Lake Seminole Reasonable Assurance Update 2024

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Lake Seminole Reasonable Assurance Plan Update – 2024

The Lake Seminole Reasonable Assurance Plan (RAP) was developed by Pinellas County in 2007 to set forth actions to reduce nutrient loading to Lake Seminole and restore the lake's water quality. Updates were submitted to the Florida Department of Environmental Protection (FDEP) in 2011, 2014, and 2019 outlining the progress made towards the goals set forth in the original RAP. This document is the fourth update to the original RAP and includes a brief overview of progress since 2007 and a detailed description of management actions undergone from 2019 through 2023.

Monitoring Summary

Pinellas County monitors water quality, phytoplankton, and vegetation in Lake Seminole. Monitoring results and trend analyses are described in the following sections.

Water Quality

Pinellas County samples at two random locations in each lobe (north and south) of Lake Seminole eight times per year, for a total of 32 samples annually. Sampling follows a stratified random design developed by Janicki Environmental (2003). Site locations for 2019 to 2023 are shown in Figure 1, and parameters monitored are listed in Table 1.

Lake Seminole RAP water quality targets are expressed as annual means for chlorophyll-a (chl-a) and the Trophic State Index (TSI). The targets are 30 µg/L chl-a and a TSI of 60. Annual means for chl-a, total nitrogen (TN), total phosphorus (TP), and TSI were calculated for the lake from the Pinellas County ambient water quality database and are presented in Table 2. In general, nutrients and TSI trends have been decreasing, as shown in Figures 2, 3, 4 and 5, and described in the trend analyses is the following section. For the 2019-2023 period, the chl-a decreased in the lake when compared to the previous reporting period. The average chl-a concentration of the lake decreased 63% from 2005 levels and over 25% from the previous reporting period. TN, TP, and Secchi depth have also shown improved trends over time with TN decreasing ~50%, TP decreasing ~30%, and Secchi increasing ~76% when compared to 2005 levels. Changes in TN, TP and Secchi depth are less pronounced when comparing the previous reporting period to the current. TN decreased by ~9%, TP increased by ~18% and Secchi depth increased by ~42%. The increase in TP over this period is due to spikes in 2019-2021 (all TP values were above 0.076 mg/L), which are likely due to dredging activities that took place from December 2019 until February 2021. Once the dredging activities ended and sediments were not being regularly disturbed the TP values returned to below 0.070 mg/L.

When splitting the lake into two lobes recent water quality trends were more pronounced in the northern lobe of the lake with an ~45% decrease in Chlorophyll-a compared to the previous period. Going from an average of 65 µg/L over 2014-2018 to an average of 36 µg/L over 2019-2023. TN and TP saw similar, though less pronounced, decreases ~25% and ~7% in the northern lobe between the two time periods.

The decrease in chl-a in the southern lobe was not as pronounced as the northern lobe with only an ~11% decrease between periods. The large decreases in nutrient and chl-a concentrations in the north lobe are likely due to the removal of nearly 700,000 cubic yards of organic sediments from the northern lobe of the lake as part of the dredging project. This is further supported by the Secchi depth in the lobe doubling, average going from 0.2m to 0.4 m, within months of dredging completion. The southern lobe of the lake did not have nearly as much dredging done, only about 240,000 cubic yards, and we did not see the same response.

Although the water quality targets for Lake Seminole are based on the chl-a and TSI targets agreed upon in the RAP, data was also compared to the state numeric nutrient criteria using data from the Impaired Waters Rule (IWR) database. The database includes data from both Pinellas County and the FDEP, but the majority of samples are from the County. Color data indicates a long–term color geometric mean of 37 PCUs for the planning period from 2003 to 2023. Based on this assessment, the lake classification for Lake Seminole is "Color > 40 PCU", which coincides with the State's numeric nutrient criteria of 20 µg/L chl-a, 1.27 mg/L TN, and 0.05 mg/L TP. Annual geometric means were calculated for Lake Seminole from the Pinellas County ambient water quality database and are presented in Table 3 and Figures 3, 4, and 5. Chl-a, TP, and TN (except for 2021 and 2022) exceeded criteria every year during the planning period; however, Pinellas County data shows a decreasing trend in nutrients over the past 15 years as described in the following section.

Table 1. Lake Seminole water quality monitoring parameters.

Water Quality Indicators	
Aluminum	Phytoplankton Taxonomy
Ammonia	Secchi Disk Depth
Chlorophyll-a, b, c, and Phaeophytin Concentration	Total Kjeldahl Nitrogen
Color	Total Nitrogen
Conductivity	Total Phosphorus
Dissolved Oxygen Concentration and % sat	Total Suspended Solids
Nitrite-Nitrate	Transmissivity (no longer collected after 2022)
Orthophosphate	Turbidity
pH	Water Temperature

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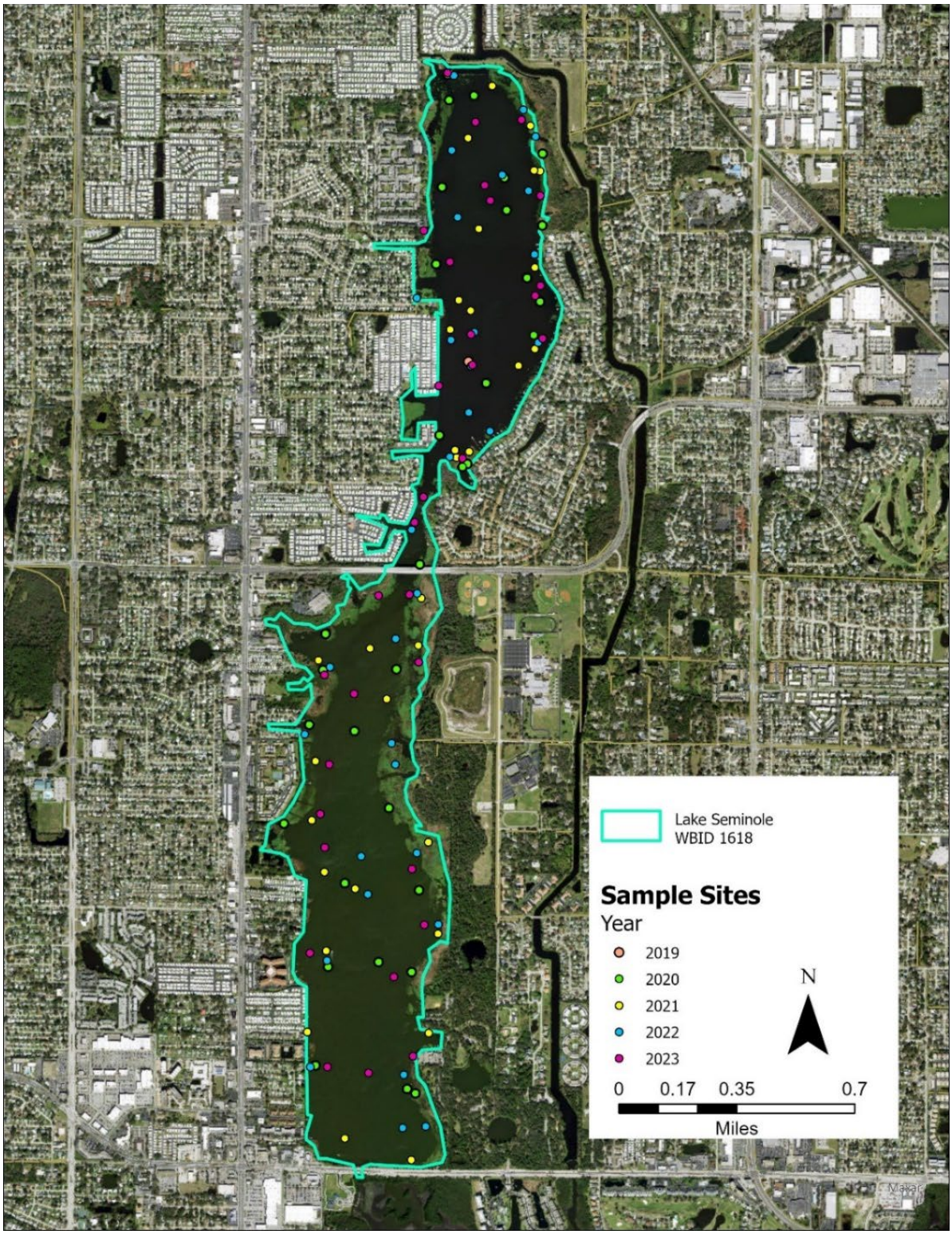

Figure 1. Lake Seminole sampling locations (2019-2023).

Table 2. Lake Seminole annual TSI and mean seasonal nutrient concentrations.

Year	TSI	TN (mg/L)	TP (mg/L)	Chl-a (µg/L)
2005	91.3	3.34	0.11	128
2006	88.5	3.47	0.1	111
2007	91.2	4.59	0.34	103.3
2008	89.0	3.2	0.09	102.2
2009	89.4	3.77	0.08	132.1
2010	85.1	2.59	0.08	72.1
2011	78.9	1.97	0.07	77.2
2012	85.7	2.82	0.09	103
2013	83.5	2.19	0.08	78.6
2014	78.5	1.62	0.05	63.4
2015	78.9	1.89	0.06	62.9
2016	78.1	1.98	0.07	64.3
2017	82.1	2.19	0.09	82.1
2018	79.3	2.04	0.07	68.9
2019	76.0	1.73	0.08	56.4
2020	77.2	1.88	0.10	60.7
2021	73.3	1.63	0.08	50.7
2022	74.0	1.83	0.07	53.3
2023	73.2	1.93	0.07	43.6

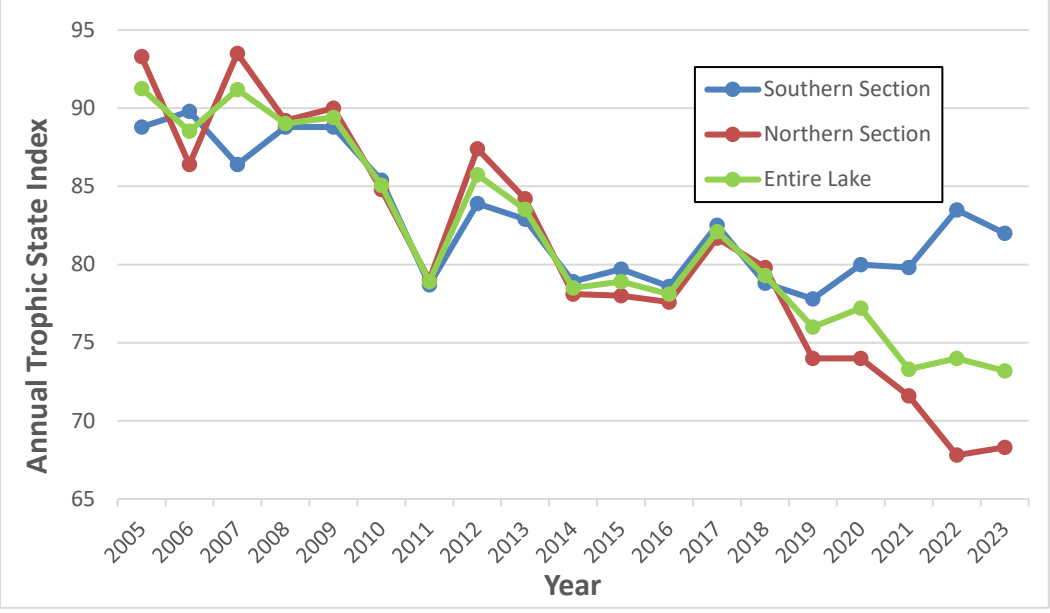

Figure 2. Lake Seminole TSI (2005 to 2023).

Table 3. Lake Seminole annual geometric means for nutrients, from Pinellas County database.

Year	Chl-a (µg/L)	TN (mg/L)	TP (mg/L)
2005	117.7	3.25	0.10
2006	96.3	3.30	0.09
2007	99.3	3.74	0.13
2008	93.6	3.13	0.09
2009	120.2	3.66	0.07
2010	69.4	2.55	0.07
2011	53.5*	1.90	0.07
2012	94.0	2.67	0.07
2013	75.8	1.92	0.06
2014	61.1	1.55	0.05
2015	60.6	1.85	0.06
2016	57.4	1.90	0.07
2017	74.7	2.12	0.09
2018	64.0	1.99	0.07
2019	52.0	1.70	0.08
2020	53.9	1.81	0.09
2021	46.5	1.54	0.08
2022	45.9	1.69	0.07
2023	39.5	1.85	0.07

*Laboratory QA/QC problems resulted in several qualified results that were removed for this calculation.

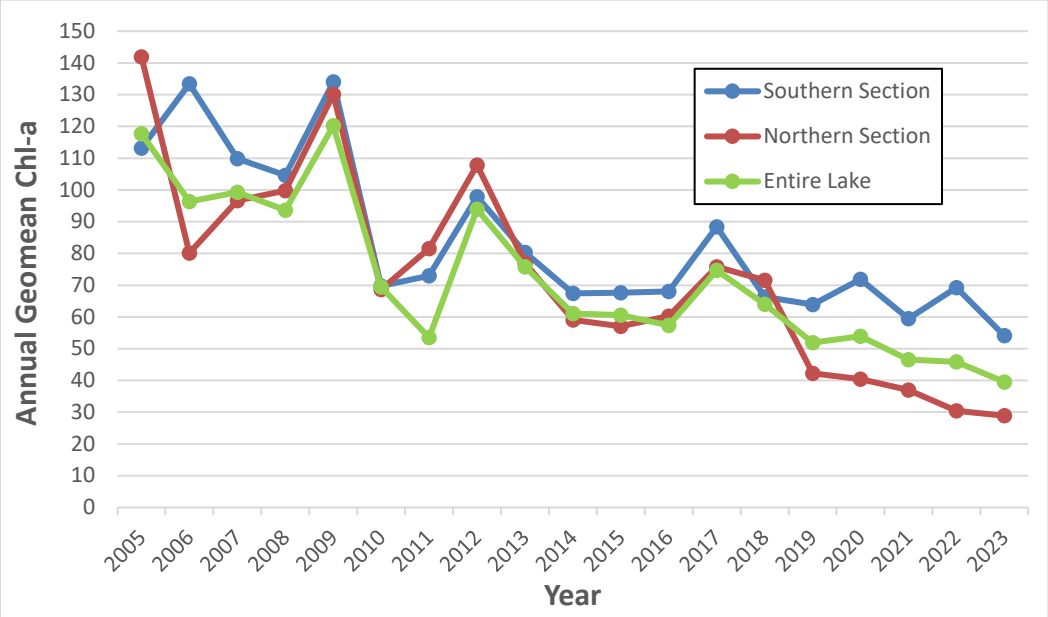

Figure 3. Lake Seminole Chlorophyll-a annual geomean (2005 to 2023).

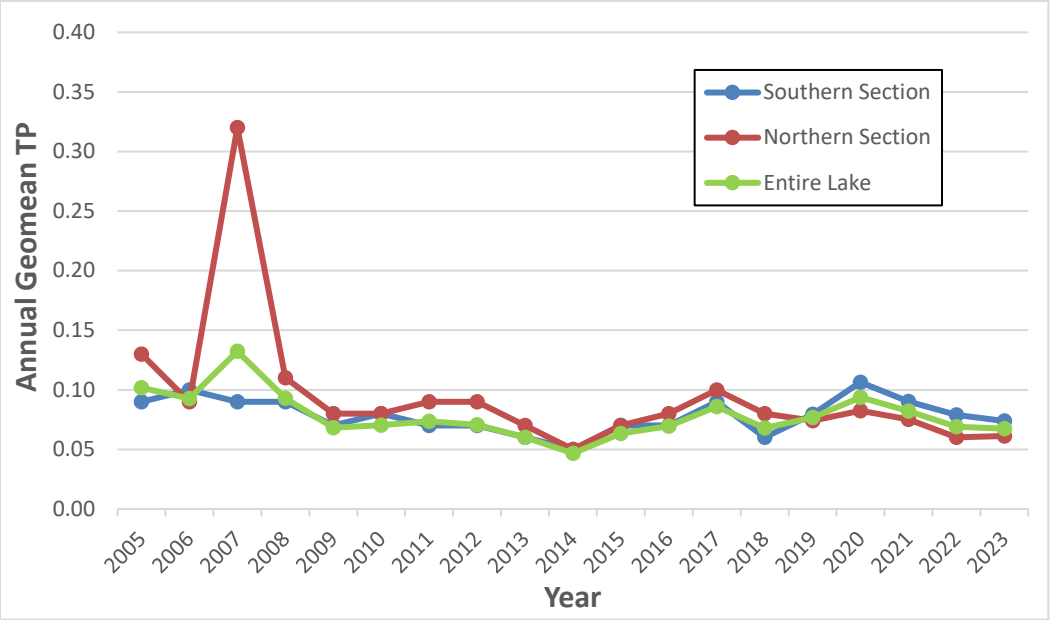

Figure 4. Lake Seminole Total Phosphorus annual geomean (2005 to 2023).

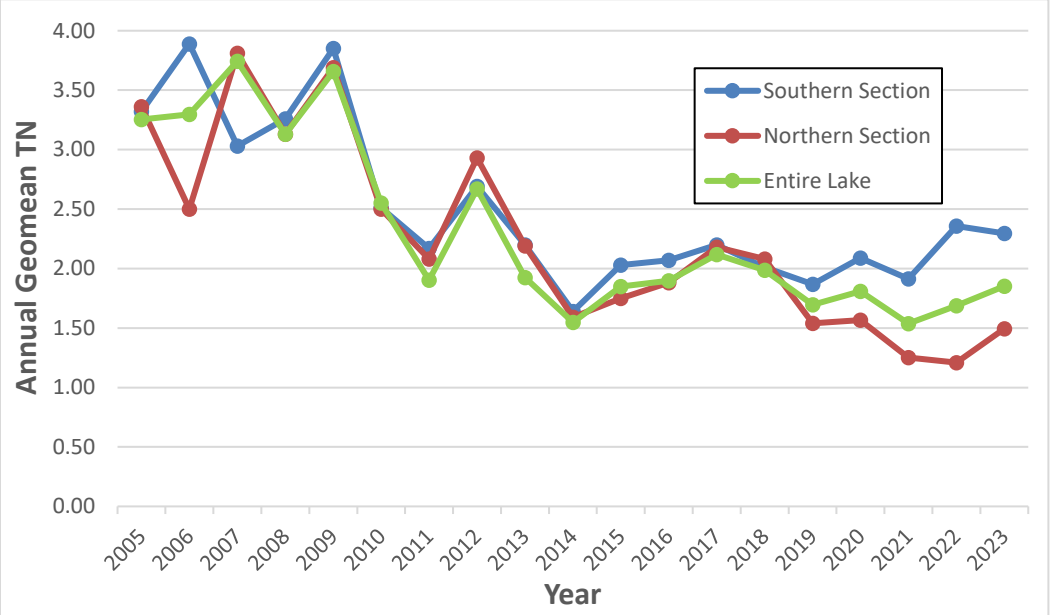

Figure 5. Lake Seminole Total Nitrogen annual geomean (2005 to 2023).

Water Quality Trends

A time series trend analysis for Pinellas County data collected from 2003 to 2022 using the seasonal Kendall Tau Test for Trend. This analysis considered both seasonality and autocorrelation. Results for Lake Seminole are displayed in Table 4. This analysis detected improvements in nearly all water quality parameters, with statistically significant (p-value ≤ 0.05) decreasing trends in chl-a, TN, TP, turbidity, and total suspended solids (TSS) and increasing trends in Secchi disk depth and transmissivity in both portions of the lake (Janicki 2023).

In comparison to the other 61 monitoring stations in Pinellas County waterbodies, only six others had decreasing trends in chl-a, 14 other sites had decreasing trends in TN, 15 other stations had decreasing trends in TP, and only one site, other than the Lake Seminole north lobe, in Pinellas County exhibited decreasing trends in all three nutrient parameters (Janicki 2023). This indicates that the water quality improvement in Lake Seminole is not common across the County and is likely the result of effective completed and ongoing management actions outlined in the RAP.

Table 4. Results of Lake Seminole Kendall Tau trend analysis 2003-2022.

Lake Segment	Parameter	Statistically Significant Trend Direction
SA	Chl-a	Decreasing
SB	Chl-a	Decreasing
SA	Secchi disk	Increasing
SB	Secchi disk	Increasing
SA	Transmisivity	Increasing
SB	Transmisivity	Increasing
SA	Turbidity	Decreasing
SB	Turbidity	Decreasing
SA	TSS	Decreasing
SB	TSS	Decreasing
SA	DO (%Sat)	No trend
SB	DO (%Sat)	No trend
SA	TN	Decreasing
SB	TN	Decreasing
SA	TP	Decreasing
SB	TP	No trend

Phytoplankton Community

Due to staffing issues within the County, phytoplankton identification is a few years behind, and no update will be provided in this report. The following information in this section is from the last update. Phytoplankton samples are collected during ambient water quality monitoring and returned to the Environmental Management Laboratory for preservation, identification, and enumeration. The dominant phytoplankton phylum in Lake Seminole is Cyanophyta, blue-green algae (Figure 6). From 2014 through 2018, blue-green algae consisted of nearly 96% percent annually of the entire lake phytoplankton population. The dominant genera of blue green algae (Figure 7) in the lake are *Planktorhrix* (37%), *Planktolyngbya* (18%), *Raphidiosis* (15%), and *Cylindrospermopsis* (12%). In 2014 and 2015, *Planktothrix*

dominated the phytoplankton community at roughly 5 million cells per ml. However, during the last three years of the report, 2016-2018, *Planktothrix* cells per ml increased by over double, with values closer to 12 million cells per ml. There were no differences seen in the percent of Cyanophyta in Lake Seminole during the wet or dry season.

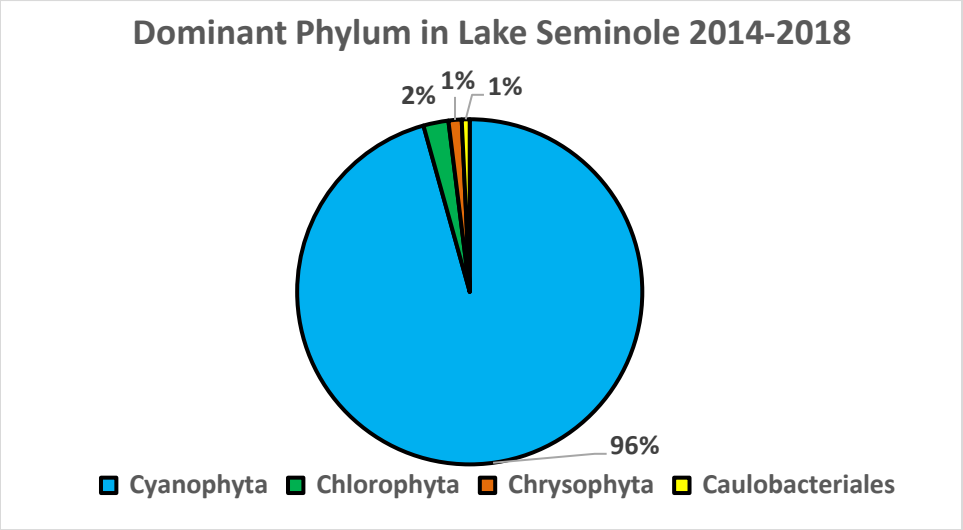

Figure 6. Dominant Phylum in Lake Seminole 2014-2018.

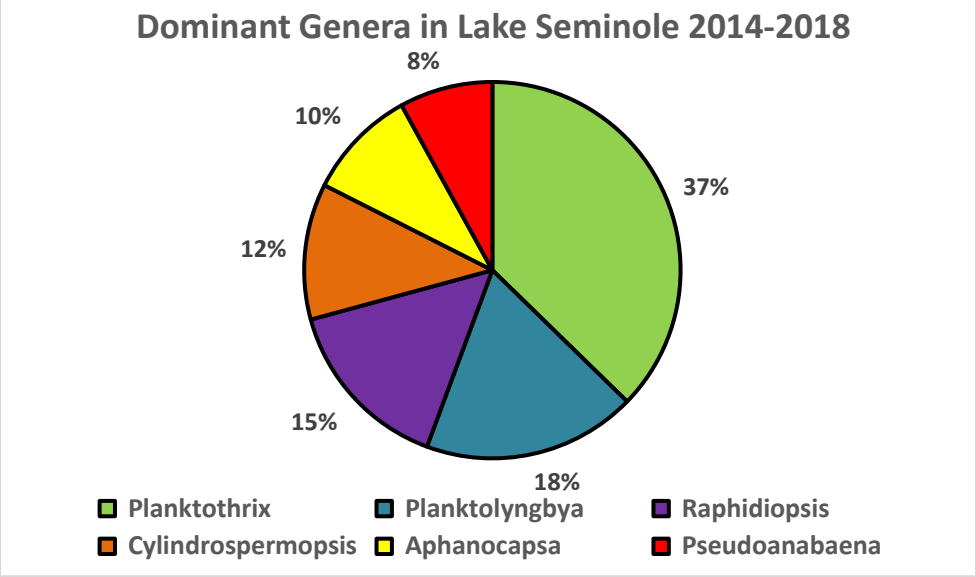

Figure 7. Dominant Genera in Lake Seminole 2014-2018.

Plant Community

Pinellas County developed a county-wide biological monitoring program in 2014 which includes the Lake Vegetation Survey (LVI), Stream Condition Index (SCI), Rapid Periphyton Survey (RPS), and Linear Vegetation Survey (LVS). Staff conducting the monitoring and taxonomy are FDEP certified for these methods and follow FDEP SOPs. An LVI was conducted on Lake Seminole once per year between 2014 and 2023, except for 2015. The first LVI was completed on Lake Seminole on 7/9/2014 with a score of 49 indicating that the lake supports a healthy, well-balanced plant community. Subsequent years, 2016-2019 and 2021, also resulted in passing LVI scores ranging from the mid 40's to the high 50's (Table 5). In 2020, 2022, and 2023, the lake did not meet the passing LVI score of 43. Each of these failing scores was due to Hydrilla being the dominant species in at least one section of lake that was surveyed.

Field observations indicate an increasing trend over the last 15 years in the abundance of the native species Illinois Pondweed (*Potamogeton illinoensis*) and Eel Grass (*Vallisneria americana*). Many areas previously barren of vegetation or covered in Hydrilla are now inhabited by one or both of these native species of submerged aquatic plants. This is especially true in the northern lobe of Lake Seminole. This has been noted by County staff through field visits to the lake and the numerous calls the County has received from residents who live on the lake inquiring about vegetation (pondweed and eel grass mainly) that they have not previously seen in proximity to their property. Following the dredge work on the lake in 2019-2020, improved water quality, which led to increased light penetration, in the lake allowed for the expansion of hydrilla into deeper parts of the lake. This was especially bad in 2020 and 2022. Pinellas County has conducted two lake-wide chemical treatments for Hydrilla using the chemical ProcellaCOR. These treatments have worked well, and we have seen a reduction in Hydrilla each year since we started the treatments. Going from nearly 250 acres/feet of treatment in 2021 to just over 100 acre/feet in 2024. Also, FWC installed 130 fingerling grass carp in January 2021. With more to be added in the winter of 2025 (if lake levels permit).

Table 5. Lake Vegetation Index Results for Lake Seminole 2014-2023.

Lake Name	WBID	Sample Date	LVI Score	Average LVI
Seminole	1618	7/9/2014	49	46
		7/6/2016	57	
		8/18/2017	57	
		6/18/2018	46	
		9/20/2019	48	
		8/26/2020	32	
		7/13/2021	51	
		8/26/2022	32	
		8/3/2023	39	

Fish Community

Based on electrofishing sampling conducted by the Florida Fish and Wildlife Conservation Commission (FFWCC) annually from 2014 to 2022, the lake supports a healthy community of fishes (FFWCC, personal communication). A majority of the fishes in the lake are of the sunfish family (i.e., bluegill, crappie, red ear, bass, etc.) and several killifish species. Several invasive species are found in the lake, mainly Blue Tilapia, a few cichlid species, and armored catfish. Between 2014 and 2018, bluegill (24%-52%), brook silverside (4%-10%), golden shiner (2.4%-17%), and largemouth bass (6%-9%) dominate the lake by number caught (FFWCC, personal communication). However, when looked at on a community basis by weight, largemouth bass (38%-45%), blue tilapia (12%-23%), and Florida gar (6%-11%) dominate the lake (FFWCC, personal communication). This trend was similar in 2019-2022 with bluegill comprising the largest portion of the community (27%-54%), followed by golden shiner (5%-17%), brook silverside (1%-11%, and largemouth bass (2%-8%). While there is some inter-annual variability in fish community composition, it is not unexpected and can be attributed to variability in annual weather patterns that favor one species over another. Lake Seminole exhibits a healthy largemouth bass population. The community structure shows strong recruitment of age-0 bass with a good proportion of those fish living to sexual maturity.

Management Actions

The proposed management actions in the RAP are categorized into structural, management, legal, policy, compliance and enforcement, and public education strategies. The status of each management action is listed below. See the original RAP document for a detailed description of each component.

Structural

1. **Excavate organic peat sediments from shoreline areas.**

Two segments of sediment (60 total acres) were excavated as reported in the 2011 update. No additional work has been completed since this time, and no additional shoreline excavation is anticipated due to the upcoming sediment removal project.

2. **Restore priority wetland and upland habitats.**

The management actions set forth in the 2007 RAP were complete as of the 2011 update. However, exotic and nuisance species removal in the basin is an ongoing management activity with Pinellas County Parks and Conservation Resources Department. This work occurs primarily on the County-owned lands, located on the southeast side and the northeast corner of the lake. In 2023, a project was conducted consisting of both wetland and upland habitat restoration. The wetland work includes nearly three acres of exotic plant removal. The upland portion of the project consisted over 20 acres of mechanical exotic plant removal and chemical treatments. Future management in this area will include native wetland and upland plantings and is scheduled for the winter of 2025.

3. **Install stage and flow measurement instrumentation on the Lake Seminole Outfall Control Structure.**

Installation of stage measurement instrumentation was complete in 2006. All data is available from the USGS website (www.usgs.gov). The site (station ID 0230889) measures stage but does not include flow.

4. Construct enhanced regional stormwater treatment facilities in priority sub-basins.

Load reductions of 4,222 lbs./yr. TP and 43,812 lbs./yr. TN are estimated to be achieved through operation of alum facilities in subbasins 1, 3, 6, and the Bypass Canal, although the technical issues described below have likely reduced the full capability of the facilities.

Sub-basin 1

Sub-basin 1 has been in operation since 2012. The system had typical early operational problems but those have been corrected and the system is now operational, per design. Monitoring of operational efficiencies for both the wet and dry season will be completed and analysis between 2025 and 2029 and will be provided in the next update. Initial limited testing, 1 rain event sample collection, indicates the system is operating as anticipated in terms of nutrient reduction.

Bypass Canal

The Bypass Canal treatment facility has been in operation since 2012. The system has had mechanical and electrical issues and was struck by lightning several times, but the issues have been fixed and the system is now operational, per design. Monitoring of operational efficiencies was completed in 2019, and a summary table of the analysis is provided below (Table 6). Overall, the system is functioning as expected, though the removal efficiency of phosphorus is less than anticipated (design reduction estimate of 80%) with an average of 47% reduction. This is due to two events (11/25/19 and 12/3/19) that had significantly lower reductions likely due to weather events, as a lack of reduction was seen in nearly all parameters tested. The system has been down since 2023, due to a blockage in the vacuum system of the trough. A repair ITB has been submitted for this work. Total nitrogen reduction (32%) exceeded design reduction estimates (17%) by 15%. One thing that was noted during the sampling was that aluminum spiked on the outflow for a few of the events. This is likely due to the flow-through rate of the treatment facility being too high; the inflow velocity has been reduced from 10 cfs. to 8 cfs. Further evaluation is needed to determine the optimal flow rate and alum injection rate, and refinements of the system will be discussed in the next update.

Table 6. Bypass Canal Alum nutrient reduction results.

Date	TKN	TN	TP	BOD
7/2/2019	32%	45%	50%	*
7/18/2019	30%	26%	53%	55%
11/19/2019	38%	42%	71%	45%
11/25/2019	10%	0%	14%	13%
12/3/2019	15%	-17%	29%	24%
12/12/2019	48%	42%	67%	55%
Average Value	29%	23%	47%	38%

Sub-basin 3

Sub-basin 3 has been in operation since late 2013. The system was struck by lightning in mid-2014, but has since been repaired and is currently operational, per design. Monitoring of operational efficiencies for both the wet and dry season will be completed, and analysis will be available in the next update. Initial limited testing, 1 rain event sample collection for efficiencies and 1 blue sky multi-depth sample collection to measure any re-release of nutrients from the bound sediment, indicates the system is operating as anticipated in terms of nutrient reduction.

Sub-basin 6

Sub-basin 6 has been in operation since June 2015. Monitoring of operational efficiencies for both the wet and dry season will be completed, and analysis will be available in the next update. Initial limited testing, 2 rain event sample collections, indicates the system is operating as anticipated in terms of nutrient reduction.

Sub-basin 2

Sub-basin 2 has been in operation since May 2019. Initial estimates of effectiveness suggest load reductions of 260 lbs./yr. TP and 2,663 lbs./yr. TN. Monitoring of operational efficiencies for both the wet and dry season will be completed, and analysis will be available in the next update.

Sub-basin 7

It was determined to be too difficult to construct the system because the existing site had insurmountable design and permitting issues. If it is determined the lake will not achieve the water quality targets without additional load reductions, the County will look for other alternatives.

5. Divert Seminole Bypass Canal flows to improve lake flushing and dilution.

The Bypass Canal Alum Treatment system is currently operational, and rainy season diversion of flows into Lake Seminole occurred for intermittent periods of time during the summers of 2018 through 2022. Pinellas County anticipates conducting this diversion for the entirety of the 2025 rainy season.

6. Dredge organic silt sediments from submerged areas.

The County began the design of the Lake Seminole Restoration Project in 2010 with an aim to remove accumulated nutrient-laden sediments from the lake. This project is estimated to result in load reductions of 154,000 lbs. of TP and 832,000 lbs. of TN. The project received permits in late 2013 from FDEP, ERP# 52-0205092-005, and ACOE, Nationwide 27# SAJ-2013-01392 (NW-CMW). A request for proposal (RFP) was released on September 16, 2016, resulting in two responsive proposals. Gator Dredging was ranked the number one firm. The negotiation for the permit modification and design phase was finalized on May 31, 2017, and the agreement was approved by the board on July 17, 2017. Phase I, which included work for professional engineering and permit modification services related to the Gator Dredging proposed upland dewatering area, which will be the permanent home for the lake dredge material, was completed on August 17, 2018. During Phase I, Gator Dredging sub-contracted with AECOM to design the upland Dredge Material Management Area (DMMA). The final plan-set for the upland DMMA was signed and sealed by AECOM, and they are the official Engineer of Record

Phase II, which consists of the construction of the DMMA and the dredging of 903,500 cubic yards from the lake began in late November 2018 (Figure 8). DMMA construction was complete in August 2019, and dredging commenced on November 26, 2019. The dredging portion of the project was expected to take up to 24 months to complete. However, it took only 12 months to complete. The DMMA has been allowed to dry and settle for three years with capping and grading of the site nearing completion as of October 2024. All work on Phase II is expected to be completed by December 2024. Phase II (Construction Services) expenditures are estimated at $17,994,550.00. Including the $668,670.00 in expenditures from Phase I (Permit Modification and Design), the contract total for the project is $18,663,220.00. Full water quality reduction results from this project should be available for the next update.

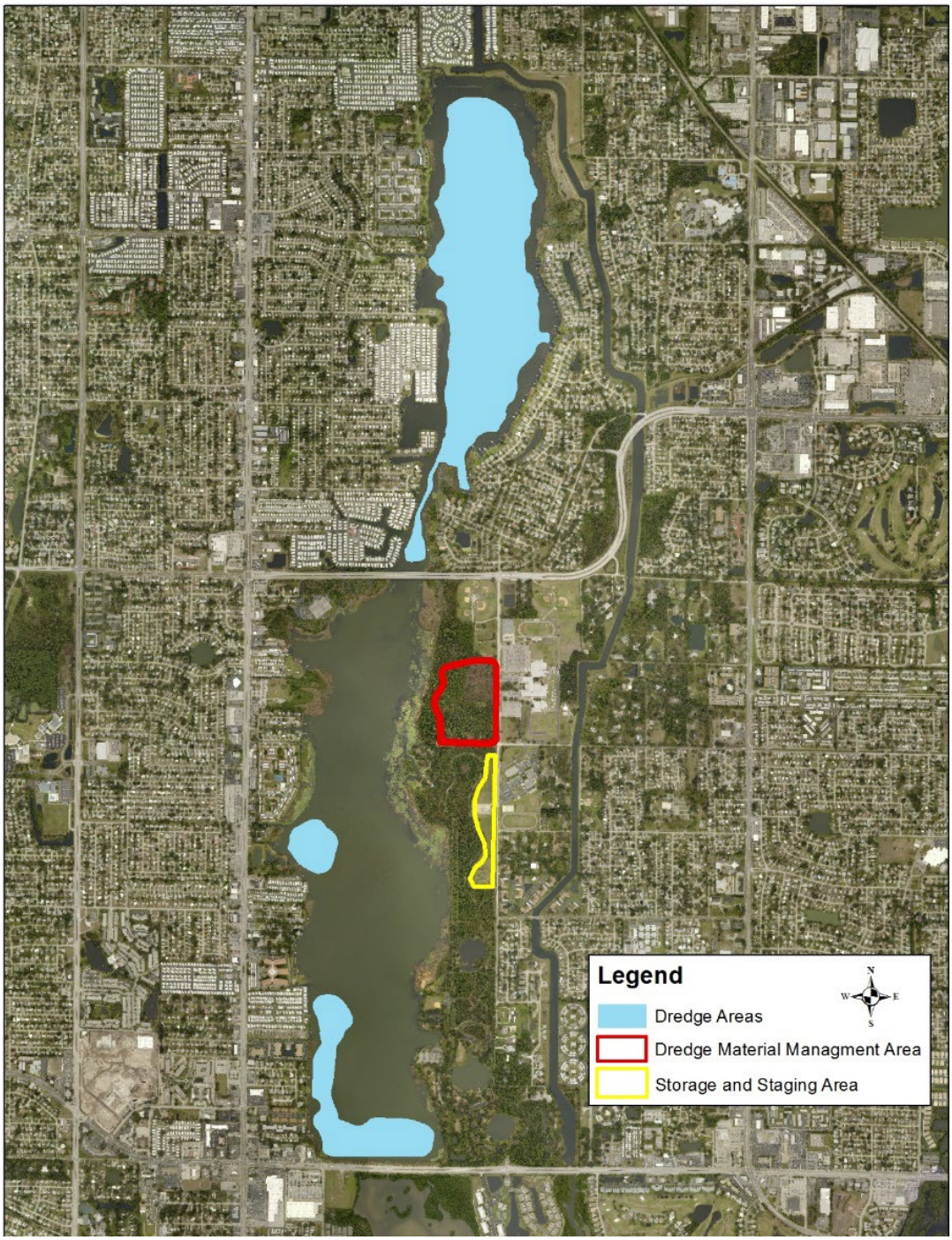

Figure 8. Lake Seminole Dredge Project-Dredge Areas and DMMA Map.

Management

1. Mechanically harvest nuisance aquatic vegetations.

The County has suspended the mechanical harvesting program on Lake Seminole as recommended in the watershed plan. Nuisance aquatic vegetation on Lake Seminole has decreased in recent years and currently, a total of only 100-150 acres per year requires management. Removal of emergent plants is generally needed only on small, dispersed areas ranging from less than 0.1 to 1.0 acre, which makes mechanical harvesting difficult and chemical treatment the preferred management approach. After completion of the dredge project (structural action #6) mechanical harvesting was looked at as an option for control of spatterdock, but chemical treatment was the chosen method.

2. Improve treatment efficiency of existing stormwater facilities.

No updates this report. In 2014, the County hired a Stormwater Compliance Engineering Specialist for site plan compliance and enforcement. The Environmental Management Division has developed an inventory of all stormwater facilities in the Lake Seminole watershed and the inventory is on an annual inspection cycle. Lake Seminole has been designated as the number one priority basin for proactive site plan compliance reviews. The owners of any facilities deemed out of compliance with site plans will be notified and the County will work cooperatively with the owners to develop and implement an improvement plan. Problems with facilities permitted by the Southwest Florida Water Management District (SWFWMD) will be forwarded to SWFWMD for follow up. Ten facilities have been inspected in the Lake Seminole watershed in response to complaints. Of those ten facilities, seven have successfully worked to get the facility back into compliance and three are currently working to re-gain compliance.

Financial incentives for owners to bring stormwater facilities into compliance include eligibility for Surface Water Assessment fee credits or participation in the County's Adopt-a-Pond program. In 2013, the County adopted a Surface Water Assessment fee to fund stormwater management programs. Property owners that can demonstrate onsite treatment are eligible for up to a 75% mitigation credit. In 2014, as a result of the adoption of the Surface Water Assessment fee, the County reinstated the Adopt-a-Pond program. The Adopt-a-Pond program partners with residents to design, implement, and maintain a five-year management plan for privately owned ponds. County supported activities include invasive plant removal, native plantings, pond clean up events, and neighborhood outreach and education. Ponds must be in compliance with all site plans and permits to be eligible for the program. To date, the Adopt-a-Pond program has adopted two ponds in the Lake Seminole watershed. The first pond at Lake Seminole Village had little vegetation, no upland buffer, and was experiencing large scale erosion. The Adopt-a-Pond program helped to solve all three of these issues in 2016. In 2019, a pond off 102nd Ln N that flows directly into the west side of Lake Seminole was adopted. The major work on this pond consisted of bank stabilization, exotic plant removal, and native aquatic and upland plantings.

3. Biomanipulate sport fish populations.

No work has occurred on this topic since the 2011 update. Florida Fish and Wildlife Conservation Commission (FFWCC) staff has indicated a preference to see how the lake responds to the operation of the alum systems and sediment removal prior to any further biomanipulation efforts.

4. Implement an enhanced lake level fluctuation schedule.

A lake level fluctuation schedule is in place to divert treated flow from the Lake Seminole Bypass Canal into Lake Seminole during the wet season.

5. Inactivate phosphorus through whole lake alum applications (if warranted by monitoring results).

A whole or targeted lake alum application or other means of sediment inactivation will only be utilized if other restoration projects do not result in significant water quality improvements.

Legal

1. Adopt a resolution designating the Lake Seminole Watershed as a "Nutrient Sensitive Watershed."

The 2008 Pinellas County Comprehensive plan Surface Water Element Objective 1.5 states that "Pinellas County shall show measurable improvements in the quality of County waters, as a result of management activities, and the development and implementation of watershed management plans." To address this objective, Policy 1.5.6 includes the establishment of a Nutrient Sensitive Watershed designation for the Lake Seminole Watershed (2008). Effective April 1, 2017, and updated in April 2023, the County has adopted a new Stormwater Manual, which includes Low Impact Development design options for development and redevelopment and establishes the required stormwater quality performance standards. Concurrently, the County updated the associated sections of the Land Development Code. The Manual and Code will include a section on the adoption of special basin criteria allowing for more stringent criteria as needed in designated basins.

Public outreach is also a large part of this management strategy. County-wide public outreach efforts are described in the Public Education element below. Additional targeted outreach in the Lake Seminole basin has coincided with the Lake Seminole dredging project. Pinellas County adopted Florida's most restrictive fertilizer ordinance in 2010. Article VIII, Chapter 58 of the Pinellas County Code requires that residential fertilizer contain at least 50% slow-release nitrogen, a soil test be conducted to confirm the need for phosphorus before it can be applied, and the application and sale of fertilizer containing nitrogen or phosphorus is restricted during the rainy season. It also requires training and certification for commercial applicators and establishes a 10-foot setback or buffer zone from the water. The ordinance is applicable County-wide, including all incorporated and unincorporated areas, which covers the entire Lake Seminole watershed.

2. Strengthen and standardize local ordinances for regulating stormwater treatment for redevelopment in the Lake Seminole Watershed.

No update since last report. As described in the previous section, the County has designed a Stormwater Manual and updated development codes for new development and redevelopment which includes Low Impact Development design options. The Pinellas County Stormwater Management Manual functions as a "tool box" of nonstructural and structural stormwater Best Management Practices (BMPs) that can be applied to a variety of redevelopment and development opportunities to satisfy regulatory standards. Many of the receiving waters in Pinellas County are impaired for certain pollutants so a net-benefit approach to reducing stormwater pollutant loadings discharged from the site are a major focus of the manual and code updates.

Policy

1. **Establish a Lake Seminole Watershed Management Area (WMA) through amendments to the Pinellas County, and cities of Largo and Seminole Comprehensive Plans.**

No update since last report. The stormwater manual and land development code updates described in the previous two sections will allow for the adoption of special stormwater criteria in priority basins. Performance standards for redevelopment County-wide exceed the requirements of SWFWMD. The next phase of the stormwater manual development will include working with municipalities to address inconsistencies in regulations. Municipalities have been informed of the County's new manual and code updates and will continue to be updated and encouraged to adopt the same standards and criteria.

Compliance and Enforcement

1. **Expand and enforce restricted speed zones on Lake Seminole.**

This management action was complete as of the 2011 update.

Public Education

1. **Develop and implement a comprehensive public involvement program for the Lake Seminole Watershed.**

On the basin level, public outreach has significantly expanded recent years. This effort has included in a public meeting in October 2018 to inform the public of the dredge project scope and schedule. Over 200 people attended this meeting. Other outreach efforts included presentations on dredge project details to the students at Osceola High School in March and November 2019 and lake restoration overview presentations at the Osceola High School PTO meeting in May 2019, the City of Seminole Historic Society in February 2019, and the City of Seminole Rotary Club in November 2019. The County has also spoken to numerous homeowner groups and mobile home park groups on the status of the lake, their aquatic vegetation management options, and the ongoing projects around the lake.

The County's Environmental Management website has been available to residents and visitors for several years. In 2010, the website was redesigned to coincide with the County's Watershed Education Campaign initiatives. The website can be found at https://pinellas.gov/watershed-management. The site includes explanation of various monitoring and protection activities. An assortment of brochures regarding protection of water resources from stormwater pollution is available on the site. There are about twelve

brochures available including general watershed protection and industry specific materials for construction activities, swimming pool maintenance and construction, landscape maintenance activities, restaurant BMPs, power-washing BMPs, painting BMPs, and commercial and industrial business BMPs.

In addition to being available on the website, printed brochures are used by staff during complaint response or proactive residential and commercial inspections and are distributed to interested citizens through outreach events. There are also a variety of door hangers used by volunteers for proactive or complaint driven response distribution to communities. Some of these door hangers include, storm drain marking, pollution prevention, pet waste pollution prevention, erosion prevention, landscape maintenance, and fertilizer application for nutrient pollution prevention.

Public Service Announcements are also available for viewing on the website. Six videos have been created since 2012 that promote the Environmental Management motto of "Pinellas County is a Watershed, where we Live, Work, and Play." Each video demonstrates how every activity has the potential to impact our waterways. In 2014, the videos ran on local cable network television (variety of channels) and in three local movie theaters on the lobby televisions and during the movie preview sessions. These videos, along with interactive banners and education messages, were also used for digital advertising outreach. In 2013 and 2014 the County advertised the Watershed Campaign on Facebook, Twitter, Tampa Bay Online, and BayNews 9 Online (local news affiliate).

Storm drain marking placards and door hangers have been distributed for years to volunteers as requested throughout the County. Storm drain marking for the Seminole basin mainly occurred in 2015, 2016, 2019, and 2020 and 105 storm drains were marked by volunteers.

Each spring the County provides the Lakes & Ponds Education Seminar. This half-day seminar is open to all interested citizens in Pinellas County. The event includes exhibitor displays and speaker presentations related to the function and maintenance of stormwater ponds in Pinellas County. Attendees also have the opportunity to take home materials (educational brochures, door hangers, and native plants) to assist them in managing their privately-owned stormwater ponds. The event has occurred annually since 2006.

In 2011, the County began to hold trainings for landscape industry personnel as described in the County Fertilizer Ordinance. The three-hour course is a requirement (at least until July 1, 2025) for certification in landscape Best Management Practices that every employee working in the landscape industry in Pinellas County must complete. Since 2011, approximately 10,000 individuals have attended the course. In addition to this course, the County offers Spill Prevention & Response Training, Illicit Discharge Training, and Sediment & Erosion Control Training for industry personnel including private and public organizations.

2. Develop and implement a local citizens Lakewatch program for Lake Seminole.

No update since previous report. The County has contacted the University of Florida/IFAS Lakewatch program and discussed the feasibility of restarting the Lakewatch program on Lake Seminole that was discontinued in the mid 2000's. Based on the discussions it was determined that there is no need for the program to be reestablished as the County has an extensive water quality monitoring program in place on Lake Seminole.

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