Upper Oconee Supplemental Document: Municipal and Industrial Water and Wastewater Forecast

PREPARED FOR: Georgia Environmental Protection Division

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Introduction

Water demand and wastewater flow forecasts were developed for municipal, industrial, agricultural, and energy sectors for all water planning regions as part of the State-wide Water Planning process. The methodologies used are uniform across the state for consistency. During the development of the forecasts, stakeholders provided comments and feedback to ensure accuracy and acceptance of the forecasts.

This technical memorandum (TM) describes the methodologies used for the municipal and industrial forecasts, with specific emphasis on the Upper Oconee Water Planning Region. Agricultural and energy forecast methodologies are presented separately.

The methodologies allow for some regional variation. The municipal and industrial forecast components include:

- Baseline year water use provided by county or industry
- Population projections provided by the Governor's Office of Planning and Budget (OPB)
- Employment projections provided by the Georgia Environmental Protection Division (GAEPD) with University of Georgia (UGA) support

Municipal Water Demand Forecasts

Municipal water demand includes residential, commercial, and light industrial customers who are self-supplied water users or served by a public provider. Publicly supplied water users obtain their water from centralized municipal or large private suppliers, such as county or city water treatment plants; self-supplied users obtain their water from private wells. To calculate the overall county-wide municipal water demand for each 10-year planning period, per capita water demand rates were developed for both self-suppliers and public providers and multiplied by population projections. A plumbing code adjustment also was applied to account for recently enacted water conservation legislation and existing plumbing codes. Each county's demand was forecasted separately and distributed

regionally based on source watershed and aquifer location. County representatives and municipal and private water suppliers were given the opportunity to refine any forecasts if they felt that the data were not representative of their demographics or growth.

Per Capita Demands

Each county's publicly supplied per capita demands were calculated by dividing the total water withdrawn for the baseline year by the publicly supplied population (Table 1). The year 2005 was selected for the baseline because it was the most recent year for which population and water withdrawal data were gathered for every county and reported in a United States Geological Survey (USGS) publication for the state of Georgia (Fanning and Trent, 2009). Consistent with this referenced publication, an initial per capita use rate of 75 gallons per capita per day (gpcd) was assigned for self-supplied water users. Each county's self-supplied population was calculated by subtracting the publicly supplied population from the total county population.

TABLE 1
Publicly Supplied Baseline Data and Per Capita Demand

County	2005 Total Public Supply Water Withdrawal (MGD)	2005 Estimated Population	Per Capita Water Demand (gpcd)
Baldwin	6.75	44,750	151
Barrow	5.01	31,890	157
Athens-Clarke	6.53	104,220	63
Greene	1.45	11,870	122
Hancock	1.02	6,110	167
Jackson	20.04	49,610	404
Laurens	3.94	25,030	157
Morgan	1.45	8,050	180
Oconee	0.31	17,850	17
Putnam	1.21	11,940	101
Walton	5.20	40,850	127
Washington	3.24	10,830	299
Wilkinson	0.93	7,050	132

MGD = million gallons per day

Population Projections

County population projections were prepared by the OPB, the state agency responsible for demographic data, with assistance from the UGA's Carl Vinson Institute of Government – Applied Demography Program. The Regional Water Planning Councils were given an opportunity to comment on these projections in an effort to more accurately reflect their view of the region's population trends, prior to finalizing the projections.

Each planning contractor split each county's population projections into publicly supplied and self-supplied populations for planning purposes. The percentages of publicly supplied population and self-supplied users were obtained from the USGS publication for 2005, and held consistent throughout the 40-year planning horizon.

Adjustments to these population projections are discussed under item 5 in the Demand Refinement section of this TM.

Plumbing Code

The 1992 National Energy Policy Act (NEPAct) reduced the maximum flush volume for toilets from 3.5 gallons per flush (gpf) to 1.6 gpf (Ultra Low Flow Toilet or ULFT). In June 2010, the Georgia Water Stewardship Act became Georgia law, lowering the maximum flush rate to 1.28 gpf (High Efficiency Toilet or HET) and requiring that after July 1, 2012, all new residential construction include HETs. Additionally, when an older, higher-flush toilet is replaced, it will be replaced with an HET. The 1992 NEPAct resulted in significant reductions in water use in Georgia and the Georgia Water Stewardship Act will continue water use reductions over this 40-year planning period.

The per capita water demand rate described in the previous section already reflects the NEPAct effects over the 12-year period of 1994-2005. However, an estimate of the Georgia Water Stewardship Act's effect (water use reduction) over the planning horizon is needed. The methodology for estimating that water use reduction on the residential/commercial water demand projections is described below:

Step 1. For each county, estimate the number of toilets by flush volume based on the U.S. Census Age of Housing Units information and the following timeline:

- Toilets made prior to 1980 use an average of 5 gpf
- Toilets made between 1980 and 1992 use an average of 3.5 gpf
- Toilets made after 1992 use 1.6 gpf (ULFT)
- Toilets made after 2012 use 1.28 gpf (HET)

Step 2. Estimate the amount of toilet replacement that has already taken place, typically 5 percent.

Step 3. Estimate the natural replacement rate of the remaining toilets installed prior to 2010 over the 40-year planning horizon. This replacement rate should be determined for each planning region, but the recommended value is 2 percent per year, which corresponds to a life of 50 years per toilet, and is consistent with the other regional water planning effort in Georgia (Metropolitan North Georgia Water Planning District).

Step 4. Using the estimated natural replacement rate, estimate the water savings that will occur (i.e., the plumbing code adjustment).

Step 5. Apply the plumbing code adjustment as a reduction to the residential/commercial water demand projections for each county over the planning period.

Demand Refinement

The municipal water demand projections have been refined further through feedback from Regional Planning Council members, county and city officials, and local planning and water provider personnel. As a result, adjustments were made to baseline per capita demand for some counties (Table 2), publicly supplied and self-supplied percentages, and future projections. A feedback form was sent to a group or individual contact for review and comment. A copy of the form is included in Appendix A. Detailed descriptions of the adjustments by County are included in Appendix B.

Per capita adjustments included:

1. **Adjustments to the baseline year**. Baseline year adjustments were made to select a year more representative of normal water use for a specific county. Reasons included water use policy changes such as conservation, a change in the county's water delivery such as construction of a new plant, or use of a year that better reflected average rainfall.

2. **Wholesale transactions with neighboring counties for water.** If a county was selling water to or purchasing water from another county on a wholesale basis, then that amount of water was allocated to the county where the actual use was taking place. These changes affected the per capita demands of both the selling and purchasing counties.

3. **Direct water sales to customers living in neighboring counties**. If a county was selling water directly to customers located in other counties, that amount of water was allocated to the county of use. These changes affected the per capita demands of both the selling and purchasing counties.

4. **Large industrial customers served by municipal water treatment facilities.** Large industrial demands supplied by centralized municipal systems were moved into the industrial forecast in order to project the demand using employment forecasts rather than population.

5. **A change in the current or future percentage of county population served by public supply.** Some counties felt that the publicly served population number reported in the USGS publication for 2005 was not representative of the actual county population served by the public water system. In some instances, counties felt that the 2005 number was inaccurate due to future changes in service strategies. In either case, an effort was made to more accurately represent the population served by public supply in both the baseline year and the future.

TABLE 2
Adjusted Baseline Year per Capita Demand (gpcpd)

County	Initial USGS 2005 Per Capita (gpcpd)	Adjustments (MGD)				Adjusted 2005 Per Capita (gpcpd)
		Baseline Year Adjustment	Out of County Raw Water Withdrawal/ Supply	Wholesale	Industrial Use	
Baldwin	151				-0.49	140
Barrow	157			0.75	-0.89	153
Athens-Clarke	63	2.39	9.81		-2.40	157
Greene	122			0.37		153
Hancock[a]	167				-0.01	125
Jackson	404		-17.38	3.03	-0.18	111
Laurens	157					157
Morgan	180				-0.13	164
Oconee	17			2.23		142
Putnam	101		0.35			131
Walton[a]	127			2.89	-0.13	138
Washington	299			-0.36	-0.30	195
Wilkinson	132					132

[a] Population served was revised based on EPA's Safe Drinking Water Information System (SDWIS) data.

Municipal Water Demand

Once a final per capita demand rate was developed for each county, publicly supplied and self-supplied municipal water demand forecasts were created for each of the 10-year planning periods through 2050 (Table 3).

Self-supplied water demand was calculated using a method similar to the calculation for publicly supplied water demand. For every planning period, the plumbing code adjustment was subtracted from the 2005 adjusted self-supplied per capita demand and multiplied by the planning period total population and percentage of self-supplied population.

TABLE 3
Municipal Water Demand Forecasts (MGD)

	Publicly Supplied Water Demand Forecasts					Self-Supplied Water Demand Forecasts				
County	**2010**	**2020**	**2030**	**2040**	**2050**	**2010**	**2020**	**2030**	**2040**	**2050**
Baldwin	6.62	7.40	8.15	8.87	9.62	0.04	0.04	0.05	0.05	0.05
Barrow	6.09	10.87	17.27	23.58	29.30	2.69	2.63	2.57	2.51	2.45
Athens-Clarke	18.37	20.22	22.35	24.61	27.04	0.02	0.02	0.02	0.02	0.03
Greene	2.08	2.75	3.49	4.22	4.85	0.21	0.20	0.20	0.19	0.18
Hancock	0.76	0.79	0.80	0.83	0.87	0.26	0.27	0.27	0.27	0.28
Jackson	6.98	9.41	12.61	16.88	22.54	0.25	0.34	0.45	0.60	0.80
Laurens	4.13	4.66	5.19	5.70	6.23	1.72	1.91	2.08	2.24	2.39
Morgan	1.65	2.49	3.46	4.51	5.50	0.70	0.68	0.66	0.64	0.62
Oconee	3.60	5.49	7.86	11.02	15.35	0.69	0.67	0.66	0.64	0.62
Putnam	1.81	2.38	3.01	3.74	4.55	0.54	0.47	0.35	0.20	0.00
Walton	7.31	11.01	15.51	19.65	23.34	2.87	2.81	2.74	2.68	2.61
Washington	2.24	2.41	2.51	2.59	2.71	0.74	0.78	0.79	0.80	0.81
Wilkinson	0.92	0.93	0.92	0.93	0.92	0.23	0.23	0.22	0.22	0.21
TOTAL	**62.56**	**80.81**	**103.13**	**127.13**	**152.82**	**10.96**	**11.05**	**11.06**	**11.06**	**11.05**

Geographic Distribution

The geographic distribution of municipal water demand forecasts was established within watershed nodes and groundwater aquifers by water withdrawal locations. GAEPD identified the watershed nodes; each node is a subset of an entire watershed. Figure 1 displays the node locations within the Upper Oconee Water Planning Region.

Publicly supplied water demand was distributed within each county based on the location of existing water withdrawal and the assumption that future water needs will be met from these locations. If a county received all of its water in the baseline year from a single groundwater aquifer or watershed node, it was assumed that the county would continue to withdraw all of its future water supply from the same source.

If a county received water from multiple sources in a baseline year (groundwater, surface water, multiple surface water watershed nodes, or groundwater from multiple aquifers), the percentage of total water withdrawn from each source was calculated and held constant throughout the planning horizon. All self-supplied water users were assumed to obtain water from privately owned groundwater wells. Self-supplied water demands were distributed equally throughout a given county. If a county was located on a single aquifer, all self-supplied water demand was assumed to be obtained from that aquifer in the baseline year and throughout the planning horizon. If there were multiple aquifers

underlying a given county, the self-supplied water demand was split between the aquifers based on the each aquifer's percentage of area within the county.

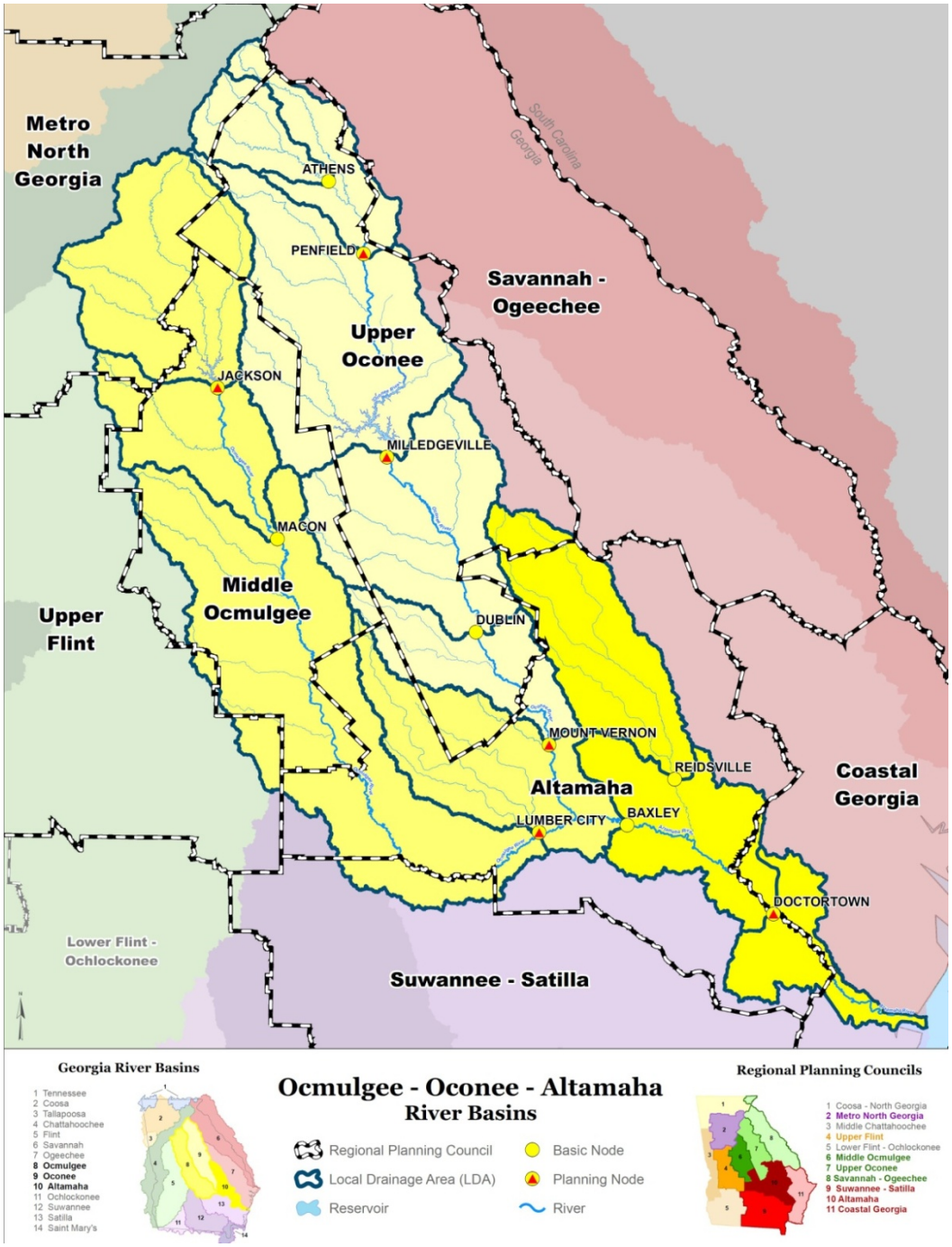

FIGURE1
Local Drainage Areas and Planning Nodes in the Upper Oconee Region
Source: GAEPD, 2009

Municipal Wastewater Flow Forecasts

Municipal wastewater flow forecasts were created from the municipal water demand forecasts. The amount of municipal wastewater generated is calculated by determining a county-specific percentage of indoor water use, which is multiplied by the water demand forecast to calculate wastewater flow generated. Wastewater generated by self-supplied water users was assumed to be treated by septic systems; wastewater generated by publicly supplied water users was assumed to be treated by either septic systems or centralized wastewater treatment facilities. Wastewater flow calculations for centralized wastewater treatment facilities also include an amount of inflow and infiltration (I/I). Septic systems are onsite treatment facilities and contain no I/I component.

To perform these calculations, it was necessary to estimate the amount of wastewater flow to each treatment type from the publicly supplied water demand. First, the percentage of customers on septic systems was estimated. Then the amount of flow returned to centralized wastewater treatment facilities was estimated by subtracting this estimated percentage.

Ultimately, the distribution of the total municipal wastewater flow was based on location, as well as type of treatment (point discharge or land application).

Customers on Septic Systems

The percentage of publicly supplied water customers with septic systems for each county was estimated using GAEPD data, as well as information from the USGS publication for 2005. GAEPD provided information regarding septic systems to the planning contractors, including the number of septic systems per county in 1990 (U.S. Census) and per county estimates for 2001 and 2007. Also, additional population and housing data by county (2000 U.S. Census) and yearly estimates of the number of houses and population in each county from 2000 to 2007 were provided.

The following calculations were made to estimate the percentage of publicly supplied customers on septic systems:

1. 2005 population estimate / 2005 housing estimate = 2005 persons per household
2. 2005 self-supplied population / 2005 persons per household = 2005 self-supplied customers
3. average yearly septic system additions (from 2001-2007) * 4 + 2001 estimate of total septic systems = estimated total number of septic systems
4. estimated total number of septic systems - 2005 self-supplied customers = estimated publicly supplied customers with septic systems
5. estimated publicly supplied customers with septic systems / (2005 housing estimate – 2005 self-supplied customers) = estimated percentage of publicly supplied customers on septic systems

This estimated percentage of publicly supplied customers using septic systems was held constant throughout the 40-year planning horizon unless a county requested an alternative

scenario through the feedback process. Copies of the feedback forms are included in Appendix A. Each county's septic system percentages for publicly supplied customers throughout the planning horizon are shown in Table 4.

TABLE 4
Percentage of Publicly Supplied Water Customers on Septic Systems by County

County	2010	2020	2030	2040	2050
Baldwin	65%	65%	65%	65%	65%
Barrow	76%	65%	55%	45%	35%
Athens-Clarke	45%	30%	25%	20%	15%
Greene	49%	49%	49%	49%	49%
Hancock	92%	92%	92%	92%	92%
Jackson	67%	60%	52%	43%	33%
Laurens	41%	41%	41%	41%	41%
Morgan	73%	73%	73%	73%	73%
Oconee	85%	65%	35%	35%	35%
Putnam	65%	65%	65%	65%	65%
Walton	94%	78%	72%	70%	70%
Washington	3%	3%	3%	3%	3%
Wilkinson	79%	79%	79%	79%	79%

Demand Adjustments

Septic system wastewater flow was calculated by multiplying the municipal demand by a representative indoor water use percentage for each county. Each county's indoor water use percentage was selected by comparing its population, water usage, and structures' ages to those of counties and cities studied in the *Georgia Water Use and Conservation Profiles* (CH2M HILL, 2008). The indoor water percentage of the county or city in the study that best matched each county's data was used. This percentage was held constant throughout the planning period, unless a county requested an alternative scenario through the feedback process. Each county's selected indoor water use percentages throughout the planning horizon are shown in Table 5.

TABLE 5
Percentage of Indoor Water Use by County

County	2010	2020	2030	2040	2050
Baldwin	77%	77%	77%	77%	77%
Barrow	77%	77%	77%	77%	77%
Athens-Clarke	89%	89%	89%	89%	89%
Greene	83%	83%	83%	83%	83%
Hancock	85%	85%	85%	85%	85%
Jackson	82%	82%	82%	82%	82%
Laurens	85%	85%	85%	85%	85%
Morgan	85%	85%	85%	85%	85%
Oconee	77%	77%	77%	77%	77%
Putnam	82%	82%	82%	82%	82%
Walton	83%	83%	83%	83%	83%
Washington	85%	85%	85%	85%	85%
Wilkinson	88%	88%	88%	88%	88%

The portion of municipal water demand that is treated by centralized wastewater treatment facilities also was multiplied by the county's indoor water use percentage. In an effort to account for groundwater and stormwater that are present in centralized wastewater systems, a 20 percent I/I ratio was used for all counties unless feedback to the contrary was provided. This percentage is representative of a typical centralized wastewater system.

Geographic Distribution

Wastewater flows from both septic systems and centralized treatment facilities were distributed geographically to watershed nodes. Septic system flows were distributed equally throughout a given county and assigned to nodes based on the percentage of the county that is located within the node's basin. Centralized treatment facility flows were distributed based on information obtained from wastewater permits, with the assumption that future wastewater flows will be treated at existing facility locations. If a county discharged all of its wastewater flow in the baseline year to a single watershed node, it was assumed that the county would continue to discharge all of its wastewater to the same node. If a county discharged water to multiple watershed nodes for the baseline year, the percentage of total wastewater discharged to each node was calculated. This percentage was held constant for each node throughout the planning period. Finally, the planning contractors separated centralized wastewater flow that was being treated by point discharge locations and by land application systems for computer modeling purposes. Each county's wastewater flow data by planning period is presented in Table 6.

TABLE 6
Municipal Wastewater Flow (MGD)

County	2010	2020	2030	2040	2050
Baldwin	5.48	6.12	6.74	7.35	7.96
Barrow	7.15	11.42	17.37	23.58	29.57
Athens-Clarke	19.96	22.58	24.76	26.96	29.20
Greene	2.07	2.68	3.34	4.01	4.58
Hancock	0.81	0.84	0.86	0.88	0.92
Jackson	6.34	8.65	11.76	15.98	21.71
Laurens	5.38	6.05	6.70	7.33	7.95
Morgan	2.07	2.82	3.67	4.59	5.47
Oconee	3.39	5.04	7.34	10.08	13.84
Putnam	2.03	2.46	2.92	3.43	3.99
Walton	8.50	11.84	15.82	19.45	22.64
Washington	2.77	2.97	3.07	3.15	3.28
Wilkinson	1.03	1.04	1.03	1.03	1.01
TOTAL	**66.98**	**84.51**	**105.38**	**127.82**	**152.12**

Industrial Water Demand Forecasts

Industrial water demand forecasts were calculated for the major industry sectors for each planning region and disaggregated at each node and aquifer. The major water-using industries are shown in Table 7. Some data sources, such as the USGS publication for 2005, use the Standard Industrial Classification (SIC) codes to categorize businesses and industries, while other sources use the newer North American Industrial Classification System (NAICS) codes. Therefore, both SIC and NAICS codes were referenced to obtain and categorize industrial water use data. If a major water-using industry was identified in a specific water planning region, its water usage was included in the water demand estimate for that water planning region.

A large portion of the industrial water use is primarily self-supplied water (i.e., industrial water users have stand-alone water withdrawal permits). However, major industries that obtain water from municipal water systems were identified, extracted from the municipal water use estimates as described in the Municipal Water Demand section, and included in the industrial water demand estimates.

TABLE 7
Major Industrial Water Users

Industry	SIC Code	NAICS Code	Industry	SIC Code	NAICS Code
Mining	14	212	Plastic and Rubber	30	326
Food	20	311/312	Stone and Clay	32	327
Textiles	22	313/314	Primary Metals	33	331
Apparel	23	315	Fabricated Metal Products	34	332
Paper	26	322	Electric Machinery	36	335
Chemicals	28	325	Automotive Manufacturing	37	336
Petroleum and Coal	29	324			

Industrial water demand projections were calculated using the employment projections for each major industry category and the 2005 baseline water use. GAEPD provided employment projections for each major industrial category and region. Other employment (such as retail, services, government, etc.) was included in the municipal demand estimates and, therefore, not considered in this methodology. Industrial water use for 2005 was assigned to the nodes or aquifers within each region based on the water usage reported by the permitted facilities, industry input, and data provided by municipal facilities supplying their water.

Industrial water use volume within a particular basin or aquifer unit was forecasted in direct proportion to the industrial employment projected growth for each of the major industrial categories. This assumes that future growth for a given industry would tend to occur within the same basin or aquifer locations.

In some cases, employment projections were replaced by production numbers or a measure of growth was formally requested by a specific industrial sector. On October 1, 2009, the Georgia Mining Association (GMA) submitted a letter to the GAEPD requesting an employment number revision and the use of GMA's current and future water demands for the mining industry (NAICS 212). On September 30, 2009, the Georgia Traditional Manufacturers Association (GTMA) submitted a letter to the GAEPD on behalf of the carpet sector that requested the use of water usage per production unit (gallons of water per square yard of carpet) instead of employment projections. In addition to these communications, several calls were organized by the GAEPD to further discuss other industry concerns which were addressed also taken into consideration during the industrial forecasting exercise. In addition to these industry-specific considerations, any industrial water use with a projected employment decline was held constant at the level of water use before the employment began to decline. It was assumed that industrial water needs may not remain tied to employment in the future and an employment decline may not reflect a decrease in an industry's water use.

Each industrial sector's regional water use was identified using its 2005 GAEPD industrial permit data. If supplemental data from the USGS publication for 2005 or industrial feedback

was received, it was also used. Industry withdrawal locations were used to assign the demands within the watershed or aquifer. Additionally, any large industrial water use extracted from a municipal water use was included in the industrial water use if the industrial sector and corresponding employment were known. Each industry's water use information was summed within a given watershed or aquifer to generate the demand on the resource.

Future water use by industry was calculated by multiplying the current industry's water use (within a watershed or aquifer) by the industry-specific regional rate of growth. An analysis was completed to provide future projections for 10-, 20-, 30-, and 40-year horizons through 2050 for each major industrial sector's water demand within the Upper Oconee Water Planning Region (Table 8). Industry growth was assumed to occur only at current industry locations and increase at its corresponding growth rate. Hence, the industrial water demand within the region remained proportional throughout the watershed or aquifer.

TABLE 8
Estimated Industrial Water Demand (MGD)

Industry	SIC Code	NAICS Code	2010	2020	2030	2040	2050
Mining	14	212	35.87	41.60	47.32	53.05	58.77
Food	20	311/312	3.92	4.43	4.60	4.78	5.00
Textiles	22	313/314	2.29	2.74	3.17	3.47	3.77
Apparel	23	315	-	-	-	-	-
Paper	26	322	15.31	15.79	16.37	17.02	17.78
Chemicals	28	325	0.32	0.41	0.49	0.57	0.65
Petroleum and Coal	29	324	-	-	-	-	-
Plastic and Rubber	30	326	0.04	0.05	0.05	0.05	0.05
Stone and Clay	32	327	-	-	-	-	-
Primary Metals	33	331	-	-	-	-	-
Fabricated Metal Products	34	332	-	-	-	-	-
Electric Machinery	36	335	-	-	-	-	-
Automotive Manufacturing	37	336	-	-	-	-	-
Other	0	0	0.42	0.51	0.60	0.72	0.86
TOTAL	**-**	**-**	**58.17**	**65.53**	**72.60**	**79.66**	**86.88**

Industrial Wastewater Flow Forecasts

The industrial sector's wastewater flow was forecasted based on the industrial water demand results and applying a series of factors to estimate wastewater return rates. These wastewater flows were distributed based on information from wastewater permits.

The wastewater flow ratio was obtained through industry feedback or using industry-specific permitted water use and permitted wastewater flows to estimate a ratio of wastewater generated to total permitted water demand. The regional industry ratio was calculated by dividing the amount of regional permitted wastewater generated by the regional permitted water use. This ratio was derived for each industry and region, and each is shown in Table 9.

TABLE 9
Estimated Wastewater Flow Ratio

Industry	SIC Code	NAICS Code	Wastewater to Water Ratio
Mining	14	212	1.29
Food	20	311/312	0.90
Textiles	22	313/314	0.45
Apparel	23	315	0.60
Paper	26	322	0.95
Chemicals	28	325	0.93
Petroleum and Coal	29	324	0.60
Plastic and Rubber	30	326	0.23
Stone and Clay	32	327	1.29
Primary Metals	33	331	0.60
Fabricated Metal Products	34	332	0.60
Electric Machinery	36	335	0.60
Automotive Manufacturing	37	336	0.60

The regional industry wastewater to water ratio was applied to the industrial water demand forecast to determine future wastewater flow. Once the total wastewater flow per industry category was calculated, it was distributed to the appropriate watershed node. This distribution was based on GAEPD's permit data for disposal methods—point source discharges, land application systems, and municipal treatment plant discharge—with the assumption that future wastewater flows will be treated at the existing treatment location.

The industrial wastewater flow forecast estimated for each major industry sector within the Upper Oconee region is presented in Table 10.

TABLE 10
Estimated Industrial Wastewater Flow (MGD)

Industry	SIC Code	NAICS Code	2010	2020	2030	2040	2050
Mining	14	212	46.28	53.66	61.04	68.43	75.81
Food	20	311/312	3.52	3.98	4.14	4.30	4.50
Textiles	22	313/314	1.72	2.05	2.38	2.60	2.83
Apparel	23	315	-	-	-	-	-
Paper	26	322	14.74	15.20	15.76	16.38	17.11
Chemicals	28	325	0.30	0.38	0.45	0.53	0.60
Petroleum and Coal	29	324	-	-	-	-	-
Plastic and Rubber	30	326	0.01	0.01	0.01	0.01	0.01
Stone and Clay	32	327	-	-	-	-	-
Primary Metals	33	331	-	-	-	-	-
Fabricated Metal Products	34	332	-	-	-	-	-
Electric Machinery	36	335	-	-	-	-	-
Automotive Manufacturing	37	336	-	-	-	-	-
Other	0	0	0.25	0.30	0.36	0.43	0.52
TOTAL			**66.82**	**75.58**	**84.14**	**92.68**	**101.38**

References

CH2M HILL. March 2008. *Georgia Water Use and Conservation Profiles*.

Fanning, J.L. and V.P. Trent. 2009. *Water Use by County for 2005; Water-Use Trends, 1980-2005*. Unites States Geological Survey Publication.

Appendix A – Feedback Form

Georgia Statewide Water Planning
Municipal Water and Wastewater Forecasting

Region-Specific Input from 9/28/09 and 10/2/09 meetings

Please provide feedback on the following items from readily available information. We understand that some of this information may not be readily obtainable. However, any input you can provide will help improve the forecasts that would otherwise rely on standard assumptions that may not reflect your community's profile. Refer to presentation and meeting notes for explanation of items below.

Return by **October 9, 2009** to *Glen.Behrend@dnr.state.ga.us 404-567-0474(cel)*
Include attachments, as necessary.

Name:	
Organization:	
Region:	
Email:	
Phone:	

WATER

Transient population changes

Forecasting base year (if not 2005, is 2004 or 2006 more applicable)

County municipal per capita water use rate (wholesale customer or purchaser, large industry)

Self-supplied per capita water use rate (if not 75 gpcd)

Self-supplied to public-supplied future ratio (if not historic trend)

WASTEWATER

Indoor use %

Septic % since 1990

I/I % (if not 20%)

Appendix B – Individual County per Capita Calculation Sheets

APPENDIX B

Individual County per Capita Calculation Sheets

BALDWIN CO.

		Public Supply (MGD) - USGS 2005			Adjustments/Additions (MGD)			
		GW	SW		External Source	Wholesale	Industrial Use	
							(2) Concord (closed) (0.08) (2) Mohawk (0.35) (2) Rheen (closed) (0.03)	
Total Population	Publicly Supplied Population		Milledgeville 6.75	USGS 2005 (gpcpd)		(1) Sinclair Water Authority (Putnam Co.)	(2) Vought (0.03)	Adjusted per Capita (gpcpd)
45,230	44,750	**0.00**	**6.75**	151	**0.00**	**0.00**	**(0.49)**	140
	99%							

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(3) Default 77%	(4) Default 20%	(5) Milledgeville and County data 65%	(6) Permit Database 100%

Ref	Date	Source	Notes	Used	Location
1	12/14/2009	Ad Hoc Meeting in Athens	Sinclair Water Authority (Putman Co.) sells ~2.5MGD (2009). Assumed to be already built in the original per capita calcs	N	
	12/14/2009	Ad Hoc Meeting in Athens	In addition to the specified industrial use,~19K people live in Milledgeville and they are 100% publicly supplied, City also supplies the Prison (~1.2MGD) and the Mental Hospital (~1.2MGD).	N	
2	12/11/2009	Email from Barry Jarrett/ Milledgeville	Provided 2005 industrial demand	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Baldwin\Milledgeville\BJarrett_email_121109.pdf
3	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.	Y	
4	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
5	12/14/2009	Ad Hoc Meeting in Athens	Milledgeville (95%) and County (35%) but expected to decrease	Y	
6	NA	GAEPD	Wastewater permit database	Y	

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BARROW CO.

		Public Supply (MGD) - USGS 2005				Adjustments/Additions (MGD)			
		GW		SW		External Source	Wholesale	Industrial Use	
								(4) Rhodia (chemicals)	(0.06)
								(4) Stephan (chemicals)	(0.14)
					0.01			(4) John Manville (insulation)	(0.12)
			0.03	Statham	0.19		(2) Bear Creek WTP (2005) 1.48 (1) Purchased by Auburn from Gwinnett Co. 0.51	(4) Automated Packaging	(0.02)
Total Population	**Publicly Supplied Population**	(1) Auburn	0.54	Winder	4.24	**USGS 2005 (gpcpd)**	(3) Sold to Braselton (Jackson Co.) (0.70)	(4) Harrison Poultry	(0.55)
59,954	31,890	**0.03**		**4.44**		140	**0.00**	**1.29**	**(0.89)**
	53%								

	Avg Indoor Water Use		I/I		Septic		NPDES/LAS	
NOTE: All values will be held constant for planning unless otherwise specified.	(5) Default	77%	(6) Old systems	35%	(7) Actual data	70%	(8) Permit Database	100%

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BARROW CO.

Ref	Date	Source	Notes	Used	Location
	12/14/2009	Ad Hoc Meeting in Athens	Purchase data provided as a hard copy during the meeting.	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Barrow\City of Auburn
1	5/14/2010	Ron Griffith/ Auburn	Auburn does not have a GW permit. In 2005 they purchased water from Gwinnett Co. (65%) and Barrow Co. (35%). Starting 2009 they purchase 99% of water from Barrow Co.	Y	Phone conversation
2		Ken Moore/ Bear Creek WTP	Raw water pumped from Middle Oconee River to Bear Creek Reservoir and then sold to 4 counties. Bear Creek WTP monthly totals for 2005.	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Barrow
3	2009	JJG	Future Water Supply Infrastructure Plan (Pg.	Y	
4	1/26/2010	Fax from Dawn Riddling/Winder	Contacted Dawn Riddling/Winder Utility Billing for info 770-867-3106. Harrison Poultry has their own GW permit but still purchases (~0.7MGD) = 0.55 MGD (2005).	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Barrow\City of Winder
5	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.		
6	12/14/2009	Ad Hoc Meeting in Athens	Winder (50's) and Statham have old systems.	Y	
7	12/14/2009	Ad Hoc Meeting in Athens			
8	NA	GAEPD	Wastewater permit database	Y	

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ATHENS-CLARKE CO.

		Public Supply (MGD) - USGS 2005			Adjustments/Additions (MGD)				
		GW	SW		Base Year Adjustment	External Source	Wholesale	Industrial Use	
Total Population	Publicly Supplied Population	0.24	Athens-Clarke Co. Public Utility 6.29	USGS 2005 (gpcpd)	(1) 2006 Data 2.39	(2) Bear Creek Reservoir 9.81		(3) Poultry (2.40)	Adjusted per Capita (gpcpd)
104,439	104,220	**0.24**	**6.29**	63	**2.39**	**9.81**	**0.00**	**(2.40)**	157
	100%								

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(3) Provided 89%	(5) Variable 40% -> 25%	(4) Variable 45% -> 25% -> 15%	(5) Permit Database 100%

Ref	Date	Source	Notes	Used	Location
1		Gary Duck/ACC	Used 2006 water usage instead of 2005 because total rainfall in 2005 was higher that the annual average.	Y	Phone converastion
		Ken Moore/Bear Creek WTP	Raw water pumped from Middle Oconee River to Bear Creek Reservoir and then sold to 4 counties. Bear Creek WTP monthly totals for 2005. Email confirmation from Gary Duck/ACC	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Clarke
2	11/14/2009	Gary Duck/ACC	Email confirmation that data is OK	Y	
3	11/10/2009	Email from Gary Duck/ACC	Industrial use - poultry	Y	
			I/I is currently 40%; CIP have been proposed to lower I/I to 25% by 2030	Y	
4	4/27/2010	Call w/ Gary Duck/ACC	Currently 8,000 septic systems in the Co. 75% sewer by 2030 and 85% sewer by 2050		
5	NA	GAEPD	Wastewater permit database	Y	

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GREENE CO.

		Public Supply (MGD) - USGS 2005						Adjustments/Additions (MGD)			
		GW		SW				External Source	Wholesale	Industrial Use	
		(1.00)	0.17								
		Siloam	0.03								
		Woodville	0.03								
		White Plains	0.02	Greensboro	0.74						
Total Population	Publicly Supplied Population	(2) Piedmont Water Co.	0.67	Union Point	0.16	USGS 2005 (gpcpd)					Adjusted per Capita (gpcpd)
15,693	11,870		**0.92**		**0.90**	153		0.00	**0.00**	**0.00**	153
	76%										

	Avg Indoor Water Use		I/I		Septic		NPDES/LAS	
NOTE: All values will be held constant for planning unless otherwise specified.	(3) Default	83%	(4) Default	20%	(5) Default	49%	(6) Default	100%

Ref	Date	Source	Notes	Used	Location
1	5/17/2010	Ricky Jones	Contacted Ricky Jones to obtain water info on private water systems	N	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOc
2	1/29/2010	Email from Mark Pittard/ Piedmont Water	Changed from 0.3 MGD (USGS 2005) to 0.67 MGD based on actual data provided by Piedmont Water (2006)	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Greene
3	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.		
4	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
5	NA	GAEPD	Calculated using the 1990 census and 2007 septic system data	Y	
6	NA	GAEPD	Wastewater permit database	Y	

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HANCOCK CO.

		Public Supply (MGD) - USGS 2005				Adjustments/Additions (MGD)			
		GW		SW		External Source	Wholesale	Industrial Use	
Total Population	Publicly Supplied Population (1)	(2) Private Water Systems including Piedmont Water 0.15 Devereux Water System 0.02		Sparta	0.85			(3) St. Gobain	(0.01)
9,643	8,067	**0.17**		**0.85**		0.00	**0.00**	**(0.01)**	
	84%								

USGS 2005 (gpcpd)	Adjusted per Capita (gpcpd)
126	125

	Avg Indoor Water Use		I/I		Septic		NPDES/LAS	
NOTE: All values will be held constant for planning unless otherwise specified.	(4) Default	85%	(5) Default	20%	(6) Default	92%	(7) Default	0%

Ref	Date	Source	Notes	Used	Location
1	NA	NA	Replaced the USGS 2005 = 6,110 people served for the SDWIS population served	Y	
2	NA	NA	Assumed to be all private water systems including Piedmont Water	Y	
3	12/22/2009	Email from Ron Waddell/ Sparta	Industrial use - St. Gobain	Y	
4	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.		
5	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
6	NA	GAEPD	Calculated using the 1990 census and 2007 septic system data	Y	
7	NA	GAEPD	Wastewater permit database	Y	

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JACKSON CO.

		Public Supply (MGD) - USGS 2005					Adjustments/Additions (MGD)					
		GW		SW			External Source		Wholesale		Industrial Use	
			0.15									
		Braselton	0.14	Jefferson	0.82				(4) Bear Creek WTP (2005)	1.79		
		Hoschton	0.03	(3) Commerce	1.32				(5) Purchased from Barrow Co.	0.7	(7) Mayfield	(0.10)
Total Population (1)	**Publicly Supplied Population**	(2) Nicholson Water Association	0.18	(4) Upper Oconee Water Authority	17.38	**USGS 2005 (gpcpd)**	(4) Bear Creek Reservoir	(17.38)	(6) Braselton purchase from Gwinnett Co.	0.54	(7) Braselton Poultry/ Kings Delight	(0.08)	**Adjusted per Capita (gpcpd)**
52,292	49,610		**0.50**		**19.52**	404		**(17.38)**		**3.03**		**(0.18)**	111
	95%												

	Avg Indoor Water Use		I/I		Septic		NPDES/LAS	
NOTE: All values will be held constant for planning unless otherwise specified.	(8) Default	82%	(9) Default	20%	(10) Actual data	70%	(11) Default	86%

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JACKSON CO.

Ref	Date	Source	Notes	Used	Location
1	4/10/2010	Hunter Bicknell/ Jackson Co.	Nicholson Water Authority used an avg of 6.2 MG/month in 2009. per month. State's latest population estimate for Jackson County is 66,250.	N	
2	5/18/2010	Ginger Dempsey/ Nicholson Water Authority	Permit not listed in the GAEPD database 0.2 MGD (USGS 2005) was replaced with 0.18 MGD since water demand data for 2005 was provided by the Authority.	Y	
3	NA	NA	Withdrawal in Banks Co. (Savannah Region)	Y	
	?	Ken Moore/Bear Creek WTP	Raw water pumped from Middle Oconee River to Bear Creek Reservoir and then sold to 4 counties. Bear Creek WTP monthly totals for 2005.	Y	
4	5/20/2010	Fred Alke/ Jackson Co. Water Authority (706-367-1741 ext. 227)	Jackson Co. Water Authority only gets water from Bear Creek WTP. The Authority has 7,000 connections in unincorporated areas (68-75 gpcpd). They were very successful implementing water conservation practices(2007) achieving a 29% overall water demand reduction through a tiered billing system that is still in place.	Y	Phone conversation
5	2009	JJG	Future Water Supply Infrastructure Plan (Pg. 12).	Y	
6	11/17/2009	Email from Jennifer Dees/ Braselton	Braselton purchase from Gwinnett Co.	Y	
7	12/14/2009	Ad Hoc Meeting in Athens	Jennifer Dees/ Braselton provided industrial use info.	Y	
8	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.		
9	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
10	12/14/2009	Ad Hoc Meeting in Athens	Jennifer Dees/ Braselton provided septic info.	Y	
11	NA	GAEPD	Wastewater permit database	Y	

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LAURENS CO.

		Public Supply (MGD) - USGS 2005					Adjustments/Additions (MGD)			
		GW		SW			External Source	Wholesale	Industrial Use	
		(1) Private supplier	0.08							
		Allentown	0.02							
		Cadwell	0.03							
		Dexter	0.06							
		Dublin	0.11							
		Dudley	0.04							
		East Dublin	0.47							
Total Population	**Publicly Supplied Population**	Rentz	0.09	Dublin	3.04	**USGS 2005 (gpcpd)**				**Adjusted per Capita (gpcpd)**
46,896	25,030	**0.90**		**3.04**		157	0.00	**0.00**	**0.00**	157
	53%									

	Avg Indoor Water Use		I/I		Septic		NPDES/LAS	
NOTE: All values will be held constant for planning unless otherwise specified.	(2) Default	85%	(3) Default	20%	(4) Default	41%	(5) Default	100%

Ref	Date	Source	Notes	Used	Location
1	4/5/2010	Jeniffer Davis/ Laurens Co. CM	Confirmed to be supplied by private water system(s)	Y	
2	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.	Y	
3	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
4	NA	GAEPD	Calculated using the 1990 census and 2007 septic system data	Y	
5	NA	GAEPD	Wastewater permit database	Y	

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MORGAN CO.

		Public Supply (MGD) - USGS 2005				Adjustments/Additions (MGD)			
		GW		SW		External Source	Wholesale	Industrial Use	
		Madison	0.10 0.01						
Total Population	**Publicly Supplied Population**	Buckhead	0.04	Madison	1.30	**USGS 2005 (gpcpd)**	(1) GA Pacific (0.1)		**Adjusted per Capita (gpcpd)**
17,492	8,050		**0.15**		**1.30**	180	0.00	**(0.13)**	**0.00**	164
	46%								

	Avg Indoor Water Use		I/I		Septic		NPDES/LAS	
NOTE: All values will be held constant for planning unless otherwise specified.	(2) Default	85%	(3) Default	20%	(4) Default	73%	(5) Default	100%

Ref	Date	Source	Notes	Used	Location
1	12/14/2009	Ad Hoc Meeting in Athens	David Nunn/ Madison City Manager stated that GA Pacific purchases 10% of Madison's production	Y	
2	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.	Y	
3	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
4	NA	GAEPD	Calculated using the 1990 census and 2007 septic system data	Y	
5	NA	GAEPD	Wastewater permit database	Y	

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OCONEE CO.

		Public Supply (MGD) - USGS 2005			Adjustments/Additions (MGD)			
		GW	SW		External Source	Wholesale	Industrial Use	
		0.27						
Total Population	**Publicly Supplied Population**	Oconee Co. Public Utilities 0.04		**USGS 2005 (gpcpd)**		(1) Bear Creek WTP (2005) 2.23		**Adjusted per Capita (gpcpd)**
29,748	17,850	**0.31**	**0.00**	17	0.00	**2.23**	**0.00**	142
	60%							

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(2) Default 77%	(3) Default 20%	(4) Actual data 90% -> 70%	(5) Default 100%

Ref	Date	Source	Notes	Used	Location
1		Ken Moore/Bear Creek WTP	Raw water pumped from Middle Oconee River to Bear Creek Reservoir and then sold to 4 counties. Bear Creek WTP monthly totals for	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Oconee
2	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.	Y	
3	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
4	12/14/2009	Ad Hoc Meeting in Athens	Jimmy Parker/PPI stated that currently the Co. is 90% septic but it is expected to decrease to 70%	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Oconee
5	NA	GAEPD	Wastewater permit database	Y	

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Individual County per Capita Calculation Sheets

PUTNAM CO.

		Public Supply (MGD) - USGS 2005			Adjustments/Additions (MGD)			
		GW	SW		External Source	Wholesale	Industrial Use	
Total Population	Publicly Supplied Population	(1) Piedmont Water Co. 0.46	(3) Coscowilla 0.3 (2) Eatonton 0.80	USGS 2005 (gpcpd)				Adjusted per Capita (gpcpd)
19,829	11,940	**0.46**	**1.10**	131	**0.00**	**0.00**	**0.00**	131
	60%							

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(4) Default 82%	(5) Default 20%	(6) Default 65%	(7) Default 100%

Ref	Date	Source	Notes	Used	Location
1	1/29/2010	Email from Mark Pittard/ Piedmont Water	Population served by Piedmont Water Co. in 2006 was 6,240.	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Oconee
2	12/11/2009	Email from Mark Gatlin/ Carter & Sloope	Population served by Eatonton in 2005 was 5,250. Putnam water system came online in 2009 and serves 2,408 customers (avg. 112 gpcpd - considering summer).	Y	
3	3/25/2010	Charlie Armentrout/ ARM	Jones Water provides 0.3 MGD to 800 households.	Y	
4	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.	Y	
5	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
6	NA	GAEPD	Calculated using the 1990 census and 2007 septic system data	Y	
7	NA	GAEPD	Wastewater permit database	Y	

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WALTON CO.

		Public Supply (MGD) - USGS 2005					Adjustments/Additions (MGD)			
		GW		SW			External Source	Wholesale		Industrial Use	
			0.02								
		(2) Loganville (from Walton Co.)	0.78	(3) Social Circle	0.56			(2) Loganville (from Gwinnett Co.)	0.01		
Total Population	**Publicly Supplied Population (1)**	Jersey	0.03	Monroe	4.30	**USGS 2005 (gpcpd)**		(4) Cornish Creek Reservoir	3.0	(3) Social Circle	(0.13)
75,647	40,850		**0.83**		**4.86**	139	0.00		**3.01**		**(0.13)**
	54%										

	Avg Indoor Water Use		I/I		Septic		NPDES/LAS	
NOTE: All values will be held constant for planning unless otherwise specified.	(5) Default	83%	(6) Default	20%	(7) Default	51%	(8) Default	100%

Ref	Date	Source	Notes	Used	Location
1	NA	NA	Replaced the USGS 2005 = 40, 850 people served for the avg value with the SDWIS population served		
2	5/14/2010	Email from Doris Frierson/ Loganville	0.29 MGD (USGS 2005) replaced with water purchased from Walton Co. and Gwinnett Co. Loganville does not use their GW wells.	N	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Walton
3	5/18/2010	Email from Barbara Schlageter/ Social Circle	Confimed water withdarawal for Social Cricle in 2005 and provided industrila demand info.	N	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Walton\SocialCircle
4	12/14/2009	Ad Hoc Meeting in Athens	Purchase water from Cornish Creek Reservoir (Newton Co.) andWTP. Walton Co. is an equity partner that owns 25%.	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Walton
5	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.	Y	
6	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
7	NA	GAEPD	Calculated using the 1990 census and 2007 septic system data	Y	
8	NA	GAEPD	Wastewater permit database	Y	

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WASHINGTON CO.

		Public Supply (MGD) - USGS 2005				Adjustments/Additions (MGD)			
		GW		SW		External Source	Wholesale	Industrial Use	
		(1) Davidsboro	0.18						
		(2) Tennille	0.00						
		Sandersville	2.03						
		Riddleville	0.03						
		Oconee	0.04						
		Harrison	0.07						
Total Population	**Publicly Supplied Population**	(3) Deepstep	0.03		**USGS 2005 (gpcpd)**			(3) Industrial demand	(0.3) **per Capita (gpcpd)**
		Warthen Water Association	0.03						
20,118	10,830		**2.41**	**0.00**	223	0.00	0.00		**(0.30)** 195
	54%								

	Avg Indoor Water Use		I/I		Septic		NPDES/LAS	
NOTE: All values will be held constant for planning unless otherwise specified.	(4) Actual data	85%	(4) Actual data	13%	(4) Actual data	3%	(5) Default	88%

WASHINGTON CO.

Ref	Date	Source	Notes	Used	Location
1	5/18/2010	Violet Josie/ Davidsboro (478-348-4400)	Davidsboro has a total 207 connections including the Washington State Prison that houses 1,500 inmates.	N	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Walton
2	5/19/2010	Adam Martin/ Tennille City Hall (478-552-7875; amartin@tennille-ga.gov)	0.36 MGD was removed (USGS 2005) since Tennille (1,500 population served) has been purchasing water from Sandersville since 2005 (5 to 8 MG/month). Tennille does have 2 GW wells that are being rehabilitated and will be used in the future. Major industry, also supplied by Sandersville (500K gal/mo), is a railcar rehab facility.	Y	
3	5/19/2010	Dorinda Smith/ Deepstep Town Hall (478-552-0867)	Confirmed that USGS 2005 withdrawal was too high (0.5 MGD). In 2009 (population = 134) they withdrew between 25 40K gallons/day	Y	
4	3/2/2010	Email from Robert Eubanks/ Sandersville	Provided industrial demands	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_2-2_Estimate_Public_Water_Supply\WorkingSheets\References\UpperOconee\Washington
5	2/20/2010	Provided by Robert Eubanks/ Sandersville	Phone conversation	Y	
6	NA	GAEPD	Wastewater permit database	Y	

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WILKINSON CO.

		Public Supply (MGD) - USGS 2005			Adjustments/Additions (MGD)			
		GW		SW	External Source	Wholesale	Industrial Use	
		Toombsboro	0.10					
		McIntyre	0.12					
		Ivey	0.18					
		Irwinton	0.21					
		Gordon	0.27					
Total Population	Publicly Supplied Population	Allentown	0.05					Adjusted per Capita (gpcpd)
10,143	7,050	**0.93**		**0.00**	0.00	**0.00**	**0.00**	132
	70%							

	Avg Indoor Water Use		I/I		Septic		NPDES/LAS	
NOTE: All values will be held constant for planning unless otherwise specified.	(1) Default	88%	(2) Default	20%	(3) Default	79%	(4) Default	100%

Ref	Date	Source	Notes	Used	Location
1	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.		
2	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
3	NA	GAEPD	Calculated using the 1990 census and 2007 septic system data	Y	
4	NA	GAEPD	Wastewater permit database	Y	