment 12 (Figures S-20b, S-20c, S-20d, and S-20e)</u>: The predicted drawdown in (descending order) the Claiborne, Clayton, Providence, and Eutaw Midville aquifers extends well into our District. The drawdowns range from two feet (Claiborne) to seven feet (Clayton, Providence, and Eutaw aquifers) within our District. We are not currently aware of the lateral facies changes and how these aquifers (if at all) extend into Florida, and if so, how they may be hydraulically connected to the UFA. Please provide more information.

Suwannee River Water Management District Comment and Review of the Georgia Environmental Protection Division Draft Report entitled: Synopsis Report Surface Water Availability Assessment (Draft March 2010)

General Comment:

The Suwannee River Water Management District (District) has reviewed the draft report prepared by the Georgia Environmental Protection Division (GEPD - March 2010) entitled *Synopsis Report Surface Water Availability Assessment* (Surface Water Assessment). The Surface Water Assessment presents the results of an evaluation of the availability of surface water resources in select Study Basins and at specific Planning Nodes (locations) in Georgia. One of the Study Basins, the Ochlockonee, Suwannee, Satilla, and St. Mary's River Basins (OSSS Basin), is of particular interest to the District. The Suwannee Basin in particular contains headwaters to several major streams that drain into the District, including the Withlacoochee, Suwannee, and Alapaha rivers. Significant reductions to inflow from these headwater areas will have a deleterious impact on the water resources of the District.

Water use in north Florida includes both surface water and groundwater extractions, but the major source in the region is groundwater (net use). In the District, groundwater and surface waters (rivers and springs) are highly connected and interactive below the Cody Scarp; therefore, the fact that groundwater is the major water supply source in the region does not preclude significant impacts to surface water sources from groundwater withdrawals.

To the contrary, the available information indicates that current and projected regional groundwater pumpage (both within and beyond the District boundaries) in the northeastern portion of our District will affect both existing instream regulations in Florida and the District's statutory requirement to provide reasonable and beneficial uses of water to our constituents. This is addressed further in our comments on the Groundwater Assessment.

Unimpaired Flows Comments:

The definition and development of the unimpaired flow concept is foundational to the Surface Water Assessment. We support this concept and look forward to further review of the methods, procedures, and assumptions for unimpaired flow development. There may be some methodologies that would be applicable to the Florida portion of the Ochlockonee and Suwannee River Basins.

Was a trend analysis conducted on the available recorded flow records prior to development of the Unimpaired Flows to determine the degree to which anthropogenic effects existed (i.e., were the flows stationary in time)? Additionally, are the final Unimpaired Flows themselves stationary?

The report states that groundwater effects are one of the anthropogenic components addressed when developing unimpaired flows. The report further states that "Groundwater effects in this study are confined primarily to southwestern Georgia portions of the ACF (Apalachicola-Chattahoochee-Flint) study basin..." Significant reductions in groundwater levels have been documented in south-central Georgia. How was the determination made that these reduced levels don't impact overlying surface water resources, other than in the ACF Basin, and thus did not require incorporation in the development of unimpaired flows in other basins such as the OSSS? As noted in our review of the Groundwater

Assessment, the vicinity of Valdosta, Georgia, is a recharge area for the Upper Floridan aquifer (UFA). Groundwater in the UFA flows from this recharge area into the northern portion of our District, supplying *significant* point resurgences, springs, and generalized base flow.

Flow Regime Comments:

There are many existing methods for evaluating in-stream flow requirements. The interim Georgia approach has the benefit of ease of use, especially for a first-cut analysis as presented in the Surface Water Assessment. However, we believe the consensus in the scientific community is that reliance on simple hydrologic/hydraulic measures is ultimately inappropriate, as described in the following:

"As a result of the CWA [Clean Water Act], low flow statistics provided some of the design criterion for wastewater treatment plants. The now infamous $7Q_{10}$ low (the lowest flow present for 7 consecutive days in a 10-year period) was developed for setting a water volume to establish plant discharge pollution thresholds and it remains the statistic typically used today. Although the $7Q_{10}$ flow represents a "worst case" situation for water receiving wastewater discharges, it has been inappropriately promoted by several states (i.e., New Jersey, Pennsylvania, and Georgia) as a minimum instream flow for fisheries (Reiser et al. 1989). The $7Q_{10}$ – and other statistics for similar infrequently low discharges, such as $3Q_{20}$ and $7Q_2$ – are relevant only for designating the lowest streamflow into which a pollutant discharge can be allowed. This group of methods and the flow levels derived from them should not be approved as the instream flow for any other stream management purpose." (from "Instream Flows for Riverine Resource Stewardship", 2002, The Instream Flow Council, pg 36)

In particular the implementation of the described Flow Regime does not appear to provide adequate recognition of the need for medium and high flows. For example, at the Pinetta gage (Withlacoochee River) only about 10 percent (or less) of high flows must be maintained to meet the monthly $7Q_{10}$ Flow Regime criteria. Current methods for instream flow specification incorporate medium and high flows for the continued environmental sustainability of a river. We would urge Georgia to implement data collection and analysis plans to facilitate refined specification of instream flow requirements using more generally accepted methods.

The Ochlockonee and Suwannee Basins are currently unregulated, so it may <u>appear</u> that any concern about medium and high flows is unwarranted; traditional uses, especially via groundwater withdrawals, would likely have minimal impact at medium to high flows due to the moderating affect of groundwater storage. However, the District has a long established policy, since 1979, of discouraging in-stream reservoirs. Should such structures be proposed for these basins we would have additional concerns. "Scalping" of significant portions of medium and high flows could include the following impacts:

- 1. Reduction in depth, duration, and frequency of flows supporting the Gulf Sturgeon, a listed threatened species that uses the Suwannee River for reproduction.
- 2. Reduction in freshwater discharge to the Suwannee Estuary, impacting the native oyster population and the economy of the District's Gulf coast.

Gap Analysis Comments:

The Assessment states that the analysis results will be used by the regional water planning councils to identify stream reaches with the most critical water availability gaps and thus will guide the selection of management responses. The OSSS Basin has (proportionately) the greatest number of nodes with shortfalls, the maximum percent duration of shortfall, and a node with the second largest average shortfall rate (see Surface Water Assessment, Table 1). Among the OSSS basins the Ochlocknee and Suwannee constitute 75 percent of the total average shortfalls at the planning nodes. Consequently, we hope that additional resources will be prioritized to these systems to better understand them and guide any management responses toward an environmentally sustainable result.