LAKE WATER QUALITY
LAKE CONDITIONS AND
TOWN MANAGEMENT RECOMMENDATIONS

Prepared For:
The Town of Miami Lakes
Public Works Department
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TABLE OF CONTENTS **Page**

TABLES

ATTACHMENTS

1.0 INTRODUCTION

The Town of Miami Lakes contains 32 lakes; the Town recognizes all the lakes as valued natural resources and beneficial to the Town. In 2008 the Town commissioned a lake study that was conducted by Florida International University (FIU). As a follow-up, and to continue the Town's efforts to protect these resources, in 2018 the Town requested Calvin, Giordano and Associates, Inc. (CGA) investigate the current condition of the lakes, to provide guidelines outlining best management practices (BMPs) for the Town and properties adjacent to the lakes, and to report on current lake conditions. This document provides the results of the CGA lake investigation and the lake water sampling that was conducted.

This current lake conditions investigation covers the 31 lakes that were included in the 2008 Aquatic Resources Study conducted by FIU. For continuity the same lake names and identification numbers as used in the previous report are again used. Shown below is Table 1. Lake Names and Assigned Identification Number, containing the list of lake names and the ID number assigned to each. Attached is graphic Exhibit A. Location and Identification of Lakes Included in this Report.

TABLE 1. Lake Names and Assigned Identification Number

Lake Name	Lake Number	Lake Name	Lake Number
Lake Michael	ML01	Lake Silvercrest South	ML18
Lake Valerie	ML02	Lake Windmill West	ML19
Lake Rose Ann	ML03	Loch Lomond East	ML20
Lake Gloria	ML04	Loch Lomond West	ML21
Unnamed Lake	ML06	Loch Isle	ML22
Lake Silvercrest North	ML07	Lake Mary	ML23
Lake Glenn Ellen	ML08	Lake Martha	ML24
Lake Cynthia	ML09	Lake Suzie	ML25
Lake Sandra	ML10	Lake Sarah	ML26
Lake Carol	ML11	Lake Adele	ML27
Lake Elizabeth	ML12	Lake Hilda	ML28
Lake Graham Dairy	ML13	Lake Patricia	ML29
Loch Doon	ML14	Lake Katharine	ML30
Loch Ness	ML15	Lake Ruth	ML31
Loch Lomond	ML16	Lake Windmill East	ML32
Loch Andrews	ML17		

This study and the previous study do not include one lake that is owned by Lennar Homes LLC, identified by folio 32-2016-005-4850 that falls within the Dunnwoody Lake subdivision. This lake is located on the NE corner of I-75 and NW 154th Street. The land surrounding this lake is currently under development for residential properties by Lennar. This report and the previous study also do not include the water features that fall within the Don Schula golf course. See Exhibit B. Location of Lake and Water Features Not Included in This Report.

All the lakes in the Town are man-made and originated as borrow pits, the removed material was used to provide fill for adjacent developments. Nearly all of these manmade lakes are geometric in shape aerially.

Based on the lake excavation dates identified in the 2008 study, the lakes, now in 2018, range in age from 14 to 56 years old. See Exhibit C. Lake Excavation Dates.

There are mostly residential properties adjacent to the lakes, but there is some commercial property, as well as park and recreational facilities. A few lakes are under the ownership and management of a single Homeowner Association, however most lake ownership is divided among the abutting properties. The South Florida Water Management District (SFWMD) has partial ownership of the three lakes the District's Biscayne Canal runs through; these are Loch Doon, Loch Ness, and Lake Ruth. Other than these three lakes interconnected with the SFWMD Biscayne Canal, the remaining lakes in the Town are closed systems.

2.0 LAKE MAINTENANCE

Through a Special Taxing District, the Town maintains Lake Patricia and Lake Hilda. Current public lake maintenance programs were identified for the public parks at the following lakes: Lake Elizabeth, Lake Cynthia, Lake Glenn Ellen, Lake Suzie, Lake Martha, Lake Hilda, Lake Patricia, Lake Katherine, Loch Lomond West, Loch Ness, and Lake Ruth. At this time DeAngelo Brothers LLC d/b/a Aquagenix, Inc. is the maintenance contractor. Their specific responsibilities include management of the park aquatic area including: aesthetic above surface debris removal, algae and aquatic weed control, border grass and brush control to water's edge, water testing, bacteria testing, aquatics consulting, management reporting, and biological control agent. The Town issues and administers this lake maintenance contract. The remaining lake area beyond the park limits under the Aquagenix contract is understood to be managed by surrounding HOA's/homeowners. Other lakes throughout the Town are also understood to be privately managed by their surrounding HOA's/homeowners.

3.0 TRANSPARENCY/TURBIDITY

Turbidity is generally defined as the cloudiness or haziness of a fluid caused by large numbers of individual suspended particles that are typically invisible to the naked eye, similar to smoke in air. Turbidity is a result of sediment load and biomass in a given environment, while it is generally true that clearer lakes are cleaner; this is not always the case. There are many sources of turbidity; untreated stormwater runoff; ground disturbing construction activities entering waterbodies, shoreline erosion, and phytoplankton are the most typical causes. Urbanized areas contribute large amounts of turbidity to nearby waters through stormwater pollution from paved surfaces such as roads, bridges and parking lots. Many of the lakes in the Town contain outfalls from upland stormwater management systems, both public and privately maintained systems.

During the current assessment, turbidity was measured using a Secchi disk. This is a black and white disk that is lowered into the water until it can no longer be seen; the depth (Secchi depth) is recorded as a measure of the transparency of the water (inversely related to turbidity). The Secchi disk can also provide a rough indication of the depth of the euphotic zone/photic zone--the uppermost layer of water in a lake exposed to intense sunlight allowing the growth of aquatic plants. The Secchi depth corresponds roughly to the layer above the compensation point, i.e. where the rate of photosynthesis exactly matches the rate of cellular respiration and the uptake of CO_2 through photosynthetic pathways equals the respiratory release of oxygen. Secchi Depth readings were taken by CGA when they conducted their lake inspections and by Solitude Lake Management when they collected water samples for testing (water sample testing results are discussed and presented in section 7 of this report.)

The average Secchi Depth, or photic zone, in the Town's lakes as measured with the Secchi disk is approximately a 5.9-foot depth. The Secchi depths ranged from a reading of 2' on Loch Isles to 10'2" at Lake Michael. As demonstrated in the table below showing that Lake Michael had a reading of 6' and 10'2', and that Loch Isle had a reading of 2' and 5', Secchi Depths do vary dependent on various conditions such as high winds, heavy rains that lead to recent input of stormwater runoff, or adjacent land disturbing activities that may lead to increased sediment runoff. The table below provides the Secchi depth for each lake, Table 2. Secchi Depth Readings.

The Secchi depth readings by Solitude Lake Management are reported under the heading titled Transparency. For Transparency the Surface Water Quality Criteria for Class III waters in F.A.C. 62-302.530 (68) states "The annual average value shall not be reduced by more than 10% as compared to the natural background value. Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart." The Town has not established the natural background value for each lake at this time. The current testing readings can be utilized in establishing a natural background value.

TABLE 2. Secchi Depth Readings

Lake Name	Lake #	Secchi Depth in feet	Secchi Depth in feet
Lake Michael	ML01	6'	10' 2"
Lake Valerie	ML02	6'	7' 8"
Lake Rose Ann	ML03	6'	6'
Lake Gloria	ML04	5'	9'6"
Unnamed Lake	ML06	6'	not tested
Lake Silvercrest North	ML07	5'	6'
Lake Glenn Ellen	ML08	5'	7'4"
Lake Cynthia	ML09	4'	8'3"
Lake Sandra	ML10	4'	5'6"
Lake Carol	ML11	5'	8'2"
Lake Elizabeth	ML12	4'	4'6"
Lake Graham Dairy	ML13	5'	5'2"
Loch Doon	ML14	9'	8'2"
Loch Ness	ML15	10'	8'6"
Loch Lomond	ML16	5'	8'7"
Loch Andrews	ML17	5'	4'
Lake Silvercrest South	ML18	5'	4'
Lake Windmill West	ML19	5'	3'6"
Loch Lomond East	ML20	5'	3'
Loch Lomond West	ML21	5'	3'
Loch Isle	ML22	5'	2'
Lake Mary	ML23	5'	4'6"
Lake Martha	ML24	10'	7'4"
Lake Suzie	ML25	7'	5'
Lake Sarah	ML26	4'	8'4"
Lake Adele	ML27	5'	5'6"

Lake Hilda	ML28	8'	6'7"
Lake Patricia	ML29	9'	7'9"
Lake Katharine	ML30	5'	6'3"
Lake Ruth	ML31	6'	7'2"
Lake Windmill East	ML32	5	4'6"

During the current assessment, many of the lakes showed signs that blue dye had been placed in the water. The use of 'Pond Dye' is a common practice. The absorption and spreading of sunlight by the pond dye reduces the clarity of the water and limits the growth of algae and submerged plants. Dyes do not hinder the growth of all aquatic plants; they do not hinder the growth of emergent plants, such as cattails, and are not efficient in managing floating-leaved plants (duckweeds and water lilies) once their leaves are floating on the surface. Pond dye reduces the depth of the photic zone a great deal; this restricts submerged plant and algae growth to only the shallowest areas of the lake. Dyes also inhibit the growth of filamentous algae, mat-forming algae, and single-cell planktonic algae. Dyes reduce the transparency of the lake.

It is important to note that most dyes utilized for aquatic use are non-toxic; they will not harm birds, reptiles, mammals, fish, or turfgrass. The dye itself does not preclude the consumption of fish from dyed ponds. Pond dyes are not a hazard to recreational swimming. Swimming in dyed ponds once the dye has diluted to the proper level will not result in stained clothes, skin, or hair. When initially introducing pond dye utilization, if too many aquatic weeds are blocked too quickly, this can cause fish kills from rotting weeds depleting oxygen.

Also, regarding discoloration, throughout Florida it is common to see brownish stained waters or 'tannic water'. This is created when leaves, grasses, pine needles, and other organic matter falls into the water. The matter breaks down over time giving the water that tea-stained look. Tannins are an aesthetic problem. They may make water smell unpleasant and stain buildings when used for irrigation, but it presents no health hazard.

4.0 STREET SWEEPING

Implementing an effective street sweeping program removes tons of pollutants on an annual basis from entering the storm drain system and entering the lakes. The Stormwater Master Plan and both subsequent updates suggest continued investment in street sweeping. This activity cleans intake structures, reduces debris deposition within the pipe network, and contributes to the aesthetics of the Town. Street sweeping is a positive maintenance activity that provides measurable benefits. Because pollutants such as hydrocarbons and metals adhere to dirt particles, removing this dirt from the street system will remove these pollutants before they are allowed to discharge into the Town's Lakes.

The current Town street sweeping program is contracted to SFM. The Town contract includes the curb and/or gutter or swale and covers the entire cross section of the road including turn lanes. The contract lists the approximate lane mileage for the town street sweeping program as follows:

4.5 miles of 2 lane curbed road
0.2 miles of 3 lane curbed road
6.7 miles of 41ane curbed road
2.23 miles of 2 lane non-curbed road
0.25 miles of 3 lane non-curbed road

Exhibit D Street Sweeping Route Map shows the streets that are swept under the current contract, and provides a graphic identifying the ownership of all the roads within the Town. There are Town owned and maintained streets where additional sweeping can occur. Street sweeping should be prioritized to clean those streets with catch basins and piping connecting to lake outfalls.

Additional sweeping on privately maintained roads would also be beneficial to lake health. It is unclear what type of a mechanism HOAs or other organizations could jointly use to pursue street sweeping programs, but this is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems.

5.0 BISCAYNE CANAL

All the lakes in the Town are closed systems except three lakes which have the South Florida Water Management District's Biscayne Canal (C-8) running through them; these are Loch Doon, Loch Ness, and Lake Ruth. The Biscayne Canal, flowing east through the Town, enters on the southwestern corner and exits midway along on the east side of the Town. The Biscayne Canal, based on the assessment procedures provided in the Impaired Waters Rule (IWR) (62-303 Florida Administrative Code), is non-compliant with dissolved oxygen, specific conductivity, and total dissolved solids surface water quality criteria. This does not imply a designation of impairment it only notes the present condition of the waterway, which can be used for management considerations within the water body ID and watershed in general. The SFWMD coordinates with the various State, County or other municipalities with outfalls into the canal on management practices. Miami-Dade County does water quality testing in the canal system adjacent to Lake Ruth and has provided the water quality testing data from July of 2013 through March of 2018.

Immediately upstream of the three lakes the Biscayne Canal runs through there is a golf course adjacent to the canal. Historically in Florida many golf courses implemented a program of heavy fertilizer, herbicide and pesticide use but with modern technologies and better understandings of turf management nearly all golf courses utilize best management practices in their turf management programs at this time.

Additional canals within the Town include a canal along the northern Town limits running east to NW 77th Court where it turns south and merges into the Biscayne canal; a canal along the entire eastern limits of the Town that also merges into the Biscayne canal; and another canal along the southern limits of the Town beginning at the I-75 and SR 836 exchange that runs into the canal on the eastern limits of the Town.

6.0 FIELD INVESTIGATION

The current field investigation measured turbidity in each lake, reports on stormwater, surrounding properties, and provides general field observations. Attached are the field investigation reports for each lake with an aerial exhibit of each lake, see Exhibit E. Individual Lake Report and Aerial View of Each Lake. Photographs of each lake where also taken and are attached as Exhibit F. Lake Photo-pages. Below are general comments on the lake investigation observations.

The Florida Exotic Pest Plant Council (FLEPPC) defines a Category 1 invasive exotic as "invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives". The submerged aquatic plant Hydrilla (*Hydrilla verticillata*) is a Category 1 invasive species and was observed in the following lakes: Lake Silvercrest North, Lake Graham Dairy, Lake Suzie, and Lake Hilda. Hydrilla is a submerged species that can rapidly create

severe weed congestion if diligent control measures are not implemented. Lake maintenance contracts should include inspection for and treatment of this species if present.

On most of the lakes Muscovy ducks (*Cairina moschata*) were observed. This is a non-native species that can readily overpopulate if not humanely controlled. It is critically important to educate the residents to not feed the ducks. Feeding bread to ducks and other wildfowl is bad for them; bread is not part of their natural diet and often leaves them with nutrient deficiencies. It is also bad for the water in the lakes. Feeding ducks attracts more ducks and other birds beyond what the natural resources of a lake can sustain. This overpopulation creates pollution in the form of droppings (fecal coliform) and uneaten bread that sinks to the bottom, causing siltation. Rotting food in lakes increases the nutrient level in the water which encourages algae to grow and reduces oxygen. Rotting food also helps diseases and parasites to breed. Uneaten bread left on land encourages rats, raccoons, possums and other vermin. Town residents should not feed ducks and other wildlife. To humanely control the population of the non-native ducks and geese in the lakes, lawn or lake maintenance contractors, or other trained staff, can collect eggs for humane disposal. Additionally, any dead animals should be reported and immediately and properly be disposed of. Professional firms can be hired that can humanly capture injured, unhealthy, aggressive or unsustainable large populations.

The littoral zone of a lake is the shallow area nearest the shore where enough sunlight penetrates the water to provide aquatic plants with adequate light for photosynthesis. The littoral zone is the most biologically active area of a lake. Vegetated littoral zones improve the chemical processes that take place within a lake. Plants in littoral zones slow and filter runoff water while reducing erosion, which decreases the amount of pollutants that enter a lake. Aquatic plants also remove nutrients from water, which can reduce the likelihood and severity of algal blooms. Vegetated littoral zones also stabilize sediments, helping to improve water clarity, and they provide a physical barrier along shorelines that helps protect shorelines from waves that may cause erosion. Within the Town there are approximately 20 lakes that have littoral areas available for planting. It was observed that other than a few scattered plants the littoral areas in the lakes were not vegetated. It would be advantageous to provide some littoral plantings. The Best Management Practices report accompanying this document provides a list of native plants that successfully grow within and along littoral zones in lakes of South Florida and a list of the lakes where plantings could be done.

Construction was observed on the northeastern and southern sides of Lake Graham Dairy. Ground disturbance was observed with no preventative measures to reduce turbidity in the lake. Typically, best management practices at an active construction site with disturbed earth includes sod, silt fence, staked turbidity barriers, or floating turbidity barrier. These measures would prevent run-off from washing disturbed soil into the water body. Depending on the size of the construction project an NPDES permit would be required prior to construction. If the site is less than 1 acre then a permit is not required, but best management practices are still required.

7.0 WATER SAMPLING AND TESTING

With closed system lakes it is imperative to control the sediment build-up and the nutrient introduction into the lakes. Water sampling and testing provides information on sedimentation and nutrient loads. A component of this current investigation included water sampling and testing for 30 of the lakes investigated, due to access limitations, sampling/testing was not conducted on Unnamed Lake ML06. One sample per lake was taken and examined for the following parameters:

pH	Alkalinity
Biochemical Oxygen Demand (BOD)	Dissolved Oxygen
Hardness	Transparency
Copper	Zinc
Total Suspended Solids	Total Nitrogen
Total Phosphorus	Fecal Coliform Bacteria
Temperature	

All surface waters in the State have been classified according to designated uses as shown below in Table 3. State Surface Water Classifications.

TABLE 3. State Surface Water Classifications	
CLASS I	Potable Water Supplies
CLASS I-Treated	Treated Potable Water Supplies
CLASS II	Shellfish Propagation or Harvesting
CLASS III	Fish Consumption; Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife
CLASS III-Limited	Fish Consumption; Recreation or Limited Recreation; and/or Propagation and Maintenance of a Limited Population of Fish and Wildlife
CLASS IV	Agricultural Water Supplies
CLASS V	Navigation, Utility and Industrial Use

The lakes within the Town are all classified as Class III waters. The specified water quality criteria corresponding to each surface water classification is listed in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.). Below is an overview of each of the parameters tested and the results including the F.A.C. Surface Water Quality Criteria for Class III waters where applicable. Exhibit G. Miami Lakes Water Quality Testing Summary, contains the tables with the testing results presented per each lake individually. Exhibit H. Lake Testing Results Comparitive Table, presents all testing results for all lakes in one side by side comparison table. Exhibit I. 2018 Water Quality Sampling Stations, shows the locations where the water samples where taken.

Temperature

Temperature taken at each lake, in degrees Celsius, ranged from a low of 29.3°C (84.74°F) in Lake Mary ML23 and Loch Isle ML22, to a high of 34.1°C (93.38°F) in Lake Silvercrest North ML07. The average temperature for all the lakes was 31.33°C (88.39 °F). The warmer the water is in a lake the less dissolved oxygen it can hold. Table 4. Lake Temperature Readings, presents these readings.

TABLE 4. Lake Temperature Readings					
Lake Name	**Lake #**	**Temp°C**	**Lake Name**	**Lake #**	**Temp°C**
Lake Michael	ML01	31.4	Lake Silvercrest South	ML18	30.9
Lake Valerie	ML02	31.4	Lake Windmill West	ML19	31.6
Lake Rose Ann	ML03	33.0	Loch Lomond East	ML20	31.4
Lake Gloria	ML04	31.9	Loch Lomond West	ML21	30.8
Unnamed Lake	ML06	N/A	Loch Isle	ML22	29.3
Lake Silvercrest North	ML07	34.1	Lake Mary	ML23	29.3
Lake Glenn Ellen	ML08	31.5	Lake Martha	ML24	31.2

Lake Cynthia	ML09	31.2	Lake Suzie	ML25	30.1
Lake Sandra	ML10	30.2	Lake Sarah	ML26	31.0
Lake Carol	ML11	32.9	Lake Adele	ML27	31.6
Lake Elizabeth	ML12	32.5	Lake Hilda	ML28	31.1
Lake Graham Dairy	ML13	32.1	Lake Patricia	ML29	31.4
Loch Doon	ML14	30.3	Lake Katharine	ML30	31.3
Loch Ness	ML15	30.5	Lake Ruth	ML31	30.7
Loch Lomond	ML16	30.8	Lake Windmill East	ML32	33.1
Loch Andrews	ML17	31.2			

pH Levels

pH is a measure of how acidic or basic water is. The range goes from 0 - 14, with 7 being neutral. pHs of less than 7 indicates acidity, and a pH of greater than 7 indicates a base. pH measures the relative amount of free hydrogen and hydroxyl ions in the water which then determines the solubility and biological availability of chemical constituents such as nutrients (phosphorus, nitrogen, and carbon) and heavy metals (lead, copper, cadmium, etc.). In addition to affecting how much and what form of phosphorus is most abundant in the water, pH also determines whether aquatic life can use it. In the case of heavy metals, the degree to which they are soluble determines their toxicity. Metals tend to be more toxic at lower pH because they are more soluble.

The Surface Water Quality Criteria for Class III waters in F.A.C. 62-302.530 (52)(c) for pH states: **"**Shall not vary more than one unit above or below natural background of predominantly fresh waters and coastal waters as defined in paragraph 62-302.520(3)(b), F.A.C. or more than two-tenths unit above or below natural background of open waters as defined in paragraph 62-302.520(3)(f), F.A.C., provided that the pH is not lowered to less than 6 units in predominantly fresh waters, or less than 6.5 units in predominantly marine waters, or raised above 8.5 units. If natural background is less than 6 units, in predominantly fresh waters or 6.5 units in predominantly marine waters, the pH shall not vary below natural background or vary more than one unit above natural background of predominantly fresh waters and coastal waters, or more than two-tenths unit above natural background of open waters. If natural background is higher than 8.5 units, the pH shall not vary above natural background or vary more than one unit below natural background of predominantly fresh waters and coastal waters, or more than two-tenths unit below natural background of open waters."

The optimal is to maintain a neutral pH of 7, the recommended range to maintain healthy systems is 6.5 to 8.5. Lake Martha had the lowest reading with a pH of 7.75. There are nine lakes within the Town that registered a pH of 8.5: Lake Michael ML01, Valerie ML02, Lake Gloria ML04, Silvercrest North ML07, Glenn Ellen ML08, Elizabeth ML12, Graham Dairy ML13, Silvercrest South ML18 and Loch Lomond West ML21. Each of these Lakes should have routine pH testing conducted to monitor the pH to see if any of these lakes may trend to exceed the optimal pH level. If any lake trends above the 8.5 level, discussions with the lake maintenance contractors on appropriate steps to incrementally reduce and maintain the lake at the healthy levels should be conducted. The remainder of the lakes in the Town registered a pH of 8.0 except Lake Sandra ML10 with a pH of 8.3. Table 5. Lake Testing Readings for pH, presents the testing results.

TABLE 5. Lake Testing Readings for pH					
Lake Name	**Lake #**	**pH**	**Lake Name**	**Lake #**	**pH**
Lake Michael	ML01	8.5	Lake Silvercrest South	ML18	8.5
Lake Valerie	ML02	8.5	Lake Windmill West	ML19	8.0
Lake Rose Ann	ML03	8.0	Loch Lomond East	ML20	8.0
Lake Gloria	ML04	8.5	Loch Lomond West	ML21	8.5
Unnamed Lake	ML06	N/A	Loch Isle	ML22	8.0
Lake Silvercrest North	ML07	8.5	Lake Mary	ML23	8.0
Lake Glenn Ellen	ML08	8.5	Lake Martha	ML24	7.75
Lake Cynthia	ML09	8.0	Lake Suzie	ML25	8.0
Lake Sandra	ML10	8.3	Lake Sarah	ML26	8.0
Lake Carol	ML11	8.0	Lake Adele	ML27	8.0
Lake Elizabeth	ML12	8.5	Lake Hilda	ML28	8.0
Lake Graham Dairy	ML13	8.5	Lake Patricia	ML29	8.0
Loch Doon	ML14	8.0	Lake Katharine	ML30	8.0
Loch Ness	ML15	8.0	Lake Ruth	ML31	8.0
Loch Lomond	ML16	8.0	Lake Windmill East	ML32	8.0
Loch Andrews	ML17	8.0			

Alkalinity

Alkalinity is the capacity of water to resist changes in pH that would make water more acidic. It is measured in milligrams/Liter as $CaCO_3$ (calcium carbonate). The Surface Water Quality Criteria for Class III waters in F.A.C. 62-302.530 (1) states "Shall not be depressed below 20 mg/L. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%."

Loch Lomond West ML21 measured lowest at 85mg/L, Lake Windmill West ML19 measures highest at 300mg/L. The majority of the lakes, 22 of them, measured between 100 and 140mg/L with the 7 remaining lakes measuring between 180 to 260 mg/L. Table 6. Lake Testing Readings for Alkalinity, presents the testing results.

TABLE 6. Lake Testing Readings for Alkalinity					
Lake Name	**Lake #**	**Alka mg/L**	**Lake Name**	**Lake #**	**Alka mg/L**
Lake Michael	ML01	120	Lake Silvercrest South	ML18	125
Lake Valerie	ML02	100	Lake Windmill West	ML19	300
Lake Rose Ann	ML03	100	Loch Lomond East	ML20	122
Lake Gloria	ML04	260	Loch Lomond West	ML21	85
Unnamed Lake	ML06	N/A	Loch Isle	ML22	100
Lake Silvercrest North	ML07	180	Lake Mary	ML23	140
Lake Glenn Ellen	ML08	140	Lake Martha	ML24	115
Lake Cynthia	ML09	120	Lake Suzie	ML25	115
Lake Sandra	ML10	110	Lake Sarah	ML26	145

Lake Carol	ML11	120	Lake Adele	ML27	100
Lake Elizabeth	ML12	140	Lake Hilda	ML28	100
Lake Graham Dairy	ML13	120	Lake Patricia	ML29	110
Loch Doon	ML14	180	Lake Katharine	ML30	125
Loch Ness	ML15	200	Lake Ruth	ML31	180
Loch Lomond	ML16	120	Lake Windmill East	ML32	200
Loch Andrews	ML17	100			

Hardness

Hard water is water that has a high mineral content. The more calcium and magnesium dissolved in the water, the harder the water becomes. General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;
61 to 120 mg/L as moderately hard;
121 to 180 mg/L as hard; and
Greater than 180 mg/L as very hard.

One lake, Loch Isles ML22, tested at 80 mg/L registering as moderately hard on the low end of the scale, and two lakes, Loch Doon ML 14 and Lake Ruth ML31, tested at 200 mg/Liter registering as very hard water on the high end of the scale. Within the lakes tested the majority, 18 Lakes, ranged from 100 to 120 mg/L registering as moderately hard water and the remaining 9 lakes ranged from 140 to 180 mg/L as hard water. Table 7. Lake Testing Readings for Hardness, presents the testing results.

Table 7. Lake Testing Readings for Hardiness

Lake Name	Lake #	Hardness mg/L	Lake Name	Lake #	Hardness mg/L
Lake Michael	ML01	100	Lake Silvercrest South	ML18	120
Lake Valerie	ML02	100	Lake Windmill West	ML19	120
Lake Rose Ann	ML03	180	Loch Lomond East	ML20	120
Lake Gloria	ML04	140	Loch Lomond West	ML21	100
Unnamed Lake	ML06	N/A	Loch Isle	ML22	80
Lake Silvercrest North	ML07	120	Lake Mary	ML23	160
Lake Glenn Ellen	ML08	140	Lake Martha	ML24	100
Lake Cynthia	ML09	160	Lake Suzie	ML25	120
Lake Sandra	ML10	100	Lake Sarah	ML26	180
Lake Carol	ML11	100	Lake Adele	ML27	140
Lake Elizabeth	ML12	200	Lake Hilda	ML28	180
Lake Graham Dairy	ML13	100	Lake Patricia	ML29	120
Loch Doon	ML14	200	Lake Katharine	ML30	120
Loch Ness	ML15	100	Lake Ruth	ML31	200
Loch Lomond	ML16	100	Lake Windmill East	ML32	100
Loch Andrews	ML17	100			

Biochemical Oxygen Demand (BOD) (mg/L)

Organic materials in the water are decomposed by microorganisms which use oxygen in the process. The amount of oxygen consumed by these organisms in breaking down the waste is known as the biochemical (or biological) oxygen demand or BOD. BOD also measures the chemical oxidation of inorganic matter (i.e., the extraction of oxygen from water via chemical reaction). The BOD value is most commonly expressed in milligrams of oxygen consumed per liter of sample during 5 days of incubation at 20° C and is often used as a surrogate of the degree of organic pollution of water. Stormwater runoff can contribute large amounts of BOD to surface water systems.

BOD directly affects the amount of dissolved oxygen (DO) in surface waters. The greater the BOD, the more rapidly oxygen is depleted, resulting in less oxygen available to higher forms of aquatic life. The consequences of high BOD are the same as those for low dissolved oxygen: aquatic organisms become stressed, suffocate, and die. BOD levels at a sampling site with slower, deeper waters might be higher for a given volume of organic and inorganic material than the levels for a similar site in highly aerated waters.

General considerations are that pristine waters will have a 5-day carbonaceous BOD below 1 mg/L, moderately polluted surface waters may have a BOD value in the range of 2 to 8 mg/L, and surface waters may be considered severely polluted when BOD values exceed 8 mg/L.

Seven lakes in the Town registered at a level of 2.0 ranging up to 2.8 mg/L. The remaining lakes in the Town all registered less than 2 mg/L. All lakes tested well on the BOD scale. Increased aeration in the lakes will contribute to keeping these scores low.

The Surface Water Quality Criteria for Class III waters in F.A.C. 62-302.530 (11) does not establish a specific level but states: **"**Shall not be increased to exceed values which would cause dissolved oxygen to be depressed below the limit established for each class and, in no case, shall it be great enough to produce nuisance conditions." Table 8. Lake Testing Readings for BOD, presents the testing results.

TABLE 8. Lake Testing Readings for BOD

Lake Name	Lake #	BOD mg/L	Lake Name	Lake #	BOD mg/L
Lake Michael	ML01	<2.0	Lake Silvercrest South	ML18	<2.0
Lake Valerie	ML02	<2.0	Lake Windmill West	ML19	<2.0
Lake Rose Ann	ML03	<2.0	Loch Lomond East	ML20	<2.0
Lake Gloria	ML04	<2.0	Loch Lomond West	ML21	<2.0
Unnamed Lake	ML06	N/A	Loch Isle	ML22	<2.0
Lake Silvercrest North	ML07	<2.0	Lake Mary	ML23	<2.0
Lake Glenn Ellen	ML08	<2.0	Lake Martha	ML24	<2.0
Lake Cynthia	ML09	<2.0	Lake Suzie	ML25	<2.0
Lake Sandra	ML10	<2.0	Lake Sarah	ML26	<2.0
Lake Carol	ML11	<2.0	Lake Adele	ML27	<2.0
Lake Elizabeth	ML12	2.3	Lake Hilda	ML28	2.2
Lake Graham Dairy	ML13	2.2	Lake Patricia	ML29	<2.0
Loch Doon	ML14	<2.0	Lake Katharine	ML30	<2.0
Loch Ness	ML15	2.0	Lake Ruth	ML31	2.3

Loch Lomond	ML16	2.8	Lake Windmill East	ML32	<2.0
Loch Andrews	ML17	2.1			

Dissolved Oxygen

Dissolve Oxygen (DO) is an important indicator of the health of a water body and its capacity to support a balanced aquatic ecosystem of plants and animals. For dissolved Oxygen the Surface Water Quality Criteria for Class III waters in F.A.C. 62-302.530 (30) states: "See Rule 62-302.533, F.A.C." which states: 62-302.533 Dissolved Oxygen Criteria for Class I, Class II, Class III, and Class III-Limited Waters.

(1) Class I, Class III predominantly freshwaters, and Class III-Limited predominantly freshwaters.

(a) No more than 10 percent of the daily average percent dissolved oxygen (DO) saturation values shall be below the following values:

2. 38 percent in the Peninsula and Everglades bioregions (the applicable region for the Town of Miami Lakes)

Generally, it is considered that DO levels below 3 milligrams per liter (mg/L) are of concern and waters with levels below 1 mg/L are considered hypoxic and usually devoid of life.

The DO levels in the Town's Lakes range from 3.24 to 9.72 mg/L. Loch Ness ML05 registered at 3.24, Lake Ruth ML32 registered at 3.5, Lake Carol ML11 registered at 3.58, and Lake Elizabeth ML12 registered at 3.69, these were the lakes with the lowest scores that should be monitored for any trends in DO levels. Table 9. Lake Testing Readings for DO, presents the testing results.

TABLE 9. Lake Testing Readings for DO

Lake Name	Lake #	DO mg/L	Lake Name	Lake #	DO mg/L
Lake Michael	ML01	7.2	Lake Silvercrest South	ML18	7.73
Lake Valerie	ML02	7.9	Lake Windmill West	ML19	8.57
Lake Rose Ann	ML03	9.2	Loch Lomond East	ML20	7.65
Lake Gloria	ML04	6.78	Loch Lomond West	ML21	8.36
Unnamed Lake	ML06	N/A	Loch Isle	ML22	7.38
Lake Silvercrest North	ML07	8.91	Lake Mary	ML23	7.58
Lake Glenn Ellen	ML08	7.41	Lake Martha	ML24	6.5
Lake Cynthia	ML09	9.72	Lake Suzie	ML25	7.5
Lake Sandra	ML10	7.35	Lake Sarah	ML26	7.32
Lake Carol	ML11	3.58	Lake Adele	ML27	8.57
Lake Elizabeth	ML12	3.69	Lake Hilda	ML28	6.15
Lake Graham Dairy	ML13	4.1	Lake Patricia	ML29	6.58
Loch Doon	ML14	5.2	Lake Katharine	ML30	6.95
Loch Ness	ML15	3.24	Lake Ruth	ML31	3.5
Loch Lomond	ML16	5.15	Lake Windmill East	ML32	6.81
Loch Andrews	ML17	7.08			

Total Copper (mg/L)

Copper has been used for many years as a chemical tool in freshwater ponds and aquaculture operations. It is both an effective algaecide and a parasite treatment. The problem with the use of copper is that there is a thin line separating effective treatment levels from overdoses, which can kill fish.

The Surface Water Quality Criteria for Class III waters in F.A.C. 62-302.530 (23) established the level as Cu $\leq e^{(0.8545[\ln H]-1.702)}$ and refers to notes (1) and (3), as follows:

> Note (1) "ln H" means the natural logarithm of total hardness expressed as milligrams/L of $CaCO_3$. For metals criteria involving equations with hardness, the hardness shall be set at 25 mg/L if actual hardness is < 25 mg/L and set at 400 mg/L if actual hardness is > 400 mg/L.
>
> Note (3) For application of dissolved metals criteria see paragraph 62-302.500(2)(d), F.A.C (which states "Criteria for metals in Rule 62-302.530 and paragraph 62-302.500(1)(c), F.A.C., are measured as total recoverable metal. However, cadmium, chromium, copper, lead, nickel, silver, and zinc may be applied as dissolved metals when, as part of a permit application, a dissolved metals translator has been established according to the procedures described in the document, "Guidance for Establishing a Metals Translator", Florida Department of Environmental Protection, December 17, 2001.)

For reference the Miami-Dade Code of Ordinances, Article III, Water and Soil Quality, Division 1. Sec. 24-42. (4) Water Quality Standards for Miami-Dade County, establishes a copper level of 4mg/l (400 µg/L) for freshwaters.

The copper levels in the lakes in the Town varied from 2.8 to 56.9 µ/L. Table 10. Lake Testing Readings for Copper Levels, presents the testing results.

TABLE 10. Lake Testing Readings for Copper Levels

Lake Name	Lake #	Cu µ/L	Lake Name	Lake #	Cu µ/L
Lake Michael	ML01	34.2	Lake Silvercrest South	ML18	11.3
Lake Valerie	ML02	47.3	Lake Windmill West	ML19	3.1
Lake Rose Ann	ML03	2.7	Loch Lomond East	ML20	28.5
Lake Gloria	ML04	6.7	Loch Lomond West	ML21	11.4
Unnamed Lake	ML06	N/A	Loch Isle	ML22	13.2
Lake Silvercrest North	ML07	10.3	Lake Mary	ML23	17
Lake Glenn Ellen	ML08	2.8	Lake Martha	ML24	49.2
Lake Cynthia	ML09	16.9	Lake Suzie	ML25	38.6
Lake Sandra	ML10	9.6	Lake Sarah	ML26	37.2
Lake Carol	ML11	17.5	Lake Adele	ML27	47.3
Lake Elizabeth	ML12	15.5	Lake Hilda	ML28	43.5
Lake Graham Dairy	ML13	3.4	Lake Patricia	ML29	74.2
Loch Doon	ML14	15.2	Lake Katharine	ML30	56.9
Loch Ness	ML15	48.6	Lake Ruth	ML31	28.6
Loch Lomond	ML16	10.6	Lake Windmill East	ML32	7.8
Loch Andrews	ML17	15.2			

The three lakes that tested highest on copper included Loch Ness ML15 testing at 48.6 µ/L, Lake Martha ML24 testing at 49.2 µ/L, and Lake Katharine ML30 testing at 56.9 µ/L. Overall most lakes tested high for copper and should continue to be monitored for this element.

Total Nitrogen (as N) (mg/L) and Total Phosphorus (mg/L)

Nutrient over-enrichment causes the impairment of many surface waters. The two major nutrient groups that are monitored include nitrogen (N) and phosphorus (P). Both N and P are essential nutrients to plant life, including algae. For aquatic vegetation and algae to grow, both nutrients have to be present. In fact, one can be present in excess but if the other is not present, overgrowth of vegetation or algae is not likely to occur.

Nitrogen (N) is one of the most abundant elements. About 80 percent of the air we breathe is nitrogen. It is found in the cells of all living things and is a major component of proteins. Inorganic nitrogen may exist in the free-state as a gas (N_2), or as nitrate (NO_3^-), nitrite (NO_2^-), or ammonia (NH_3^+). Organic nitrogen is found in proteins and is continually recycled by plants and animals.

Nitrogen containing compounds act as nutrients in streams and rivers. Nitrate reactions in water can cause oxygen depletion. Together with phosphorus, nitrates in excess amounts can accelerate eutrophication. This, in turn, affects dissolved oxygen, temperature, and other indicators. Excess nitrates can cause hypoxia (low levels of dissolved oxygen).

Phosphorus, the other essential nutrient governing algal growth in aquatic systems, has a critical concentration that is much lower than the nitrogen threshold. Phosphorus in water can originate from natural sources, primarily phosphate-rich clay and dolomite. Anthropogenic sources of phosphorus include fertilizer, animal waste, human wastewater and bio-solids, and industrial wastewater effluent.

Phosphorus is a key element of concern because the natural occurrence of P in surface water bodies is minimal. Even a minute amount of phosphorus entering or becoming soluble in a water body can trigger a significant algal boom (although nitrogen (N) and carbon (C) are also required for algal growth).

Phosphorus is one of the key elements necessary for growth of plants and animals. In nature, phosphorus usually exists as part of a phosphate molecule (PO_4). Phosphates exist in three forms: orthophosphate (inorganic phosphorus), metaphosphate (or polyphosphate) and organically-bound phosphate. Each compound contains phosphorus in a different chemical arrangement. Phosphate that is not associated with organic material is considered inorganic. Inorganic phosphorus is the form required by plants. Animals can use either organic or inorganic phosphate.

The Surface Water Quality Criteria for Class III waters in F.A.C. 62-302.530 does not have a category specific to Total Nitrogen (TN) or for Total Phosphorus (TP). It does however have a category for Nutrients under 62-302.530 (48)(a) which states “The discharge of nutrients shall continue to be limited as needed to prevent violations of other standards contained in this chapter. Man-induced nutrient enrichment (total nitrogen or total phosphorus) shall be considered degradation in relation to the provisions of Rules 62-302.300, 62-302.700, and 62-4.242”; and under 62-302.530(48)(b) which states “In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna.”

Numeric Interpretations of Narrative Nutrient Criteria found in F.A.C. 62-302.531 (2)(c) relating to TN and TP for the South Florida Regions states "No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(48)(b), F.A.C., applies."

For informational reference the complete table from 62-302.531 (2)(c) is provided below showing criteria for all regions in the state. Table 11. Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c).

TABLE 11. Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c)		
Nutrient Watershed/Region	Total Phosphorus Nutrient Threshold[1]	Total Nitrogen Nutrient Threshold[1]
Panhandle West	0.06 mg/L	0.67 mg/L
Panhandle East	0.18 mg/L	1.03 mg/L
North Central	0.30 mg/L	1.87 mg/L
Peninsular	0.12 mg/L	1.54 mg/L
West Central	0.49 mg/L	1.65 mg/L
South Florida	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(48)(b), F.A.C., applies.	No numeric nutrient threshold. The narrative criterion in paragraph 62-302.530(48)(b), F.A.C., applies.

When compared to the criteria established for the other regions in the state the TN and TP levels in the Town's lakes register favorably below the state criteria. Table 12. Lake Testing Readings for TN and TP, presents the testing results.

TABLE 12. Lake Testing Readings for TN and TP

Lake Name	Lake #	TN mg/L	TP mg/L	Lake Name	Lake #	TN mg/L	TP mg/L
Lake Michael	ML01	0.43	0.0047	Lake Silvercrest South	ML18	0.47	0.0097
Lake Valerie	ML02	0.43	0.0081	Lake Windmill West	ML19	0.47	0.0091
Lake Rose Ann	ML03	0.39	0.0061	Loch Lomond East	ML20	0.49	0.014
Lake Gloria	ML04	0.48	0.005	Loch Lomond West	ML21	0.26	0.0067
Unnamed Lake	ML06	N/A	N/A	Loch Isle	ML22	0.37	0.021
Lake Silvercrest North	ML07	0.36	0.0096	Lake Mary	ML23	0.39	0.016
Lake Glenn Ellen	ML08	0.55	0.0065	Lake Martha	ML24	0.47	0.021
Lake Cynthia	ML09	0.37	0.0074	Lake Suzie	ML25	0.45	0.0077
Lake Sandra	ML10	0.42	0.018	Lake Sarah	ML26	0.43	0.012
Lake Carol	ML11	0.45	0.0064	Lake Adele	ML27	0.43	0.0081
Lake Elizabeth	ML12	0.77	0.013	Lake Hilda	ML28	0.76	0.023
Lake Graham Dairy	ML13	0.73	0.018	Lake Patricia	ML29	0.36	0.013
Loch Doon	ML14	1.1	0.011	Lake Katharine	ML30	0.29	0.0095
Loch Ness	ML15	1.2	0.022	Lake Ruth	ML31	0.99	0.012
Loch Lomond	ML16	0.53	0.011	Lake Windmill East	ML32	0.51	0.02
Loch Andrews	ML17	0.52	0.021				

Total Suspended Solids (TSS) (mg/L)
Suspended solids include silt and clay particles, plankton, algae, fine organic debris, and other particulate matter. These are particles that will not pass through a 2-micron filter. Suspended solids can serve as carriers for organic compounds. Total solids (especially suspended solids) affect water clarity. High levels of solids decrease the passage of light through water, thereby slowing photosynthesis of submersed aquatic plants. Water also heats up more rapidly and holds more heat as total dissolved solids increase.

The Surface Water Quality Criteria for Class III waters in F.A.C. 62-302.530 does not have a category or criteria specific to Total Suspended Solids. Every lake in the Town registered a TSS level of less than 5 mg/L. Generally, good TSS levels are considered those below 25 mg/L.

Total Zinc (µg/L)
Zinc is found naturally at low concentrations in many rocks and soils principally as sulphide ores and to a lesser degree as carbonates. Drinking water containing high levels of zinc can lead to stomach cramps, nausea and vomiting. Water with a zinc concentration of more than 5 milligrams/L may start to be become chalky in appearance with a detectable deterioration in taste. Although zinc is an essential requirement for good health, excess zinc can be harmful. Excessive absorption of zinc suppresses copper and iron absorption. The free zinc ion in solution is highly toxic to plants, invertebrates, and even vertebrate fish.

The Surface Water Quality Criteria for Class III waters in F.A.C. 62-302.530 (71) established a level of $\leq$ 86 micrograms/liter. Every lake in the Town registered a zinc level of less than 11 micrograms/Liter, well under the state criteria.

Microbial Bacteria (fecal coliform)
The United States Environmental Protection Agency (EPA) recommends the use of the fecal indicator bacteria (FIB) Escherichia coli (E. coli) and enterococci to determine the level of fecal contamination present in environmental waters. Enterococci and E. coli are bacteria found in the intestines of all warm-blooded animals, including humans. Because these bacteria are easy to detect and commonly found in animal and human waste, they are used as indicators of recreational water quality conditions. High concentrations of these bacteria may indicate the presence of microorganisms that could cause disease, infections, or rashes. Enterococci are typically not considered harmful to humans, but their presence in the environment may indicate that other disease-causing agents such as viruses, bacteria, and protozoa may also be present.

Typical sources of fecal indicator bacteria include wastewater treatment plant effluent, leaking septic systems, stormwater runoff, sewage discharged or dumped from recreational boats, domestic animal and wildlife waste, improper land application of manure or sewage, and runoff from manure storage areas, pastures, rangelands, and feedlots. Pets, especially dogs, can contribute to fecal contamination of surface waters. Runoff from roads, parking lots, and yards can carry animal wastes to ponds through storm sewers. Birds can be a significant source of fecal coliform bacteria. Waterfowl can elevate bacterial counts, especially in wetlands, lakes and ponds. There are also natural, non-fecal sources of fecal indicator bacteria, including plants, sand, soil and sediments, that contribute to a certain background level in ambient waters and vary based on local environmental and meteorological conditions.

The following water quality classifications are used by the Florida Department of Health and are based upon the United States Environmental Protection Agency (EPA) recommended standard for enterococci. The classification standard is:

GOOD: 0-35 colony forming units (CFU) per 100 milliliters (ml) of marine water,
MODERATE: 36-70 CFU per 100 ml of marine water,
POOR: greater than 70 CFU per 100 ml of marine water.

Test results are a reflection of a water sample taken at a point in time. As such, bacteria levels may change between testing periods. For example, significant rainfall with storm water runoff between testing periods may result in elevated levels of enterococci bacteria in the water.

The testing conducted in the Towns Lakes measured fecal coliform. Bacterial testing is measured in colony forming units (CFU) per 100 mL. The Surface Water Quality Criteria in F.A.C. 62-302.530 (6)(a) for fecal coliform bacteria does not provide standards for Class III waters. For reference the standard established for Class II waters for fecal coliform states "Most Probable Number (MPN) or Membrane Filter (MF) counts shall not exceed a median value of 14 with not more than 10% of the samples exceeding the Ten Percent Threshold Value (TPTV) of 43 (for MPN) or 31 (for MF), nor exceed 800 on any one day. To determine the percentage of samples exceeding the criteria when there are both MPN and MF samples for a waterbody, the percent shall be calculated as $100*(n_{mpn}+n_{mf})/N$, where n_{mpn} is the number of MPN samples greater than 43, n_{mf} is the number of MF samples greater than 31, and N is the total number of MPN and MF samples."

The Surface Water Quality Criteria for Class III waters in F.A.C. 62-302.530 (6)(b) for *Escherichia coli* bacteria, as measured in number per 100 ml (Most Probable Number (MPN) or Membrane Filter (MF)), states "MPN or MF counts shall not exceed a monthly geometric mean of 126 nor exceed the Ten Percent Threshold Value (TPTV) of 410 in 10% or more of the samples during any 30-day period. Monthly geometric means shall be based on a minimum of 10 samples taken over a 30-day period."

The Surface Water Quality Criteria in F.A.C. 62-302.530 (6)(c) for *Enterococci* bacteria does not provide standards for Class III waters. For reference the standards established for Class II and Class III limited waters is "MPN or MF counts shall not exceed a monthly geometric mean of 35 nor exceed the Ten Percent Threshold Value (TPTV) of 130 in 10% or more of the samples during any 30-day period. Monthly geometric means shall be based on a minimum of 10 samples taken over a 30-day period."

It is important to note that a single sample is a snapshot at that one point in time in that one specific location. Fecal coliform counts can vary greatly location to location. Fecal coliform counts can vary greatly sample to sample, that is why the state established criteria based on geometric means of samples. An example being a test result for Lake Patricia ML29 indicated a result of TNTC - Too Numerous to Count for Enterococci from a sample taken on 8/22/18 by the Miami-Dade Health Department, but the sample taken on 8/15/18 reported 25 CFU for the parameter fecal coliform. See Exhibit J. Miami-Dade Testing Result for Lake Patricia.

The table below shows the results of testing for fecal coliform in the lakes. Several of the lakes tested at high numbers, two lakes in particular, Lake Rose Ann ML03 at 1,490 and Loch Ness ML15 at 1,080. Routine testing on the lakes should be conducted for fecal coliform to see if long term trends consistently indicated elevated levels. Table 13. Lake Testing Readings for Fecal coliform, presents the testing results.

TABLE 13. Lake Testing Readings for Fecal Coliform					
Lake Name	**Lake #**	**Fecal coliform CFU/100mL**	**Lake Name**	**Lake #**	**Fecal coliform CFU/100mL**
Lake Michael	ML01	157	Lake Silvercrest South	ML18	160
Lake Valerie	ML02	2	Lake Windmill West	ML19	690
Lake Rose Ann	ML03	1490	Loch Lomond East	ML20	62
Lake Gloria	ML04	920	Loch Lomond West	ML21	320
Unnamed Lake	ML06	N/A	Loch Isle	ML22	600
Lake Silvercrest North	ML07	620	Lake Mary	ML23	770
Lake Glenn Ellen	ML08	910	Lake Martha	ML24	3
Lake Cynthia	ML09	115	Lake Suzie	ML25	290
Lake Sandra	ML10	84	Lake Sarah	ML26	145
Lake Carol	ML11	8	Lake Adele	ML27	2
Lake Elizabeth	ML12	140	Lake Hilda	ML28	390
Lake Graham Dairy	ML13	82	Lake Patricia	ML29	25
Loch Doon	ML14	600	Lake Katharine	ML30	<2.0
Loch Ness	ML15	1080	Lake Ruth	ML31	64
Loch Lomond	ML16	600	Lake Windmill East	ML32	23
Loch Andrews	ML17	810			

Miami Dade County conducts water quality testing on a monthly basis in the canal system adjacent to Lake Ruth and has provided the water quality data from July of 2013 through March of 2018. The table below, Table 14. Miami-Dade 2108 Testing Results for Lake Ruth, provides the testing data for 2018 for the parameters that correlate to the sampling the Town recently conducted. As mentioned above, the Fecal coliform levels in this testing varied from 89 CFU/100 ML in March to 460 CFU/100 ML in January. The complete set of results for Lake Ruth from Miami-Dade testing can found in Exhibit K. Miami-Dade Testing Results for Lake Ruth.

TABLE 14. Miami-Dade 2018 Testing Results for Lake Ruth				
Parameter	**Units**	**1/8/2018**	**2/12/2018**	**3/5/2018**
Phosphorus, Total (TP)	mg/L	0.007		0.012
Depth	m	2.015	2.004	1.772
Dissolved Oxygen (Fld)	mg/L	5.2	4.49	6.32
Dissolved Oxygen (Fld)	mg/L	5.63	4.99	6.35
Dissolved Oxygen (Fld)	mg/L	5.65	5.04	6.55
pH (Field)		7.65	7.64	7.8
pH (Field)		7.66	7.65	7.84
pH (Field)		7.66	7.66	8.02
Temperature (Field)	C	18.5	24.1	22.9
Temperature (Field)	C	18.8	24.4	23
Temperature (Field)	C	18.8	24.6	23.1
DO%	%	55.7	53.5	73.7

DO%	%	60.5	59.9	74.3
DO%	%	60.7	60.7	76.3
Escherichia Coli	MPN/100ML	86	160	52
Fecal Coliform	CFU/100 ML	460	420	89
Total Suspended Solids (TSS)	mg/L			2.5
Copper	ug/L			4
Zinc	ug/L			8

8.0 TOWN LAKE MANAGEMENT RECOMMENDATIONS

A myriad of factors influence considerations on swimming in urban lakes. Regarding bacterial levels, as stated previously in this document, a single sample is a snapshot at that one point in time in that one specific location. Fecal coliform counts vary greatly location to location. Even if the Town has a sample result that comes back identifying low fecal bacterial levels that is not an assurance that levels are not high in a different location on that lake based on factors that may affect other locations, such as the presence of water fowl or outfalls. The Town also does not have immediate knowledge of activities on private yards that may affect water quality in the near shore waters, or on the activities or recent treatments by lake maintenance firms under contract by private HOA's. In addition to the water quality considerations, there are concerns for dangerous wildlife such as alligators or venomous water moccasin (Cottonmouth) snakes, both prevalent species in south Florida. With an inability to monitor or know local conditions throughout every lake at all times the Town should prudently take the approach to advise residents and guests to swim in the lakes at their own risk and can take the conservative approach to post no swimming signs on the Town owned waterfront park sites.

To maintain the health of the Town's lakes it is imperative to control sediment and nutrient introduction into the lakes. Both are interrelated. Controlling invasive and excessive plant growth and providing aeration are also important. Following are recommendations for the Town to address these and other concerns along with a perform measures to assist in tracking Best Management Practices implementation.

Street Sweeping: Street Sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. Town roads not included in the current street sweeping program that have drainage connected to outfalls into the lakes should be added to the street sweeping program. For private roads, the Town should work with the HOA's to establish a cooperative or regulatory mechanism to have all streets with drainage systems interconnected to lake outfalls incorporated into a street sweeping program. The Town should require a reporting mechanism for private street weeping activities.

Performance Measures:
Increase in miles of Town roads covered in the street sweeping program, addition of private roads.
Collection of reporting tools for privately conducted street sweeping programs.

Catch Basins: It is also critical to implement a program to clean-out catch basins connected to lake outfalls. The Town conducts this activity as a part of their NPDES MS4 permit for Town managed catch basins. A routine review of cleaning records to identify catch basins with the highest debris loads can be conducted and procedures put in place to adjust and provide more frequent cleaning and to investigate debris sources for these to see if this could be addressed at the source level. Some catch basins are components of privately maintained drainage systems. The Town should establish the locations of these private catch

basins and work with the HOA's or businesses to establish a cooperative or regulatory mechanism to ensure all catch basins are cleaned on a routine basis. The Town should require records of maintenance activities on private catch basins.

Performance Measures:
Maintenance records review and increase in maintenance activities on Town owned catch basins. Collection of maintenance records on private catch basins.

Disturbed Surfaces: Disturbed ground surfaces should be stabilized and controlled in accordance with NPDES best management practices to manage stormwater run-off and keep large amounts of sediment from entering the lakes. Typically, best management practices at an active construction site with disturbed earth include sod, silt fencing, staked turbidity barriers, or floating turbidity barriers. These measures would prevent run-off from washing disturbed soil into the water body or spreading throughout a water body. As a component of routine construction inspections, the Town should ensure NPDES best management practices are being implemented until disturbed surfaces are re-sodded or otherwise covered. Violations should be cited, tracked and corrected.

Performance Measures:
Collection of erosion and sediment control inspection records from construction sites.
Report of violations and corrective actions if applicable.

Stormwater run-off: Stormwater runoff is generated from rain events that flow over land or impervious surfaces, such as paved streets, sidewalks, and parking lots, and does not soak into the ground. The runoff picks up pollutants like trash, chemicals, oils, pet waste, and dirt/sediment that can have negative impacts on the quality of the lakes. Stormwater should be directed to a swale or depressional area before flowing into a lake to allow the debris and pollutants picked up with the first flush to be contained in the swale. The Town can inspect all town owned water front properties to ensure a swale is installed, and if not, install one. The Town can establish regulations that would require new or substantially improved waterfront sites to create swale areas to control direct run-off into the lake. The Town can work with existing properties to encourage them to install swales where none currently exist.

Performance Measures:
Inspection report of Town owned properties
Report on implementation of Town corrective actions taken if needed
Adoption of code amendment addressing requirement for installation of swale
Documentation of public outreach activities on importance of stormwater run-off control

Septic Systems: When septic system failures occur, untreated wastewater and sewage can be introduced into groundwater or nearby streams and water bodies. There are only eight septic systems that remain in the Town. For the protection of the ground water and lakes, it is imperative these be maintained to function as designed before these are ultimately connected to the municipal system. The Town can work cooperatively with Miami-Dade County to encourage these septic systems be connected to the County Sewer system as soon as feasible, and the Town can provide information on the appropriate maintenance of septic systems to these properties to include the following practices:

- Inspect the system annually and have it cleaned when it reaches half full
- Choose household chemicals carefully as many may be harmful to the bacteria that make the system work; bleach, drain cleaners, and paints harm beneficial microorganisms in septic systems
- Non-degradable materials can clog the system; such as paper towels and cigarettes

- Garbage disposal debris should never be flushed as this can overload the septic system

Performance Measures:
Mail information on septic maintenance to Town properties on septic systems
Coordination meeting with Miami-Dade on connection of Town septic systems to County sewer

Wildlife: The Town should implement an educational program to inform the residents to not feed the ducks, geese or other water fowl in the lakes. This can be done through brochures, signage and information on the Town website. Birds are recognized to be a significant source of fecal coliform bacteria. Waterfowl can elevate bacterial counts. The Town should implement a program to humanely control the population of the non-native ducks and geese in the lakes. This can be done by having Lawn or lake maintenance contractors, or other trained staff, collect eggs for humane disposal. Additionally, any dead animals should be reported and immediately and properly be disposed of. Professional firms can be hired that can humanly capture injured, unhealthy, aggressive or unsustainable large populations. The Town can install 'Do Not Feed Wildlife' signage on Town owned properties.

Performance Measure:
Educational information on Town website
Installation of 'Do not Feed Wildlife' signage
Inclusion of collection of duck eggs in lawn/lake maintenance contract(s)

Pet Waste: Pets, especially dogs, can contribute to fecal contamination of surface waters. Providing conveniently located pet waste stations and educational signage in areas frequently used for dog walking, encourages owners to clean up after their dogs. Well-marked collection systems located in parks and recreation areas that are frequented by pet owners are critical to proper disposal. These containers should also have bag dispensers for those owners that forgot to bring them with them. Homeowners should be educated to pick-up pet waste in their yards and not dispose of it in the lakes.
The Town should:

- Provide pet waste stations and educational signage in public areas
- Maintain pet stations in public spaces that allow dogs
- Install 'Pick-up after your Pet' signage in public spaces that allow dogs
- Ensure 'No Pets Allowed' signage is installed in public spaces that do not allow pets
- Provide 'pick up after your pet' information on the Town website and newsletters
- Information on proper disposal of cat litter should also be included on the Town website

Performance Measures:
Educational information on Town website
Installation of 'Pick-up after your Pet' and 'No Pets Allowed' signage

Educational Information: The Town should establish a Lake Best Management Practices webpage and provide the information on all the BMPs included in this report on the webpage.

Performance Measures:
BMP information on Town website

Aerations and Re-stratification: Providing aeration in the lakes increases dissolved oxygen, lowers BOD, and can moderate temperatures, all positive things. Aeration examples found in the Town's lakes

include surface fountains and bottom aerators (bubblers). Bottom aerators are more effective at mixing waters at lower levels, surface fountains impacts are more limited to upper levels. It would be advantageous to have aeration provided in each of the lakes. On lakes with lobes/arms, aerators/fountains should be installed in each lobe. The Town should install or establish a cooperative or regulatory mechanism to ensure all lakes have aeration systems installed.

Performance Measures:
Increase in number of aeration systems installed with ultimate target of all lakes.

Shoreline Stabilization: Many lakes in the Town have seawalls or areas of stacked concrete bags for shoreline stabilization. All lakes in the Town are man-made; they range in age from approximately 56 years to 14 years. Many of the armoring structures along the shorelines may be reaching an age where failures have the potential to occur. Seawall failures can occur for various reasons including heavy rain events with run-off pushing behind failing seawalls; when this occurs, heavy sediment loads are dumped in the lake along with debris from the failed structure and the adjacent upland.

The Town should inspect all Town owned seawalls for soundness. The Town could consider requiring a certification of the structural soundness of each seawall be submitted every 5 years or when substantial improvements occur on a property, or a change of use. The Town should establish regulations that require that when seawalls are replaced, 'living seawall' type structures be installed, or riprap placed at the base of the seawall. The Town could consider requiring a certification of the structural soundness of each seawall be submitted every 5 years.

Performance Measure:
Inspection report for all Town owned seawalls
Inspection reports of private seawalls
Adoption of shoreline stabilization regulations including living seawall and riprap standards

Littoral plantings: Vegetated littoral zones improve the chemical processes that take place within a lake. Plants in littoral zones slow and filter runoff water while reducing erosion, which decreases the amount of pollutants that enter a lake. Aquatic plants also remove nutrients from water, which can reduce the likelihood and severity of algal blooms. Vegetated littoral zones also stabilize sediments, helping to improve water clarity, and they provide a physical barrier along shorelines that helps protect shorelines from wave action that may cause erosion.

The Town can install littoral plantings on Town owned water front properties where feasible. The Town can establish regulations that establish littoral planting standards.

Performance Measures:
Installation of littoral plantings on Town properties
Adoption of shoreline stabilization regulations including littoral planting standards

Lake Maintenance: An ongoing contract with a professional lake management firm should be maintained for each lake to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract could also include collection of duck eggs. The contract should encompass the entire lake. Only a few lakes in the Town are wholly maintained by the Town, a few lakes are under the ownership and management of a single Homeowner Association, most lakes are divided under the ownership of the abutting properties.

The South Florida Water Management District has partial ownership of the three lakes the District's Biscayne Canal runs through; these are Loch Doon, Loch Ness, and Lake Ruth. The Town should investigate and determine which lakes currently have ongoing holistic lake maintenance contracts. For those lakes that are closed systems and that have disparate ownership not unified through an HOA, it would be advantageous for the Town to assist them to establish a mechanism to jointly pursue an overall lake maintenance contract and lake preservation measures.

The Town should establish a procedure to require and request copies of the lake maintenance contracts for each lake. Upon review of each contract the Town could consider establishing recommended lake maintenance standards.

The submerged aquatic plant Hydrilla (*Hydrilla verticillata*) is a Category 1 invasive species and was observed in the following lakes: Lake Silvercrest North, Lake Graham Dairy, Lake Suzie, and Lake Hilda. Hydrilla is a submerged species that can rapidly create severe weed congestion if diligent control measures are not implemented. Hydrilla and any other aggressive invasive aquatic pest plants should be aggressively controlled. Lake contractors should inspect for these plants and catch them at early stages of infestation and adopt aggressive control measures to ensure the lakes do not become congested with these weeds.

Performance Measures:
Establishment of process to collect lake maintenance contracts
Copies of Contracts for all lakes
Draft of Lake Maintenance standards

Lawn Maintenance: For Town owned or maintained properties the Town should adhere to the following best management practices:

- Do not cut the lawn too short, generally 2.5" to 3.5" is recommended
- Never hose or rake lawn clippings into the neighboring lake or canal
- Do not place compost piles at the water's edge
- Never hose or rake lawn clippings into the street, or down storm drains
- Strictly apply lawn fertilizers per label. Slow release fertilizer is best
- Only apply low phosphorus fertilizer, with a phosphorus amount of 2 or less
- Always leave a "ring of responsibility" when applying lawn fertilizer
- When herbicides, insecticides or pesticides are needed, strictly follow label dosages
- When herbicides, insecticides or pesticides are needed, strictly target only the area needed
- When using fertilizer/herbicides or pesticides do not dump excess material or rinse water in adjacent waters or down storm drains
- Never apply fertilizers/herbicides or pesticides when heavy rains are expected
- Ensure any contracted lawn maintenance company is licensed and insured
- Avoid unnecessary routine preventive maintenance applications of lawn products
- Ensure the lawn maintenance firms provides notification of lawn treatments

Performance Measures:
Establish Lawn Maintenance SOPs for Town conducted lawn maintenance work.
Establish Lawn Maintenance SOPS' for Town Contracted lawn maintenance work
Inclusion of Lawn Maintenance SOPs on Town website

Dumpsters: The Town should ensure all Town dumpsters adhere to the following:

- Ensure dumpsters do not leak and drain into lakes or storm drains
- Keep dumpster lids closed
- keep dumpsters away from storm drain inlets
- Keep dumpsters away from water's edge
- Replace or repair leaking dumpsters

Through the Code Compliance process the Town can ensure that dumpsters on private properties adhere to the criteria above.

Performance Measures:
Inspection report on Town dumpsters
Record of citations of dumpster violations

Water Sampling: The Town should implement a program of routine water sampling and testing in each lake to catch any trends in an early stage. The Town should coordination with Miami-Dade County to ensure the Town is copied on the testing data collected near Lake Ruth, or in other locations to supplement the Town data. The Town should coordination with any community HOA that may be doing independent lake water testing to obtain copies of this information to supplement their testing program and gain a more comprehensive data base on which to make decisions.

Below are the parameters that should be tested and the standards that should be achieved. Testing should be done on at least a quarterly basis. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable, and those established in the Miami-Dade Code of Ordinances, Article III, Water and Soil Quality, Division 1. Sec. 24-42. (4) Water Quality Standards for Miami-Dade County. See Exhibit L. Miami-Dade Water and Soil Quality Standards.

Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;
61 to 120 mg/L as moderately hard;
121 to 180 mg/L as hard; and
Greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Performance Measure:
Establishment of Quarterly Water Sampling Program
Establishment of Water Quality Tracking program

Attached is Exhibit M. Lake Management Recommendations, providing a brief overview of management recommendations per each lake within the Town based on the field observations and the testing results.

ATTACHMENTS

Exhibit A. Location and Identification of Lakes Included in this Report

Exhibit B. Location of Lake and Water Features Not Included in this Report

Exhibit C. Lake Excavation Dates

Exhibit D. Street Sweeping Route Map

Exhibit E. Individual Lake Reports and Aerial View of each Lake

Exhibit F. Lake Photo-Pages

Exhibit G. Lake Water Quality Testing Summary

Exhibit H. Lake Testing Results Comparitive Table

Exhibit I. 2018 Water Quality Sampling Stations

Exhibit J. Miami-Dade Testing Result for Lake Patricia

Exhibit K. Miami-Dade Testing Results for Lake Ruth

Exhibit L. Miami-Dade Water and Soil Quality Standards

Exhibit M. Lake Management Recommendations

Exhibit A. Location and Identification of Lakes Included in this Report

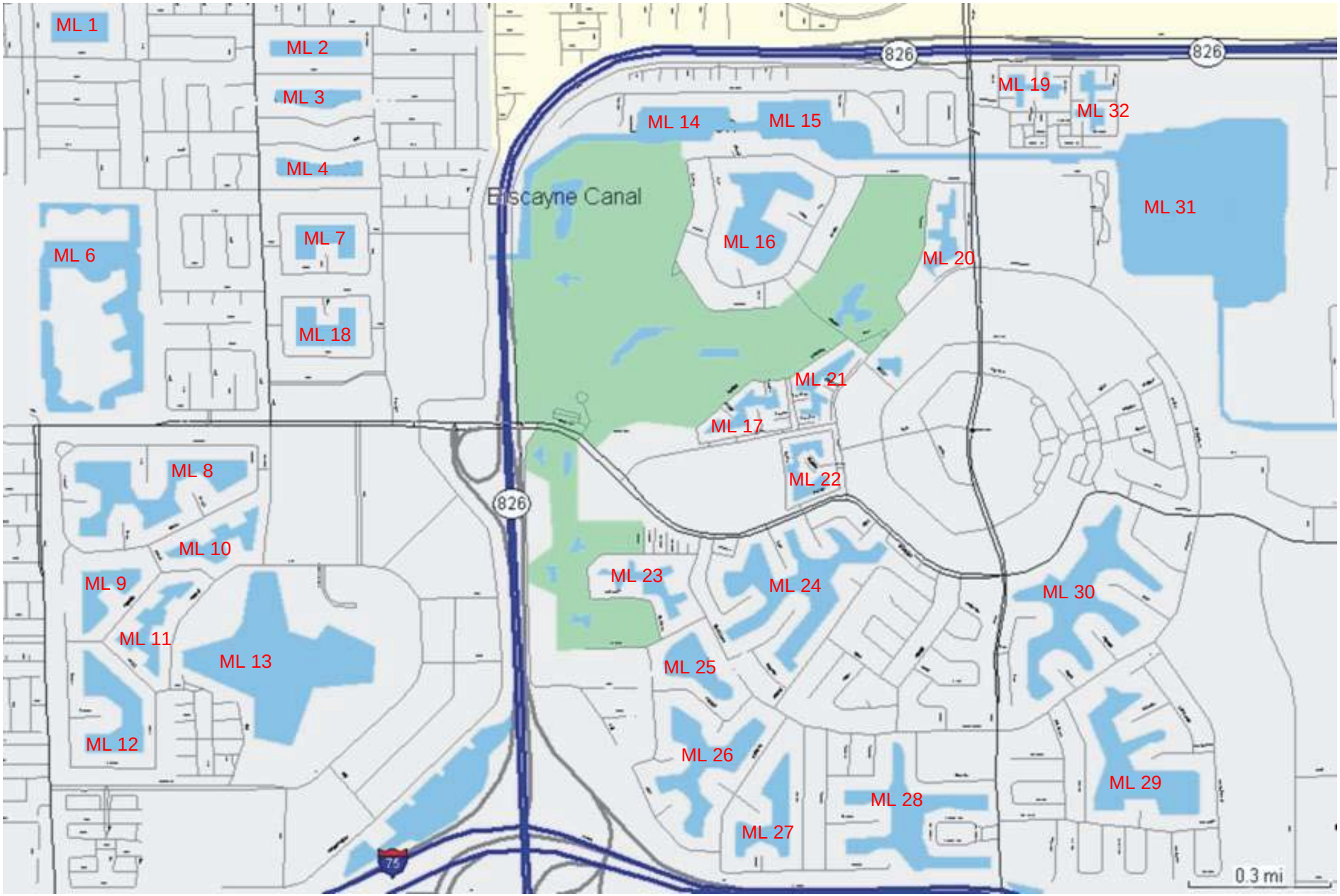


Exhibit B. Location of Lake and Water Features Not Included in this Report

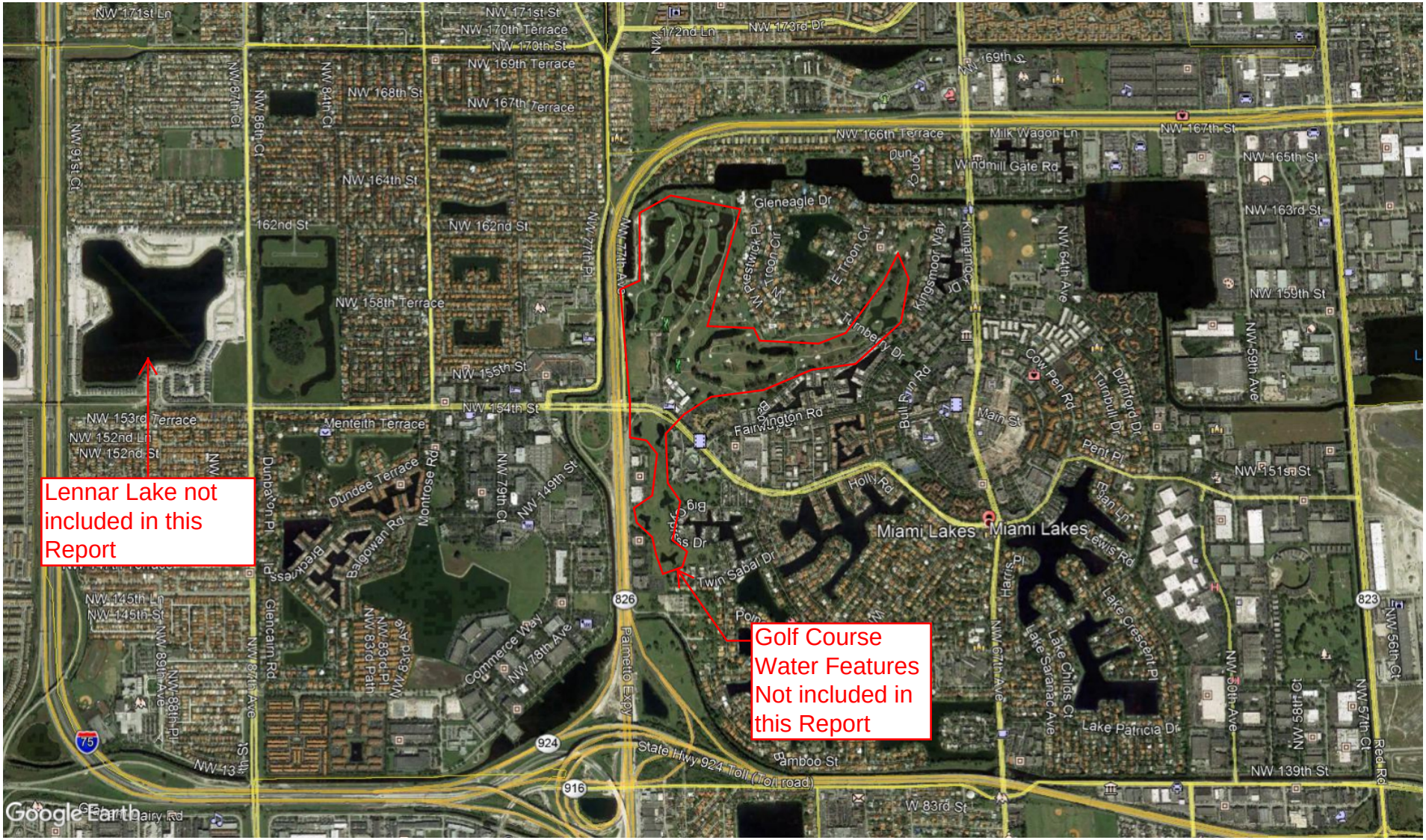


Exhibit C. Lake Excavation Dates

Lake #	Lake Name	Excavation Date	Years Old
ML01	Lake Michael	1990	28
ML02	Lake Valerie	1985	33
ML03	Lake Rose Ann	1987	31
ML04	Lake Gloria	1988	30
ML06	Unnamed Lake	2004	14
ML07	North Silvercrest lake	1999	19
ML08	Lake Glenn Ellen	1980	38
ML09	Lake Cynthia	1982	36
ML10	Lake Sandra	1981	35
ML11	Lake Carol	1982	36
ML12	Lake Elizabeth	1985	33
ML13	Graham Dairy Lake	1985	33
ML14	Loch Doon	1963	55
ML15	Loch Ness	1963	55
ML16	Loch Lomond	1963	55
ML17	Loch Andrew	1974	44
ML18	Lake Silvercrest South	2001	17
ML19	Windmill West	1977	41
ML20	Loch Lomond East	1975	43
ML21	Loch Lomond West	1975	43
ML22	Loch Isle	1977	41
ML23	Unnamed Lake	1968	50
ML24	Lake Martha	1968	50
ML25	Lake Suzie	1965	53
ML26	Lake Sarah	1965	53
ML27	Lake Adele	1965	53
ML28	Lake Hilda	1963	55
ML29	Lake Patricia	1962	56
ML30	Lake Katharine	1963	55
ML31	Lake Ruth	1962	56
ML32	Windmill East	1978	40

Exhibit D. Street Sweeping Route Map

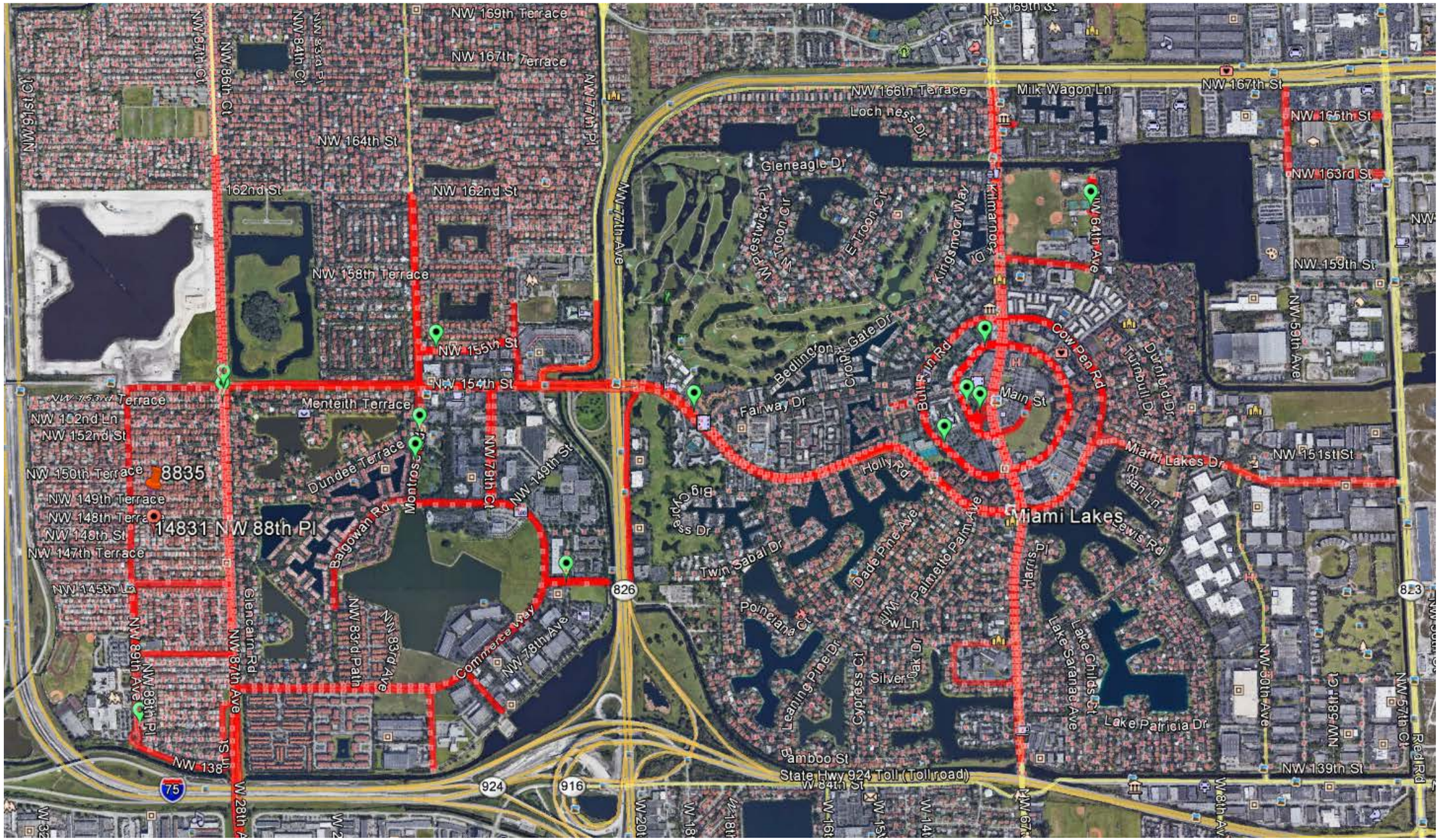
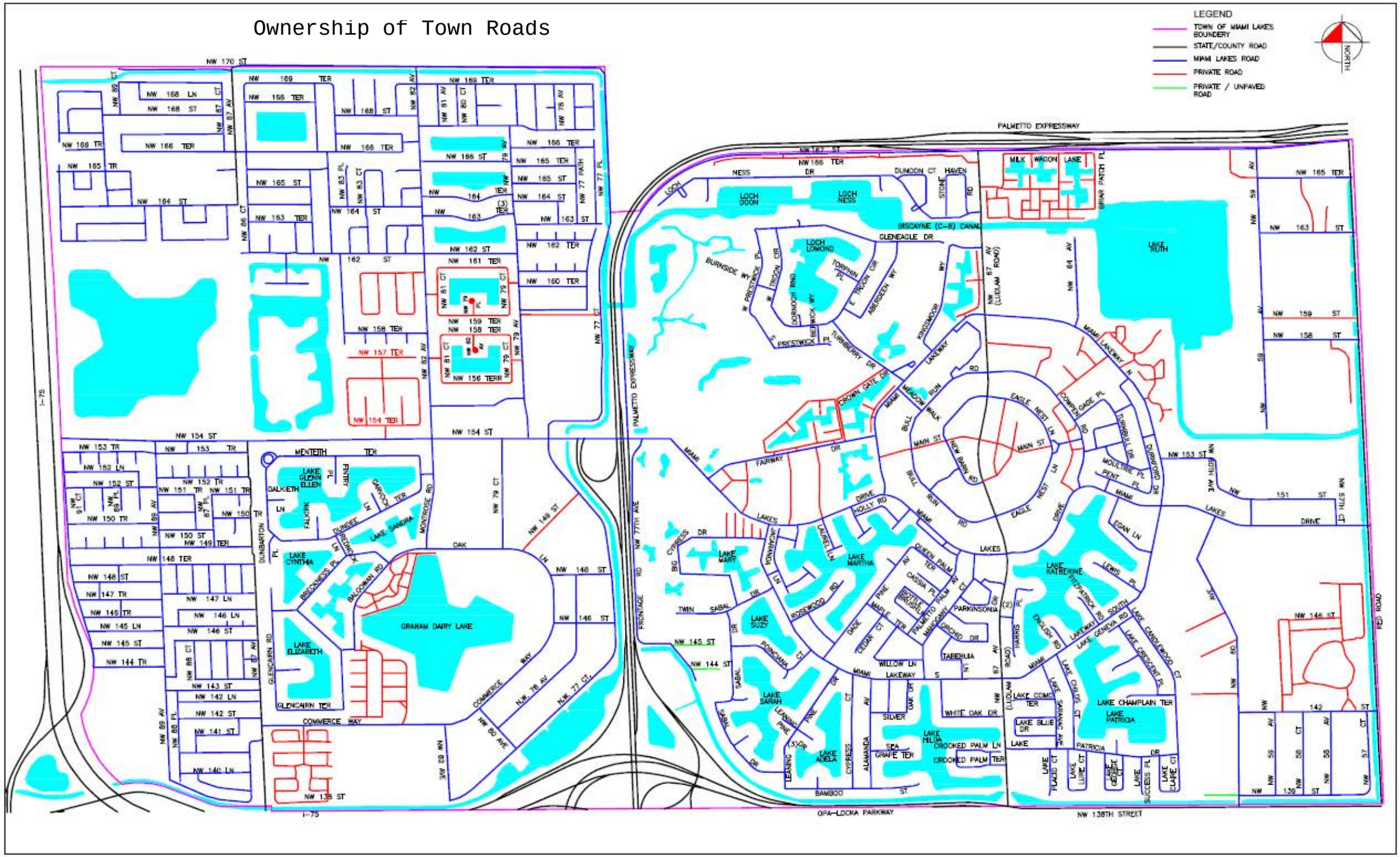


Exhibit D.


Ownership of Town Roads
LEGEND
TOWN OF MIAMI LAKES BOUNDERY
STATE/COUNTY ROAD
MIAMI LAKES ROAD
PRIVATE ROAD
PRIVATE / UNPAVED ROAD
NORTH
PALMETTO EXPRESSWAY
I-75
NW 170 ST
NW 154 ST
NW 162 ST
NW 138TH STREET
OPA-LOCKA PARKWAY
RED ROAD
GRAHAM DAIRY LAKE
LAKE RUTH
LAKE KATHERINE
LAKE MARY
LAKE MARTHA
LAKE SUZY
LAKE SARAH
LAKE ADELA
LAKE MILA
LAKE PATRICIA
LAKE CHAMPLAIN TER
LAKE ELIZABETH
LAKE CYNTHIA
LAKE GLENN ELLEN
LOCH DOON
LOCH NESS
LOCH LOMOND
MILK WAGON LANE
BRIAR PATCH PL
BISCAYNE (C-8) CANAL
GLENEAGLE DR
NESS DR
DUNDON CT
HAVEN STONE RD
BURNSIDE WY
PRESTWICK PL
DORNOCH RND
TORPHIN PL
ABERDEEN WY
KINGSMOOR
TURNBERRY DR
MIAMI LAKEWAY
LAKEWAY RD
CROWN GATE DR
MEADOW RUN
BULL RUN
MAIN ST
NEW BARN RD
EAGLE NEST LN
EAGLE NEST DRIVE
COMPTON GRADE PL
TURNBULL DR
MOULTRIE PL
PENT PL
DUNBARTON PL
MENTEITH TER
DALKEITH LN
FALKIRK LN
DUNBAR PL
GARROCK TER
LAKE SANDRA
MONTROSE RD
BALCOMAN RD
BRECKNESS PL
GLENCAIRN RD
GLENCAIRN TER
COMMERCE WAY
OAK LN
FRONTAGE RD
NW 77TH AVE
NW 79 CT
NW 77 CT
NW 80 AVE
NW 82 AVE
NW 77 PL
NW 77 PATH
NW 79 AVE
NW 82 AV
NW 87 AV
NW 89 AV
NW 89 PL
NW 89 CT
NW 91 CT
NW 87 CT
NW 88 CT
NW 86 CT
NW 83 PL
NW 83 CT
NW 81 AV
NW 80 CT
NW 76 AV
NW 64 AV
NW 59 AV
NW 57 AV
NW 57 CT
NW 57TH CT
NW 67 AV
NW 57 PL
NW 57 (LUDLAM ROAD)
NW 67 (LUDLAM ROAD)
NW 153 ST
NW 151 ST
NW 146 ST
NW 142 ST
NW 139 ST
NW 165 TER
NW 163 ST
NW 159 ST
NW 158 ST
NW 166 TER
NW 166 TR
NW 166 ST
NW 166 LN
NW 165 TR
NW 165 ST
NW 164 ST
NW 164 TER
NW 163 TER
NW 162 TER
NW 161 TER
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NW 158 TER
NW 157 TER
NW 156 TERR
NW 154 TER
NW 153 TR
NW 152 LN
NW 152 ST
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NW 151 TR
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NW 150 ST
NW 149 TER
NW 148 TER
NW 148 ST
NW 147 TR
NW 147 LN
NW 146 LN
NW 145 TR
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NW 145 ST
NW 144 TR
NW 143 ST
NW 142 LN
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NW 141 ST
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NW 169 TER
NW 168 TER
NW 168 LN
NW 168 ST
NW 168 TER
NW 166 TER
NW 165 TER
NW 165 ST
NW 164 ST
NW 163 ST
NW 184 TER
NW 163 TER
NW 162 ST
NW 161 TER
NW 159 TER
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NW 156 TERR
NW 154 TER
NW 153 TR
NW 152 TR
NW 151 TR
NW 150 TR
NW 149 TER
NW 148 TER
NW 146 ST
NW 146 LN
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NW 146 ST
NW 145 ST
NW 144 ST
NW 139 ST
NW 77 CT
NW 79 CT
NW 79 AVE
NW 82 AVE
NW 80 AVE
NW 82 AVE
NW 77 PL
NW 77 PATH
NW 64 AV
NW 59 AV
NW 57 AV
NW 57 CT
NW 57TH CT
NW 57 PL
NW 57 (LUDLAM ROAD)
NW 67 (LUDLAM ROAD)
NW 67 AV
NW 89 AV
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NW 88 CT
NW 86 CT
NW 83 PL
NW 83 CT
NW 81 AV
NW 80 CT
NW 76 AV
FAIRWAY DRIVE
HOLLY RD
LAUREL LN
QUEEN PALM TER
CASSIA PL
PALMETTO PARK RD
MAHOGANY CT
ORCHID DR
PARKINSONIA
TABEBUIA
WILLOW LN
LAKEWAY
LAKE COMO TER
LAKE BLUE DR
LAKE PATRICIA
LAKE CHAMPLAIN TER
LAKE GENEVA RD
LAKE GENEVA SOUTH
LAKE CAROLEWOOD CT
LAKE CRESCENT PL
LAKE CHALICE CT
LAKE SARANAC AVE
LAKE PLACID CT
LAKE LUNE CT
LAKE GENEVA CT
LAKE SUCCESS PL
LAKE ELAINE CT
LEWIS PL
ENGLISH RD
HARRIS
PINE
MAPLE
CEDAR CT
ROSEWOOD RD
PONCIANA CT
SABAL
TWIN
BIG CYPRESS DR
LEANING
ALAMANDA
SILVER
OAK DR
WHITE OAK DR
CROOKED PALM LN
CROOKED PALM TER
SICA
GRAPE TER
BAMBOO
EGAN LN
LAKES DRIVE
MIAMI LAKES DRIVE
MIAMI LAKES RD
MIAMI LAKES WAY
MIAMI LAKES WAY N
MIAMI LAKES WAY S

LAKE NUMBER ML01, LAKE MICHAEL

This is a rectangular shaped lake with a surface area of approximately 280,500 square feet (6.44 acres). The 2008 study identified a littoral shelf of 38,954 square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 6 feet. At the time of inspection the lake did appear to contain a blue dye.

Stormwater

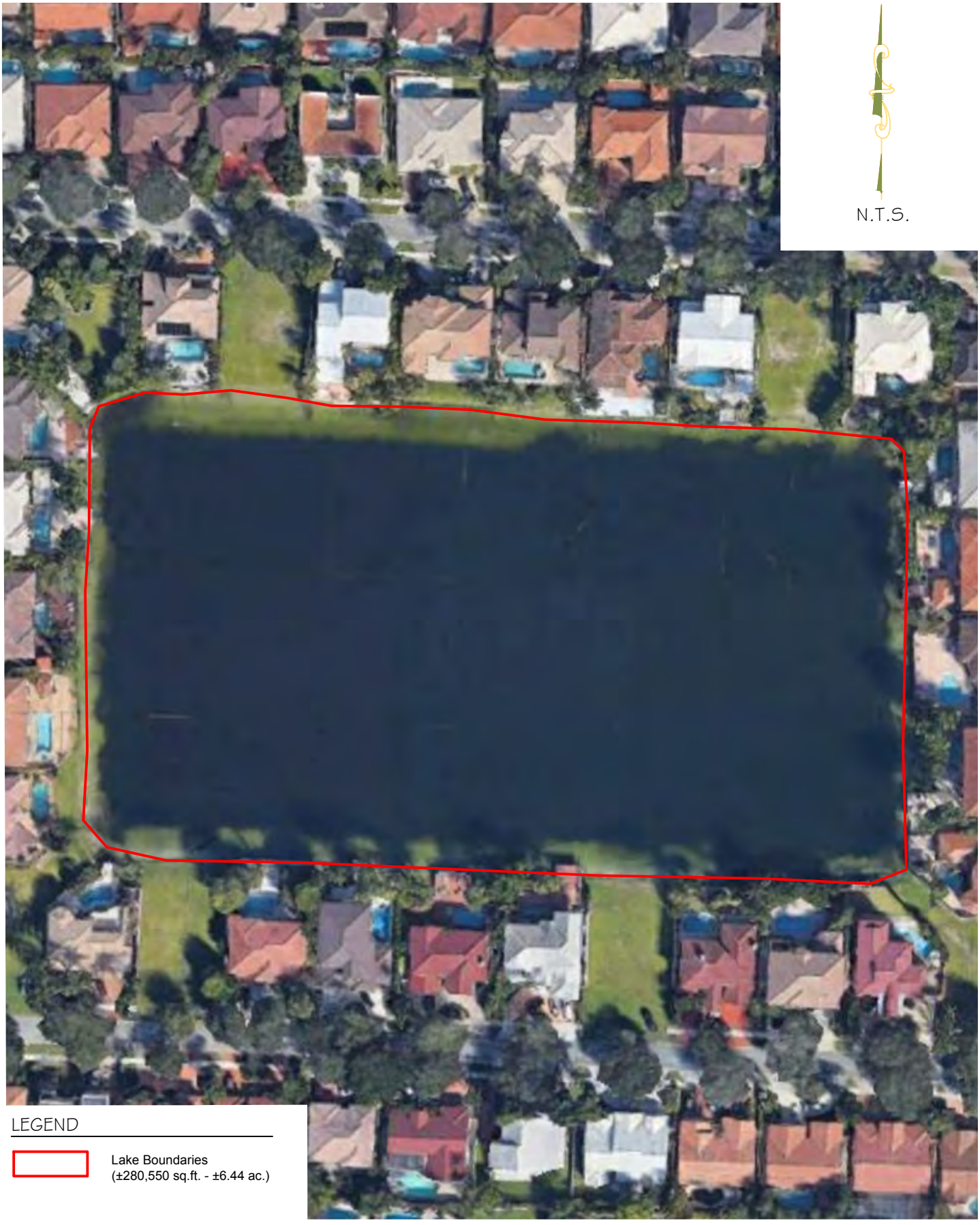
Lake Michael was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. The Stormwater Master Plan shows this lake and surrounding area as "Closed System (Exfiltration)" and stormwater outfalls were not observed. The Master Plan document shows no public outfalls; however there is the possibility of a privately owned and maintained stormwater system. The Town's drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. The neighborhood surrounding the lake is not part of the current street sweeping program.

Surrounding Properties and Parcel Information

There are five (5) vacant lots along the perimeter of Lake Michael; the remainder is residential single family homes with lawn abutting the waterline. The vacant lots are mostly devoid of woody vegetation and are well maintained in a mowed state. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. Ownership of the lake was unidentified by the Miami-Dade Property Appraiser website.

Field Observations

The inspection to evaluate the lake's current condition was conducted on 7/19/18. The inspection showed the shoreline was mainly unconsolidated (lawns abutting shoreline) adjacent to single family residences and 5 maintained vacant lots. The lake depth was measured to be 35 feet. No fountains or aerators were observed at the time of the inspection. The invasive species Torpedo grass (*Panicum repens*) and Mexican petunia (*Ruellia simplex*) were observed along the shoreline. Observed wildlife at the time of the inspection was limited to non-native Muscovy duck (*Cairina moschata*).



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	**Lake Quality Assessment** **17-9546.1** **Miami Lakes, Florida**	**LAKE MICHAEL** **ML-01**	SHEET **1**

LAKE NUMBER ML02, LAKE VALERIE

This is a rectangular lake with a surface area of approximately 187,710 square feet (4.31 acres) with no littoral shelf.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 6 feet. This lake did not appear to currently have pond dye, but a resident informed us the pond is typically dyed blue.

Stormwater

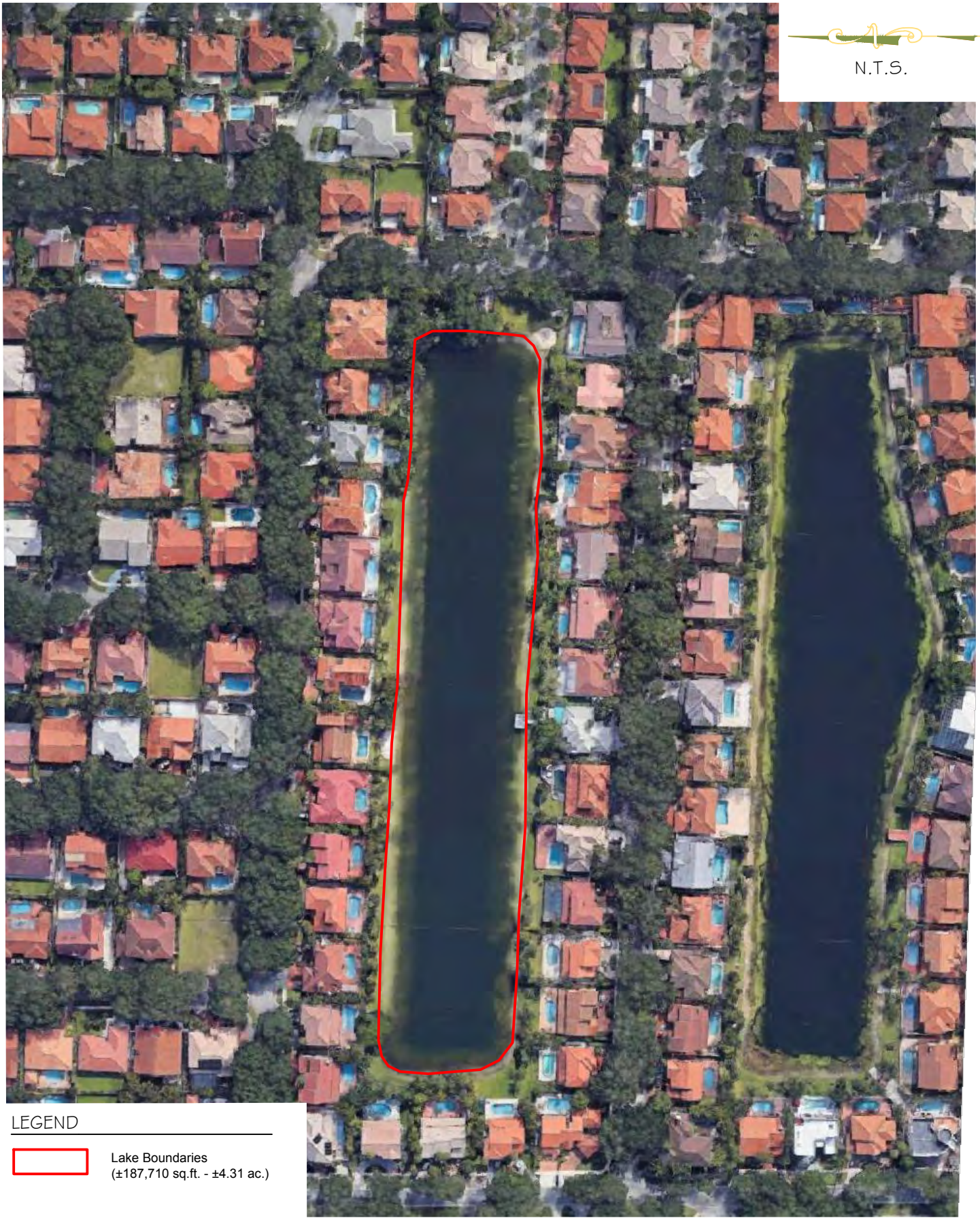
Lake Valerie was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. The Stormwater Master Plan shows this lake and surrounding area as "Undeveloped or Unknown System" Stormwater outfalls were not observed. The Master Plan documents show no public outfalls; however there is the possibility of a privately owned and maintained stormwater system. The Town's drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. The neighborhood surrounding the lake is not part of the current street sweeping program.

Surrounding Properties and Parcel Information

Lake Valerie is surrounding exclusively by residential single family homes. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows lake ownership is divided among the surrounding homeowners.

Field Observations

The inspection to evaluate the lake's current condition was conducted on 5/3/18. The inspection showed the shoreline was unconsolidated (lawns abutting shoreline) adjacent to single family residences. The lake depth was measured to be 35 feet. No fountains or aerators were observed at the time of the inspection. The native, submerged species Spiny Naiad (*Najas marina*) was observed along the shoreline. Observed wildlife at the time of the inspection was limited to non-native Muscovy duck (*Cairina moschata*). At the time of inspection the lake did not appear to contain blue dye, but while performing the inspection a resident stated the lake is typically blue.



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	**Lake Quality Assessment** **17-9546.1** **Miami Lakes, Florida**	**LAKE VALERIE** **ML-02**	SHEET **2**

LAKE NUMBER ML03, LAKE ROSE ANN

This is a narrow rectangular lake with a surface area of approximately 204,560 square feet (4.70 acres). The 2008 study identified a littoral shelf of 65,207 square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 6 feet. At the time of inspection the lake did appear to contain a blue dye.

Stormwater

Lake Rose Ann was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. The Stormwater Master Plan shows this lake and surrounding area as "Closed System (Exfiltration)" and stormwater outfalls were not observed. The Master Plan documents show no public outfalls; however there is the possibility of a privately owned and maintained stormwater system. The Town's drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. The neighborhood surrounding the lake is not part of the current street sweeping program.

Surrounding Properties and Parcel Information

Lake Rose Ann is surrounding by residential single family homes with lawn abutting the waterline. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the entire lake ownership is divided among the surrounding homeowners.

Field Observations

The inspection to evaluate the lake's current condition was conducted on 7/19/18. The inspection showed the shoreline was unconsolidated (lawns abutting shoreline) adjacent to single family residences. The lake depth was measured to be 30 feet. No fountains or aerators were observed at the time of the inspection. In addition to the native, submerged species Muskgrass (*Chara spp.*), the invasive species Torpedo grass (*Panicum repens*) was observed along the shoreline. Observed wildlife at the time of the inspection was limited to native Common moorhen (*Gallinula chloropus*) and red-eared slider (*Trachemys scripta elegans*).

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	**Lake Quality Assessment** **17-9546.1** **Miami Lakes, Florida**	**LAKE ROSE ANN** **ML-03**	SHEET **3**

LAKE NUMBER ML04, LAKE GLORIA

This is a narrow rectangular shaped lake with a surface area of approximately 174,930 square feet (4.02 acres). The 2008 study identified a littoral shelf of 45,929 square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. At the time of inspection the lake did appear to contain blue dye.

Stormwater

Lake Gloria was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. The Stormwater Master Plan shows this lake and surrounding area as "Closed System (Exfiltration)" and stormwater outfalls were not observed. The Master Plan documents show no public outfalls; however there is the possibility of a privately owned and maintained stormwater system. The Town's drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. The neighborhood surrounding the lake is not part of the current street sweeping program.

Surrounding Properties and Parcel Information

Lake Gloria is surrounding by residential single family homes with lawn abutting the waterline. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the entire lake ownership is divided among the surrounding homeowners.

Field Observations

The inspection to evaluate the lake's current condition was conducted on 7/19/18. The inspection showed the shoreline was unconsolidated (lawns abutting shoreline) adjacent to single family residences. The lake depth was measured to be 35 feet. No fountains or aerators were observed at the time of the inspection. The invasive species Torpedo grass (*Panicum repens*) and Coconut palm (*Cocos nucifera*) were observed along the shoreline. Observed wildlife at the time of the inspection was limited to the invasive Green iquana (*Iguana iguana*).

N.T.S.

LEGEND

Lake Boundaries
(±174,930 sq.ft. - ±4.02 ac.)

Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS™

Lake Quality Assessment
17-9546.1
Miami Lakes, Florida

LAKE GLORIA
ML-04

SHEET
4

LAKE NUMBER ML06, UNNAMED

This is a convoluted shaped lake with a surface area of approximately 1,204,700 square feet (27.66 acres). The 2008 study identified 222,296 square feet of littoral shelf.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 6 feet. At the time of inspection the lake did appear to contain blue dye.

Stormwater

Unnamed Lake 6 was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. The Stormwater Master Plan shows this lake and surrounding area as "Undeveloped or Unknown System" and stormwater outfalls were not observed. The Master Plan documents show no public outfalls; however there is the possibility of a privately owned and maintained stormwater system. The Town's drainage cleaning cycle map excluded this lake from the drainage cleaning cycles. The streets abutting the lake to the west (NW 87th Ave) and south (NW 154th St) are currently part of the current street sweeping program.

Surrounding Properties and Parcel Information

There is no development on the land surrounding this lake and surrounded by this lake. In the northern part of the lake, the lake surrounds an 'island' of land with one access point. The northern lake, 'island' and land surrounding the lake are under the ownership of F78 3 LCC. There are platted lots along the northern portion of the lake but no development has yet occurred on these lots. In the southern part the lake surrounds an 'island, of land with two access points. This island of land is currently used to graze cattle and it contains an approximate 6 acre archaeological zone containing tropical hardwood hammock habitat. The archaeological zone, referend to as Madden's Hammock, is owned by the Town of Miami Lakes. The remaining southern portion of the lake, island and surrounding land is under the ownership of F69 1 LLC and does not appear to have platted lots.

Field Observations

The inspection to evaluate the lake's current condition was conducted on 7/19/18. The inspection showed the shoreline was unconsolidated adjacent to vacant land. The lake depth was measured to be 25 feet. No fountains or aerators were observed at the time of the inspection. Observed native shoreline vegetation included Spikerush (*Eleocharis* sp.), Giant bulrush (*Schoenoplectus californicus*), Green Buttonwood (*Conocarpus erectus*), Coastal plain willow (*Salix caroliniana*), Giant leather fern (*Acrostichum danaeifolium*), and Spatterdock (*Nuphar lutea*). The invasive species observed included Torpedo grass (*Panicum repens*), Cattail (*Typha* sp.), Australian pine (Casuarina equisetifolia), and Brazilian pepper (*Schinus terebinthifolia*) . Observed wildlife at the time of the inspection was limited to the invasive Green iquana (*Iguana iguana*). This lake did not appear to contain blue dye.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	UNNAMED LAKE ML-06	SHEET 5

LAKE NUMBER ML07, LAKE SILVERCREST NORTH

This is a “U” lake with a surface area of approximately 180,400 square feet (4.14 acres). The 2008 study identified a littoral shelf of approximately 46, 360 square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. At the time of inspection the lake did not appear to contain blue dye.

Stormwater

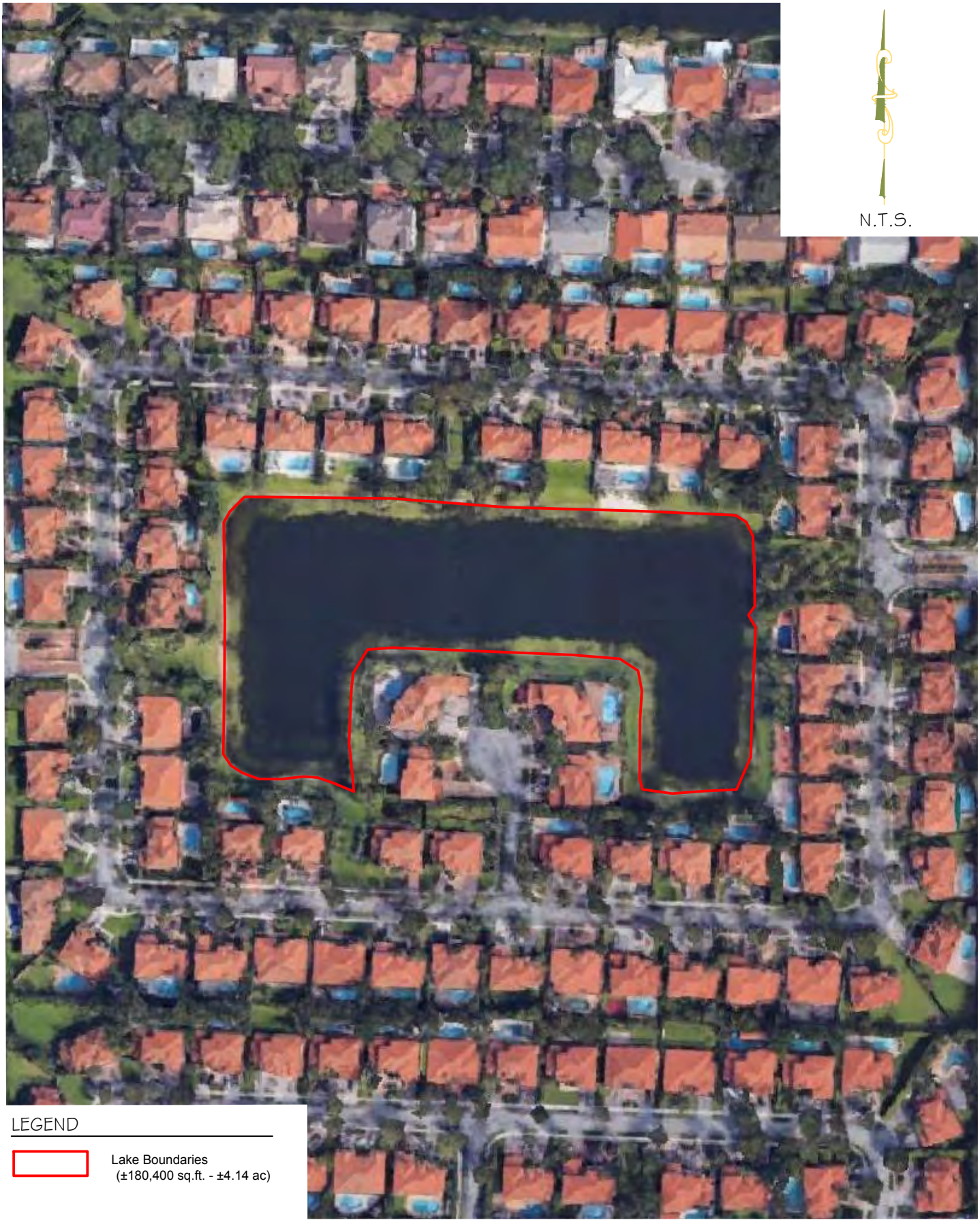
Lake Silvercrest North was not specifically listed in the Stormwater Master Plan, Update #1, or Update #; however, there is a drainage basin named Silvercrest in the original Stormwater Master Plan. This drainage basin appears include Lake Silvercrest North, but the supplied documentation shows this neighborhood was still under development and additional stormwater drainage information was not included. The Stormwater Master Plan does not depict this lake in the masterplan map. It is assumed this lake was constructed after the map was created. There is the possibility of a privately owned and maintained stormwater system. The Town’s drainage cleaning cycle map excluded this lake. The neighborhood surrounding the lake is not part of the current street sweeping program, but Montrose Road abutting the west side of the neighborhood is included in the street sweeping program.

Surrounding Properties and Parcel Information

Lake Silvercrest North is surrounding by residential single family homes with lawn abutting the waterline and two (2) privately owned parks. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the lake is owned by the Silvercrest Lake Estates Homeowners Association.

Field Observations

The inspection to evaluate the lake’s current condition was conducted on 7/19/18. The inspection showed the shoreline was unconsolidated (lawns abutting shoreline) adjacent to single family residences. The lake depth was measured to be 35 feet. No fountains or aerators were observed at the time of the inspection. In addition to the invasive, submerged species Hydrilla (*Hydrilla verticillata*), the invasive species Torpedo grass (*Panicum repens*) was observed along the shoreline. Observed wildlife at the time of the inspection was limited to native Ross's goose (*Chen rossii*).



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE SILVERCREST NORTH ML-07	SHEET 6

LAKE NUMBER ML08, LAKE GLEN ELLEN

This lake has a surface area of approximately 739,880 square feet (16.99 acres). The 2008 study identified the littoral shelf as approximately 240,864 square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake did not appear to have pond dye like some of the other lakes within the Town.

Stormwater

Lake Glenn Ellen was included in the Stormwater Master Plan as a lake with blocked or undersized outfalls. At the time of Stormwater Master Plan Update #1, the Lake Glenn Ellen sub-basin was under construction for drainage improvements. Storm Water Master Plan Update #2 stated there were still drainage deficiencies even though the capital improvement project had been completed in 2004. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the neighborhood surrounding Lake Glenn Ellen as a combination exfiltration and outfall system. The Town’s drainage cleaning cycle map shows the catch basins and french drains were scheduled to be cleaned in fiscal year 2016-2017.The neighborhood immediately surrounding the lake is not part of the current street sweeping program. However, NW 154th Street on the north side of the neighborhood and NW 87th Avenue on the west side of the neighborhood are currently swept as part of the Town street sweeping program.

Surrounding Properties and Parcel Information

Lake Glenn Ellen is surrounding by residential single family homes and two Town parks (P66 and P67) with water access. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by the abutting homeowners, the parks are owned by the Town, and the center of the lake is owned by Miami Lakes Lake Glenn Ellen Homeowners Association Inc.

Field Observations

The inspection to evaluate the lake’s current condition was conducted on 5/3/18. The inspection showed that the shoreline was mostly unconsolidated, but there are a few concrete sandbags, or concrete panel seawalls. As indicated in the 2008 report, the shoreline still contained a shallow littoral shelf around most of the lake. The unconsolidated areas appear to provide opportunity to install shoreline plantings. The depth of the lake was measured to be 25 feet. A public beach, with signage regarding pet waste, exists at the northwestern corner of the lake. No fountains or aerators were observed. The native submerged species Coontail (*Ceratophyllum demersum*) was observed along the shoreline. Observed wildlife was limited to the native Ross's goose (*Chen rossii*) at the time of the inspection.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE GLENN ELLEN ML-08	SHEET 7

LAKE NUMBER ML09, LAKE CYNTHIA

This is a triangular lake with peninsula extending from the southeastern shore. The surface area of the lake is approximately 246,850 square feet (5.67 acres). The 2008 study identified a littoral shelf area of 47,985square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 4 feet. This lake appeared to contain pond dye.

Stormwater

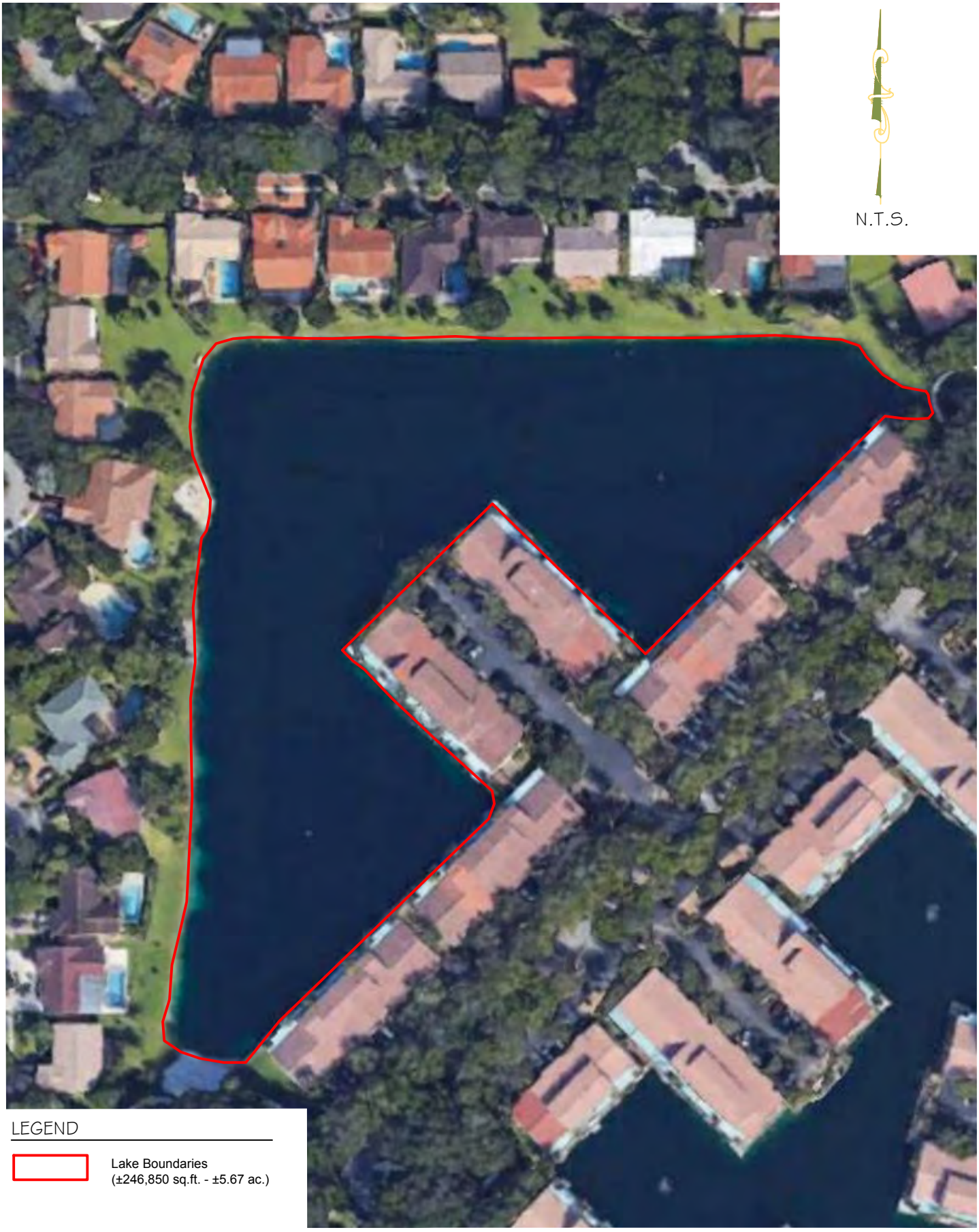
The original Stormwater Master Report stated the outfalls around Lake Cynthia were blocked or undersized. Stormwater Master Report Update #1 indicated Lake Cynthia Section 1 sub-basin was under construction for a drainage improvement project. The Stormwater Master Report Update #2 states the improvements to Lake Cynthia sub-basin had been completed. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the neighborhood surrounding Lake Cynthia is a combination of outfalls and exfiltration trenches. The Town’s drainage and cleaning cycle map shows the french drains and catch basins were scheduled to be cleaned in fiscal year 2016-2017. The neighborhood surrounding Lake Cynthia is not part of the current street sweeping program.

Surrounding Properties and Parcel Information

Approximately half of Lake Cynthia is surrounded by residential single family homes, with the other half surrounded by multi-family buildings. There are two (2) parks (P80 & P81) with water access on the lake. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows ownership of the lake’s perimeter is divided among the surrounding homeowners, while the parks are owned by the Town of Miami Lakes. The interior portion of the lake is owned by Miami Lakes Lake Cynthia Homeowner’s Association Inc.

Field Observations

The inspection to evaluate the lake’s current condition was conducted on 5/3/18. The western and northern shoreline consists of unconsolidated shoreline with adjacent turf lawns. The southeastern shoreline consists of a concrete sandbag seawall with a potential footer or rock ledge at the base. The lake depth was measure to be 32 feet. A public beach exists at the southern corner of the lake. It was observed that the lake has two (2) fountains but that neither was in operation at the time of the inspection. No aquatic vegetation was observed along the shorelines or within the lake. Observed wildlife was limited to non-native Muscovy duck (*Cairina moschata*). At the time of the inspection, the lake appeared to have been dyed blue.



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	**Lake Quality Assessment** **17-9546.1** **Miami Lakes, Florida**	**LAKE CYNTHIA** **ML-09**	SHEET **8**

LAKE NUMBER ML10, LAKE SANDRA

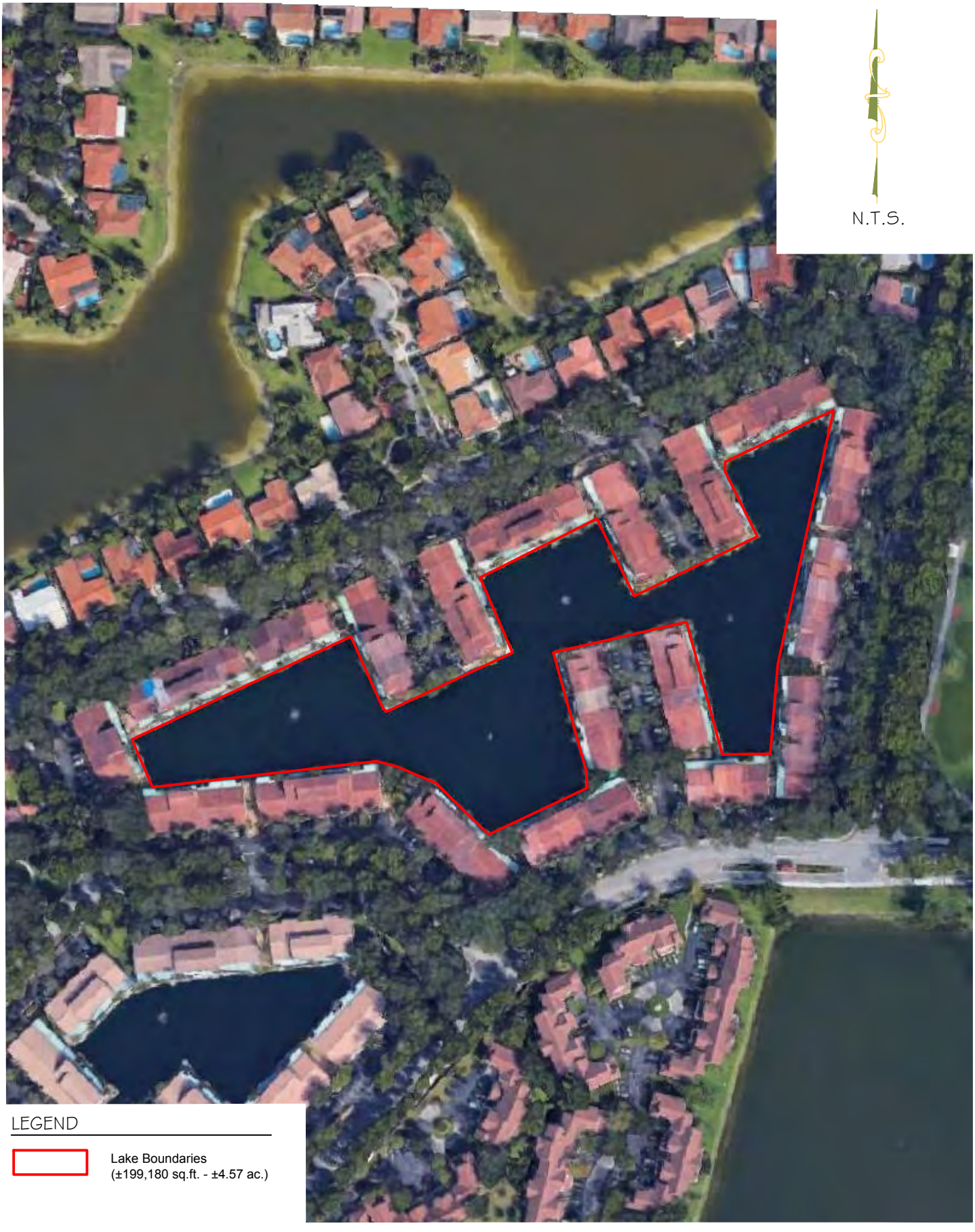
This is a roughly triangular shape lake with three rectangular peninsulas extending into the lake. The surface area of the lake is approximately 199,180 square feet (4.57 acres), with no littoral shelf.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 4 feet. This lake appeared to contain pond dye.

Stormwater
In the Stormwater Master Plan, the Lake Sandra basin and sub-basin were shown to have outfalls into Lake Sandra and Lake Glenn Ellen. Stormwater Master Plan Update #1 stated the small existing 8-inch outfalls, the culverts, and catch basins may frequently clog with debris and sediment such that water flow is blocked or highly restricted, and that frequent maintenance is recommended for the existing system. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding Lake Sandra is a combination of exfiltration trenches and outfalls. The town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2016-2017. Balgowan Street to the south and Montrose Road to the east are both part of the current street sweeping program.

Surrounding Properties and Parcel Information
Lake Sandra is surrounded by multi-family buildings and three parks (P69, P72, and Community Center West) with access to the lake. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows ownership of the lake’s perimeter is divided among the homeowners, while the parks are owned by the Town, and the lake is owned by the Sengra Corporation Homeowner’s Association.

Field Observations
The inspection to evaluate the lake’s current condition was conducted on 5/3/18. It was observed that the entire shoreline consisted of a concrete sandbag seawall with a potential footer or rock ledge at the base. Multi-family residences surround the lake and there are no lawns abutting the seawall. The lake depth was not measured due to the inaccessibility created by the seawall. The 2008 study stated the average depth was 16 feet. It was observed that the lake has four (4) fountains but that not all were in operation at the time of the inspection. No vegetation or wildlife was observed during the course of the inspection. At the time of the inspection, the lake appeared to have been dyed blue.



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE SANDRA ML-10	SHEET 9

LAKE NUMBER ML11, LAKE CAROL

This lake is roughly triangular shaped with five rectangular peninsulas extending into the lake. The surface area of the lake is approximately 212,780 square feet (4.88 acres), with no littoral shelf.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake appeared to contain pond dye, as it was an unnatural blue color.

Stormwater
The Stormwater Master Plan listed Lake Carol as having blocked or undersized outfalls. Stormwater Master Plan Update #2 indicated 2 of the Lake Carol sub-basins had Capital Improvement Projects constructed to improve performance. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the neighborhood surrounding the lake is a combination of exfiltration trenches and outfalls. The Town’s drainage and cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2016-2017. Balgowan Road on the southeast side of the neighborhood is part of the current street sweeping program.

Surrounding Properties and Parcel Information
Lake Carol’s shoreline has a seawall and is surrounded by multi-family buildings. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the majority of the lake is owned by the Captain Group Homeowner’s Association Inc. A section of lake along the southeastern perimeter is owned by the abutting property owners.

Field Observations
The inspection to evaluate the lake’s current condition was conducted on 5/3/18. It was observed that the entire shoreline consisted of a concrete sandbag seawall with a potential footer or rock ledge at the base, with no lawns abutting the seawall. The lake depth was not measured due to the inaccessibility created by the seawall. The 2008 study stated the average depth was 12.5 feet. In addition, it was observed that the lake has four (4) fountains but not all were in operation at the time of the inspection. No vegetation was observed, however observed wildlife was limited to Red-eared slider (*Trachemys scripta elegans*) – a semiaquatic turtle. Lastly, at the time of the inspection, the lake appeared to have been dyed blue.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE CAROL ML-11	SHEET 10

LAKE NUMBER ML12, LAKE ELIZABETH

This lake has a trapezoidal shape with a rounded peninsula extending into the lake. The surface area of the lake is approximately 399, 390 square feet 9.17 acres). The 2008 study identified there was a littoral shelf of about 62,592 square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 4 feet. This lake did not appear to have pond dye like some of the other lakes within the Town.

Stormwater

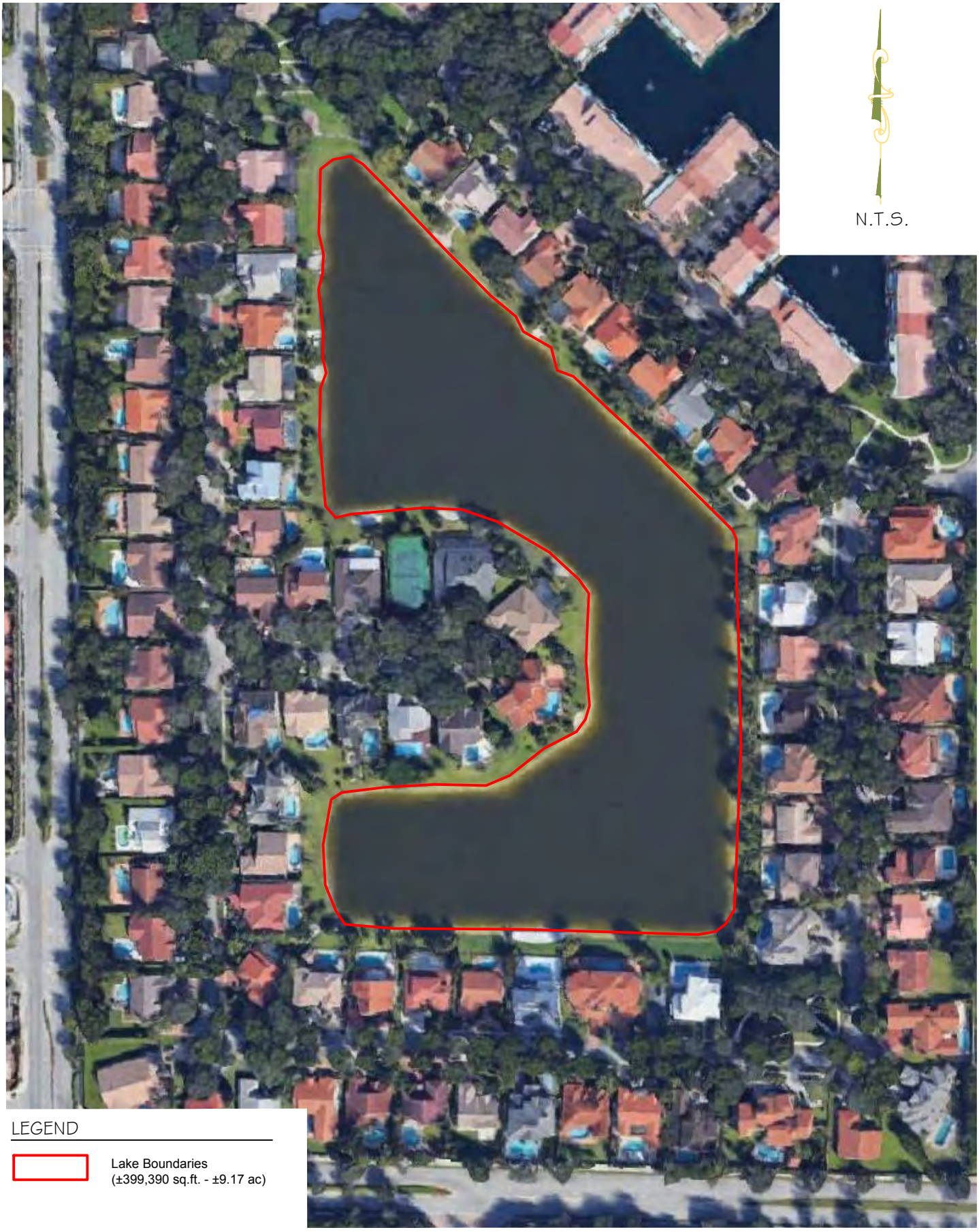
The Stormwater Master Report included Lake Elizabeth basin and sub-basins, but no outfalls appeared to be connected to Lake Elizabeth. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan depicts the drainage system surrounding the lake as a closed exfiltration system. The Town’s drainage cleaning cycle map shows the french drains and catch basins were scheduled to be cleaned in fiscal year 2016-2017. The neighborhood surrounding Lake Elizabeth is not part of the current street sweeping program.

Surrounding Properties and Parcel Information

Lake Elizabeth is surrounding by residential single family homes and two parks (P82 & P83) with lake access. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows ownership of the lake’s perimeter is divided among the surrounding homeowners, with the parks owned by the Town of Miami Lakes. The interior portion of the lake is owned by Miami Lakes Lake Elizabeth Homeowner’s Association Inc.

Field Observations

The inspection to evaluate the lake’s current condition was conducted on 5/3/18. It was observed that most of the shoreline was unconsolidated, with a few concrete sandbag or concrete panel seawalls. All shorelines were adjacent to turf lawns. The lake depth was measured to be 30 feet. A public beach, with signage regarding pet waste, exists at the northern portion of the lake. It was observed that the lake has two (2) fountains. The invasive exotic species Torpedo grass (*Panicum repens*) was observed along the shoreline; while no wildlife was observed at the time of the inspection.



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE ELIZABETH ML-12	SHEET 11

LAKE NUMBER ML13, LAKE GRAHAM DAIRY

This lake roughly approximates a cross shape with a surface area of approximately 1,768,610 square feet (40.60 acrea). The 2008 study identified there was a littoral shelf of about 175,645square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake did not appear to have pond dye like some of the other lakes within the Town.

Stormwater

In the Stormwater Master Plan Graham Dairy sub-basin was identified, but it is unclear if this sub-basin drains into Lake Graham Dairy. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding Lake Graham Dairy as “undeveloped or unknown system”. The Town’s drainage cleaning cycle map showed the catch basins and french drains in this section of Town were scheduled to be cleaned in fiscal year 2016-2017. Balgowan Road, Oak Lane, and Commerce Parkway form a loop around Lake Graham Dairy and these three streets are part of the current street sweeping program.

Surrounding Properties and Parcel Information

The entire east side of Lake Graham Dairy has multi-family development. Along the northern and southern ends of the west side are commercial developments. Along the central portion of the west side is a large vacant parcel currently under development that has a shoreline approximately 1,850 linear feet in length. There is also a vacant lot currently under development on the very southern tip of the lake that has approximately 400 linear feet of shoreline. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows ownership of the lake is divided among the following owners: The Anchorage at Miami Lakes Homeowner’s Association, Inc./The Capin Group; William A Graham; The Graham Companies; and TGC BPW South LLC C/O The Graham Companies.

Field Observations

The inspection to evaluate the lake’s current condition was conducted on 5/1/18. The lake depth was measured to be 25 feet. The entire shoreline is unconsolidated with no seawalls. There is turf/lawn upland of the shoreline around the entirety of the lake accept for a small sandy “beach” area on the east side serving the gated residential developments. Approximately 1/3rd of the shoreline (eastern portions) was an active construction site and did not have turbidity barriers along the shoreline. Active construction sites and earthwork can lead to increased turbidity due to the release of sediment into the water. Signage discouraging the feeding of wildlife was observed at the northern portion of the lake. One (1) fountain was observed at the time of the inspection. The invasive exotic, submerged aquatic species Hydrilla (*Hydrilla verticillata*) was observed along the shoreline. Wildlife observed at the time of the inspection included: Red-eared slider turtle (*Trachemys scripta elegans*), Double-crested cormorant (*Phalacrocorax auritus*), and the non-native Eqyptian goose (*Alopochen aegyptiaca*).

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE GRAHAM DAIRY ML-13	SHEET 12

LAKE NUMBER ML14, LOCH DOON

This is a rectangular lake with an interconnecting canal that wraps towards the south. The overall surface area is 667,730 square feet including canal segment (15.33 acres). The 2008 study identified there was a littoral shelf of about 43,583 square feet. Loch Doon, Loch Ness, and Lake Ruth are interconnected by the Biscayne Canal, a significant South Florida Water Management District (SFWMD) conveyance system.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 9 feet. This lake did not appear to have pond dye like some of the other lakes within the Town. As this lake is a component of a significant SFWMD canal, placement of dye in this lake to impede algal and other growth would not be as effective as in other lakes with limited inflow and outflow.

Stormwater

In the Stormwater Master Plan, the Loch Ness sub-basin was identified as having outfalls into Loch Doon. Figure 4 “Types of Drainage Systems” from the Stormwater Master plan shows the neighborhood north of the lake was a combination system of outfalls and exfiltration. The neighborhood south of the lake is depicted as an exclusively outfall system draining into a different lake. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. Neither neighborhood surrounding the lake is shown to have a street sweeping program.

Surrounding Properties and Parcel Information

Loch Doon is surrounding by single family homes, a public park with water access (P51), and a golf course on the southwestern corner. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows ownership of the canal leading to the lake and a large central portion of the lake is owned by the South Florida Water Management District; the lake’s perimeter is divided among the following owners: Sengra Development Group, the individual homeowners abutting the lake, the Town owned park, and a portion of the lake’s ownership was unidentified.

Field Observations

The inspection to evaluate the lake’s current condition was conducted on 5/3/18. It was observed that most of the shoreline was unconsolidated with lawns abutting the water’s edge; but there are concrete sandbag, or concrete panel, seawalls as well. The lake depth was measure to be 50 feet. Adjacent uplands consisted of golf courses turf grass and lawns for single family residences. Observed vegetation consisted of Cattail (*Typha* sp.), white water lily (*Nymphaea odorata*), Common reed (*Phragmites australis*), eelgrass (*Vallisneria americana*), primrose willow (*Ludwigia* sp.), spadder dock (*Nuphar advena*), torpedo grass (*Panicum repens*), and duck potato (*Sagittaria lancifolia*). Torpedo grass is listed as a category 1 invasive exotic by the Florida Exotic Pest Plant Council (FLEPPC). No wildlife was observed during the course of the inspection. At the time of inspection, power washing of the sidewalks and curbing was observed. A strong chlorine odor was detected in the waste water was draining into storm drains.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	**Lake Quality Assessment** **17-9546.1** **Miami Lakes, Florida**	**LOCH DOON** **ML-14**	SHEET **13**

LAKE NUMBER ML 15, LOCH NESS

This is a narrow, elongated lake with a canal running off the east end. It has a surface area of approximately 685,590 square feet (15.74 acres). The 2008 study identified there was a littoral shelf of about 15,510 square feet. Loch Doon, Loch Ness, and Lake Ruth are connected by the Biscayne Canal, a significant South Florida Water Management District (SFWMD) conveyance system.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 10 feet. This lake did not appear to have pond dye like some of the other lakes within the Town. As this lake is a component of a significant SFWMD canal, placement of dye in this lake to impede algal and other growth would not be as effective as in other lakes with limited inflow and outflow.

Stormwater

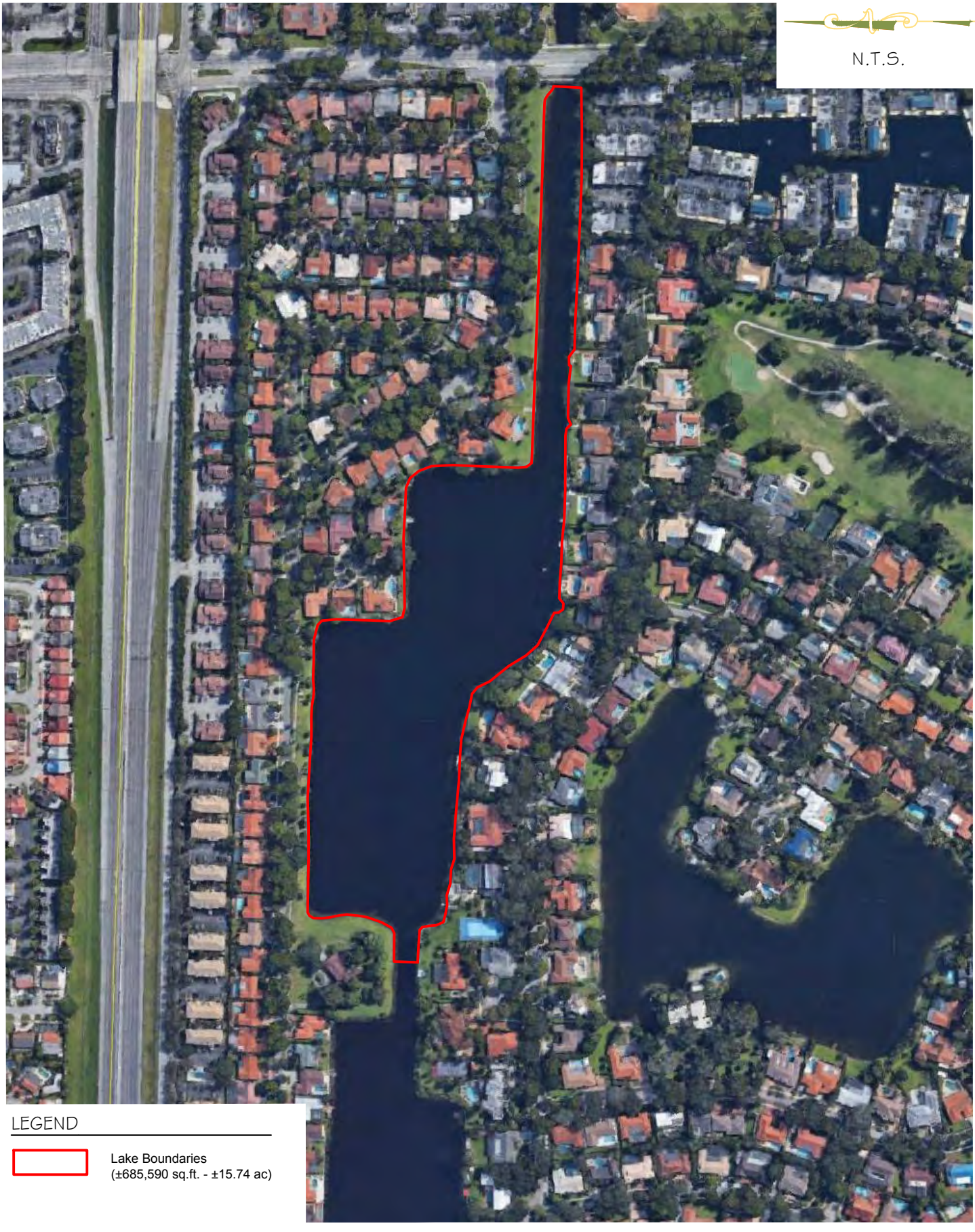
The Master Stormwater Plan showed the Loch Ness basin and sub-basin has outfalls into Loch Ness. A summary of the Storm Water Master Plan Update #1 was provided in Update Report #2 and this lake was identified as a sub-basin for which a Capital Improvement Project had been constructed. Figure 4 "Types of Drainage Systems" from the Stormwater Master plan shows the neighborhood north of the lake as a combination system of outfalls and exfiltration. The neighborhood south of the lake is depicted as an exclusively outfall system draining into a different lake. The Town's drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. Neither neighborhood surrounding the lake is shown to have a street sweeping program. Ludlam road crosses over the canal connecting Lock Ness to Lake Ruth and this street is part of the current street sweeping program.

Surrounding Properties and Parcel Information

Loch Ness is predominately surrounding by single family homes, with a small area of multi-family units along the very south easterly corner of the lake. There is a Town owned public park (P51) on the north shore with water access. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the central portion of the lake is owned by South Florida Water Management District, abutting property owners own remaining portions; and a segment abutting the park was unidentified.

Field Observations

The inspection to evaluate the lake's current condition was conducted on 5/3/18. It was observed that the shorelines were a combination of unconsolidated and concrete sandbag or concrete panel seawalls. The lake depth was measure to be 44 feet. No fountains or aerators were observed at the time of the inspection. The following native plant species were observed along the shoreline: common reed (*Phragmites australis*), spadderdock (*Nuphar advena*), and eel grass (*Vallisneria Americana*). Torpedo grass (*Panicum repens*) and Primrose willow (*Ludwigia peruviana*) were also observed along the shoreline. Torpedo grass and Primrose willow are considered category 1 invasive exotic plants by the Florida Exotic Pest Plant Council. Pet waste signage and collection bags were observed in the open space on the north side of the lake. Additional signage included: no fishing, no jet skis, and no boat launching. At the time of inspection, power washing of the sidewalks and curbing was observed. A strong chlorine odor was detected in the waste water draining into storm drains.



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS	**Lake Quality Assessment** **17-9546.1** **Miami Lakes, Florida**	**LOCH NESS** **ML-15**	SHEET **14**

LAKE NUMBER ML16, LOCH LOMOND

Loch Lomond is an irregular shaped lake with a surface area of approximately 543,210 square feet (12.47 acre). The 2008 study identified there was a littoral shelf of about 144,483square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. At the time of inspection the lake did not appear to contain blue dye.

Stormwater

Loch Lomond sub-basin was identified in the Stormwater Master Plan with three potential outfalls, but no additional information was provided. However, stormwater drains and outfalls were observed surrounding the lake. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake as an exclusively outfall system. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. The area surrounding Loch Lomond is not part of the current street sweeping cycle.

Surrounding Properties and Parcel Information

Loch Lomond is surrounding by single family homes. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the central portion of the lake is owned by Miami Lakes Civic Association, and the perimeter of the lake is owned by abutting property owners.

Field Observations

The inspection to evaluate the lake’s current condition was conducted on 7/20/18. It was observed that the shorelines were a combination of unconsolidated and concrete sandbag. The lake depth was measure to be 30 feet. No fountains or aerators were observed at the time of the inspection. Invasive species of vegetation observed along the shoreline was limited to Torpedo grass (*Panicum repens*). Observed wildlife was limited to the non-native Muscovy duck (*Cairina moschata*) at the time of the inspection.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	**Lake Quality Assessment** **17-9546.1** **Miami Lakes, Florida**	**LOCH LOMOND** **ML-16**	SHEET **15**

LAKE NUMBER ML 17, LOCH ANDREWS

This is an irregular shaped lake with a surface area of approximately 131,940 square feet (3.03 acre), with no littoral shelf.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake appeared to contain pond dye.

Stormwater
Loch Andrews sub-basin was identified in the Stormwater Master Plan, but no additional information was provided. However, stormwater drains and outfalls were observed surrounding the lake. Figure 4 "Types of Drainage Systems" from the Stormwater Master Plan shows the area surrounding the lake as an exclusively outfall system. The Town's drainage cleaning cycle map showed the neighborhood surrounding the lake was excluded from the drainage cleaning cycle map. The area surrounding Loch Andrews is not part of the current street sweeping cycle.

Surrounding Properties and Parcel Information
The Loch Andrews shoreline has a sea wall and is surrounded by multi-family buildings and a Town park (P53) at the western end of the lake. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, including the town on the portion abutting the park; there is one central portion that is owned by the Miami Lakes Loch Andrews HOA Inc., and another central portion of the lake's ownership was unidentified.

Field Observations
The inspection to evaluate the lake's current condition was conducted on 5/3/18. It was observed that the entire shoreline consisted of a concrete sandbag seawall with a potential footer or rock ledge at the base. Nearly all the uplands surrounding the lake were comprised of concrete decking. Some trees were observed but little to no area of ground cover vegetation to filter runoff was observed. The lake depth was not measured due to the inaccessibility created by the seawall. The 2008 study stated the average depth was 13 feet. It was observed that the lake has both fountains and aerators. At the time of the inspection, some or all of the fountains/aerators were not in operation No vegetation was observed. Observed wildlife was limited to Green iguana (*Iguana iguana*). The lake appeared to have been dyed blue.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LOCH ANDREWS ML-17	SHEET 16

LAKE NUMBER ML18, LAKE SILVERCREST SOUTH

This is a “U” lake with a surface area of approximately 182,970 square feet (4.20 acres). The 2008 study stated there was no littoral shelf.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. At the time of inspection the lake did not appear to contain blue dye.

Stormwater

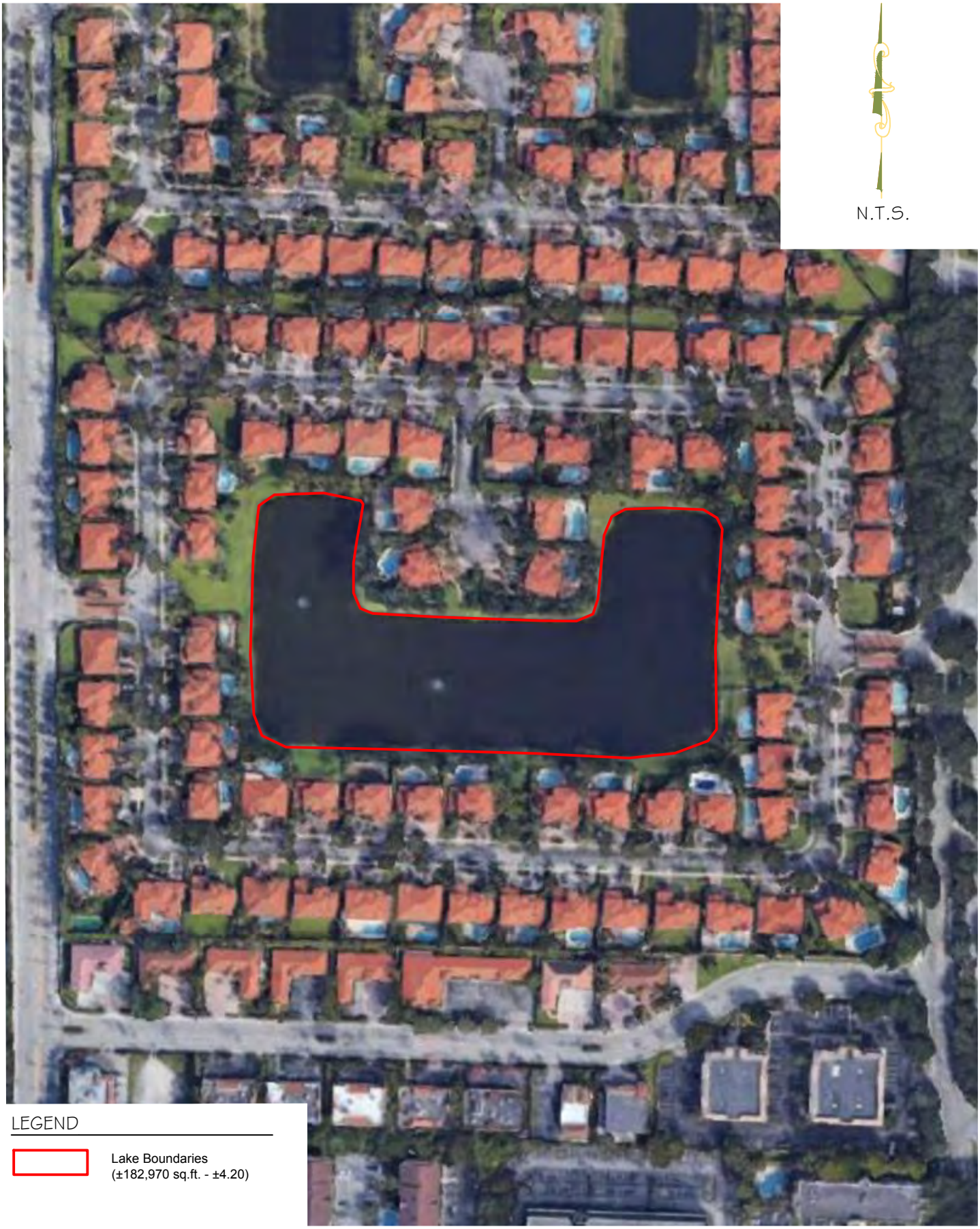
Lake Silvercrest South was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2; however, there is a drainage basin named Silvercrest in the original Stormwater Master Plan. This drainage basin appears to include Lake Silvercrest South, but the supplied documentation shows this neighborhood was still under development and additional stormwater drainage information was not included. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan does not depict this lake in the figure. It is assumed this lake was constructed after the map was created. There is the possibility of a privately owned and maintained stormwater system. The Town’s drainage cleaning cycle map excluded this lake. The neighborhood surrounding the lake is not part of the current street sweeping program, but Montrose Road abutting the west side of the neighborhood is included in the street sweeping program.

Surrounding Properties and Parcel Information

Lake Silvercrest South is surrounding by residential single family homes with lawn abutting the waterline and two (2) privately owned parks. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the lake is owned by Silvercrest Lakes Estates South Homeowner’s Association Inc.

Field Observations

The inspection to evaluate the lake’s current condition was conducted on 7/19/18. The inspection showed the shoreline was unconsolidated (lawns abutting shoreline) adjacent to single family residences. A public access area, with signage indicating no pets, exists at the northern end of the lake. The lake depth was measured to be 35 feet. Two (2) fountains were observed at the time of the inspection. The invasive species Torpedo grass (*Panicum repens*) was observed along the shoreline. Observed wildlife at the time of the inspection was limited to non-native Muscovy duck (*Cairina moschata*). At the time of inspection the lake did not appear to contain blue dye.


N.T.S.
LEGEND
Lake Boundaries
(±182,970 sq.ft. - ±4.20)

LAKE NUMBER ML19, LAKE WINDMILL WEST

This is a very angular, convoluted lake with a surface area of approximately 119,160 square feet (2.74 acre). The 2008 study stated there was no littoral shelf.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake appeared to contain pond dye.

Stormwater
Lake Windmill West was not included in the Stormwater Master Plan, Update #1 or #2. Figure 4 "Types of Drainage Systems" from the Stormwater Master Plan shows the neighborhood surrounding the lake was an exclusively outfall system, but was excluded from the Drainage and Cleaning Cycle Map. This indicates the possibility of a privately maintained stormwater system. The neighborhood around Lake Windmill West is not part of the current street sweeping program.

Surrounding Properties and Parcel Information
Lake Windmill West is surrounding by multi-family residential buildings. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, but ownership of the center of the lake is unidentified (for reference purposes was assigned folio 32-2013-004-2460).

Field Observations
The inspection to evaluate the lake's current condition was conducted on 5/3/18. It was observed there is a seawall surrounding the lake. Multi-family residences surround the lake and nearly all the uplands surrounding the lake were comprised of concrete decking. Some trees were observed but little to no area of ground cover vegetation to filter runoff was observed. The lake depth was not measured due to the inaccessibility created by the seawall. The 2008 study stated the average depth was 13 feet. Two aerators were observed at the time of inspection. A Tri-colored heron (*Egretta tricolor*) and non-native Iguana (*Iguana iguana*) were observed. No submergent or emergent vegetation was observed at this lake. This lake appeared to contain pond dye.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE WINDMILL WEST ML-19	SHEET 18

LAKE NUMBER ML20, LOCH LOMOND EAST

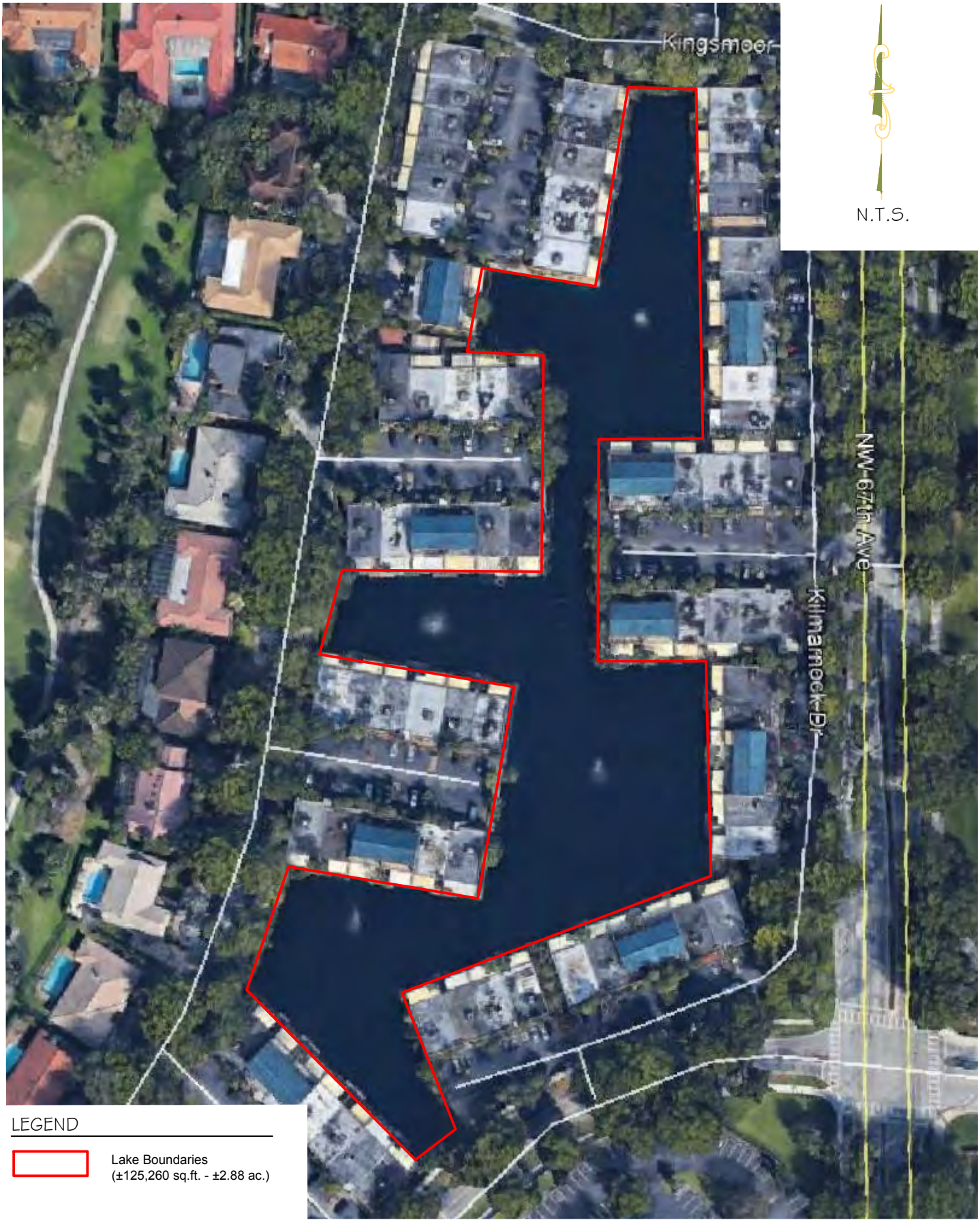
This is a very angular, convoluted lake with a surface area of approximately 125,260 square feet (2.88 acres) with no littoral shelf.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake appeared to contain pond dye.

Stormwater
Loch Lomond East sub-basin was identified in the Stormwater Master Plan, but no additional information was provided. Stormwater drains and outfalls were observed surrounding the lake. Figure 4 "Types of Drainage Systems" from the Stormwater Master Plan shows the area surrounding the lake as an exclusively outfall system. The documentation provided shows no public outfalls; however there is the possibility of a privately maintained stormwater system. The Town's drainage cleaning cycle map showed the catch basins on the west side of the lake were scheduled to be cleaned during the 2014-2015 fiscal year. The neighborhood on the eastern side of the lake was excluded from the drainage cleaning cycle map. The roads accessing the homes surrounding the lake are not a part of the street sweeping program, but NW 67th Ave. (Ludlam Road), which abuts the neighborhood on the east side, is part of the current street sweeping cycle.

Surrounding Properties and Parcel Information
Loch Lomond East is surrounding by multi-family residential buildings with a seawall surrounding the lake. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, but ownership of the center of the lake is unidentified.

Field Observations
The inspection to evaluate the lake's current condition was conducted on 5/3/18. It was observed there was a seawall surrounding the lake. Multi-family residences surround the lake and there are no lawns abutting the seawall in the uplands, mostly concrete decking. The lake depth was not measured due to the inaccessibility created by the seawall. The 2008 study stated the average depth was 18 feet. Several fountains were observed at the time of inspection. No wildlife or vegetation was observed at this lake. This lake appeared to contain pond dye.



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LOCH LOMOND EAST ML-20	SHEET 19

LAKE NUMBER ML21, LOCH LOMOND WEST

This is an angular, convoluted lake with a surface area of approximately 142,360 square feet (3.27 acres). The 2008 study stated there was no littoral shelf.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake appeared to contain pond dye.

Stormwater
Loch Lomond West basin and sub-basin were identified in the Stormwater Master Plan, but no additional information was provided. Stormwater drains and outfalls were observed surrounding the lake. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake as an exclusively outfall system. The documentation provided shows no public outfalls; however there is the possibility of a privately maintained stormwater system. The Town’s drainage cleaning cycle map excluded Loch Lomond West and the surrounding streets. The streets surrounding Loch Lomond West are not part of the current street sweeping program.

Surrounding Properties and Parcel Information
Loch Lomond West is surrounding by multi-family residential buildings. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, but ownership of the center of the lake is unidentified.

Field Observations
The inspection to evaluate the lake’s current condition was conducted on 5/3/18. It was observed there was a seawall surrounding the lake. Multi-family residences surround the lake and there are no lawns abutting the seawall, nearly all concrete decking. The lake depth was not measured due to the inaccessibility created by the seawall. The 2008 study stated the average depth was 15 feet. No fountains or aerators were observed at the time of inspection. A red-eared slider (*Trachemys scripta elegans*) and Muscovy duck (*Cairina moschata*) were observed. No submerged or emergent vegetation was observed. This lake appeared to contain pond dye.


Turnberry Dr
Crown Gate Dr
Sharpecroft Ct
Sharpecroft Dr
Miami Lakeway N
Crown Gate Ct
Bedington Rd
Crown Gate Pl
Grandal Rd
Loch Isle
N.T.S.
LEGEND
Lake Boundaries
(±142,360 sq.ft. - ±3.27 ac.)

LAKE NUMBER ML22, LOCH ISLE

This is an angular, somewhat “U” shaped lake with a surface area of approximately 125,260 square feet, (2.88 acres) with no littoral shelf.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake appeared to contain pond dye.

Stormwater
Loch Isle sub-basin was identified in the Stormwater Master Plan, but no additional information was provided. Stormwater drains and outfalls were observed surrounding the lake. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake as a combination exfiltration and outfall system. The Town’s drainage cleaning cycle map showed the neighborhood surrounding the lake was excluded from the drainage cleaning cycle map. This indicates the possibility of a privately maintained stormwater system. The immediate streets surrounding the lake are not part of the current street sweeping program but Miami Lakes Drive, which falls on the south side of the neighborhod, is part of the current street sweeping cycle.

Surrounding Properties and Parcel Information
Loch Isle is surrounding by multi-family residential buildings. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, but ownership of the center of the lake is unidentified, but for reference purposes has been assigned folio #32-2023-021-0840.

Field Observations
The inspection to evaluate the lake’s current condition was conducted on 5/3/18. It was observed there was a seawall surrounding the lake. Multi-family residences surround the lake and there are no lawns abutting the seawall, mostly concrete decking. The lake depth was not measured due to the inaccessibility created by the seawall. The 2008 study stated the average depth was 11 feet. Fountains were observed at the time of inspection, but were not operational. Recent aerial indicate there may be 5 fountains in the lake. Algae mats were observed floating within the lake. A non-native Muscovy duck (*Cairina moschata*) and native soft shelled turtle (*Apalone ferox*) were observed. This lake appeared to contain pond dye.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	**Lake Quality Assessment** **17-9546.1** **Miami Lakes, Florida**	**LOCH ISLE** **ML-22**	SHEET **21**

LAKE ML 23, UNAMED LAKE (MARY)

This lake was un-named in the previous study conducted in 2008, but has more recently been referend to as Lake Mary. This is an angular, convoluted shaped lake. The surface area of the lake is approximately 196,200 square feet (4.5 acres). The 2008 study stated there was no littoral shelf.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake appeared to contain pond dye.

Stormwater

This lake was not included in the Stormwater Master Plan, Update #1 or #2. Storm drains were observed in the multi-family residential area surrounding the lake and they appeared to be connected to outfalls surrounding the lake. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake is an exclusively outfall system. The Town’s drainage cleaning cycle map showed the catch basins were scheduled to be cleaned in fiscal year 2015-2016. The area surrounding this lake is not part of the current street sweeping program.

Surrounding Properties and Parcel Information

This lake is surrounded by multi-family buildings. All of the surrounding homeowners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, but ownership of the center of the lake is unidentified.

Field Observations

The inspection to evaluate the lake’s current condition was conducted on 5/1/18. It was observed that the entire shoreline consisted of a concrete sandbag seawall with a potential footer or rock ledge at the base. The lake depth was not measured due to the inaccessibility created by the seawall. The 2008 study stated the average depth was 12. feet. It was observed that the lake has aerators. No vegetation was observed, and observed wildlife was limited to the non-native Green Iguana (*Iguana iguana*). This lake appeared to contain pond dye.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	**Lake Quality Assessment** **17-9546.1** **Miami Lakes, Florida**	**LAKE MARY** **ML-23**	SHEET **22**

LAKE NUMBER ML24, LAKE MARTHA

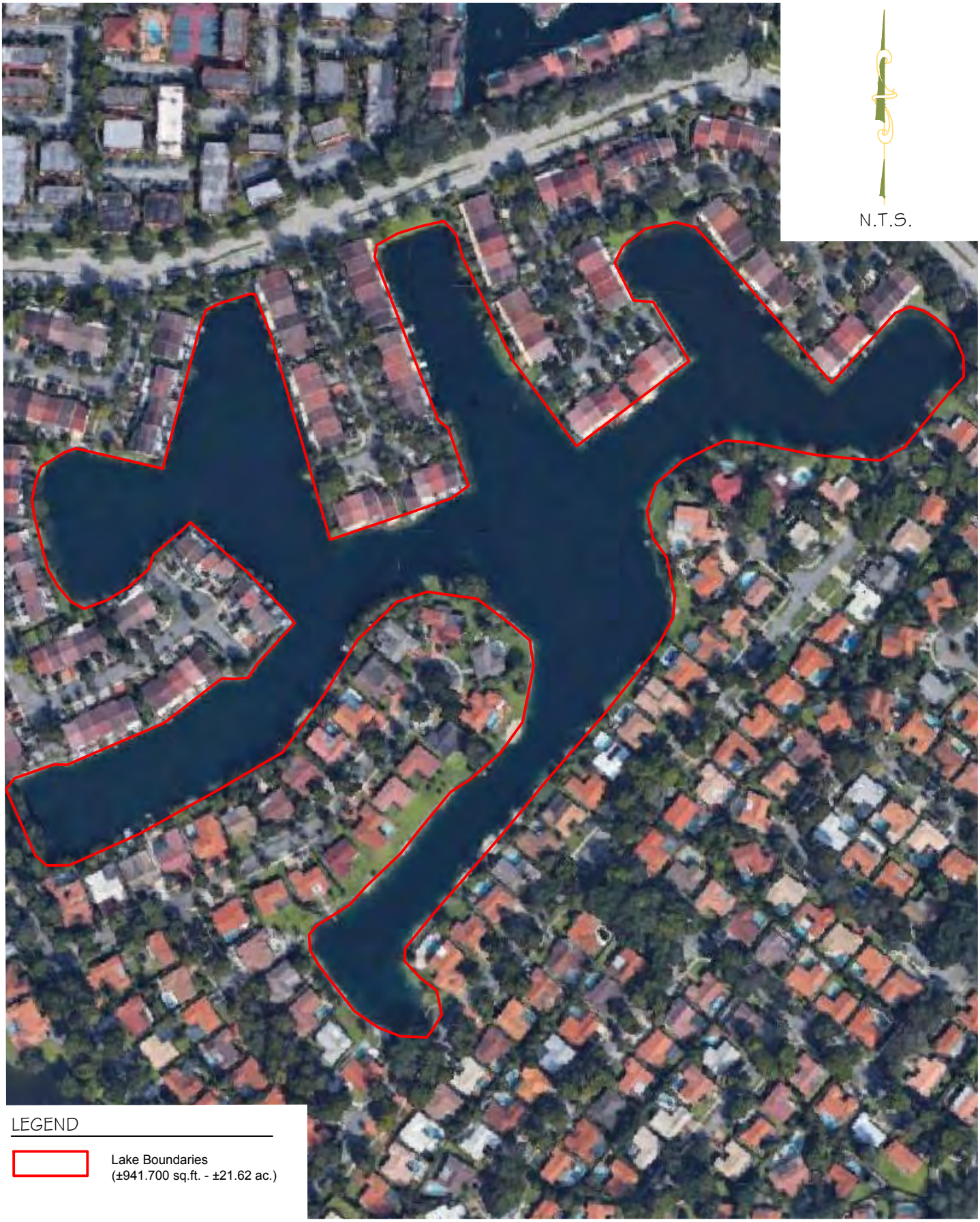
This lake has a multi-lobed, convoluted configuration with a surface area of approximately 914,700 square feet (21.62 acres). The 2008 study stated the littoral shelf was approximately 273,252 square feet.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 10 feet. This lake appeared to contain pond dye.

Stormwater
The Lake Martha sub-basin was identified in the Stormwater Master Plan, Update #1, and Update #2. This sub-basin has existing catch basins and some existing exfiltration trench tied to outfalls to Lake Martha. The Stormwater updates listed deficiencies such as catch basins full of debris and infrastructure deficiencies were noted and drainage improvements were recommended. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding Lake Martha consists of an exclusively outfall system. The Town’s drainage and cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The neighborhood surrounding the lake is not part of the current street sweeping program. However, Miami Lakes Drive which abuts the neighborhood to the north is part of the street sweeping program.

Surrounding Properties and Parcel Information
Lake Martha is surrounding by single family residences, multi-family residential building, and four parks (P36, P37, P38, & P39). All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, with the parks owned by the Town of Miami Lakes, but ownership of the center of the lake is unidentified.

Field Observations
The inspection to evaluate the lake’s current condition was conducted on 5/1/18. It was observed that the shoreline consisted of a mix of unconsolidated shoreline, and concrete sandbag and concrete panel seawalls. The shoreline of single family residences was mostly lawns extending to the water’s edge. The multi-family residences generally have a seawall. The lake depth was measured to be 31 feet. Lake access, with signage discouraging the feeding of wildlife, was located at the three parks. No fountains or aerators were observed at the time of the inspection. Observed vegetation was limited eelgrass (*Vallisneria americana*) along the northeastern shoreline (adjacent to access area). Observed wildlife was limited to invasive exotic Green iguana (*Iguana iguana*), non-native Muscovy duck (*Cairina moschata*), non-native Egyptian goose (*Alopochen aegyptiaca*), native Double-crested cormorant (*Phalacrocorax auritus*), and Common gallinule (*Gallinula galeata*). This lake appeared to contain pond dye.



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE MARTHA ML-24	SHEET 23

LAKE NUMBER ML25, LAKE SUZIE

This lake is somewhat triangular shaped with a surface area of approximately 280,940 square feet (6.45 acre). The 2008 study stated the littoral shelf was approximately 88,210 square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 7 feet. This lake did not appear to have pond dye like some of the other lakes within the Town.

Stormwater

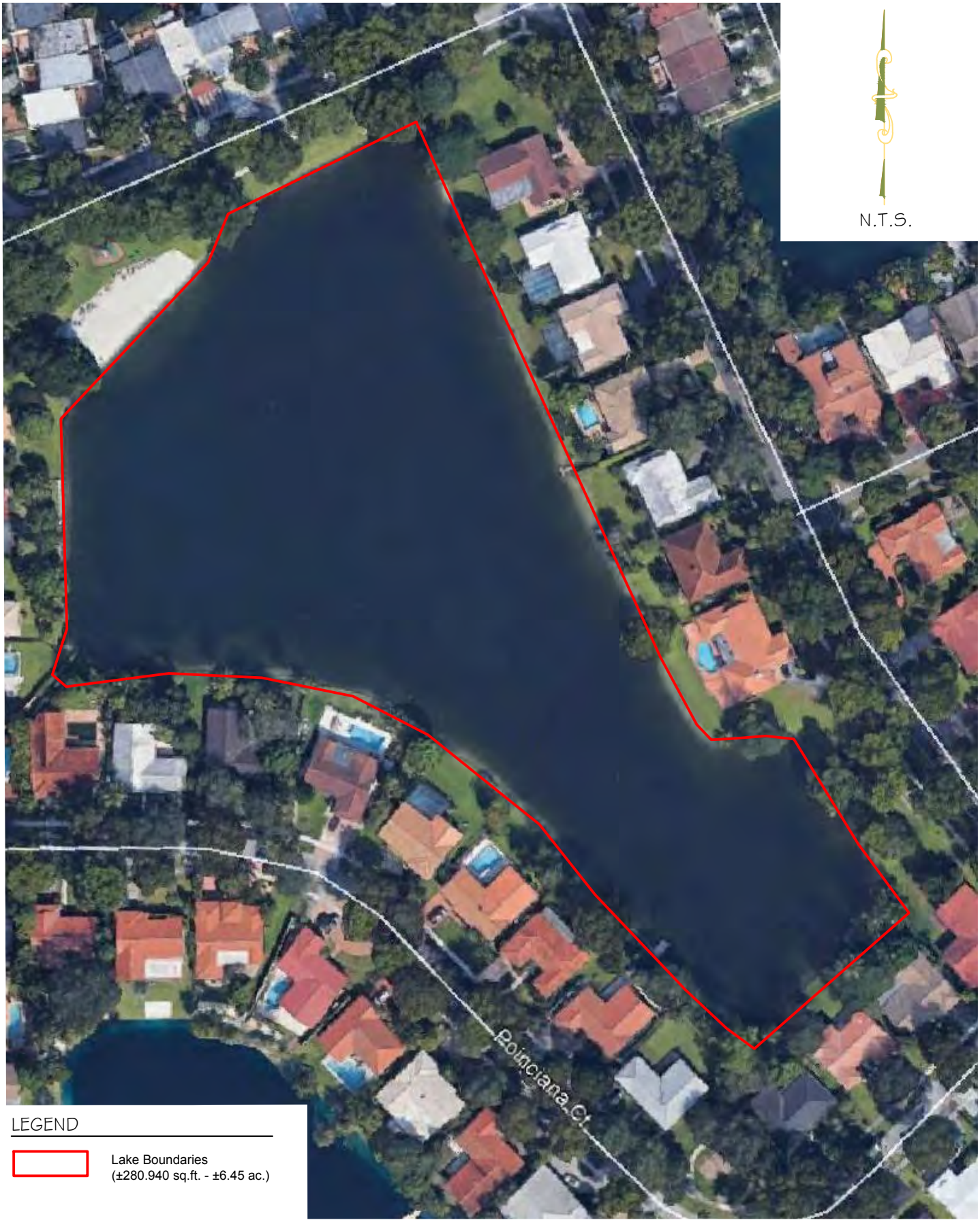
The Stormwater Master Plan Update #1 and #2 identify outfalls into Lake Suzie as part of the Lake Sara sub-basin drainage system. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding Lake Suzie consisted exclusively of an outfall system. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The area surrounding this lake is not part of the current street sweeping program.

Surrounding Properties and Parcel Information

Lake Suzie is surrounding by single family residences with lawns extending to the water’s edge. There is also a park (P32) with public beach access constructed on the north. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, and the park is owned by the Town. Ownership of the center of the lake is unidentified.

Field Observations

The inspection to evaluate the lake’s current conditions was conducted on 5/1/18. The lake depth was measured to be 15 feet. It was observed that most of the shoreline was unconsolidated shoreline with a few concrete sandbag or concrete panel seawalls. All shorelines were adjacent to turf lawns for single family residences. A public beach, with signage indicating no pets, exists at the northern end of the lake. Two (2) aerators were observed at the time of the inspection. The invasive exotic submerged species Hydrilla (*Hydrilla verticillata*) was observed along the shoreline. Hydrilla is a Category 1 invasive pest species. No wildlife was observed at the time of the inspection. This lake did not appear to have pond dye like some of the other lakes within the Town.



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE SUZIE ML-25	SHEET 24

LAKE NUMBER ML26, LAKE SARAH

This is a lake in an irregular X-shaped pattern with a surface area of approximately 576,760 square feet (13.24 acres). The 2008 study stated the littoral shelf was approximately 199,358 square feet.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 4 feet. This lake appeared to contain pond dye.

Stormwater
Lake Sarah was included in the Stormwater Master Plan Update #2. The Lake Sarah sub-basin is part of the Lake Martha drainage basin and has outfalls into Lake Sarah and Lake Suzie. Deficiencies such as catch basins full of debris and infrastructure deficiencies were noted and drainage improvements were recommended. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the neighborhood surrounding Lake Sarah consists exclusively of an outfall system. The Town’s drainage cleaning cycle map showed the catch basins were scheduled to be cleaned in fiscal year 2015-2016. The neighborhood surrounding the lake is not part of the current street sweeping program.

Surrounding Properties and Parcel Information
Lake Sarah is surrounded by single family residences. All of the surrounding properties are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners. Ownership of the center of the lake is unidentified.

Field Observations
The inspection to evaluate the lake’s current condition was conducted on 5/3/18. It was observed that most of the shoreline was unconsolidated shoreline with a few concrete sandbag or concrete panel seawalls. All shorelines were adjacent to turf lawns for single family residences. The lake depth was measured to be 20 feet. During the inspection, it was noted that roadwork in the vicinity was being conducting and the closest outfall did have a turbidity curtain surrounding it. No fountains or aerators were observed at the time of the inspection. No vegetation along the shoreline or in the lake was observed at the time of the inspection. Observed wildlife was limited to the non-native Muscovy duck (*Cairina moschata*) at the time of the inspection. This lake appeared to contain pond dye.

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Lake Quality Assessment
17-9546.1
Miami Lakes, Florida

LAKE SARAH
ML-26

SHEET
25

LAKE NUMBER ML27, LAKE ADELE

This is an irregularly shaped lake with a surface area of approximately 356,400 square feet (8.18 acres). The 2008 study stated the littoral shelf was approximately 131,125 square feet.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. At the time of inspection the lake did not appear to contain blue dye.

Stormwater
Lake Adele was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. Figure 4 "Types of Drainage Systems" from the Stormwater Master Plan shows this lake and surrounding area as "Outfall System". The Master Plan documents show three potential public outfalls. The Town's drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The neighborhood surrounding the lake is not part of the current street sweeping program

Surrounding Properties and Parcel Information
Lake Adele is surrounding by single family residences with lawns extending to the water's edge. All of the surrounding properties are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners but ownership of the center of the lake is unidentified.

Field Observations
The inspection to evaluate the lake's current condition was conducted on 7/19/18. It was observed that most of the shoreline was unconsolidated shoreline with a few concrete sandbag or concrete panel seawalls. The lake depth was measured to be 20 feet. No fountains or aerators were observed at the time of the inspection. No vegetation along the shoreline or in the lake was observed at the time of the inspection. Observed wildlife was limited to the non-native Muscovy duck (*Cairina moschata*). At the time of inspection the lake did not appear to contain blue dye.

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Lake Quality Assessment
17-9546.1
Miami Lakes, Florida

LAKE ADELE
ML-27

SHEET
26

LAKE NUMBER ML28, LAKE HILDA

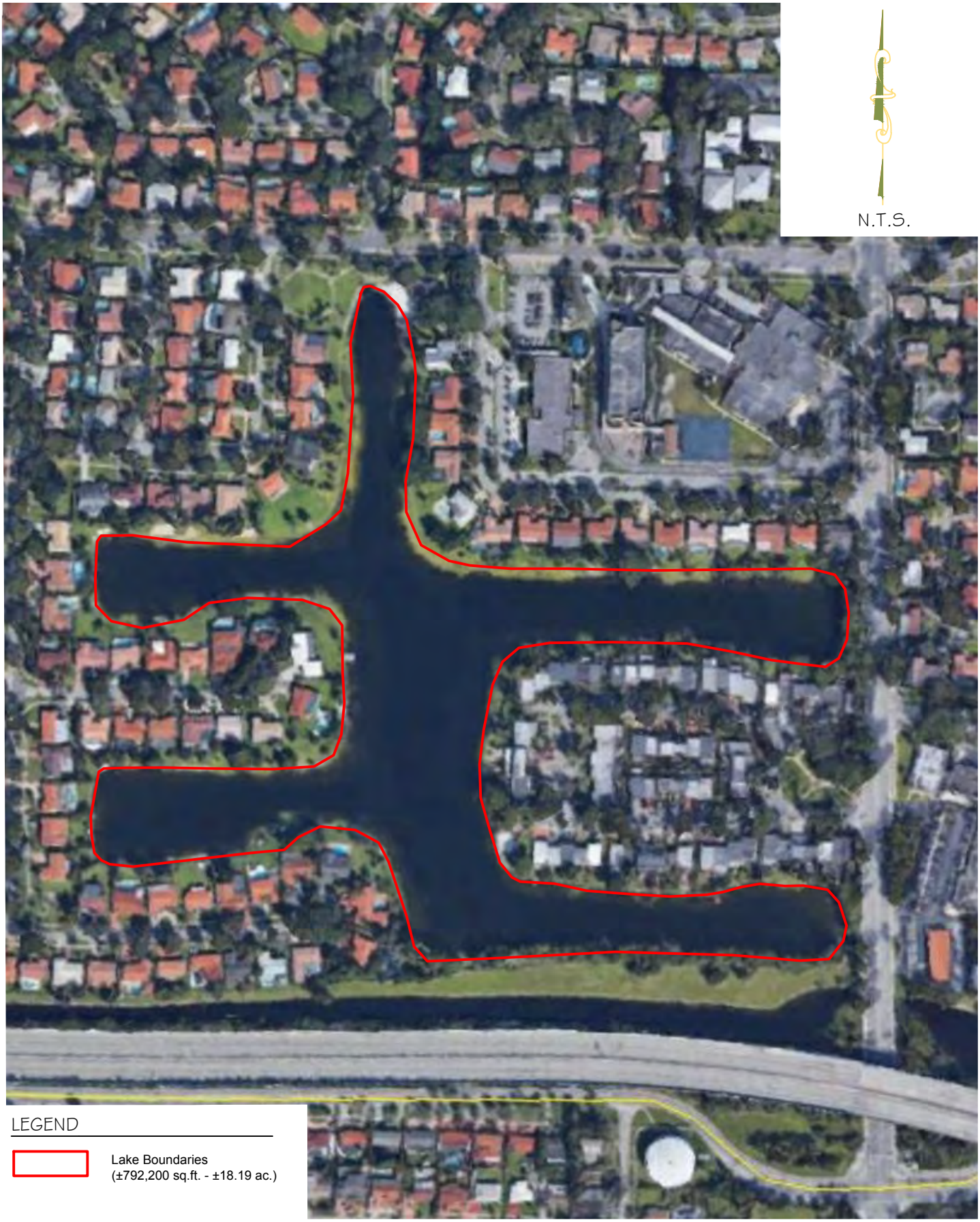
This is a five-lobed lake with a surface area of approximately 792,200 square feet (18.19 acres). The 2008 study stated the littoral shelf was approximately 359,406 square feet.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 8 feet. This lake did not appear to have pond dye like some of the other lakes within the Town.

Stormwater
The Stormwater Master Plan Update #1 identified the Lake Martha sub-basin has existing catch basins and some existing exfiltration trench tied to outfalls to Lake Hilda. Figure 4 "Types of Drainage Systems" from the Stormwater Master Plan shows the area surrounding Lake Hilda consists of an exclusively outfall system. The Town's drainage and cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The current street sweeping program includes two streets adjacent to Lake Hilda, White Oak Drive in the northeast corner and Ludlam Road on along the eastern portion of the lake.

Surrounding Properties and Parcel Information
Lake Hilda is surrounding by single family residences with lawns extending to the water's edge. There are two (2) parks (P21 & P27) on the lake with water access. All of the surrounding properties are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, with the parks owned by the Town of Miami Lakes, but ownership of the center of the lake is unidentified.

Field Observations
The inspection to evaluate the lake's current conditions was conducted on 5/1/18. The lake depth was measured to be 33 feet. It was observed that most of the shoreline was unconsolidated (grass abutting water's edge) with a few concrete sandbag or concrete panel seawalls. All shorelines were adjacent to turf lawns for single family residences. Both public parks had beaches, with signage stating no pets were allowed. No fountains or aerators were observed at the time of the inspection. The invasive exotic, submerged species Hydrilla (*Hydrilla verticillata*) was observed along the shoreline along with native, submerged eelgrass (*Vallisneria americana*) and pond apple (*Annona glabra*). Observed wildlife at the time of the inspection was limited to non-native fish the Mayan cichlid (*Cichlasoma urophthalmus*). This lake did not appear to have pond dye like some of the other lakes within the Town.



Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	**Lake Quality Assessment** **17-9546.1** **Miami Lakes, Florida**	**LAKE HILDA** **ML-28**	SHEET **27**

LAKE NUMBER ML29, LAKE PATRICIA

This is an irregularly shaped lake with a surface area of approximately 865,870 square feet (19.89 acres). The 2008 study stated the littoral shelf was approximately 329,956 square feet.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 9 feet. This lake appeared to contain pond dye, as it was an unnatural blue color.

Stormwater
The Stormwater Master Plan Update #1 identified the Lake Patricia sub-basin has catch basins and some existing exfiltration trench tied to outfalls at Lake Patricia. In addition, Stormwater Master Plan Update #2 identified the Lake Patricia sub-basin was in the design phase of a Capital Improvement Project. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake has an exclusively outfall system. The Town’s drainage and cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The streets surrounding Lake Patricia are not part of the current street sweeping program.

Surrounding Properties and Parcel Information
Lake Patricia is surrounding by single family residences and a park (P8) with lawns extending to the water’s edge. All of the surrounding properties are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, with the park owned by the Town of Miami Lakes, but ownership of the center of the lake is Miami Dade County Internal Services Department Real Estate Management.

Field Observations
The inspection to evaluate the lake’s current conditions was conducted on 5/1/18. It was observed that the shoreline consisted mostly of an unconsolidated shoreline with some concrete sandbag and concrete panel seawalls. The lake depth was measured to be 16 feet. A public park with a beach access, and signage stating no pets, was located at the southwestern portion of the lake. Both public and private beaches were observed surrounding the lake. No fountains or aerators were observed at the time of the inspection. Observed vegetation included: eelgrass (*Vallisneria americana*) along the southwestern shoreline (adjacent to access area) and Cattail (*Typha* sp.). Observed wildlife included: invasive exotic Green iguana (*Iguana iguana*), non-native Egyptian goose (*Alopochen aegyptiaca*), American coot (*Fulica americana*), Double-crested cormorant (*Phalacrocorax auritus*), American white ibis (*Eudocimus albus*), and Common gallinule (*Gallinula galeata*). This lake appeared to contain pond dye, as it was an unnatural blue color.

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Lake Quality Assessment
17-9546.1
Miami Lakes, Florida

LAKE PATRICIA
ML-29

SHEET
28

LAKE NUMBER ML30, LAKE KATHERINE

This is a convoluted shaped lake with multiple lobes. The lake has a surface area of approximately 1,234,150 square feet (28.33 acres). The 2008 study stated the littoral shelf was approximately 355,047 square feet.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake appeared to contain pond dye.

Stormwater
The Lake Katherine drainage basin and sub-basin were identified in the Stormwater Master Plan, but no additional information was included in the Master Plan or subsequent Master Plan updates. Figure 4 "Types of Drainage Systems" from the Stormwater Master Plan shows the area surrounding the lake as an exclusively outfall system. The Town's drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The residential areas immediately surrounding the lake are not part of the current street sweeping program. However, Ludlam Road on the west and Miami Lakes Drive on the north are both part of the current street sweeping program.

Surrounding Properties and Parcel Information
Lake Katherine is surrounding by single family residences, multi-family residential buildings and four parks (P44, P45, P46, & P47). The surrounding properties are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, and the parks are owned by the Town. Ownership of the center of the lake is unidentified.

Field Observations
The inspection to evaluate the lake's current conditions was conducted on 5/1/18. It was observed that the shoreline consisted of an unconsolidated shoreline and some seawalls. The shoreline of single family residences generally had lawns extending to the water's edge while the multi-family residences generally have a seawall. Some of the Single Family Residential lots had docks. The lake depth was measured to be 33 feet. Lake access was located at the northwestern portion of the lake. No fountains or aerators were observed at the time of the inspection. Observed vegetation was limited Umbrella sedge (*Cyperus alternifolis*) along the northern shoreline (adjacent to access area). Observed wildlife was limited to invasive exotic Green iguana (*Iguana iguana*) and native Common gallinule (*Gallinula galeata*). This lake appeared to contain pond dye.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS™	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE KATHERINE ML-30	SHEET 29

LAKE NUMBER ML31, LAKE RUTH

This is a roughly square shaped lake with the Biscayne Canal extending to the west and to the south. The lake has a surface area of approximately 3,514,760 square feet (80.69 acres). The 2008 study stated the littoral shelf was approximately 329,956 square feet.

Turbidity

Using a Secchi disk, the turbidity was measured with the disk visible to 6 feet. This lake did not appear to have pond dye. As this lake is a component of a significant SFWMD canal, placement of dye in this lake to impede algal and other growth would not be as effective as in other lakes with limited inflow and outflow.

Stormwater

In the Stormwater Master Plan the Ruth drainage basin was identified, and Update #1 stated the basin is a combination of outfalls into Lake Ruth and exfiltration trenches. Lake Ruth was not mentioned in Update #2. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the northeast corner of the lake has a combination outfall and exfiltration trench system. The area surrounding the northwest corner of the lake has an exclusively outfall system. The area surrounding the southwest corner of the lake has a closed system (exfiltration). The remaining areas surrounding the lake were listed as undeveloped or unknown system. The Town’s drainage cleaning cycle map showed the catch basins and french drains in this section of the Town were scheduled to be cleaned in fiscal year 2015-2016. However, the area in the southwest corner, with a closed exfiltration system, was excluded on the map. In addition the area in the northwest, with an outfall system, was also excluded from the drainage cleaning cycle map. Two streets adjacent to Lake Ruth are part of the current street sweeping program: NW 67th Avenue on the west side of the lake and portion of NW 57th Avenue on the east side of the lake.

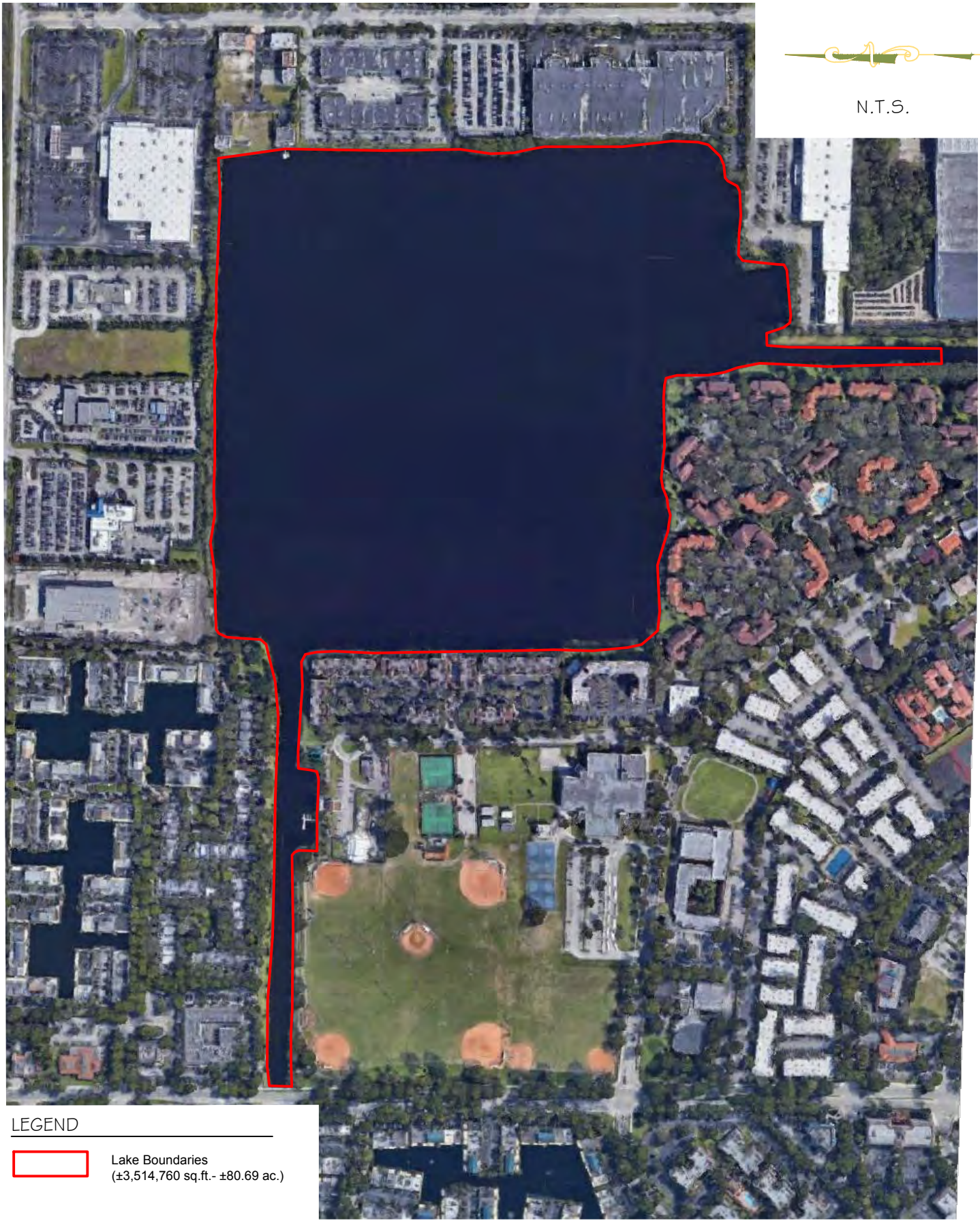
Surrounding Properties and Parcel Information

Lake Ruth is surrounding by a combination of land uses: industrial, commercial, retail, and multi-family residences. Park (P58) is located in the northwest corner of the lake. All of the surrounding properties are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, with the park owned by the Town of Miami Lakes, but ownership of the center of the lake is South Florida Water Management District, Joe Daniel INC, and Cap East Associates.

Field Observations

The inspection to evaluate the lake’s current conditions was conducted on 5/1/18. It was observed that the shoreline was a combination of unconsolidated shoreline with some concrete sandbag and concrete panel seawalls. The lake depth was measured to be 42 feet. A public park with access was located at the western portion of the lake. No fountains or aerators were observed. Observed vegetation included the following native species: eelgrass (*Vallisneria americana*), soft stem bulrush (*Scirpus tabernaemontani*), Red mangrove (*Rhizophora mangle*), Pond apple (*Annona glabra*); and the following invasive species: Cattail (*Typha* sp.), torpedo grass (*Panicum repens*), primrose willow (*Ludwigia* sp.), and common reed (*Phragmites australis*). Observed wildlife was limited to native Green heron (*Butorides virescens*). This lake did not appear to have pond dye.

N.T.S.



LEGEND

Lake Boundaries
(±3,514,760 sq.ft.- ±80.69 ac.)

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE RUTH ML-31	SHEET 30

LAKE NUMBER ML32 LAKE WINDMILL EAST

This is a very angular, irregular shaped lake with a surface area of approximately 122,640 square feet (2.82 acres) with no littoral shelf.

Turbidity
Using a Secchi disk, the turbidity was measured with the disk visible to 5 feet. This lake appeared to contain pond dye, as it was an unnatural blue color.

Stormwater
Lake Windmill East was not included in the Stormwater Master Plan, Update #1 or update #2. Figure 4 "Types of Drainage Systems" from the Stormwater Master Plan shows the neighborhood surrounding the lake was an exclusively outfall system, but was excluded from the Drainage and Cleaning Cycle Map. This indicates the possibility of a privately maintained stormwater system. The neighborhood around Lake Windmill East is not part of the current street sweeping program.

Surrounding Properties and Parcel Information
Lake Windmill East is surrounding by multi-family residential buildings. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, but ownership of the center of the lake is unidentified.

Field Observations
The inspection to evaluate the lake's current condition was conducted on 5/3/18. It was observed there was a seawall surrounding the lake with a potential rock ledge or building footer visible below the waterline. Multi-family residences surround the lake and there are no lawns abutting the seawall, mostly concrete decking. The lake depth was not measured due to the inaccessibility created by the seawall. The 2008 study stated the average depth was 15 feet. Two aerators were observed. No wildlife or vegetation was observed at this lake. This lake appeared to contain pond dye.

Calvin, Giordano & Associates, Inc. EXCEPTIONAL SOLUTIONS	Lake Quality Assessment 17-9546.1 Miami Lakes, Florida	LAKE WINDMILL EAST ML-32	SHEET 31

1. Photos from site inspection of Lake Valerie.

2. Photos from site inspection of Glenn Ellen.

3. Photos from site inspection of Lake Cynthia.

4. Photos from site inspection of Lake Sandra.

5. Photos from site inspection of Lake Carol.

6. Photos from site inspection of Lake Elizabeth.

7. Photos from site inspection of Graham Dairy.

8. Photos from site inspection of Loch Doon.

9. Photos from site inspection of Loch Ness.

10. Photos from site inspection of Loch Andrews.

11. Photos from site inspection of Lake Windmill West.

12. Photos from site inspection of Loch Lomond East.

13. Photos from site inspection of Loch Lomond West.

14. Photos from site inspection of Loch Isle.

15. Photo from site inspection of Lake Mary

16. Photos from site inspection of Lake Martha.

17. Photos from site inspection of Lake Suzy.

18. Photos from site inspection of Lake Sarah.

19. Photos from site inspection of Lake Hilda.

20. Photos from site inspection of Lake Patricia.

21. Photos from site inspection of Lake Katherine.

22. Photos from site inspection of Lake Ruth.

23. Photos from site inspection of Lake Windmill East.

24. Photos from site inspection of Unnamed Lake ML06.

25. Photos from site inspection of Lake Michael.

26. Photos from site inspection of Lake Silvercrest North.

27. Photos from site inspection of Lake Silvercrest South.

28. Photos from site inspection of Lake Gloria.

29. Photos from site inspection of Lake Rose Ann.

30. Photos from site inspection of Lake Adele.

31. Photos from site inspection of Lake Lomond.

Exhibit G. Lake Water Quality Testing Summary

Miami Lakes Water Quality Summary 2018

Lake Michael (ML01)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.4
DO	mg/L	7.20
pH	SU	8.5
Alkalinity	mg/L	120
Hardness	mg/L	100
Transparency	Feet	10' 2''
Copper	ug/L	34.2
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.43
Total Phosphorus	mg/L	0.0047
Fecal Coliform	CFU/100 mL	157

Lake Valerie (ML02)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.4
DO	mg/L	7.90
pH	SU	8.5
Alkalinity	mg/L	100
Hardness	mg/L	100
Transparency	Feet	7' 8''
Copper	ug/L	47.3
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.43
Total Phosphorus	mg/L	0.0081
Fecal Coliform	CFU/100 mL	2

Lake Rose Ann (ML03)		Date: 8/16/18
Parameter	**Units**	**Results**
Temperature	ºC	33.0
DO	mg/L	9.20
pH	SU	8.0
Alkalinity	mg/L	100
Hardness	mg/L	180
Transparency	Feet	6.0
Copper	ug/L	2.7
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.39
Total Phosphorus	mg/L	0.0061
Fecal Coliform	CFU/100 mL	1490

Lake Gloria (ML04)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.9
DO	mg/L	6.78
pH	SU	8.5
Alkalinity	mg/L	260
Hardness	mg/L	140
Transparency	Feet	9' 6''
Copper	ug/L	6.7
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.48
Total Phosphorus	mg/L	0.005
Fecal Coliform	CFU/100 mL	920

Lake Silvercrest North (ML07)		Date: 8/16/18
Parameter	**Units**	**Results**
Temperature	ºC	34.1
DO	mg/L	8.19
pH	SU	8.5
Alkalinity	mg/L	180
Hardness	mg/L	120
Transparency	Feet	6.0
Copper	ug/L	10.3
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.36
Total Phosphorus	mg/L	0.0096
Fecal Coliform	CFU/100 mL	620

Lake Silvercrest South (ML18)		Date: 8/16/18
Parameter	**Units**	**Results**
Temperature	ºC	30.9
DO	mg/L	7.73
pH	SU	8.5
Alkalinity	mg/L	125
Hardness	mg/L	120
Transparency	Feet	4.0
Copper	ug/L	11.3
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.47
Total Phosphorus	mg/L	0.0097
Fecal Coliform	CFU/100 mL	160

Note: Copper treatment was completed by Aqua Systems prior to sample collection at Silvercrest South

* Indicates DO taken at 2 feet from profiles.

Exhibit G. Lake Water Quality Testing Summary

Miami Lakes Water Quality Summary 2018

Lake Glenn Ellen (ML08)		Date: 8/16/18
Parameter	**Units**	**Results**
Temperature	ºC	31.5
DO	mg/L	7.41
pH	SU	8.5
Alkalinity	mg/L	140
Hardness	mg/L	140
Transparency	Feet	7' 4''
Copper	ug/L	2.8
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.55
Total Phosphorus	mg/L	0.0065
Fecal Coliform	CFU/100 mL	910

Lake Cynthia (ML09)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.2
DO	mg/L	9.75
pH	SU	8.0
Alkalinity	mg/L	120
Hardness	mg/L	160
Transparency	Feet	8' 3''
Copper	ug/L	16.9
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.37
Total Phosphorus	mg/L	0.0074
Fecal Coliform	CFU/100 mL	115

Lake Elizabeth (ML12)		Date: 8 /15/18
Parameter	**Units**	**Results**
Temperature	ºC	32.5
DO*	mg/L	3.69
pH	SU	8.5
Alkalinity	mg/L	140
Hardness	mg/L	200
Transparency	Feet	4' 6''
Copper	ug/L	15.5
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	2.3
Total Nitrogen	mg/L	0.77
Total Phosphorus	mg/L	0.013
Fecal Coliform	CFU/100 mL	140

Note: * Indicates DO taken at 2 feet from profiles.

Lake Sandra (ML10)		Date: 8/16/18
Parameter	**Units**	**Results**
Temperature	ºC	30.2
DO	mg/L	7.35
pH	SU	8.25
Alk	mg/L	110
Hard	mg/L	100
Transparency	Feet	5.5
Copper	ug/L	9.6
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.42
Total Phosphorus	mg/L	0.018
Fecal Coliform	CFU/100 mL	84

Lake Carol (ML11)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	32.9
DO	mg/L	3.58
pH	SU	8.0
Alkalinity	mg/L	120
Hardness	mg/L	100
Transparency	Feet	8' 2''
Copper	ug/L	17.5
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.45
Total Phosphorus	mg/L	0.0064
Fecal Coliform	CFU/100 mL	8.0

Gram Dairy Lake (ML13)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	32.1
DO*	mg/L	4.10
pH	SU	8.5
Alkalinity	mg/L	120
Hardness	mg/L	100
Transparency	Feet	5' 2''
Copper	ug/L	3.4
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	2.2
Total Nitrogen	mg/L	0.73
Total Phosphorus	mg/L	0.018
Fecal Coliform	CFU/100 mL	82.0

Exhibit G. Lake Water Quality Testing Summary

Miami Lakes Water Quality Summary 2018

Lake Windmill East (ML32)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	33.1
DO	mg/L	6.81
pH	SU	8.0
Alkalinity	mg/L	200
Hardness	mg/L	100
Transparency	Feet	4.5
Copper	ug/L	7.8
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.51
Total Phosphorus	mg/L	0.02
Fecal Coliform	CFU/100 mL	23

Lake Windmill West (ML19)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.6
DO	mg/L	8.57
pH	SU	8.0
Alkalinity	mg/L	300
Hardness	mg/L	120
Transparency	Feet	3.5
Copper	ug/L	3.1
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.47
Total Phosphorus	mg/L	0.0091
Fecal Coliform	CFU/100 mL	690

Loch Lomond (ML16)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	30.8
DO	mg/L	5.15
pH	SU	8.0
Alkalinity	mg/L	120
Hardness	mg/L	100
Transparency	Feet	8' 7''
Copper	ug/L	10.6
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	2.8
Total Nitrogen	mg/L	0.53
Total Phosphorus	mg/L	0.011
Fecal Coliform	CFU/100 mL	600

Loch Lomond East (ML20)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.4
DO	mg/L	7.65
pH	SU	8.0
Alkalinity	mg/L	122
Hardness	mg/L	120
Transparency	Feet	3.0
Copper	ug/L	28.5
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.49
Total Phosphorus	mg/L	0.014
Fecal Coliform	CFU/100 mL	62

Loch Ness (ML15)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	30.5
DO*	mg/L	3.24
pH	SU	8.0
Alkalinity	mg/L	200
Hardness	mg/L	100
Transparency	Feet	8' 6''
Copper	ug/L	48.6
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	2.0
Total Nitrogen	mg/L	1.2
Total Phosphorus	mg/L	0.022
Fecal Coliform	CFU/100 mL	1080

Loch Doon (ML14)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	30.3
DO*	mg/L	5.2
pH	SU	8.0
Alkalinity	mg/L	180
Hardness	mg/L	200
Transparency	Feet	8' 2''
Copper	ug/L	15.2
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	1.1
Total Phosphorus	mg/L	0.011
Fecal Coliform	CFU/100 mL	600

Lake Ruth (ML31)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	30.7
DO*	mg/L	3.50
pH	SU	8.0
Alkalinity	mg/L	180
Hardness	mg/L	200
Transparency	Feet	7' 2''
Copper	ug/L	28.6
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	2.3
Total Nitrogen	mg/L	0.99
Total Phosphorus	mg/L	0.012
Fecal Coliform	CFU/100 mL	64

Note: * Indicates DO taken at 2 feet from profiles.

Exhibit G. Lake Water Quality Testing Summary

Miami Lakes Water Quality Summary 2018

Loch Lomond West (ML21)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	30.8
DO	mg/L	8.36
pH	SU	8.5
Alkalinity	mg/L	85
Hardness	mg/L	100
Transparency	Feet	3.0
Copper	ug/L	11.4
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.26
Total Phosphorus	mg/L	0.0067
Fecal Coliform	CFU/100 mL	320

Loch Isle (ML22)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	29.3
DO	mg/L	7.38
pH	SU	8.0
Alk	mg/L	100
Hard	mg/L	80
Transparency	Feet	2
Copper	ug/L	13.2
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.37
Total Phosphorus	mg/L	0.021
Fecal Coliform	CFU/100 mL	600

Note: * Indicates DO taken at 2 feet from profiles.

Loch Andrew (ML17)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.2
DO	mg/L	7.08
pH	SU	8.0
Alkalinity	mg/L	100
Hardness	mg/L	100
Transparency	Feet	4'est
Copper	ug/L	15.2
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	2.1
Total Nitrogen	mg/L	0.52
Total Phosphorus	mg/L	0.021
Fecal Coliform	CFU/100 mL	810

Exhibit G. Lake Water Quality Testing Summary

Miami Lakes Water Quality Summary 2018

Lake Martha (ML24)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.2
DO*	mg/L	6.50
pH	SU	7.75
Alkalinity	mg/L	115
Hardness	mg/L	100
Transparency	Feet	7' 4"
Copper	ug/L	49.2
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.47
Total Phosphorus	mg/L	0.021
Fecal Coliform	CFU/100 mL	3

Lake Adele (ML27)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.6
DO	mg/L	8.57
pH	SU	8.0
Alkalinity	mg/L	100
Hardness	mg/L	140
Transparency	Feet	5.5
Copper	ug/L	47.3
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.43
Total Phosphorus	mg/L	0.0081
Fecal Coliform	CFU/100 mL	2

Lake Hilda (ML28)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.1
DO*	mg/L	6.15
pH	SU	8.0
Alkalinity	mg/L	100
Hardness	mg/L	180
Transparency	Feet	6' 7"
Copper	ug/L	43.5
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	2.2
Total Nitrogen	mg/L	0.76
Total Phosphorus	mg/L	0.023
Fecal Coliform	CFU/100 mL	390

Lake Suzie (ML25)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	30.1
DO	mg/L	7.50
pH	SU	8.0
Alkalinity	mg/L	115
Hardness	mg/L	120
Transparency	Feet	5'est
Copper	ug/L	38.6
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.45
Total Phosphorus	mg/L	0.0077
Fecal Coliform	CFU/100 mL	290

Lake Katharine (ML30)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.3
DO*	mg/L	6.95
pH	SU	8.0
Alkalinity	mg/L	125
Hardness	mg/L	120
Transparency	Feet	6' 3"
Copper	ug/L	56.9
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.29
Total Phosphorus	mg/L	0.0095
Fecal Coliform	CFU/100 mL	<2.0

Unnamed Lake (ML23)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	29.3
DO	mg/L	7.58
pH	SU	8.0
Alkalinity	mg/L	140
Hardness	mg/L	160
Transparency	Feet	4.5
Copper	ug/L	17
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.39
Total Phosphorus	mg/L	0.016
Fecal Coliform	CFU/100 mL	770

Lake Sarah (ML26)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.0
DO*	mg/L	7.32
pH	SU	8.0
Alkalinity	mg/L	145
Hardness	mg/L	180
Transparency	Feet	8' 4"
Copper	ug/L	37.2
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.43
Total Phosphorus	mg/L	0.012
Fecal Coliform	CFU/100 mL	145

Lake Patricia (ML29)		Date: 8/15/18
Parameter	**Units**	**Results**
Temperature	ºC	31.4
DO*	mg/L	6.58
pH	SU	8.0
Alkalinity	mg/L	110
Hardness	mg/L	120
Transparency	Feet	7' 9"
Copper	ug/L	74.2
Zinc	ug/L	<11.0
Total Suspended Solids	mg/L	<5.0
BOD	mg/L	<2.0
Total Nitrogen	mg/L	0.36
Total Phosphorus	mg/L	0.013
Fecal Coliform	CFU/100 mL	25

Note: * Indicates DO taken at 2 feet from profiles.

Exhibit H. Lake Testing Results Comparitive Table

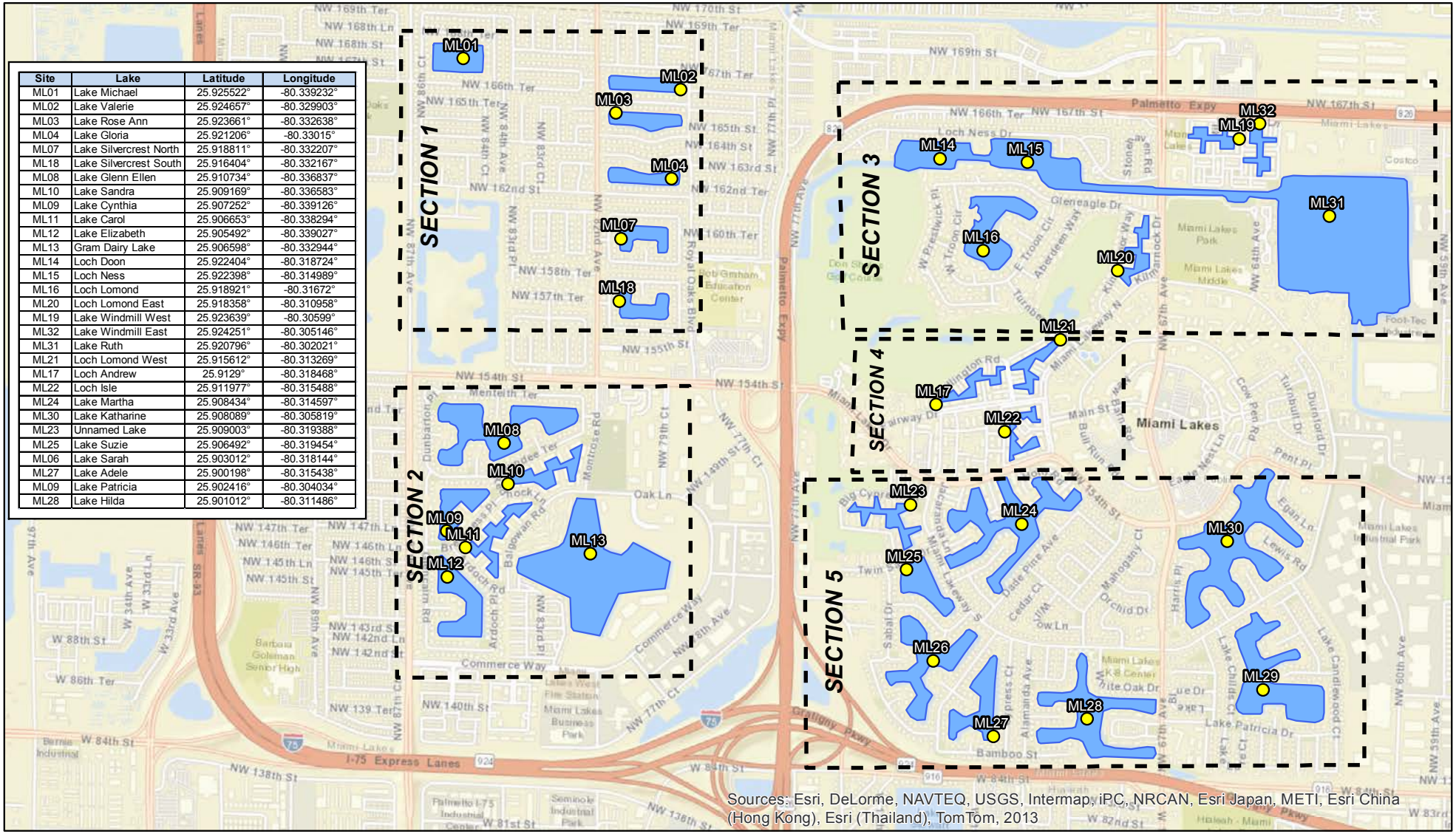
Lake Name	Lake #	Transparency Secchi Depth feet		TSS mg/L	Temp°C	DO mg/L	BOD mg/L	TN mg/L	TP mg/L	Fecal coliform CFU/100mL	Alka mg/L	Cu µ/L	Zn µ/L	Hardness mg/L	pH
Lake Michael	ML01	6	10.17	<5.0	31.4	7.2	<2.0	0.43	0.0047	157	120	34.2	<11.0	100	8.5
Lake Valerie	ML02	6	7.66	<5.0	31.4	7.9	<2.0	0.43	0.0081	2	100	47.3	<11.0	100	8.5
Lake Rose Ann	ML03	6	6	<5.0	33.0	9.2	<2.0	0.39	0.0061	1490	100	2.7	<11.0	180	8.0
Lake Gloria	ML04	5	9.5	<5.0	31.9	6.78	<2.0	0.48	0.005	920	260	6.7	<11.0	140	8.5
Unnamed Lake	ML06	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Lake Silvercrest North	ML07	5	6	<5.0	34.1	8.91	<2.0	0.36	0.0096	620	180	10.3	<11.0	120	8.5
Lake Glenn Ellen	ML08	5	7.33	<5.0	31.5	7.41	<2.0	0.55	0.0065	910	140	2.8	<11.0	140	8.5
Lake Cynthia	ML09	4	8.25	<5.0	31.2	9.72	<2.0	0.37	0.0074	115	120	16.9	<11.0	160	8.0
Lake Sandra	ML10	4	5.5	<5.0	30.2	7.35	<2.0	0.42	0.018	84	110	9.6	<11.0	100	8.3
Lake Carol	ML11	5	8.17	<5.0	32.9	3.58	<2.0	0.45	0.0064	8	120	17.5	<11.0	100	8.0
Lake Elizabeth	ML12	4	4.5	<5.0	32.5	3.69	2.3	0.77	0.013	140	140	15.5	<11.0	200	8.5
Lake Graham Dairy	ML13	5	5.17	<5.0	32.1	4.1	2.2	0.73	0.018	82	120	3.4	<11.0	100	8.5
Loch Doon	ML14	9	8.17	<5.0	30.3	5.2	<2.0	1.1	0.011	600	180	15.2	<11.0	200	8.0
Loch Ness	ML15	10	8.5	<5.0	30.5	3.24	2.0	1.2	0.022	1080	200	48.6	<11.0	100	8.0
Loch Lomond	ML16	5	8.58	<5.0	30.8	5.15	2.8	0.53	0.011	600	120	10.6	<11.0	100	8.0
Loch Andrews	ML17	5	4	<5.0	31.2	7.08	2.1	0.52	0.021	810	100	15.2	<11.0	100	8.0
Lake Silvercrest South	ML18	5	4	<5.0	30.9	7.73	<2.0	0.47	0.0097	160	125	11.3	<11.0	120	8.5
Lake Windmill West	ML19	5	3.5	<5.0	31.6	8.57	<2.0	0.47	0.0091	690	300	3.1	<11.0	120	8.0
Loch Lomond East	ML20	5	3	<5.0	31.4	7.65	<2.0	0.49	0.014	62	122	28.5	<11.0	120	8.0
Loch Lomond West	ML21	5	3	<5.0	30.8	8.36	<2.0	0.26	0.0067	320	85	11.4	<11.0	100	8.5
Loch Isle	ML22	5	2	<5.0	29.3	7.38	<2.0	0.37	0.021	600	100	13.2	<11.0	80	8.0
Unnamed Lake	ML23	5	4.5	<5.0	29.3	7.58	<2.0	0.39	0.016	770	140	17	<11.0	160	8.0
Lake Martha	ML24	10	7.33	<5.0	31.2	6.5	<2.0	0.47	0.021	3	115	49.2	<11.0	100	7.75
Lake Suzie	ML25	7	5	<5.0	30.1	7.5	<2.0	0.45	0.0077	290	115	38.6	<11.0	120	8.0
Lake Sarah	ML26	4	8.25	<5.0	31.0	7.32	<2.0	0.43	0.012	145	145	37.2	<11.0	180	8.0
Lake Adele	ML27	5	5.5	<5.0	31.6	8.57	<2.0	0.43	0.0081	2	100	47.3	<11.0	140	8.0
Lake Hilda	ML28	8	6.58	<5.0	31.1	6.15	2.2	0.76	0.023	390	100	43.5	<11.0	180	8.0
Lake Patricia	ML29	9	9.75	<5.0	31.4	6.58	<2.0	0.36	0.013	25	110	74.2	<11.0	120	8.0
Lake Katharine	ML30	5	6.25	<5.0	31.3	6.95	<2.0	0.29	0.0095	<2.0	125	56.9	<11.0	120	8.0
Lake Ruth	ML31	6	7.17	<5.0	30.7	3.5	2.3	0.99	0.012	64	180	28.6	<11.0	200	8.0
Lake Windmill East	ML32	5	4.5	<5.0	33.1	6.81	<2.0	0.51	0.02	23	200	7.8	<11.0	100	8.0

Exhibit I. 2018 Water Quality Sampling Stations

LOCATOR MAP
2018 WATER QUALITY SAMPLING STATIONS

SOLITUDE LAKE MANAGEMENT
888.480.5253
solitudelakemanagement.com

Site	Lake	Latitude	Longitude
ML01	Lake Michael	25.925522°	-80.339232°
ML02	Lake Valerie	25.924657°	-80.329903°
ML03	Lake Rose Ann	25.923661°	-80.332638°
ML04	Lake Gloria	25.921206°	-80.33015°
ML07	Lake Silvercrest North	25.918811°	-80.332207°
ML18	Lake Silvercrest South	25.916404°	-80.332167°
ML08	Lake Glenn Ellen	25.910734°	-80.336837°
ML10	Lake Sandra	25.909169°	-80.336583°
ML09	Lake Cynthia	25.907252°	-80.339126°
ML11	Lake Carol	25.906653°	-80.338294°
ML12	Lake Elizabeth	25.905492°	-80.339027°
ML13	Gram Dairy Lake	25.906598°	-80.332944°
ML14	Loch Doon	25.922404°	-80.318724°
ML15	Loch Ness	25.922398°	-80.314989°
ML16	Loch Lomond	25.918921°	-80.31672°
ML20	Loch Lomond East	25.918358°	-80.310958°
ML19	Lake Windmill West	25.923639°	-80.30599°
ML32	Lake Windmill East	25.924251°	-80.305146°
ML31	Lake Ruth	25.920796°	-80.302021°
ML21	Loch Lomond West	25.915612°	-80.313269°
ML17	Loch Andrew	25.9129°	-80.318468°
ML22	Loch Isle	25.911977°	-80.315488°
ML24	Lake Martha	25.908434°	-80.314597°
ML30	Lake Katharine	25.908089°	-80.305819°
ML23	Unnamed Lake	25.909003°	-80.319388°
ML25	Lake Suzie	25.906492°	-80.319454°
ML06	Lake Sarah	25.903012°	-80.318144°
ML27	Lake Adele	25.900198°	-80.315438°
ML09	Lake Patricia	25.902416°	-80.304034°
ML28	Lake Hilda	25.901012°	-80.311486°



Town of Miami Lakes
Miami, Florida
[Miami-Dade County]
25.925522°, -80.339232°

TOWN OF MIAMI LAKES

1:23,960

0 700 1,400 2,800 Feet

N

Map Date: 9/17/2018
File: Miami_LocatorMap
Prepared by: KM
Office: Washington, NJ

Exhibit I. 2018 Water Quality Sampling Stations

SECTION 1
2018 WATER QUALITY SAMPLING STATIONS

SOLITUDE LAKE MANAGEMENT
888.480.5253
solitudelakemanagement.com

Town of Miami Lakes
Miami, Florida
[Miami-Dade County]
25.925522°, -80.339232°

TOWN OF MIAMI LAKES

1:8,601

0 265 530 1,060 Feet

N

Map Date: 9/17/2018
File: Miami_WQStations_Section1
Prepared by: KM
Office: Washington, NJ

SECTION 2
2018 WATER QUALITY SAMPLING STATIONS

SOLITUDE LAKE MANAGEMENT
888.480.5253
solitudelakemanagement.com

Town of Miami Lakes
Miami, Florida
[Miami-Dade County]
25.925522°, -80.339232°

TOWN OF MIAMI LAKES

1:8,601

0 265 530 1,060 Feet

N

Map Date: 9/11/2018
File: Miami_WQStations_Section2
Prepared by: KM
Office: Washington, NJ

SECTION 3
2018 WATER QUALITY SAMPLING STATIONS

SOLITUDE LAKE MANAGEMENT
888.480.5253
solitudelakemanagement.com

Town of Miami Lakes
Miami, Florida
[Miami-Dade County]
25.925522°, -80.339232°

TOWN OF MIAMI LAKES

1:11,000

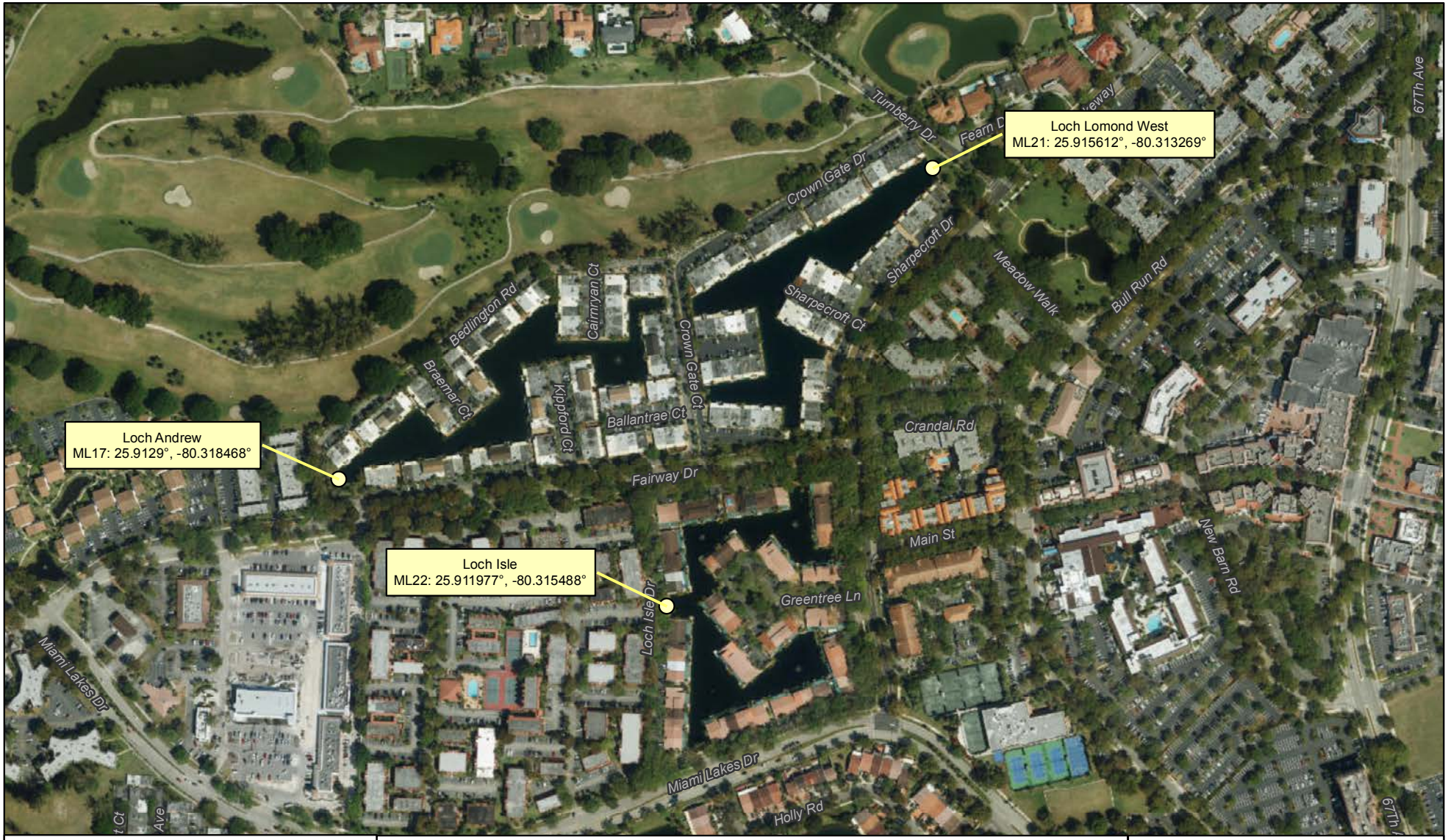
0 340 680 1,360 Feet

N

Map Date: 9/11/2018
File: Miami_WQStations_Section3
Prepared by: KM
Office: Washington, NJ

SECTION 4
2018 WATER QUALITY SAMPLING STATIONS

SOLITUDE LAKE MANAGEMENT
888.480.5253
solitudelakemanagement.com



Town of Miami Lakes
Miami, Florida
[Miami-Dade County]
25.925522°, -80.339232°

TOWN OF MIAMI LAKES

1:5,000

0 155 310 620 Feet

N

Map Date: 9/11/2018
File: Miami_WQStations_Section4
Prepared by: KM
Office: Washington, NJ

SECTION 5
2018 WATER QUALITY SAMPLING STATIONS

SOLITUDE LAKE MANAGEMENT
888.480.5253
solitudelakemanagement.com

Town of Miami Lakes
Miami, Florida
[Miami-Dade County]
25.925522°, -80.339232°

TOWN OF MIAMI LAKES

1:10,000

0 310 620 1,240 Feet

N

Map Date: 9/11/2018
File: Miami_WQStations_Section5
Prepared by: KM
Office: Washington, NJ

FLORIDA DEPARTMENT OF HEALTH
Bureau of Laboratories
Jacksonville, Miami, Pensacola, Tampa, West Palm Beach

N001756

For Lab Use Only
RECEIVED
Bureau of Public Health Labs
AUG 22 2018
1325 NW 14 Ave Miami-FL 33125
Phone: 305-324-2432

Sample Acceptance Criteria:
Preservation ☐ on ice ☐ not on ice ☐ ____°C
☐ This sample does not meet the following NELAC requirements:

SAMPLE COLLECTION AND REPORT FORM FOR NON-POTABLE WATER BACTERIOLOGICAL ANALYSIS

Program or Site Name: Firefighter Training Lakes
County: Miami-Dade Collector: GARY Joseph Collector Phone #: 7866260071
Collection Address: 7900 SW 40th St, 14200 Lake Childs Ct,
Collection City: Miami Collection State: FL Collection Zip: 33056
Date Reported: _____ Comments: _____

Circle the analysis requested

Station No.	Date & Time Collected	Total Coliform/100ml MPN (SM9221B) MF (SM9222B)	Fecal Coliform/100ml MPN (SM9221E) MF (SM9222D)	Enterococci/100ml MF (EPA 1600)	Other	Lab Number
(1) Tropical Park	08/22 8:50			24		...18000811
(4) Lake Patricia	08/22 10:17			TNTC		...18000812
(2) Amelia Earhardt Wakeboard Lake	08/22 11:08			28		...18000813

Name and Mailing Address of Person to Receive Report
FHMDC
1725 NW 167 St, Miami
FL 33056

All tests are performed in accordance with NELAC standards. Qualifier codes: (U) = not detected; (B) = results based on colony counts outside the acceptable range; (Z) = TNTC at highest dilution performed; (Q) = sample holding time exceeded.

For enforcement samples, EPA recommends a maximum of 6 hours time lapse from sample collection to analysis of samples in the lab. Samples must be scheduled with the lab in advance to arrive by 3:30PM to allow sufficient time for analysis. Lab procedures conform to EPA recommendations. Results of samples not received within this time frame may not be reliable.

DateCollected	Parameter Tested	Units	Value
1/7/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.24
1/7/2013	Fecal Coliform	CFU/100ml	210
1/7/2013	Nitrate/Nitrite (NOX)	mg/l	0.1
1/7/2013	Ortho Phosphate (OPO4)	mg/l	0.002
1/7/2013	Phosphorus, Total (TP)	mg/l	0.01
1/7/2013	Total Kjeldahl Nitrogen (TKN)	mg/l	1.72
1/7/2013	Turbidity	NTU	1.6
1/7/2013	Depth	meters	1.832
1/7/2013	Dissolved Oxygen (Fld)	mg/l	3.53
1/7/2013	pH (Field)	pH Units	7.11
1/7/2013	Salinity	ppt	0.31
1/7/2013	Specific Conductivity (Field)	umhos/cm	642
1/7/2013	Temperature (Field)	^C	23.44
1/7/2013	Dissolved Oxygen (Fld)	mg/l	5.76
1/7/2013	pH (Field)	pH Units	7.17
1/7/2013	Salinity	ppt	0.31
1/7/2013	Specific Conductivity (Field)	umhos/cm	643
1/7/2013	Temperature (Field)	^C	23.7
1/7/2013	Dissolved Oxygen (Fld)	mg/l	6.11
1/7/2013	pH (Field)	pH Units	7.25
1/7/2013	Salinity	ppt	0.31
1/7/2013	Specific Conductivity (Field)	umhos/cm	643
1/7/2013	Temperature (Field)	^C	23.89
2/4/2013	Ortho Phosphate (OPO4)	mg/l	0.002
2/4/2013	Nitrate/Nitrite (NOX)	mg/l	0.1
2/4/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.17
2/4/2013	Turbidity	NTU	1.1
2/4/2013	Fecal Coliform	CFU/100ml	210
2/4/2013	Salinity	ppt	0.31
2/4/2013	Salinity	ppt	0.31
2/4/2013	Salinity	ppt	0.32
2/4/2013	Depth	meters	2.04
2/4/2013	Dissolved Oxygen (Fld)	mg/l	6.37
2/4/2013	Dissolved Oxygen (Fld)	mg/l	6.39
2/4/2013	Dissolved Oxygen (Fld)	mg/l	6.43
2/4/2013	pH (Field)	pH Units	7.68
2/4/2013	pH (Field)	pH Units	7.68
2/4/2013	pH (Field)	pH Units	7.68
2/4/2013	Temperature (Field)	^C	20.61
2/4/2013	Temperature (Field)	^C	21.21
2/4/2013	Temperature (Field)	^C	21.47
2/4/2013	Specific Conductivity (Field)	umhos/cm	632
2/4/2013	Specific Conductivity (Field)	umhos/cm	647
2/4/2013	Specific Conductivity (Field)	umhos/cm	649
2/4/2013	Phosphorus, Total (TP)	mg/l	0.009
3/4/2013	1,1,1-Trichloroethane	ug/l	0.5
3/4/2013	1,1,2-Trichloroethane	ug/l	0.5
3/4/2013	1,1-Dichloroethane	ug/l	0.5
3/4/2013	1,1-Dichloropropene	ug/l	0.5

DateCollected	Parameter Tested	Units	Value
3/4/2013	1,2,3-Trichloropropane	ug/l	0.5
3/4/2013	1,2,4-Trimethylbenzene	ug/l	0.5
3/4/2013	1,2-Dichloroethane	ug/l	1
3/4/2013	1,2-Dichloropropane	ug/l	0.5
3/4/2013	1,3-Dichloropropane	ug/l	0.5
3/4/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.22
3/4/2013	Benzene	ug/l	0.2
3/4/2013	BOD_5	mg/l	2
3/4/2013	Bromobenzene	ug/l	0.5
3/4/2013	Bromochloromethane	ug/l	0.5
3/4/2013	Bromodichloromethane	ug/l	0.3
3/4/2013	Bromoform	ug/l	0.5
3/4/2013	Cadmium	ug/l	0.3
3/4/2013	Chlorobenzene	ug/l	0.5
3/4/2013	Chloroethane	ug/l	1
3/4/2013	Chloroform	ug/l	0.5
3/4/2013	cis-1,2-Dichloroethylene	ug/l	0.5
3/4/2013	cis-1,3-Dichloropropene	ug/l	0.3
3/4/2013	COD	mg/l	41
3/4/2013	Copper	ug/l	0.7
3/4/2013	Dibromochloromethane	ug/l	0.3
3/4/2013	Dibromomethane	ug/l	0.5
3/4/2013	Dichlorodifluoromethane	ug/l	0.5
3/4/2013	Isopropylbenzene	ug/l	0.5
3/4/2013	Lead	ug/l	3
3/4/2013	Mercury	ng/L	3
3/4/2013	Methylene Chloride	ug/l	0.5
3/4/2013	n-Butylbenzene	ug/l	0.5
3/4/2013	n-Propylbenzene	ug/l	0.5
3/4/2013	Oil & Grease	mg/l	1.4
3/4/2013	o-Xylene	ug/l	0.5
3/4/2013	Phenols	ug/l	4
3/4/2013	Phosphorus, Total (TP)	mg/l	0.007
3/4/2013	sec-Butylbenzene	ug/l	0.5
3/4/2013	Toluene	ug/l	0.5
3/4/2013	Total Dissolved Solids (TDS)	mg/l	410
3/4/2013	Total Kjeldahl Nitrogen (TKN)	mg/l	0.98
3/4/2013	Total Suspended Solids (TSS)	mg/l	6
3/4/2013	Trichlorofluoromethane	ug/l	0.5
3/4/2013	Turbidity	NTU	1
3/4/2013	Vinyl Chloride	ug/l	0.5
3/4/2013	Zinc	ug/l	4
3/4/2013	Hardness	mg/l	248
3/4/2013	Nitrate/Nitrite (NOX)	mg/l	0.07
3/4/2013	Fecal Coliform	CFU/100ml	180
3/4/2013	Depth	meters	1.936
3/4/2013	Dissolved Oxygen (Fld)	mg/l	5.99
3/4/2013	pH (Field)	pH Units	7.68
3/4/2013	Salinity	ppt	0.32

DateCollected	Parameter Tested	Units	Value
3/4/2013	Specific Conductivity (Field)	umhos/cm	656
3/4/2013	Temperature (Field)	^C	19.56
3/4/2013	Dissolved Oxygen (Fld)	mg/l	6.11
3/4/2013	pH (Field)	pH Units	7.68
3/4/2013	Salinity	ppt	0.32
3/4/2013	Specific Conductivity (Field)	umhos/cm	662
3/4/2013	Temperature (Field)	^C	19.62
3/4/2013	Dissolved Oxygen (Fld)	mg/l	6.15
3/4/2013	pH (Field)	pH Units	7.68
3/4/2013	Salinity	ppt	0.32
3/4/2013	Specific Conductivity (Field)	umhos/cm	660
3/4/2013	Temperature (Field)	^C	19.69
3/4/2013	1,1,2,2-Tetrachloroethane	ug/l	0.2
3/4/2013	1,1-Dichloroethylene	ug/l	0.5
3/4/2013	1,2-Dichlorobenzene (o)	ug/l	0.5
3/4/2013	1,3-Dichlorobenzene	ug/l	0.2
3/4/2013	1,4-Dichlorobenzene	ug/l	0.5
3/4/2013	2-Chloroethyl vinyl ether	ug/l	0.5
3/4/2013	2-Chlorotoluene (o)	ug/l	0.5
3/4/2013	2-Ethyltoluene	ug/l	0.5
3/4/2013	4-Chlorotoluene	ug/l	0.5
3/4/2013	4-Isopropyltoluene	ug/l	0.5
3/4/2013	Carbon Tetrachloride	ug/l	0.5
3/4/2013	Ethylbenzene	ug/l	0.5
3/4/2013	p&m-Xylene	ug/l	0.5
3/4/2013	Methyl Bromide (Bromomethane)	ug/l	0.5
3/4/2013	Methyl Chloride (Chloromethane)	ug/l	0.5
3/4/2013	Methyl-t-butyl ether (MTBE)	ug/l	0.5
3/4/2013	Ortho Phosphate (OPO4)	mg/l	0.002
3/4/2013	styrene	ug/l	0.5
3/4/2013	Tetrachloroethylene	ug/l	0.5
3/4/2013	trans-1,2-Dichloroethylene	ug/l	0.5
3/4/2013	trans-1,3-Dichloropropylene	ug/l	0.5
3/4/2013	Trichloroethene	ug/l	0.5
4/1/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.06
4/1/2013	Depth	meters	1.882
4/1/2013	Dissolved Oxygen (Fld)	mg/l	6.78
4/1/2013	Dissolved Oxygen (Fld)	mg/l	7.15
4/1/2013	Dissolved Oxygen (Fld)	mg/l	7.66
4/1/2013	Fecal Coliform	CFU/100ml	60
4/1/2013	Nitrate/Nitrite (NOX)	mg/l	0.16
4/1/2013	Ortho Phosphate (OPO4)	mg/l	0.002
4/1/2013	pH (Field)	pH Units	7.86
4/1/2013	pH (Field)	pH Units	7.89
4/1/2013	pH (Field)	pH Units	7.94
4/1/2013	Phosphorus, Total (TP)	mg/l	0.011
4/1/2013	Salinity	ppt	0.32
4/1/2013	Salinity	ppt	0.3
4/1/2013	Salinity	ppt	0.3

DateCollected	Parameter Tested	Units	Value
4/1/2013	Specific Conductivity (Field)	umhos/cm	652
4/1/2013	Specific Conductivity (Field)	umhos/cm	626
4/1/2013	Specific Conductivity (Field)	umhos/cm	617
4/1/2013	Temperature (Field)	^C	23.26
4/1/2013	Temperature (Field)	^C	23.42
4/1/2013	Temperature (Field)	^C	23.5
4/1/2013	Turbidity	NTU	1.1
5/6/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.35
5/6/2013	Depth	meters	1.366
5/6/2013	Dissolved Oxygen (Fld)	mg/l	5.01
5/6/2013	Dissolved Oxygen (Fld)	mg/l	5
5/6/2013	Dissolved Oxygen (Fld)	mg/l	5
5/6/2013	Nitrate/Nitrite (NOX)	mg/l	0.08
5/6/2013	DO%	% Sat	63.1
5/6/2013	DO%	% Sat	61.6
5/6/2013	DO%	% Sat	61.5
5/6/2013	Fecal Coliform	CFU/100ml	150
5/6/2013	Ortho Phosphate (OPO4)	mg/l	0.002
5/6/2013	pH (Field)	pH Units	6.85
5/6/2013	pH (Field)	pH Units	6.94
5/6/2013	pH (Field)	pH Units	6.98
5/6/2013	Phosphorus, Total (TP)	mg/l	0.011
5/6/2013	Salinity	ppt	0.3
5/6/2013	Salinity	ppt	0.3
5/6/2013	Salinity	ppt	0.3
5/6/2013	Specific Conductivity (Field)	umhos/cm	619
5/6/2013	Specific Conductivity (Field)	umhos/cm	626
5/6/2013	Specific Conductivity (Field)	umhos/cm	625
5/6/2013	Temperature (Field)	^C	25.83
5/6/2013	Temperature (Field)	^C	25.84
5/6/2013	Temperature (Field)	^C	25.83
5/6/2013	Total Kjeldahl Nitrogen (TKN)	mg/l	1.49
5/6/2013	Turbidity	NTU	1.1
6/3/2013	Turbidity	NTU	0.7
6/3/2013	DO%	% Sat	56.5
6/3/2013	DO%	% Sat	39.9
6/3/2013	DO%	% Sat	40.3
6/3/2013	BOD_5	mg/l	2
6/3/2013	COD	mg/l	28
6/3/2013	Nitrate/Nitrite (NOX)	mg/l	0.11
6/3/2013	Total Dissolved Solids (TDS)	mg/l	373
6/3/2013	Total Suspended Solids (TSS)	mg/l	7
6/3/2013	Depth	meters	1.675
6/3/2013	Dissolved Oxygen (Fld)	mg/l	3.18
6/3/2013	Dissolved Oxygen (Fld)	mg/l	3.21
6/3/2013	pH (Field)	pH Units	7.15
6/3/2013	pH (Field)	pH Units	7.22
6/3/2013	pH (Field)	pH Units	7.72
6/3/2013	Salinity	ppt	0.29

DateCollected	Parameter Tested	Units	Value
6/3/2013	Salinity	ppt	0.29
6/3/2013	Salinity	ppt	0.29
6/3/2013	Specific Conductivity (Field)	umhos/cm	594
6/3/2013	Specific Conductivity (Field)	umhos/cm	598
6/3/2013	Specific Conductivity (Field)	umhos/cm	600
6/3/2013	Temperature (Field)	^C	26.91
6/3/2013	Temperature (Field)	^C	26.91
6/3/2013	Temperature (Field)	^C	27.23
6/3/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.57
6/3/2013	Ortho Phosphate (OPO4)	mg/l	0.002
6/3/2013	Phenols	ug/l	4
6/3/2013	Phosphorus, Total (TP)	mg/l	0.012
6/3/2013	Fecal Coliform	CFU/100ml	96
6/3/2013	Dissolved Oxygen (Fld)	mg/l	7.79
7/8/2013	DO%	% Sat	42
7/8/2013	Salinity	ppt	0.34
7/8/2013	Depth	meters	1.67
7/8/2013	Dissolved Oxygen (Fld)	mg/l	3.24
7/8/2013	pH (Field)	pH Units	7.2
7/8/2013	Temperature (Field)	^C	28.72
7/8/2013	Specific Conductivity (Field)	umhos/cm	697
7/8/2013	DO%	% Sat	60.9
7/8/2013	Salinity	ppt	0.33
7/8/2013	Dissolved Oxygen (Fld)	mg/l	4.65
7/8/2013	pH (Field)	pH Units	7.26
7/8/2013	Temperature (Field)	^C	29.31
7/8/2013	Specific Conductivity (Field)	umhos/cm	685
7/8/2013	DO%	% Sat	67
7/8/2013	Salinity	ppt	0.33
7/8/2013	Dissolved Oxygen (Fld)	mg/l	5.08
7/8/2013	pH (Field)	pH Units	7.32
7/8/2013	Temperature (Field)	^C	29.66
7/8/2013	Specific Conductivity (Field)	umhos/cm	683
7/8/2013	Ortho Phosphate (OPO4)	mg/l	0.002
7/8/2013	Phosphorus, Total (TP)	mg/l	0.008
7/8/2013	Nitrate/Nitrite (NOX)	mg/l	0.21
7/8/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.49
7/8/2013	Total Kjeldahl Nitrogen (TKN)	mg/l	1.41
7/8/2013	Turbidity	NTU	1.5
7/8/2013	Fecal Coliform	CFU/100ml	85
8/5/2013	Phosphorus, Total (TP)	mg/l	0.011
8/5/2013	Nitrate/Nitrite (NOX)	mg/l	0.1
8/5/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.62
8/5/2013	Turbidity	NTU	0.7
8/5/2013	Salinity	ppt	0.29
8/5/2013	Salinity	ppt	0.29
8/5/2013	Salinity	ppt	0.29
8/5/2013	Depth	meters	1.72
8/5/2013	Dissolved Oxygen (Fld)	mg/l	2.18

DateCollected	Parameter Tested	Units	Value
8/5/2013	Dissolved Oxygen (Fld)	mg/l	2.22
8/5/2013	Dissolved Oxygen (Fld)	mg/l	2.83
8/5/2013	pH (Field)	pH Units	6.72
8/5/2013	pH (Field)	pH Units	6.73
8/5/2013	pH (Field)	pH Units	6.73
8/5/2013	Temperature (Field)	^C	28.26
8/5/2013	Temperature (Field)	^C	28.28
8/5/2013	Temperature (Field)	^C	28.29
8/5/2013	Specific Conductivity (Field)	umhos/cm	603
8/5/2013	Specific Conductivity (Field)	umhos/cm	604
8/5/2013	Specific Conductivity (Field)	umhos/cm	606
8/5/2013	Ortho Phosphate (OPO4)	mg/l	0.002
8/5/2013	Fecal Coliform	cfu/100ml	70
8/5/2013	DO%	% Sat	28
8/5/2013	DO%	% Sat	28.6
8/5/2013	DO%	% Sat	36.3
9/9/2013	DO%	% Sat	39.6
9/9/2013	DO%	% Sat	40.3
9/9/2013	DO%	% Sat	46.3
9/9/2013	Hardness	mg/l	268
9/9/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.49
9/9/2013	Cadmium	ug/l	0.3
9/9/2013	Copper	ug/l	0.7
9/9/2013	Depth	meters	1.418
9/9/2013	Dissolved Oxygen (Fld)	mg/l	3.11
9/9/2013	Dissolved Oxygen (Fld)	mg/l	3.17
9/9/2013	Dissolved Oxygen (Fld)	mg/l	3.62
9/9/2013	Lead	ug/l	3
9/9/2013	Nitrate/Nitrite (NOX)	mg/l	0.1
9/9/2013	Ortho Phosphate (OPO4)	mg/l	0.002
9/9/2013	pH (Field)	pH Units	6.97
9/9/2013	pH (Field)	pH Units	7.01
9/9/2013	pH (Field)	pH Units	7.02
9/9/2013	Phosphorus, Total (TP)	mg/l	0.014
9/9/2013	Salinity	ppt	0.29
9/9/2013	Salinity	ppt	0.29
9/9/2013	Salinity	ppt	0.3
9/9/2013	Specific Conductivity (Field)	umhos/cm	595
9/9/2013	Specific Conductivity (Field)	umhos/cm	601
9/9/2013	Specific Conductivity (Field)	umhos/cm	623
9/9/2013	Temperature (Field)	^C	27.58
9/9/2013	Temperature (Field)	^C	27.76
9/9/2013	Temperature (Field)	^C	27.98
9/9/2013	Total Kjeldahl Nitrogen (TKN)	mg/l	1.29
9/9/2013	Total Suspended Solids (TSS)	mg/l	6
9/9/2013	Turbidity	NTU	0.9
9/9/2013	Zinc	ug/l	4
9/9/2013	BOD_5	mg/l	2
9/9/2013	COD	mg/l	36

DateCollected	Parameter Tested	Units	Value
9/9/2013	Fecal Coliform	CFU/100ml	70
9/9/2013	Phenols	ug/l	4
9/9/2013	Total Dissolved Solids (TDS)	mg/l	363
10/7/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.55
10/7/2013	Nitrate/Nitrite (NOX)	mg/l	0.13
10/7/2013	Ortho Phosphate (OPO4)	mg/l	0.002
10/7/2013	Phosphorus, Total (TP)	mg/l	0.012
10/7/2013	Turbidity	NTU	0.8
10/7/2013	Fecal Coliform	CFU/100ml	38
10/7/2013	Depth	meters	1.72
10/7/2013	Dissolved Oxygen (Fld)	mg/l	3.36
10/7/2013	Dissolved Oxygen (Fld)	mg/l	3.4
10/7/2013	Dissolved Oxygen (Fld)	mg/l	3.67
10/7/2013	DO%	% Sat	42.5
10/7/2013	DO%	% Sat	43.1
10/7/2013	DO%	% Sat	46.4
10/7/2013	pH (Field)	pH Units	6.95
10/7/2013	pH (Field)	pH Units	6.98
10/7/2013	pH (Field)	pH Units	7.04
10/7/2013	Salinity	ppt	0.28
10/7/2013	Salinity	ppt	0.28
10/7/2013	Salinity	ppt	0.28
10/7/2013	Specific Conductivity (Field)	umhos/cm	583
10/7/2013	Specific Conductivity (Field)	umhos/cm	583
10/7/2013	Specific Conductivity (Field)	umhos/cm	585
10/7/2013	Temperature (Field)	^C	27.38
10/7/2013	Temperature (Field)	^C	27.38
10/7/2013	Temperature (Field)	^C	27.38
11/4/2013	DO%	% Sat	14.1
11/4/2013	DO%	% Sat	67.9
11/4/2013	Phosphorus, Total (TP)	mg/l	0.01
11/4/2013	Nitrate/Nitrite (NOX)	mg/l	0.14
11/4/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.22
11/4/2013	Turbidity	NTU	1.4
11/4/2013	Fecal Coliform	CFU/100ml	168
11/4/2013	Dissolved Oxygen (Fld)	mg/l	5.58
11/4/2013	Ortho Phosphate (OPO4)	mg/l	0.002
11/4/2013	Total Kjeldahl Nitrogen (TKN)	mg/l	1.13
11/4/2013	Salinity	ppt	0.3
11/4/2013	Salinity	ppt	0.3
11/4/2013	Salinity	ppt	0.3
11/4/2013	Depth	meters	2.447
11/4/2013	Dissolved Oxygen (Fld)	mg/l	3.91
11/4/2013	Dissolved Oxygen (Fld)	mg/l	3.97
11/4/2013	pH (Field)	pH Units	7.36
11/4/2013	pH (Field)	pH Units	7.47
11/4/2013	pH (Field)	pH Units	7.55
11/4/2013	Temperature (Field)	^C	24.95
11/4/2013	Temperature (Field)	^C	25.25

DateCollected	Parameter Tested	Units	Value
11/4/2013	Temperature (Field)	^C	25.27
11/4/2013	DO%	% Sat	48.3
11/4/2013	Specific Conductivity (Field)	umhos/cm	616
11/4/2013	Specific Conductivity (Field)	umhos/cm	617
11/4/2013	Specific Conductivity (Field)	umhos/cm	629
12/2/2013	Ortho Phosphate (OPO4)	mg/l	0.002
12/2/2013	Ammonia Nitrogen (Dissolved)	mg/l	0.26
12/2/2013	COD	mg/l	31
12/2/2013	Fecal Coliform	CFU/100ml	54
12/2/2013	Nitrate/Nitrite (NOX)	mg/l	0.4
12/2/2013	Phosphorus, Total (TP)	mg/l	0.011
12/2/2013	Total Dissolved Solids (TDS)	mg/l	347
12/2/2013	Turbidity	NTU	0.9
12/2/2013	Depth	meters	1.749
12/2/2013	Dissolved Oxygen (Fld)	mg/l	3.45
12/2/2013	Dissolved Oxygen (Fld)	mg/l	3.4
12/2/2013	Dissolved Oxygen (Fld)	mg/l	3.4
12/2/2013	DO%	% Sat	40.1
12/2/2013	DO%	% Sat	40.1
12/2/2013	DO%	% Sat	40.1
12/2/2013	pH (Field)	pH Units	7.53
12/2/2013	pH (Field)	pH Units	7.42
12/2/2013	pH (Field)	pH Units	7.44
12/2/2013	Salinity	ppt	0.28
12/2/2013	Salinity	ppt	0.28
12/2/2013	Salinity	ppt	0.28
12/2/2013	Specific Conductivity (Field)	umhos/cm	574
12/2/2013	Specific Conductivity (Field)	umhos/cm	574
12/2/2013	Specific Conductivity (Field)	umhos/cm	575
12/2/2013	Temperature (Field)	^C	23.49
12/2/2013	Temperature (Field)	^C	23.48
12/2/2013	Temperature (Field)	^C	23.49
12/2/2013	BOD_5	mg/l	2
12/2/2013	Phenols	ug/l	4
12/2/2013	Total Suspended Solids (TSS)	mg/l	6
1/6/2014	Depth	meters	1.934
1/6/2014	Dissolved Oxygen (Fld)	mg/l	4.57
1/6/2014	Salinity	ppt	0.29
1/6/2014	Specific Conductivity (Field)	umhos/cm	595
1/6/2014	Temperature (Field)	^C	23.33
1/6/2014	pH (Field)	pH Units	7.67
1/6/2014	Dissolved Oxygen (Fld)	mg/l	4.21
1/6/2014	Salinity	ppt	0.29
1/6/2014	Specific Conductivity (Field)	umhos/cm	591
1/6/2014	Temperature (Field)	^C	23.35
1/6/2014	pH (Field)	pH Units	7.45
1/6/2014	Dissolved Oxygen (Fld)	mg/l	3.81
1/6/2014	Salinity	ppt	0.28
1/6/2014	Specific Conductivity (Field)	umhos/cm	579

DateCollected	Parameter Tested	Units	Value
1/6/2014	Temperature (Field)	^C	23.55
1/6/2014	pH (Field)	pH Units	7.2
1/6/2014	Ortho Phosphate (OPO4)	mg/l	0.002
1/6/2014	Ammonia Nitrogen (Dissolved)	mg/l	0.32
1/6/2014	Nitrate/Nitrite (NOX)	mg/l	0.37
1/6/2014	Phosphorus, Total (TP)	mg/l	0.009
1/6/2014	Total Kjeldahl Nitrogen (TKN)	mg/l	1.33
1/6/2014	Turbidity	NTU	0.9
1/6/2014	DO%	% Sat	53.7
1/6/2014	DO%	% Sat	49.5
1/6/2014	DO%	% Sat	44.9
1/6/2014	Fecal Coliform	CFU/100ml	76
2/10/2014	Fecal Coliform	CFU/100ml	467
2/10/2014	DO%	% Sat	53.9
2/10/2014	Depth	meters	1.693
2/10/2014	Dissolved Oxygen (Fld)	mg/l	4.53
2/10/2014	Salinity	ppt	0.31
2/10/2014	Specific Conductivity (Field)	umhos/cm	635
2/10/2014	Temperature (Field)	^C	24.06
2/10/2014	pH (Field)	pH Units	7.3
2/10/2014	Ammonia Nitrogen (Dissolved)	mg/l	0.36
2/10/2014	Nitrate/Nitrite (NOX)	mg/l	0.16
2/10/2014	Phosphorus, Total (TP)	mg/l	0.013
2/10/2014	Turbidity	NTU	1
2/10/2014	DO%	% Sat	56.8
2/10/2014	Dissolved Oxygen (Fld)	mg/l	4.71
2/10/2014	Salinity	ppt	0.31
2/10/2014	Specific Conductivity (Field)	umhos/cm	633
2/10/2014	Temperature (Field)	^C	24.63
2/10/2014	pH (Field)	pH Units	7.21
2/10/2014	Ortho Phosphate (OPO4)	mg/l	0.002
2/10/2014	DO%	% Sat	59.6
2/10/2014	Dissolved Oxygen (Fld)	mg/l	4.89
2/10/2014	Salinity	ppt	0.31
2/10/2014	Specific Conductivity (Field)	umhos/cm	633
2/10/2014	Temperature (Field)	^C	25.31
2/10/2014	pH (Field)	pH Units	7.23
3/3/2014	Ammonia Nitrogen (Dissolved)	mg/l	0.13
3/3/2014	DO%	% Sat	68.5
3/3/2014	DO%	% Sat	70.6
3/3/2014	DO%	% Sat	76.7
3/3/2014	Phenols	ug/l	6
3/3/2014	Hardness	mg/l	238
3/3/2014	Turbidity	NTU	3.6
3/3/2014	Nitrate/Nitrite (NOX)	mg/l	0.16
3/3/2014	Total Kjeldahl Nitrogen (TKN)	mg/l	0.97
3/3/2014	COD	mg/l	37
3/3/2014	Fecal Coliform	CFU/100 ML	92
3/3/2014	Specific Conductivity (Field)	umhos/cm	621

DateCollected	Parameter Tested	Units	Value
3/3/2014	Total Dissolved Solids (TDS)	mg/l	422
3/3/2014	Dissolved Oxygen (Fld)	mg/l	5.71
3/3/2014	pH (Field)	pH Units	7.37
3/3/2014	Salinity	ppt	0.3
3/3/2014	Temperature (Field)	^C	24.44
3/3/2014	Dissolved Oxygen (Fld)	mg/l	5.9
3/3/2014	pH (Field)	pH Units	7.3
3/3/2014	Salinity	ppt	0.3
3/3/2014	Specific Conductivity (Field)	umhos/cm	622
3/3/2014	Temperature (Field)	^C	24.29
3/3/2014	Depth	meters	1.185
3/3/2014	Dissolved Oxygen (Fld)	mg/l	7.61
3/3/2014	pH (Field)	pH Units	7.43
3/3/2014	Salinity	ppt	0.3
3/3/2014	Specific Conductivity (Field)	umhos/cm	621
3/3/2014	Temperature (Field)	^C	24.3
3/3/2014	Phosphorus, Total (TP)	mg/l	0.008
3/3/2014	Zinc	ug/l	7
3/3/2014	Cadmium	ug/l	0.3
3/3/2014	Copper	ug/l	0.7
3/3/2014	Lead	ug/l	3
3/3/2014	Ortho Phosphate (OPO4)	mg/l	0.002
3/3/2014	Total Suspended Solids (TSS)	mg/l	6
3/3/2014	1,1-Dichloroethane	ug/l	0.5
3/3/2014	1,1-Dichloroethylene	ug/l	0.5
3/3/2014	1,1-Dichloropropene	ug/l	0.5
3/3/2014	1,2,3-Trichloropropane	ug/l	0.5
3/3/2014	1,1,1-Trichloroethane	ug/l	0.5
3/3/2014	1,1,2,2-Tetrachloroethane	ug/l	0.2
3/3/2014	1,1,2-Trichloroethane	ug/l	0.5
3/3/2014	1,2,4-Trimethylbenzene	ug/l	0.5
3/3/2014	1,2-Dichlorobenzene (o)	ug/l	0.5
3/3/2014	1,2-Dichloroethane	ug/l	1
3/3/2014	1,2-Dichloropropane	ug/l	0.5
3/3/2014	1,3-Dichlorobenzene (m)	ug/l	0.2
3/3/2014	1,3-Dichloropropane	ug/l	0.5
3/3/2014	1,4-Dichlorobenzene (p)	ug/l	0.5
3/3/2014	2-Chloroethyl vinyl ether	ug/l	0.5
3/3/2014	2-Chlorotoluene (o)	ug/l	0.5
3/3/2014	2-Ethyltoluene	ug/l	0.5
3/3/2014	4-Chlorotoluene (p)	ug/l	0.5
3/3/2014	4-Isopropyltoluene (p)	ug/l	0.5
3/3/2014	Arsenic	ug/l	4
3/3/2014	Benzene	ug/l	0.2
3/3/2014	BOD_5	mg/l	2
3/3/2014	Bromobenzene	ug/l	0.5
3/3/2014	Bromochloromethane	ug/l	0.5
3/3/2014	Bromodichloromethane	ug/l	0.3
3/3/2014	Bromoform	ug/l	0.5

DateCollected	Parameter Tested	Units	Value
3/3/2014	Carbon tetrachloride	ug/l	0.5
3/3/2014	Chlorobenzene	ug/l	0.5
3/3/2014	Chloroethane	ug/l	1
3/3/2014	Chloroform	ug/l	0.5
3/3/2014	Chromium	ug/l	0.7
3/3/2014	cis-1,2-Dichloroethylene	ug/l	0.5
3/3/2014	cis-1,3-Dichloropropene	ug/l	0.3
3/3/2014	Dibromochloromethane	ug/l	0.3
3/3/2014	Dibromomethane	ug/l	0.5
3/3/2014	Dichlorodifluoromethane	ug/l	0.5
3/3/2014	Ethylbenzene	ug/l	0.5
3/3/2014	Isopropylbenzene	ug/l	0.5
3/3/2014	Mercury	ng/L	3
3/3/2014	Methyl Bromide (Bromomethane)	ug/l	0.5
3/3/2014	Methyl Chloride (Chloromethane)	ug/l	0.5
3/3/2014	Methylene Chloride	ug/l	0.5
3/3/2014	Methyl-t-butyl Ether (MTBE)	ug/l	0.5
3/3/2014	n-Butylbenzene	ug/l	0.5
3/3/2014	Nickel	ug/l	2
3/3/2014	n-Propylbenzene	ug/l	0.5
3/3/2014	o-Xylene	ug/l	0.5
3/3/2014	p&m-Xylene	ug/l	0.5
3/3/2014	sec-Butylbenzene	ug/l	0.5
3/3/2014	Styrene	ug/l	0.5
3/3/2014	Tetrachloroethylene	ug/l	0.5
3/3/2014	Toluene	ug/l	0.5
3/3/2014	trans-1,2-Dichloroethylene	ug/l	0.5
3/3/2014	trans-1,3-Dichloropropylene	ug/l	0.5
3/3/2014	Trichloroethene	ug/l	0.5
3/3/2014	Trichlorofluoromethane	ug/l	0.5
3/3/2014	Vinyl Chloride	ug/l	0.5
4/7/2014	Nitrate/Nitrite (NOX)	mg/l	0.23
4/7/2014	Ammonia Nitrogen (Dissolved)	mg/l	0.06
4/7/2014	Turbidity	NTU	0.6
4/7/2014	Fecal Coliform	CFU/100 ML	134
4/7/2014	DO%	% Sat	73.9
4/7/2014	DO%	% Sat	72.6
4/7/2014	DO%	% Sat	72.4
4/7/2014	Dissolved Oxygen (Fld)	mg/l	5.83
4/7/2014	Dissolved Oxygen (Fld)	mg/l	5.84
4/7/2014	Dissolved Oxygen (Fld)	mg/l	5.94
4/7/2014	Depth	meters	1.862
4/7/2014	Salinity	ppt	0.3
4/7/2014	Salinity	ppt	0.3
4/7/2014	Salinity	ppt	0.3
4/7/2014	Specific Conductivity (Field)	umhos/cm	613
4/7/2014	Specific Conductivity (Field)	umhos/cm	612
4/7/2014	Specific Conductivity (Field)	umhos/cm	615
4/7/2014	Temperature (Field)	^C	26.37

DateCollected	Parameter Tested	Units	Value
4/7/2014	Temperature (Field)	^C	26.42
4/7/2014	Temperature (Field)	^C	26.32
4/7/2014	pH (Field)	pH Units	7.83
4/7/2014	pH (Field)	pH Units	7.75
4/7/2014	pH (Field)	pH Units	7.75
4/7/2014	Phosphorus, Total (TP)	mg/l	0.007
4/7/2014	Ortho Phosphate (OPO4)	mg/l	0.002
5/5/2014	Depth	meters	1.877
5/5/2014	Dissolved Oxygen (Fld)	mg/l	5.16
5/5/2014	DO%	% Sat	65
5/5/2014	pH (Field)	pH Units	7.69
5/5/2014	Salinity	ppt	0.3
5/5/2014	Specific Conductivity (Field)	umhos/cm	617
5/5/2014	Temperature (Field)	^C	27.13
5/5/2014	Dissolved Oxygen (Fld)	mg/l	5.55
5/5/2014	Dissolved Oxygen (Fld)	mg/l	5.64
5/5/2014	DO%	% Sat	70.4
5/5/2014	DO%	% Sat	71.9
5/5/2014	pH (Field)	pH Units	7.69
5/5/2014	pH (Field)	pH Units	7.71
5/5/2014	Salinity	ppt	0.29
5/5/2014	Salinity	ppt	0.29
5/5/2014	Specific Conductivity (Field)	umhos/cm	596
5/5/2014	Specific Conductivity (Field)	umhos/cm	599
5/5/2014	Temperature (Field)	^C	27.51
5/5/2014	Temperature (Field)	^C	27.8
5/5/2014	Turbidity	NTU	0.8
5/5/2014	Ortho Phosphate (OPO4)	mg/l	0.002
5/5/2014	Phosphorus, Total (TP)	mg/l	0.01
5/5/2014	Ammonia Nitrogen (Dissolved)	mg/l	0.05
5/5/2014	Nitrate/Nitrite (NOX)	mg/l	0.11
5/5/2014	Total Kjeldahl Nitrogen (TKN)	mg/l	0.77
5/5/2014	Fecal Coliform	CFU/100ML	250
6/2/2014	DO%	% Sat	63.7
6/2/2014	Depth	meters	1.996
6/2/2014	Dissolved Oxygen (Fld)	mg/l	5.01
6/2/2014	Salinity	ppt	0.29
6/2/2014	Specific Conductivity (Field)	umhos/cm	610
6/2/2014	Temperature (Field)	^C	27.69
6/2/2014	pH (Field)	pH Units	7.5
6/2/2014	DO%	% Sat	64
6/2/2014	Dissolved Oxygen (Fld)	mg/l	5.03
6/2/2014	Salinity	ppt	0.29
6/2/2014	Specific Conductivity (Field)	umhos/cm	612
6/2/2014	Temperature (Field)	^C	27.7
6/2/2014	pH (Field)	pH Units	7.5
6/2/2014	DO%	% Sat	64
6/2/2014	Dissolved Oxygen (Fld)	mg/l	5.03
6/2/2014	Salinity	ppt	0.29

DateCollected	Parameter Tested	Units	Value
6/2/2014	Specific Conductivity (Field)	umhos/cm	613
6/2/2014	Temperature (Field)	^C	27.69
6/2/2014	pH (Field)	pH Units	7.5
6/2/2014	Turbidity	NTU	0.8
6/2/2014	Ortho Phosphate (OPO4)	mg/l	0.002
6/2/2014	Fecal Coliform	CFU/100ml	2100
6/2/2014	BOD_5	mg/l	2
6/2/2014	Total Suspended Solids (TSS)	mg/l	6
6/2/2014	Total Dissolved Solids (TDS)	mg/l	378
6/2/2014	COD	mg/l	46
6/2/2014	Ammonia Nitrogen (Dissolved)	mg/l	0.22
6/2/2014	Phosphorus, Total (TP)	mg/l	0.01
6/2/2014	Nitrate/Nitrite (NOX)	mg/l	0.11
6/2/2014	Phenols	ug/l	4
7/7/2014	Ammonia Nitrogen (Dissolved)	mg/l	0.49
7/7/2014	Depth	meters	1.438
7/7/2014	Dissolved Oxygen (Fld)	mg/l	1.78
7/7/2014	Dissolved Oxygen (Fld)	mg/l	1.51
7/7/2014	Dissolved Oxygen (Fld)	mg/l	1.63
7/7/2014	DO%	% Sat	22.5
7/7/2014	DO%	% Sat	19.1
7/7/2014	DO%	% Sat	20.6
7/7/2014	Fecal Coliform	CFU/100 ML	100
7/7/2014	Nitrate/Nitrite (NOX)	mg/l	0.2
7/7/2014	Ortho Phosphate (OPO4)	mg/l	0.005
7/7/2014	pH (Field)	pH Units	7.69
7/7/2014	pH (Field)	pH Units	7.17
7/7/2014	pH (Field)	pH Units	7.1
7/7/2014	Salinity	ppt	0.29
7/7/2014	Salinity	ppt	0.29
7/7/2014	Salinity	ppt	0.28
7/7/2014	Specific Conductivity (Field)	umhos/cm	604
7/7/2014	Specific Conductivity (Field)	umhos/cm	600
7/7/2014	Specific Conductivity (Field)	umhos/cm	588
7/7/2014	Temperature (Field)	^C	27.19
7/7/2014	Temperature (Field)	^C	27.26
7/7/2014	Temperature (Field)	^C	27.42
7/7/2014	Total Kjeldahl Nitrogen (TKN)	mg/l	1.08
7/7/2014	Turbidity	NTU	0.7
8/4/2014	Ammonia Nitrogen (Dissolved)	mg/l	0.78
8/4/2014	Depth	meters	1.155
8/4/2014	Dissolved Oxygen (Fld)	mg/l	1.38
8/4/2014	Dissolved Oxygen (Fld)	mg/l	2.02
8/4/2014	Dissolved Oxygen (Fld)	mg/l	1.4
8/4/2014	DO%	% Sat	17.6
8/4/2014	DO%	% Sat	25.3
8/4/2014	DO%	% Sat	17.3
8/4/2014	Fecal Coliform	CFU/100 ML	200
8/4/2014	Ortho Phosphate (OPO4)	mg/l	0.003

DateCollected	Parameter Tested	Units	Value
8/4/2014	Nitrate/Nitrite (NOX)	mg/l	0.1
8/4/2014	pH (Field)	pH Units	7.01
8/4/2014	pH (Field)	pH Units	7.3
8/4/2014	pH (Field)	pH Units	6.97
8/4/2014	Phosphorus, Total (TP)	mg/l	0.014
8/4/2014	Salinity	ppt	0.29
8/4/2014	Salinity	ppt	0.29
8/4/2014	Salinity	ppt	0.28
8/4/2014	Specific Conductivity (Field)	umhos/cm	592
8/4/2014	Specific Conductivity (Field)	umhos/cm	611
8/4/2014	Specific Conductivity (Field)	umhos/cm	596
8/4/2014	Temperature (Field)	^C	27.02
8/4/2014	Temperature (Field)	^C	26.98
8/4/2014	Temperature (Field)	^C	26.9
8/4/2014	Turbidity	NTU	1.4
9/8/2014	Phosphorus, Total (TP)	mg/l	0.017
9/8/2014	Total Kjeldahl Nitrogen (TKN)	mg/l	0.88
9/8/2014	Ortho Phosphate (OPO4)	mg/l	0.002
9/8/2014	Ammonia Nitrogen (Dissolved)	mg/l	0.12
9/8/2014	COD	mg/l	32
9/8/2014	Fecal Coliform	cfu/100ml	240
9/8/2014	Hardness	mg/l	234
9/8/2014	Total Dissolved Solids (TDS)	mg/l	323
9/8/2014	Turbidity	NTU	1.4
9/8/2014	Depth	meters	1.493
9/8/2014	Dissolved Oxygen (Fld)	mg/l	2.95
9/8/2014	Dissolved Oxygen (Fld)	mg/l	4.89
9/8/2014	Dissolved Oxygen (Fld)	mg/l	5.89
9/8/2014	DO%	% Sat	38.1
9/8/2014	DO%	% Sat	64
9/8/2014	pH (Field)	pH Units	7.06
9/8/2014	pH (Field)	pH Units	7.3
9/8/2014	pH (Field)	pH Units	7.21
9/8/2014	Salinity	ppt	0.29
9/8/2014	Salinity	ppt	0.28
9/8/2014	Salinity	ppt	0.28
9/8/2014	Specific Conductivity (Field)	umhos/cm	595
9/8/2014	Specific Conductivity (Field)	umhos/cm	582
9/8/2014	Specific Conductivity (Field)	umhos/cm	578
9/8/2014	Temperature (Field)	^C	28.53
9/8/2014	Temperature (Field)	^C	29.25
9/8/2014	Temperature (Field)	^C	29.4
9/8/2014	Nitrate/Nitrite (NOX)	mg/l	0.02
9/8/2014	Total Suspended Solids (TSS)	mg/l	9
9/8/2014	Cadmium	ug/l	0.3
9/8/2014	Copper	ug/l	0.7
9/8/2014	Lead	ug/l	3
9/8/2014	Phenols	ug/l	4
9/8/2014	Zinc	ug/l	4

DateCollected	Parameter Tested	Units	Value
9/8/2014	BOD_5	mg/l	2
9/8/2014	DO%	% Sat	77.2
10/6/2014	Ammonia Nitrogen	mg/L	0.47
10/6/2014	Nitrate/Nitrite (NOX)	mg/L	0.15
10/6/2014	Phosphorus, Total (TP)	mg/L	0.013
10/6/2014	Turbidity	NTU	1.3
10/6/2014	Fecal Coliform	CFU/100ml	146
10/6/2014	DO%	% Sat	41.2
10/6/2014	Depth	meters	1.709
10/6/2014	Dissolved Oxygen (Fld)	mg/l	3.27
10/6/2014	Salinity	ppt	0.3
10/6/2014	Specific Conductivity (Field)	umhos/cm	615
10/6/2014	Temperature (Field)	^C	27.23
10/6/2014	pH (Field)	pH Units	7.16
10/6/2014	DO%	% Sat	55.6
10/6/2014	Dissolved Oxygen (Fld)	mg/l	4.34
10/6/2014	Salinity	ppt	0.28
10/6/2014	Specific Conductivity (Field)	umhos/cm	586
10/6/2014	Temperature (Field)	^C	28.12
10/6/2014	pH (Field)	pH Units	7.22
10/6/2014	DO%	% Sat	61.7
10/6/2014	Dissolved Oxygen (Fld)	mg/l	4.79
10/6/2014	Salinity	ppt	0.28
10/6/2014	Specific Conductivity (Field)	umhos/cm	578
10/6/2014	Temperature (Field)	^C	28.38
10/6/2014	pH (Field)	pH Units	7.26
10/6/2014	Ortho Phosphate (OPO4)	mg/L	0.005
11/3/2014	Ammonia Nitrogen	mg/L	0.14
11/3/2014	Nitrate/Nitrite (NOX)	mg/L	0.1
11/3/2014	Phosphorus, Total (TP)	mg/L	0.017
11/3/2014	Total Kjeldahl Nitrogen (TKN)	mg/L	0.7
11/3/2014	Turbidity	NTU	2.5
11/3/2014	Fecal Coliform	CFU/100ML	290
11/3/2014	DO%	% Sat	74
11/3/2014	Depth	meters	1.518
11/3/2014	Dissolved Oxygen (Fld)	mg/l	6.45
11/3/2014	Salinity	ppt	0.27
11/3/2014	Specific Conductivity (Field)	umhos/cm	565
11/3/2014	Temperature (Field)	^C	22.05
11/3/2014	pH (Field)	pH Units	7.67
11/3/2014	DO%	% Sat	73.6
11/3/2014	Dissolved Oxygen (Fld)	mg/l	6.37
11/3/2014	Salinity	ppt	0.27
11/3/2014	Specific Conductivity (Field)	umhos/cm	566
11/3/2014	Temperature (Field)	^C	22.47
11/3/2014	pH (Field)	pH Units	7.64
11/3/2014	DO%	% Sat	74.6
11/3/2014	Dissolved Oxygen (Fld)	mg/l	6.42
11/3/2014	Salinity	ppt	0.27

DateCollected	Parameter Tested	Units	Value
11/3/2014	Specific Conductivity (Field)	umhos/cm	567
11/3/2014	Temperature (Field)	^C	22.75
11/3/2014	pH (Field)	pH Units	7.64
11/3/2014	Ortho Phosphate (OPO4)	mg/L	0.007
12/1/2014	BOD_5	mg/L	2
12/1/2014	DO%	% Sat	82.5
12/1/2014	DO%	% Sat	84.9
12/1/2014	Ammonia Nitrogen	mg/L	0.11
12/1/2014	COD	mg/L	37
12/1/2014	Fecal Coliform	CFU/100ML	52
12/1/2014	Nitrate/Nitrite (NOX)	mg/L	0.14
12/1/2014	Total Dissolved Solids (TDS)	mg/L	390
12/1/2014	Turbidity	NTU	1.7
12/1/2014	DO%	% Sat	73.1
12/1/2014	Depth	meters	1.789
12/1/2014	Dissolved Oxygen (Fld)	mg/l	6.4
12/1/2014	Salinity	ppt	0.29
12/1/2014	Specific Conductivity (Field)	umhos/cm	596
12/1/2014	Temperature (Field)	^C	21.88
12/1/2014	pH (Field)	pH Units	7.26
12/1/2014	Dissolved Oxygen (Fld)	mg/l	7.09
12/1/2014	Salinity	ppt	0.29
12/1/2014	Specific Conductivity (Field)	umhos/cm	596
12/1/2014	Temperature (Field)	^C	22.84
12/1/2014	pH (Field)	pH Units	7.44
12/1/2014	Dissolved Oxygen (Fld)	mg/l	7.28
12/1/2014	Salinity	ppt	0.29
12/1/2014	Specific Conductivity (Field)	umhos/cm	595
12/1/2014	Temperature (Field)	^C	22.94
12/1/2014	pH (Field)	pH Units	7.53
12/1/2014	Ortho Phosphate (OPO4)	mg/L	0.006
12/1/2014	Phosphorus, Total (TP)	mg/L	0.008
12/1/2014	Total Suspended Solids (TSS)	mg/L	6
1/5/2015	Ammonia Nitrogen	mg/L	0.09
1/5/2015	Nitrate/Nitrite (NOX)	mg/L	0.04
1/5/2015	Total Kjeldahl Nitrogen (TKN)	mg/L	0.84
1/5/2015	Phosphorus, Total (TP)	mg/L	0.008
1/5/2015	Turbidity	NTU	1.3
1/5/2015	Fecal Coliform	CFU/100ML	1000
1/5/2015	DO%	% Sat	72.4
1/5/2015	DO%	% Sat	69.4
1/5/2015	DO%	% Sat	75.7
1/5/2015	Depth	meters	1.964
1/5/2015	Salinity	ppt	0.31
1/5/2015	Salinity	ppt	0.31
1/5/2015	Salinity	ppt	0.31
1/5/2015	Specific Conductivity (Field)	umhos/cm	637
1/5/2015	Specific Conductivity (Field)	umhos/cm	637
1/5/2015	Specific Conductivity (Field)	umhos/cm	638

DateCollected	Parameter Tested	Units	Value
1/5/2015	Temperature (Field)	^C	24.61
1/5/2015	Temperature (Field)	^C	25.15
1/5/2015	Temperature (Field)	^C	24.14
1/5/2015	pH (Field)	pH Units	7.11
1/5/2015	pH (Field)	pH Units	7.44
1/5/2015	pH (Field)	pH Units	7.25
1/5/2015	Dissolved Oxygen (Fld)	mg/l	5.82
1/5/2015	Dissolved Oxygen (Fld)	mg/l	6.02
1/5/2015	Dissolved Oxygen (Fld)	mg/l	6.23
1/5/2015	Ortho Phosphate (OPO4)	mg/L	0.008
2/2/2015	DO%	% Sat	76.8
2/2/2015	Depth	meters	1.909
2/2/2015	Dissolved Oxygen (Fld)	mg/l	6.89
2/2/2015	Salinity	ppt	0.31
2/2/2015	Specific Conductivity (Field)	umhos/cm	635
2/2/2015	Temperature (Field)	^C	20.56
2/2/2015	pH (Field)	pH Units	7.81
2/2/2015	DO%	% Sat	78.7
2/2/2015	Dissolved Oxygen (Fld)	mg/l	7.02
2/2/2015	Salinity	ppt	0.31
2/2/2015	Specific Conductivity (Field)	umhos/cm	635
2/2/2015	Temperature (Field)	^C	20.83
2/2/2015	pH (Field)	pH Units	7.83
2/2/2015	DO%	% Sat	79.7
2/2/2015	Dissolved Oxygen (Fld)	mg/l	7.1
2/2/2015	Salinity	ppt	0.31
2/2/2015	Specific Conductivity (Field)	umhos/cm	635
2/2/2015	Temperature (Field)	^C	20.99
2/2/2015	pH (Field)	pH Units	7.84
2/2/2015	Ortho Phosphate (OPO4)	mg/l	0.003
2/2/2015	Phosphorus, Total (TP)	mg/l	0.005
2/2/2015	Turbidity	NTU	1.1
2/2/2015	Ammonia Nitrogen	mg/l	0.1
2/2/2015	Nitrate/Nitrite (NOX)	mg/l	0.08
2/2/2015	Fecal Coliform	cfu/100 ml	134
3/2/2015	DO%	% Sat	86.2
3/2/2015	Fecal Coliform	CFU/100 ML	137
3/2/2015	Depth	meters	2.011
3/2/2015	Dissolved Oxygen (Fld)	mg/l	6.07
3/2/2015	Dissolved Oxygen (Fld)	mg/l	6.48
3/2/2015	Dissolved Oxygen (Fld)	mg/l	7.05
3/2/2015	DO%	% Sat	71.8
3/2/2015	DO%	% Sat	78.2
3/2/2015	pH (Field)	pH Units	7.64
3/2/2015	pH (Field)	pH Units	7.75
3/2/2015	pH (Field)	pH Units	8.06
3/2/2015	Salinity	ppt	0.31
3/2/2015	Salinity	ppt	0.31
3/2/2015	Salinity	ppt	0.31

DateCollected	Parameter Tested	Units	Value
3/2/2015	Specific Conductivity (Field)	umhos/cm	647
3/2/2015	Specific Conductivity (Field)	umhos/cm	642
3/2/2015	Specific Conductivity (Field)	umhos/cm	638
3/2/2015	Temperature (Field)	^C	23.62
3/2/2015	Temperature (Field)	^C	24.78
3/2/2015	Temperature (Field)	^C	25.47
3/2/2015	Ortho Phosphate (OPO4)	mg/L	0.002
3/2/2015	Ammonia Nitrogen	mg/L	0.15
3/2/2015	Arsenic	ug/L	4
3/2/2015	BOD_5	mg/L	2
3/2/2015	COD	mg/L	46
3/2/2015	Cadmium	ug/L	0.5
3/2/2015	Copper	ug/L	0.7
3/2/2015	Hardness	mg/L	238
3/2/2015	Lead	ug/L	3
3/2/2015	Mercury	ng/L	3
3/2/2015	Nitrate/Nitrite (NOX)	mg/L	0.11
3/2/2015	Phosphorus, Total (TP)	mg/L	0.008
3/2/2015	Total Dissolved Solids (TDS)	mg/L	393
3/2/2015	Total Kjeldahl Nitrogen (TKN)	mg/L	0.98
3/2/2015	Total Suspended Solids (TSS)	mg/L	6
3/2/2015	Turbidity	NTU	1
3/2/2015	Zinc	ug/L	4
4/13/2015	DO%	% Sat	86.6
4/13/2015	Ammonia Nitrogen	mg/L	0.08
4/13/2015	Turbidity	NTU	1.2
4/13/2015	DO%	% Sat	85
4/13/2015	DO%	% Sat	70.5
4/13/2015	Depth	meters	1.927
4/13/2015	Dissolved Oxygen (Fld)	mg/l	6.68
4/13/2015	Dissolved Oxygen (Fld)	mg/l	5.59
4/13/2015	Dissolved Oxygen (Fld)	mg/l	6.78
4/13/2015	Salinity	ppt	0.3
4/13/2015	Salinity	ppt	0.29
4/13/2015	Salinity	ppt	0.3
4/13/2015	Specific Conductivity (Field)	umhos/cm	604
4/13/2015	Specific Conductivity (Field)	umhos/cm	617
4/13/2015	Specific Conductivity (Field)	umhos/cm	631
4/13/2015	Temperature (Field)	^C	27.67
4/13/2015	Temperature (Field)	^C	27.15
4/13/2015	Temperature (Field)	^C	27.91
4/13/2015	pH (Field)	pH Units	7.88
4/13/2015	pH (Field)	pH Units	8.02
4/13/2015	pH (Field)	pH Units	8.06
4/13/2015	Ortho Phosphate (OPO4)	mg/L	0.003
4/13/2015	Phosphorus, Total (TP)	mg/L	0.019
4/13/2015	Fecal Coliform	CFU/100 ML	2
4/13/2015	Nitrate/Nitrite (NOX)	mg/L	0.01
5/4/2015	Ammonia Nitrogen	mg/L	0.09

DateCollected	Parameter Tested	Units	Value
5/4/2015	Phosphorus, Total (TP)	mg/L	0.019
5/4/2015	Total Kjeldahl Nitrogen (TKN)	mg/L	0.87
5/4/2015	Turbidity	NTU	1.1
5/4/2015	DO%	% Sat	70.6
5/4/2015	Depth	meters	1.826
5/4/2015	Dissolved Oxygen (Fld)	mg/l	5.74
5/4/2015	Salinity	ppt	0.31
5/4/2015	Specific Conductivity (Field)	umhos/cm	638
5/4/2015	Temperature (Field)	^C	25.74
5/4/2015	pH (Field)	pH Units	7.84
5/4/2015	DO%	% Sat	80.2
5/4/2015	Dissolved Oxygen (Fld)	mg/l	6.49
5/4/2015	Salinity	ppt	0.31
5/4/2015	Specific Conductivity (Field)	umhos/cm	637
5/4/2015	Temperature (Field)	^C	26.07
5/4/2015	pH (Field)	pH Units	7.92
5/4/2015	DO%	% Sat	81.7
5/4/2015	Dissolved Oxygen (Fld)	mg/l	6.6
5/4/2015	Salinity	ppt	0.31
5/4/2015	Specific Conductivity (Field)	umhos/cm	637
5/4/2015	Temperature (Field)	^C	26.17
5/4/2015	pH (Field)	pH Units	7.96
5/4/2015	Fecal Coliform	CFU/100 ML	210
5/4/2015	Nitrate/Nitrite (NOX)	mg/L	0.02
5/4/2015	Ortho Phosphate (OPO4)	mg/L	0.003
6/1/2015	COD	mg/L	33
6/1/2015	Depth	meters	1.953
6/1/2015	Ammonia Nitrogen	mg/L	0.08
6/1/2015	BOD_5	mg/L	2
6/1/2015	DO%	% Sat	86.7
6/1/2015	DO%	% Sat	76.8
6/1/2015	DO%	% Sat	81.6
6/1/2015	Dissolved Oxygen (Fld)	mg/l	5.91
6/1/2015	Dissolved Oxygen (Fld)	mg/l	6.23
6/1/2015	Dissolved Oxygen (Fld)	mg/l	6.59
6/1/2015	Fecal Coliform	CFU/100 ML	137
6/1/2015	Nitrate/Nitrite (NOX)	mg/L	0.03
6/1/2015	Ortho Phosphate (OPO4)	mg/L	0.002
6/1/2015	pH (Field)	pH Units	7.5
6/1/2015	pH (Field)	pH Units	7.5
6/1/2015	pH (Field)	pH Units	7.56
6/1/2015	Phosphorus, Total (TP)	mg/L	0.037
6/1/2015	Salinity	ppt	0.3
6/1/2015	Salinity	ppt	0.3
6/1/2015	Salinity	ppt	0.3
6/1/2015	Specific Conductivity (Field)	umhos/cm	624
6/1/2015	Specific Conductivity (Field)	umhos/cm	623
6/1/2015	Specific Conductivity (Field)	umhos/cm	624
6/1/2015	Temperature (Field)	^C	28.92

DateCollected	Parameter Tested	Units	Value
6/1/2015	Temperature (Field)	^C	29.31
6/1/2015	Temperature (Field)	^C	29.63
6/1/2015	Total Dissolved Solids (TDS)	mg/L	352
6/1/2015	Total Suspended Solids (TSS)	mg/L	6
6/1/2015	Turbidity	NTU	0.6
7/6/2015	DO%	% Sat	88.5
7/6/2015	Temperature (Field)	^C	32.48
7/6/2015	Dissolved Oxygen (Fld)	mg/l	6.4
7/6/2015	Dissolved Oxygen (Fld)	mg/l	5.5
7/6/2015	Dissolved Oxygen (Fld)	mg/l	6.31
7/6/2015	Salinity	ppt	0.3
7/6/2015	Salinity	ppt	0.3
7/6/2015	Salinity	ppt	0.3
7/6/2015	Nitrate/Nitrite (NOX)	mg/L	0.01
7/6/2015	Ammonia Nitrogen	mg/L	0.05
7/6/2015	Depth	meters	1.96
7/6/2015	Total Kjeldahl Nitrogen (TKN)	mg/L	0.92
7/6/2015	Turbidity	NTU	0.9
7/6/2015	Fecal Coliform	CFU/100 ML	155
7/6/2015	DO%	% Sat	74.3
7/6/2015	DO%	% Sat	86
7/6/2015	Specific Conductivity (Field)	umhos/cm	621
7/6/2015	Specific Conductivity (Field)	umhos/cm	624
7/6/2015	Specific Conductivity (Field)	umhos/cm	625
7/6/2015	Temperature (Field)	^C	31.17
7/6/2015	Temperature (Field)	^C	31.65
7/6/2015	pH (Field)	pH Units	7.93
7/6/2015	pH (Field)	pH Units	7.84
7/6/2015	pH (Field)	pH Units	7.68
7/6/2015	Ortho Phosphate (OPO4)	mg/L	0.003
7/6/2015	Phosphorus, Total (TP)	mg/L	0.007
8/3/2015	DO%	% Sat	75.6
8/3/2015	Depth	meters	1.98
8/3/2015	Salinity	ppt	0.29
8/3/2015	Specific Conductivity (Field)	umhos/cm	613
8/3/2015	Temperature (Field)	^C	29.68
8/3/2015	pH (Field)	pH Units	7.68
8/3/2015	Salinity	ppt	0.29
8/3/2015	Specific Conductivity (Field)	umhos/cm	597
8/3/2015	Temperature (Field)	^C	29.96
8/3/2015	pH (Field)	pH Units	7.83
8/3/2015	DO%	% Sat	77.9
8/3/2015	Salinity	ppt	0.29
8/3/2015	Specific Conductivity (Field)	umhos/cm	613
8/3/2015	Temperature (Field)	^C	30.17
8/3/2015	pH (Field)	pH Units	7.84
8/3/2015	Nitrate/Nitrite (NOX)	mg/L	0.01
8/3/2015	Ortho Phosphate (OPO4)	mg/L	0.002
8/3/2015	Turbidity	NTU	0.9

DateCollected	Parameter Tested	Units	Value
8/3/2015	Fecal Coliform	CFU/100 ML	128
8/3/2015	Dissolved Oxygen (Fld)	mg/l	5.74
8/3/2015	DO%	% Sat	79.1
8/3/2015	Dissolved Oxygen (Fld)	mg/l	5.98
8/3/2015	Dissolved Oxygen (Fld)	mg/l	5.86
8/3/2015	Ammonia Nitrogen	mg/L	0.08
8/3/2015	Phosphorus, Total (TP)	mg/L	0.007
9/14/2015	Total Kjeldahl Nitrogen (TKN)	mg/L	1
9/14/2015	Nitrate/Nitrite (NOX)	mg/L	0.08
9/14/2015	Phosphorus, Total (TP)	mg/L	0.011
9/14/2015	Total Dissolved Solids (TDS)	mg/L	335
9/14/2015	COD	mg/L	33
9/14/2015	Turbidity	NTU	1.1
9/14/2015	Fecal Coliform	CFU/100 ML	1100
9/14/2015	DO%	% Sat	61.2
9/14/2015	DO%	% Sat	53.7
9/14/2015	DO%	% Sat	56
9/14/2015	Depth	meters	1.825
9/14/2015	Dissolved Oxygen (Fld)	mg/l	4.26
9/14/2015	Dissolved Oxygen (Fld)	mg/l	4.08
9/14/2015	Dissolved Oxygen (Fld)	mg/l	4.66
9/14/2015	Salinity	ppt	0.29
9/14/2015	Salinity	ppt	0.29
9/14/2015	Salinity	ppt	0.29
9/14/2015	Specific Conductivity (Field)	umhos/cm	615
9/14/2015	Specific Conductivity (Field)	umhos/cm	610
9/14/2015	Specific Conductivity (Field)	umhos/cm	601
9/14/2015	Temperature (Field)	^C	29.62
9/14/2015	Temperature (Field)	^C	29.52
9/14/2015	Temperature (Field)	^C	29.46
9/14/2015	pH (Field)	pH Units	7.19
9/14/2015	pH (Field)	pH Units	7.45
9/14/2015	pH (Field)	pH Units	7.31
9/14/2015	Ortho Phosphate (OPO4)	mg/L	0.003
9/14/2015	Ammonia Nitrogen	mg/L	0.32
9/14/2015	Total Suspended Solids (TSS)	mg/L	6
9/14/2015	BOD_5	mg/L	2
10/5/2015	Ammonia Nitrogen	mg/L	0.3
10/5/2015	Nitrate/Nitrite (NOX)	mg/L	0.15
10/5/2015	Phosphorus, Total (TP)	mg/L	0.009
10/5/2015	Turbidity	NTU	1
10/5/2015	Fecal Coliform	CFU/100 ML	2700
10/5/2015	DO%	% Sat	83.2
10/5/2015	Dissolved Oxygen (Fld)	mg/l	6.41
10/5/2015	Dissolved Oxygen (Fld)	mg/l	6.16
10/5/2015	Dissolved Oxygen (Fld)	mg/l	6.06
10/5/2015	DO%	% Sat	77.2
10/5/2015	DO%	% Sat	78.4
10/5/2015	Depth	meters	1.864

DateCollected	Parameter Tested	Units	Value
10/5/2015	Salinity	ppt	0.28
10/5/2015	Salinity	ppt	0.28
10/5/2015	Salinity	ppt	0.28
10/5/2015	Specific Conductivity (Field)	umhos/cm	579
10/5/2015	Specific Conductivity (Field)	umhos/cm	577
10/5/2015	Specific Conductivity (Field)	umhos/cm	576
10/5/2015	Temperature (Field)	^C	27.72
10/5/2015	Temperature (Field)	^C	27.65
10/5/2015	Temperature (Field)	^C	27.62
10/5/2015	pH (Field)	pH Units	7.64
10/5/2015	pH (Field)	pH Units	7.28
10/5/2015	pH (Field)	pH Units	7.35
10/5/2015	Ortho Phosphate (OPO4)	mg/L	0.003
11/2/2015	Fecal Coliform	CFU/100 ML	164
11/2/2015	Total Kjeldahl Nitrogen (TKN)	mg/L	1.17
11/2/2015	Nitrate/Nitrite (NOX)	mg/L	0.21
11/2/2015	Turbidity	NTU	1.2
11/2/2015	DO%	% Sat	59.6
11/2/2015	DO%	% Sat	36.3
11/2/2015	DO%	% Sat	53.9
11/2/2015	Depth	meters	1.886
11/2/2015	Dissolved Oxygen (Fld)	mg/l	2.9
11/2/2015	Dissolved Oxygen (Fld)	mg/l	4.25
11/2/2015	Salinity	ppt	0.29
11/2/2015	Salinity	ppt	0.29
11/2/2015	Salinity	ppt	0.29
11/2/2015	Specific Conductivity (Field)	umhos/cm	605
11/2/2015	Specific Conductivity (Field)	umhos/cm	608
11/2/2015	Specific Conductivity (Field)	umhos/cm	608
11/2/2015	Temperature (Field)	^C	26.93
11/2/2015	Temperature (Field)	^C	27.86
11/2/2015	Temperature (Field)	^C	27.46
11/2/2015	pH (Field)	pH Units	7.2
11/2/2015	pH (Field)	pH Units	7.27
11/2/2015	pH (Field)	pH Units	7.32
11/2/2015	Dissolved Oxygen (Fld)	mg/l	4.67
11/2/2015	Ortho Phosphate (OPO4)	mg/L	0.003
11/2/2015	Ammonia Nitrogen	mg/L	0.29
11/2/2015	Phosphorus, Total (TP)	mg/L	0.013
12/7/2015	Nitrate/Nitrite (NOX)	mg/L	0.27
12/7/2015	Phosphorus, Total (TP)	mg/L	0.02
12/7/2015	Total Dissolved Solids (TDS)	mg/L	332
12/7/2015	COD	mg/L	30
12/7/2015	Turbidity	NTU	1.5
12/7/2015	Fecal Coliform	CFU/100 ML	64
12/7/2015	DO%	% Sat	30.8
12/7/2015	DO%	% Sat	28
12/7/2015	DO%	% Sat	28.4
12/7/2015	Depth	meters	2.278

DateCollected	Parameter Tested	Units	Value
12/7/2015	Dissolved Oxygen (Fld)	mg/l	2.54
12/7/2015	Dissolved Oxygen (Fld)	mg/l	2.31
12/7/2015	Dissolved Oxygen (Fld)	mg/l	2.34
12/7/2015	Salinity	ppt	0.28
12/7/2015	Salinity	ppt	0.28
12/7/2015	Salinity	ppt	0.28
12/7/2015	Temperature (Field)	^C	25.12
12/7/2015	Temperature (Field)	^C	25.12
12/7/2015	Temperature (Field)	^C	25.1
12/7/2015	BOD_5	mg/L	2
12/7/2015	Specific Conductivity (Field)	umhos/cm	572
12/7/2015	Specific Conductivity (Field)	umhos/cm	579
12/7/2015	Specific Conductivity (Field)	umhos/cm	573
12/7/2015	pH (Field)	pH Units	7.23
12/7/2015	pH (Field)	pH Units	7.23
12/7/2015	pH (Field)	pH Units	7.23
12/7/2015	Ortho Phosphate (OPO4)	mg/L	0.007
12/7/2015	Ammonia Nitrogen	mg/L	0.65
12/7/2015	Total Suspended Solids (TSS)	mg/L	6
1/4/2016	Nitrate/Nitrite (NOX)	mg/L	0.25
1/4/2016	Phosphorus, Total (TP)	mg/L	0.01
1/4/2016	Total Kjeldahl Nitrogen (TKN)	mg/L	1.47
1/4/2016	Turbidity	NTU	0.7
1/4/2016	Fecal Coliform	CFU/100 ML	119
1/4/2016	Depth	meters	1.355
1/4/2016	Ortho Phosphate (OPO4)	mg/L	0.002
1/4/2016	Ammonia Nitrogen	mg/L	0.66
1/4/2016	Dissolved Oxygen (Fld)	mg/l	2.51
1/4/2016	Dissolved Oxygen (Fld)	mg/l	2.62
1/4/2016	Dissolved Oxygen (Fld)	mg/l	2.51
1/4/2016	DO%	% Sat	29.8
1/4/2016	DO%	% Sat	29.8
1/4/2016	DO%	% Sat	31.1
1/4/2016	pH (Field)	pH Units	7.34
1/4/2016	pH (Field)	pH Units	7.32
1/4/2016	pH (Field)	pH Units	7.33
1/4/2016	Salinity	ppt	0.31
1/4/2016	Salinity	ppt	0.31
1/4/2016	Salinity	ppt	0.31
1/4/2016	Specific Conductivity (Field)	umhos/cm	647
1/4/2016	Specific Conductivity (Field)	umhos/cm	647
1/4/2016	Specific Conductivity (Field)	umhos/cm	647
1/4/2016	Temperature (Field)	^C	23.9
1/4/2016	Temperature (Field)	^C	23.9
1/4/2016	Temperature (Field)	^C	23.9
2/1/2016	Depth	meters	0.104
2/1/2016	Dissolved Oxygen (Fld)	mg/l	3.5
2/1/2016	Dissolved Oxygen (Fld)	mg/l	3.4
2/1/2016	Dissolved Oxygen (Fld)	mg/l	3.42

DateCollected	Parameter Tested	Units	Value
2/1/2016	Salinity	ppt	0.28
2/1/2016	Salinity	ppt	0.28
2/1/2016	Salinity	ppt	0.27
2/1/2016	Specific Conductivity (Field)	umhos/cm	566
2/1/2016	Specific Conductivity (Field)	umhos/cm	575
2/1/2016	Specific Conductivity (Field)	umhos/cm	578
2/1/2016	Temperature (Field)	^C	22.95
2/1/2016	Temperature (Field)	^C	22.94
2/1/2016	Temperature (Field)	^C	22.94
2/1/2016	Turbidity	NTU	0.6
2/1/2016	pH (Field)	pH Units	7.36
2/1/2016	pH (Field)	pH Units	7.34
2/1/2016	pH (Field)	pH Units	7.48
2/1/2016	Ammonia Nitrogen	mg/L	0.52
2/1/2016	Fecal Coliform	CFU/100 ML	155
2/1/2016	Nitrate/Nitrite (NOX)	mg/L	0.31
2/1/2016	Ortho Phosphate (OPO4)	mg/L	0.004
2/1/2016	DO%	% Sat	40.9
2/1/2016	DO%	% Sat	39.8
2/1/2016	DO%	% Sat	39.6
2/1/2016	Depth	meters	0.504
2/1/2016	Depth	meters	1.958
3/7/2016	DO%	% Sat	53.8
3/7/2016	DO%	% Sat	66.8
3/7/2016	DO%	% Sat	71.3
3/7/2016	BOD_5	mg/L	2
3/7/2016	COD	mg/L	39
3/7/2016	Copper	ug/L	0.7
3/7/2016	Depth	meters	2.001
3/7/2016	Hardness	See Para.	284
3/7/2016	Lead	ug/L	3
3/7/2016	pH (Field)	pH Units	7.23
3/7/2016	pH (Field)	pH Units	7.29
3/7/2016	pH (Field)	pH Units	7.33
3/7/2016	Salinity	ppt	0.3
3/7/2016	Salinity	ppt	0.3
3/7/2016	Salinity	ppt	0.31
3/7/2016	Specific Conductivity (Field)	umhos/cm	618
3/7/2016	Specific Conductivity (Field)	umhos/cm	624
3/7/2016	Specific Conductivity (Field)	umhos/cm	631
3/7/2016	Temperature (Field)	^C	23.13
3/7/2016	Temperature (Field)	^C	23.56
3/7/2016	Temperature (Field)	^C	23.8
3/7/2016	Total Dissolved Solids (TDS)	mg/L	448
3/7/2016	Total Kjeldahl Nitrogen (TKN)	mg/L	1.34
3/7/2016	Total Suspended Solids (TSS)	mg/L	6
3/7/2016	Turbidity	NTU	0.8
3/7/2016	Ammonia Nitrogen	mg/L	0.31
3/7/2016	Arsenic	ug/L	6

DateCollected	Parameter Tested	Units	Value
3/7/2016	Fecal Coliform	CFU/100 ML	82
3/7/2016	Cadmium	ug/L	0.5
3/7/2016	Dissolved Oxygen (Fld)	mg/l	4.6
3/7/2016	Dissolved Oxygen (Fld)	mg/l	5.66
3/7/2016	Dissolved Oxygen (Fld)	mg/l	6.01
3/7/2016	Mercury	ng/L	3
3/7/2016	Nitrate/Nitrite (NOX)	mg/L	0.25
3/7/2016	Ortho Phosphate (OPO4)	mg/L	0.003
3/7/2016	Phosphorus, Total (TP)	mg/L	0.012
3/7/2016	Zinc	ug/L	4
4/4/2016	Ortho Phosphate (OPO4)	mg/L	0.002
4/4/2016	Ammonia Nitrogen	mg/L	0.21
4/4/2016	DO%	% Sat	50.2
4/4/2016	DO%	% Sat	50.5
4/4/2016	DO%	% Sat	51.4
4/4/2016	Depth	meters	1.804
4/4/2016	Dissolved Oxygen (Fld)	mg/l	4.12
4/4/2016	Dissolved Oxygen (Fld)	mg/l	4.2
4/4/2016	Dissolved Oxygen (Fld)	mg/l	4.1
4/4/2016	Fecal Coliform	CFU/100 ML	73
4/4/2016	Nitrate/Nitrite (NOX)	mg/L	0.27
4/4/2016	Salinity	ppt	0.3
4/4/2016	Salinity	ppt	0.3
4/4/2016	Salinity	ppt	0.3
4/4/2016	Specific Conductivity (Field)	umhos/cm	618
4/4/2016	Specific Conductivity (Field)	umhos/cm	612
4/4/2016	Specific Conductivity (Field)	umhos/cm	612
4/4/2016	Temperature (Field)	^C	25.59
4/4/2016	Temperature (Field)	^C	25.54
4/4/2016	Temperature (Field)	^C	25.59
4/4/2016	Turbidity	NTU	0.6
4/4/2016	pH (Field)	pH Units	7.67
4/4/2016	pH (Field)	pH Units	7.58
4/4/2016	pH (Field)	pH Units	7.61
5/1/2017	Ortho Phosphate (OPO4)	mg/L	0.002
5/1/2017	Ammonia Nitrogen	mg/L	0.12
5/1/2017	Nitrate/Nitrite (NOX)	mg/L	0.08
5/1/2017	Turbidity	NTU	0.8
5/1/2017	Total Kjeldahl Nitrogen (TKN)	mg/L	0.83
5/1/2017	Fecal Coliform	CFU/100 ML	64
5/1/2017	DO%	% Sat	66.8
5/1/2017	Dissolved Oxygen (Fld)	mg/l	5.33
5/1/2017	Temperature (Field)	^C	26.8
5/1/2017	pH (Field)	pH Units	7.65
5/1/2017	DO%	% Sat	68.7
5/1/2017	Dissolved Oxygen (Fld)	mg/l	5.48
5/1/2017	Temperature (Field)	^C	26.9
5/1/2017	pH (Field)	pH Units	7.65
5/1/2017	DO%	% Sat	70

DateCollected	Parameter Tested	Units	Value
5/1/2017	Dissolved Oxygen (Fld)	mg/l	5.58
5/1/2017	Temperature (Field)	^C	26.9
5/1/2017	pH (Field)	pH Units	7.65
5/1/2017	Salinity	ppt	0.26
5/1/2017	Specific Conductivity (Field)	umhos/cm	550.9
5/1/2017	Salinity	ppt	0.26
5/1/2017	Specific Conductivity (Field)	umhos/cm	549.4
5/1/2017	Salinity	ppt	0.26
5/1/2017	Specific Conductivity (Field)	umhos/cm	549.4
5/1/2017	Depth	meters	2.121
5/1/2017	Phosphorus, Total (TP)	mg/L	0.007
8/7/2017	Escherichia Coli	MPN/100ML	189
8/7/2017	Salinity	ppt	0.3
8/7/2017	Salinity	ppt	0.3
8/7/2017	Salinity	ppt	0.3
8/7/2017	Depth	meters	1.752
8/7/2017	Dissolved Oxygen (Fld)	mg/l	2.91
8/7/2017	Dissolved Oxygen (Fld)	mg/l	2.91
8/7/2017	Dissolved Oxygen (Fld)	mg/l	3
8/7/2017	pH (Field)	pH Units	7.56
8/7/2017	pH (Field)	pH Units	7.56
8/7/2017	pH (Field)	pH Units	7.58
8/7/2017	Temperature (Field)	^C	29.72222222
8/7/2017	Temperature (Field)	^C	29.72222222
8/7/2017	Temperature (Field)	^C	29.72222222
8/7/2017	DO%	% Sat	38.4
8/7/2017	DO%	% Sat	38.4
8/7/2017	DO%	% Sat	39.5
8/7/2017	Specific Conductivity (Field)	umhos/cm	619.9
8/7/2017	Specific Conductivity (Field)	umhos/cm	620.2
8/7/2017	Specific Conductivity (Field)	umhos/cm	620.3
8/7/2017	Fecal Coliform	CFU/100 ML	250
8/7/2017	Ortho Phosphate (OPO4)	mg/L	0.002
8/7/2017	Ammonia Nitrogen	mg/L	0.13
8/7/2017	Nitrate/Nitrite (NOX)	mg/L	0.22
8/7/2017	Turbidity	NTU	0.7
4/6/2017	Fecal Coliform	CFU/100 ML	340
4/6/2017	Ammonia Nitrogen	mg/L	0.07
4/6/2017	Nitrate/Nitrite (NOX)	mg/L	0.12
4/6/2017	Turbidity	NTU	0.5
4/6/2017	Ortho Phosphate (OPO4)	mg/L	0.002
4/6/2017	Salinity	ppt	0.31
4/6/2017	Salinity	ppt	0.31
4/6/2017	Salinity	ppt	0.31
4/6/2017	Salinity	ppt	0.31
4/6/2017	Depth	meters	1.952
4/6/2017	Dissolved Oxygen (Fld)	mg/l	5.03
4/6/2017	Dissolved Oxygen (Fld)	mg/l	5.23
4/6/2017	Dissolved Oxygen (Fld)	mg/l	5.32

DateCollected	Parameter Tested	Units	Value
4/6/2017	Dissolved Oxygen (Fld)	mg/l	5.43
4/6/2017	pH (Field)	pH Units	7.66
4/6/2017	pH (Field)	pH Units	7.69
4/6/2017	pH (Field)	pH Units	7.69
4/6/2017	pH (Field)	pH Units	7.7
4/6/2017	Temperature (Field)	^C	26
4/6/2017	Temperature (Field)	^C	26.1
4/6/2017	Temperature (Field)	^C	26.1
4/6/2017	Temperature (Field)	^C	26.8
4/6/2017	DO%	% Sat	62.1
4/6/2017	DO%	% Sat	64.6
4/6/2017	DO%	% Sat	65.8
4/6/2017	DO%	% Sat	68.1
4/6/2017	Specific Conductivity (Field)	umhos/cm	635.2
4/6/2017	Specific Conductivity (Field)	umhos/cm	640.2
4/6/2017	Specific Conductivity (Field)	umhos/cm	640.8
4/6/2017	Specific Conductivity (Field)	umhos/cm	640.9
6/6/2016	Total Suspended Solids (TSS)	mg/L	6
6/6/2016	Ammonia Nitrogen	mg/L	0.16
6/6/2016	COD	mg/L	37
6/6/2016	Nitrate/Nitrite (NOX)	mg/L	0.09
6/6/2016	Total Dissolved Solids (TDS)	mg/L	400
6/6/2016	Turbidity	NTU	0.8
6/6/2016	Ortho Phosphate (OPO4)	mg/L	0.014
6/6/2016	Phosphorus, Total (TP)	mg/L	0.021
6/6/2016	Fecal Coliform	CFU/100 ML	342
6/6/2016	DO%	% Sat	49
6/6/2016	DO%	% Sat	48
6/6/2016	DO%	% Sat	47.8
6/6/2016	Depth	meters	1.86
6/6/2016	Dissolved Oxygen (Fld)	mg/l	3.7
6/6/2016	Dissolved Oxygen (Fld)	mg/l	3.77
6/6/2016	Dissolved Oxygen (Fld)	mg/l	3.68
6/6/2016	Salinity	ppt	0.3
6/6/2016	Salinity	ppt	0.3
6/6/2016	Salinity	ppt	0.3
6/6/2016	Specific Conductivity (Field)	umhos/cm	623
6/6/2016	Specific Conductivity (Field)	umhos/cm	623
6/6/2016	Specific Conductivity (Field)	umhos/cm	623
6/6/2016	Temperature (Field)	^C	28.73
6/6/2016	Temperature (Field)	^C	28.74
6/6/2016	Temperature (Field)	^C	28.74
6/6/2016	pH (Field)	pH Units	7.3
6/6/2016	pH (Field)	pH Units	7.38
6/6/2016	pH (Field)	pH Units	7.28
6/6/2016	BOD_5	mg/L	2
7/11/2016	Turbidity	NTU	5
7/11/2016	Total Kjeldahl Nitrogen (TKN)	mg/L	0.99
7/11/2016	Ammonia Nitrogen	mg/L	0.15

DateCollected	Parameter Tested	Units	Value
7/11/2016	Nitrate/Nitrite (NOX)	mg/L	0.15
7/11/2016	Phosphorus, Total (TP)	mg/L	0.013
7/11/2016	Fecal Coliform	CFU/100 ML	91
7/11/2016	DO%	% Sat	61.4
7/11/2016	Depth	meters	1.973
7/11/2016	Salinity	ppt	0.3
7/11/2016	Specific Conductivity (Field)	umhos/cm	617
7/11/2016	Temperature (Field)	^C	30.44
7/11/2016	pH (Field)	pH Units	7.48
7/11/2016	DO%	% Sat	54.7
7/11/2016	Dissolved Oxygen (Fld)	mg/l	4.07
7/11/2016	Salinity	ppt	0.29
7/11/2016	Specific Conductivity (Field)	umhos/cm	610
7/11/2016	Temperature (Field)	^C	30.79
7/11/2016	pH (Field)	pH Units	7.41
7/11/2016	DO%	% Sat	66.2
7/11/2016	Salinity	ppt	0.29
7/11/2016	Specific Conductivity (Field)	umhos/cm	612
7/11/2016	Temperature (Field)	^C	31.01
7/11/2016	pH (Field)	pH Units	7.31
7/11/2016	Dissolved Oxygen (Fld)	mg/l	4.6
7/11/2016	Dissolved Oxygen (Fld)	mg/l	4.92
7/11/2016	Ortho Phosphate (OPO4)	mg/L	0.002
8/1/2016	Ammonia Nitrogen	mg/L	0.05
8/1/2016	Nitrate/Nitrite (NOX)	mg/L	0.12
8/1/2016	Salinity	ppt	0.28
8/1/2016	Salinity	ppt	0.29
8/1/2016	Salinity	ppt	0.29
8/1/2016	Turbidity	NTU	0.6
8/1/2016	Depth	meters	1.937
8/1/2016	Dissolved Oxygen (Fld)	mg/l	2.94
8/1/2016	Dissolved Oxygen (Fld)	mg/l	3.42
8/1/2016	Dissolved Oxygen (Fld)	mg/l	3.7
8/1/2016	pH (Field)	pH Units	7.05
8/1/2016	pH (Field)	pH Units	7.09
8/1/2016	pH (Field)	pH Units	7.18
8/1/2016	Temperature (Field)	^C	29.97
8/1/2016	Temperature (Field)	^C	30.01
8/1/2016	Temperature (Field)	^C	30.5
8/1/2016	DO%	% Sat	39
8/1/2016	DO%	% Sat	45.7
8/1/2016	DO%	% Sat	49
8/1/2016	Specific Conductivity (Field)	umhos/cm	595
8/1/2016	Specific Conductivity (Field)	umhos/cm	599
8/1/2016	Specific Conductivity (Field)	umhos/cm	600
8/1/2016	Ortho Phosphate (OPO4)	mg/L	0.003
8/1/2016	Fecal Coliform	CFU/100 ML	55
9/12/2016	DO%	% Sat	29.9
9/12/2016	DO%	% Sat	40

DateCollected	Parameter Tested	Units	Value
9/12/2016	DO%	% Sat	34.2
9/12/2016	Depth	meters	1.794
9/12/2016	Salinity	ppt	0.3
9/12/2016	Salinity	ppt	0.31
9/12/2016	Salinity	ppt	0.3
9/12/2016	Ortho Phosphate (OPO4)	mg/L	0.003
9/12/2016	Phosphorus, Total (TP)	mg/L	0.014
9/12/2016	Dissolved Oxygen (Fld)	mg/l	2.34
9/12/2016	Dissolved Oxygen (Fld)	mg/l	3.13
9/12/2016	Dissolved Oxygen (Fld)	mg/l	2.68
9/12/2016	Nitrate/Nitrite (NOX)	mg/L	0.07
9/12/2016	Specific Conductivity (Field)	umhos/cm	634
9/12/2016	Specific Conductivity (Field)	umhos/cm	631
9/12/2016	Specific Conductivity (Field)	umhos/cm	629
9/12/2016	Temperature (Field)	^C	27.84
9/12/2016	Temperature (Field)	^C	27.82
9/12/2016	Temperature (Field)	^C	27.81
9/12/2016	Total Dissolved Solids (TDS)	mg/L	344
9/12/2016	Total Kjeldahl Nitrogen (TKN)	mg/L	1.43
9/12/2016	Total Suspended Solids (TSS)	mg/L	6
9/12/2016	Turbidity	NTU	0.6
9/12/2016	pH (Field)	pH Units	7.14
9/12/2016	pH (Field)	pH Units	7.15
9/12/2016	pH (Field)	pH Units	7.2
9/12/2016	Ammonia Nitrogen	mg/L	0.69
9/12/2016	Fecal Coliform	CFU/100 ML	290
12/5/2016	COD	mg/L	40
12/5/2016	Total Dissolved Solids (TDS)	mg/L	489
12/5/2016	Turbidity	NTU	0.7
12/5/2016	Ortho Phosphate (OPO4)	mg/L	0.002
12/5/2016	Total Suspended Solids (TSS)	mg/L	2.5
12/5/2016	Ammonia Nitrogen	mg/L	0.25
12/5/2016	Nitrate/Nitrite (NOX)	mg/L	0.14
12/5/2016	Phosphorus, Total (TP)	mg/L	0.008
12/5/2016	Fecal Coliform	CFU/100 ML	73
12/5/2016	Dissolved Oxygen (Fld)	mg/l	4.59
12/5/2016	Dissolved Oxygen (Fld)	mg/l	4.46
12/5/2016	Dissolved Oxygen (Fld)	mg/l	4.78
12/5/2016	DO%	% Sat	58.1
12/5/2016	DO%	% Sat	53.8
12/5/2016	DO%	% Sat	55.6
12/5/2016	Depth	meters	1.796
12/5/2016	Salinity	ppt	0.3
12/5/2016	Salinity	ppt	0.3
12/5/2016	Salinity	ppt	0.3
12/5/2016	Specific Conductivity (Field)	umhos/cm	624
12/5/2016	Specific Conductivity (Field)	umhos/cm	624
12/5/2016	Specific Conductivity (Field)	umhos/cm	624
12/5/2016	Temperature (Field)	^C	24.83

DateCollected	Parameter Tested	Units	Value
12/5/2016	Temperature (Field)	^C	25.2
12/5/2016	Temperature (Field)	^C	24.96
12/5/2016	pH (Field)	pH Units	7.41
12/5/2016	pH (Field)	pH Units	7.44
12/5/2016	pH (Field)	pH Units	7.47
12/5/2016	BOD_5	mg/L	2
10/3/2016	Ortho Phosphate (OPO4)	mg/L	0.002
10/3/2016	Nitrate/Nitrite (NOX)	mg/L	0.12
10/3/2016	Turbidity	NTU	0.7
10/3/2016	Ammonia Nitrogen	mg/L	0.62
10/3/2016	Fecal Coliform	CFU/100 ML	480
10/3/2016	DO%	% Sat	35.6
10/3/2016	DO%	% Sat	36.7
10/3/2016	DO%	% Sat	35.1
10/3/2016	Depth	meters	1.884
10/3/2016	Dissolved Oxygen (Fld)	mg/l	2.74
10/3/2016	Dissolved Oxygen (Fld)	mg/l	2.78
10/3/2016	Dissolved Oxygen (Fld)	mg/l	2.86
10/3/2016	Salinity	ppt	0.29
10/3/2016	Salinity	ppt	0.29
10/3/2016	Salinity	ppt	0.29
10/3/2016	Specific Conductivity (Field)	umhos/cm	598
10/3/2016	Specific Conductivity (Field)	umhos/cm	606
10/3/2016	Specific Conductivity (Field)	umhos/cm	601
10/3/2016	Temperature (Field)	^C	28.1
10/3/2016	Temperature (Field)	^C	28.1
10/3/2016	Temperature (Field)	^C	28.07
10/3/2016	pH (Field)	pH Units	7.01
10/3/2016	pH (Field)	pH Units	7.02
10/3/2016	pH (Field)	pH Units	7.11
11/14/2016	Ammonia Nitrogen	mg/L	0.31
11/14/2016	DO%	% Sat	42.3
11/14/2016	DO%	% Sat	38.2
11/14/2016	DO%	% Sat	38.4
11/14/2016	Depth	meters	2.031
11/14/2016	Dissolved Oxygen (Fld)	mg/l	3.2
11/14/2016	Dissolved Oxygen (Fld)	mg/l	3.18
11/14/2016	Dissolved Oxygen (Fld)	mg/l	3.52
11/14/2016	Fecal Coliform	CFU/100 ML	48
11/14/2016	Nitrate/Nitrite (NOX)	mg/L	0.2
11/14/2016	Ortho Phosphate (OPO4)	mg/L	0.004
11/14/2016	Phosphorus, Total (TP)	mg/L	0.008
11/14/2016	Salinity	ppt	0.3
11/14/2016	Salinity	ppt	0.3
11/14/2016	Salinity	ppt	0.3
11/14/2016	Specific Conductivity (Field)	umhos/cm	627
11/14/2016	Specific Conductivity (Field)	umhos/cm	628
11/14/2016	Specific Conductivity (Field)	umhos/cm	626
11/14/2016	Temperature (Field)	^C	24.44

DateCollected	Parameter Tested	Units	Value
11/14/2016	Temperature (Field)	^C	24.5
11/14/2016	Temperature (Field)	^C	24.4
11/14/2016	Total Kjeldahl Nitrogen (TKN)	mg/L	1.15
11/14/2016	Turbidity	NTU	0.7
11/14/2016	pH (Field)	pH Units	7.39
11/14/2016	pH (Field)	pH Units	7.41
11/14/2016	pH (Field)	pH Units	7.44
6/5/2017	Ortho Phosphate (OPO4)	mg/L	0.002
6/5/2017	Nitrate/Nitrite (NOX)	mg/L	0.05
6/5/2017	Ammonia Nitrogen	mg/L	0.37
6/5/2017	Turbidity	NTU	2.2
6/5/2017	COD	mg/L	37
6/5/2017	Total Dissolved Solids (TDS)	mg/L	367
6/5/2017	Fecal Coliform	CFU/100 ML	700
6/5/2017	Fecal Coliform	CFU/100 ML	300
6/5/2017	Salinity	ppt	0.28
6/5/2017	Salinity	ppt	0.28
6/5/2017	Salinity	ppt	0.28
6/5/2017	Depth	meters	1.81
6/5/2017	Dissolved Oxygen (Fld)	mg/l	2.41
6/5/2017	Dissolved Oxygen (Fld)	mg/l	2.51
6/5/2017	Dissolved Oxygen (Fld)	mg/l	2.58
6/5/2017	pH (Field)	pH Units	7.28
6/5/2017	pH (Field)	pH Units	7.28
6/5/2017	pH (Field)	pH Units	7.29
6/5/2017	Temperature (Field)	^C	27.7
6/5/2017	Temperature (Field)	^C	27.8
6/5/2017	Temperature (Field)	^C	27.8
6/5/2017	DO%	% Sat	30.7
6/5/2017	DO%	% Sat	32
6/5/2017	DO%	% Sat	32.9
6/5/2017	Specific Conductivity (Field)	umhos/cm	585.7
6/5/2017	Specific Conductivity (Field)	umhos/cm	589
6/5/2017	Specific Conductivity (Field)	umhos/cm	590.5
6/5/2017	BOD_5	mg/L	2
6/5/2017	Total Suspended Solids (TSS)	mg/L	2.5
1/9/2017	Ammonia Nitrogen	mg/L	0.28
1/9/2017	Depth	meters	2.043
1/9/2017	Dissolved Oxygen (Fld)	mg/l	5.19
1/9/2017	Dissolved Oxygen (Fld)	mg/l	5.05
1/9/2017	Dissolved Oxygen (Fld)	mg/l	5.02
1/9/2017	DO%	% Sat	56
1/9/2017	DO%	% Sat	55.6
1/9/2017	DO%	% Sat	57.4
1/9/2017	Fecal Coliform	CFU/100 ML	19
1/9/2017	Nitrate/Nitrite (NOX)	mg/L	0.18
1/9/2017	Ortho Phosphate (OPO4)	mg/L	0.002
1/9/2017	pH (Field)	pH Units	7.23
1/9/2017	pH (Field)	pH Units	7.23

DateCollected	Parameter Tested	Units	Value
1/9/2017	pH (Field)	pH Units	7.25
1/9/2017	Phosphorus, Total (TP)	mg/L	0.005
1/9/2017	Salinity	ppt	0.3
1/9/2017	Salinity	ppt	0.3
1/9/2017	Salinity	ppt	0.3
1/9/2017	Specific Conductivity (Field)	umhos/cm	613
1/9/2017	Specific Conductivity (Field)	umhos/cm	615
1/9/2017	Specific Conductivity (Field)	umhos/cm	613
1/9/2017	Temperature (Field)	^C	20.27
1/9/2017	Temperature (Field)	^C	20.21
1/9/2017	Temperature (Field)	^C	20.26
1/9/2017	Total Kjeldahl Nitrogen (TKN)	mg/L	1.11
1/9/2017	Turbidity	NTU	0.5
2/6/2017	Ortho Phosphate (OPO4)	mg/L	0.002
2/6/2017	Ammonia Nitrogen	mg/L	0.14
2/6/2017	DO%	% Sat	57.6
2/6/2017	DO%	% Sat	55
2/6/2017	DO%	% Sat	54.5
2/6/2017	Depth	meters	2.029
2/6/2017	Dissolved Oxygen (Fld)	mg/l	4.67
2/6/2017	Dissolved Oxygen (Fld)	mg/l	4.72
2/6/2017	Dissolved Oxygen (Fld)	mg/l	4.93
2/6/2017	Fecal Coliform	CFU/100 ML	110
2/6/2017	Nitrate/Nitrite (NOX)	mg/L	0.14
2/6/2017	Salinity	ppt	0.3
2/6/2017	Salinity	ppt	0.3
2/6/2017	Salinity	ppt	0.3
2/6/2017	Specific Conductivity (Field)	umhos/cm	625
2/6/2017	Specific Conductivity (Field)	umhos/cm	625
2/6/2017	Specific Conductivity (Field)	umhos/cm	627
2/6/2017	Temperature (Field)	^C	22.91
2/6/2017	Temperature (Field)	^C	22.96
2/6/2017	Temperature (Field)	^C	22.95
2/6/2017	Turbidity	NTU	0.5
2/6/2017	pH (Field)	pH Units	7.19
2/6/2017	pH (Field)	pH Units	7.25
2/6/2017	pH (Field)	pH Units	7.22
3/6/2017	Phosphorus, Total (TP)	mg/L	0.007
3/6/2017	BOD_5	mg/L	2
3/6/2017	Total Dissolved Solids (TDS)	mg/L	401
3/6/2017	Fecal Coliform	CFU/100 ML	270
3/6/2017	Arsenic	ug/L	6
3/6/2017	Cadmium	ug/L	0.5
3/6/2017	Chromium	ug/L	0.7
3/6/2017	Copper	ug/L	0.7
3/6/2017	Lead	ug/L	3
3/6/2017	Mercury	ng/L	3
3/6/2017	Nickel	ug/L	2
3/6/2017	Ortho Phosphate (OPO4)	mg/L	0.002

DateCollected	Parameter Tested	Units	Value
3/6/2017	Total Suspended Solids (TSS)	mg/L	2.5
3/6/2017	Zinc	ug/L	4
3/6/2017	Ammonia Nitrogen	mg/L	0.07
3/6/2017	Nitrate/Nitrite (NOX)	mg/L	0.15
3/6/2017	Salinity	ppt	0.3
3/6/2017	Salinity	ppt	0.3
3/6/2017	Salinity	ppt	0.3
3/6/2017	Turbidity	NTU	0.6
3/6/2017	Depth	meters	1.974
3/6/2017	Dissolved Oxygen (Fld)	mg/L	6.19
3/6/2017	Dissolved Oxygen (Fld)	mg/L	6.24
3/6/2017	Dissolved Oxygen (Fld)	mg/L	6.56
3/6/2017	pH (Field)	pH Units	7.71
3/6/2017	pH (Field)	pH Units	7.72
3/6/2017	pH (Field)	pH Units	7.77
3/6/2017	Temperature (Field)	^C	21.94
3/6/2017	Temperature (Field)	^C	21.94
3/6/2017	Temperature (Field)	^C	21.95
3/6/2017	DO%	% Sat	70.8
3/6/2017	DO%	% Sat	71.4
3/6/2017	DO%	% Sat	75
3/6/2017	Specific Conductivity (Field)	umhos/cm	618
3/6/2017	Specific Conductivity (Field)	umhos/cm	618
3/6/2017	Specific Conductivity (Field)	umhos/cm	618
3/6/2017	Total Kjeldahl Nitrogen (TKN)	mg/L	1.01
3/6/2017	COD	mg/L	42
3/6/2017	Hardness	mg/L	218
3/6/2017	Fecal Coliform	CFU/100 ML	270
11/20/2017	Ammonia Nitrogen	mg/L	0.31
11/20/2017	Depth	meters	1.253
11/20/2017	Dissolved Oxygen (Fld)	mg/l	2.16
11/20/2017	Dissolved Oxygen (Fld)	mg/l	2.29
11/20/2017	Dissolved Oxygen (Fld)	mg/l	2.37
11/20/2017	DO%	% Sat	25.8
11/20/2017	DO%	% Sat	27.4
11/20/2017	DO%	% Sat	28.4
11/20/2017	Escherichia Coli	MPN/100ML	41
11/20/2017	Fecal Coliform	CFU/100 ML	85
11/20/2017	Nitrate/Nitrite (NOX)	mg/L	0.2
11/20/2017	Ortho Phosphate (OPO4)	mg/L	0.003
11/20/2017	pH (Field)	pH Units	7.42
11/20/2017	pH (Field)	pH Units	7.42
11/20/2017	pH (Field)	pH Units	7.45
11/20/2017	Phosphorus, Total (TP)	mg/L	0.011
11/20/2017	Salinity	ppt	0.29
11/20/2017	Salinity	ppt	0.29
11/20/2017	Salinity	ppt	0.29
11/20/2017	Specific Conductivity (Field)	umhos/cm	593.3
11/20/2017	Specific Conductivity (Field)	umhos/cm	593.6

DateCollected	Parameter Tested	Units	Value
11/20/2017	Specific Conductivity (Field)	umhos/cm	594.3
11/20/2017	Temperature (Field)	^C	24.3
11/20/2017	Temperature (Field)	^C	24.3
11/20/2017	Temperature (Field)	^C	24.3
11/20/2017	Total Kjeldahl Nitrogen (TKN)	mg/L	1.19
11/20/2017	Turbidity	NTU	0.5
9/25/2017	Ortho Phosphate (OPO4)	mg/L	0.004
9/25/2017	Phosphorus, Total (TP)	mg/L	0.023
9/25/2017	Nitrate/Nitrite (NOX)	mg/L	0.16
9/25/2017	Salinity	ppt	0.27
9/25/2017	Salinity	ppt	0.28
9/25/2017	Salinity	ppt	0.28
9/25/2017	Ammonia Nitrogen	mg/L	0.59
9/25/2017	Turbidity	NTU	1
9/25/2017	Total Kjeldahl Nitrogen (TKN)	mg/L	1.48
9/25/2017	Depth	meters	1.915
9/25/2017	Dissolved Oxygen (Fld)	mg/l	1.92
9/25/2017	BOD_5	mg/L	2
9/25/2017	Dissolved Oxygen (Fld)	mg/l	2
9/25/2017	Dissolved Oxygen (Fld)	mg/l	2.12
9/25/2017	Total Suspended Solids (TSS)	mg/L	2.5
9/25/2017	pH (Field)	pH Units	7.27
9/25/2017	pH (Field)	pH Units	7.27
9/25/2017	pH (Field)	pH Units	7.3
9/25/2017	DO%	% Sat	24.6
9/25/2017	DO%	% Sat	25.7
9/25/2017	DO%	% Sat	27.3
9/25/2017	Temperature (Field)	^C	28
9/25/2017	Temperature (Field)	^C	28.1
9/25/2017	Temperature (Field)	^C	28.2
9/25/2017	COD	mg/L	43
9/25/2017	Total Dissolved Solids (TDS)	mg/L	265
9/25/2017	Specific Conductivity (Field)	umhos/cm	570.7
9/25/2017	Specific Conductivity (Field)	umhos/cm	573.8
9/25/2017	Specific Conductivity (Field)	umhos/cm	575.7
9/25/2017	Escherichia Coli	MPN/100ML	74
10/16/2017	Nitrate/Nitrite (NOX)	mg/L	0.21
10/16/2017	Ammonia Nitrogen	mg/L	0.54
10/16/2017	Turbidity	NTU	0.7
10/16/2017	Salinity	ppt	0.28
10/16/2017	Salinity	ppt	0.28
10/16/2017	Salinity	ppt	0.28
10/16/2017	Depth	meters	1.899
10/16/2017	Dissolved Oxygen (Fld)	mg/l	2.74
10/16/2017	Dissolved Oxygen (Fld)	mg/l	2.86
10/16/2017	Dissolved Oxygen (Fld)	mg/l	2.91
10/16/2017	pH (Field)	pH Units	7.16
10/16/2017	pH (Field)	pH Units	7.19
10/16/2017	pH (Field)	pH Units	7.3

Exhibit K. Miami-Dade Testing Results for Lake Ruth

DateCollected	Parameter Tested	Units	Value
10/16/2017	Temperature (Field)	^C	27.8
10/16/2017	Temperature (Field)	^C	27.9
10/16/2017	Temperature (Field)	^C	27.9
10/16/2017	DO%	% Sat	34.9
10/16/2017	DO%	% Sat	36.5
10/16/2017	DO%	% Sat	37.1
10/16/2017	Specific Conductivity (Field)	umhos/cm	573.1
10/16/2017	Specific Conductivity (Field)	umhos/cm	578.8
10/16/2017	Specific Conductivity (Field)	umhos/cm	580.4
10/16/2017	Ortho Phosphate (OPO4)	mg/L	0.004
12/4/2017	Salinity	ppt	0.28
12/4/2017	Salinity	ppt	0.28
12/4/2017	Salinity	ppt	0.28
12/4/2017	Depth	meters	2.001
12/4/2017	Dissolved Oxygen (Fld)	mg/l	2.69
12/4/2017	Dissolved Oxygen (Fld)	mg/l	2.85
12/4/2017	Dissolved Oxygen (Fld)	mg/l	2.92
12/4/2017	pH (Field)	pH Units	7.38
12/4/2017	pH (Field)	pH Units	7.39
12/4/2017	pH (Field)	pH Units	7.42
12/4/2017	Temperature (Field)	^C	24.2
12/4/2017	Temperature (Field)	^C	24.2
12/4/2017	Temperature (Field)	^C	24.3
12/4/2017	DO%	% Sat	32.1
12/4/2017	DO%	% Sat	34.1
12/4/2017	DO%	% Sat	34.9
12/4/2017	Specific Conductivity (Field)	umhos/cm	585.7
12/4/2017	Specific Conductivity (Field)	umhos/cm	585.8
12/4/2017	Specific Conductivity (Field)	umhos/cm	588.1
12/4/2017	Ortho Phosphate (OPO4)	mg/L	0.004
12/4/2017	BOD_5	mg/L	2
12/4/2017	Total Suspended Solids (TSS)	mg/L	2.5
12/4/2017	Ammonia Nitrogen	mg/L	0.3
12/4/2017	Escherichia Coli	MPN/100ML	63
12/4/2017	Phosphorus, Total (TP)	mg/L	0.009
12/4/2017	Nitrate/Nitrite (NOX)	mg/L	0.23
12/4/2017	Turbidity	NTU	0.7
12/4/2017	COD	mg/L	34
12/4/2017	Fecal Coliform	CFU/100 ML	90
12/4/2017	Total Dissolved Solids (TDS)	mg/L	363
12/4/2017	BOD_5	mg/L	2
12/4/2017	Total Suspended Solids (TSS)	mg/L	2.5
1/8/2018	Ortho Phosphate (OPO4)	mg/L	0.003
1/8/2018	Phosphorus, Total (TP)	mg/L	0.007
1/8/2018	Ammonia Nitrogen	mg/L	0.16
1/8/2018	Nitrate/Nitrite (NOX)	mg/L	0.2
1/8/2018	Salinity	ppt	0.29
1/8/2018	Salinity	ppt	0.29
1/8/2018	Salinity	ppt	0.29

DateCollected	Parameter Tested	Units	Value
1/8/2018	Turbidity	NTU	0.4
1/8/2018	Total Kjeldahl Nitrogen (TKN)	mg/L	1.02
1/8/2018	Depth	m	2.015
1/8/2018	Dissolved Oxygen (Fld)	mg/L	5.2
1/8/2018	Dissolved Oxygen (Fld)	mg/L	5.63
1/8/2018	Dissolved Oxygen (Fld)	mg/L	5.65
1/8/2018	pH (Field)		7.65
1/8/2018	pH (Field)		7.66
1/8/2018	pH (Field)		7.66
1/8/2018	Temperature (Field)	C	18.5
1/8/2018	Temperature (Field)	C	18.8
1/8/2018	Temperature (Field)	C	18.8
1/8/2018	DO%	%	55.7
1/8/2018	DO%	%	60.5
1/8/2018	DO%	%	60.7
1/8/2018	Escherichia Coli	MPN/100ML	86
1/8/2018	Fecal Coliform	CFU/100 ML	460
1/8/2018	Specific Conductivity (Field)	uS/cm	600.9
1/8/2018	Specific Conductivity (Field)	uS/cm	601.3
1/8/2018	Specific Conductivity (Field)	uS/cm	601.8
2/12/2018	Ortho Phosphate (OPO4)	mg/L	0.003
2/12/2018	Nitrate/Nitrite (NOX)	mg/L	0.12
2/12/2018	Ammonia Nitrogen	mg/L	0.16
2/12/2018	Salinity	ppt	0.3
2/12/2018	Salinity	ppt	0.3
2/12/2018	Salinity	ppt	0.3
2/12/2018	Turbidity	NTU	0.6
2/12/2018	Depth	meters	2.004
2/12/2018	Dissolved Oxygen (Fld)	mg/l	4.49
2/12/2018	Dissolved Oxygen (Fld)	mg/l	4.99
2/12/2018	Dissolved Oxygen (Fld)	mg/l	5.04
2/12/2018	pH (Field)	pH Units	7.64
2/12/2018	pH (Field)	pH Units	7.65
2/12/2018	pH (Field)	pH Units	7.66
2/12/2018	Temperature (Field)	^C	24.1
2/12/2018	Temperature (Field)	^C	24.4
2/12/2018	Temperature (Field)	^C	24.6
2/12/2018	DO%	% Sat	53.5
2/12/2018	DO%	% Sat	59.9
2/12/2018	DO%	% Sat	60.7
2/12/2018	Escherichia Coli	MPN100ML	160
2/12/2018	Fecal Coliform	CFU100 ML	420
2/12/2018	Specific Conductivity (Field)	umhos/cm	619.4
2/12/2018	Specific Conductivity (Field)	umhos/cm	619.4
2/12/2018	Specific Conductivity (Field)	umhos/cm	619.7
3/5/2018	Ortho Phosphate (OPO4)	mg/L	0.003
3/5/2018	Phosphorus, Total (TP)	mg/L	0.012
3/5/2018	Ammonia Nitrogen	mg/L	0.05
3/5/2018	Nitrate/Nitrite (NOX)	mg/L	0.23

DateCollected	Parameter Tested	Units	Value
3/5/2018	Salinity	ppt	0.29
3/5/2018	Salinity	ppt	0.29
3/5/2018	Salinity	ppt	0.29
3/5/2018	Turbidity	NTU	0.5
3/5/2018	Total Kjeldahl Nitrogen (TKN)	mg/L	0.9
3/5/2018	Depth	meters	1.772
3/5/2018	BOD_5	mg/L	2
3/5/2018	Dissolved Oxygen (Fld)	mg/l	6.32
3/5/2018	Dissolved Oxygen (Fld)	mg/l	6.35
3/5/2018	Dissolved Oxygen (Fld)	mg/l	6.55
3/5/2018	pH (Field)	pH Units	7.8
3/5/2018	pH (Field)	pH Units	7.84
3/5/2018	Zinc	ug/L	8
3/5/2018	pH (Field)	pH Units	8.02
3/5/2018	Temperature (Field)	^C	22.9
3/5/2018	Temperature (Field)	^C	23
3/5/2018	Temperature (Field)	^C	23.1
3/5/2018	COD	mg/L	41
3/5/2018	Escherichia Coli	MPN/100ML	52
3/5/2018	DO%	% Sat	73.7
3/5/2018	DO%	% Sat	74.3
3/5/2018	DO%	% Sat	76.3
3/5/2018	Fecal Coliform	CFU/100 ML	89
3/5/2018	Hardness	See Para.	232
3/5/2018	Total Dissolved Solids (TDS)	mg/L	369
3/5/2018	Specific Conductivity (Field)	umhos/cm	605.2
3/5/2018	Specific Conductivity (Field)	umhos/cm	605.7
3/5/2018	Specific Conductivity (Field)	umhos/cm	605.9
3/5/2018	Cadmium	ug/L	2
3/5/2018	Total Suspended Solids (TSS)	mg/L	2.5
3/5/2018	Lead	ug/L	3
3/5/2018	Mercury	ng/L	3
3/5/2018	Copper	ug/L	4
3/5/2018	Arsenic	ug/L	6
7/10/2017	Ortho Phosphate (OPO4)	mg/L	0.002
7/10/2017	Escherichia Coli	CFU/100ML	110
7/10/2017	Fecal Coliform	CFU/100 ML	280
7/10/2017	Nitrate/Nitrite (NOX)	mg/L	0.13
7/10/2017	Phosphorus, Total (TP)	mg/L	0.017
7/10/2017	Total Kjeldahl Nitrogen (TKN)	mg/L	1.34
7/10/2017	Turbidity	NTU	0.9
7/10/2017	Ammonia Nitrogen	mg/L	0.61
7/10/2017	Depth	meters	2.017
7/10/2017	Dissolved Oxygen (Fld)	mg/l	1.74
7/10/2017	Specific Conductivity (Field)	umhos/cm	567.3
7/10/2017	Temperature (Field)	^C	28.05555556
7/10/2017	pH (Field)	pH Units	7.19
7/10/2017	Dissolved Oxygen (Fld)	mg/l	1.85
7/10/2017	Specific Conductivity (Field)	umhos/cm	571.7

Exhibit K. Miami-Dade Testing Results for Lake Ruth

DateCollected	Parameter Tested	Units	Value
7/10/2017	Temperature (Field)	^C	28.05555556
7/10/2017	pH (Field)	pH Units	7.16
7/10/2017	Dissolved Oxygen (Fld)	mg/l	2
7/10/2017	Salinity	ppt	0.28
7/10/2017	Specific Conductivity (Field)	umhos/cm	574.8
7/10/2017	Temperature (Field)	^C	28.16666667
7/10/2017	pH (Field)	pH Units	7.15
7/10/2017	DO%	% Sat	22.2
7/10/2017	Salinity	ppt	0.27
7/10/2017	DO%	% Sat	23.7
7/10/2017	Salinity	ppt	0.27
7/10/2017	DO%	% Sat	25.6

Exhibit L. Miami-Dade Water and Soil Quality Standards

Miami-Dade Code of Ordinances

Article III. Water and Soil quality

Division 1. Sec. 24-42. - Prohibitions against water pollution.

(1) PROHIBITIONS AGAINST DISCHARGE. It shall be unlawful for any person to throw, drain, run or otherwise discharge into any of the waters of this County, or to cause, permit or suffer to be thrown, run, drained, allowed to seep, or otherwise discharged into such water any organic or inorganic matter which shall:

(a) Breach the values set forth in Section 24-42(2);

(b) Cause water pollution as herein defined; or

(c) Cause a nuisance or sanitary nuisance as herein defined.

(2) EFFLUENT STANDARDS FOR MIAMI-DADE COUNTY. All sewage treatment plants and industrial waste treatment plants (except those discharging to approved ocean outfalls) shall effect ninety (90) percent treatment or better at the defined sampling point (24-44.2(1)). However, in no case shall the following effluent standards be exceeded (except where the standard is noted to be a minimum).

Chemical, Physical, or Biological Characteristic	*Standard*
Dissolved oxygen	Not less than 2.0 mg/l
Suspended solids	40 mg/l
Biochemical oxygen demand	30 mg/l
Floating solids	None visible to the naked eye
pH	6.0—8.5
Settleable solids	Not greater than 0.1 mg/l on Imhoff cone 1 hr. test
Oil and grease	30 mg/l
Odor-producing substances	None attributable to sewage or industrial wastes
Temperature	

Sources permitted after July 1, 1972	
Fresh water	92°F
Salt water	(June—September) 92°F
	(October-May) 90°F
Turbidity	29 NTU above background
Chlorides	500 mg/l [1]
Chromium	
Hexavalent	.5 mg/l
Total	1.0 mg/l
Copper	.5 mg/l
Cyanides	0.01 mg/l
Color	Not more than 10 units above normal background of the receiving water
Foam	Effluent shall not cause foaming in the stream
Chlorine	Minimum residual level of .5 mg/l after a ½ hour contact time at peak flow, where the nature of the waste requires disinfection
LAS	6.0 mg/l
Mercury	None detectable
Lead	0.05 mg/l
Arsenic	.05 mg/l
Phenol	0.001 mg/l
Iron	.3 mg/l

Zinc	1.0 mg/l
Sulfides	0.2 mg/l
Coliform organisms	
(MPN 100 ml)	1,000 total 0 Fecal
Other compounds	Other toxic or undesirable compounds than those listed above may occur in individual waste streams. Limits for these components may be specified by the Director based on the latest scientific knowledge concerning toxicity and adverse effects on the intended water use.
Synergistic action	Whenever scientific evidence indicates that a combination of pollutants exert a greater effect than the individual pollutants, the Director may, on the basis of these findings, lower the herein established limits to the level necessary to prevent damage to the waters of the County.

[1] In waters other than fresh water, waste shall not increase natural background more than ten (10) percent.

(3) DISCHARGES AFFECTING WATER QUALITY AND PROHIBITION OF POSITIVE DRAINAGE. It shall be unlawful for any person to dewater or to discharge sewage, industrial wastes, cooling water and solid wastes, or any other wastes into the waters of this County, including but not limited to surface water, tidal salt water estuaries, or ground water in such quantities, and of such characteristics as:

(a) May cause the receiving waters, after mixing with the waste streams, to be of poorer quality than the water quality standards set forth in Section 24-42(4);

(b) To cause water pollution as defined in Section 24-5; or

(c) To cause a nuisance or sanitary nuisance as herein defined.

It shall be unlawful for any County or municipal officer, agent, employee or board to approve, grant, or issue any permit, or permit, allow, let or suffer the approval or issuance of any permit, which authorizes positive drainage without the prior written approval of the Director or the Director's designee. The Director or the Director's designee shall issue a written approval only if the Director or the Director's designee determine, after reviewing data submitted by the applicant, that one (1) or more of the following conditions exist at the subject site:

(d) Inadequate size, shape or topographic characteristics of the site to provide full on-site disposal of stormwater.

(e) Extremely poor soil seepage capacity which prevents full on-site disposal of stormwater.

(f) An existing groundwater contamination plume under or in the vicinity of the subject site which will be adversely impacted by full on-site stormwater disposal.

(4) WATER QUALITY STANDARDS FOR MIAMI-DADE COUNTY:

Chemical, Physical or Biological Characteristic	Fresh Water (water containing less than 500 ppm chlorides)	Tidal Salt Water (water containing more than 500 ppm chlorides)	Groundwater
Dissolved oxygen (mg/l)	5 ppm during at least 10 hours per 24-hour period, never less than 4 ppm, unless acceptable data indicate that the natural background dissolved oxygen is lower than the values established herein.		—
Biochemical oxygen demand (mg/l)	Shall not exceed a value which would cause dissolved oxygen to be depressed below values listed under dissolved oxygen and in no case shall be great enough to produce nuisance conditions.		—
pH	6.0—8.5 [1]	6.0—8.5 [1]	6.0—8.5 [1]
Floating solids, settleable solids, sludge deposits	None attributable to sewage, industrial wastes or other wastes.	None attributable to sewage, industrial wastes, or other wastes.	—
Oil and grease (mg/l)	15 [2]	15 [2]	15 [2]
Odor-producing substances	None attributable to sewage, industrial wastes, or other wastes. Threshold odor number not to exceed 24 at 60°C as a daily average.		—
Temperature			
Sources permitted prior to July 1, 1972	Shall cause no environmental damage.		
Sources permitted after July 1, 1972	3° above ambient.	(June—September) 2° above ambient. (October—May) 4° above ambient.	—
Turbidity	29 NTU above background		

Ammonia (mg/l)	.5 ppm as N	.5 ppm as N	.5 ppm as N
Chlorides (mg/l)	500 [3]	3	500 [3]
Chromium (mg/l) total	.05	.05	.05
Copper (mg/l)	0.4	0.4	0.4
Cyanides (mg/l)	None detectable	None detectable	None detectable
Detergents (mg/l)	0.5	Insufficient to cause foaming	0.5
Fluoride (mg/l)	1.4 as F	10 as F	1.4 as F
Lead (mg/l)	0.95	0.35	0.05
Phenol (mg/l)	0.001	0.005	0.001
Zinc (mg/l)	1.0	1.0	1.0
Sulfides (mg/l)	0.2	1.0	0.2
Coliform organisms (MPN/100 ml)	1,000 [4]	1,000 [5]	50
Mercury	None detectable	None detectable	None detectable
Iron (mg/l)	0.3	0.3	0.3
Arsenic (mg/l)	0.05	0.05	0.05
Specific conductance	500 micromhos per cm (fresh water). Not more than 100% above background, in waters other than fresh.		
Dissolved solids	Not to exceed 500 mg/l for monthly average or 1000 mg/l at any time.		
Radioactive	Gross beta activity (in known absence of strontium 90 and alpha emitters), not to		

substances	exceed 1000 micro-microcuries at any time.
Other compounds	Other toxic or undesirable compounds than those listed above may occur in individual waste streams. Limits for these components may be specified by the Director based on the latest scientific knowledge concerning toxicity and adverse effect of the intended water use.
Synergistic action	Whenever scientific evidence indicates that a combination of pollutants exert a greater effect than the individual pollutants, the Director may, on the basis of these findings, lower the herein established limits to the level necessary to prevent damage to the waters of the County.

[1] Shall not cause the pH of the receiving waters to vary more than 1.0 unit. When the natural background pH lies outside the limits established, the introduction of a waste shall not displace the pH of the receiving waters more than 0.5 pH units from these standards.

[2] Shall not be visible, defined as iridescence, or cause taste or odors.

[3] Waste shall not increase natural background more than 10 percent.

[4] Maximum MPN/100 ml in a surface water used as a drinking water supply shall be 100.

[5] Maximum MPN/100 ml in a tidal water from which shellfish are harvested for human consumption shall be 70.

(Ord. No. 04-214, §§ 1, 5, 12-2-04; Ord. No. 08-55, § 2, 5-6-08)

LAKE MANAGEMENT RECOMMENDATIONS - LAKE NUMBER ML01, LAKE MICHAEL

LAKE GENERAL DESCRIPTION

This is a rectangular shaped lake with a surface area of approximately 280,500 square feet (6.44 acres). The 2008 study identified a littoral shelf of 38,954 square feet. There is no public ownership on or around this lake. The property appraiser's website identifies one parcel that encompasses the lake including the immediate shoreline area but does not identify ownership of this parcel nor has it assigned a folio number. There are no seawalls along this lake. There are no public outfalls into this lake and no aeration devices installed in the lake. Single family residential use surrounds this lake with five (5) remaining vacant lots along the perimeter.

LAKE MICHAEL MANAGEMENT RECOMMENDATIONS

AERATION: Currently there are no aerators in the lake. It is recommended that at least two (2) bubbler systems be installed.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive species Torpedo grass (*Panicum repens*) and Mexican petunia (*Ruellia simplex*) were observed along the shoreline.

WILDLIFE CONTROL: The non-native Muscovy duck (*Cairina moschata*) was observed in this lake. To keep moscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Michael (ML01)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Michael (ML01)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.4	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.20	Not less than 2.0 mg/L
pH	SU	8.5	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	120	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	10’2”	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	34.2	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.43	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0047	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	157	1000 CFU/100 ML

Regarding the water sampling, the pH should be monitored to see if it trends to above 8.5.

STORMWATER:

Lake Michael was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. The Stormwater Master Plan shows this lake and surrounding area as “Closed System (Exfiltration)” and stormwater outfalls were not observed. The Master Plan document shows no public outfalls; however there is the possibility of a privately owned and maintained stormwater system. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. The neighborhood surrounding the lake is not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

LAKE MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML02, LAKE VALERIE

LAKE GENERAL DESCRIPTION

This is a rectangular lake with a surface area of approximately 187,710 square feet (4.31 acres). The Miami-Dade Property Appraiser website shows lake ownership is divided among the surrounding homeowners. There are no seawalls along this lake. There are no public outfalls into this lake and no aeration devices installed in the lake. Single family residential use surrounds this lake.

LAKE VALERIE MANAGEMENT RECOMMENDATIONS

AERATION: Currently there are no aerators in the lake. It is recommended that at least one bubbler system be installed and maintained.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: The non-native Muscovy duck (*Cairina moschata*) was observed in this lake. To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Valeria (ML02)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;
61 to 120 mg/L as moderately hard;
121 to 180 mg/L as hard; and
greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Valerie (ML02)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.4	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.90	Not less than 2.0 mg/L
pH	SU	8.5	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	100	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	7’8”	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	47.3	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.43	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0081	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	2	1000 CFU/100 ML

Regarding the water sampling, the pH should be monitored to see if it trends to above 8.5.

STORMWATER:

Lake Valerie was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. The Stormwater Master Plan shows this lake and surrounding area as “Undeveloped or Unknown System” Stormwater outfalls were not observed. The Master Plan documents show no public outfalls; however there is the possibility of a privately owned and maintained stormwater system. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. The neighborhood surrounding the lake is not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

LAKE MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML03, LAKE ROSE ANN

LAKE GENERAL DESCRIPTION

This is a narrow rectangular lake with a surface area of approximately 204,560 square feet (4.70 acres). The Miami-Dade Property Appraiser website shows lake ownership is divided among the surrounding homeowners. There are no seawalls along this lake. There are no public outfalls into this lake but there is the possibility of privately owned and maintained stormwater outfalls. There are no aeration devices installed in the lake. Single family residential use surrounds this lake.

LAKE ROSE ANN MANAGEMENT RECOMMENDATIONS

AERATION: Currently there are no aerators in the lake. It is recommended that at one least bubbler system be installed and maintained.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive plant species Torpedo grass (*Panicum repens*) was observed along the shoreline.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Rose Ann(ML03)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Rose Ann (ML03)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	33.0	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	9.20	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	100	Shall not be depressed below 20
[2]Hardness	mg/L	180	
[3]Transparency	Feet	6’0”	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	2.7	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.39	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0061	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1490	1000 CFU/100 ML

STORMWATER:

Lake Rose Ann was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. The Stormwater Master Plan shows this lake and surrounding area as “Closed System (Exfiltration)” and stormwater outfalls were not observed. The Master Plan documents show no public outfalls; however there is the possibility of a privately owned and maintained stormwater system. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. The neighborhood surrounding the lake is not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

LAKE MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML04, LAKE GLORIA

LAKE GENERAL DESCRIPTION

This is a narrow rectangular shaped lake with a surface area of approximately 174,930 square feet (4.02 acres). The Miami-Dade Property Appraiser website shows lake ownership is divided among the surrounding homeowners. There are no seawalls along this lake. There are no public outfalls into this lake but there is the potential for private stormwater system outfalls to be present. There are no aeration devices installed in the lake. Single family residential use surrounds this lake.

LAKE GLORIA MANAGEMENT RECOMMENDATIONS

AERATION: Currently there are no aerators in the lake. It is recommended that at least one bubbler system be installed.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive species Torpedo grass (*Panicum repens*) was observed along the shoreline.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.:

Lake Gloria (ML04)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Gloria (ML04)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.9	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	6.78	Not less than 2.0 mg/L
pH	SU	8.5	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	260	Shall not be depressed below 20
[2]Hardness	mg/L	140	
[3]Transparency	Feet	9’6”	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	6.7	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.48	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.005	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	920	1000 CFU/100 ML

Regarding the water sampling, the pH should be monitored to see if it trends to above 8.5.

STORMWATER:

Lake Gloria was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. The Stormwater Master Plan shows this lake and surrounding area as “Closed System (Exfiltration)” and stormwater outfalls were not observed. The Master Plan documents show no public outfalls; however there is the possibility of a privately owned and maintained stormwater system. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. The neighborhood surrounding the lake is not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

LAKE MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML06, UNNAMED

LAKE GENERAL DESCRIPTION

This is a convoluted shaped lake with a surface area of approximately 1,204,700 square feet (27.66 acres). The 2008 study identified 222,296 square feet of littoral shelf. There is no development on the land surrounding this lake and surrounded by this lake. In the northern part of the lake, the lake surrounds an 'island' of land with one access point. The northern lake, 'island' and land surrounding the lake are under the ownership of F78 3 LCC. There are platted lots along the northern portion of the lake but no development has yet occurred on these lots. In the southern part the lake surrounds an 'island, of land with two access points. This island of land is currently used to graze cattle and it contains an approximate 6 acre archaeological zone containing tropical hardwood hammock habitat. The archaeological zone, referend to as Madden's Hammock, is owned by the Town of Miami Lakes. The remaining southern portion of the lake, island and surrounding land is under the ownership of F69 1 LLC and does not appear to have platted lots. There are no seawalls along this lake. There are no public outfalls into this lake and no aeration devices installed in the lake.

ML06, UNNAMED MANAGEMENT RECOMMENDATIONS

AERATION: Currently there are no aerators in the lake. It is recommended that at least three bubbler systems be installed in the.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive plant species observed at the time of inspection included Torpedo grass (*Panicum repens*), Cattail (*Typha* sp.), Australian pine (Casuarina equisetifolia), and Brazilian pepper (*Schinus terebinthifolia*) .

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Unnamed (ML06)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L

Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Due to accessibility issues no testing was conducted on this lake. Due to the use of the land within this lake for grazing purposes it is anticipated that fecal bacterial levels would be elevated.

STORMWATER:

Unnamed Lake (ML06) was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. The Stormwater Master Plan shows this lake and surrounding area as “Undeveloped or Unknown System” and stormwater outfalls were not observed. The Master Plan documents show no public outfalls; however there is the possibility of a privately owned and maintained stormwater system. The Town’s drainage cleaning cycle map excluded this lake from the drainage cleaning cycles. The streets abutting the lake to the west (NW 87th Ave) and south (NW 154th St) are currently part of the current street sweeping program.

LAKE MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML07, LAKE SILVERCREST NORTH

LAKE GENERAL DESCRIPTION

This is a "U" lake with a surface area of approximately 180,400 square feet (4.14 acres). The 2008 study identified a littoral shelf of approximately 46, 360 square feet. There is no public ownership on or around this lake. The property appraiser's website identifies one parcel that encompasses the lake the immediate shoreline area and four lakeside parcels and identifies ownership of this parcel by the Silvercrest Lake Estates Homeowners Association. There are no seawalls along this lake. There are no public outfalls into this lake and no aeration devices installed in the lake. Single family residential use and two (2) privately owned parks surround this lake.

LAKE SILVERCREST NORTH MANAGEMENT RECOMMENDATIONS

AERATION: Currently there are no aerators in the lake. It is recommended that at least one bubbler system be installed.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive, submerged species Hydrilla (*Hydrilla verticillata*) was observed in this lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Silvercrest North (ML07)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:
0 to 60 mg/L as calcium carbonate is classified as soft;
61 to 120 mg/L as moderately hard;
121 to 180 mg/L as hard; and
greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Silvercrest North (ML07)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	34.1	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	8.19	Not less than 2.0 mg/L
pH	SU	8.5	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	180	Shall not be depressed below 20
[2]Hardness	mg/L	120	
[3]Transparency	Feet	6'0"	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	10.3	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.36	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0096	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	620	1000 CFU/100 ML

Regarding the water sampling, the pH should be monitored to see if it trends to above 8.5.

STORMWATER:

Lake Silvercrest North was not specifically listed in the Stormwater Master Plan, Update #1, or Update #; however, there is a drainage basin named Silvercrest in the original Stormwater Master Plan. This drainage basin appears include Lake Silvercrest North, but the supplied documentation shows this neighborhood was still under development and additional stormwater drainage information was not included. The Stormwater Master Plan does not depict this lake in the masterplan map. It is assumed this lake was constructed after the map was created. There is the possibility of a privately owned and maintained stormwater system. The Town's drainage cleaning cycle map excluded this lake. The neighborhood surrounding the lake is not part of the current street sweeping program, but Montrose Road abutting the west side of the neighborhood is included in the street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML08, LAKE GLEN ELLEN

LAKE GENERAL DESCRIPTION

This lake has a surface area of approximately 739,880 square feet (16.99 acres). The 2008 study identified the littoral shelf as approximately 240,864 square feet. Lake Glenn Ellen is surrounding by residential single family homes and two Town parks (P66 and P67) with water access. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by the abutting homeowners, the parks are owned by the Town, and the center of the lake is owned by Miami Lakes Lake Glenn Ellen Homeowners Association Inc. The shoreline is mostly unconsolidated, but there are a few concrete sandbags, or concrete panel seawalls. There are public outfalls into this lake. There are no aeration devices installed in the lake.

LAKE GLEN ELLEN MANAGEMENT RECOMMENDATIONS

AERATION: Currently there are no aerators in the lake. It is recommended that at least four bubbler systems be installed and maintained.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Glen Ellen (ML08)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Glen Ellen (ML08)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.5	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.41	Not less than 2.0 mg/L
pH	SU	8.5	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	140	Shall not be depressed below 20
[2]Hardness	mg/L	140	
[3]Transparency	Feet	7’4”	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	1.8	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.55	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0065	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	910	1000 CFU/100 ML

Regarding the water sampling, the pH should be monitored to see if it trends to above 8.5.

STORMWATER:

Lake Glenn Ellen was included in the Stormwater Master Plan as a lake with blocked or undersized outfalls. At the time of Stormwater Master Plan Update #1, the Lake Glenn Ellen sub-basin was under construction for drainage improvements. Storm Water Master Plan Update #2 stated there were still drainage deficiencies even though the capital improvement project had been completed in 2004. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the neighborhood surrounding Lake Glenn Ellen as a combination exfiltration and outfall system. The Town’s drainage cleaning cycle map shows the catch basins and french drains were scheduled to be cleaned in fiscal year 2016-2017.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. However, NW 154th Street on the north side of the neighborhood and NW 87th Avenue on the west side of the neighborhood are currently swept as part of the Town street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

LAKE MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML09, LAKE CYNTHIA

LAKE GENERAL DESCRIPTION

This is a triangular lake with peninsula extending from the southeastern shore. The surface area of the lake is approximately 246,850 square feet (5.67 acres). The 2008 study identified a littoral shelf area of 47,985square feet. Approximately half of Lake Cynthia is surrounded by residential single family homes, with the other half surrounded by multi-family buildings. There are two (2) Town parks (P80 & P81) with water access on the lake. The Miami-Dade Property Appraiser website shows ownership of the lake's perimeter is divided among the surrounding homeowners, while the parks are owned by the Town of Miami Lakes. The interior portion of the lake is owned by Miami Lakes Lake Cynthia Homeowner's Association Inc. The western and northern shoreline consists of unconsolidated shoreline with adjacent turf lawns. The southeastern shoreline consists of a concrete sandbag seawall with a potential footer or rock ledge at the base. A public beach exists at the southern corner of the lake. It was observed that the lake has two (2) fountains but that neither was in operation at the time of the inspection. There are public outfalls into this lake.

LAKE CYNTHIA MANAGEMENT RECOMMENDATIONS

AERATION: The fountains should be inspected to ensure they are operational and should be maintained and continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations. The non-native Muscovy duck (*Cairina moschata)* was observed in this lake.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Cynthia (ML09)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L

[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Cynthia (ML09)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.2	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	9.75	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	120	Shall not be depressed below 20
[2]Hardness	mg/L	160	
[3]Transparency	Feet	8’3”	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	16.9	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.37	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0074	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	115	1000 CFU/100 ML

STORMWATER:

The original Stormwater Master Report stated the outfalls around Lake Cynthia were blocked or undersized. Stormwater Master Report Update #1 indicated Lake Cynthia Section 1 sub-basin was under construction for a drainage improvement project. The Stormwater Master Report Update #2 states the improvements to Lake Cynthia sub-basin had been completed. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the neighborhood surrounding Lake Cynthia is a combination of outfalls and exfiltration trenches. The Town’s drainage and cleaning cycle map shows the french drains and catch basins were scheduled to be cleaned in fiscal year 2016-2017. The neighborhood surrounding Lake Cynthia is not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

LAKE MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML10, LAKE SANDRA

LAKE GENERAL DESCRIPTION

This is a roughly triangular shape lake with three rectangular peninsulas extending into the lake. The surface area of the lake is approximately 199,180 square feet (4.57 acres), with no littoral shelf. Lake Sandra is surrounded by multi-family buildings and three Town parks (P69, P72, and Community Center West). The Miami-Dade Property Appraiser website shows ownership of the lake's perimeter is divided among the homeowners, while the parks are owned by the Town, and the lake is owned by the Sengra Corporation Homeowner's Association. The entire shoreline consists of a concrete sandbag seawall with a potential footer or rock ledge at the base. Multi-family residences surround the lake and there are no lawns abutting the seawall. It was observed that the lake has four (4) fountains but that not all were in operation at the time of the inspection. There are outfalls into this lake.

LAKE SANDRA MANAGEMENT RECOMMENDATIONS

AERATION: The fountains should be inspected to ensure they are operational and should continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Sandra (ML10)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Sandra (ML10)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	30.2	Shall no cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.35	Not less than 2.0 mg/L
pH	SU	8.25	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	110	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	5’5”	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	9.6	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.42	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.018	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	84	1000 CFU/100 ML

STORMWATER:

In the Stormwater Master Plan, the Lake Sandra basin and sub-basin were shown to have outfalls into Lake Sandra and Lake Glenn Ellen. Stormwater Master Plan Update #1 stated the small existing 8-inch outfalls, the culverts, and catch basins may frequently clog with debris and sediment such that water flow is blocked or highly restricted, and that frequent maintenance is recommended for the existing system. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding Lake Sandra is a combination of exfiltration trenches and outfalls. The town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2016-2017. Balgowan Street to the south and Montrose Road to the east are both part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML11, LAKE CAROL

LAKE GENERAL DESCRIPTION

This lake is roughly triangular shaped with five rectangular peninsulas extending into the lake. The surface area of the lake is approximately 212,780 square feet (4.88 acres), with no littoral shelf. The Miami-Dade Property Appraiser website shows the majority of the lake is owned by the Captain Group Homeowner's Association Inc. A section of lake along the southeastern perimeter is owned by the abutting property owners. The entire shoreline consisted of a concrete sandbag seawall with a potential footer or rock ledge at the base, with no lawns abutting the seawall. It was observed that the lake has four (4) fountains but not all were in operation at the time of the inspection. There are outfalls into this lake.

LAKE CAROL MANAGEMENT RECOMMENDATIONS

AERATION: The fountains should be inspected to ensure they are operational and should be kept running.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Carol (ML11)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Carol (ML11)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	32.9	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	3.58	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	120	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	8' 2''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	17.5	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.45	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0064	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	8.0	1000 CFU/100 ML

Regarding water testing, the DO levels should be monitored to ensure do not trend to lower values and drop below 3.

STORMWATER:

The Stormwater Master Plan listed Lake Carol as having blocked or undersized outfalls. Stormwater Master Plan Update #2 indicated 2 of the Lake Carol sub-basins had Capital Improvement Projects constructed to improve performance. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the neighborhood surrounding the lake is a combination of exfiltration trenches and outfalls. The Town’s drainage and cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2016-2017. Balgowan Road on the southeast side of the neighborhood is part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML12, LAKE ELIZABETH

LAKE GENERAL DESCRIPTION

This lake has a trapezoidal shape with a rounded peninsula extending into the lake. The surface area of the lake is approximately 399, 390 square feet 9.17 acres). Lake Elizabeth is surrounding by residential single family homes and two Town parks (P82 & P83) with lake access. The Miami-Dade Property Appraiser website shows ownership of the lake's perimeter is divided among the surrounding homeowners, with the parks owned by the Town of Miami Lakes. The interior portion of the lake is owned by Miami Lakes Lake Elizabeth Homeowner's Association Inc. It was observed that most of the shoreline was unconsolidated, with a few concrete sandbag or concrete panel seawalls. All shorelines were adjacent to turf lawns. A public beach, with signage regarding pet waste, exists at the northern portion of the lake. It was observed that the lake has two (2) fountains. There are no public outfalls into this lake.

LAKE ELIZABETH MANAGEMENT RECOMMENDATIONS

AERATION: The fountains should be maintained to ensure they remain operational and should be kept running.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive exotic species Torpedo grass (*Panicum repens*) was observed along the shoreline.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Elizabeth (ML12)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Elizabeth (ML12)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	32.5	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	3.69	Not less than 2.0 mg/L
pH	SU	8.5	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	140	Shall not be depressed below 20
[2]Hardness	mg/L	200	
[3]Transparency	Feet	4' 6''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	15.5	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	2.3	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.77	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.013	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	140	1000 CFU/100 ML

Regarding the water sampling, the pH should be monitored to see if it trends to above 8.5, and the DO levels should be monitored to ensure do not trend to lower values and drop below 3.

STORMWATER:

The Stormwater Master Report included Lake Elizabeth basin and sub-basins, but no outfalls appeared to be connected to Lake Elizabeth. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan depicts the drainage system surrounding the lake as a closed exfiltration system. The Town’s drainage cleaning cycle map shows the french drains and catch basins were scheduled to be cleaned in fiscal year 2016-2017. The neighborhood surrounding Lake Elizabeth is not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML13, LAKE GRAHAM DAIRY

LAKE GENERAL DESCRIPTION

This lake roughly approximates a cross shape with a surface area of approximately 1,768,610 square feet (40.60 acrea). The entire east side of Lake Graham Dairy has multi-family development. Along the northern and southern ends of the west side are commercial developments. Along the central portion of the west side is a large vacant parcel currently under development that has a shoreline of approximately 1,850 linear feet in length. There is also a vacant lot currently under development on the very southern tip of the lake that has approximately 400 linear feet of shoreline. The Miami-Dade Property Appraiser website shows ownership of the lake is divided among the following: The Anchorage at Miami Lakes Homeowner's Association, Inc./The Capin Group; William A Graham; The Graham Companies; and TGC BPW South LLC C/O The Graham Companies. There is turf/lawn upland of the shoreline around the entirety of the lake accept for a small sandy "beach" area on the east side serving the adjacent gated residential developments. One fountain was observed in the lake. It is undetermined if there are outfalls into this lake.

LAKE GRAHAM DAIRY MANAGEMENT RECOMMENDATIONS

AERATION: The fountains should be maintained to ensure they remain operational and should be kept running. In a lake of this size at least three additional bubblers should be installed.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive exotic, submerged aquatic species Hydrilla (*Hydrilla verticillata*) was observed along the shoreline in this lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Graham Dairy (ML13)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L

[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Graham Dairy (ML13)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	32.1	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	4.10	Not less than 2.0 mg/L
pH	SU	8.5	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	120	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	5' 2''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	3.4	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	2.2	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.73	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.018	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	82.0	1000 CFU/100 ML

Regarding the water sampling, the pH should be monitored to see if it trends to above 8.5.

STORMWATER:

In the Stormwater Master Plan Graham Dairy sub-basin was identified, but it is unclear if this sub-basin drains into Lake Graham Dairy. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding Lake Graham Dairy as “undeveloped or unknown system”. The Town’s drainage cleaning cycle map showed the catch basins and french drains in this section of Town were scheduled to be cleaned in fiscal year 2016-2017. Balgowan Road, Oak Lane, and Commerce Parkway form a loop around Lake Graham Dairy and these three streets are part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML14, LOCH DOON

LAKE GENERAL DESCRIPTION

This is a rectangular lake with an interconnecting canal on the east and west end. Loch Doon, Loch Ness, and Lake Ruth are interconnected by the Biscayne Canal, a significant South Florida Water Management District (SFWMD) conveyance system. The overall surface area is 667,730 square feet including a canal segment (15.33 acres). Loch Doon is surrounding by single family homes, a public park with water access (P51), and a golf course on the southwestern corner. All of the surrounding property owners are on municipal sewer system and do not have septic tanks. The Miami-Dade Property Appraiser website shows ownership of the canal leading to the lake and a large central portion of the lake is owned by the South Florida Water Management District; the lake's perimeter is divided among the following owners: Sengra Development Group, the individual homeowners abutting the lake, the Town owned park, and a portion of the lake's ownership was unidentified. Most of the shoreline is unconsolidated with lawns abutting the water's edge; but there are concrete sandbag, or concrete panel, seawalls as well. There are outfalls into this lake. There are no fountains or aerators in this lake.

LOCH DOON MANAGEMENT RECOMMENDATIONS

AERATION: Due to the SFWMD canal running through this lake, additional aeration is not necessary.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Loch Doon (ML14)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.

[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Loch Doon (ML14)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	30.3	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	5.2	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	180	Shall not be depressed below 20
[2]Hardness	mg/L	200	
[3]Transparency	Feet	8' 2''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	15.2	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	1.1	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.011	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	600	1000 CFU/100 ML

STORMWATER:

In the Stormwater Master Plan, the Loch Ness sub-basin was identified as having outfalls into Loch Doon. Figure 4 “Types of Drainage Systems” from the Stormwater Master plan shows the neighborhood north of the lake was a combination system of outfalls and exfiltration. The neighborhood south of the lake is depicted as an exclusively outfall system draining into a different lake. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. Neither neighborhood surrounding the lake is shown to have a street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML 15, LOCH NESS

LAKE GENERAL DESCRIPTION

This is a narrow, elongated lake with a interconnecting canal on the east and west end. Loch Doon, Loch Ness, and Lake Ruth are interconnected by the Biscayne Canal, a significant South Florida Water Management District (SFWMD) conveyance system. Loch Ness has a surface area of approximately 685,590 square feet (15.74 acres). Loch Ness is predominately surrounding by single family homes, with a small area of multi-family units along the very south easterly corner of the lake. There is a Town owned public park (P51) on the north shore with water access. The Miami-Dade Property Appraiser website shows the central portion of the lake is owned by South Florida Water Management District, abutting property owners own remaining portions; and a segment abutting the park was unidentified. The shorelines are a combination of unconsolidated and concrete sandbag or concrete panel seawalls. No fountains or aerators were observed at the time of the inspection. There are outfalls into this lake.

LOCH NESS MANAGEMENT RECOMMENDATIONS

AERATION: Due to the SFWMD canal running through this lake, additional aeration is not necessary.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. Torpedo grass (*Panicum repens*) and Primrose willow (*Ludwigia peruviana*) were also observed along the shoreline. Torpedo grass and Primrose willow are considered category 1 invasive exotic plants by the Florida Exotic Pest Plant Council.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Loch Ness (ML15)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Loch Ness (ML15)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	30.5	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	3.24	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	200	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	8' 6''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	48.6	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	1.2	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.022	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1080	1000 CFU/100 ML

Regarding testing, the DO levels should be monitored to ensure do not trend to lower values and drop below 3.

STORMWATER:

The Master Stormwater Plan showed the Loch Ness basin and sub-basin has outfalls into Loch Ness. A summary of the Storm Water Master Plan Update #1 was provided in Update Report #2 and this lake was identified as a sub-basin for which a Capital Improvement Project had been constructed. Figure 4 “Types of Drainage Systems” from the Stormwater Master plan shows the neighborhood north of the lake as a combination system of outfalls and exfiltration. The neighborhood south of the lake is depicted as an exclusively outfall system draining into a different lake. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. Neither neighborhood surrounding the lake is shown to have a street sweeping program. Ludlam road crosses over the canal connecting Lock Ness to Lake Ruth and this street is part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML16, LOCH LOMOND

LAKE GENERAL DESCRIPTION

Loch Lomond is an irregular shaped lake with a surface area of approximately 543,210 square feet (12.47 acre). Loch Lomond is surrounding by single family homes. The Miami-Dade Property Appraiser website shows the central portion of the lake is owned by Miami Lakes Civic Association, and the perimeter of the lake is owned by abutting property owners. The shorelines are a combination of unconsolidated and concrete sandbag. No fountains or aerators were observed. There are outfalls into the lake.

LOCH LOMOND MANAGEMENT RECOMMENDATIONS

AERATION: At least three bubbler systems should be installed in this lake.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations. The non-native Muscovy duck (*Cairina moschata*) was observed in this lake.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Loch Lomond (ML16)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Loch Lomond (ML16)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	30.8	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	5.15	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	120	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	8' 7''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	10.6	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	2.8	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.53	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.011	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	600	1000 CFU/100 ML

STORMWATER:

Loch Lomond sub-basin was identified in the Stormwater Master Plan with three potential outfalls, but no additional information was provided. However, stormwater drains and outfalls were observed surrounding the lake. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake as an exclusively outfall system. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2014-2015. The area surrounding Loch Lomond is not part of the current street sweeping cycle.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML 17, LOCH ANDREWS

LAKE GENERAL DESCRIPTION

This is an irregular shaped lake with a surface area of approximately 131,940 square feet (3.03 acre), with no littoral shelf. Loch Andrews is surrounded by multi-family buildings and a Town park (P53) at the western end of the lake. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, including the Town on the portion abutting the park; the large central portion on the western end is owned by the Miami Lakes Loch Andrews HOA Inc., and another central portion of the lake on the eastern end identifies the following ownership Veronica Hale Le, Jessica Hale Salazar Le, Rem Benny Gonzalez and Rem Aleida Gonzalez. The entire shoreline consisted of a concrete sandbag seawall with a potential footer or rock ledge at the base. Nearly all the uplands surrounding the lake were comprised of concrete decking. Some trees were observed but little to no area of ground cover vegetation to filter runoff was observed. The lake has both fountains and aerators. At the time of the inspection, some or all of the fountains/aerators were not in operation. There are outfalls into the lake.

LOCH ANDREWS MANAGEMENT RECOMMENDATIONS

AERATION: The fountains and bubbles should be maintained to ensure they are operations and should continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Loch Andrews (ML17)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L

BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Loch Andrews (ML17)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.2	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.08	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	100	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	4'est	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	15.2	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	2.1	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.52	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.021	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	810	1000 CFU/100 ML

STORMWATER:

Loch Andrews sub-basin was identified in the Stormwater Master Plan, but no additional information was provided. However, stormwater drains and outfalls were observed surrounding the lake. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake as an exclusively outfall system. The Town’s drainage cleaning cycle map showed the neighborhood surrounding the lake was excluded from the drainage cleaning cycle map. The area surrounding Loch Andrews is not part of the current street sweeping cycle.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML18, LAKE SILVERCREST SOUTH

LAKE GENERAL DESCRIPTION

This is a "U" shaped lake with a surface area of approximately 182,970 square feet (4.20 acres). Lake Silvercrest South is surrounding by residential single family homes with lawn abutting the waterline and two (2) privately owned parks. A public access area, with signage indicating no pets, exists at the northern end of the lake. The Miami-Dade Property Appraiser website shows the lake and immediate shorelines are owned by Silvercrest Lakes Estates South Homeowner's Association Inc. Two (2) fountains were observed in the lake. It is undetermined if there are outfalls into this lake.

LAKE SILVERCREST SOUTH MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended the fountains be maintained and continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive plant species Torpedo grass (*Panicum repens*) was observed along the shoreline.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations. The non-native Muscovy duck (*Cairina moschata*) was observed in this lake.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Silvercrest South (ML18)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Silvercrest South (ML18)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	30.9	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.73	Not less than 2.0 mg/L
pH	SU	8.5	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	125	Shall not be depressed below 20
[2]Hardness	mg/L	120	
[3]Transparency	Feet	4.0	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	11.3	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.47	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0097	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	160	1000 CFU/100 ML

Regarding the water sampling, the pH should be monitored to see if it trends to above 8.5.

STORWMATER:

Lake Silvercrest South was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2; however, there is a drainage basin named Silvercrest in the original Stormwater Master Plan. This drainage basin appears to include Lake Silvercrest South, but the supplied documentation shows this neighborhood was still under development and additional stormwater drainage information was not included. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan does not depict this lake in the figure. It is assumed this lake was constructed after the map was created. There is the possibility of a privately owned and maintained stormwater system. The Town’s drainage cleaning cycle map excluded this lake. The neighborhood surrounding the lake is not part of the current street sweeping program, but Montrose Road abutting the west side of the neighborhood is included in the street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML19, LAKE WINDMILL WEST

LAKE GENERAL DESCRIPTION

This is a very angular, convoluted lake with a surface area of approximately 119,160 square feet (2.74 acre). The 2008 study stated there was no littoral shelf. Lake Windmill West is surrounding by multi-family residential buildings. The Miami-Dade Property Appraiser website shows the shoreline and perimeter of the lake is owned by abutting property owners. The ownership of the center of the lake is unidentified but for reference purposes was assigned folio 32-2013-004-2460. There is a seawall surrounding the lake and nearly all the uplands surrounding the lake are comprised of concrete decking. Some trees were observed but little to no area of ground cover vegetation to filter runoff was observed. Two aerators were observed. There are outfalls into this lake.

LAKE WINDMILL WEST MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended the aerators be maintained and continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Windmill West (ML19)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:
0 to 60 mg/L as calcium carbonate is classified as soft;
61 to 120 mg/L as moderately hard;
121 to 180 mg/L as hard; and
greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Windmill West (ML19)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.6	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	8.57	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	300	Shall not be depressed below 20
[2]Hardness	mg/L	120	
[3]Transparency	Feet	3.5	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	3.1	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.47	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0091	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	690	1000 CFU/100 ML

STORWMATER:

Lake Windmill West was not included in the Stormwater Master Plan, Update #1 or #2. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the neighborhood surrounding the lake was an exclusively outfall system, but was excluded from the Drainage and Cleaning Cycle Map. This indicates the possibility of a privately maintained stormwater system. The neighborhood around Lake Windmill West is not part of the current street sweeping program.

Most roads in the Town are not Town controlled and not a part of the Town street sweeping contract. The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML20, LOCH LOMOND EAST

LAKE GENERAL DESCRIPTION

This is a very angular, convoluted lake with a surface area of approximately 125,260 square feet (2.88 acres) with no littoral shelf. Loch Lomond East is surrounding by multi-family residential buildings with a seawall surrounding the lake; there are no lawns abutting the seawall in the uplands, mostly concrete decking. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, but ownership of the center of the lake is unidentified. Four fountains were observed in the lake. There are outfalls into this lake.

LOCH LOMOND EAST MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended the fountains be maintained and continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Loch Lomond East (ML20)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;
121 to 180 mg/L as hard; and
greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Loch Lomond East (ML20)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.4	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.65	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	122	Shall not be depressed below 20
[2]Hardness	mg/L	120	
[3]Transparency	Feet	3.0	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	28.5	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.49	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.014	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	62	1000 CFU/100 ML

STORWMATER:

Loch Lomond East sub-basin was identified in the Stormwater Master Plan, but no additional information was provided. Stormwater drains and outfalls were observed surrounding the lake. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake as an exclusively outfall system. The documentation provided shows no public outfalls; however there is the possibility of a privately maintained stormwater system. The Town’s drainage cleaning cycle map showed the catch basins on the west side of the lake were scheduled to be cleaned during the 2014-2015 fiscal year. The neighborhood on the eastern side of the lake was excluded from the drainage cleaning cycle map. The roads accessing the homes surrounding the lake are not a part of the street sweeping program, but NW 67th Ave. (Ludlam Road), which abuts the neighborhood on the east side, is part of the current street sweeping cycle.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML21, LOCH LOMOND WEST

LAKE GENERAL DESCRIPTION

This is an angular, convoluted lake with a surface area of approximately 142,360 square feet (3.27 acres). The 2008 study stated there was no littoral shelf. Loch Lomond West is surrounding by multi-family residential buildings. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, but ownership of the center of the lake is unidentified. There is a seawall surrounding the lake. Multi-family residences surround the lake and there are no lawns abutting the seawall, nearly all concrete decking. No fountains or aerators were observed in the lake.

LOCH LOMOND WEST MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended the fountains be maintained and continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations. Muscovy ducks (*Cairina moschata*) were observed in the lake.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Loch Lomond West (ML21)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:
0 to 60 mg/L as calcium carbonate is classified as soft;
61 to 120 mg/L as moderately hard;
121 to 180 mg/L as hard; and
greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Loch Lomond West (ML21)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	30.8	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	8.36	Not less than 2.0 mg/L
pH	SU	8.5	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	85	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	3.0	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	11.4	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.26	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0067	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	320	1000 CFU/100 ML

Regarding the water sampling, the pH should be monitored to see if it trends to above 8.5.

STORWMATER:

Loch Lomond West basin and sub-basin were identified in the Stormwater Master Plan, but no additional information was provided. Stormwater drains and outfalls were observed surrounding the lake. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake as an exclusively outfall system. The documentation provided shows no public outfalls; however there is the possibility of a privately maintained stormwater system. The Town’s drainage cleaning cycle map excluded Loch Lomond West and the surrounding streets. The streets surrounding Loch Lomond West are not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML22, LOCH ISLE

LAKE GENERAL DESCRIPTION

This is an angular, somewhat "U" shaped lake with a surface area of approximately 125,260 square feet, (2.88 acres) with no littoral shelf. Loch Isle is surrounding by multi-family residential buildings. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, and lake is owned by the Miami Lakes Loch Isles HOA Association. There is seawall surrounding the lake. There are no lawns abutting the seawall, mostly concrete decking. Fountains were observed at the time of inspection, but were not operating. There are outfalls into the lake. Loch Isle had a relatively low Secchi Depth/Transparency reading of 2' and 5' in the recent testing.

LOCH ISLE MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended the fountains be maintained and continue to run. Recent aerial indicate there may be five fountains in the lake.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations. The non-native Muscovy duck (Cairina moschata) was observed in this lake.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Loch Isle (ML22)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Loch Isle (ML22)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	29.3	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.38	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	100	Shall not be depressed below 20
[2]Hardness	mg/L	80	
[3]Transparency	Feet	2	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	13.2	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.37	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.021	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	600	1000 CFU/100 ML

STORWMATER:

Loch Isle sub-basin was identified in the Stormwater Master Plan, but no additional information was provided. Stormwater drains and outfalls were observed surrounding the lake. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake as a combination exfiltration and outfall system. The Town’s drainage cleaning cycle map showed the neighborhood surrounding the lake was excluded from the drainage cleaning cycle map. This indicates the possibility of a privately maintained stormwater system. The immediate streets surrounding the lake are not part of the current street sweeping program but Miami Lakes Drive, which falls on the south side of the neighborhood, is part of the current street sweeping cycle.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE ML 23, UNAMED LAKE (LAKE MARY)

LAKE GENERAL DESCRIPTION

This lake was un-named in the previous study conducted in 2008, but has more recently been referred to as Lake Mary. This is an angular, convoluted shaped lake. The surface area of the lake is approximately 196,200 square feet (4.5 acres). This lake is surrounded by multi-family buildings. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, but ownership of the center of the lake is unidentified. The entire shoreline consists of a concrete sandbag seawall with a potential footer or rock ledge at the base. There are no aerators or fountains in the lake. There are outfalls into the lake.

LAKE MARY MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended that at least two bubblers be installed in the lake and maintained.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Mary (ML23)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;
61 to 120 mg/L as moderately hard;
121 to 180 mg/L as hard; and
greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Mary (ML23)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	29.3	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.58	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	140	Shall not be depressed below 20
[2]Hardness	mg/L	160	
[3]Transparency	Feet	4.5	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	17	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.39	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.016	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	770	1000 CFU/100 ML

STORWMATER:

This lake was not included in the Stormwater Master Plan, Update #1 or #2. Storm drains were observed in the multi-family residential area surrounding the lake and they appeared to be connected to outfalls surrounding the lake. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake is an exclusively outfall system. The Town’s drainage cleaning cycle map showed the catch basins were scheduled to be cleaned in fiscal year 2015-2016. The area surrounding this lake is not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML24, LAKE MARTHA

LAKE GENERAL DESCRIPTION

This lake has a multi-lobed, convoluted configuration with a surface area of approximately 914,700 square feet (21.62 acres). The 2008 study stated the littoral shelf was approximately 273,252 square feet. Lake Martha is surrounding by single family residences, multi-family residential building, and four Town parks (P36, P37, P38, & P39). The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, with the parks owned by the Town of Miami Lakes, but ownership of the center of the lake is unidentified. The shoreline consists of a mix of unconsolidated shoreline, and concrete sandbag and concrete panel seawalls. The shoreline of single family residences is mostly lawns extending to the water's edge. The multi-family residences generally have a seawall. Lake access, with signage discouraging the feeding of wildlife, is located at the three parks. No fountains or aerators were observed at the time of the inspection. There are outfalls into the Lake.

LAKE MARTHA MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended that at least four bubblers be installed in the lake and maintained.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations. The non-native Muscovy duck (*Cairina moschata*) was observed in this lake.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Martha (ML24)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L

[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Martha (ML24)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.2	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	6.50	Not less than 2.0 mg/L
pH	SU	7.75	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	115	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	7' 4''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	49.2	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.47	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.021	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	3	1000 CFU/100 ML

STORWMATER:

The Lake Martha sub-basin was identified in the Stormwater Master Plan, Update #1, and Update #2. This sub-basin has existing catch basins and some existing exfiltration trench tied to outfalls to Lake Martha. The Stormwater updates listed deficiencies such as catch basins full of debris and infrastructure deficiencies were noted and drainage improvements were recommended. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding Lake Martha consists of an exclusively outfall system. The Town’s drainage and cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The neighborhood surrounding the lake is not part of the current street sweeping program. However, Miami Lakes Drive which abuts the neighborhood to the north is part of the street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML25, LAKE SUZIE

LAKE GENERAL DESCRIPTION

This lake is somewhat triangular shaped with a surface area of approximately 280,940 square feet (6.45 acre). The 2008 study stated the littoral shelf was approximately 88,210 square feet. Lake Suzie is surrounding by single family residences with lawns extending to the water's edge. There is also a park (P32) with public beach access constructed on the north. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, and the park is owned by the Town. Ownership of the center of the lake is unidentified. Most of the shoreline is unconsolidated shoreline but there are a few concrete sandbag or concrete panel seawalls. A public beach, with signage indicating no pets, exists at the northern end of the lake. Two (2) aerators were observed. There are outfalls into this lake.

LAKE SUZIE MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended the aerators be maintained and continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive exotic submerged species Hydrilla (*Hydrilla verticillata*) was observed along the shoreline. Hydrilla is a Category 1 invasive pest species.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Suzie (ML25)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L

Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Suzie (ML25)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	30.1	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.50	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	115	Shall not be depressed below 20
[2]Hardness	mg/L	120	
[3]Transparency	Feet	5'est	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	38.6	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.45	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0077	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	290	1000 CFU/100 ML

STORWMATER:

The Stormwater Master Plan Update #1 and #2 identify outfalls into Lake Suzie as part of the Lake Sara sub-basin drainage system. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding Lake Suzie consisted exclusively of an outfall system. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The area surrounding this lake is not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML26, LAKE SARAH

LAKE GENERAL DESCRIPTION

This is a lake in an irregular X-shaped pattern with a surface area of approximately 576,760 square feet (13.24 acres). The 2008 study stated the littoral shelf was approximately 199,358 square feet. Lake Sarah is surrounded by single family residences. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners. Ownership of the center of the lake is unidentified. Most of the shoreline is unconsolidated but there are a few concrete sandbag or concrete panel seawalls. All shorelines are adjacent to turf lawns for single family residences. No fountains or aerators were observed in the lake. There are outfalls into the lake.

LAKE SARAH MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended that at least three (3) bubbler systems be installed and maintained.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive exotic submerged species Hydrilla (*Hydrilla verticillata*) was observed along the shoreline. Hydrilla is a Category 1 invasive pest species.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations. The the non-native Muscovy duck (*Cairina moschata*) was observed in the lake.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Sarah (ML26)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Sarah (ML26)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.0	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	7.32	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	145	Shall not be depressed below 20
[2]Hardness	mg/L	180	
[3]Transparency	Feet	8' 4''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	37.2	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.43	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.012	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	145	1000 CFU/100 ML

STORWMATER:

Lake Sarah was included in the Stormwater Master Plan Update #2. The Lake Sarah sub-basin is part of the Lake Martha drainage basin and has outfalls into Lake Sarah and Lake Suzie. Deficiencies such as catch basins full of debris and infrastructure deficiencies were noted and drainage improvements were recommended. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the neighborhood surrounding Lake Sarah consists exclusively of an outfall system. The Town’s drainage cleaning cycle map showed the catch basins were scheduled to be cleaned in fiscal year 2015-2016. The neighborhood surrounding the lake is not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML27, LAKE ADELE

LAKE GENERAL DESCRIPTION

This is an irregularly shaped lake with a surface area of approximately 356,400 square feet (8.18 acres). The 2008 study stated the littoral shelf was approximately 131,125 square feet. Lake Adele is surrounding by single family residences with lawns extending to the water's edge. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners but ownership of the center of the lake is unidentified. Most of the shoreline is unconsolidated but there are a few concrete sandbag or concrete panel seawalls. No fountains or aerators were observed in the lake.

LAKE ADELE MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended that at least 2 bubbler systems be installed and maintained.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations. The the non-native Muscovy duck (*Cairina moschata)* was observed in this lake.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Adele (ML27)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:
0 to 60 mg/L as calcium carbonate is classified as soft;
61 to 120 mg/L as moderately hard;
121 to 180 mg/L as hard; and
greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Adele (ML27)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.6	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	8.57	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	100	Shall not be depressed below 20
[2]Hardness	mg/L	140	
[3]Transparency	Feet	5.5	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	47.3	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.43	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0081	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	2	1000 CFU/100 ML

STORWMATER:

Lake Adele was not specifically listed in the Stormwater Master Plan, Update #1, or Update #2. Figure 4 "Types of Drainage Systems" from the Stormwater Master Plan shows this lake and surrounding area as "Outfall System". The Master Plan documents show three potential public outfalls. The Town's drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The neighborhood surrounding the lake is not part of the current street sweeping program

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML28, LAKE HILDA

LAKE GENERAL DESCRIPTION

This is a five-lobed lake with a surface area of approximately 792,200 square feet (18.19 acres). Lake Hilda is surrounding by single family residences with lawns extending to the water's edge. There are two (2) Town parks (P21 & P27) on the lake with water access. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, with the parks owned by the Town of Miami Lakes, but ownership of the lake is unidentified. Most of the shoreline is unconsolidated (grass abutting water's edge) but there are a few concrete sandbag or concrete panel seawalls. Both public parks have beaches, with signage stating no pets are allowed. No fountains or aerators were observed in the lake. There are outfalls into the lake.

LAKE HILDA MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended that a minimum of 5 aerators, one in each lobe of the lake, be installed, maintained and continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake. The invasive exotic submerged species Hydrilla (*Hydrilla verticillata*) was observed along the shoreline. Hydrilla is a Category 1 invasive pest species.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Hilda (ML28)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L

Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Hilda(ML28)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.1	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	6.15	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	100	Shall not be depressed below 20
[2]Hardness	mg/L	180	
[3]Transparency	Feet	6' 7''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	43.5	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	2.2	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.76	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.023	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	390	1000 CFU/100 ML

STORWMATER:

The Stormwater Master Plan Update #1 identified the Lake Martha sub-basin has existing catch basins and some existing exfiltration trench tied to outfalls to Lake Hilda. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding Lake Hilda consists of an exclusively outfall system. The Town’s drainage and cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The current street sweeping program includes two streets adjacent to Lake Hilda, White Oak Drive in the northeast corner and Ludlam Road on along the eastern portion of the lake.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML29, LAKE PATRICIA

LAKE GENERAL DESCRIPTION

This is an irregularly shaped lake with a surface area of approximately 865,870 square feet (19.89 acres). Lake Patricia is surrounding by single family residences and Town park (P8) with lawns extending to the water's edge. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, with the park owned by the Town of Miami Lakes, but ownership of the center of the lake is Miami Dade County Internal Services Department Real Estate Management. The shoreline is mostly unconsolidated with some concrete sandbag and concrete panel seawalls. A public park with a beach access, and signage stating no pets, is located at the southwestern portion of the lake. Both public and private beaches were observed surrounding the lake. No fountains or aerators were observed at the time of the inspection. There are outfalls into this lake.

LAKE PATRICIA MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended that a minimum of 5 aerators, one in each lobe of the lake, be installed, maintained and continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Patricia (ML29)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L

Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Patricia (ML29)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.4	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	6.58	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	110	Shall not be depressed below 20
[2]Hardness	mg/L	120	
[3]Transparency	Feet	7' 9''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	74.2	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.36	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.013	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	25	1000 CFU/100 ML

STORWMATER:

The Stormwater Master Plan Update #1 identified the Lake Patricia sub-basin has catch basins and some existing exfiltration trench tied to outfalls at Lake Patricia. In addition, Stormwater Master Plan Update #2 identified the Lake Patricia sub-basin was in the design phase of a Capital Improvement Project. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake has an exclusively outfall system. The Town’s drainage and cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The streets surrounding Lake Patricia are not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML30, LAKE KATHERINE

LAKE GENERAL DESCRIPTION

This is a convoluted shaped lake with multiple lobes. The lake has a surface area of approximately 1,234,150 square feet (28.33 acres). Lake Katherine is surrounding by single family residences, multi-family residential buildings and four Town parks (P44, P45, P46, & P47). The Miami-Dade Property Appraiser website shows the immediate perimeter of the lake is owned by abutting property owners, and the parks are owned by the Town. Ownership of the center of the lake is unidentified. The shoreline homes consists mainly an unconsolidated shoreline but there are a few seawalls. The shoreline of single family residences generally has lawns extending to the water's edge while the multi-family residences generally have a seawall. Some of the Single Family Residential lots have docks. Lake access is located at the northwestern portion of the lake. No fountains or aerators were observed in the lake. There are outfalls into the lake.

LAKE KATHERINE MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended that a minimum of five aerators, one in each lobe of the lake, be installed, maintained and continue to run.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Katherine (ML30)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L

[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Katherine (ML30)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	31.3	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	6.95	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	125	Shall not be depressed below 20
[2]Hardness	mg/L	120	
[3]Transparency	Feet	6' 3''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	56.9	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.29	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.0095	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	<2.0	1000 CFU/100 ML

STORWMATER:

The Lake Katherine drainage basin and sub-basin were identified in the Stormwater Master Plan, but no additional information was included in the Master Plan or subsequent Master Plan updates. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the lake as an exclusively outfall system. The Town’s drainage cleaning cycle map showed the catch basins and french drains were scheduled to be cleaned in fiscal year 2015-2016. The residential areas immediately surrounding the lake are not part of the current street sweeping program. However, Ludlam Road on the west and Miami Lakes Drive on the north are both part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML31, LAKE RUTH

LAKE GENERAL DESCRIPTION

This is a roughly square shaped lake with the Biscayne Canal extending to the west and to the south. The lake has a surface area of approximately 3,514,760 square feet (80.69 acres). The 2008 study stated the littoral shelf was approximately 329,956 square feet. Loch Doon, Loch Ness, and Lake Ruth are interconnected by the Biscayne Canal, a significant South Florida Water Management District (SFWMD) conveyance system. Lake Ruth is surrounding by a combination of land uses: industrial, commercial, retail, and multi-family residences. Town Park (P58) is located in the northwest corner of the lake. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, with the park owned by the Town of Miami Lakes, but ownership of the center of the lake is South Florida Water Management District, Joe Daniel INC, and Cap East Associates. The shoreline is a combination of unconsolidated shoreline with some concrete sandbag and concrete panel seawalls. No fountains or aerators were observed. There are outfalls into this lake.

LAKE RUTH MANAGEMENT RECOMMENDATIONS

AERATION: Due to the SFWMD canal running through this lake, additional aeration is not necessary, but could be considered in the northeastern corner of the lake.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, undesirable border grass and brush control to water's edge, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Ruth (ML31)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Ruth (ML31)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	30.7	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	3.50	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	180	Shall not be depressed below 20
[2]Hardness	mg/L	200	
[3]Transparency	Feet	7' 2''	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	28.6	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	2.3	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.99	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.012	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	64	1000 CFU/100 ML

Regarding water testing, the DO levels should be monitored to ensure do not trend to lower values and drop below 3.

STORMWATER:

In the Stormwater Master Plan the Ruth drainage basin was identified, and Update #1 stated the basin is a combination of outfalls into Lake Ruth and exfiltration trenches. Lake Ruth was not mentioned in Update #2. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the area surrounding the northeast corner of the lake has a combination outfall and exfiltration trench system. The area surrounding the northwest corner of the lake has an exclusively outfall system. The area surrounding the southwest corner of the lake has a closed system (exfiltration). The remaining areas surrounding the lake were listed as undeveloped or unknown system. The Town’s drainage cleaning cycle map showed the catch basins and french drains in this section of the Town were scheduled to be cleaned in fiscal year 2015-2016. However, the area in the southwest corner, with a closed exfiltration system, was excluded on the map. In addition the area in the northwest, with an outfall system, was also excluded from the drainage cleaning cycle map. Two streets adjacent to Lake Ruth are part of the current street sweeping program: NW 67th Avenue on the west side of the lake and portion of NW 57th Avenue on the east side of the lake.

Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.

MANAGEMENT RECOMMENDATIONS, LAKE NUMBER ML32 LAKE WINDMILL EAST

LAKE GENERAL DESCRIPTION

This is a very angular, irregular shaped lake with a surface area of approximately 122,640 square feet (2.82 acres) with no littoral shelf. Lake Windmill East is surrounding by multi-family residential buildings. The Miami-Dade Property Appraiser website shows the perimeter of the lake is owned by abutting property owners, but ownership of the center of the lake is unidentified. The lake parcel has been assigned folio # 32-2013-004-2460 for reference. There is a seawall surrounding the lake with a potential rock ledge or building footer visible below the waterline. Multi-family residences surround the lake and there are no lawns abutting the seawall, mostly concrete decking. Two aerators were observed in the lake. There are outfalls into the lake.

LAKE WINDMILL EAST MANAGEMENT RECOMMENDATIONS

AERATION: It is recommended that an aerator be installed in the north end of the lake and one in the south end.

INVASIVE AQUATIC PLANT CONTROL: An ongoing contract with a professional lake maintenance firm should be maintained to address aesthetic above surface debris removal, algae and aquatic weed control, and biological control. The contract should encompass the entire lake.

WILDLIFE CONTROL: To keep Muscovy ducks or other non-native water fowl from over populating, lake maintenance, lawn maintenance contractors, or other trained staff or volunteers, should be contracted to collect eggs for humane disposal to control populations.

EDUCATION SIGNAGE: Education signage should be posted in the right of ways on each side of the lake to inform and reinforce the behavior of neighborhood residents. Signage should include language to not feed the ducks, to collect duck eggs, to not dump litter or debris in the lake, to prevent lawn fertilizer from entering the lake, and to not allow pet waste to enter the lake.

WATER QUALITY TESTING:

Water Quality testing should be conducted in this lake on a quarterly basis for the following parameters. The Standards cited are those found in Rules 62-302.500 through 62-302.540, and 62-302.800 in the Florida Adminstrative Code (F.A.C.) as applicable.

Lake Windmill East (ML32)		
Parameter	**Units**	**Standards**
Temperature	°Celsius	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	Not less than 2.0 mg/L
pH	Standard Units	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	Shall not be depressed below 20
[2]Hardness	mg/L	See note 2 below
[3]Transparency	Feet	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	below 25 mg/L
BOD	mg/L	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	1000 CFU/100 ML

[1]Alkalinity: Shall not be depressed below 20. In waterbodies with natural alkalinity levels below 20 mg/L, alkalinity shall not be reduced by more than 25%.

[2]General guidelines for hardness measures of waters are:

0 to 60 mg/L as calcium carbonate is classified as soft;

61 to 120 mg/L as moderately hard;

121 to 180 mg/L as hard; and

greater than 180 mg/L as very hard

[3]Transparency: Annual average values shall be based on a minimum of three samples, with each sample collected at least three months apart.

[4] Utilized the standards set for Total Phosphorus mg/L and Total Nitrogen mg/L from west central Florida within the Numeric Nutrient Criteria Found in F.A.C. 62-302.531 (2)(c) as a guideline for South Florida.

[5]CFU=Colony Forming Units as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms. as reflected in Miami-Dade Code of Ordinances Article III. Division 1. Section 24-42(4) for Coliform Organisms.

Water Quality testing was conducted on 8/15/18 in this lake with the following results:

Lake Windmill East (ML32)			
Parameter	**Units**	**Results**	**Standards**
Temperature	°Celsius	33.1	Shall not cause environmental damage
Dissolved Oxygen (DO)	mg/L	6.81	Not less than 2.0 mg/L
pH	SU	8.0	6.5 to 8.5 SU (Standard Units)
[1]Alkalinity	mg/L	200	Shall not be depressed below 20
[2]Hardness	mg/L	100	
[3]Transparency	Feet	4.5	Not to be reduced by more than 10% compared to the natural background value
Copper	µg/L	7.8	Not to exceed 0.4 mg/L = 400 µg/L
Zinc	µg/L	<11.0	Less than or equal to 86 micrograms/liter
Total Suspended Solids mg/L	mg/L	<5.0	below 25 mg/L
BOD	mg/L	<2.0	Not to exceed 8 mg/L.
[4]Total Nitrogen	mg/L	0.51	Less than 1.65 mg/L
[4]Total Phosphorus	mg/L	0.02	Less than 0.49 mg/L
Fecal Coliform	[5]CFU/100ml	23	1000 CFU/100 ML

STORWMATER:

Lake Windmill East was not included in the Stormwater Master Plan, Update #1 or update #2. Figure 4 “Types of Drainage Systems” from the Stormwater Master Plan shows the neighborhood surrounding the lake was an exclusively outfall system, but was excluded from the Drainage and Cleaning Cycle Map. This indicates the possibility of a privately maintained stormwater system. The neighborhood around Lake Windmill East is not part of the current street sweeping program.

The neighborhood immediately surrounding this lake is not part of the current street sweeping program. Street sweeping is a documented very highly effective tool in removing pollutants and sediment from entering the lakes through the storm drain systems. It is recommended to include to the roads in the Town street sweeping program that contribute to the outfalls in this lake.