

2009 Reuse Inventory

September 2010



Florida Department of Environmental Protection
Water Reuse Program

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2009 REUSE INVENTORY

Purpose

Water conservation and the promotion of reuse of reclaimed water have been established in Sections 403.064 and 373.250, Florida Statutes (F.S.), as formal state objectives. Florida maintains the largest and most comprehensive inventories of permitted reuse systems in the country. This inventory and future, annual updates of the inventory enable monitoring of the State's efforts to encourage and promote reuse of reclaimed water in Florida. In addition, the information contained in the inventory gives municipalities and utilities interested in developing reuse programs access to other communities and utilities that have already implemented such programs.

Inventory Design

Chapter 62-610, Florida Administrative Code (F.A.C.), requires owners (permittees) of domestic wastewater facilities having permitted capacities of 0.1 million gallons per day (mgd) and above that provide reclaimed water for reuse to submit annual reuse reports on the Florida Department of Environmental Protection (FDEP) Form 62-610.300(4)(a)2., F.A.C. These annual reports are the basis for this inventory.

The forms for the 2009 reuse inventory were due on January 1, 2010. Information obtained from the report forms was entered into the Department's "Reuse Inventory Database," which is a Microsoft Access 2003 database. Over 99% of the 2009 annual reuse reports were received and entered into the database. For the five reuse systems that did not submit a 2009 annual reuse report form, data from the 2008 reuse inventory were used.

In addition to the reuse reports received from the owners and operators of the wastewater treatment facilities and reuse systems, flow data and other information was obtained from the Department's wastewater databases.

The 2009 reuse inventory includes all active domestic wastewater treatment facilities having permitted capacities of 0.1 mgd or more, including those that do not engage in reuse activities. This threshold is also the minimum treatment plant capacity that is allowed by Chapter 62-610, F.A.C., to provide reclaimed water for irrigation of public access areas (such as parks and golf courses).

Appendix M provides definitions of terms, codes and abbreviations used in this report and appendices.

Results

Reuse Facilities

A total of 484 domestic wastewater treatment facilities with permitted capacities of 0.1 mgd or above that make reclaimed water available for reuse are included in the 2009 inventory. These facilities have a permitted wastewater treatment facility (WWTF) capacity totaling 2,287 mgd and treated 1,421 mgd of domestic wastewater in 2009. These treatment facilities serve 433 reuse systems which are listed in Appendix A. Approximately 673 mgd of reclaimed water from these facilities is reused for beneficial purposes. The total reuse capacity associated with these systems is 1,559 mgd. Appendices B¹, D, E, and K provide information on these reuse facilities and reuse systems² as well as their reuse and disposal activities.

Reclaimed water from these systems was used to irrigate 276,471 residences, 533 golf courses, 873 parks, and 306 schools. Appendix F provides details on the numbers and types of public access reuse customers, including cooling towers and unique uses for reclaimed water. Table 1 summarizes the data in terms of the number of reuse facilities and reuse systems in each FDEP district and water management district, as well as the breakdown of certain public access reuse activities, such as number of residences, golf courses, parks, and schools irrigated by reclaimed water.

Table 2 provides a summary of reuse activities by reuse type, including the number of reuse systems, capacity, flow, and area for each reuse subtype. Irrigation of areas accessible to the public represented about 56 percent of the 673 mgd of reclaimed water reused. Figure 1 shows the percentage of reclaimed water utilization by flow for each reuse type. Table 3 compares the types of reclaimed water utilization in each FDEP district and water management district.

Over 12,750 acres of edible crops on 75 farms are reported to be irrigated with reclaimed water. Around 78% of the farmland is dedicated to the production of citrus (i.e., oranges, tangerines, grapefruit, etc.). Appendix G provides information on the 18 reuse systems providing reclaimed water for the irrigation of edible crops and the farms using the reclaimed water.

Disposal Facilities

There are about 64 active domestic wastewater treatment facilities having permitted capacities of 0.1 mgd or greater that do not provide reuse of any kind. These facilities have a total WWTF capacity of 210 mgd and a total WWTF flow

¹ Due to the design of the reuse database, some facilities listed in Appendix B are assigned to the county where the reuse system is located. For example, the JEA-Julington Creek treatment facility is reported to be in Duval County, where JEA-South Grid is largely located, rather than St. Johns County where the treatment facility is actually located.

² See definitions in Appendix M for an explanation of the terms 'reuse facility' and 'reuse system' as used in this report.

of 134 mgd. Appendix I provides information on facilities that engage in disposal activities only.

All Facilities

The 548 domestic wastewater treatment facilities with permitted capacities of 0.1 mgd or more have a total WWTF capacity of 2,497 mgd and a total WWTF flow of 1,555 mgd. Appendix L³ provides information on all these facilities.

The 673 mgd of reclaimed water use represents approximately 43% of the total domestic wastewater flow in the state. The 1,559 mgd of reuse capacity represents approximately 62% of the total domestic wastewater treatment capacity in the state. Table 4 provides the reuse capacity and flow ratios for each FDEP district and water management district.

Table 5 provides a summary, by county, of the total domestic wastewater treatment plant and reuse capacities and flows for all facilities with permitted capacities of 0.1 mgd or greater, the ratio of the reuse capacity to wastewater treatment plant capacity, and the ratio of the reuse flow to total WWTF flow.

The state-wide average reuse flow per capita, including population served by onsite sewage treatment and disposal systems (e.g., septic tanks), is 35.88 gallons per day of reuse per person. Table 6 shows the per capita reuse capacities and reuse flows for each county in Florida. The per capita usage is based on 2009 population estimates from the State of Florida's Demographic Estimating Conference, February 2009 and the Florida Demographic Database, August 2009 (Florida Legislature, 2009). Figure 2 shows the map of Florida's counties color-coded by range of reuse flow per capita.

³ The total flow from all facilities reported in Appendix L does not equal totaling all reported reuse flows in Appendix D with all reported disposal flows in Appendices I and K. Reasons for this include:

- (1) Use of supplemental water supplies to augment public access reclaimed water application;
- (2) Use of reclaimed water in wetland creation, restoration, or enhancement activities that then later gets discharged or reused again;
- (3) Use of aquifer storage and recovery wells;
- (4) Use of reclaimed water at the treatment plant that is then reused again offsite or discharged; and
- (5) Other minor discrepancies due to internal rounding or differences in metering at the treatment plants.

Table 1. Summary of Reuse Facilities/Systems^(a) and Reuse Customers

Information by District							
DEP District ^(d)	No. of Treatment Facilities Providing Reuse ^(b)	No. of Reuse Systems ^(b)	No. of Residences Irrigated	No. of Golf Courses Irrigated	No. of Parks Irrigated	No. of Schools Irrigated	No. of Cooling Towers ^(c)
Central (Orlando)	120	107	84,976	122	292	105	30
Northeast (Jacksonville)	68	64	9,995	39	6	3	1
Northwest (Pensacola)	66	60	2,141	26	11	6	-
Southeast (West Palm Beach)	46	44	25,525	77	46	18	1
South (Ft. Myers)	60	58	57,759	96	55	24	9
Southwest (Tampa)	124	100	96,075	173	463	150	36
2009 Totals	484	433	276,471	533	873	306	77
Water Management District^(d)							
Northwest Florida	67	61	2,141	26	11	6	-
South Florida	108	100	106,184	191	227	67	32
St. Johns River	142	128	69,773	117	159	82	9
Suwannee River	23	24	-	1	-	-	-
Southwest Florida	144	120	98,373	198	476	151	36
2009 Totals	484	433	276,471	533	873	306	77
2008 Totals	481	436	260,456	477	805	285	63
% Change	+0.6%	-0.7%	+6.1%	+11.7%	+8.4%	+7.4%	+22.2%

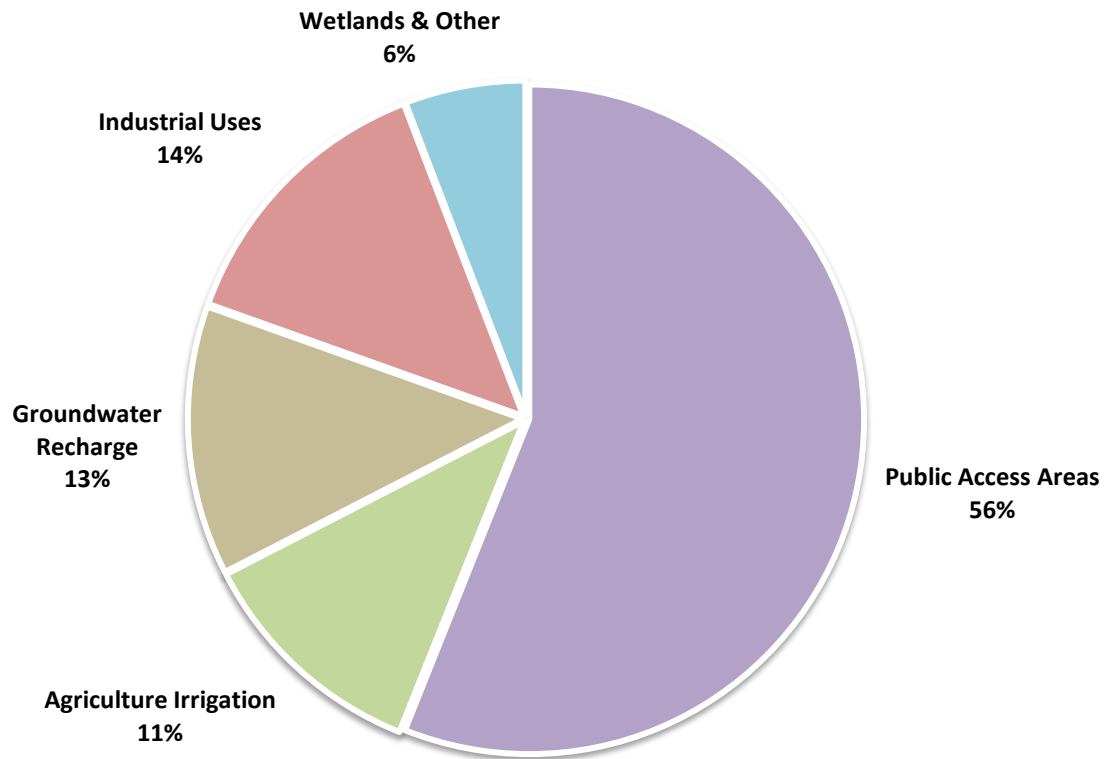
- Notes:
- (a) See definitions in Appendix M for an explanation of the terms 'reuse facility' and 'reuse system' as used in this report.
 - (b) The number of treatment facilities providing reuse (Appendix B) is greater than the number of reuse systems (Appendix A) because in several cases multiple treatment facilities serve one reuse system. Furthermore, a treatment facility may send reclaimed water to more than one reuse system while these facilities will be listed more than once in Appendix B, they are only counted once in the total number of facilities providing reuse.
 - (c) The number of cooling towers includes once-through cooling towers at power plants as well as other commercial use cooling towers.
 - (d) A few reuse systems are physically located across jurisdictional boundaries (i.e., across more than one water management district, FDEP district, or county). Due to the design of the database, all of the reuse systems' reuse flows are attributed to the jurisdiction in which the majority of the reuse system is located. For example, Ocala #1, Ocala #2, and Villages WWTF are listed as being located within the St. Johns River Water Management District; however, some of their reuse customers are also located within the Southwest Florida Water Management District.

Table 2. Summary of Reuse Activities

Reuse Type	Number of Systems ^(a)	Reuse Capacity ^(b) (mgd)	Reuse Flow ^(b) (mgd)	Reported Area ^(b,c) (acres)	Adjusted Area ^(b,c) (acres)
<u>Public Access Areas & Landscape Irrigation</u>					
Golf Course Irrigation	192	294.6	127.4	60,243	64,249
Residential Irrigation	128	419.9	171.1	141,272	164,144
Other Public Access Areas & Other	130	203.3	81.5	35,234	49,554
Subtotal	234	917.8	379.9	236,749	277,948
<u>Agricultural Irrigation</u>					
Edible Crops ^(d)	18	32.9	12.1	12,758	12,758
Other Crops	107	141.8	63.5	23,957	24,958
Subtotal	117	174.7	75.6	36,715	37,716
<u>Ground Water Recharge & Indirect Potable Reuse</u>					
Rapid Infiltration Basins	169	203.4	82.2	14,859	15,402
Absorption Fields	21	13.1	4.6	836	836
Surface Water Augmentation	0	0	0	NA	NA
Injection	0	0	0	NA	NA
Subtotal	179	216.5	86.8	15,695	16,237
<u>Industrial</u>					
At Treatment Plant	89	77.8	44.7	662	NA
At Other Facilities	34	83.0	46.9	4,704	NA
Subtotal	105	160.9	91.6	5,366	NA
<u>Toilet Flushing</u>	8	0.7	0.4	NA	NA
<u>Fire Protection</u>	2	2.0	0	NA	NA
<u>Wetlands</u>	12	73.6	35.3	5,015	5,054
<u>Other Uses</u>	15	12.6	3.2	246	NA
2009 Totals	433	1,558.8	672.9	299,785	336,955
2008 Totals	436	1,535.9	666.8	264,536	285,352
% Change	-0.7%	+1.5%	+0.9%	+13.3%	+18.1%

- Notes: (a) The numbers of systems are not additive since a single system may engage in one or more reuse activity.
 (b) Discrepancies in column totals are due to internal rounding associated with the development of this summary table; totals presented in table are calculated without rounding individual values.
 (c) Some facilities did not report the acreage where reclaimed water was applied. For a better representation of the actual acreage, the averages of the reported areas were used to adjust the acreage totals to include the non-reported values.
 (d) About 78% of total area for edible crops is citrus – including oranges, grapefruit, and tangerines.

Figure 1. Reclaimed Water Utilization by Flow



Note: (1) Agriculture irrigation includes edible crops as well as feed and fodder crops (e.g., sprayfields).

Table 3. Reuse Flows for Reuse Types by FDEP District and Water Management District

	Public Access Areas	Agricultural Irrigation	Ground Water Recharge	Industrial	Wetlands & Other ^(b)	Totals
DEP Districts (mgd)						
Central (Orlando)	110.96	17.91	47.19	18.01	28.06	222.14
Northeast (Jacksonville)	18.45	8.69	4.48	7.00	0.48	39.12
Northwest (Pensacola)	12.70	32.01	7.21	1.48	6.38	59.77
Southeast (West Palm Beach)	50.56	1.41	6.12	21.14	2.33	81.55
South (Ft. Myers)	68.85	2.16	6.04	1.71	1.39	80.13
Southwest (Tampa)	118.42	13.39	15.72	42.29	0.33	190.15
2009 Totals	379.94	75.56	86.75	91.64	38.96	672.86
Water Management Districts (mgd)						
Northwest Florida	12.70	32.09	7.21	1.48	6.46	59.94
South Florida	154.56	10.00	43.29	25.98	4.77	238.60
St. Johns River	89.53	11.67	17.05	21.01	27.22	166.48
Suwannee River	0.03	8.25	0.76	0.16	0.18	9.39
Southwest Florida	123.11	13.55	18.45	43.01	0.33	198.45
2009 Totals	379.94	75.56	86.75	91.64	38.96	672.86
2008 Totals	368.53	76.74	88.78	91.09	41.68	666.82
% Change	+3.1%	-1.5%	-2.3%	+0.6%	-6.5%	+0.9%

Notes: (a) Any discrepancies in totals are due to rounding associated with developing this summary table; totals presented in table are calculated without rounding individual values.

(b) Includes fire protection, toilet flushing and "other uses."

Table 4. Capacity and Flow Ratios by FDEP District and Water Management District

DEP Districts	Reuse Capacity (mgd)	Total WWTF Capacity^(b) (mgd)	Capacity Ratio^(c)	Reuse Flow (mgd)	Total WWTF Flow^(b) (mgd)	Flow Ratio^(d)		
Central (Orlando)	534.1	442.66	1.21	222.1	257.09	0.86		
Northeast (Jacksonville)	97.5	236.15	0.41	39.1	146.77	0.27		
Northwest (Pensacola)	152.7	183.19	0.83	59.8	95.48	0.63		
Southeast (West Palm Beach)	154.9	899.22	0.17	81.6	661.03	0.12		
South (Ft. Myers)	135.8	184.90	0.73	80.1	89.18	0.90		
Southwest (Tampa)	483.8	550.54	0.88	190.1	305.55	0.62		
2009 Totals	1558.8	2496.7	0.62^(g)	672.9	1555.1	0.43^(g)		

Water Management Districts	Reuse Capacity (mgd)	Total WWTF Capacity^(b) (mgd)	Capacity Ratio^(c)	Reuse Flow (mgd)	Total WWTF Flow^(b) (mgd)	Flow Ratio^(d)	Reuse Flow that Replaces Potable-Quality Water^(e) (mgd)	Flow Ratio for Reuse that Replaces Potable-Quality Water^(f)
Northwest Florida	153.0	183.44	0.83	59.9	95.66	0.63	12.9	0.13
South Florida	487.2	1194.40	0.41	238.6	822.72	0.29	164.5	0.20
St. Johns River	395.9	528.74	0.75	166.5	309.40	0.54	100.1	0.32
Suwannee River	15.6	17.47	0.89	9.4	10.64	0.88	0.2	0.02
Southwest Florida	507.1	572.61	0.89	198.4	316.69	0.63	161.7	0.51
2009 Totals	1558.8	2496.7	0.62^(g)	672.9	1555.1	0.43^(g)	439.4	0.28^(g)

- Note: (a) Discrepancies in totaling the columns are due to internal rounding associated with the development of this table; totals presented in table are calculated without rounding individual values.
- (b) Totals include the wastewater treatment plant (WWTF) capacity and flow of facilities over 0.1 million gallons per day (mgd) that do not provide reuse.
- (c) Capacity Ratio = Reuse Capacity/Total WWTF Capacity.
Capacities ratios greater than 1.0 (i.e., greater than 100%) indicate the utility(s) may employ several reuse options, making the reuse capacity greater than the WWTF capacity.
- (d) Flow Ratio = Reuse Flow/Total WWTF Flow.
- (e) Reuse Flow That Replaces Potable-Quality Water includes flows for public access irrigation and industrial uses. Not included in this flow calculation are agriculture irrigation of other crops, absorption fields, rapid infiltration basins, wetlands, and industrial reuse at the treatment plant.
- (f) Flow Ratio for Reuse that Replaces Potable-Quality Water = Reuse Flow that Replaces Potable-Quality Water/Total WWTF Flow.
- (g) State average.

Table 5. County Capacity and Flow Ratios

County	Total WWTF Capacity (mgd) ^(a)	Total WWTF Flow (mgd) ^(a)	Reuse Capacity (mgd)	Reuse Flow (mgd)	Capacity Ratio ^(b)	Flow Ratio ^(c)
Alachua	27.24	18.09	11.39	4.44	0.42	0.25
Baker	1.55	0.99	0.38	0.27	0.25	0.27
Bay	30.08	15.42	6.21	3.53	0.21	0.23
Bradford	3.43	1.99	2.70	1.59	0.79	0.80
Brevard	64.27	37.17	49.07	24.30	0.76	0.65
Broward	287.57	224.19	17.25	10.77	0.06	0.05
Calhoun	1.50	0.54	0	0	0	0
Charlotte	15.80	8.54	11.68	4.00	0.74	0.47
Citrus	5.64	3.11	6.08	3.11	1.08	1.00
Clay	19.36	9.73	12.62	4.08	0.65	0.42
Collier	58.91	23.05	31.86	21.96	0.54	0.95
Columbia	3.53	2.73	3.53	2.68	1.00	0.98
De Soto	3.40	1.19	3.00	1.19	0.88	1.00
Dixie	0.40	0.21	0.40	0.21	1.00	1.00
Duval	133.10	83.05	23.44	9.65	0.18	0.12
Escambia	31.05	22.14	15.36	6.53	0.49	0.30
Flagler	12.33	7.58	22.62	6.67	1.84	0.88
Franklin	2.61	0.71	1.39	0.46	0.53	0.65
Gadsden	4.27	2.19	1.48	0.51	0.35	0.23
Gilchrist	0.32	0.23	0.32	0.23	1.00	1.00
Glades	0.14	0.15	0	0	0	0
Gulf	5.33	0.89	3.58	0.26	0.67	0.29
Hamilton	1.53	0.84	0.20	0.12	0.13	0.14
Hardee	2.29	1.17	2.29	1.17	1.00	1.00
Hendry	3.11	1.98	3.11	1.98	1.00	1.00
Hernando	14.75	4.79	14.71	4.58	1.00	0.96
Highlands	4.65	1.84	4.26	1.71	0.92	0.93
Hillsborough	149.50	94.85	62.01	38.78	0.41	0.41
Holmes	1.40	0.77	0	0	0	0
Indian River	12.73	7.44	10.09	5.47	0.79	0.73
Jackson	6.37	3.01	5.32	2.31	0.83	0.77
Jefferson	1.25	0.68	1.30	0.68	1.04	1.00
Lafayette	0.36	0.24	0.36	0.24	1.00	1.00
Lake	28.09	12.27	31.83	12.25	1.13	1.00
Lee	87.37	46.95	81.52	49.18	0.93	1.05
Leon	32.37	18.85	37.87	18.32	1.17	0.97
Levy	1.11	0.38	1.12	0.38	1.01	1.00
Liberty	0.45	0.21	0.45	0.21	1.00	1.00
Madison	1.52	0.91	1.63	0.91	1.07	1.00
Manatee	51.90	25.70	45.57	18.73	0.88	0.73

Table 5. County Capacity and Flow Ratios

County	Total WWTF Capacity (mgd) ^(a)	Total WWTF Flow (mgd) ^(a)	Reuse Capacity (mgd)	Reuse Flow (mgd)	Capacity Ratio ^(b)	Flow Ratio ^(c)
Marion	20.82	9.24	22.68	8.80	1.09	0.95
Martin	15.46	7.33	8.89	4.17	0.58	0.57
Miami-Dade	374.31	297.67	22.49	18.06	0.06	0.06
Monroe	13.15	5.67	1.26	0.31	0.10	0.05
Nassau	6.62	3.77	3.17	1.54	0.48	0.41
Okaloosa	40.20	18.63	41.99	18.63	1.04	1.00
Okeechobee	1.43	0.84	1.42	0.84	0.99	1.00
Orange	128.72	88.48	203.14	90.30	1.58	1.02
Osceola	37.69	23.40	51.45	24.29	1.37	1.04
Palm Beach	192.35	118.19	92.73	41.78	0.48	0.35
Pasco	40.05	25.29	37.71	24.20	0.94	0.96
Pinellas	170.65	93.15	209.13	58.93	1.23	0.63
Polk	58.22	28.41	37.82	17.21	0.65	0.61
Putnam	4.30	2.21	1.30	0.45	0.30	0.20
Santa Rosa	10.37	5.64	10.61	3.34	1.02	0.59
Sarasota	43.40	21.88	46.75	16.24	1.08	0.74
Seminole	82.40	43.90	113.01	36.23	1.37	0.83
St. Johns	15.17	11.33	8.06	3.15	0.53	0.28
St. Lucie	28.38	13.08	12.69	6.20	0.45	0.47
Sumter	10.70	6.06	18.64	6.06	1.74	1.00
Suwannee	1.70	0.72	1.66	0.72	0.98	1.00
Taylor	1.65	1.10	1.65	1.10	1.00	1.00
Union	0.70	0.52	0.70	0.52	1.00	1.00
Volusia	69.49	35.88	54.41	21.20	0.78	0.59
Wakulla	1.26	0.75	1.26	0.75	1.00	1.00
Walton	13.08	4.50	25.54	4.09	1.95	0.91
Washington	1.87	0.75	0.68	0.33	0.36	0.44
Totals^(d)/Avgs:	2,496.66	1,555.10	1,558.79	672.86	0.62^(e)	0.43^(e)

Notes: (a) Totals include the wastewater treatment plant (WWTF) capacity and flow of facilities over 0.1 million gallons per day (mgd) that do not provide reuse.

(b) Capacity Ratio = Reuse Capacity/Total WWTF Capacity.
Capacities ratios greater than 1.0 (i.e., greater than 100%) indicate the utility(s) may employ several reuse options, making the reuse capacity greater than the WWTF capacity.

(c) Flow Ratio = Reuse Flow/Total WWTF Flow.
Flow ratios greater than 1.0 (i.e., greater than 100%) indicate that reuse may include supplemental water supplies, reclaimed water recovered from aquifer storage recover wells, or reclaimed water that is reused at the treatment plant and then reused again offsite.

(d) Discrepancies in totaling the columns are due to internal rounding associated with the development of this table; totals presented in table are calculated without rounding individual values.

(e) State Average.

Table 6. Per Capita Reuse Information

County	Population (2009) ^(a)	Reuse Capacity (gpd/person) ^(b)	Reuse Flow (gpd/person) ^(c)	Rank (flow) ^(d)	Rank (population) ^(e)
Alachua	256,232	44.47	17.31	49	23
Baker	25,899	14.71	10.31	57	52
Bay	169,562	36.62	20.81	47	27
Bradford	29,085	92.66	54.74	14	50
Brevard	555,657	88.30	43.73	20	10
Broward	1,744,922	9.89	6.17	62	2
Calhoun	14,601	0	0	65-67	63
Charlotte	165,455	70.58	24.15	38	28
Citrus	142,609	42.60	21.79	43	32
Clay	185,208	68.13	22.01	42	25
Collier	333,032	95.65	65.92	9	15
Columbia	66,409	53.08	40.33	25	40
De Soto	34,792	86.21	34.29	28	48
Dixie	16,221	24.66	13.01	55	59
Duval	900,518	26.03	10.72	56	7
Escambia	312,980	49.08	20.87	46	18
Flagler	94,901	238.36	70.32	7	36
Franklin	12,414	111.97	36.89	27	64
Gadsden	50,046	29.58	10.19	58	43
Gilchrist	17,393	18.40	13.17	54	57
Glades	11,311	0	0	65-67	65
Gulf	16,798	213.12	15.66	52	58
Hamilton	14,783	13.53	7.98	60	61
Hardee	28,333	80.90	41.40	24	51
Hendry	41,320	75.24	47.85	15	44
Hernando	165,048	89.11	27.76	35	29
Highlands	99,713	42.72	17.13	50	34
Hillsborough	1,196,892	51.81	32.40	31	4
Holmes	19,857	0	0	65-67	56
Indian River	141,634	71.24	38.61	26	33
Jackson	52,637	100.99	43.87	19	42
Jefferson	14,677	88.64	46.33	17	62
Lafayette	8,183	44.36	29.45	32	67
Lake	291,993	109.00	41.95	21	19
Lee	615,124	132.52	79.95	5	8
Leon	274,803	137.80	66.66	8	20
Levy	40,674	27.44	9.44	59	45
Liberty	8,220	54.74	24.94	37	66
Madison	20,333	80.26	44.71	18	55

Table 6. Per Capita Reuse Information

County	Population (2009) ^(a)	Reuse Capacity (gpd/person) ^(b)	Reuse Flow (gpd/person) ^(c)	Rank (flow) ^(d)	Rank (population) ^(e)
Manatee	318,404	143.10	58.83	12	17
Marion	330,440	68.64	26.63	36	16
Martin	143,856	61.81	28.96	34	31
Miami-Dade	2,472,344	9.10	7.31	61	1
Monroe	77,925	16.14	3.96	64	37
Nassau	72,588	43.60	21.24	44	39
Okaloosa	196,237	213.99	94.96	1	24
Okeechobee	39,703	35.66	21.13	45	47
Orange	1,108,882	183.19	81.43	4	5
Osceola	272,788	188.62	89.04	2	22
Palm Beach	1,287,344	72.03	32.46	30	3
Pasco	439,786	85.74	55.02	13	12
Pinellas	931,113	224.60	63.30	11	6
Polk	584,343	64.73	29.44	33	9
Putnam	74,608	17.48	6.00	63	38
Santa Rosa	144,508	73.41	23.09	40	30
Sarasota	389,320	120.07	41.72	23	14
Seminole	423,759	266.69	85.49	3	13
St. Johns	183,572	43.89	17.13	51	26
St. Lucie	272,864	46.49	22.73	41	21
Sumter	95,326	195.55	63.59	10	35
Suwannee	40,230	41.14	17.90	48	46
Taylor	23,164	71.23	47.31	16	54
Union	15,576	44.94	33.51	29	60
Volusia	507,105	107.29	41.80	22	11
Wakulla	31,791	39.48	23.47	39	49
Walton	57,917	440.96	70.65	6	41
Washington	24,721	27.30	13.43	53	53
Florida	18,750,483	83.13^(f)	35.88^(f)		

Notes: (a) 2009 population estimates from the Florida Demographic Estimating Conference, February 2009, and the Florida Demographic Database, August 2009.

(b) Reuse Capacity = Reuse Capacity (gpd)/Population.

(c) Reuse Flow = Reuse Flow (gpd)/Population.

(d) Counties ranked from highest rate of reuse flow per capita to lowest rate of reuse flow per capita (e.g., county with highest rate of reuse flow per capita is ranked No. 1; counties with no reuse flow per capita tie for last place).

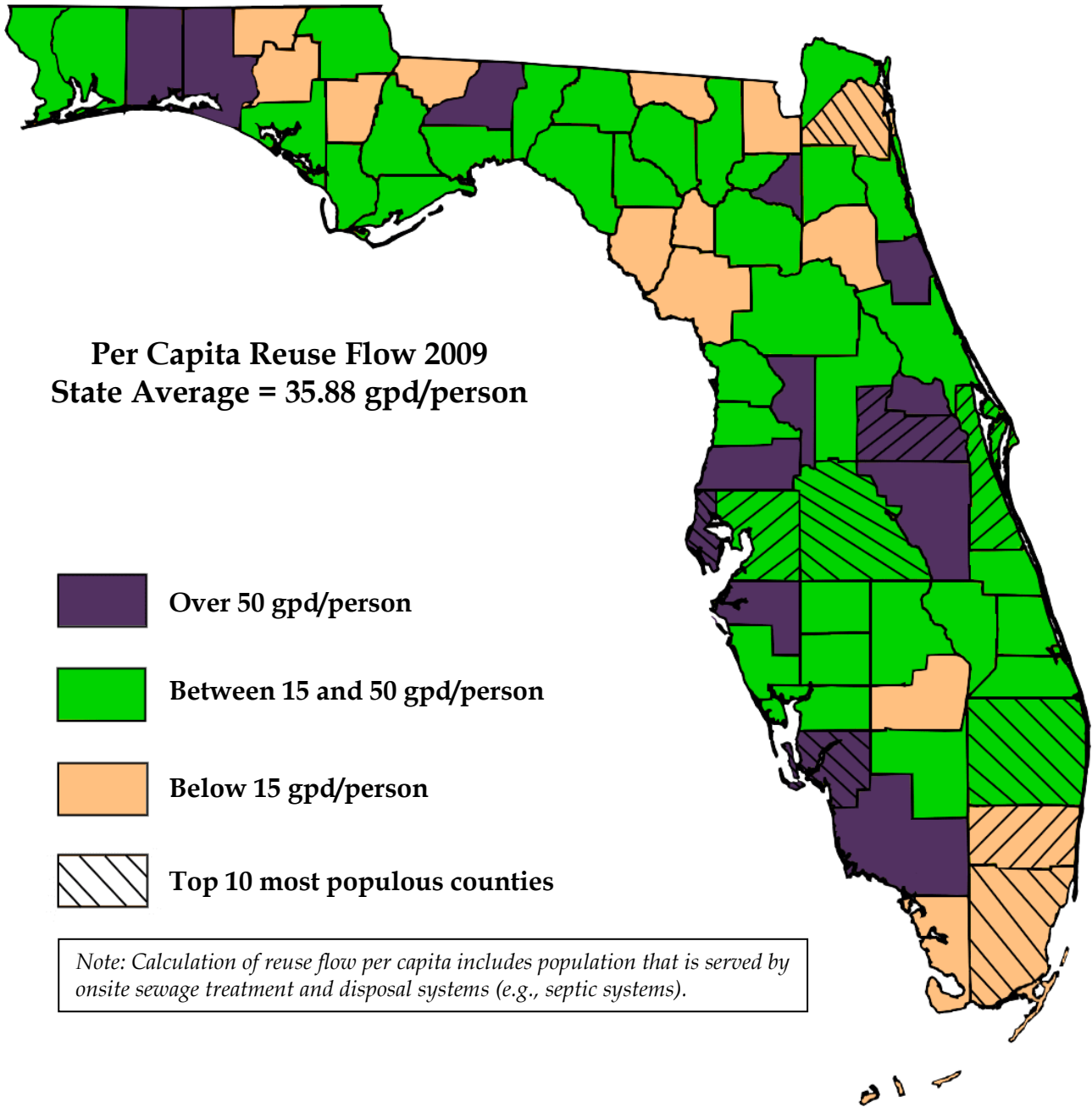
(e) Counties ranked according to population capita (e.g., county with highest population is ranked No. 1).

(f) State average.

(e) Discrepancies in calculating per capita statistics are due to internal rounding associated with the development of these tables; values presented in this table are calculated without rounding individual values.

*gpd = gallons per day (equivalent to mgd*1,000,000)*

Figure 2. Map of Per Capita Reuse Flow by County



Supplemental Water Supplies

Some reuse systems use other sources of water to augment the reclaimed water supply. In 2009, a total of 50 reuse systems in Florida used 11.70 mgd of surface water, 14.24 mgd of ground water, 3.03 mgd of stormwater, and 0.54 mgd of drinking water to supplement reclaimed water supplies for a total of 29.51 mgd of supplemental water used in 2009. In addition, 0.55 mgd of demineralization concentrate was blended with reclaimed water while 0.34 mgd of reclaimed water was recovered from aquifer storage and recovery (ASR) wells and sent to a reuse system. Appendix C details the 50 reuse systems in the state which use supplemental water supplies and summarizes the flows by water management district.

Reuse Rates

Utilities recoup costs associated with the reuse system through rate recovery. Reuse costs can be allocated among wastewater customers, water users, and reclaimed water users. Table 7a provides a summary of charges made for the use of reclaimed water in Florida for reuse systems that reported charging fees.

Table 7a. Summary of Reuse Rates for Reuse Systems^(a)

Residential Customers - 127 systems				
	<i>Average</i>	<i>Median</i>	<i>Range</i>	<i>No. of Systems</i>
Flat Rate Only (\$/month)	\$9.22	\$9.00	\$0.87 - \$18.45	27
Gallonge Charge Only (\$/1000 gallons)	\$0.82	\$0.54	\$0.16 - \$2.90	36
Combination Flat and per Gallon Charge				47
Flat Rate ^(b) (\$/month)	\$9.31	\$6.80	\$2.37 - \$39.76	
Gallonge Charge (\$/1000 gallons)	\$0.93	\$0.75	\$0.21 - \$10.00	
Non-Residential Customers - 205 systems				
	<i>Average</i>	<i>Median</i>	<i>Range</i>	<i>No. of Systems</i>
Flat Rate Only (\$/month)	\$651.71	\$500	\$7.00 - \$1,650	15
Gallonge Charge Only (\$/1000 gallons)	\$0.48	\$0.31	\$0.05 - \$3.67	74
Combination Flat and per Gallon Charge				44
Flat Rate ^(b) (\$/month)	\$630.07	\$22.76	\$2.32 - \$12,595 ^(c)	
Gallonge Charge (\$/1000 gallons)	\$0.64	\$0.57	\$0.05 - \$2.10	

- Notes: (a) Many reuse systems charge a tiered-rate based on total volume used and/or their rates are based on the size of the connection; however, only one charge value per customer type was chosen for this data analysis.
- (b) When a gallonge charge (\$/1000 gallons) is assessed, the flat rate reported is usually a base charge (e.g., users fee, miscellaneous fees, etc.).
- (c) \$12,595/month reported by Dunes CDD.

A total of 72 utilities reported not charging their residential and/or non-residential reclaimed water customers any fee (base, flat, or gallonge) specific to use of

reclaimed water⁴. These utilities may recoup the costs associated with the reuse system through other means. Table 7b provides a summary of reuse systems, utilities, and customer types.

Table 7b. Summary of Reuse Systems and Utilities with Public Access Reuse Customers (Residential and Non-Residential)

	No. of Reuse Systems	No. of Utilities ^(a)	No. of Utilities Reporting No Charges ^(b)
Total	221	176	72
Serving both residential and non-residential customers	111	92	9
Serving only residential customers	16	10	8
Serving only non-residential customers	94	74	55
Total serving residential customers	127	102	17
Total serving non-residential customers	205	166	64

Notes: (a) A utility can be a public (e.g., JEA, Lee County, City of Sanibel, etc.) or private (e.g., Toho Water Authority) entity operating one or more reuse systems within that entity's jurisdiction or area.

(b) Number of unique utilities that reported not charging their reuse customers for the use of their reclaimed water.

Appendix H shows the 221 reuse systems who reported having public access reuse customers and their charges for use of reclaimed water.

Efficient and Effective Water Reuse

In 2003, Water Reuse for Florida: Strategies for Effective Use of Reclaimed Water, also known as, "*The Strategies Report*," was published. The report identifies strategies for increasing the efficient and effective use of reclaimed water. Two concepts introduced in the report, "potable quality water offset" and "recharge fraction," will play increasingly important roles in shaping efficient and effective water reuse in Florida.

"Potable quality water offset" means the amount of potable quality water (Class F-I, G-I, or G-II ground water or water meeting drinking water standards) saved through the use of reclaimed water expressed as a percentage of the total reclaimed water used. "Recharge fraction" means the portion of reclaimed water used in a reuse system that recharges an underlying potable quality ground water (Class F-I, G-I, or G-II ground water) that is used for potable supply, or augments a Class I surface water, expressed as a percentage of the total reclaimed water used.

The 673 mgd of reclaimed water used in 2009 is estimated to have offset (i.e., avoided) the use of 349 mgd (over 127 billion gallons) of potable quality water while serving to add 218 mgd (over 79 billion gallons) back to available water supplies. These estimates do not include the 41 mgd of reclaimed water discharged

⁴ Some of these utilities may not only own and operate the reuse system but also the establishment(s) to which public access reclaimed water is being applied, such as a golf course. Therefore, they do not charge themselves for the use of the reclaimed water.

to wetlands or used for all “other” purposes, such as decorative fountains and storage.

Table 8a summarizes the amount of potable quality water offset and recharge flow achieved within each FDEP district and water management district. Table 8b details the amount of reclaimed water used to offset and recharge potable quality water by county.

Table 8a. Summary of Offset and Recharge Flows

FDEP District	Total Flow (mgd)	Offset Flow^(a) (mgd)	Recharge Flow^(a) (mgd)
Central (Orlando)	194.09	90.98	82.55
Northeast (Jacksonville)	38.90	23.70	11.58
Northwest (Pensacola)	53.22	28.36	20.78
Southeast (West Palm Beach)	77.01	51.24	18.08
South (Ft. Myers)	78.88	42.12	26.39
Southwest (Tampa)	189.82	112.42	58.58
2009 Totals	631.90	348.82	217.96
Water Management District	Total Flow (mgd)	Offset Flow^(a) (mgd)	Recharge Flow^(a) (mgd)
Northwest Florida	53.39	28.51	20.81
South Florida	231.74	121.33	84.62
St. Johns River	139.27	77.13	47.16
Suwannee River	9.39	5.31	3.58
Southwest Florida	198.12	116.53	61.79
2009 Totals	631.90	348.82	217.96

Note: (a) The offset and recharge flows were calculated using values from Table 5 of the *Strategies Report*. See Table 8b for details.

(b) Discrepancies in totaling the columns are due to internal rounding associated with the development of this table; totals presented in table are calculated without rounding individual values.

Table 8b. County Offset and Recharge Flows Due to Water Reuse

County	Golf Course Irrigation (mgd)			Residential Irrigation (mgd)			Other Public Access Areas (mgd)			Ground Water Recharge & Indirect Potable Reuse(mgd)		Agricultural Irrigation (mgd)			Industrial Uses, Toilet Flushing & Fire Protection(mgd)		Totals (mgd)		
	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	RF ^(b)	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	Offset Flow	Total Flow	Offset Flow	RF ^(b)
Alachua	0.888	0.666	0.089	1.647	0.659	0.741	0.358	0.215	0.107	0.119	0.107	0.797	0.478	0.279	0.626	0.626	4.435	2.644	1.323
Baker	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.118	0.106	0.149	0.089	0.052	0.000	0.000	0.267	0.089	0.158
Bay	0.881	0.661	0.088	1.523	0.609	0.685	1.062	0.637	0.319	0.000	0.000	0.000	0.000	0.000	0.062	0.062	3.528	1.969	1.092
Bradford	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.542	0.925	0.540	0.050	0.050	1.592	0.975	0.540
Brevard	6.576	4.932	0.658	11.120	4.448	5.004	3.158	1.895	0.947	0.949	0.854	0.433	0.260	0.152	1.136	1.136	23.372	12.671	7.615
Broward	2.662	1.997	0.266	1.024	0.410	0.461	0.340	0.204	0.102	0.662	0.596	0.000	0.000	0.000	6.079	6.079	10.767	8.689	1.425
Calhoun	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Charlotte	2.787	2.090	0.279	0.199	0.080	0.090	0.068	0.041	0.020	0.161	0.145	0.000	0.000	0.000	0.780	0.780	3.995	2.991	0.534
Citrus	0.019	0.014	0.002	0.000	0.000	0.000	0.000	0.000	0.000	1.318	1.186	1.771	1.063	0.620	0.000	0.000	3.108	1.077	1.808
Clay	0.754	0.566	0.075	3.179	1.272	1.431	0.000	0.000	0.000	0.143	0.129	0.000	0.000	0.000	0.000	0.000	4.076	1.837	1.635
Collier	8.840	6.630	0.884	3.912	1.565	1.760	6.025	3.615	1.808	1.314	1.183	0.630	0.378	0.221	0.000	0.000	20.721	12.188	5.855
Columbia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.502	1.501	0.876	0.177	0.177	2.678	1.677	0.876
De Soto	0.140	0.105	0.014	0.000	0.000	0.000	0.034	0.020	0.010	0.051	0.046	0.968	0.581	0.339	0.000	0.000	1.193	0.706	0.409
Dixie	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.211	0.127	0.074	0.000	0.000	0.211	0.127	0.074
Duval	2.753	2.065	0.275	0.509	0.204	0.229	0.000	0.000	0.000	0.297	0.267	0.060	0.036	0.021	6.033	6.033	9.652	8.337	0.793
Escambia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.200	1.200	1.200	1.200	0.000
Flagler	1.994	1.495	0.199	1.843	0.737	0.829	0.376	0.226	0.113	2.456	2.210	0.005	0.003	0.002	0.000	0.000	6.674	2.461	3.354
Franklin	0.048	0.036	0.005	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.365	0.219	0.128	0.045	0.045	0.458	0.300	0.133
Gadsden	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.315	0.284	0.115	0.069	0.040	0.080	0.080	0.510	0.149	0.324
Gilchrist	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.229	0.137	0.080	0.000	0.000	0.229	0.137	0.080
Glades	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Gulf	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.263	0.158	0.092	0.000	0.000	0.263	0.158	0.092
Hamilton	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.118	0.071	0.041	0.000	0.000	0.118	0.071	0.041
Hardee	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.297	0.178	0.104	0.876	0.876	1.173	1.054	0.104
Hendry	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.551	0.496	1.426	0.856	0.499	0.000	0.000	1.977	0.856	0.995
Hernando	1.685	1.264	0.169	0.000	0.000	0.000	0.000	0.000	0.000	2.002	1.802	0.000	0.000	0.000	0.895	0.895	4.582	2.159	1.970

Table 8b. County Offset and Recharge Flows Due to Water Reuse

County	Golf Course Irrigation (mgd)			Residential Irrigation (mgd)			Other Public Access Areas (mgd)			Ground Water Recharge & Indirect Potable Reuse(mgd)		Agricultural Irrigation (mgd)			Industrial Uses, Toilet Flushing & Fire Protection(mgd)		Totals (mgd)		
	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	RF ^(b)	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	Offset Flow	Total Flow	Offset Flow	RF ^(b)
Highlands	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.674	1.507	0.025	0.015	0.009	0.010	0.010	1.709	0.025	1.515
Hillsborough	2.264	1.698	0.226	12.494	4.998	5.622	2.904	1.742	0.871	0.373	0.336	0.771	0.463	0.270	19.968	19.968	38.774	28.869	7.325
Holmes	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Indian River	2.482	1.862	0.248	2.280	0.912	1.026	0.170	0.102	0.051	0.236	0.212	0.000	0.000	0.000	0.300	0.300	5.468	3.176	1.538
Jackson	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.265	1.359	0.793	0.044	0.044	2.309	1.403	0.793
Jefferson	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.089	0.053	0.031	0.088	0.088	0.177	0.141	0.031
Lafayette	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.133	0.120	0.108	0.065	0.038	0.000	0.000	0.241	0.065	0.158
Lake	1.981	1.486	0.198	1.537	0.615	0.692	0.357	0.214	0.107	4.123	3.711	4.099	2.460	1.435	0.152	0.152	12.249	4.926	6.142
Lee	13.066	9.800	1.307	25.933	10.373	11.670	7.187	4.312	2.156	1.898	1.708	0.078	0.047	0.027	0.993	0.993	49.155	25.525	16.868
Leon	0.000	0.000	0.000	0.000	0.000	0.000	0.097	0.058	0.029	0.647	0.582	17.574	10.544	6.151	0.000	0.000	18.318	10.603	6.762
Levy	0.000	0.000	0.000	0.000	0.000	0.000	0.007	0.004	0.002	0.241	0.217	0.136	0.082	0.048	0.000	0.000	0.384	0.086	0.267
Liberty	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.205	0.185	0.000	0.000	0.000	0.000	0.000	0.205	0.000	0.185
Madison	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.797	0.478	0.279	0.112	0.112	0.909	0.590	0.279
Manatee	1.379	1.034	0.138	8.205	3.282	3.692	5.035	3.021	1.511	0.000	0.000	3.470	2.082	1.215	0.612	0.612	18.701	10.031	6.555
Marion	1.054	0.791	0.105	0.002	0.001	0.001	2.433	1.460	0.730	1.340	1.206	3.971	2.383	1.390	0.000	0.000	8.800	4.634	3.432
Martin	2.597	1.948	0.260	0.698	0.279	0.314	0.208	0.125	0.062	0.278	0.250	0.372	0.223	0.130	0.012	0.012	4.165	2.587	1.017
Miami-Dade	0.000	0.000	0.000	0.000	0.000	0.000	0.120	0.072	0.036	4.956	4.460	0.000	0.000	0.000	12.986	12.986	18.062	13.058	4.496
Monroe	0.225	0.169	0.023	0.000	0.000	0.000	0.030	0.018	0.009	0.000	0.000	0.000	0.000	0.000	0.054	0.054	0.309	0.241	0.031
Nassau	1.019	0.764	0.102	0.000	0.000	0.000	0.000	0.000	0.000	0.303	0.273	0.000	0.000	0.000	0.002	0.002	1.324	0.766	0.375
Okaloosa	1.003	0.752	0.100	1.255	0.502	0.565	0.847	0.508	0.254	4.846	4.361	10.000	6.000	3.500	0.000	0.000	17.951	7.762	8.781
Okeechobee	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.723	0.434	0.253	0.000	0.000	0.723	0.434	0.253
Orange	9.894	7.421	0.989	5.718	2.287	2.573	18.090	10.854	5.427	25.553	22.998	6.891	4.135	2.412	11.188	11.188	77.334	35.884	34.399
Osceola	3.829	2.872	0.383	5.929	2.372	2.668	3.140	1.884	0.942	10.169	9.152	0.000	0.000	0.000	1.222	1.222	24.289	8.349	13.145
Palm Beach	18.880	14.160	1.888	12.177	4.871	5.480	4.035	2.421	1.211	0.185	0.167	0.310	0.186	0.109	1.766	1.766	37.353	23.404	8.853
Pasco	2.851	2.138	0.285	9.996	3.998	4.498	2.608	1.565	0.782	7.490	6.741	0.568	0.341	0.199	0.685	0.685	24.197	8.727	12.505
Pinellas	6.930	5.198	0.693	30.540	12.216	13.743	9.688	5.813	2.906	0.000	0.000	0.014	0.008	0.005	11.762	11.762	58.935	34.997	17.347
Polk	1.046	0.785	0.105	1.355	0.542	0.610	0.712	0.427	0.213	4.562	4.105	1.809	1.085	0.633	7.494	7.494	16.976	10.332	5.666
Putnam	0.333	0.250	0.033	0.000	0.000	0.000	0.000	0.000	0.000	0.115	0.104	0.000	0.000	0.000	0.000	0.000	0.448	0.250	0.137
Santa Rosa	1.967	1.475	0.197	0.668	0.267	0.301	0.404	0.242	0.121	0.246	0.221	0.005	0.003	0.002	0.014	0.014	3.304	2.002	0.842

Table 8b. County Offset and Recharge Flows Due to Water Reuse

County	Golf Course Irrigation (mgd)			Residential Irrigation (mgd)			Other Public Access Areas (mgd)			Ground Water Recharge & Indirect Potable Reuse(mgd)		Agricultural Irrigation (mgd)			Industrial Uses, Toilet Flushing & Fire Protection(mgd)		Totals (mgd)		
	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	RF ^(b)	Reuse Flow	Offset Flow	RF ^(b)	Reuse Flow	Offset Flow	Total Flow	Offset Flow	RF ^(b)
Sarasota	8.405	6.304	0.841	3.930	1.572	1.769	1.201	0.721	0.360	0.039	0.035	2.666	1.600	0.933	0.001	0.001	16.242	10.197	3.938
Seminole	1.502	1.127	0.150	8.597	3.439	3.869	5.221	3.133	1.566	3.171	2.854	3.077	1.846	1.077	0.751	0.751	22.319	10.295	9.516
St. Johns	2.793	2.095	0.279	0.000	0.000	0.000	0.000	0.000	0.000	0.172	0.155	0.000	0.000	0.000	0.180	0.180	3.145	2.275	0.434
St. Lucie	1.450	1.087	0.145	4.079	1.631	1.835	0.074	0.044	0.022	0.301	0.270	0.000	0.000	0.000	0.300	0.300	6.203	3.063	2.273
Sumter	3.962	2.972	0.396	0.000	0.000	0.000	1.607	0.964	0.482	0.114	0.103	0.311	0.187	0.109	0.001	0.001	5.995	4.123	1.090
Suwannee	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.049	0.044	0.671	0.403	0.235	0.000	0.000	0.720	0.403	0.279
Taylor	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.338	0.304	0.758	0.455	0.265	0.000	0.000	1.096	0.455	0.570
Union	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.522	0.313	0.183	0.000	0.000	0.522	0.313	0.183
Volusia	4.187	3.140	0.419	10.285	4.114	4.628	1.420	0.852	0.426	1.594	1.435	0.185	0.111	0.065	3.270	3.270	20.941	11.487	6.972
Wakulla	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.035	0.032	0.670	0.402	0.235	0.041	0.041	0.746	0.443	0.266
Walton	2.281	1.711	0.228	0.444	0.178	0.200	0.000	0.000	0.000	0.668	0.601	0.661	0.397	0.231	0.038	0.038	4.092	2.323	1.260
Washington	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.245	0.221	0.087	0.052	0.030	0.000	0.000	0.332	0.052	0.251
Total	127.41	95.555	12.74	171.08	68.43	76.98	79.02	47.41	23.70	86.75	78.08	75.56	45.34	26.45	92.08	92.08	631.90	348.82	217.96

- Notes: (a) The 40.96 mgd of reclaimed water discharged to wetlands or used for all “other purposes” was not included in this analysis.
 (b) RF = recharge flow - the portion of reuse flow that is recharged to water supplies.
 (c) The offset and recharge flows were calculated by multiplying the total flow for a reuse activity by the percentages of potable quality offset and recharge fraction for that reuse activity as prescribed in Table 5 of the *Strategies Report* seen below:

Reuse Activity	Potable Quality Water Offset (%)	Recharge Fraction (%)	Justification Using Table 5 of <i>Strategies Report</i>
Golf Course Irrigation	75	10	Efficient landscape irrigation
Residential Irrigation	40	45	Rounded averages of efficient and inefficient residential irrigation
Other Public Access Areas	60	30	Rounded averages of efficient and inefficient landscape irrigation
Ground Water Recharge & Indirect Potable Reuse	0	90	High Desirability - rapid infiltration basins
Agricultural Irrigation	60	35	Rounded averages of efficient and inefficient agricultural irrigation
Industrial Uses, Toilet Flushing, and Fire Protection	100	0	High Desirability - cooling towers, toilet flushing and fire protection

Water Resource Caution Areas

Water resource caution areas (WRCAs) are areas that have critical water supply problems or are projected to have critical water supply problems within the next 20 years. Originally, water reuse was required only within these water resource caution areas, unless such reuse is not economically, environmentally, or technically feasible as determined by a reuse feasibility study. Currently, Chapter 62-40, F.A.C., requires use of reclaimed water statewide. Domestic wastewater facilities located within, discharging within or serving a population within designated water resource caution areas are required to prepare reuse feasibility studies before receiving a domestic wastewater permit. Table 9 summarizes information about reuse systems located within WRCAs and those located outside of WRCAs.

Table 9. Reuse Activity in Water Resource Caution Areas

	Inside WRCA	Outside WRCA	Total
Number of Reuse Systems	310	123	433
Number of WWTFs Providing Reuse	346	138	484
Number of WWTFs with no Reuse (Disposal Only)	54	10	64
Total Wastewater Capacity (mgd)	2,148	349	2,497
Total Wastewater Flow (mgd)	1,356	199	1,555
Reuse Capacity (mgd)	1,251	308	1,559
Reuse Flow (mgd)	542	131	673
Public Access Reuse Flow (mgd) ^(a)	327	53	380
Edible Crops Reuse Flow (mgd)	9	3	12

Note: (a) This includes irrigation of residential landscapes, golf courses, schools, parks, and other public access reuse such as toilet flushing and fire protection.

Cross-Connection Control

Cross-connections between reclaimed water lines and potable water lines are strictly prohibited in Florida. In 1999, reporting requirements for cross-connection control activities were added to the Annual Reuse Report Form. Appendix J summarizes cross-connection control activities reported by reuse systems for the October 1, 2008 to September 30, 2009 reporting period.

Of the 236 reuse systems that reported cross-connection control activities, 17 reuse systems reported identifying and eliminating 1 or more cross-connections. 11,288 new connections to public access reuse systems were reported to occur in 2009. Over 99 percent of those new connections were inspected to ensure that no cross-connections had been created.

The 2004 Guidelines for Water Reuse published by the U.S. Environmental Protection Agency (EPA) provides guidelines for establishing cross-connection

prevention and control programs. Utilities should consult the EPA Guidelines for implementation and enforcement of cross-connection control programs.

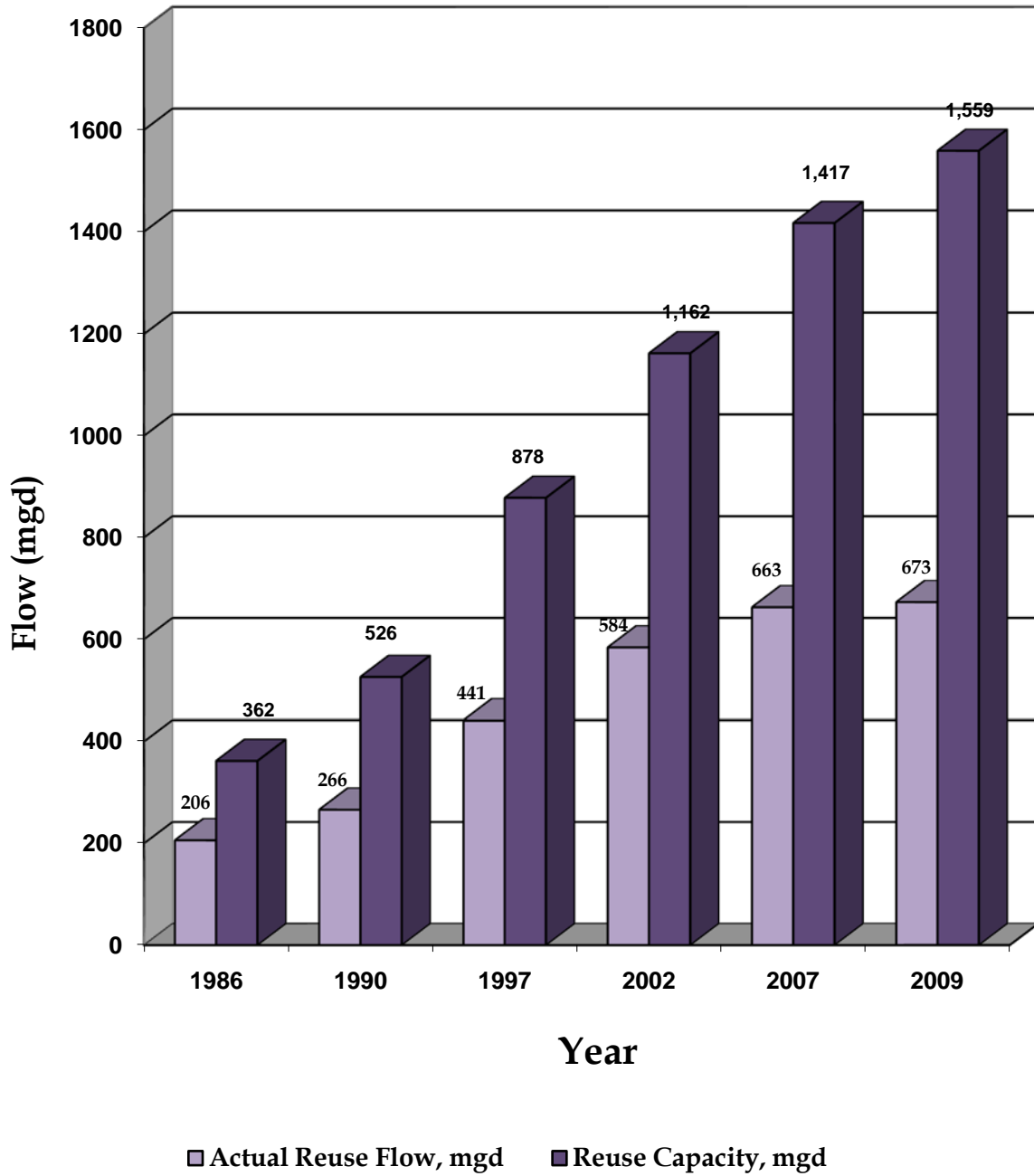
PREVIOUS INVENTORIES AND TRENDS

The FDEP (and its predecessor agency) published previous reuse inventories for 1986, 1990, 1992, and 1996 through 2008. Table 10 shows a summary of the total number of domestic wastewater treatment facilities providing water for reuse, the reuse capacities of the reuse facilities, and the average reuse flow rates recorded for previous inventories and the 2009 inventory. Figure 3 presents the growth of Florida's reuse capacity and flow.

Table 10. Summary of FDEP Reuse Inventories (1986 to Present)

Report Year	No. of Facilities Providing Reuse	Reuse Capacity (mgd)	Reuse Flow (mgd)
1986	118	362	206
1990	212	526	266
1992	308	601	290
1996	444	826	402
1997	451	878	441
1998	451	1,009	490
1999	459	1,043	523
2000	457	1,116	575
2001	461	1,151	584
2002	467	1,162	584
2003	469	1,206	603
2004	468	1,273	637
2005	465	1,325	660
2006	468	1,368	663
2007	475	1,417	663
2008	481	1,536	667
2009	484	1,559	673

Figure 3. Florida's Reuse Growth



FUTURE UPDATES

In order to monitor the effectiveness of the State's reuse program, the FDEP will update this inventory each year.

Suggested corrections, additions, or deletions may be brought to the attention of Mrs. Shanin Speas-Frost, P.E., Florida Department of Environmental Protection, Mail Station 3540, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Mrs. Speas-Frost can be reached by phone at (850) 245-8610, by fax at (850) 245-8621, or by e-mail at shanin.speasfrost@dep.state.fl.us.

REUSE WEBPAGE

For more information on water reuse in Florida, please see FDEP's website devoted to reuse at:

www.dep.state.fl.us/water/reuse/

The 2009 Reuse Inventory, including downloadable spreadsheets for each of the appendices, can be found at the above website by following the *Florida's Reuse Inventory* link.

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APPENDICES
