

**SEMINOLE COUNTY GOVERNMENT
AGENDA MEMORANDUM**

SUBJECT: Lake Management Program

DEPARTMENT: Public Works **DIVISION:** Roads-Stormwater

AUTHORIZED BY: W. Gary Johnson **CONTACT:** Kim Ornberg, P.E. **EXT.** 5738
W. Gary Johnson, P.E., Director Owen Reagan, P.E., Acting Division Manager

Agenda Date	<u>9/12/06</u>	Regular <input type="checkbox"/>	Consent <input type="checkbox"/>	Work Session <input type="checkbox"/>	Briefing <input checked="" type="checkbox"/>
		Public Hearing – 1:30 <input type="checkbox"/>		Public Hearing – 7:00 <input type="checkbox"/>	

MOTION/RECOMMENDATION:

Brief the Board on a Lake Management Program which is included in the proposed FY 06/07 budget.

Countywide **(Kim Ornberg, P.E.)**

BACKGROUND:

At Public Works' budget work session last month, the Board directed staff to develop a Lake Management Program for inclusion in the FY06/07 budget. Attached is a program description and funding allocation for a five-year program.

The recommended program focuses resources and activities on lakes most immediately impacted by water quality regulations, specifically the Total Maximum Daily Load (TMDL) requirements. A science-based Lake Management Program is necessary to assure compliance with state and federal standards as pollutant load reductions and deadlines are established for affected water bodies.

The proposed Regulatory Lake Management Program provides funding for lakes which are already on the impaired list (TMDL water bodies) and for lakes which are not impaired but drain to and contribute to the pollutant load of an impaired lake (TMDL-related water bodies). In addition to Lake Jesup and Cranes Strand, for which TMDL's have been established, 22 other impaired water bodies are anticipated to have TMDL's determined on or before 2008.

The recommended program does not include resources for lakes categorized as non-regulatory. Given the number and magnitude of water bodies impacted by TMDL regulations and anticipated costs for achieving pollutant load reductions, staff recommends allocating the first five (5) years of Lake Management Program resources to regulatory (TMDL) compliance activities. The non-regulatory category includes lakes which have declining water quality but are not on the impaired list. In the future, as impaired water bodies are undergoing restoration, resources may be allocated to prevent declining water bodies from becoming impaired. Funding to supplement community initiated activities such as MSBU's on water bodies which are neither TMDL-impaired nor TMDL-related (non-regulated) is not included in the proposed program.

Reviewed by:
Co Atty: <u>N/A</u>
DFS: _____
Other: _____
DCM: _____
CM: <u>[Signature]</u>
File No. <u>BPWS01</u>

Attachments: Lake Management Program Description and Five Year Funding Plan
Lake Definition and Listing of Seminole County Lakes

Surface Water Quality Lake Management Programs

There are 199 named lakes with more than 30,000 acres within Seminole County, most of which have shared jurisdiction among the BCC, municipalities, and bordering counties. For the purposes of program identification, there are different Lake Management Programs that are described as a direct result of the two separate driving forces: regulatory-driven water quality restoration activities and citizen requested restoration activities.

Regulatory (TMDL Related) Lake Management Program:

Funding and staffing for this program has been included in the proposed Lake Management Program Budget.

TMDL Waterbodies

A science-based, regulatory-driven Lake Management Program needs to be initiated in order to comply with the regulatory requirements of the state and federal TMDL program. This program will require one new staff position (Senior Coordinator) for implementation. TMDLs have already been set by Florida Department of Environmental Protection (FDEP) for Lake Jesup and Cranes Strand in Seminole County. Specific compliance activities will be defined through the Basin Management Action Plan (BMAP), which is under development through FY06/07. Specific activities will need to be implemented in FY07/08. Many of these anticipated activities are outlined in a preliminary five-year program and are based on estimated levels of efforts and their associated costs. There are 22 other impaired waterbodies (lakes, rivers, and streams) within the entire County, which are scheduled to have TMDLs and/or Pollutant Load Reduction Goals (PLRGs) set on or before 2008. Detailed assessments need to be initiated for these complex systems, which would determine feasibility and options available for restoration. In-lake restoration projects will need to be identified and funded during the BMAP process for compliance, as well as other associated watershed retrofit projects. It is anticipated that the other watershed retrofit projects will be a part of the Subdivision Rehabilitation/Retrofit Program and that significant coordination will occur between the two positions/programs.

A preliminary five-year regulatory lake management program has been developed, which identifies some of the TMDL waterbodies and the projected costs for potential restoration/compliance activities. These activities include tasks that are necessary to meet FDEP water quality standards for Class III waters (recreational waters). Cost shares with the local municipalities, counties, FDOT, and state agencies have been conservatively estimated in the preliminary program. Targeted stormwater education will also be conducted for residents and businesses within each affected watershed as a component of regulatory compliance, and will be accomplished through a cooperative agreement with the FDEP-endorsed Florida Yards & Neighborhoods (FYN) Program through the County Extension Office.

Under the TMDL program, waterbodies are re-assessed every five years for improvement or decline of water quality. Those waterbodies that have declined to the point of not meeting the state water quality standards will be included on future "impaired" waterbody lists and will have TMDLs developed for each; the waterbodies that have improved and are consistently meeting state water quality standards will be removed from the "impaired" list.

TMDL-Related Waterbodies

These are waterbodies that are not currently identified as "impaired" but discharge or drain to an impaired waterbody, and contribute to the pollutant load of that impaired waterbody. Lake Amory would be an example of this type of waterbody. The restoration of such a lake would in turn help with the restoration efforts for the impaired waterbody by decreasing its contributing pollutant load.

Limited funding for a one-time aquatic weed removal/harvesting has been included in the proposed Lake Management Program budget for either the TMDL or TMDL-Related Waterbodies, which may be recommended if the lakefront residents would be willing to enter into an MSBU agreement. This would ensure good stewardship and that the aquatic weeds would be maintained for the long-term. Funding estimates are based on two waterbodies per year with an estimated cost of \$60,000 per waterbody.

Non-Regulatory Lake Management Program:

Funding and staffing for this program has **not** been included in the proposed Lake Management Program budget.

Declining Waterbodies

The long-range expectations for this program component are such that even as the “impaired” waterbodies are undergoing restoration efforts, future attention should also be focused on declining waterbodies (based on available funding), in order to prevent them from becoming “impaired,” as defined by state water quality standards. It has been shown that it is generally less expensive to be proactive in preventing a waterbody from becoming “impaired” than it is to restore it.

Community Initiated Waterbodies

This program would include those non-regulated waterbodies whose residents have requested County assistance with restoration activities. Funding for a one-time/initial restoration of a lake may be provided by the County, if the residents are willing to enter into an MSBU to ensure that the necessary maintenance and upkeep would be conducted on an on-going basis. The vast majority of these requests would come for aquatic and emergent weed control. This may be viewed as a way to develop and implement a policy for lake management in much the same way as retention pond maintenance: functional and aesthetic maintenance. The “functional” activities are conducted by the County to ensure that the pond is functioning as designed for capacity and treatment. The residents (HOA) are responsible for “aesthetic” pond maintenance activities, such as mowing. In terms of this Lake Management Program, the initial restoration would be considered the “functional” component and the MSBU-funded activities would be considered the “aesthetic” component. It would be essential for the success of this type of program, to require the dedication of resources from the residents via the MSBU Program, since it would ensure the long-term stewardship of the lake and drastically reduce the likelihood that major restoration activities will be required in the future. Technical management and oversight of this program would be required by Water Quality Section staff.

Conclusion

Throughout these program initiatives, educational outreach components will play an important role, since eliminating the pollutant at its source is a key (and cost-effective) component in restoring and protecting the County’s surface water resources. As previously mentioned, the Water Quality Section will continue to work cooperatively with other environmentally-oriented outreach programs, such as the St. Johns River Water Management District (SJRWMD) Watershed Action Volunteers (WAV) and County Extension Office/UF/IFAS Lakewatch and FYN programs, which serve to enhance the overall educational outreach efforts without creating any duplication among existing programs.

**PRELIMINARY REGULATORY (TMDL) LAKE MANAGEMENT PROGRAM
ACTIVITY & COST ESTIMATE**

Dist #	FDEP Priority/ Due date	Example Projects:	Estimated Cost: (per acre)	Surface Area: (Acres)	Year 1 (FY06/07)		Year 2 (FY07/08)		Year 3 (FY08/09)		Year 4 (FY09/10)		Year 5 (FY10/11)	
					Activity	Total Cost	Activity	Total Cost	Activity	Total Cost	Activity	Total Cost	Activity	Total Cost
2, 5	High 2006	Lake Jesup TMDL (Impaired) Alum System			(These activities have already been programmed into existing Water Quality budget.)		Alum Design/Test	\$ 100,000.00	Alum System Install	\$ 400,000.00	O&M	\$ 30,000.00	O&M	\$ 30,000.00
		Subtotal					\$ 100,000.00		\$ 400,000.00		\$ 30,000.00		\$ 30,000.00	
		Estimated Cost Share (30%) w/cities, FDOT & Orange Co.*					\$ (30,000.00)		\$ (120,000.00)		\$ (9,000.00)		\$ (9,000.00)	
		Net Total:					\$ 70,000.00		\$ 280,000.00		\$ 21,000.00		\$ 21,000.00	
1, 4	High 2006	Cranes Strand TMDL (Impaired)			(These activities have already been programmed into existing Water Quality budget.)		In-stream activities	\$ 100,000.00						
		Net Total:					\$ 100,000.00							
1	Medium 2008	Lake Howell TMDL (Impaired) Lake Assessment/Feasibility Report Restoration Activities:			Report	\$ 65,000.00								
		Shoreline restoration/education ALUM One Time Application	\$ 1,505.00 \$ 800.00	408 50 408				Application	\$ 326,400.00			Shoreline rest.	\$ 75,250.00	
		Subtotal				\$ 65,000.00		\$ 326,400.00				\$ 75,250.00		
		Est. Cost Share (30%) w/FDOT, Casseberry, Orange Co.*				\$ (19,500.00)		\$ (97,920.00)				\$ (22,575.00)		
		Net Total:				\$ 45,500.00		\$ 228,480.00				\$ 52,675.00		
3	Medium 2006	Spring Lake/Wekiva Protection TMDL (Impaired) Lake Assessment/Fisheries Study Gizzard Shad Removal Shoreline Restoration/Ed ALUM One Time Application	\$ 2,000.00 \$ 1,505.00 \$ 800.00	88 20 88	Report Shad Removal	\$ 20,000.00 \$ 176,000.00			Activities	\$ 30,100.00	Activities	\$ 30,100.00	Activities	\$ 30,100.00
		Subtotal				\$ 196,000.00		\$ 25,000.00	Alum testing	\$ 25,000.00	Alum Treat.	\$ 70,400.00	Alum Treat.	\$ 70,400.00
		Cost Share (30%) w/Altamonte Springs*				\$ (58,800.00)		\$ (7,500.00)		\$ (16,530.00)		\$ (30,150.00)		
		Cost Share w/SJRWMD				\$ (150,000.00)						\$ (30,150.00)		
		Net Total:				\$ 46,000.00		\$ 17,500.00		\$ 38,570.00		\$ 70,350.00		
4	Medium 2006	Island Lake TMDL/Wekiva Protection TMDL (Impaired) Lake Assessment/Delisting Package			Report	\$ 20,000.00								
		Subtotal				\$ 20,000.00								
		Cost Share (50%) w/Longwood, FDOT*				\$ (10,000.00)								
		Net Total:				\$ 10,000.00								
2	Medium 2006	Lake Orienta, Florida, Adelaide/Wekiva Protection TMDL (Impaired) Altamonte Springs to take lead role for these 3 lake Lake Assessment (Sem. Co. portion) In-lake projects				\$ 25,000.00								
		Net Total:				\$ 25,000.00		\$ 50,000.00		\$ 50,000.00				
5	Medium 2008	DeForest Lake TMDL (Impaired) Lake Assessment Activities: Mechanical vegetation removal. Shoreline restoration, education	\$ 3,050.00	12	Report	\$ 10,000.00			Activities	\$ 36,600.00				
		Subtotal				\$ 10,000.00		\$ 36,600.00						
		Cost Share (25%) w/Lake Mary, Sanford*				\$ (2,500.00)		\$ (9,150.00)						
		Net Total:				\$ 7,500.00		\$ 27,450.00						
5	Medium 2008	Lake Monroe TMDL (Impaired) Lake Assessment Alum System In-lake projects			Report	\$ 30,000.00			Alum Design/test	\$ 100,000.00	Alum System Inst.	\$ 400,000.00	O&M	\$ 25,000.00
		Subtotal				\$ 30,000.00		\$ 100,000.00		\$ 400,000.00		\$ 400,000.00	In-Lake Projects	\$ 150,000.00
		Cost Share (40%) w/Sanford, FDOT*				\$ -		\$ (40,000.00)		\$ (160,000.00)		\$ (70,000.00)		
		Net Total:				\$ 30,000.00		\$ 60,000.00		\$ 240,000.00		\$ 105,000.00		
2	Medium 2008	Lake Harney TMDL (Impaired) Lake Assessment (Sem. Co. portion only)			Report	\$ 20,000.00							In-Lake Projects	\$ 200,000.00
		Net Total:				\$ 20,000.00							\$ 200,000.00	
Varies	Medium 2008	13 Remaining TMDL Waterbodies Assessment Reports					Reports	\$ 50,000.00	Reports	\$ 80,000.00	In-Lake Projects	\$ 200,000.00	In-Lake Projects	\$ 300,000.00
		Net Total:				\$ -		\$ 50,000.00		\$ 280,000.00		\$ 200,000.00		\$ 300,000.00
					Year 1	Year 2	Year 3	Year 4	Year 5					
Upfront Vegetation/Sediment Removal for TMDL Related Lakes, if MSBU assumes on-going aquatic weed control (assume 2 lakes/year)						\$ 120,000.00	\$ 120,000.00	\$ 120,000.00	\$ 120,000.00	\$ 120,000.00				
Annual Program Activity Estimated Cost:						\$ 486,000.00	\$ 808,000.00	\$ 955,100.00	\$ 925,750.00	\$ 925,500.00				
Senior Lake Management Coordinator Position (salary, fringes, op expenses, etc)						\$ 81,589.00	\$ 81,589.00	\$ 81,589.00	\$ 81,589.00	\$ 81,589.00				
Florida Yards & Neighborhoods Program						\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00	\$ 40,000.00				
Total Gross Estimated Annual Program Cost:						\$ 607,589.00	\$ 929,589.00	\$ 1,076,689.00	\$ 1,047,339.00	\$ 1,047,089.00				
Total Net Annual Estimated Cost w/anticipated cost share:						\$ 425,589.00	\$ 785,019.00	\$ 900,159.00	\$ 825,614.00	\$ 937,939.00				

* Cost share percentages are based on preliminary estimates of the contributing drainage area (watershed) & are NOT based on any negotiated percentages. These cost shares do NOT include any potential FDEP/state grants (SB444 & SB319).

SEMINOLE COUNTY LAKE QUESTIONS

DEFINITION OF A LAKE:

• US EPA DEFINES A LAKE AS:

- A natural standing body of water that is 2.5 acres or greater,
- Has at least 0.25 acres of open water, and
- A maximum depth of at least 3 feet

NUMBER OF LAKES IN SEMINOLE COUNTY:

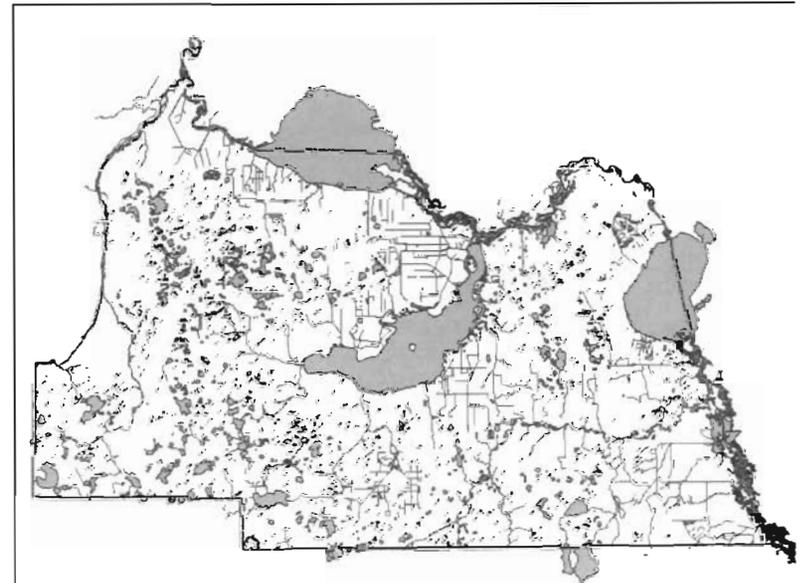
1) BASED ON THE SEMINOLE COUNTY'S GIS HYDROLOGICAL LAYER (SCHYDRO.SHP):

- There are 483 "lakes" that have an area of 2.5 acres or greater (this includes retention ponds and other manmade waterbodies),
- 175 of these waterbodies have names,
- The maximum depth has not been recorded for 394 of these 483 "lakes,"
- Open water area has not been recorded

2) COUNTY WATER QUALITY STAFF MAINTAINS A "MASTER LAKE LIST" THAT INCLUDES 199 NAMED LAKES:

- This list includes the 175 named waterbodies (above), and
- An additional 24 waterbodies that are less than 2.5 acres;
- All of these listed are natural waterbodies;
- Maximum depth and open water area have not been determined for all included waterbodies

GIS Layer Sources: Stormwater Engineering, University of South Florida,
Property Appraiser's Office, Planning and Development, Lineage: 1999
aerial photography



MASTER LIST OF NAMED WATERBODIES

	DISPNAME	NAME	TMDL (year) / Declining Trend (DT)	WQ CHEMISTRY	BIOLOGICAL MONITORING	MSBU	GAUGE	JURISDICTION	GISACRES
1	Lake Jesup	JESUP, LAKE	2005	Y	Y		Y	SC/WSPRGS	8,120.4
2	Lake Adelaide	ADELAIDE, LAKE	2006	Y	Y		Y	SC/ALT	21.2
3	Lake Florida	FLORIDA, LAKE	2006	Y	Y		Y	ALT	24.8
4	Lake Orienta	ORIENTA, LAKE	2006	Y	Y		Y	SC/ALT	142.2
5	Bear Gully Lake	BEAR GULLY LAKE	2008	Y	Y		Y	SC	139.4
6	Deforest Lake	DEFOREST LAKE	2008	Y	Y		Y	SC	11.8
7	Fruitwood Lake	FRUITWOOD LAKE	2008	Y	N			WSPRGS	2.2
8	Island Lake	ISLAND LAKE	2008	Y	N		Y	SC/LNGWD	138.3
9	Lake Alma	ALMA, LAKE	2008	Y	N			SC	20.9
10	Lake Harney	HARNEY, LAKE	2008	Y	Y			SC/VC	6,268.5
11	Lake Howell	HOWELL, LAKE	2008	Y	Y		Y	SC/CASS	407.6
12	Lake Monroe	MONROE, LAKE	2008	VOL	N		Y	SC/VC/SANF	8,953.2
42	Lake Searcy	SEARCY, LAKE	2008	Y	N		Y	LNGWD	11.4
43	Spring Lake	SPRING LAKE (ALT SP)	2008	Y	Y		Y	SC/ALT	88.0
44	Buck Lake	BUCK LAKE	DT	Y	Y		Y	SC	158.8
45	Horseshoe South Lake	HORSESHOE SOUTH LAKE	DT	Y	Y		Y	SC	33.7
46	Lake Ann	ANN, LAKE (CASSELBERRY)	DT	Y	Y		Y	SC/CASS	15.1
47	Lake Marion	MARION, LAKE	DT	Y	Y		Y	SC	13.7
48	Lake Mobile	MOBILE, LAKE	DT	Y	Y		Y	SC	23.6
49	Lake Of The Woods	WOODS, LAKE OF THE	DT	Y	Y		Y	SC	50.5
50	Sylvan Lake	SYLVAN LAKE	DT	Y	N		Y	SC	187.8
51	Yankee Lake	YANKEE LAKE	DT	Y	N		Y	SC	49.4
52	Amory Lake	AMORY LAKE		Y		Y	Y	SC/SANF	9.8
61	Azalea Lake	AZALEA LAKE						SC	2.3
62	Banana Lake	BANANA LAKE					Y	SC	17.7
63	Baptismal Lake	BAPTISMAL LAKE						SC	6.3
64	Bass Lake	BASS LAKE						SC	7.2
65	Bath Lake	BATH LAKE						SC/OVEIDO	10.9
65	Bay Lagoon	BAY LAGOON					Y	SC	3.5
66	Bear Lake	BEAR LAKE		Y			Y	SC	309.5
67	Belair Lake	BELAIR LAKE					Y	SC	33.6
30	Big Lake Mary	MARY, BIG LAKE					Y	LM	105.9
31	Boat Lake	BOAT LAKE					Y	SC/WSPRGS	10.2
32	Border Lake	BORDER LAKE						SC	31.0
33	Clear Lake	CLEAR LAKE						SC	6.7
1	Cranes Roost Lake	CRANES ROOST LAKE					Y	ALT	26.2
2	Crescent Lake	CRESCENT LAKE					Y	SC	5.8
12	Crystal Bowl Lake	CRYSTAL BOWL LAKE					Y	CASS	8.9
13	Cub Lake	CUB LAKE		Y			Y	SC	14.9
31	Dawson Lake	DAWSON LAKE					Y	LM	23.1
32	Deep Lake	DEEP LAKE					Y	SC	42.9
33	Dew Drop Pond	DEW DROP POND						SC/CASS	7.7
13	Duck Pond	DUCK POND						CASS	1.1
14	East Crystal Lake	EAST CRYSTAL LAKE		Y			Y	SC/LM	127.8
36	East Lake	EAST LAKE					Y	LNGWD	6.6
2	Elaine Lake	ELAINE LAKE						ALT	2.0
3	Emerald Lake	EMERALD LAKE						SC	2.0
4	Fairy Lake	FAIRY LAKE		Y			Y	SC/LNGWD	50.2
37	Fern Lake	FERN LAKE						LNGWD	0.8
38	Forest Lake	FOREST LAKE						SC	5.3
39	Foxwood Lake	FOXWOOD LAKE						SC	10.6
40	Garden Lake	GARDEN LAKE		Y			Y	SC	22.9
51	Gem Lake	GEM LAKE						OVIEDO	6.3
52	Geneva Pond	GENEVA POND					Y	SC	18.9
53	Golden Lake	GOLDEN LAKE					Y	SC/SANF	49.0
54	Grace Lake	GRACE LAKE					Y	SC	18.9
14	Grassy Lake	GRASSY LAKE					Y	CASS	6.9

MASTER LIST OF NAMED WATERBODIES

	DISPNAME	NAME	TMDL (year) / Declining Trend (DT)	WQ CHEMISTRY	BIOLOGICAL MONITORING	MSBU	GAUGE	JURISDICTION	GISACRES
15	Greenwood Lake	GREENWOOD LAKE		Y			Y	SC/LM	55.7
16	Harts Lake	HARTS LAKE						SC	12.6
57	Hidden Lake	HIDDEN LAKE						SANF	13.7
58	Hope Lake	HOPE LAKE						SC/ALT	20.6
59	Horseshoe North Lake	HORSESHOE NORTH LAKE					Y	SC	62.5
60	Island Heathrow Lake	ISLAND HEATHROW LAKE					Y	SC	43.8
61	Island Pond	ISLAND POND					Y	SC	71.0
62	Kewanee Pond	KEWANEE POND		Y			Y	SC	4.4
63	Kiwanis Lake	KIWANIS, LAKE		Y			Y	SC	31.4
58	Lake Ada	ADA, LAKE					Y	SANF	51.3
59	Lake Ann	ANN, LAKE						SC	1.4
15	Lake Annette	ANNETTE, LAKE						CASS	0.9
16	Lake Asher	ASHER, LAKE		Y			Y	SC	4.9
32	Lake Bingham	BINGHAM, LAKE					Y	LM	17.1
33	Lake Brantley	BRANTLEY, LAKE		Y			Y	SC	285.0
34	Lake Burkett	BURKETT, LAKE						SC/OC	74.8
35	Lake Catherine	CATHERINE, LAKE		Y			Y	SC	13.8
16	Lake Cecille	CECILLE, LAKE						CASS	6.2
52	Lake Charm	CHARM, LAKE					Y	OVIEDO	19.4
53	Lake Cochran	COCHRAN, LAKE						SC	69.2
33	Lake Como	COMO, LAKE						LM	48.6
17	Lake Concord	CONCORD, LAKE					Y	CASS	18.7
18	Lake Deeks	DEEKS, LAKE					Y	SC	5.6
19	Lake Destiny	DESTINY, LAKE					Y	SC/ALT/OC	32.9
20	Lake Dot	DOT, LAKE						SC	2.8
18	Lake Ellen	ELLEN, LAKE					Y	CASS	6.4
19	Lake Emily	EMILY, LAKE						CASS	4.7
34	Lake Emma	EMMA, LAKE					Y	LM	19.2
35	Lake Eva	EVA, LAKE					Y	SC	21.5
38	Lake Evergreen	EVERGREEN, LAKE						LNGWD	2.0
39	Lake Faith	FAITH, LAKE						SC	27.5
40	Lake Florence	FLORENCE, LAKE		Y			Y	SC	28.3
41	Lake Gary	GARY, LAKE						SC	4.8
39	Lake Gem	GEM, LAKE					Y	LNGWD	2.6
40	Lake Gene	GENE, LAKE						SC	5.5
41	Lake Geneva	GENEVA, LAKE		Y			Y	SC	29.4
42	Lake Geoffrey	GEOFFREY, LAKE						SC	3.5
29	Lake Griffin	GRIFFIN, LAKE					Y	CASS/LNGWD	11.5
30	Lake Harriet	HARRIET, LAKE		Y			Y	SC/ALT	5.9
31	Lake Hayes	HAYES, LAKE		Y			Y	SC	12.0
32	Lake Hodge	HODGE, LAKE					Y	SC/CASS	16.6
33	Lake Howard	HOWARD, LAKE						SC	4.4
34	Lake Irene	IRENE, LAKE					Y	SC/LNGWD	13.8
35	Lake Irish	IRISH, LAKE					Y	SC	13.2
40	Lake Jane	JANE, LAKE						LNGWD	1.8
41	Lake Jeanette	JEANETTE, LAKE						SC	2.7
42	Lake Jennie	JENNIE, LAKE					Y	SC/SANF	45.0
43	Lake Kathryn	KATHRYN, LAKE					Y	SC/LNGWD	77.8
4	Lake Lotus	LOTUS, LAKE (ALTAMONTE SPRINGS)						ALT	77.2
5	Lake Lotus	LOTUS, LAKE					Y	SC/CASS/LNGWD	2.2
6	Lake Lucerne	LUCERNE, LAKE						SC	3.4
5	Lake Maltbie	MALTBIE, LAKE					Y	ALT	3.3
20	Lake Maria	MARIA, LAKE (CASSELBERRY)						CASS	3.4
21	Lake Maria	MARIA, LAKE (WINTER SPRINGS)						WSPRGS	4.1
22	Lake Marietta	MARIETTA, LAKE					Y	SC	74.4
23	Lake Markham	MARKHAM, LAKE		Y			Y	SC	69.5
24	Lake Martha	MARTHA, LAKE						SC/OC	30.8

MASTER LIST OF NAMED WATERBODIES

	DISPNAME	NAME	TMDL (year) / Declining Trend (DT)	WQ CHEMISTRY	BIOLOGICAL MONITORING	MSBU	GAUGE	JURISDICTION	GISACRES
25	Lake Mills	MILLS, LAKE		Y		Y	Y	SC	231.1
26	Lake Minnie	MINNIE, LAKE					Y	SC/SANF	41.6
27	Lake Myladdie	MYLADDIE, LAKE						SC	2.3
28	Lake Nixon	NIXON, LAKE						SC	15.1
29	Lake Onora	ONORA, LAKE					Y	SC	7.5
41	Lake Orange	ORANGE, LAKE						LNGWD	2.0
42	Lake Pickett	PICKETT, LAKE					Y	SC/OC	736.5
53	Lake Rogers	ROGERS, LAKE						OVIEDO	3.9
6	Lake Ruby	RUBY, LAKE					Y	ALT	2.4
7	Lake Ruth	RUTH, LAKE					Y	SC/LNGWD	10.7
8	Lake Seminary	SEMINARY, LAKE		Y			Y	SC/OC	55.1
9	Lake Seminole	SEMINOLE, LAKE						SC	1.6
10	Lake Sten	STEN, LAKE						SC	14.7
50	Lake Talmo	TALMO, LAKE					Y	LNGWD/WSPRGS	4.2
51	Lake Tony	TONY, LAKE		Y			Y	SC	23.4
21	Lake Triplet	TRIPLET, LAKE					Y	CASS	84.2
22	Lake Trout	TROUT, LAKE					Y	SC	8.4
23	Lake Trout	TROUT, LAKE						SC/CASS	1.6
43	Lake Wayman	WAYMAN, LAKE						LNGWD	2.4
44	Lake Wildmere	WILDMERE, LAKE					Y	LNGWD	31.6
45	Lake Winsor	WINSOR, LAKE					Y	LNGWD	17.4
22	Lake Yvonne	YVONNE, LAKE					Y	CASS	7.1
23	Le Fils Slough	LE FILS SLOUGH						SC	68.1
24	Lenelle Lake	LENELLE LAKE						SC	5.1
25	Linden Lake	LINDEN LAKE		Y			Y	SC	15.8
26	Little Bear Lake	LITTLE BEAR LAKE		Y			Y	SC	27.5
27	Little Lake Georgia	LITTLE LAKE GEORGIA					Y	SC	12.1
28	Little Lake Howell	TUSKAWILLA LAKE		Y			Y	SC/WSPRGS	99.8
59	Little Lake Mary	MARY, LITTLE LAKE					Y	SANF/LM	50.3
46	Little Wildmere Lake	LITTLE WILDMERE LAKE						LNGWD	3.7
60	Loch Low Lake	LOCH LOW LAKE						SANF/LM	33.6
54	Long Lake	LONG LAKE					Y	OVIEDO	68.8
23	Lost Lake	LOST LAKE					Y	CASS	11.8
24	Lower Lake Proctor	PROCTOR, LOWER LAKE		Y			Y	SC	97.5
25	Middlemass Lake	MIDDLEMASS LAKE						SC	10.0
26	Miranda Lake	MIRANDA LAKE						SC	3.9
27	Mirror Lake	MIRROR LAKE		Y		Y	Y	SC	28.4
28	Moran Lake	MORAN LAKE						SC	9.8
47	Mud Lake	MUD LAKE						LNGWD	18.2
48	Mullet Lake	MULLET LAKE					Y	SC	189.5
49	Myrtle Lake	MYRTLE LAKE		Y			Y	SC/LM	54.6
7	North Lake	NORTH LAKE						ALT	5.4
24	North Lake Triplet	NORTH LAKE TRIPLET					Y	CASS	22.8
48	Northside Lake	NORTHSIDE LAKE						LNGWD	0.3
49	Oak Forest Lake	OAK FOREST LAKE					Y	WSPRGS	6.9
8	Pearl Lake	PEARL LAKE						ALT	5.9
9	Pearl Lake	PEARL LAKE (CASSELBERRY)						SC	13.5
10	Pearl Lake	PEARL LAKE (ALTAMONTE SPRINGS)					Y	SC/ALT	29.2
11	Phyllis Lake	PHYLLIS LAKE						SC	1.9
12	Pine Lake	PINE LAKE						SC/SANF	2.3
25	Plaza Oval Pond	PLAZA OVAL POND					Y	CASS	2.5
9	Pot Lake	POT LAKE					Y	ALT	2.1
10	Prairie Lake	PRAIRIE LAKE		Y			Y	SC/ALT	122.3
11	Puzzle Lake	PUZZLE LAKE						SC/C	574.1
26	Quail Lake	QUAIL LAKE					Y	CASS	3.7
27	Queens Mirror Lake	QUEENS MIRROR LAKE					Y	CASS	11.7
28	Red Bug Lake	RED BUG LAKE		Y			Y	SC	29.2

MASTER LIST OF NAMED WATERBODIES

	DISPNAME	NAME	TMDL (year) / Declining Trend (DT)	WQ CHEMISTRY	BIOLOGICAL MONITORING	MSBU	GAUGE	JURISDICTION	GISACRES
29	Reservoir Lake	RESERVOIR LAKE					Y	SC/SANF	17.4
30	Rice Lake	RICE LAKE					Y	SC	47.1
31	Rock Lake	ROCK LAKE					Y	SC/LNGWD	19.1
32	Ross Lake	ROSS LAKE		Y			Y	SC	16.5
55	Round Lake	ROUND LAKE					Y	OVIEDO	11.2
56	Sawyer Lake	SAWYER LAKE					Y	SC	23.2
28	Secret Lake	SECRET LAKE					Y	CASS	5.0
29	Silver Lake	SILVER LAKE					Y	SC/SANF	36.8
30	Spring Lake	SPRING LAKE						SC	4.7
31	Spring Wood Lake	SPRING WOOD LAKE						SC/ALT	8.0
32	Still Lake	STILL LAKE						SC	15.2
10	Tille Lake	TILLE LAKE						ALT	0.7
11	Trout Lake	TROUT LAKE (ALTAMONTE SPRINGS)						SC/ALT	16.2
12	Trout Lake	TROUT LAKE (CASSELBERRY)					Y	SC/CASS	14.8
13	Trues Lake	TRUES LAKE						SC	1.3
14	Twin Lakes	TWIN LAKES						SC	24.9
15	Twin Lakes	TWIN LAKES (LONGWOOD)						SC	5.1
16	Twin Lakes East	TWIN LAKES EAST					Y	SC/SANF	22.2
17	Twin Lakes West	TWIN LAKES WEST						SC/SANF	26.2
18	Upper Lake Proctor	PROCTOR, UPPER LAKE						SC	38.3
19	Vonna Lake	VONNA LAKE						SC	2.5
20	Wekiva Lake	WEKIVA LAKE		Y			Y	SC	40.5
35	West Crystal Lake	WEST CRYSTAL LAKE					Y	LM	221.6
49	West Lake	WEST LAKE					Y	LNGWD	25.5
11	West Pearl Lake	WEST PEARL LAKE (ALTAMONTE SPRINGS)					Y	ALT	10.9
12	Wildwood Lake	WILDWOOD LAKE						SC	1.7
56	Willa Lake	WILLA LAKE						OVIEDO	3.5
57	Wood Lake	WOOD LAKE						SC	2.7
		Total Lake Acres:		31,102					31,101.6
		Seminole County Lake Acreages:		3,198					
		Shared Jurisdiction w/others		26,684					
		Other Jurisdiction		1,219					
		* Impaired Waterbodies							
		Total Impaired Lake Acres:		24,350					
		** Total Seminole Impaired		172					
		** Total Shared Jurisdiction (Impaired)		24,139					
		** Other Jurisdiction		38					
		* Acreages do not include those of impaired rivers, creeks, & streams.							
		** Jurisdictional responsibility may include additional entities (cities, counties, industries) that contribute pollutant load to the waterbodies.							

MASTER LIST OF RIVERS, CREEKS, STREAMS

DISPNAME	NAME	ALTNAME	TMDL (year) / Declining Trend (DT)	WQ CHEMISTRY	BIOLOGICAL MONITORING	GAUGE
Crane Strand Canal	CRANE STRAND CANAL		2005	Y	N	
Wekiva River	WEKIVA RIVER		2006 (PLRG)			
Chub Creek	CHUB CREEK		2008	Y	N	
Econlockhatchee River	ECONLOCKHATCHEE RIVER		2008	Y	Y	
Howell Creek	HOWELL CREEK		2008	Y	Y	
Little Wekiva River	LITTLE WEKIVA RIVER	Starbuck Spring	2008	Y	Y	
Lockhart Smith Canal	LOCKHART SMITH CANAL		2008	Y	N	
Salt Creek	SALT CREEK		2008	Y	N	
St Johns River	ST JOHNS RIVER		2008			Y
Sweetwater Creek	SWEETWATER CREEK (OVIEDO)	Kansas Sweetwater Canal, Black S	2008	Y	N	
Bear Gully Creek	BEAR GULLY CREEK	Bear Creek, Bear Gully Canal				
Ben Jackson Creek	BEN JACKSON CREEK	Jackson Creek				
Big Run	BIG RUN					
Blackwater Creek	BLACKWATER CREEK					
Buscombe Creek	BUSCOMBE CREEK					
Cameron Ditch	CAMERON DITCH			Y		
Futch Run	FUTCH RUN					
Gee Creek	GEE CREEK			Y	Y	
Lightwood Knot Canal	LIGHTWOOD KNOT CANAL					
Little Econlockhatchee River	LITTLE ECONLOCKHATCHEE RIVER			Y	Y	Y
Little Run	LITTLE RUN					
Mills Branch	MILLS BRANCH					
Mills Creek	MILLS CREEK					
Mills Creek	MILLS CREEK (SANFORD)					
Navy Canal	NAVY CANAL			Y		
Roberts Branch	ROBERT'S BRANCH					
Shortcut Canal	SHORTCUT CANAL					
Six Mile Creek	SIX MILE CREEK			Y		
Soldiers Creek	SOLDIERS CREEK			Y	Y	
Sweetwater Creek	SWEETWATER CREEK	Sweetwater Canal, Lake 63 (FEMA)				
Sweetwater Creek	SWEETWATER CREEK (WINTER SPRINGS)	Solary Canal		Y		
Sweetwater Creek	SWEETWATER CREEK	Sweetwater Canal				
Sweetwater Creek	SWEETWATER CREEK	Sweetwater Canal				
Turkey Creek	TURKEY CREEK					
Wharf Creek	WHARF CREEK					
Woodruff Creek	WOODRUFF CREEK					
Woodruff Creek Cutoff	WOODRUFF CREEK CUTOFF					