

Municipal and Industrial Water and Wastewater Forecasting for the Coosa-North Georgia Region

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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 Coosa-North Georgia 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Each county's publicly supplied per capita demands were calculated by dividing the total water withdrawn for the baseline year by the publicly supplied population (Table 1).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 Served	Per Capita Water Demand (gpcd)
Catoosa	4.68	51,340	91
Chattooga	3.36	22,720	148
Dade	2.35	16,000	147
Dawson	1.60	13,340	120
Fannin	1.78	11,760	151
Floyd	13.39	93,350	143
Gilmer	3.22	12,210	264
Gordon	12.71	37,940	335
Habersham	5.90	22,080	267
Lumpkin	1.21	4,450	272
Murray	3.42	16,220	211
Pickens	2.17	21,050	103
Polk	5.96	35,620	167
Towns	2.11	9,590	220
Union	1.91	12,860	149
Walker	7.61	63,690	119
White	1.89	12,630	150
Whitfield	35.38	89,980	393

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	
Catoosa	91			1.74	-0.23	121
Chattooga	148			0.36		164
Dade	147				-0.20	134
Dawson	120		0.24	0.38		166
Fannin	151					151
Floyd ^a	143		0.27	0.46	-2.15	133
Gilmer	264				-1.50	141
Gordon ^b	335			-1.00	-4.54	159
Habersham ^b	267					170
Lumpkin ^a	272					166
Murray	211			0.50		145
Pickens	103		-0.30	0.71		133
Polk	167					167
Towns ^b	220					141
Union	149					149
Walker	119			0.08		145
White	150					150
Whitfield	393			2.00	-17.20	224

^a Population served was revised based on data provided by the county or municipality.

^b 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)

County	Publicly Supplied Water Demand Forecasts					Self-Supplied Water Demand Forecasts				
	2010	2020	2030	2040	2050	2010	2020	2030	2040	2050
Catoosa	6.70	8.31	10.21	12.54	15.43	0.77	0.94	1.14	1.39	1.68
Chattooga	3.83	4.23	4.66	5.09	5.52	0.30	0.32	0.35	0.37	0.39
Dade	2.22	2.53	2.82	2.96	3.06	0.00	0.00	0.00	0.00	0.00
Dawson	2.56	4.23	6.24	8.27	10.44	0.58	0.49	0.40	0.32	0.25
Fannin	1.89	2.24	2.60	2.97	3.35	0.82	0.95	1.09	1.23	1.37
Floyd	12.91	13.92	14.95	15.99	17.05	0.07	0.07	0.07	0.08	0.08
Gilmer	1.89	2.47	3.21	4.15	5.36	1.25	1.61	2.07	2.65	3.38
Gordon	6.60	7.85	9.28	10.93	12.83	1.01	1.18	1.38	1.59	1.84
Habersham	4.32	5.88	7.59	9.01	10.29	1.43	1.22	1.01	0.82	0.63
Lumpkin	0.92	2.17	3.66	5.35	7.21	1.72	1.68	1.64	1.60	1.56
Murray	3.44	5.31	7.64	10.79	14.25	1.39	1.35	1.31	1.27	1.23
Pickens	3.25	4.54	6.09	7.58	9.03	0.64	0.63	0.61	0.60	0.58
Polk	6.36	7.21	8.15	9.16	10.25	0.39	0.43	0.48	0.52	0.57
Towns	1.49	1.69	1.92	2.15	2.38	0.06	0.07	0.08	0.08	0.09
Union	2.22	3.26	4.65	6.07	7.70	0.60	0.88	1.23	1.59	1.99
Walker	9.54	10.44	11.26	11.67	11.80	0.02	0.02	0.02	0.02	0.02
White	2.10	2.71	3.44	4.15	4.83	0.95	1.21	1.52	1.81	2.08
Whitfield	21.51	25.06	29.21	33.93	39.46	0.07	0.08	0.09	0.11	0.12
TOTAL	93.77	114.06	137.56	162.75	190.25	12.06	13.14	14.50	16.05	17.86

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 Coosa-North Georgia 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.

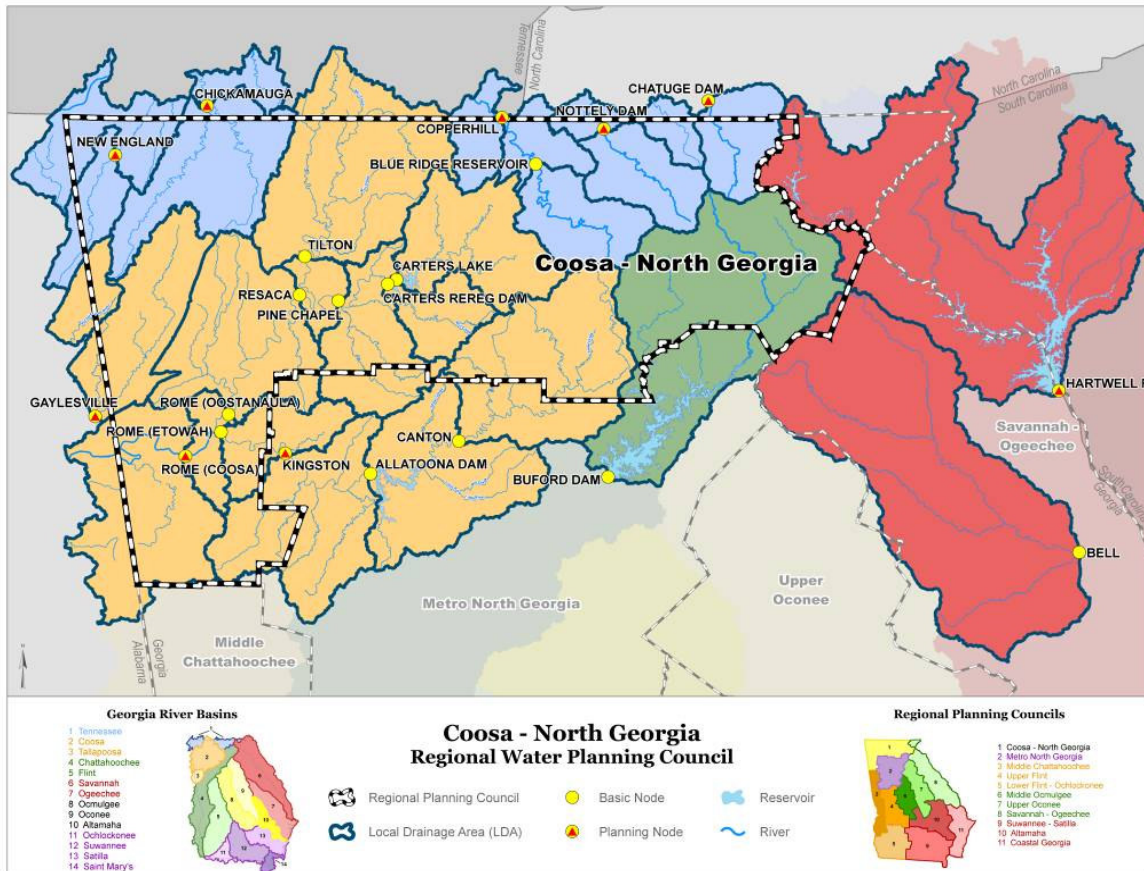


FIGURE 1
Local Drainage Areas and Planning Nodes in the Coosa-North Georgia Region
Source: GAEPD, 2009

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
Catoosa	95%	95%	95%	95%	95%
Chattooga	45%	45%	45%	45%	45%
Dade	80%	80%	80%	80%	80%
Dawson	20%	20%	20%	20%	20%
Fannin	56%	56%	56%	56%	56%
Floyd	35%	35%	35%	35%	35%
Gilmer	90%	90%	90%	90%	90%
Gordon	79%	79%	79%	79%	79%
Habersham	68%	68%	68%	68%	68%
Lumpkin	51%	51%	51%	51%	51%
Murray	78%	78%	78%	78%	78%
Pickens	65%	65%	65%	65%	65%
Polk	45%	45%	45%	45%	45%
Towns	69%	69%	69%	69%	69%
Union	69%	69%	69%	69%	69%
Walker	69%	69%	69%	69%	69%
White	69%	69%	69%	69%	69%
Whitfield	63%	63%	63%	63%	63%

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.

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
Catoosa	6.20	7.69	9.43	11.57	14.22
Chattooga	3.50	3.86	4.25	4.63	5.02
Dade	1.97	2.24	2.49	2.62	2.70
Dawson	3.01	4.55	6.43	8.33	10.37
Fannin	2.35	2.77	3.21	3.65	4.10
Floyd	12.02	12.95	13.91	14.88	15.86
Gilmer	2.70	3.51	4.54	5.85	7.52
Gordon	7.50	8.89	10.49	12.33	14.45
Habersham	5.61	7.01	8.55	9.81	10.95
Lumpkin	2.32	3.45	4.81	6.35	8.05
Murray	3.84	5.31	7.16	9.66	12.40
Pickens	3.17	4.22	5.49	6.70	7.88
Polk	6.34	7.17	8.09	9.09	10.16
Towns	1.40	1.58	1.80	2.01	2.23
Union	2.52	3.69	5.24	6.83	8.65
Walker	8.63	9.44	10.19	10.56	10.68
White	2.70	3.48	4.40	5.29	6.13
Whitfield	19.70	22.95	26.74	31.07	36.13
TOTAL	95.47	114.78	137.22	161.23	187.50

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 Coosa-North Georgia 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	6.94	7.27	7.61	7.94	8.27
Food	20	311/312	2.26	2.63	2.68	2.76	2.86
Textiles	22	313/314	34.41	44.78	55.14	63.60	72.05
Apparel	23	315	-	-	-	-	-
Paper	26	322	26.79	28.90	31.00	33.11	35.21
Chemicals	28	325	2.08	2.24	2.35	2.45	2.55
Petroleum and Coal	29	324	-	-	-	-	-
Plastic and Rubber	30	326	0.48	0.54	0.56	0.58	0.60
Stone and Clay	32	327	-	-	-	-	-
Primary Metals	33	331	0.01	0.01	0.01	0.02	0.02
Fabricated Metal Products	34	332	0.27	0.36	0.51	0.73	1.07
Electric Machinery	36	335	-	-	-	-	-
Automotive Manufacturing	37	336	0.34	0.52	0.75	1.09	1.59
Other	0	0	0.71	0.79	0.87	0.97	1.01
TOTAL	-	-	74.30	88.05	101.48	113.023	125.32

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	0.82
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 Coosa-North Georgia 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	8.95	9.38	9.81	10.24	10.67
Food	20	311/312	2.03	2.37	2.41	2.48	2.57
Textiles	22	313/314	28.61	37.23	45.84	52.87	59.90
Apparel	23	315	0.00	0.00	0.00	0.00	0.00
Paper	26	322	25.45	27.45	29.45	31.45	33.45
Chemicals	28	325	1.56	1.69	1.77	1.84	1.92
Petroleum and Coal	29	324	0.00	0.00	0.00	0.00	0.00
Plastic and Rubber	30	326	0.11	0.13	0.13	0.14	0.14
Stone and Clay	32	327	0.00	0.00	0.00	0.00	0.00
Primary Metals	33	331	0.01	0.01	0.01	0.01	0.01
Fabricated Metal Products	34	332	0.16	0.22	0.30	0.44	0.64
Electric Machinery	36	335	0.00	0.00	0.00	0.00	0.00
Automotive Manufacturing	37	336	0.20	0.31	0.45	0.65	0.96
Other	0	0	0.43	0.47	0.52	0.58	0.66
TOTAL			67.52	79.26	90.70	100.71	110.92

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*.
United 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(ceI)
Include attachments, as necessary.

Name:	
Organization:	
Region:	
Email:	
Phone:	

WATER

Transient population changes

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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%)

--

TABLE 5
Percentage of Indoor Water Use by County

County	2010	2020	2030	2040	2050
Catoosa	82%	82%	82%	82%	82%
Chattooga	77%	77%	77%	77%	77%
Dade	85%	85%	85%	85%	85%
Dawson	90%	90%	90%	90%	90%
Fannin	82%	82%	82%	82%	82%
Floyd	82%	82%	82%	82%	82%
Gilmer	85%	85%	85%	85%	85%
Gordon	95%	95%	95%	95%	95%
Habersham	95%	95%	95%	95%	95%
Lumpkin	85%	85%	85%	85%	85%
Murray	77%	77%	77%	77%	77%
Pickens	77%	77%	77%	77%	77%
Polk	85%	85%	85%	85%	85%
Towns	85%	85%	85%	85%	85%
Union	85%	85%	85%	85%	85%
Walker	85%	85%	85%	85%	85%
White	85%	85%	85%	85%	85%
Whitfield	85%	85%	85%	85%	85%

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

Appendix B – Individual County per Capita Calculation Sheets

APPENDIX B

Individual County per Capita Calculation Sheets

CATOOSA COUNTY

		Public Supply (MGD) - USGS 2005 Data			Additions/Adjustments (MGD)			
		GW	SW		External Source	Wholesale	Industrial Use	
						(1) TN American to Ft. Oglethorpe 1.00		
						(1) TN American 0.82 (2) Walker Co. (0.08)	(3) Ringgold (0.21)	
		Catoosa Co. Water System		Ringgold		(2) Eastside Utility District 0.00	(1) Ft. Oglethorpe (0.02)	
Total Population	Publicly Supplied Population				USGS 2005 (gpcpd)			Adjusted per Capita (gpcpd)
60,830	51,340	4.12	0.56	91	0.00	1.74	(0.23)	121
84%								

	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 95%	(7) Default 100%

Ref	Date	Source	Notes	Used	Location
1	3/15/2010	Pam Travillian/ Finance Director Ft. Oglethorpe	Ft. Oglethorpe is served only by TN American and provides water to a carpet industry.	Y	Phone conversation
	12/15/2009	Randy Thompson/ Catoosa Utility District	Provided a spreadsheet with buy/sell data.	Y	CatoosaUtilityDistrict2005.xlsx
2	NA	Online info	Water and sewer services provided by Ringgold and Ft. Oglethorpe for those living within city limits and by Catoosa County Water Systems for rural areas. Ringgold and Catoosa County Water Systems are interconnected. Sewer interceptors at Peavine (middle of the Co.) and Ft. Oglethorpe (west) provides ties to the TN River basin. Wastewater is treated at the Moccasin Bend Treatment Facility in Chattanooga, TN.	N	Online info
3	12/11/2009	Stephanie Graham/ Ringgold	2005 industrial use supplied by Ringgold.	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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Individual County per Capita Calculation Sheets

CHATTOOGA COUNTY

		Public Supply (MGD) - USGS 2005 Data				Additions/Adjustments (MGD)			Adjusted per Capita (gpcpd)
		GW		SW		External Source	Wholesale	Industrial Use	
		Chattooga Co. Water	0.51						
		Lyerly	0.15						
		Menlo	0.05						
		Trion	0.15						
	15000	Summerville - Lowe Spring	0.45	Summerville	2.05			(1) Mt. Vernon Mills	0.36
Total Population	Publicly Supplied Population		1.31		2.05	USGS 2005 (gpcpd)			
26,570	22,720					148	0.00	0.00	0.36
									164
									86%

	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) Default 45%	(5) Default 100%

Ref	Date	Source	Notes	Used	Location
1	12/4/2009	Ron Beegle/ Mt. Vernon Mills	(1) Mt. Vernon Mills (NAICS 313/315) produced 4.59 MGD and provides water to Trion (0.51 MGD)	Y	Email communication
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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Individual County per Capita Calculation Sheets

DADE COUNTY

Total Population	Publicly Supplied Population	Public Supply (MGD) - USGS 2005 Data		USGS 2005 (gpcpd)	Additions/Adjustments (MGD)			Adjusted per Capita (gpcpd)
		GW	SW		External Source	Wholesale	Industrial Use	
16,040	16,000	0.00	Dade County Water Authority	2.35	0.00		(1) Shaw Carpets (closed in 2008) (0.20)	134
	1500000%			147			(0.20)	

	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) Actual data 80%	(5) Default 100%

Ref	Date	Source	Notes	Used	Location
1	7/7/2010	Frank Hawking/ Water Plant Manager Dade Co. Water Authority	Dade Co. provided water for Shaw Carpets = 200K gal/d (2005)	Y	Phone conversation (706-657-6097)
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	7/7/2010	Sandy Robertson/ City of Trenton	Estimate provided based on incorporated Trenton population numbers (2,000 people)	Y	Phone conversation (706-657-4167)
	NA	GAEPD	Wastewater permit database.	Y	
5	7/7/2010	EPA - Envirofacts	Trenton WPCP (GA0026221): Avg. Limit = 1.0 MGD Max. Limit = 1.25 MGD	N	Phone conversation with Bobby Chipwood/ Trenton WPCP Plant Operator (423-240-1679) http://oaspub.epa.gov/enviro/pcs_det_reports.pcs_tst?npdesid=GA0026221&npvalue=6&rvalue=14
6		Online info	The county can withdraw up to 3.8 MGD from Lookout Creek; current consumption is about 2.2 MGD. Dade has a tie-in with TN American Water Company (2 MGD), so demand could double without unduly distressing the county.	N	

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Individual County per Capita Calculation Sheets

DAWSON COUNTY

	Total Population	Publicly Supplied Population (1)	Public Supply (MGD) - USGS 2005 Data		USGS 2005 (gpcpd)	Additions/Adjustments (MGD)			Adjusted per Capita (gpcpd)	
			GW	SW		External Source	Wholesale	Industrial Use		
				Dawsonville	0.10		(3) Forsyth Co.	0.30		
				Etowah Water & Sewer Authority	1.50		(2) Big Canoe	0.24	(3) Cherokee Co.	0.08
	19,731	13,340	0.00		1.60	120	0.24	0.38	0.00	166
		68%								

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS	
NOTE: All values will be held constant for planning unless otherwise specified.	(4) Actual data	90%	(5) Actual data	10%	
			(6) Actual data	7%	
				(7) Default	0%

Ref	Date	Source	Notes	Used	Location
1	7/28/2010	BAnderson/EWSA	Publicly supplied population modified from 13,340 to	Y	Phone conversation
2	NA	MBerg	Big Canoe Intake (Pickens Co.) ~1,500 households	Y	
3	9/9/2010	BAnderson/EWSA	Additional sources of water are supplied by Forsyth Co. Water (300,000 gpd) and Cherokee County Water (75,000 gpd) for the Crystal Falls development (Dawson County Comprehensive Plan 2006-2026, MACTEC 2006). Numbers were confirmed by Brooke Anderson/ Etowah Water and Sewer Authority during a phone conversation.	Y	P:\GeorgiaEPD\387430CoosaWDCP\Task_1-2d_Existing_Plans\2010-04-26_REQUEST_FOR_INFORMATION\2010-05_InformationProvided\Dawson_County\DawsonCo.CAss.pdf
4	10/8/2009	BAnderson/EWSA	Provided via email	Y	
5	10/8/2009	BAnderson/EWSA	Provided via email	Y	
6	10/8/2009	BAnderson/EWSA	Provided via email	Y	
7	NA	GAEPD	Wastewater permit database.	Y	

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Individual County per Capita Calculation Sheets

FANNIN COUNTY

		Public Supply (MGD) - USGS 2005 Data				Additions/Adjustments (MGD)				
		GW		SW		External Source	Wholesale	Industrial Use		
	Publicly Supplied Population	Morganton 0.11	McCaysville 0.76							Adjusted per Capita (gpcpd)
	Total Population	Mineral Bluff 0.05	Blue Ridge 0.84	USGS 2005 (gpcpd)						
21,887	11,760	0.16	1.60	150	0.00	0.00	0.00	150	54%	

NOTE: All values will be held constant for planning unless otherwise specified.	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
	(1) Default 82%	(2) Default 20%	(3) Default 56%	(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.	Y	
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	

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Individual County per Capita Calculation Sheets

FLOYD COUNTY

		Public Supply (MGD) - USGS 2005 Data			Additions/Adjustments (MGD)			
		GW	SW		External Source	Wholesale	Industrial Use	
			Possum Trot Reservoir 0.27					
			Cave Spring 0.55					
			Rome 9.98			(1) Adairsville (Bartow Co.) 0.65		
Total Population	15000	Floyd Co. Water System 0.29	Floyd Co. Water System 2.57	USGS 2005 (gpcpd)		(2) Sold to Cherokee, Alabama (0.19)	(3) Industrial use (Rome and Floyd Co.) (2.15)	Adjusted per Capita (gpcpd)
94,198	89,750	0.29	13.37	152	0.00	0.46	(2.15)	133
		95%						

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(4) Actual data 82%	(5) Default 20%	(6) Actual data 35%	(7) Default 100%

Ref	Date	Source	Notes	Used	Location
1	12/15/2009		Floyd Co. purchase from Adairsville (Bartow Co.).	Y	
2	12/16/2009		35% of Cave Spring (0.55 MGD) sold to Cherokee, Alabama.	Y	
3	various	Email	Email from JBennett/Rome (11/5/2009) and JBoyd/Floyd Co.(12/7/2009) provided industrial use and wastewater treatment.	Y	indusage05_JBennettEmail091104.xlsx
4	12/15/2009		Data provided during meeting.	Y	
5	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
6	12/15/2009		Approximately 1/3 of population on septic.	Y	
7	NA	GAEPD	Wastewater permit database.	Y	

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Individual County per Capita Calculation Sheets

GILMER COUNTY

		Public Supply (MGD) - USGS 2005 Data				Additions/Adjustments (MGD)			Adjusted per Capita (gpcpd)
		GW	SW		External Source	Wholesale	Industrial Use		
Total Population	Publicly Supplied Population	East Ellijay	0.10	Ellijay-Gilmer Co. Water System	3.12			(1) Industrial use (Ellijay-Gordon Co.)	(1.50)
27,335	12,210		0.10		3.12	USGS 2005 (gpcpd) 264	0.00		(1.50)
1500000%									
									141

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(2) Actual data 85%	(3) Default 20%	(4) Actual data 90%	(5) Default 100%

Ref	Date	Source	Notes	Used	Location
1	11/12/2009	Emory DeBord/ Ellijay-Gilmer Co.	Ellijay-Gilmer Co. WSA provides water to industries under 313 and 311 categories	Y	Email communication
2	12/15/2009		Data provided during meeting.	Y	
3	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
4	12/15/2009		Data provided during meeting.	Y	
5	NA	GAEPD	Wastewater permit database.	Y	

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Individual County per Capita Calculation Sheets

GORDON COUNTY

		Public Supply (MGD) - USGS 2005 Data			Additions/Adjustments (MGD)				
		GW	SW		External Source	Wholesale	Industrial Use		
			Fairmount	0.06		(1) Calhoun to Pickens Co. (0.50)			
Total Population	Publicly Supplied Population	Calhoun 3.55	Calhoun 9.10	USGS 2005 (gpcpd)		(1) Calhoun to Chatsworth (Murray Co.) (0.50)	(2) Industrial use (Calhoun) (4.54)	Adjusted per Capita (gpcpd)	
50,279	45,000	3.55	9.16	282	0.00	(1.00)	(4.54)	159	

90%

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(3) Actual data 95%	(4) Default 20%	(5) Actual data 79%	(6) Default 100%

Ref	Date	Source	Notes	Used	Location
1	12/15/2009	KCornwell/ Calhoun	Water sales from city of Calhoun	Y	Meeting
2	11/10/2009	Ray Dudkowski/ Calhoun	Industrial use for city of Calhoun	Y	Email communication
3	12/15/2009		Data provided during meeting. Used to be 83% but was increased.		Meeting
4	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
5	12/15/2009		Data provided during meeting. Sewers close to 20 -22%.	Y	Meeting
6	NA	GAEPD	Wastewater permit database.	Y	

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HABERSHAM COUNTY

		Public Supply (MGD) - USGS 2005 Data				Additions/Adjustments (MGD)			Adjusted per Capita (gpcpd)
		GW		SW		External Source	Wholesale	Industrial Use	
		0.08							
		Alto 0.37		Baldwin 2.05					
		Demorest 0.25		Clarkesville 0.63					
		Mount Airy 0.05		Cornelia 2.47					
Total Population	15000				USGS 2005 (gpcpd)				
39,603	34,800	0.75		5.15	170	0.00	0.00	0.00	170
		88%							

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(1) Default 95%	(2) Default 20%	(3) Default 68%	(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	Y	
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	

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LUMPKIN COUNTY

		Public Supply (MGD) - USGS 2005 Data		Additions/Adjustments (MGD)			Adjusted per Capita (gpcpd)
		GW	SW	External Source	Wholesale	Industrial Use	
Total Population	15000	Dahlonega 0.11	Dahlonega 0.30				
24,324	7,310	0.41	0.80	USGS 2005 (gpcpd) 166	0.00	0.00	0.00
		30%					166

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(1) Default 85%	(2) Default 20%	(3) Default 51%	(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.	Y	
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	

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Individual County per Capita Calculation Sheets

MURRAY COUNTY

		Public Supply (MGD) - USGS 2005 Data				Additions/Adjustments (MGD)			Adjusted per Capita (gpcpd)
		GW		SW		External Source	Wholesale	Industrial Use	
		0.01							
	Chatsworth	0.71							
	Chatsworth Waterworks								
Total Population	15000	Commission	1.44	Chatsworth	1.26	USGS 2005 (gpcpd)	(1) Calhoun (Gordon Co.)	0.50	
40,812	27,000		2.16		1.26	127	0.00	0.50	0.00
		66%							145

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(1) Default 77%	(2) Default 20%	(3) Default 78%	(4) Default 100%

Ref	Date	Source	Notes	Used	Location
1	12/15/2009	KCornwall/Calhoun	Purchased from Gordon Co.	Y	Meeting
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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PICKENS COUNTY

Public Supply (MGD) - USGS 2005 Data				Additions/Adjustments (MGD)				Adjusted per Capita (gpcpd)
GW		SW		External Source	Wholesale	Industrial Use		
Bent Tree Community	0.07	(2) Bent Tree SW Permit	0.22					
Jasper (1) Nelson (No GAEPD permit)	0.48	Big Canoe Corp.	0.48					
	0.06	Jasper	1.00		(4) Cherokee Co.	0.21		
Pickens Co. Water Authority	0.08			(3) Big Canoe (Dawson Co.)	(5) Calhoun (Gordon Co.)	0.50		
					(0.24)			
Total Population	15000			USGS 2005 (gpcpd)				
28,442	21,050	0.63	1.70	111	(0.24)	0.71	0.00	

74%

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(6) Default 77%	(7) Default 20%	(8) Default 29%	(9) Default 98%

Ref	Date	Source	Notes	Used	Location
1	7/16/2010	City of Nelson	Cherokee Co. provides W and WW for City of Nelson	Y	Phone conversation
2	NA	GAEPD database	SW Permit listed for Bent Tree Community	Y	
3	NA	MBerg	Big Canoe Intake (Pickens Co.) ~1,500 households	Y	
4	4/19/2010	Norman Pope/ Pickens Co.	Cherokee Co. sells water to Pickens Co.	Y	Email communication
5	12/15/2009	Kelly Cornwell/ Calhoun	Gordon Co. sells water to Pickens Co.	Y	Meeting
6	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use.	Y	
7	NA	NA	Default value selected based on typical I/I for municipal collection systems.	Y	
8	NA	GAEPD	Calculated using the 1990 census and 2007 septic system data.	Y	
9	NA	GAEPD	Wastewater permit database.	Y	

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POLK COUNTY

		Public Supply (MGD) - USGS 2005 Data				Additions/Adjustments (MGD)			
		GW		SW		External Source	Wholesale	Industrial Use	
		Cedartown	2.27						
				Polk Co. Water Authority	2.21				
Total Population	15000	Rockmart	1.48						Adjusted per Capita (gpcpd)
40,479	35,620		3.75		2.21				167
	88%					0.00	0.00	0.00	167

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(1) Default 85%	(2) Default 20%	(3) Default 45%	(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.	Y	
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	

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TOWNS COUNTY

		Public Supply (MGD) - USGS 2005 Data				Additions/Adjustments (MGD)				
		GW		SW		External Source	Wholesale	Industrial Use		
		Young Harris	0.13							
		Towns Co. Water System	1.02	Hiawassee	0.96					
Total Population	15000					USGS 2005 (gpcpd)				Adjusted per Capita (gpcpd)
15,000	15,000		1.15		0.96	141	0.00	0.00	0.00	141
		100%								

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(1) Default 85%	(2) Default 20%	(3) Default 69%	(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.	Y	
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	

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UNION COUNTY

		Public Supply (MGD) - USGS 2005 Data				Additions/Adjustments (MGD)			Adjusted per Capita (gpcpd)
		GW		SW		External Source	Wholesale	Industrial Use	
		0.01							
		Blairsville	0.24						
		Coosa Co. Water Authority	0.37	Blairsville	0.31				
Total Population	15000	Notla Water Authority	0.37	Notla Water Authority	0.61	USGS 2005 (gpcpd)			
19,782	12,860		0.99		0.92	149	0.00	0.00	149

65%

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(1) Default 85%	(2) Default 20%	(3) Default 69%	(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.	Y	
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	

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WALKER COUNTY

		Public Supply (MGD) - USGS 2005 Data			Additions/Adjustments (MGD)			
		GW	SW		External Source	Wholesale	Industrial Use	
		Walker Co. Rural Water & Sewer Authority	0.25					
		Kensington Water Authority	0.47					
		Chickamauga Lafayette	0.91					
		Lafayette	0.97					
Total Population	(1) Publicly Supplied Population	Walker Co. Water & Sewer Authority	3.81	Lafayette	1.20	(2) Catoosa Co.	0.08	Adjusted per Capita (gpcpd)
63,890	53,190		6.41		1.20		0.00	145
	83%				USGS 2005 (gpcpd) 143			

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(3) Default 85%	(4) Default 20%	(5) Default 69%	(6) Default 100%

Ref	Date	Source	Notes	Used	Location
1	4/14/2010	David Ashburn/Walker Co.	Rossville (8,000 people) and Lookout Mountain (2,500) get water from outside the Co.	Y	Meeting
2	12/15/2010	Randy Thompson/Catoosa Utility District	Spreadsheet provided during the meeting.	Y	CatoosaUtilityDistrict2005.xlsx
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	NA	GAEPD	Calculated using the 1990 census and 2007 septic system data.	Y	
6	NA	GAEPD	Wastewater permit database.	Y	

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WHITE COUNTY

		Public Supply (MGD) - USGS 2005 Data			Additions/Adjustments (MGD)				
		GW	SW		External Source	Wholesale	Industrial Use		
		0.05							
		Robertsontown 0.01							
		Helen 0.14							
		Cleveland 0.25	White Co. Water & Sewer Authority	1.44					
Total Population	15000	0.45		1.44	USGS 2005 (gpcpd)				Adjusted per Capita (gpcpd)
24,055	12,630			150		0.00	0.00	0.00	150
		53%							

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held	(1) Default 85%	(2) Default 20%	(3) Default 69%	(4) Default 41%

Ref	Date	Source	Notes	Used	Location
1	2008	CH2M HILL	Georgia Water Use and Conservation Profiles - Interpolated Co. specific average indoor water use	Y	
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	

APPENDIX B

Individual County per Capita Calculation Sheets

WHITFIELD COUNTY

		Public Supply (MGD) - USGS 2005 Data				Additions/Adjustments (MGD)				
		GW	SW			External Source	Wholesale	Industrial Use		
Total Population	15000		Dalton Utilities 35.38	USGS 2005 (gpcpd)			(1) Eastside Utility District (TN) 2.00	(2) Industrial use (Dalton Utilities) (17.20)	Adjusted per Capita (gpcpd)	
90,889	89,980	0.00	35.38	393		0.00	2.75	(17.20)		233
		99%								

	Avg Indoor Water Use	I/I	Septic	NPDES/LAS
NOTE: All values will be held constant for planning unless otherwise specified.	(3) Default 85%	(4) Default 20%	(5) Actual data 63%	(6) Actual data 1%

Ref	Date	Source	Notes	Used	Location
1			Purchased from Eastside Utility District (TN)	Y	
2	11/25/2009	MMarlowe/ Dalton Utilities	Industrial data provided during meeting	Y	
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	11/25/2009	MMarlowe/ Dalton Utilities	Approximately 37% on sewer	Y	
6	11/25/2009	MMarlowe/ Dalton Utilities	Dalton Utilities LAS permit under Murray Co.	Y	