2008 Adopt-A-Lake Report

Volunteer Lake Monitoring Results for Water Year 2008

ORANGE COUNTY • ENVIRONMENTAL PROTECTION • DIVISION • FLORIDA

Report Completed: June 2009

Online Reports:

http://www.orangecountyfl.net

http://www.orangewateratlas.org

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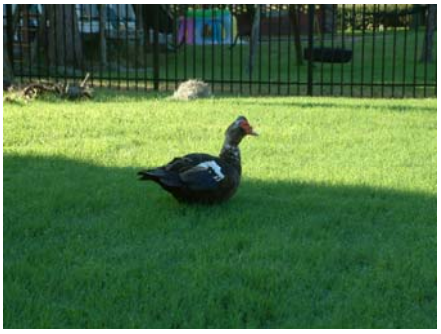

We would like to thank all the Orange County staff involved in the Adopt-a-Lake program. Staff duties included laboratory analysis, quality assurance and control, data verification, training, volunteer coordination, equipment management, technical writing, and report layout and production. The following staff members have contributed significantly in the production of this report and making the Adopt-A-Lake program a success.

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PROGRAM OVERVIEW

The Orange County Adopt-A-Lake (AAL) program began in 1994 when the environmental protection division (EPD) designed a plan to organize a group of interested citizens to collect samples. These citizens were mainly interested in the quality of their lakes, and they agreed to collect and deliver water samples to the EPD lab. Within the first few years, the program grew to include 50 volunteers. Additionally, the program was recognized and received the National Association of Counties Award for "Innovative Environmental Education." Since 2003, Orange County currently works in concert with the WAV (Watershed Action Volunteer) program coordinated by the St. Johns River Water Management District.

The WAV Program was started by the St. Johns River Water Management District in 1994 to create opportunities for anyone to get involved with the care and protection of their local watershed. The WAV program is a local partnership of the District with other agencies including local governments and municipalities in 14 of 18 counties in the District service area. In Orange County, this partnership includes the Orange County Environmental Protection Division and the South Florida Water Management District (SFWMD).

The goal of the WAV Program is to engage people in caring about their watershed through volunteer projects. These projects can be bird watching on Lake Apopka, storm drain labeling in any community or subdivision, or making educational presentations to local schools or civic groups. Other hands on activities include vegetation removal, and native species planting projects.

As of 2008, our volunteer program has 21 members who sample a total of 25 waterbodies. Volunteers collect information such as temperature, secchi-depth, dissolved oxygen, pH, and weather conditions. The water samples are tested for fecal coliform bacteria, metals, nutrients, and wet chemistry parameters.

Participating Volunteers

Many individuals have contributed to the collection of data for the Adopt-A-Lake volunteer monitoring program. Special thanks to our dedicated team of volunteers, many of whom have been sampling for 5 years or more. The success of this program is dependent on their devoted and enthusiastic efforts.

Baldwin

Bay Lake, Barrett Canal, Orlando

Big Sand Lake

Buchanon

Douglas

Dwarf and Patric

Fairview

Irma

Johns Lake and Shepard

Killarney

Little Econ

Little Lake Fairview

Mann

Pineloch

Rose

Split Oak Reserve

Starlite

Desy Sutikno

Richard Adamczyk

Nick, Nina, and Shari Gallo

Harriet Lehnhoff

Alysee and Daniel Rasmussen

Carole and Pat McDaniel

Jerry Porter

Martha Tempest

Charles Gomez

Adam Wershil

Terry Johnson

Fred Breitbeil

Alec and Andrea Josiah

Horton Johnson

John Conley

Bruce Williams

Schumsky and Born

Trophic State Index & Water Quality

TROPHIC STATE INDEX (TSI)

Orange County uses the Trophic State Index (TSI) to assess the natural aging process of the lake and to see if it is being impacted by development or other human interference. There are four TSI classifications derived from a scientific calculation using the concentrations of three parameters (total nitrogen, total phosphorus, chlorophyll *a*), and the Secchi depth.

Oligotrophic	**0-49**
Mesotrophic	**50-59**
Eutrophic	**60-69**
Hypereutrophic	**70-100**

Oligotrophic (0-49) is the state of the lake in its early stage. There are very few nutrient productivity, little submerged plants, and low fish populations. Water clarity is very good and the littoral zone (area between the land and the lakeshore) is narrow.

Mesotrophic (50-59) is the state after the lake has aged a hundred years or more. There is an increase in nutrient concentrations, algal blooms.

Eutrophic (60-69) is the state of the lake categorized by high concentrations of nutrients and frequent algal blooms. Large fish and bird populations are present.

Hypereutrophic (> 70) is the last stage of a lake. The clarity of the lake decreases due to constant algal blooms and high nutrients. Lake surfaces may turn a pea green color.

WATAR QUALITY PARAMETER DEFINITIONS

Total Nitrogen - A measure of all forms of nitrogen, both inorganic and organic, in a sample. Nitrogen is necessary for the growth of aquatic plants and algae. Increased nitrogen levels result from natural and human related sources of run-off to surface waters.

Total Phosphorus – Includes inorganic and organic types of phosphorus. An essential element that contributes to the eutrophication water bodies. Increased levels result from discharges of phosphorus containing materials into surface waters.

Fecal Coliform – the major portion of fecal coliform is E. coli, a species indicative of fecal pollution. Found in wastewater treatment systems and bathing waters.

Dissolved Oxygen - A measure of the amount of oxygen available in the water for plants and wildlife. Plants do produce oxygen, but only during daytime hours when the sun is shining. At this time, aquatic plants use photosynthesis to convert carbon dioxide into oxygen. At night, aquatic plants reverse the process converting oxygen to carbon dioxide, therefore removing oxygen from the water. The excess of aquatic plants, such as algae, may remove a significant amount of oxygen from the water and cause a fish kill.

Program Thanks and Outlook

How often have we heard, “the water quality is worse than it was years ago”? Because of human impacts in recent years, this is undoubtedly a true statement. Thanks to our Adopt-A-Lake Volunteers, we are able to sample more lakes than we have the employees and hours in a day to handle. Volunteer monitoring efforts help by providing information and data points for many locations throughout the county.

We want to thank our volunteers who take the time to sample and collect water quality data on their lakes. The AAL program has undergone many changes in the past 14 years, and more changes occur as we head into the future. However, we are committed to keeping the primary goals consistent: to have as many small lakes and streams monitored; to provide data summaries and reports; to provide technical support and responses to questions regarding water quality issues.

From Brett Cogswell: WAV coordinator

I would like to give a personal Thank You to the AAL volunteers who have dedicated their time once a month, especially over the last 2 years during my time as the WAV coordinator. Those of you who have been volunteering with this program longer than I have been here, you are simply amazing! I appreciate your continued support! We know that you take time out of your busy schedules to volunteer with Orange County EPD and the Watershed Action Volunteers and we truly value your commitment.

“Volunteers do not necessarily have the time; they just have the heart” ~Elizabeth Andrew

LAKE BALDWIN-AAL 108

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 86
Origin: Natural
Lake Surface Area (ac): 202
Lake Volume (ft^3): 131,986,800
Average Depth (ft): 15
Shoreline length (ft): 10,541
100 Year Flood: 95 FEMA
Historic Low Water Elevation (NGVD): 90.3
Historic High Water Elevation (NGVD): 95
Normal High Water Elevation (NHWE): 91.1
TMDL Impairment: No Data
TMDL Group: 2
BMAP: No
MSTU: No
Public Access: Yes

Biological Information

Plant life

Surveys: No Data

Treatments: No Data

Fishing Management

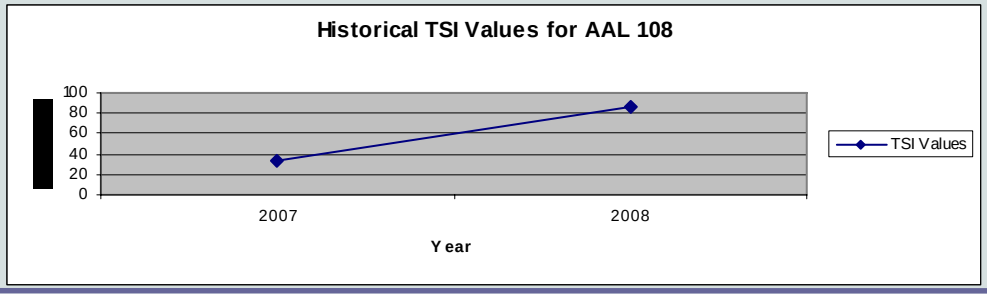
FCA: Yes

Grass Carp: Yes

Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

Historic TSI Graph 2008 TSI Score: 86 Lake Ranking: Hypereutrophic



Legend

- orange county outfalls

ORANGELUSE

- COMMERCIAL
- INSTITUTIONAL
- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- PARKS AND RECREATION
- RURAL / AGRICULTURE
- WATER BODY
- sampling locations

Lake Baldwin
AAL108

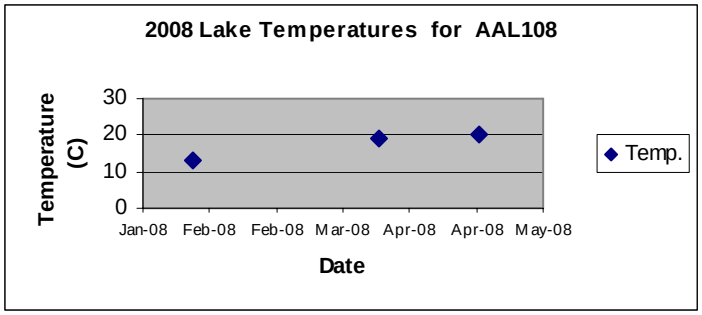
0 0.05 0.1 0.2 0.3
Miles

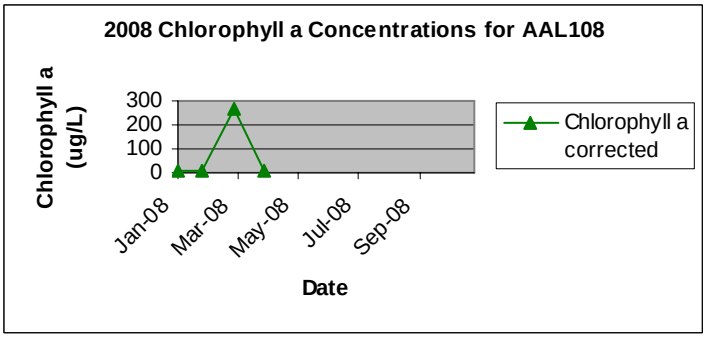
LAKE BALDWIN-AAL 108

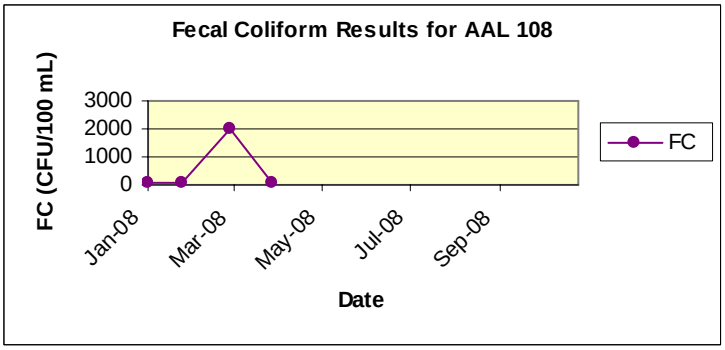
Baldwin Overview

Volunteer Monitoring began at Lake Baldwin in 2007 and was sampled 4 times in 2008. The TSI score of 86 shows that Lake Baldwin has very poor water quality. This score was based on a portion of data from 2007 in order to determine the trophic state index for 2008. It is important to note that this TSI score may not be accurate for the 2008 year.

No other data has been submitted by the volunteer for this lake.

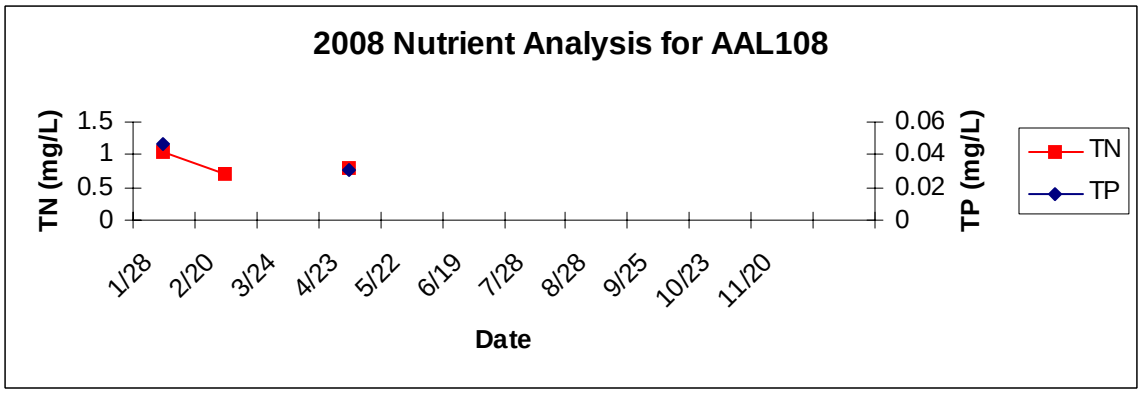






Analysis

The average lake temperature for the year was 17° C. Dissolved oxygen was 5.4 mg/L, and pH was 7.2. Bacteria levels experienced a large spike in March, with a sample concentration of 2000 CFU/100 mL. There was not enough data to show a relationship between nitrogen and phosphorus levels.



BARRET CANAL-AAL 90

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

Origin: Natural
Lake Surface Area (ac):
Lake Volume (ft^3):
Average Depth (ft):
Shoreline length (ft):
100 Year Flood:
Historic Low Water Elevation (NGVD):
Historic High Water Elevation (NGVD):
Normal High Water Elevation (NHWE):
TMDL Impairment: Yes
TMDL Group: NA
BMAP: No
MSTU: No
Public Access: No

Biological Information

Plant life

Surveys: No

Treatments: No

Fishing Management

FCA: No

Grass Carp: No

Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

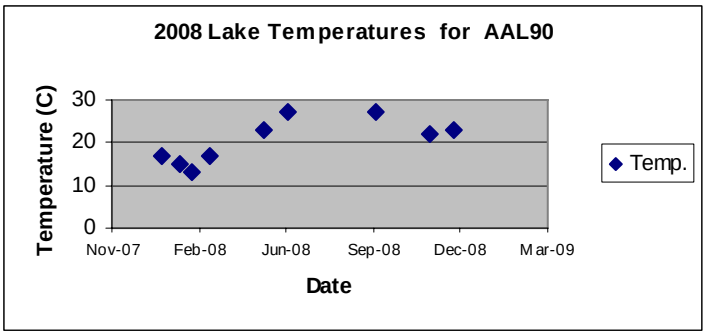
BARRET CANAL-AAL 90

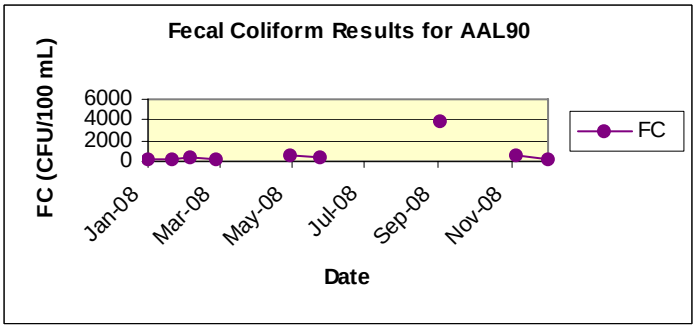
Barret Canal Overview

Volunteer Monitoring began on Barret Canal in 2006. Barret Canal flows into Lake Orlando. Since it is not a lake, there is no TSI score for this site. However, it is important to note, that the water quality of Barret canal directly effects the water quality and TSI score of Lake Orlando.

The sample site is at the entrance to the lake, which is surrounded by 1/3 golf course, 1/3 housing, and 1/3 park or preserved area. This area experiences a large amount of runoff during storm events. High fecal coliform counts are a recurring issue for the Barret canal and Lake Orlando.

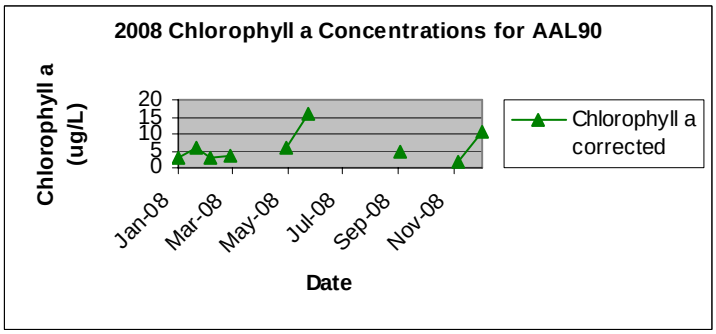
Wildlife observed include many types of birds and ducks. Cypress and water oak are two types of trees predominate at Barret Canal and Lake Orlando.

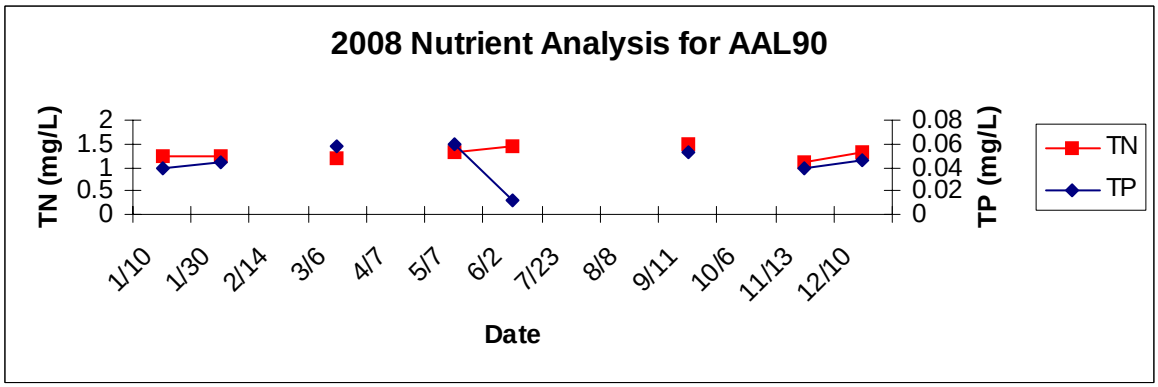




Analysis

The average lake temperature for the year was 21° Celsius. The average for Dissolved Oxygen was 4.3 mg/L, pH was 6.4, and secchi depth was 0.9 meters. Bacteria levels had a peak in September of 3900 CFU/100 mL. There was not enough data to show a direct relationship in nutrients, however, the graph does suggest that Total phosphorus and total nitrogen were in proportion; except for June.





BAY LAKE-AAL 95

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 69
Origin: Natural
Lake Surface Area (ac): 37
Lake Volume (ft^3): 12,410,244
Average Depth (ft): 7.7
Shoreline length (ft): 4,694
100 Year Flood: 92.60 FEMA
Historic Low Water Elevation (NGVD):87.7
Historic High Water Elevation (NGVD): 92.2
Normal High Water Elevation (NHWE): 91.1
TMDL Impairment: Nutrients (TSI)
TMDL Group: 2
BMAP: No
MSTU: No
Public Access: No

Biological Information

Plant life

Surveys: No

Treatments: No

Fishing Management

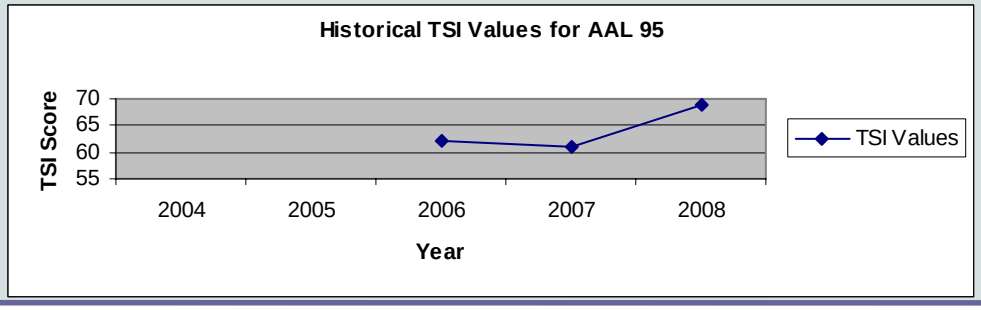
FCA: No

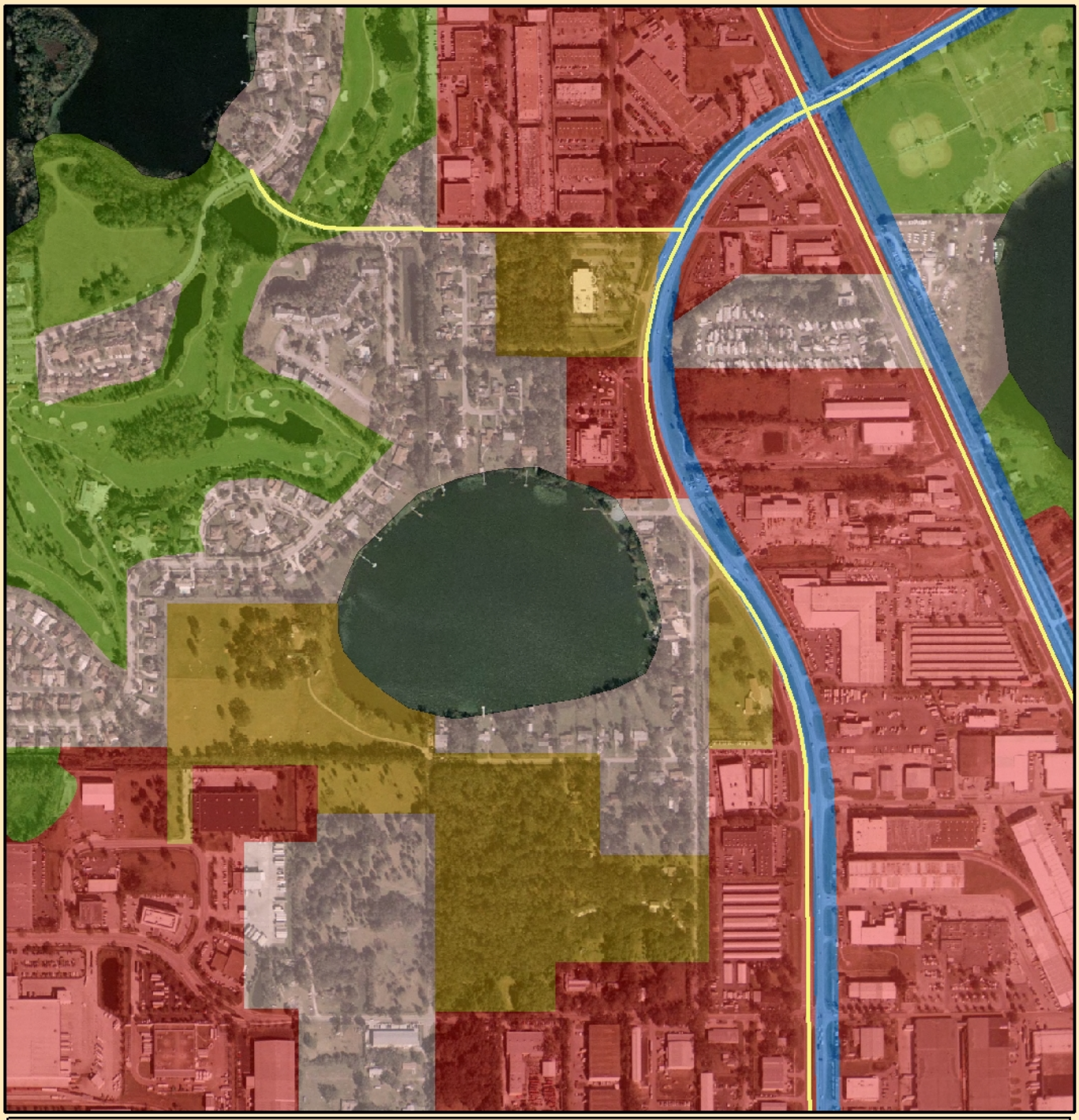
Grass Carp: Yes

Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

Historic TSI Graph 2008 TSI Score: 69 Lake Ranking: Eutrophic





Legend

- orange county outfalls

ORANGELUSE

- COMMERCIAL
- CONSERVATION
- INSTITUTIONAL
- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- NO DESIGNATION
- PARKS AND RECREATION
- RURAL / AGRICULTURE
- WATER BODY

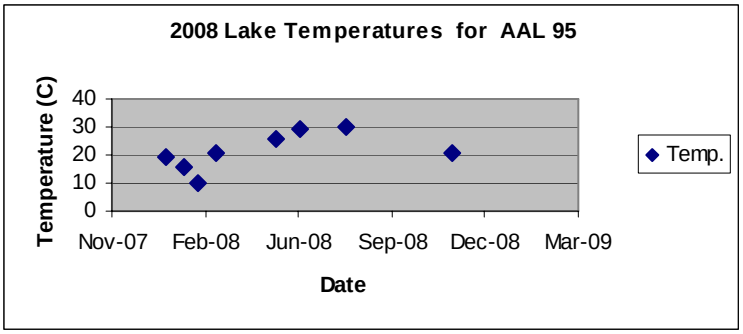
Bay Lake
AAL 95

0 0.0450.09 0.18 0.27
Miles

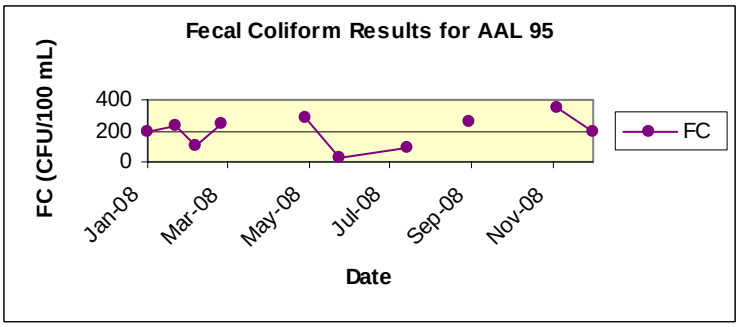
BAY LAKE-AAL 95

Bay Lake Overview

Volunteer Monitoring began at Bay Lake in 2006. The TSI score of 69 suggests that Bay Lake has poor water quality. When samples are taken from a location other than the center of a lake, there may be a difference in nutrient concentrations that would effect the score of a trophic state index. A TSI from the center of the lake could be lower or higher, and is more representative.

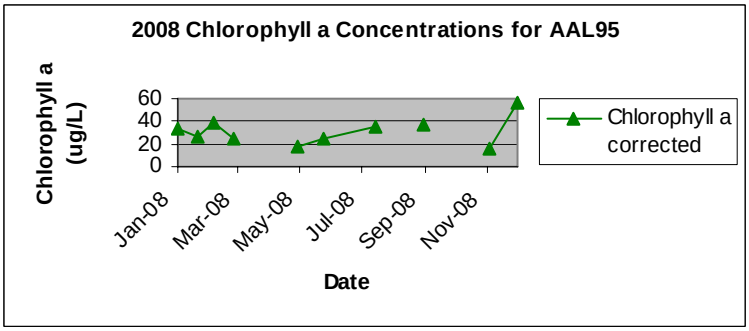


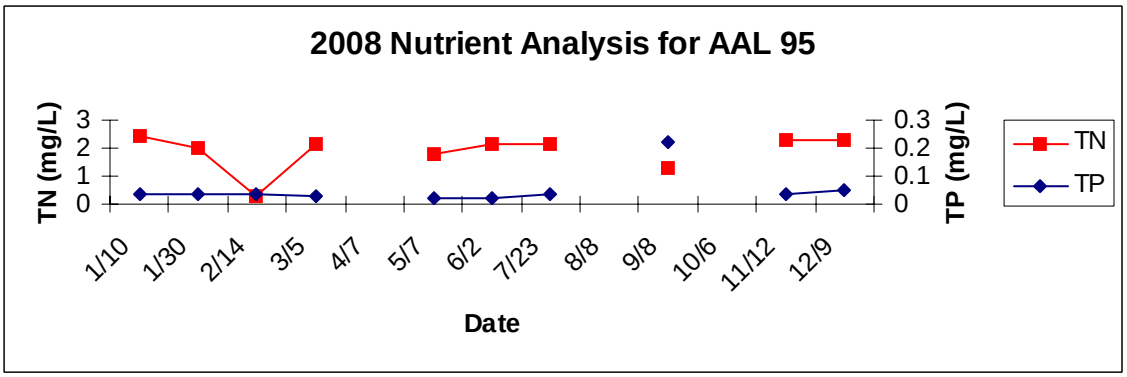
No other data was submitted by the volunteer for this lake.



Analysis

The average lake temperature for the year was 22° Celsius. The average for dissolved oxygen was 5.8 mg/L, pH was 7.4, and secchi depth was 1 meter. Bacteria levels were above 200 CFU/100 mL for all months except February, June, and July. Total phosphorus and total nitrogen remained in proportion with one another for all months collected, except February.





BIG SAND LAKE-AAL 30

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 33
Origin: Natural
Lake Surface Area (ac): 1,090
Lake Volume (ft^3): 1,092,049,200
Average Depth (ft): 23.0
Shoreline length (ft): 55,735
100 Year Flood: 104.4 FEMA
Historic Low Water Elevation (NGVD):
Historic High Water Elevation (NGVD): 100.4
Normal High Water Elevation (NHWE): 90.0
TMDL Impairment: No Data
TMDL Group: 4
BMAP: No Data
MSTU: Yes
Public Access: No

Biological Information

Plant life

Surveys: Yes

Treatments: Yes

Fishing Management

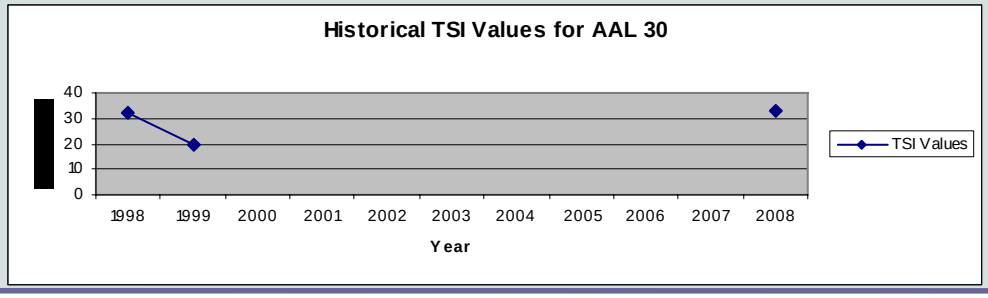
FCA: No

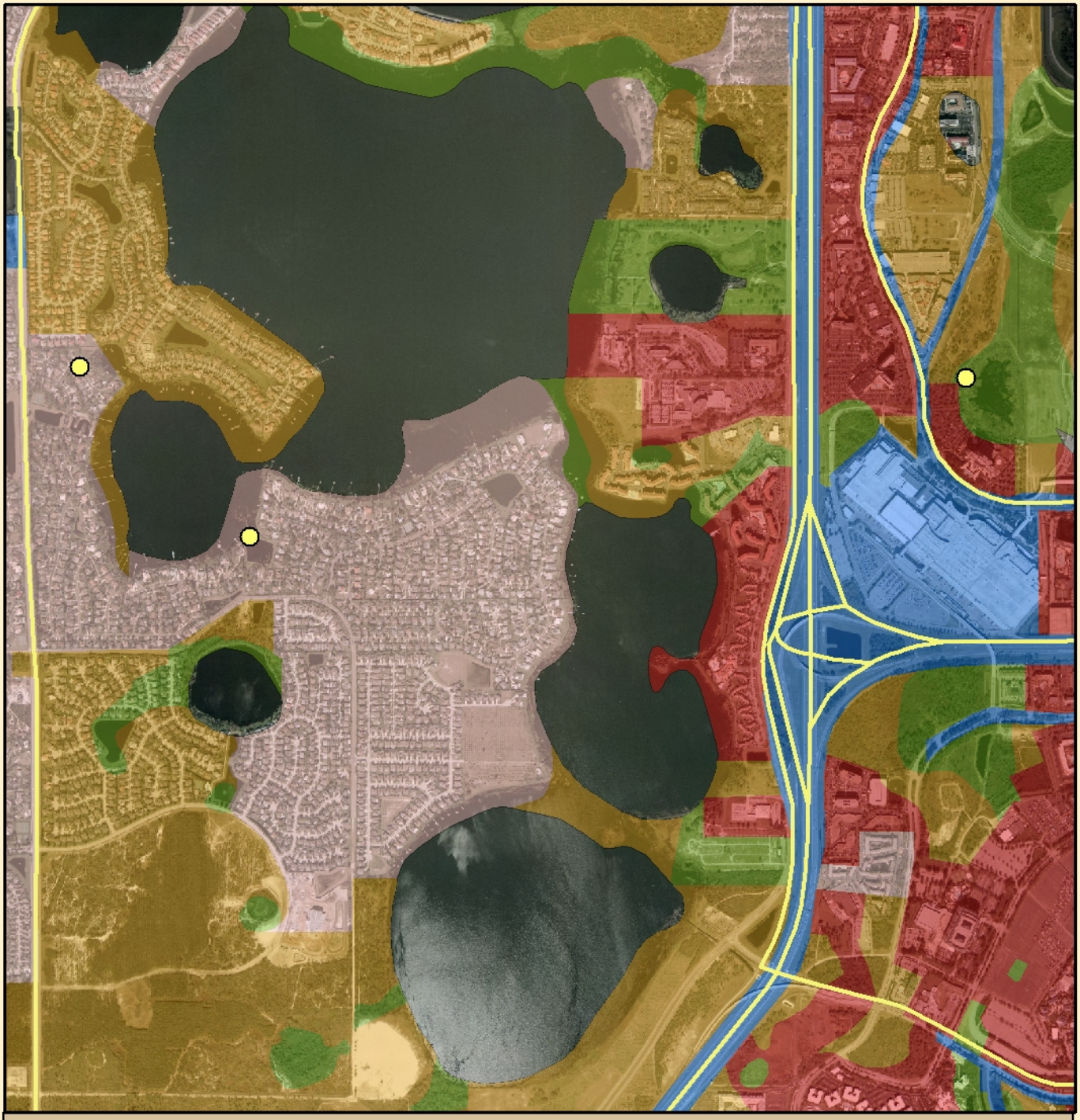
Grass Carp: No

Macroinvetebrates

LCI Score: 53
Overall Health: Good
Diversity Index: 3.4

Historic TSI Graph 2008 TSI Score: 33 Lake Ranking: Oligotrophic





Legend

- orange county outfalls

ORANGELUSE

- COMMERCIAL
- CONSERVATION
- INDUSTRIAL
- INSTITUTIONAL
- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- PARKS AND RECREATION
- RURAL / AGRICULTURE
- WATER BODY
- sampling locations

Big Sand Lake
AAL 30

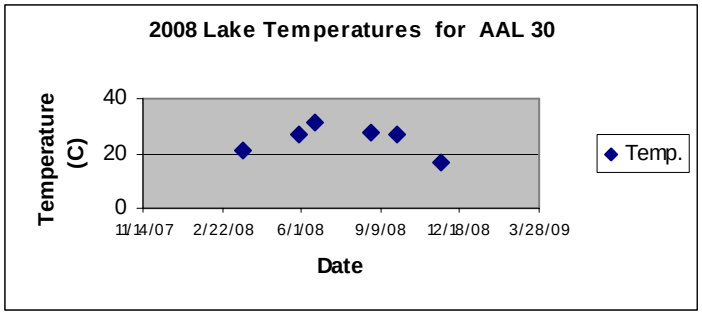
0 0.125 0.25 0.5 0.75
Miles

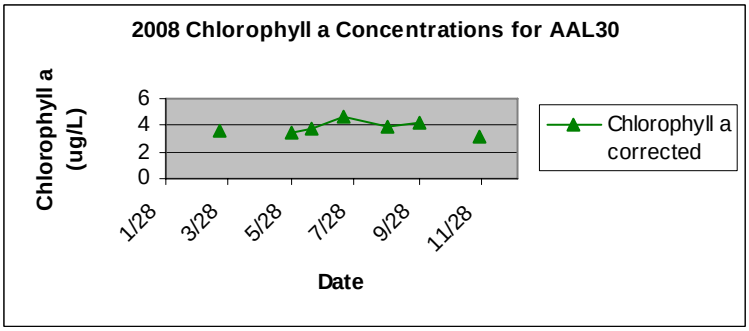
BIG SAND LAKE-AAL 30

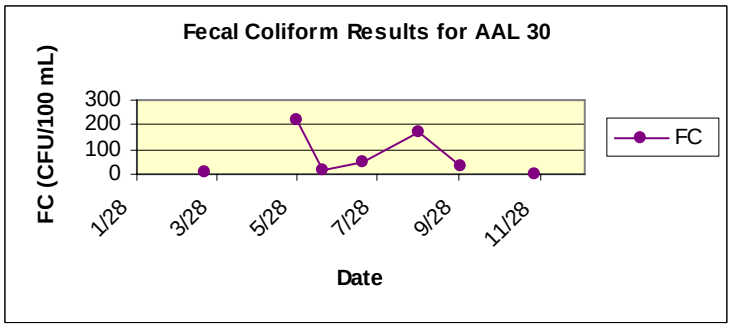
Big Sand Overview

Volunteer Monitoring began at Big Sand Lake in 1998. After two years, volunteer monitoring stopped. In 2008 volunteer monitoring resumed. The TSI score of 33 shows that Big Sand Lake has excellent water quality.

No other data was submitted by the volunteer for this lake.

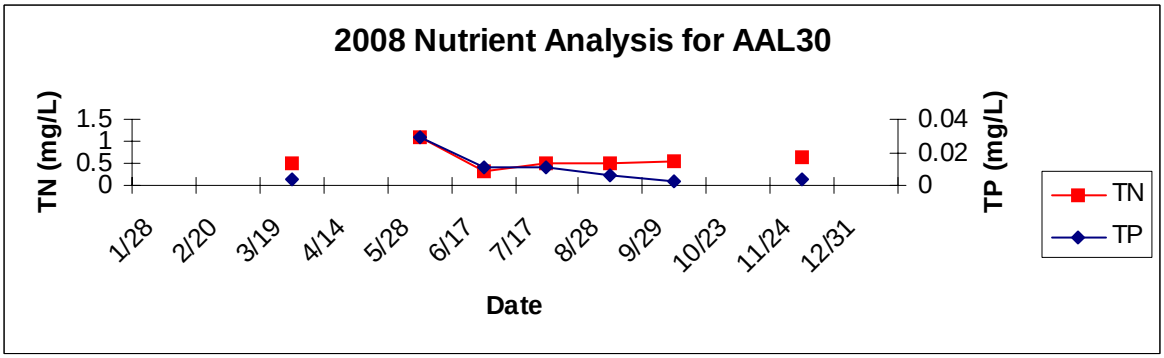






Analysis

The average lake temperature for the year was 25° C. Dissolved oxygen was 8.8 mg/L, pH was 7.4 and secchi depth was 1.5 meters. Bacteria levels were above the average of 71 CFU/100 mL in May and October. Total nitrogen and phosphorus remained in fairly constant proportion to each other during the 2008 sampling season. There was a slight increase in for both observed in May.



LAKE BUCHANAN-AAL 93

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 76
Origin: Natural
Springfed: No
Lake Surface Area: 88 acres
Lake Volume: 38,000,000 ft^3
Average Depth: 10 ft.
Shoreline length: 7,952 ft
100 Year Flood: 100.02 F.E.M.A
Historic Low Water Elevation: 97.2 NGVD
Historic High Water Elevation: 98.3 NGVD
TMDL Status: Impaired for
MSTU: No
Public Access: No

Biological Information

Plant life

Plant Surveys: No data

Treatments: No data

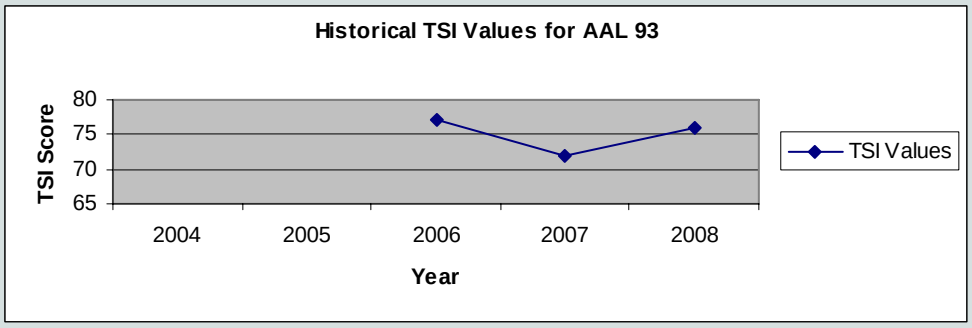
Fishing Management

FCA: No data
Grass Carp: No data

Macroinvetebrates

LCI Score: No data
Overall Health: No data
Diversity Index: No data

Historical TSI Graph 2008 TSI Score: 76 Lake Ranking: Hypereutrophic



Lake Buchanon
AAL 93

Legend

- orange county outfalls

ORANGELUSE

- COMMERCIAL
- CONSERVATION
- INSTITUTIONAL
- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- RURAL / AGRICULTURE
- WATER BODY
- sampling locations

0 0.04 0.08 0.16 0.24

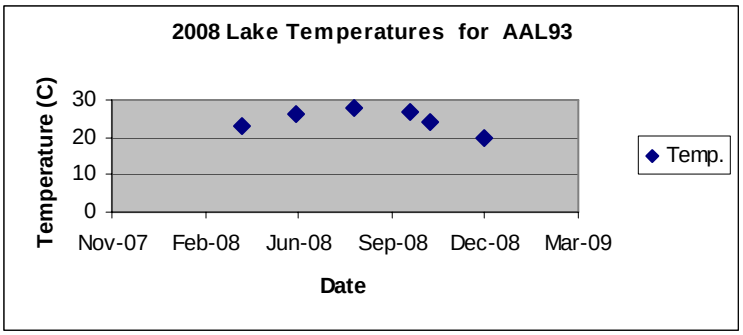
Miles

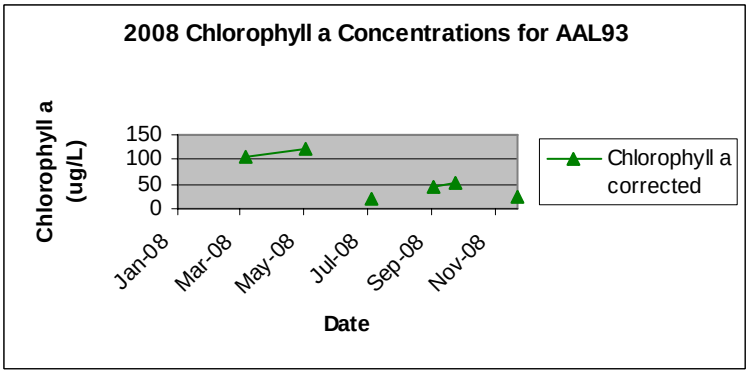
LAKE BUCHANAN-AAL 93

Buchanan Overview

Volunteer Monitoring began at Lake Buchanan in 2006. The TSI score of 76 shows that Lake Buchanan has very poor water quality.

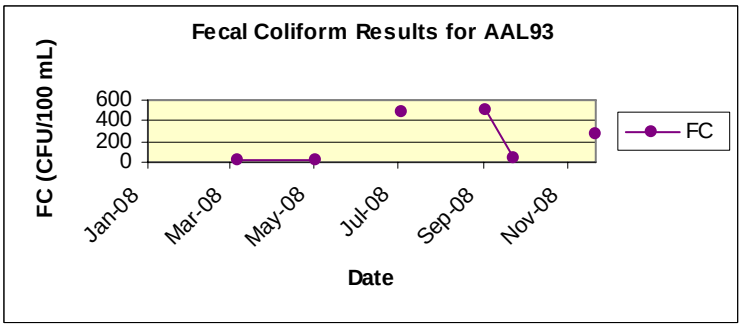
No other data has been submitted by the volunteer for this lake.

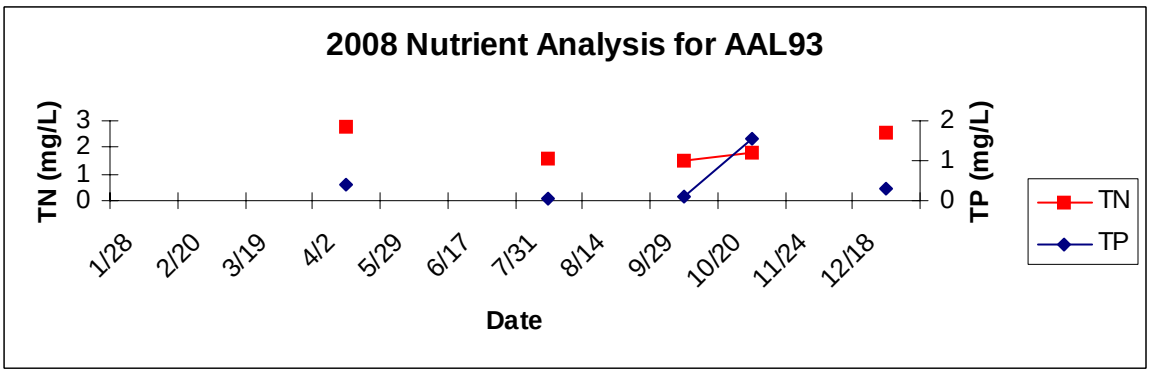




Analysis

The average lake temperature for the year was 25° C. Dissolved oxygen was 7.4 mg/L, pH was 8.0 and secchi depth was 1.0 meter. Bacteria levels were relatively constant, with concentrations above 200 CFU/100 mL for 3 out of the 6 months sampled for 2008. Total nitrogen and phosphorus remained in fairly constant proportion to each other for the dates sampled.





LAKE DOUGLAS-AAL 109

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 36
Origin: Natural
Lake Surface Area (ac): No Data
Lake Volume (ft): No Data
Average Depth (m):
Shoreline length (ft): No Data
100 Year Flood:
Historic Low Water Elevation(NGVD):
Historic High Water Elevation(NGVD):
Normal High Water Elevation (NHWE):
TMDL Impairment: No Data
TMDL Group:
BMAP: No
MSTU: No
Public Access: No

Biological Information

Plant life

Surveys: Yes, Volunteer

Treatments: No Data

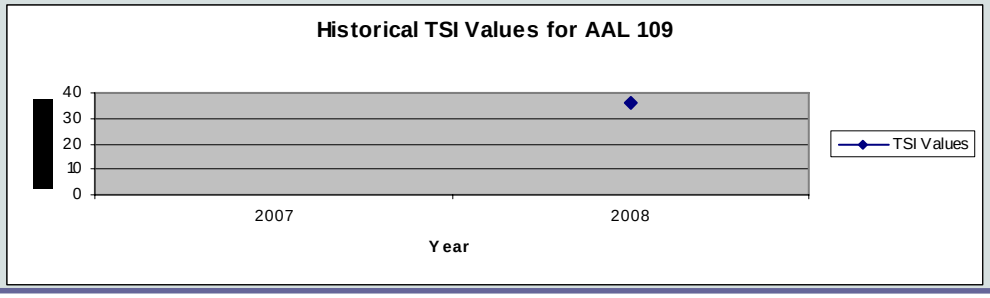
Fishing Management

FCA: No Data
Grass Carp: No Data

Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

Historic TSI Graph 2008 TSI Score 36 and Rank: Oligotrophic



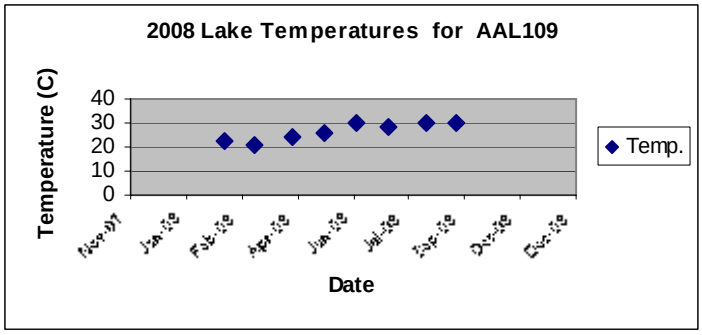
LAKE DOUGLAS-AAL 109

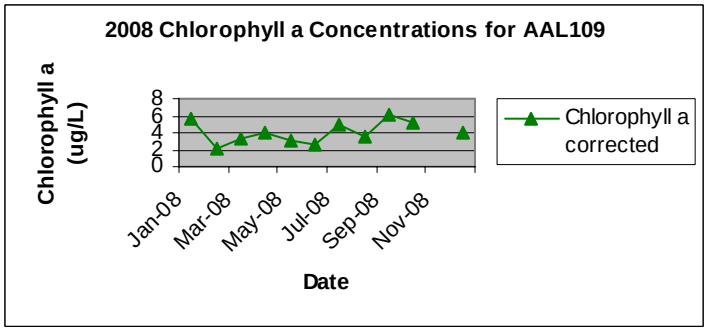
Douglas Overview

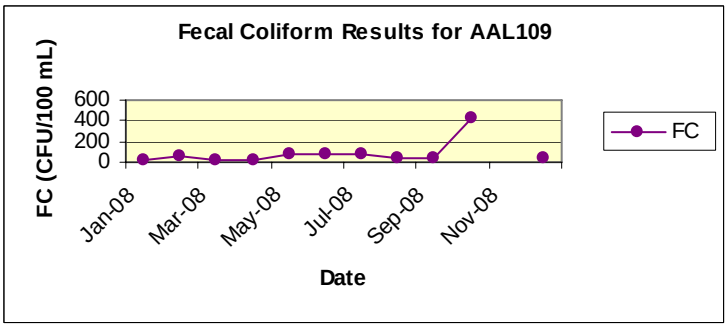
Volunteer Monitoring began at Lake Douglas in January 2008. The TSI score of 36 shows that Lake Douglas has excellent water quality.

Aquatic vegetation around the lake consist of water lilies, pickerel, cattails, buttonbush. Upland vegetation include red maple trees, wax myrtle, and cypress. The volunteers have recently planted duck potato, lizard tail and cypress. Invasive species observed are wedelia, primrose willow and wild grapes.

Wildlife spotted at include mallards, moorhens, blue herons, white egrets, red-ear bass, blue gill, some large mouth bass and alligator gar. Up to 27 turtles can be seen sunning themselves in a day and about a half dozen grebes have bee seen this winter. Songbirds such as goldfinch, morning doves, tufted titmouse, cardinals, blue jays, Carolina wrens, red-winged blackbirds, and red-bellied woodpeckers. A possum and a raccoon stop by nightly.

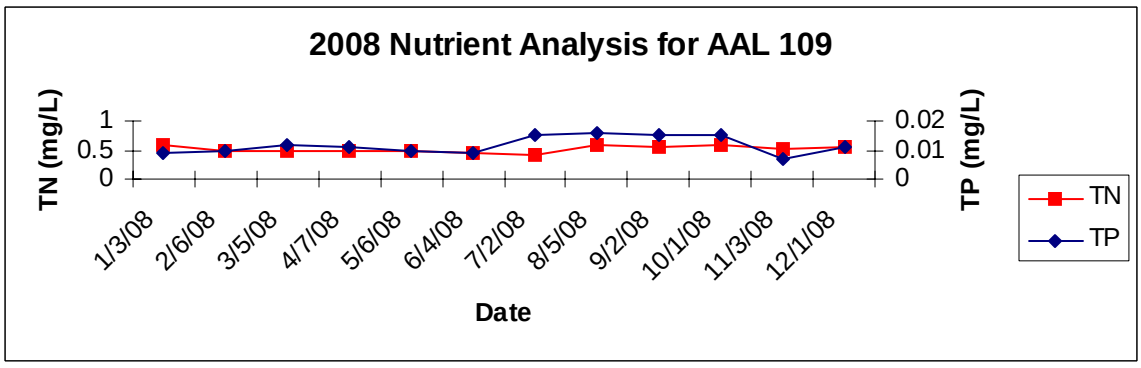






Analysis

The average lake temperature for the year was 27° C. Dissolved oxygen was 5.4 mg/L, pH was 6.7 and secchi depth was 1.4 meters. Bacteria levels were relatively constant, under 80 CFU/100 mL, except for the October sample which had a concentration of 420 CFU/100 mL. Total nitrogen and phosphorus remained in fairly constant proportion to each other during the 2008 sampling season.



LAKE DWARF—AAL25

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 73
Origin: Altered
Springfed: No
Lake Surface Area (ac):
Lake Volume (ft):
Average Depth (ft):
Shoreline length (ft):
100 Year Flood: 71.32 O.C.E.
Historic Low Water Elevation: 63.5
Historic High Water Elevation: 65.01
TMDL Impairment: No Data
TMDL Group: No Data
BMAP: No
MSTU: No
Public Access: No

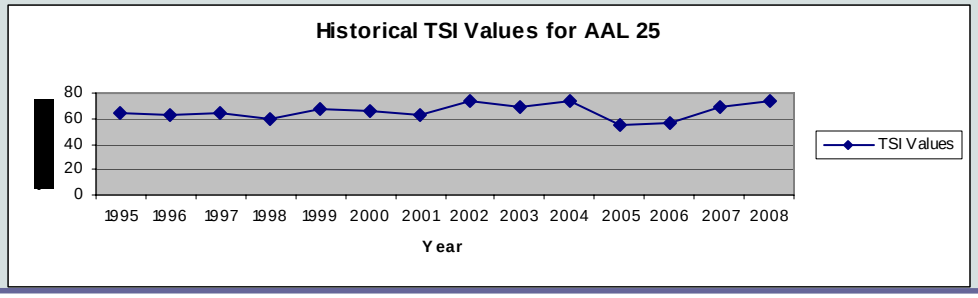
Biological Information

Plant life
Surveys: No Data
Treatments: No Data
LVI: No Data

Fishing Management
FCA: No Data
Grass Carp: No Data

Macroinvetebrates
LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

Historic TSI Graph 2008 TSI Score: 73 Lake Ranking: Hypereutrophic



LAKE DWARF—AAL25

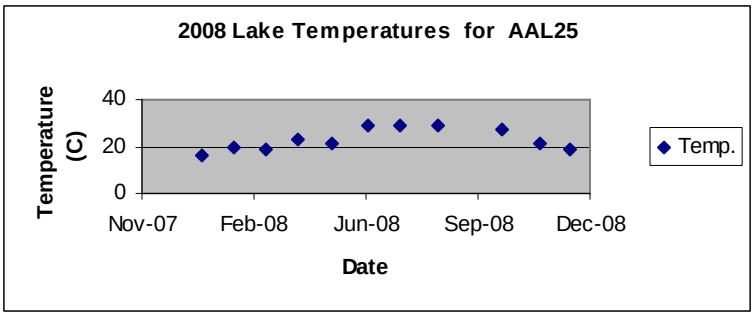
Dwarf Overview

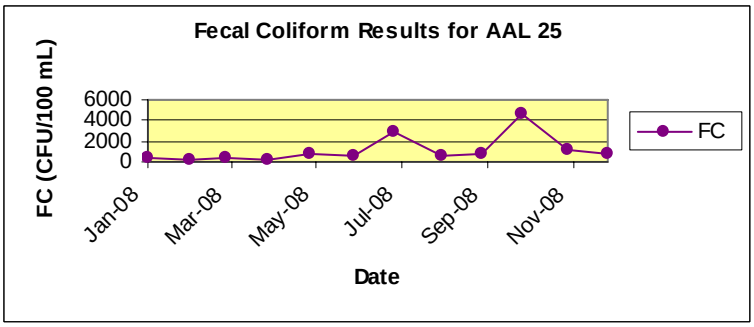
Lake Dwarf has been monitored since 1995. The TSI score of 73 suggests that Lake Dwarf has very poor water quality.

Since the area is sprayed yearly, very little shoreline vegetation exists.

Wildlife observed on Lake Dwarf consists mainly of shorebirds, ducks, gulls, terns, ospreys, and eagles.

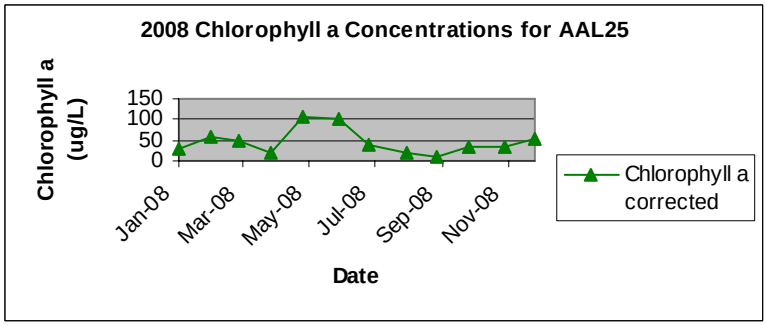
In 2006, a car was pulled from the bottom of Lake Dwarf.

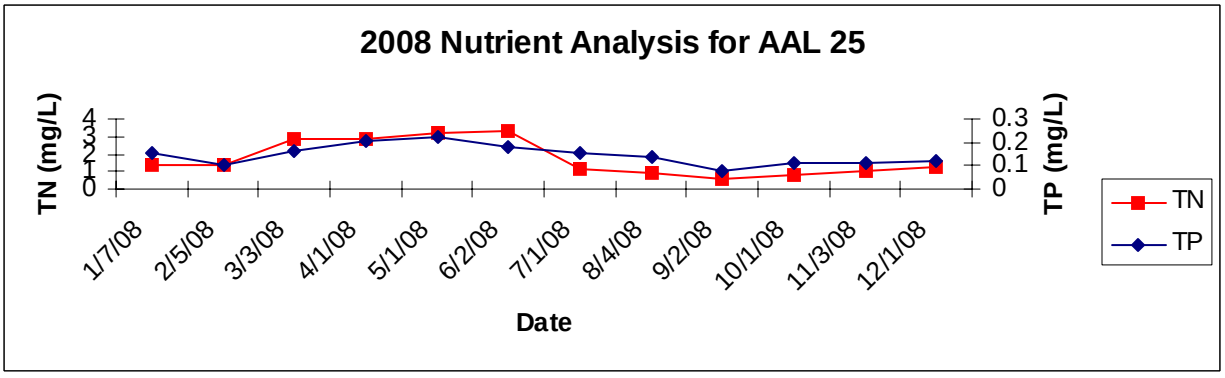




Analysis

The average lake temperature for the year was 23° Celsius. The average for dissolved oxygen was 6.9 mg/L, pH was 6.2, and secchi depth was 0.9 meters. Bacteria levels were very high throughout the year, with peaks in July, and October. Nutrient levels fluctuated between the wet and dry season. Total phosphorus and total nitrogen were in proportion for the 2008 year.





LAKE FAIRVIEW-AAL36

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 46
Origin: Natural
Lake Surface Area (ac): 417
Lake Volume (ft^3): 317,879,100
Average Depth (ft): 17.5
Shoreline length (ft): 28,911
100 Year Flood: 90.8 FEMA
Historic Low Water Elevation(NGVD): 85.8
Historic High Water Elevation (NGVD):90.5
TMDL Impairment: None
TMDL Group: 2
BMAP: Noe
MSTU: No
Public Access: Yes, Lake Fairview Park

Biological Information

Plant life

Surveys: No Data

Treatments: Yes

Fishing Management

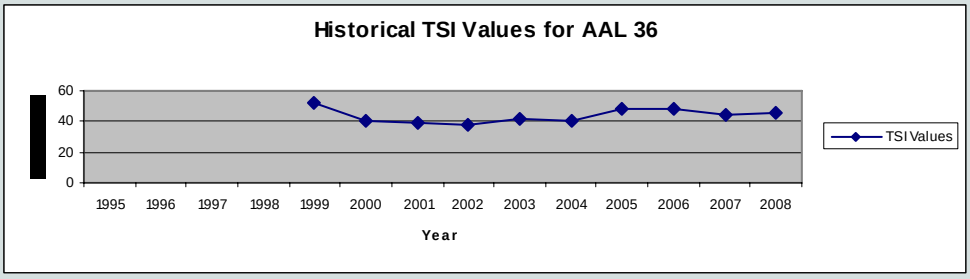
FCA: No

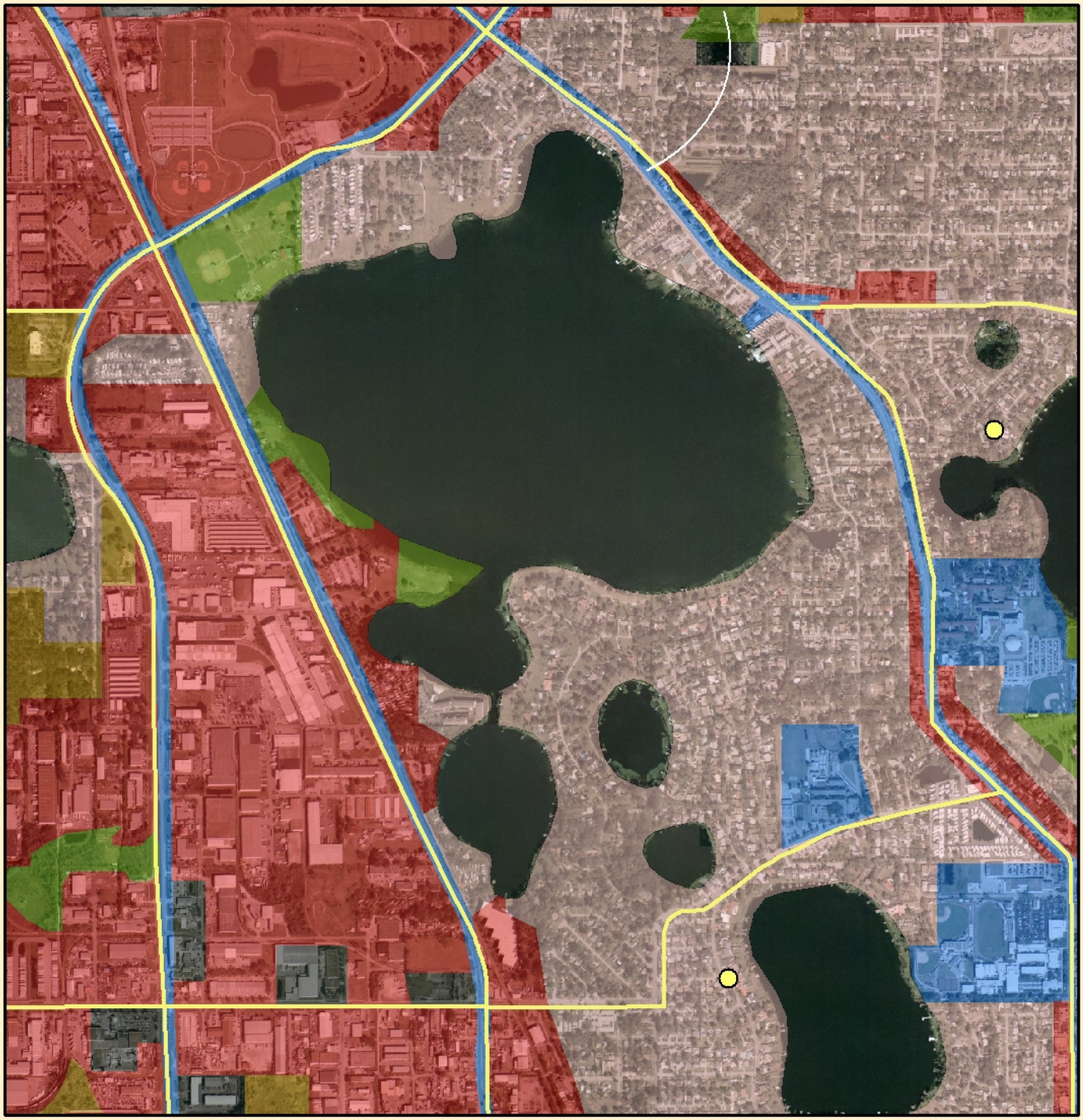
Grass Carp: Yes

Macroinvetebrates

LCI Score: 51
Overall Health: Very Good
Diversity Index: 3

Historic TSI Graph 2008 TSI Score: 46 Lake Ranking: Oligotrophic





Lake Fairview
AAL 36

Legend

- orange county outfalls

ORANGELUSE

- COMMERCIAL
- CONSERVATION
- INSTITUTIONAL
- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- PARKS AND RECREATION
- RURAL / AGRICULTURE
- WATER BODY
- sampling locations

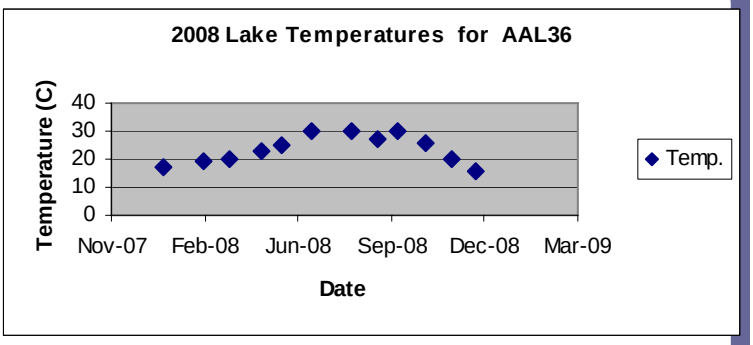
0 0.05 0.1 0.2 0.3
Miles

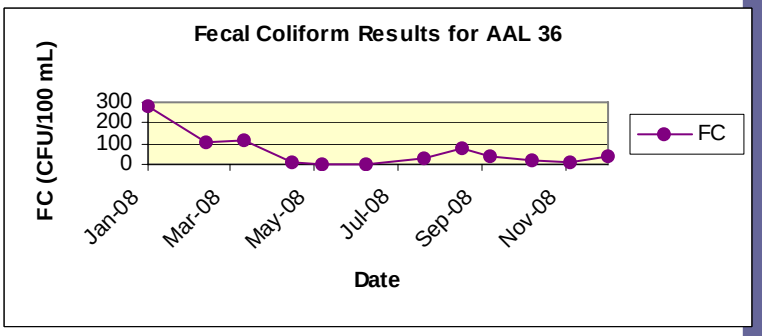
LAKE FAIRVIEW-AAL36

Fairview Overview

Volunteer monitoring began at Lake Fairview in 1995. The TSI score of 46 suggests that Lake Fairview has excellent water quality.

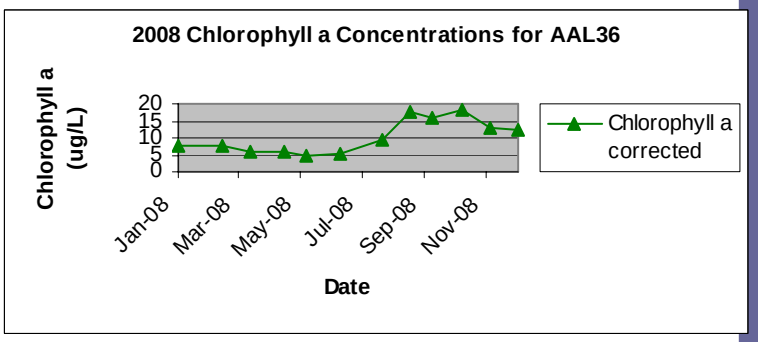
No other data has been submitted by the volunteer for this lake.

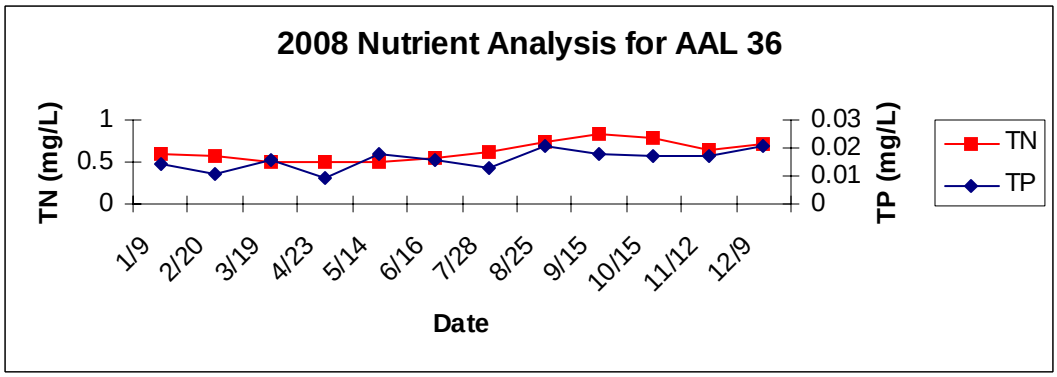




Analysis

The average lake temperature for the year was 24° Celsius. The average for dissolved oxygen was 7.7 mg/L, pH was 7.8, and secchi depth was 1.8 meters. Bacteria levels peaked in January and then decreased for the remainder of the year. Total phosphorus and total nitrogen both showed an increase over the year, except for November, where there was a slight decrease in total nitrogen.





JOHNS LAKE-AAL 99

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 51
Origin: Natural
Lake Surface Area (ac): 2,439
Lake Volume (ft): 1,221,792,660
Average Depth (ft): 11.5
Shoreline length (ft): 104,936
100 Year Flood: 100.6 FEMA
Historic Low Water Elevation (NGVD): 72.4
Historic High Water Elevation (NGVD): 98.5
Normal High Water Elevation (NHWE): 98.4
TMDL Impairment: Nutrients (TSI), Hg in Fish
TMDL Group: 1
BMAP: None
MSTU: No
Public Access: Yes, Johns Lake Park

Biological Information

Plant life

Surveys: No Data

Treatments: No Data

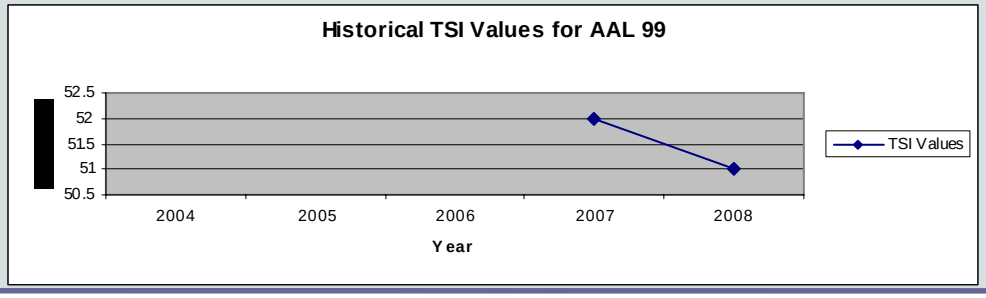
Fishing Management

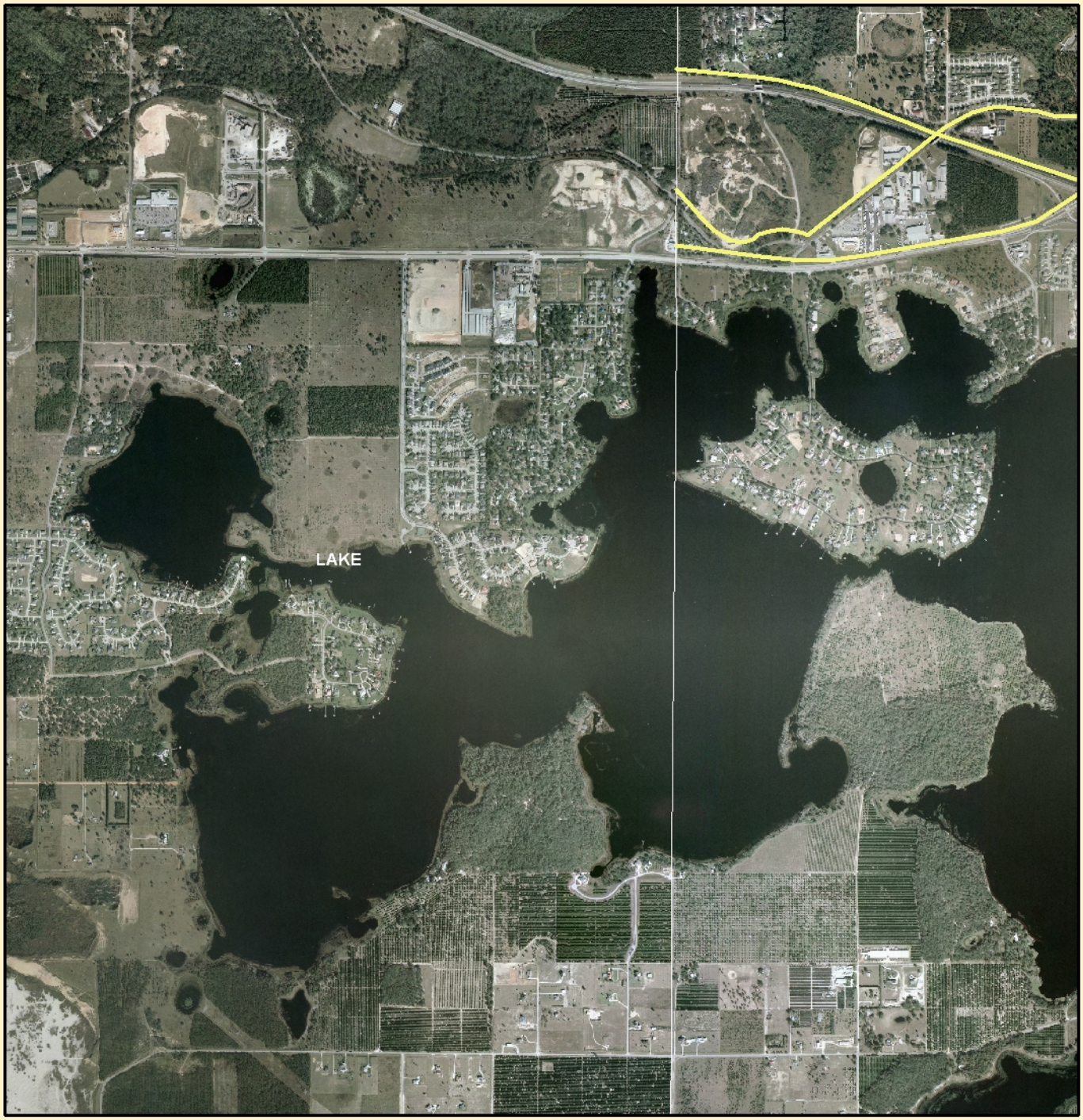
FCA: Yes
Grass Carp: Yes

Macroinvetebrates

LCI Score: None to Date
Overall Health: NA
Diversity Index: NA

Historic TSI Graph 2008 TSI Score: 51 Lake Ranking: Mesotrophic





John's Lake West
AAL 99

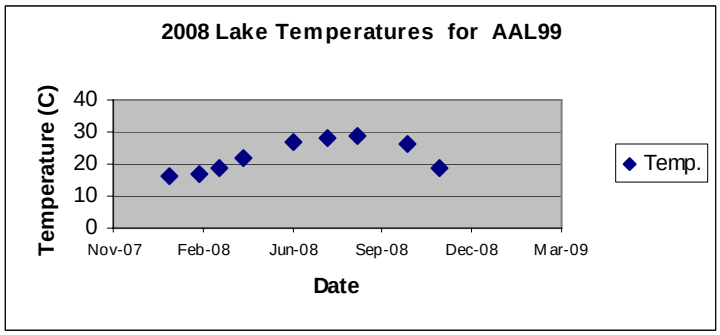
0 0.15 0.3 0.6 0.9
Miles

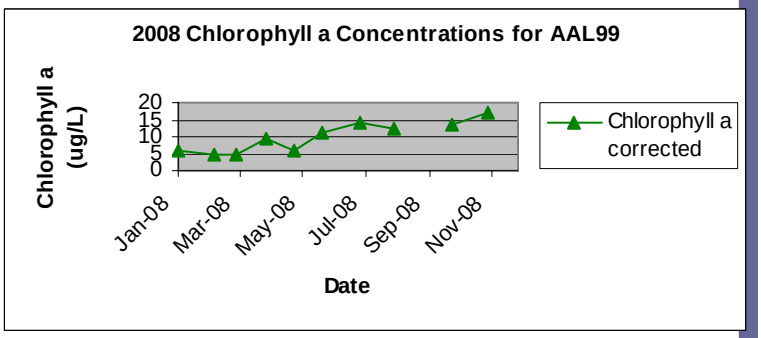
JOHNS LAKE-AAL 99

Johns Lake Overview

Volunteer Monitoring began at Johns Lake in 2007. The TSI score of 51 suggests that Johns lake has good water quality.

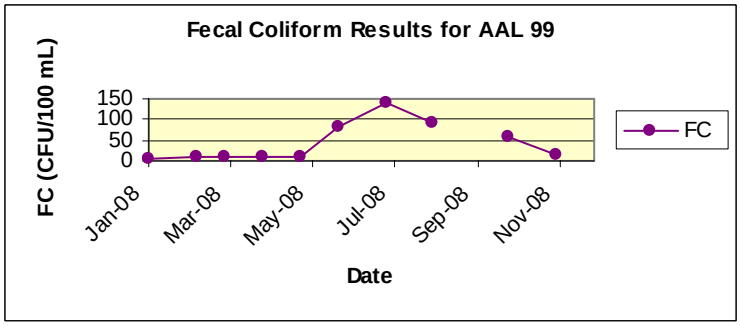
No other data has been submitted by the volunteer for this lake.

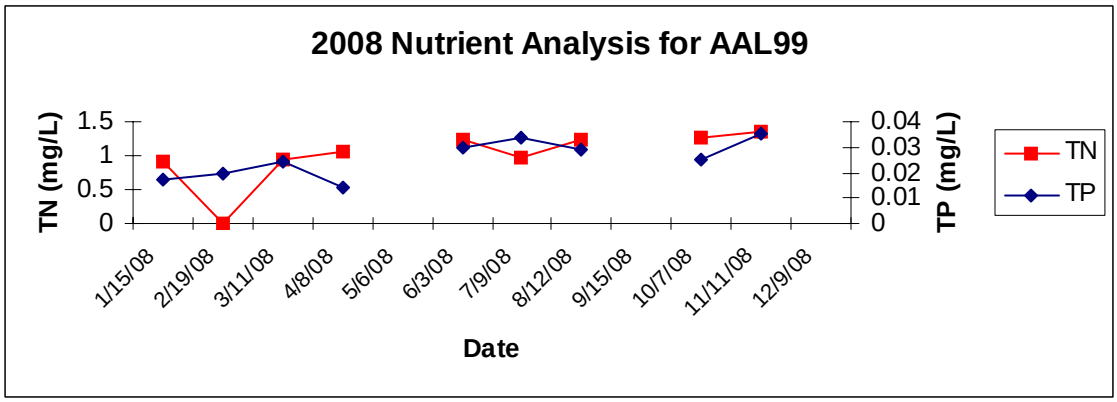




Analysis

The average lake temperature for the year was 23° Celsius. The average for Dissolved Oxygen was 6.7 mg/L, pH was 7.2, and secchi depth was 1 meter. Bacteria levels increased during the summer months of June-August. Nutrient levels did not show any significant pattern.





LITTLE LAKE FAIRVIEW-AAL10

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 38
Origin: Natural
Springfed: No
Lake Surface Area (ac): No Data
Lake Volume (ft): No Data
Average Depth (m): 1.9
Shoreline length (ft): No Data
100 Year Flood: 90.8 O.C.E.
Historic Low Water Elevation: 88.7
Historic High Water Elevation: 91.33
TMDL Impairment: No Data
TMDL Group: 2
BMAP: No
MSTU: No
Public Access: No

Biological Information

Plant life

Surveys: No Data

Treatments: No Data

LVI: No Data

Fishing Management

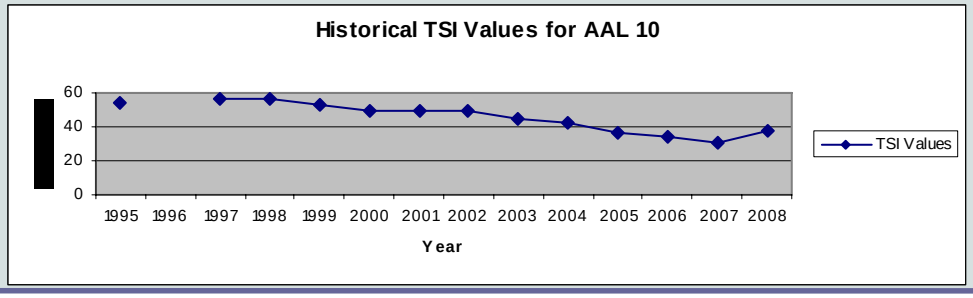
FCA: No Data

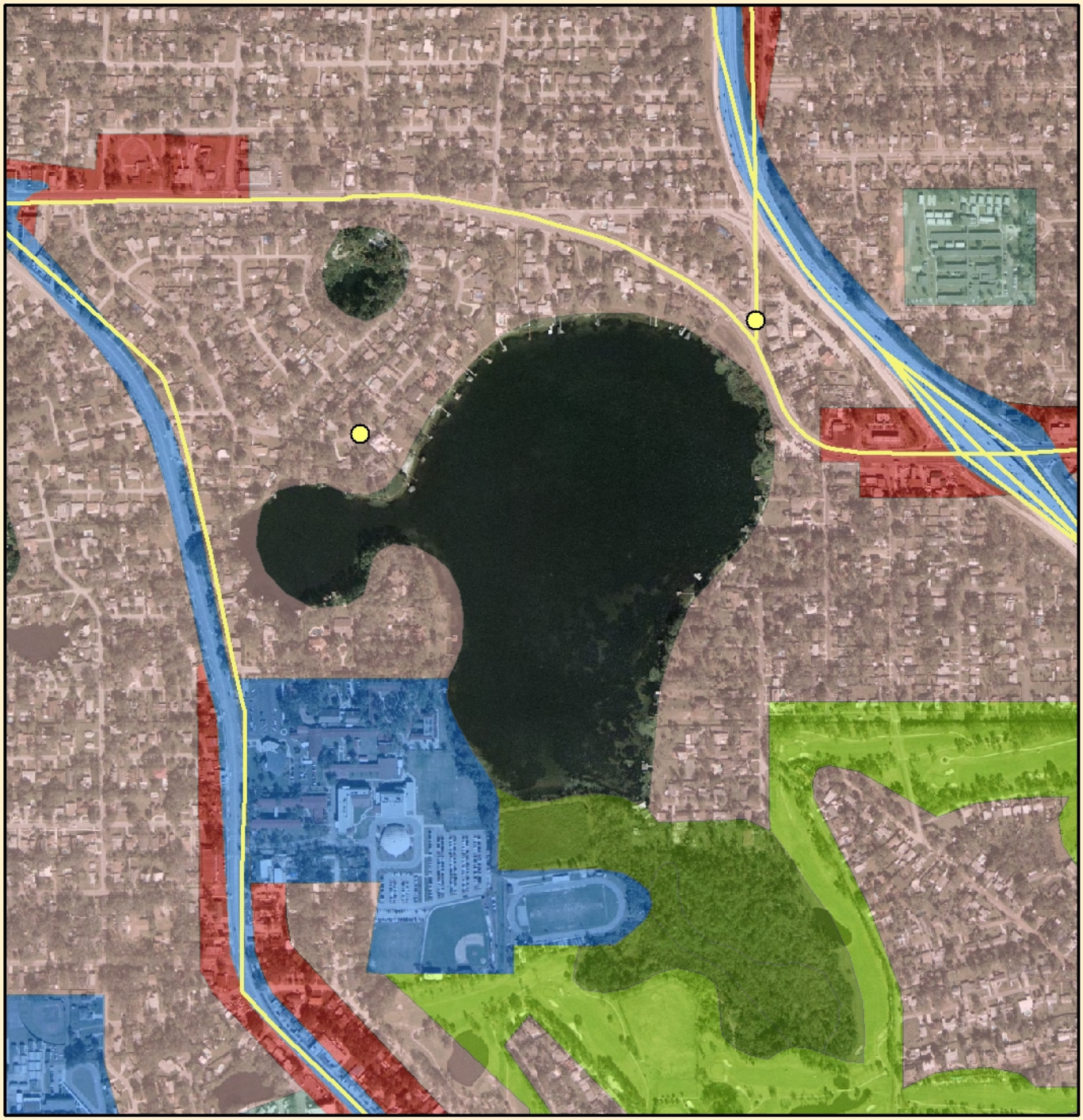
Grass Carp: No Data

Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

Historic TSI Graph 2008 TSI Score: 38 Lake Ranking: Oligotrophic





Little Lake Fairview
AAL 10

Legend

- orange county outfalls

ORANGELUSE

- COMMERCIAL
- CONSERVATION
- INSTITUTIONAL
- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- PARKS AND RECREATION
- RURAL / AGRICULTURE
- WATER BODY
- sampling locations

N
W E
S

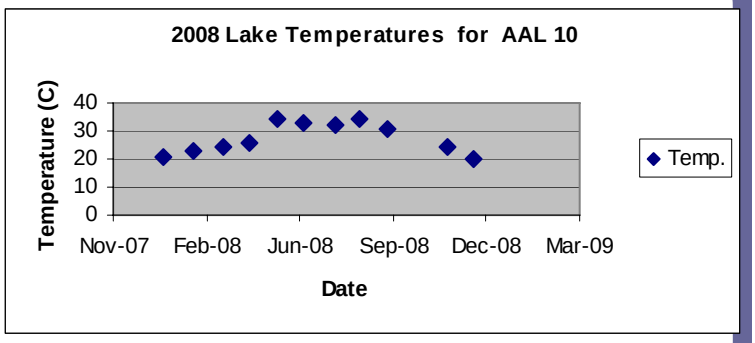
0 0.03 0.06 0.12 0.18
Miles

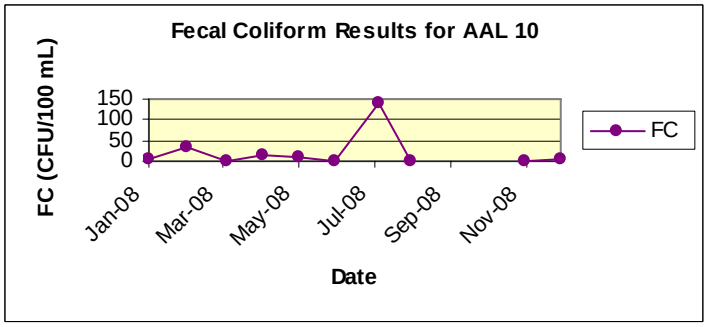
LITTLE LAKE FAIRVIEW-AAL10

Little Lake Fairview Overview

Volunteer Monitoring began at Little Lake Fairview in 1995. The TSI score of 38 suggests that Little Lake Fairview has excellent water quality.

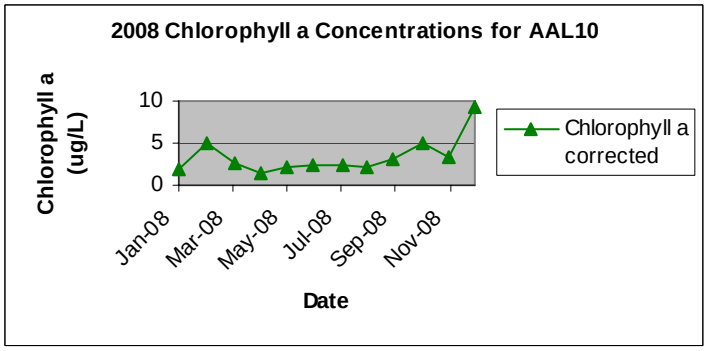
No other data has been submitted by the volunteer for this lake.

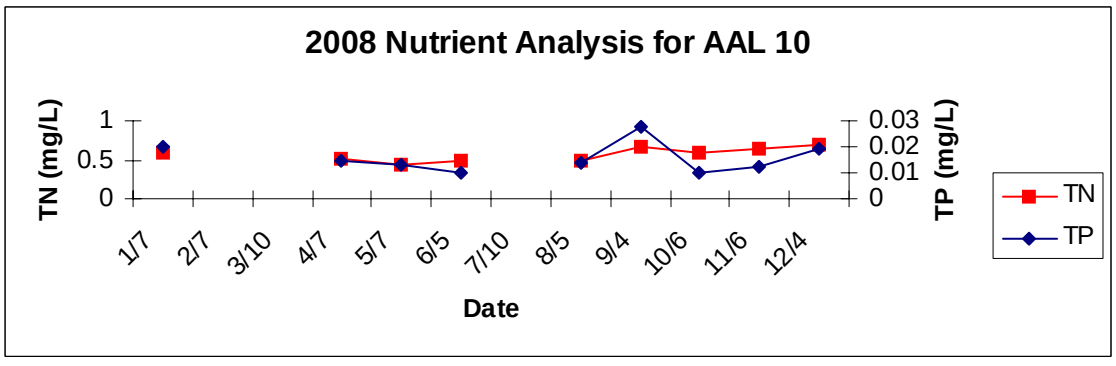




Analysis

The average lake temperature for the year was 27° Celsius. The average for dissolved oxygen was 8.1 mg/L, pH was 7.6, and secchi depth was 1.9 meters. Bacteria levels were fairly constant except for a peak in July. Total phosphorus and total nitrogen were in relative proportion to one another throughout the season. Slight fluctuations in total phosphorus were observed; while total nitrogen increased.





LAKE MANN-AAL62

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 60
Origin: Natural
Springfed: No
Lake Surface Area (ac): 230
Lake Volume (ft^3): 15,701
Average Depth (ft): 11.4
Shoreline length (ft): 114,214,320
100 Year Flood: 95 FEMA
Historic Low Water Elevation: 88.3
Historic High Water Elevation: 94.1
TMDL Impairment: Nutrients (TSI)
TMDL Group: 4
BMAP:
MSTU: No
Public Access: Yes

Biological Information

Plant life

Surveys: No Data

Treatments: No Data

LVI: No Data

Fishing Management

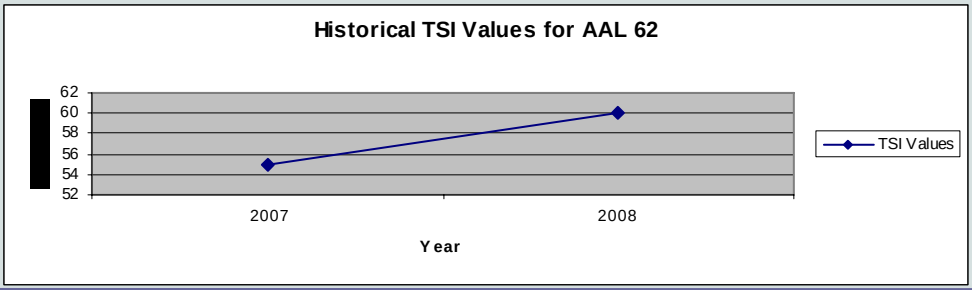
FCA: Yes

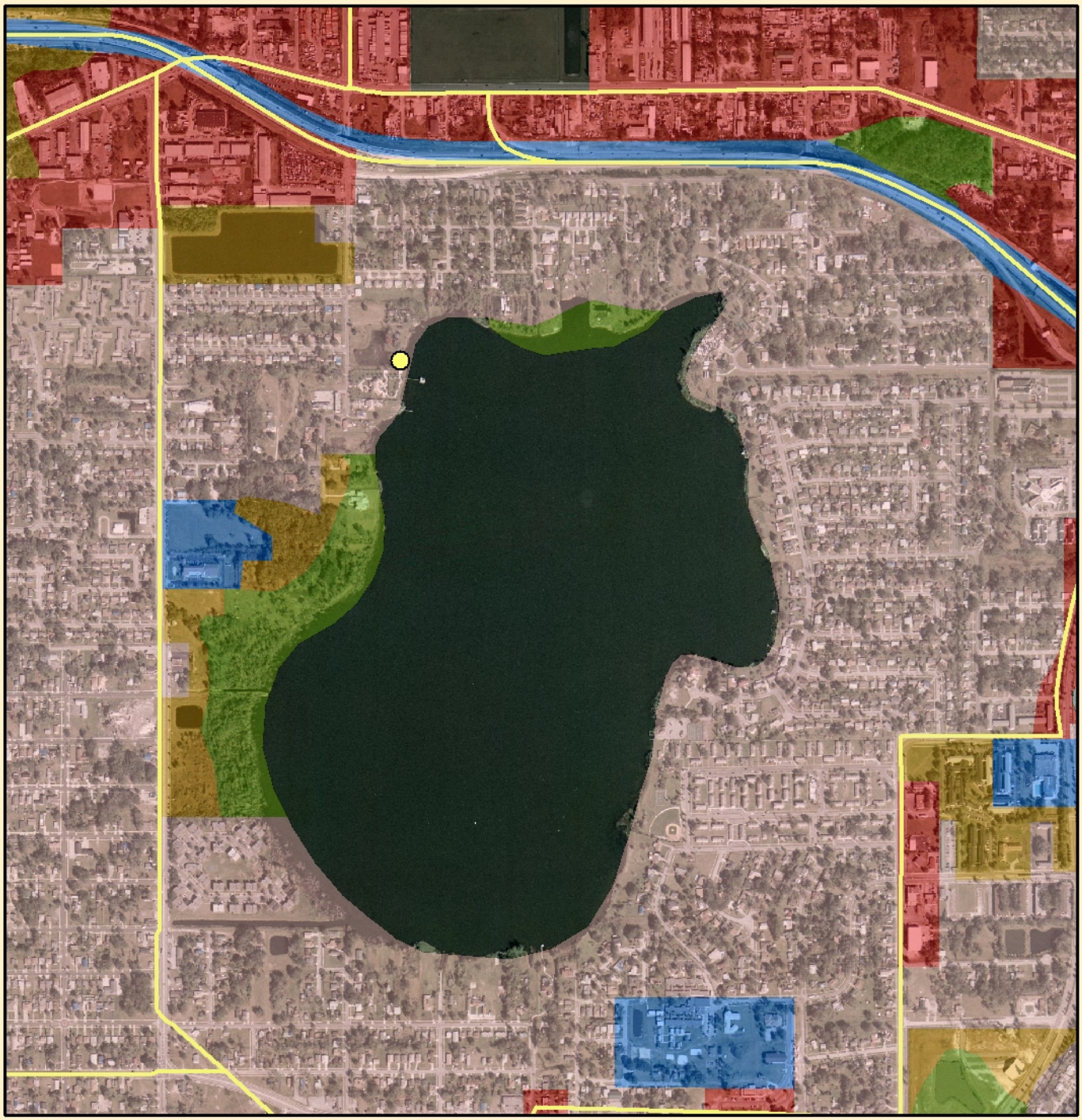
Grass Carp: No Data

Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

Historic TSI Graph 2008 TSI Score: 60 Lake Ranking: Eutrophic





Lake Mann
AAL 62

Legend

- orange county outfalls

ORANGELUSE

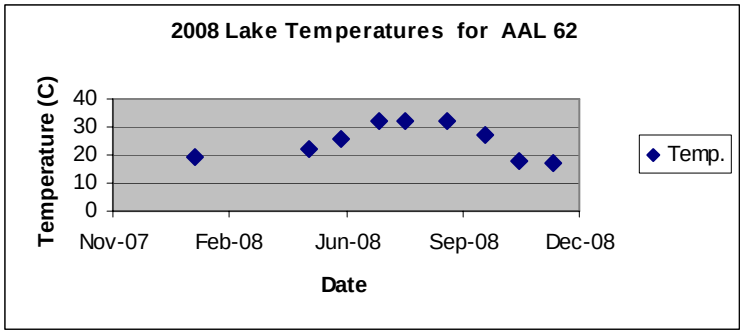
- COMMERCIAL
- CONSERVATION
- INDUSTRIAL
- INSTITUTIONAL
- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- RURAL / AGRICULTURE
- WATER BODY
- sampling locations

0 0.1 0.2 0.4 0.6 Miles

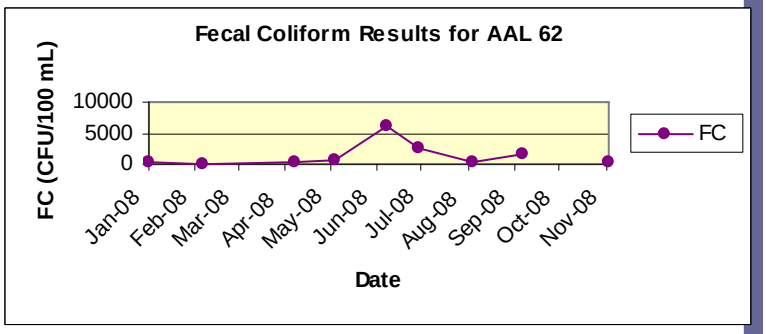
LAKE MANN-AAL62

Mann Overview

Volunteer Monitoring began at Lake Mann in 2007. The TSI score of 60 suggests that Lake Mann has poor water quality. When samples are taken from a location other than the center of a lake, there may be a difference in nutrient concentrations that would effect the score of a trophic state index. A TSI from the center of the lake could be lower or higher, and is more representative.

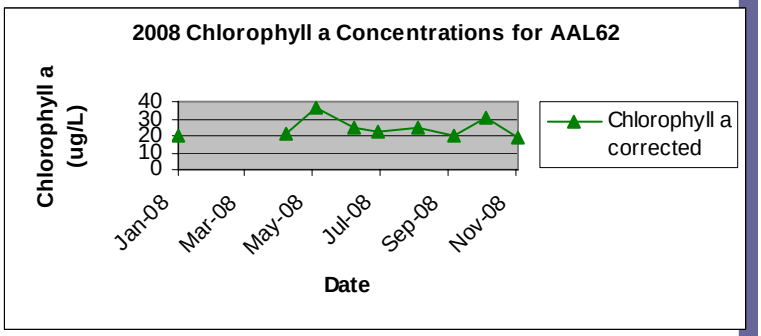


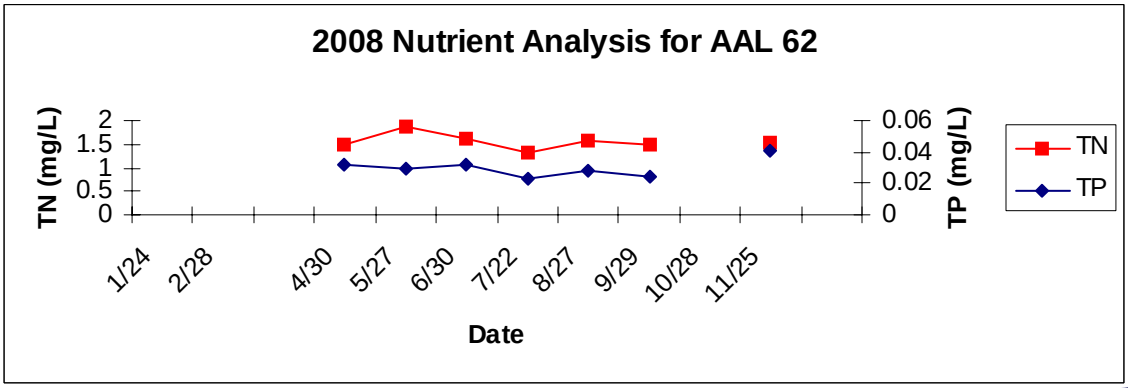
Wildlife observed at Lake Mann include a variety of birds and ducks.



Analysis

The average lake temperature for the year was 25° Celsius. The average for dissolved oxygen was 6.9 mg/L, and pH was 7.4. Bacteria levels were above 200 CFU/100 mL for most of the season with a spike of 6200 CFU/100 mL. Total phosphorus and total nitrogen were in proportion with both increases and declines throughout the year





LAKE ORLANDO-AAL 96

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 62
Origin: Natural
Springfed: No
Lake Surface Area (ac): 183
Lake Volume (ft): 57,394656
Average Depth (ft): 7.2
Shoreline length (ft): 15170
100 Year Flood: 87.9 FEMA
Historic Low Water Elevation: 22.8
Historic High Water Elevation: 84.9
TMDL Impairment: No Data
TMDL Group: 2
BMAP: No Data
MSTU: No
Public Access: No

Biological Information

Plant life

Surveys: No Data

Treatments: No Data

LVI: No Data

Fishing Management

FCA: No Data

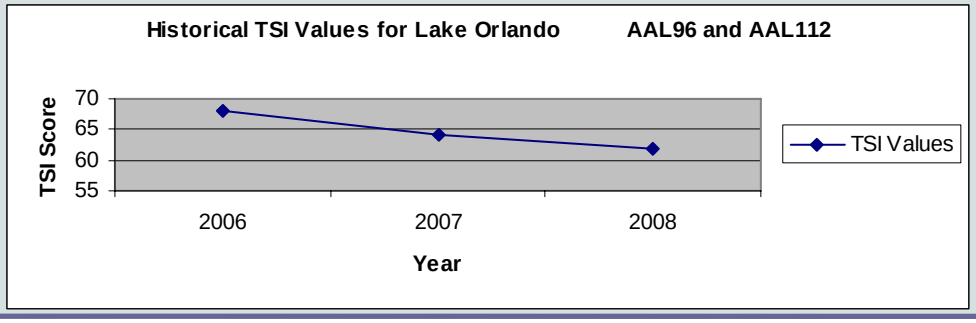
Grass Carp: No Data

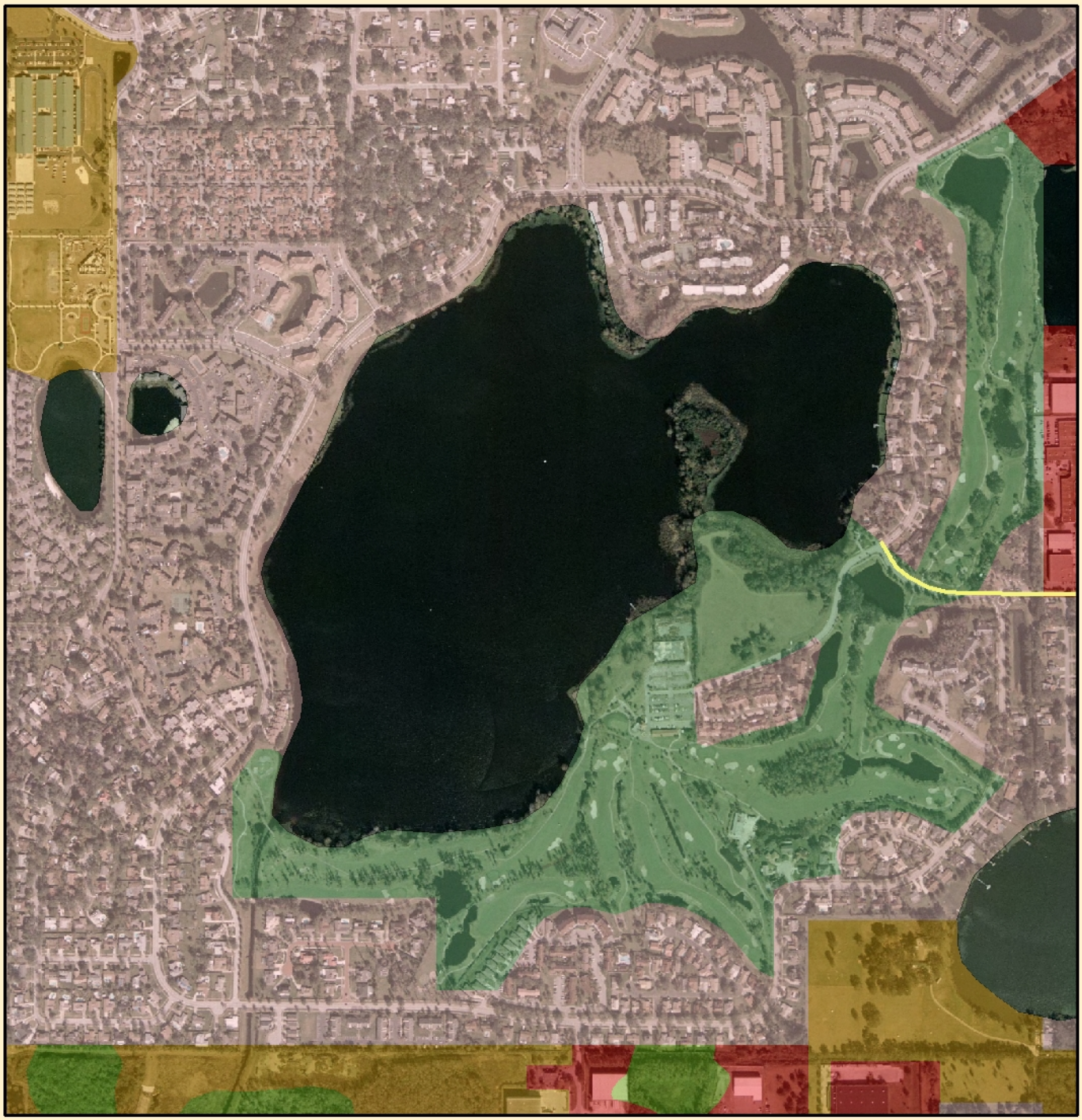
Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

TSI Trend

2008 TSI Score: 62 Lake Ranking: Eutrophic





Lake Orlando
AAL 96

Legend

- orange county outfalls

ORANGELUSE

- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- PARKS AND RECREATION
- RURAL / AGRICULTURE
- WATER BODY

N
W E
S

0 0.035 0.07 0.14 0.21
Miles

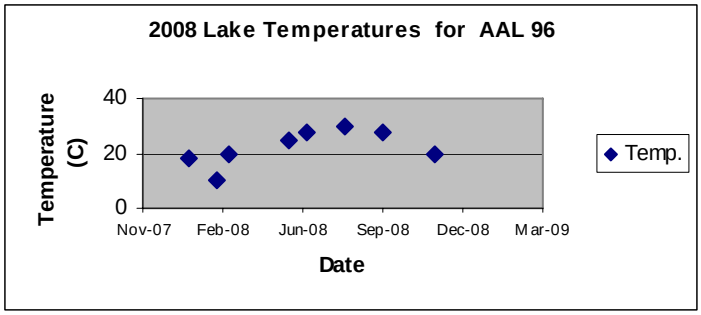
LAKE ORLANDO-AAL 96

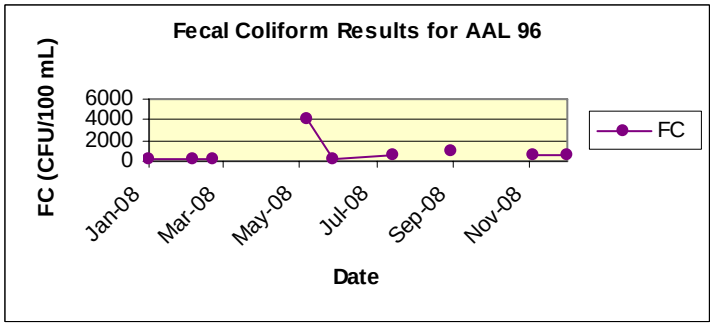
Orlando AAL 96 Overview

Volunteer Monitoring began at Lake Orlando in 2005. The TSI score of 62 shows that Lake Orlando has poor water quality. This TSI score is an average of 2 different locations along the lake (AAL96 and AAL 112).

Historically, Lake Orlando was called Lake Wekiva and the Rosemont area was a swamp. When the city annexed the area in the late 60's, the name was officially changed.

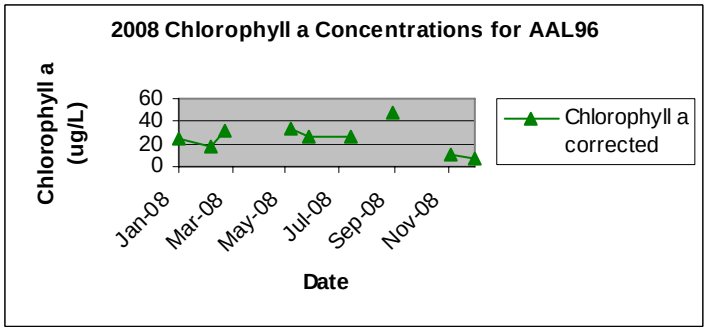
Wildlife at Lake Orlando includes a variety of birds and ducks.

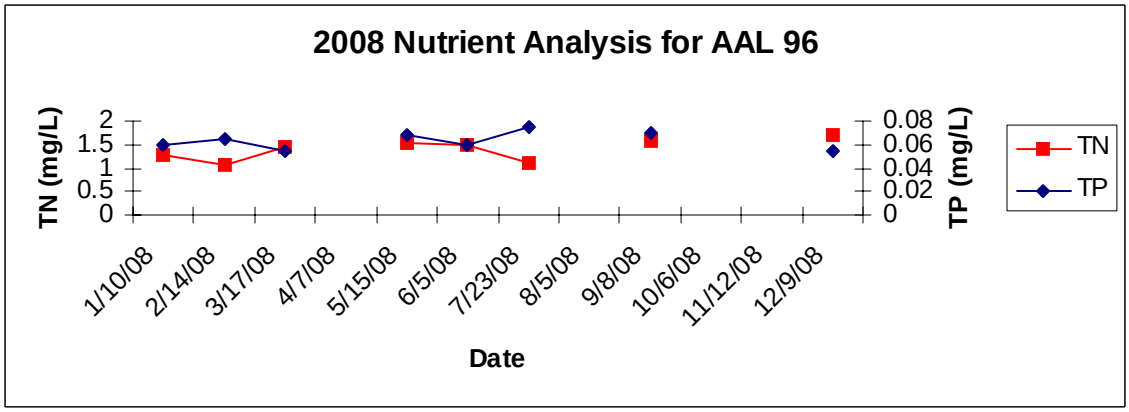




Analysis

The average lake temperature for the year was 22° C. Dissolved oxygen was 4.3 mg/L, pH was 7.2 and secchi depth was 0.9 meters. Bacteria levels experienced a large spike of 4000 CFU/100 mL in May. On average, the fecal coliform counts were above 200 CFU100mL throughout 2008. Total nitrogen and total phosphorus remained in fairly constant proportion to each other during the 2008 sampling season.

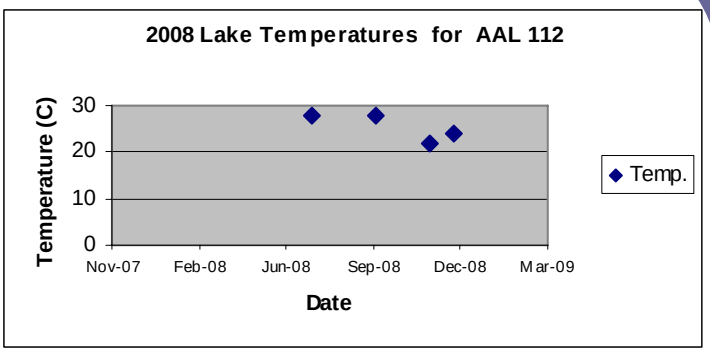


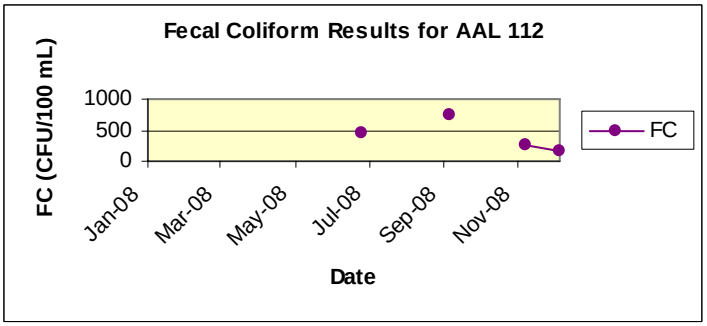


LAKE ORLANDO-AAL112

Orlando AAL112 Overview

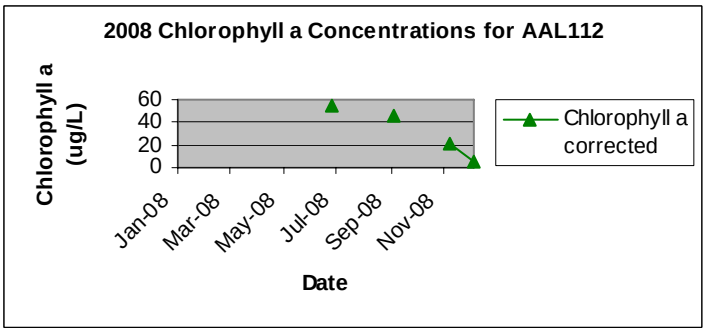
Volunteer Monitoring began at site AAL112 on Lake Orlando in 2008.

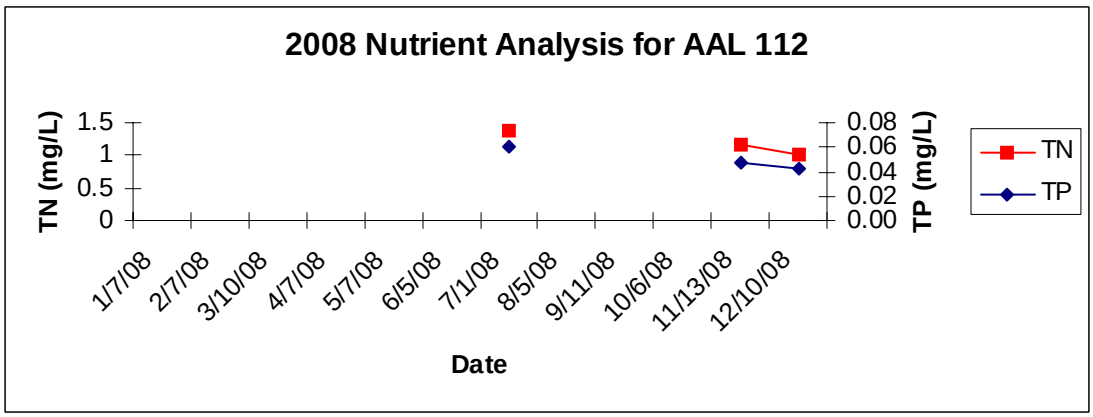




Analysis

The average lake temperature at this site was 26°C. Dissolved oxygen was 6.1 mg/L, pH was 6.4 and secchi depth was 0.6 meters. Bacteria levels were relatively high for all of the collection dates. Total nitrogen and total phosphorus were in proportion to each other for the dates sampled in 2008.





LAKE PATRIC-AAL63

Basin:

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 54
Origin: Altered
Springfed: No
Lake Surface Area (ac): No Data
Lake Volume (ft): No Data
Average Depth (ft):
Shoreline length (ft): No Data
100 Year Flood: No Data
Historic Low Water Elevation: No Data
Historic High Water Elevation: No Data
TMDL Impairment: No Data
TMDL Group: No Data
BMAP: No Data
MSTU: No
Public Access: No

Biological Information

Plant life

Surveys: No Data

Treatments: No Data

Fishing Management

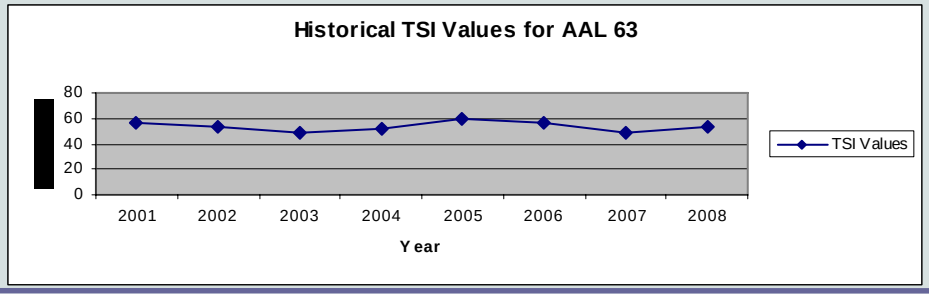
FCA: No Data

Grass Carp: No Data

Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

TSI Trend 2008 TSI Score: 54 Lake Ranking: Mesotrophic



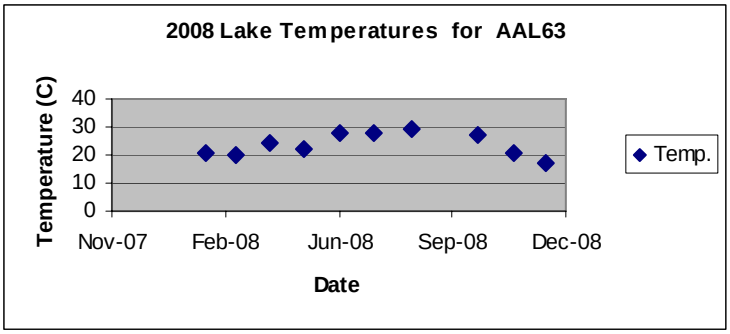
LAKE PATRIC-AAL63

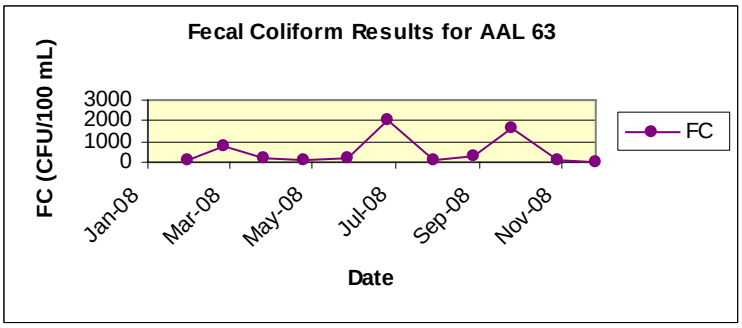
Patric Overview

Volunteer Monitoring for Lake Patric began in 2001.

Aquatic vegetation around the shoreline of Lake Patric includes hydrilla and algae. The north side consists of wetlands.

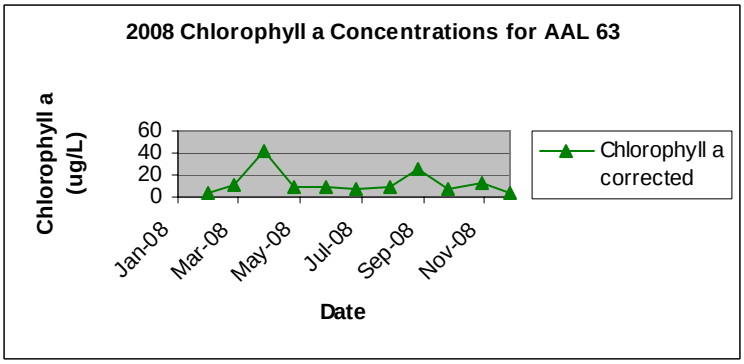
Wildlife observed include anhingas, ducks, comorants, and turtles.

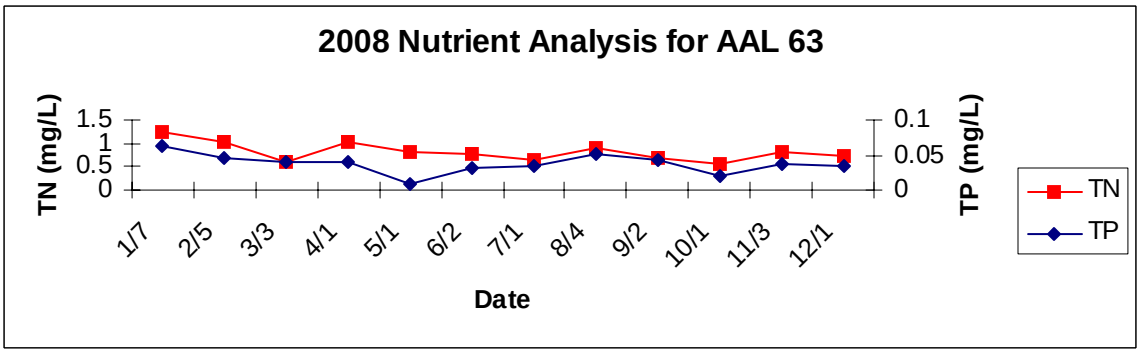




Analysis

The average lake temperature for the year was 24° Celsius. The average for dissolved oxygen was 5.6 mg/L, pH was 6.9, and secchi depth was 2.9 meters. Bacteria levels were high, remaining above 200 CFU/100 mL for most of the season. Total phosphorus and total nitrogen concentrations showed both increases and declines throughout the year.





LAKE PEARL — AAL78

Basin: Howell Branch

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 64
Origin: Natural
Lake Surface Area (ac): 16
Lake Volume (ft^3): 4,809,024
Average Depth (ft): 6.9
Shoreline length (ft): 4,035
100 Year Flood: 122.30 FEMA
Historic Low Water Elevation: 69.1
Historic High Water Elevation: 118.7
Normal High Water Elevation (NHWE): 117.4
TMDL Impairment: No Data
TMDL Group: 2
BMAP: None
MSTU: No
Public Access: No

Biological Information

Plant life

Surveys: No

Treatments: No

LVI: No

Fishing Management

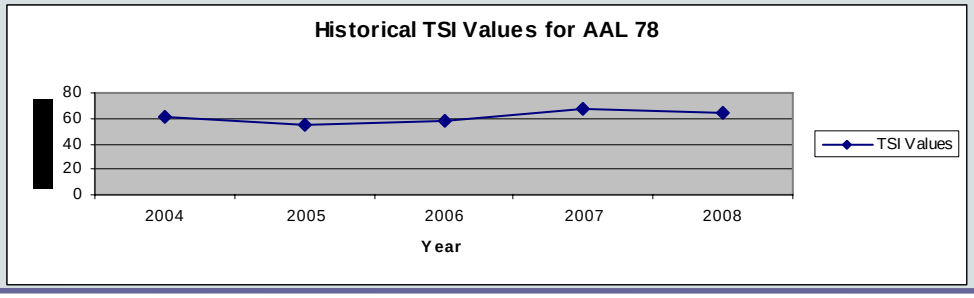
FCA: No

Grass Carp: No

Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

Historic TSI Graph 2008 TSI Score: 64 Lake Ranking: Mesotrophic



Lake Pearl
AAL 78

Legend

- orange county outfalls

ORANGELUSE

- COMMERCIAL
- CONSERVATION
- INSTITUTIONAL
- LOW DENSITY RESIDENTIAL
- RURAL / AGRICULTURE
- WATER BODY

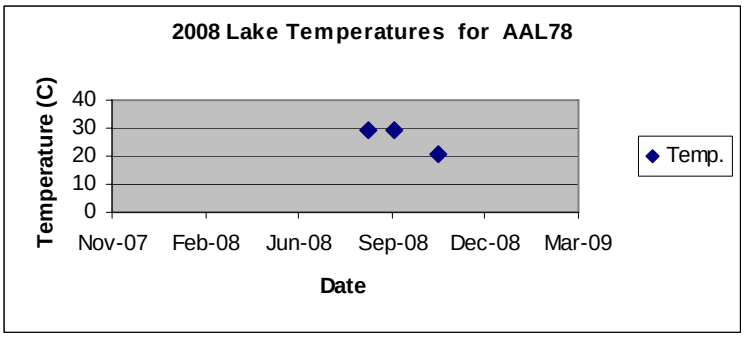
0 0.035 0.07 0.14 0.21
Miles

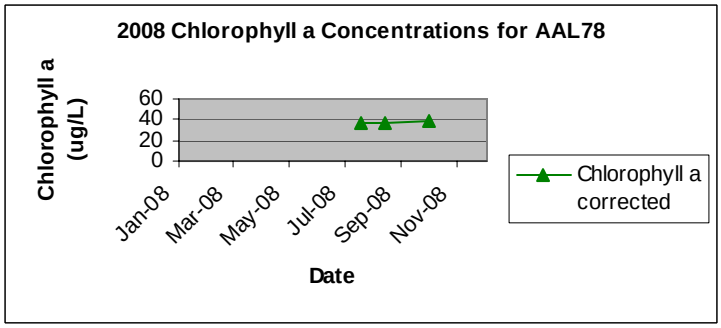
LAKE PEARL-AAL 78

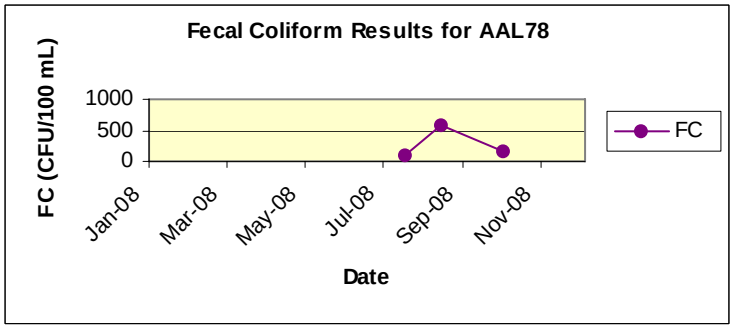
Pearl Overview

Volunteer Monitoring began at Lake Pearl in 2004. The TSI score of 64 shows that Lake Douglas has poor water quality. When samples are taken from a location other than the center of a lake, there may be a difference in nutrient concentrations that would effect the score of a trophic state index. A TSI from the center of the lake could be lower or higher, and is more representative.

No other data has been submitted by the volunteer for this lake.

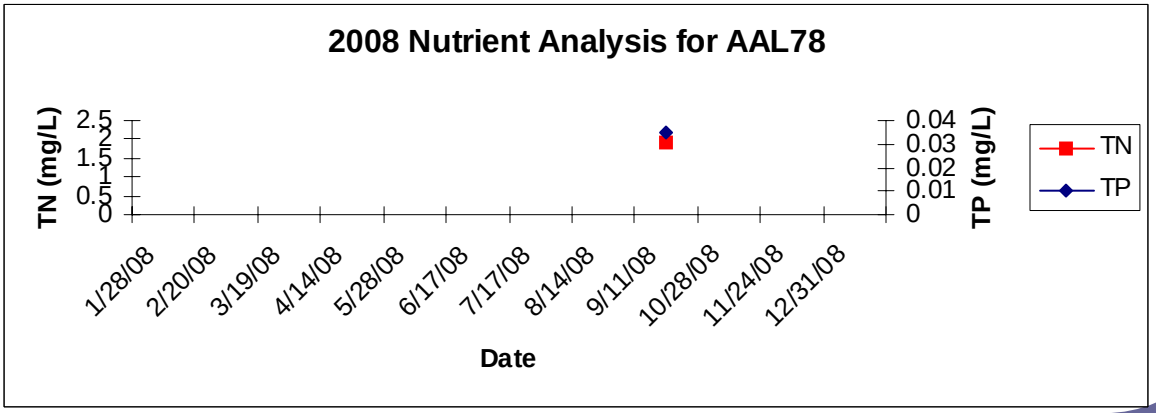






Analysis

The average lake temperature for the year was 26° C. Dissolved oxygen was 5.6 mg/L, pH was 7.2 and secchi depth was 1.0 meter. Bacteria levels had one sample over 200 CFU/100 mL in September; which was 580 CFU/100 mL. There was not enough data to determine a relationship between total nitrogen and total phosphorus.



LAKE ROSE-AAL61

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 56
Origin: Natural
Lake Surface Area (ac): 90
Lake Volume (ft^3): 41,164,200
Average Depth (ft): 10.5
Shoreline length (ft): 11,273
100 Year Flood: 89.5 FEMA
Historic Low Water Elevation (NGVD): No Data
Historic High Water Elevation (NGVD): 87
Normal High Water Elevation (NHWE): 70.7
TMDL Impairment: None
TMDL Group: 2
BMAP: No
MSTU: No
Public Access: No

Biological Information

Plant life

Surveys: No

Treatments: No

Fishing Management

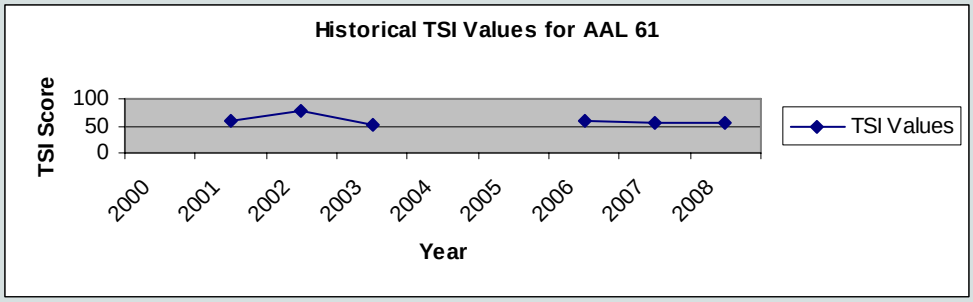
FCA: No

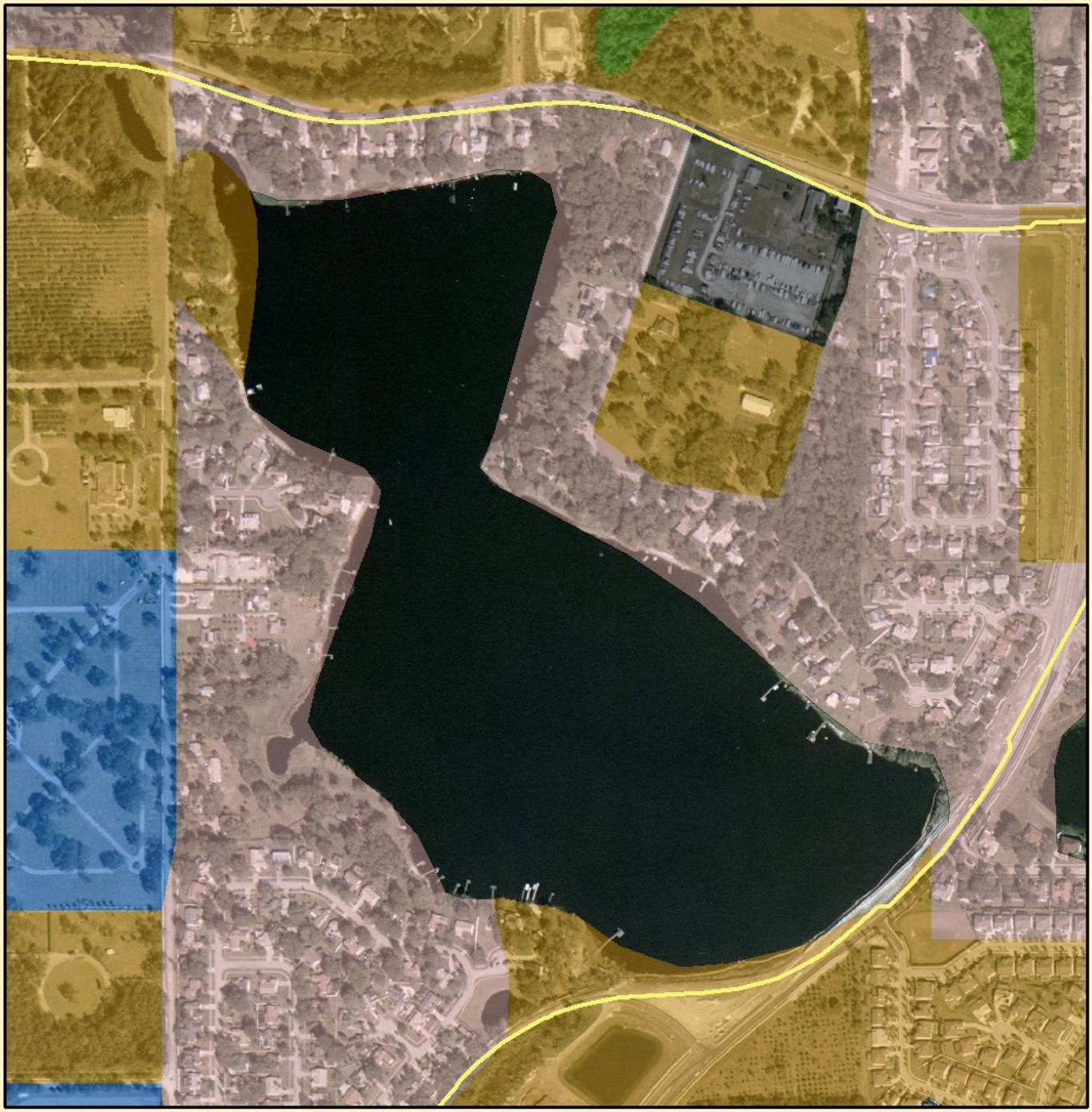
Grass Carp: No

Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

Historic TSI Graph 2008 TSI Score: 56 Lake Ranking: Mesotrophic





Lake Rose
AAL 61

Legend

- orange county outfalls

ORANGELUSE

- CONSERVATION
- INDUSTRIAL
- INSTITUTIONAL
- LOW DENSITY RESIDENTIAL
- RURAL / AGRICULTURE
- WATER BODY
- sampling locations

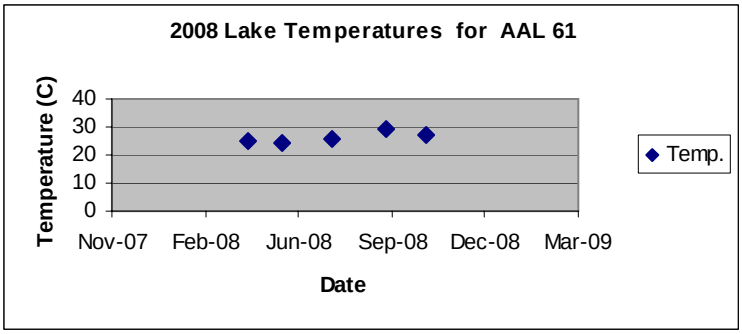
0 0.030.06 0.12 0.18
Miles

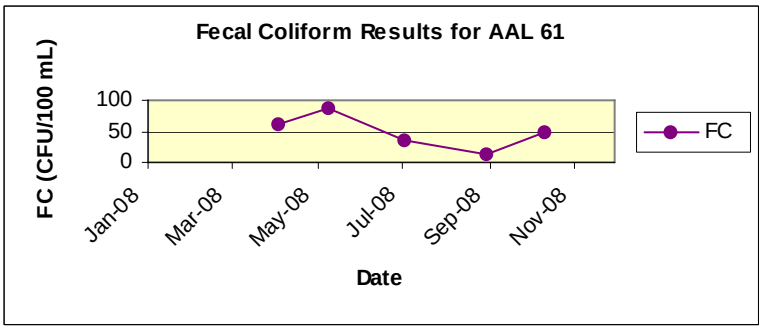
LAKE ROSE-AAL61

Rose Overview

Volunteer Monitoring for Lake Rose began in 2001. The TSI Score of 56 shows the lake to have good water quality.

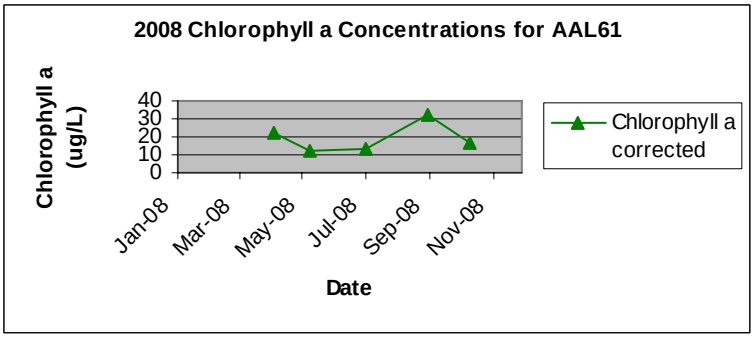
No other data has been submitted by the volunteer for this lake.

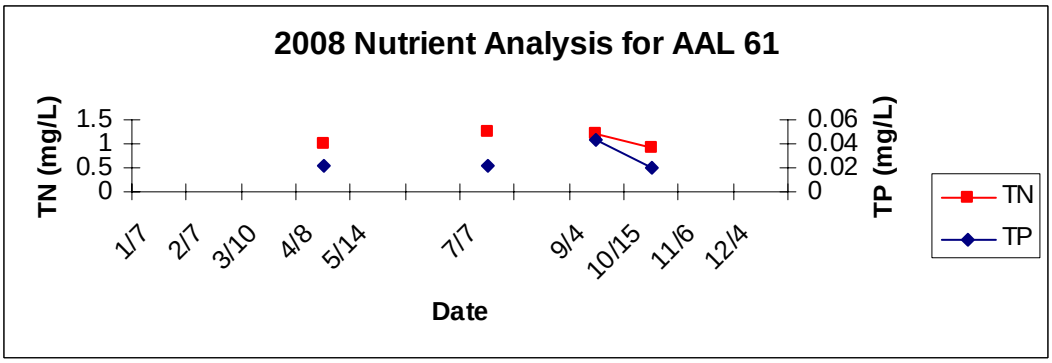




Analysis

The average lake temperature for the year was 28° Celsius. The average for dissolved oxygen was 5.5 mg/L, pH was 7.4 and secchi depth was 0.8 meters. Bacteria levels were low for the 2008 year. Total phosphorus and total nitrogen concentrations were in proportion with each other for the dates sampled.





LAKE SHEPPARD-AAL98

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 59
Origin: Natural
Lake Surface Area (ac):
Lake Volume (ft):
Average Depth (ft):
Shoreline length (ft):
100 Year Flood:
Historic Low Water Elevation (NGVD):
Historic High Water Elevation (NGVD):
Normal High Water Elevation (NHWE):
TMDL Impairment:
TMDL Group:
BMAP:
MSTU: No
Public Access:

Biological Information

Plant life

Surveys: No Data

Treatments: No Data

Fishing Management

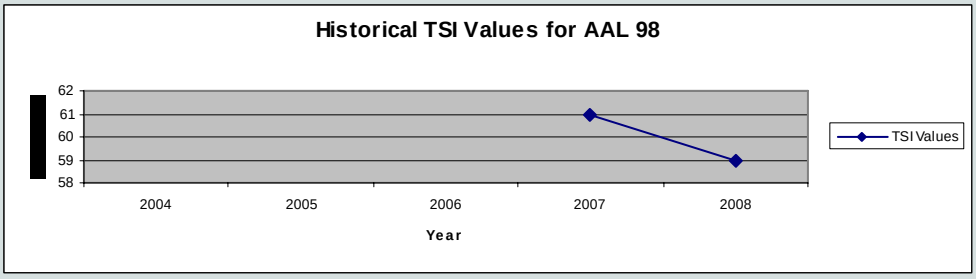
FCA:

Grass Carp:

Macroinvetebrates

LCI Score: None to Date
Overall Health: NA
Diversity Index: NA

Historic TSI Graph 2008 TSI Score: 59 Lake Ranking: Mesotrophic

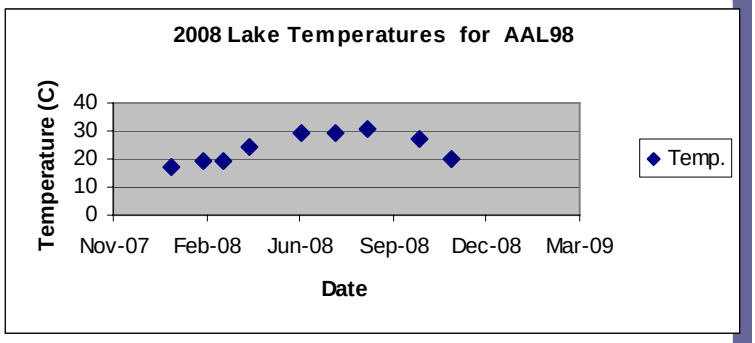


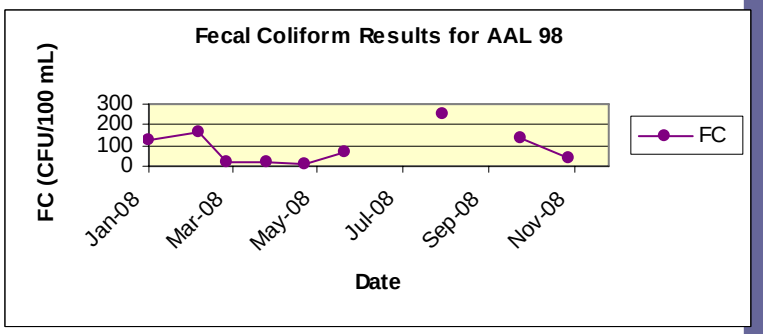
LAKE SHEPPARD-AAL98

Sheppard Overview

Volunteer Monitoring began at Lake Sheppard in 2007. The TSI score of 59 suggests that Lake Sheppard has good water quality.

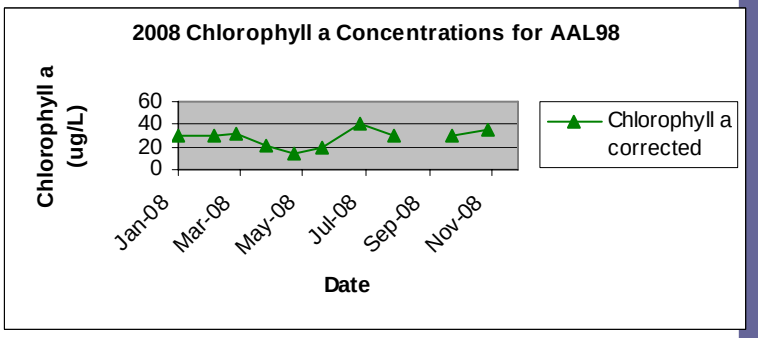
No other data has been submitted by the volunteer for this lake.

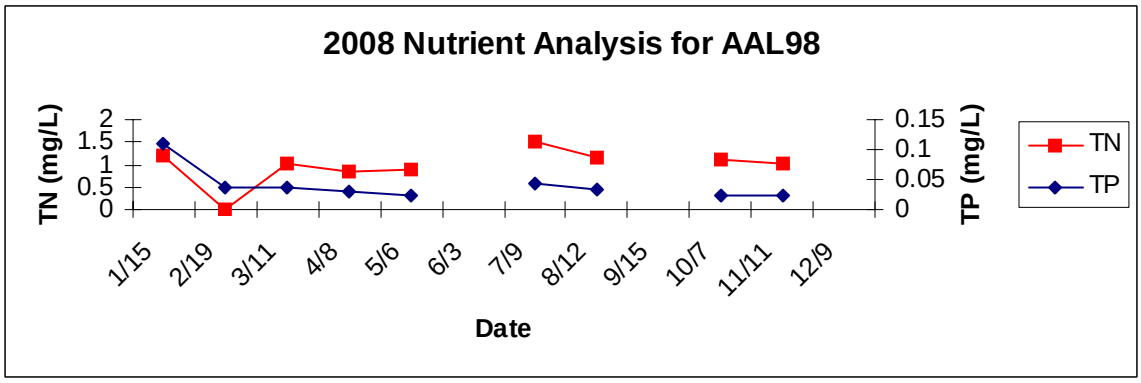




Analysis

The average lake temperature for the year was 24° Celsius. The average for dissolved oxygen was 8.0 mg/L, pH was 7.1, and secchi depth was 0.7 meters. Bacteria levels fluctuated throughout the season. In August, the bacteria spiked at 250 CFU/100 mL. Total phosphorus and total nitrogen were in proportion with each other. A slight increased was observed during July, followed by a decrease.





SPLIT OAK RESERVE-AAL104

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 55
Origin: Natural
Lake Surface Area (ac):
Lake Volume (ft^3):
Average Depth (ft):
Shoreline length (ft):
100 Year Flood:
Historic Low Water Elevation(NGVD):
Historic High Water Elevation(NGVD):
TMDL Impairment: None
TMDL Group: 2
BMAP: None
MSTU: No
Public Access: Yes, Moss Park

Biological Information

Plant life

Surveys: No Data

Treatments: Yes

Fishing Management

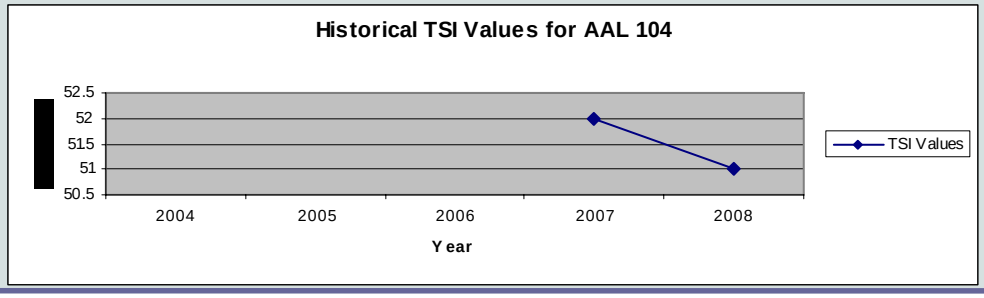
FCA: No

Grass Carp: Yes

Macroinvetebrates

LCI Score: No data
Overall Health: No data
Diversity Index: No data

Historic TSI Graph 2007 TSI Score: 55 Lake Ranking: Mesotrophic

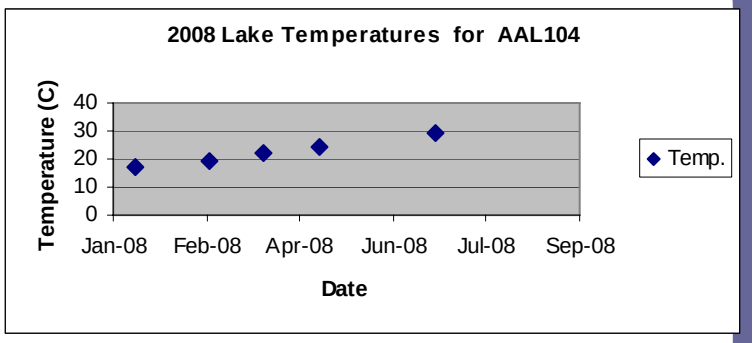


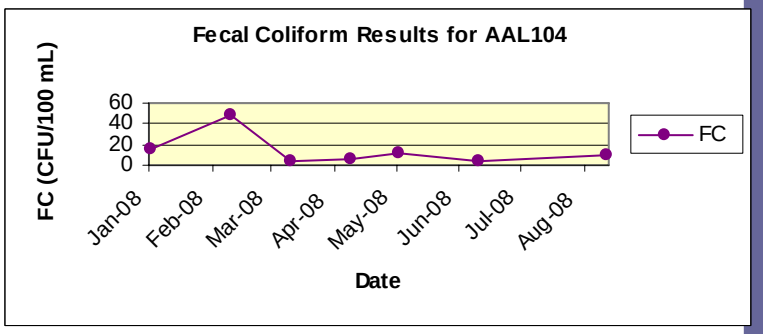
SPLIT OAK RESERVE-AAL104

Split Oak Overview

Volunteer monitoring began at Split Oak Reserve in 2007. The TSI score of 55 suggests that split oak has good water quality.

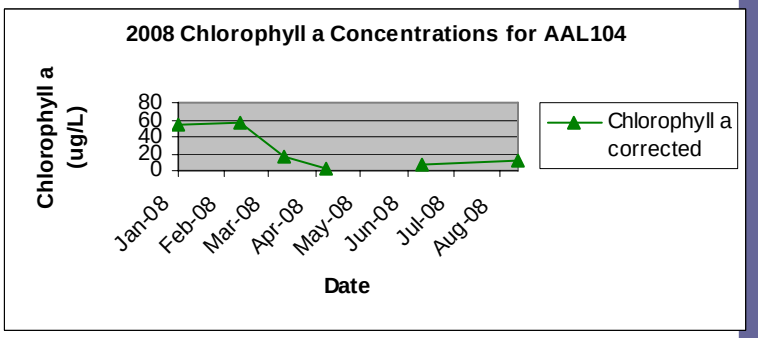
No other data has been submitted by the volunteer for this site.

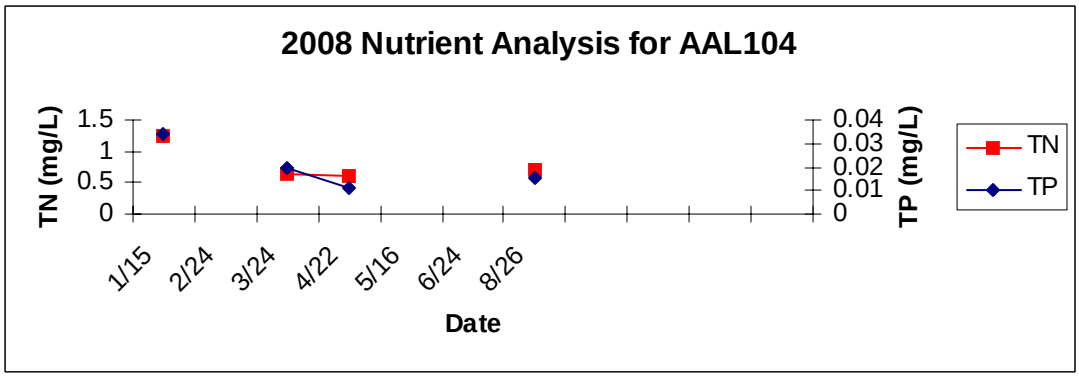




Analysis

The average lake temperature for the year was 22° Celsius. The average for Dissolved Oxygen was 6.2 mg/L, pH was 6.3 and secchi depth was 1.8 meters. Bacteria levels increased slightly in February, but all were a below 50 CFU/100 mL. There was not enough data to show a relationship between total nitrogen and total phosphorus.





LAKE STARLITE-AAL94

Basin: Big Wekiva

LATITUDE: 28° 36' 15" LONGITUDE: 81° 15' 51"

Characteristics

TSI Score: 61
Origin: Natural
Lake Surface Area (ac):
Lake Volume (ft^3):
Average Depth (ft):
Shoreline length (ft):
100 Year Flood:
Historic Low Water Elevation (NGVD):
Historic High Water Elevation (NGVD):
Normal High Water Elevation (NHWE):
TMDL Impairment:
TMDL Group:
BMAP: No
MSTU: No
Public Access: No

Biological Information

Plant life

Surveys: No

Treatments: No

Fishing Management

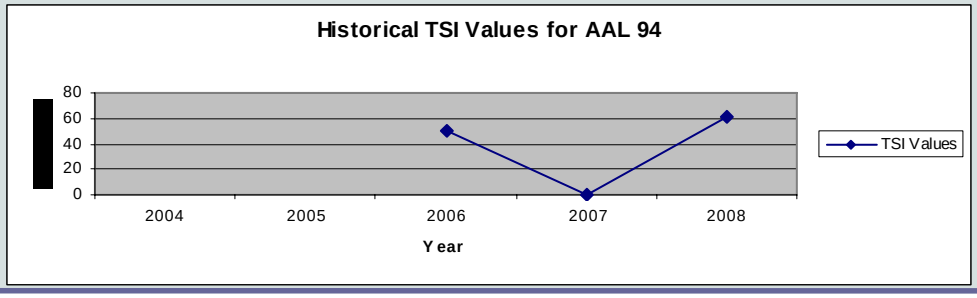
FCA: No

Grass Carp: No

Macroinvetebrates

LCI Score: No Data
Overall Health: No Data
Diversity Index: No Data

Historic TSI Graph 2008 TSI Score: 61 Lake Ranking: Eutrophic



Lake Starlite
AAL 94

Legend

- sampling locations
- orange county outfalls
- County Border

0 0.015 0.03 0.06 0.09

Miles

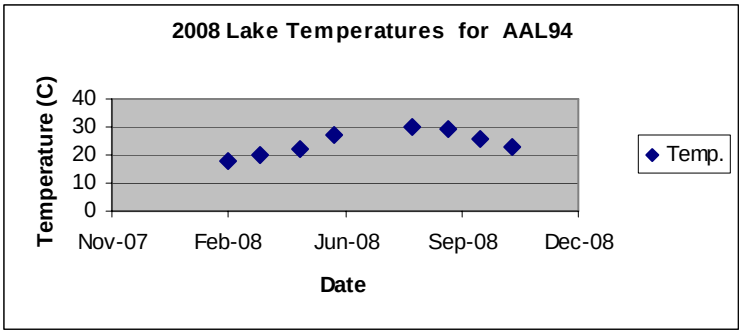
LAKE STARLITE-AAL94

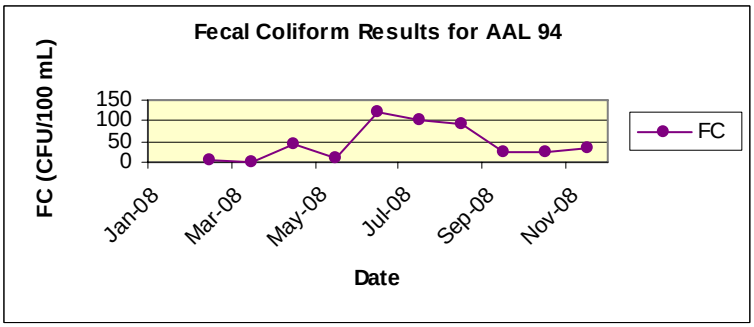
Starlight Overview

Volunteer Monitoring for Lake Starlite began in 2006. The TSI Score of 61 shows the lake to have poor water quality. When samples are taken from a location other than the center of a lake, there may be a difference in nutrient concentrations that would effect the score of a trophic state index. A TSI from the center of the lake could be lower or higher, and is more representative.

Shoreline vegetation consists of willows, cattails, water lilies, and dog fennel.

Wildlife observed include raccoons, brown rabbits, coral snakes, black racers, and five-lined skinks. Bird populations include: belted kingfishers, great blue herons, little blue herons, great white egrets, red shoulder hawks, red-wing blackbirds, ospreys, woodpeckers, and various songbirds (cardinal, catbird, mockingbird, titmouse, and warbler).





Analysis

The average lake temperature for the year was 24° Celsius. The average for dissolved oxygen was 6.2 mg/L, and pH was 7.3. Bacteria levels rose in the summer months but remained below 200 CFU/100 mL. Total phosphorus and total nitrogen remained relatively proportional with each other. Nitrogen levels increased significantly in May and dropped suddenly in August.