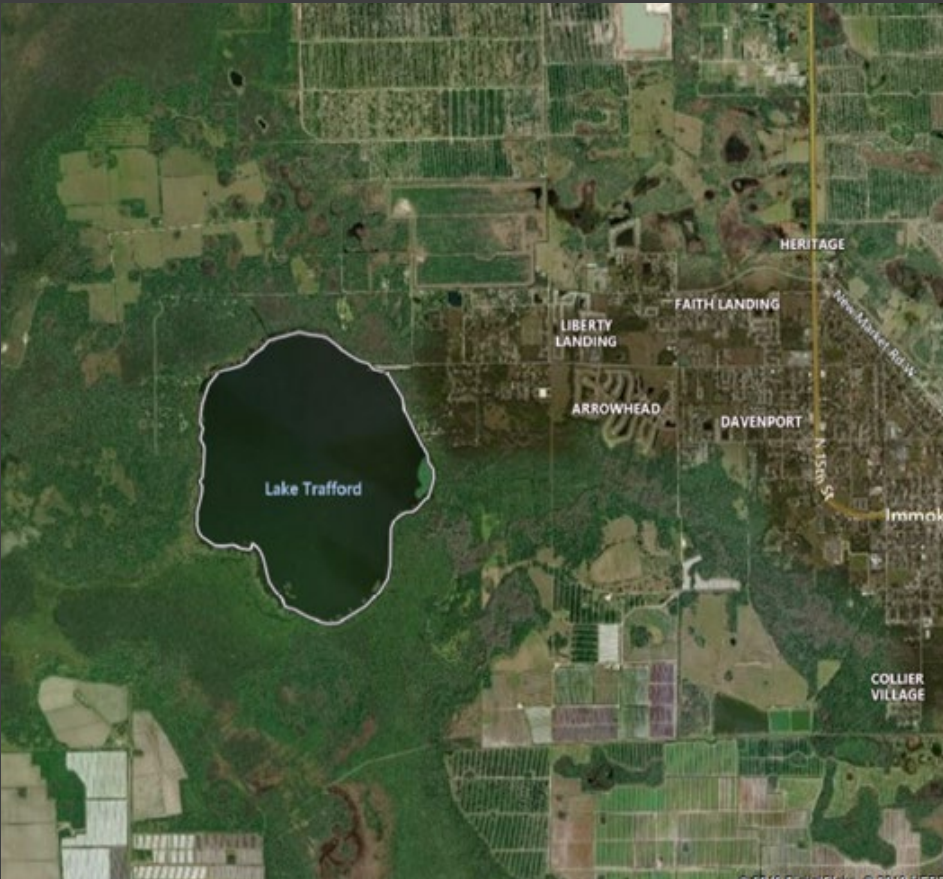
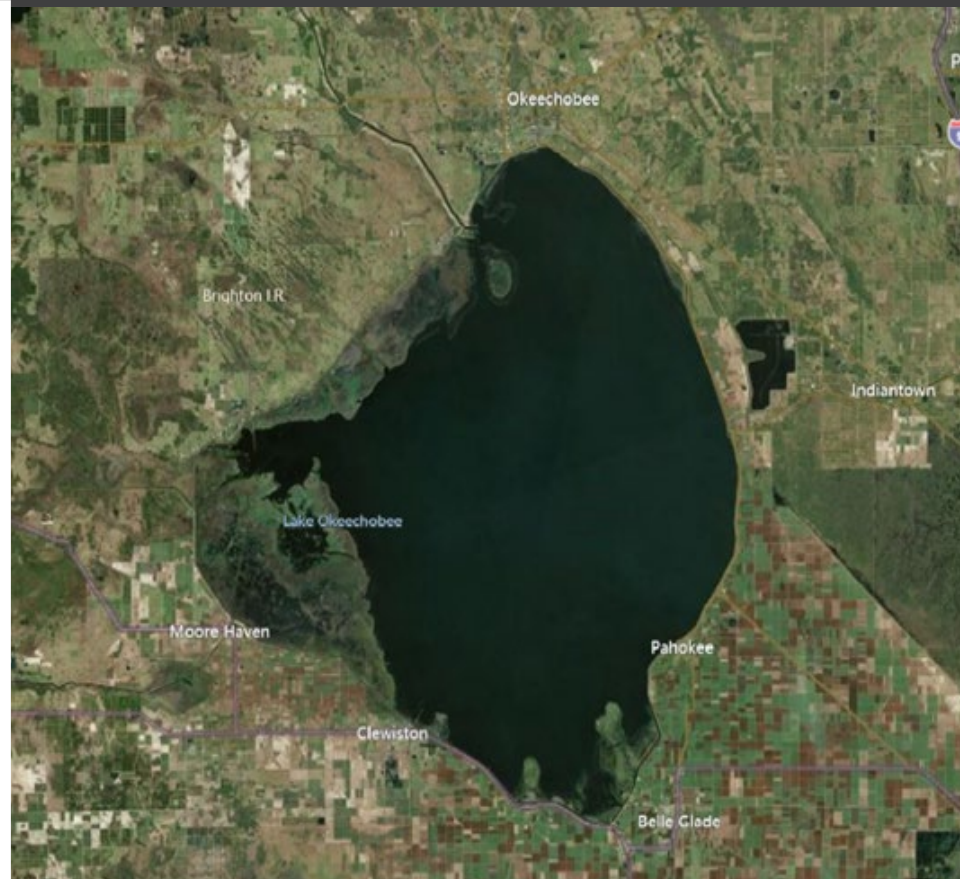


A Tale of Two Lakes



Lake Trafford



Lake Okeechobee

Recent Google map, 2019

August 1, 2018

St. Lucie Lock & Dam in Martin County

Naples Daily News





Lake Trafford 1998 Conditions



**Visible accumulation of muck
Western Rim Route**

**Lake Okeechobee
March 2019**



Visible White Sands at Lake Okeechobee

Western Rim Route

Lake Okeechobee conditions courtesy of Paul N. Gray, Ph.D.,
Science Coordinator Everglades Restoration Program, Audubon Florida



The Beginning of Lake Trafford Restoration

1998

US Army Corps of Engineers Report May 1998

Poor water quality, including high biological oxygen demand, lethal ammonia levels, and depressed dissolved oxygen content

Internal nutrient cycling from extensive organic muck deposits throughout the lake basin

Loss of native submergent plant communities

Periodic aquatic weed infestations

Numerous moderate fish kills

Physical and Hydrologic Setting

*1998 Report
Army Corps of Engineers
(ACOE)*

Lake Trafford is the headwater area for surface water flow to the Corkscrew Swamp-Imperial River and Cocohatchee River drainage ways to the County's Gulf of Mexico coastal zone

Camp Keais Strand-Panther Preserve-Fakahatchee Strand drainage ways to the 10,000 Islands watershed/coastal zone

Lake Trafford is thus an integral part of regional drainage and wetlands systems, and coastal estuarine systems

Surface area - 1,490 acres (about 2.5 square miles)

Average depth (in 1998) of about four and one half (4.5) feet

Inflow is via rainwater, surface sheetflow, canals and drainage ditches, and groundwater

Outflow is via sheetflow to adjacent flow ways and wetlands, and groundwater

Project Description

1998 Report
Army Corps of Engineers
(ACOE)

Economic and environmental enhancement of Lake Trafford necessitates the removal of an estimated 8,500,000 cubic yards, as noted in the U.S. Army Corps of Engineers April 1998 letter report, of organic sediment from the lake to restore the lake's depth and bottom configuration to its quartz sand bottom; and to reduce, by as much as one half the nutrient enrichment to the lake. This nutrient enrichment results in proliferation of aquatic plant growth, periodic algal blooms, and fish kills.

(The scope was slightly modified by Big Cypress Basin (BCB) from 2006-2010)

Project Description (cont'd)

1998 Report
Army Corps of Engineers
(ACOE)

The sediment removal phase of the project includes:



Mechanical or suction dredging of the organic sediment from the lake, transport of that dredge spoil via pipeline, dispersal of the dredged spoil on a prepared land disposal site, and spreading of the dredged spoil as a soil amendment.

CONCEPTUAL RESTORATION PLAN

Phase I

**Lake Ecosystem and Watershed
Assessment**



Phase II

Dredging Lake Sediments



Phase
III

**Lake Habitat and Watershed
Restoration**



Phase
IV

Post-Project Monitoring

Phase I: Lake Ecosystem and Watershed Assessment

COMPLETED

Ground water and surface water monitoring

Identify surface water flow ways

Install monitoring equipment

Identify/map land use activities

Delineate exotic/noxious vegetation

Sediment core analysis

Quantify phosphorus diffusion

Document wildlife

Establish fish management area

Finalize Planned Disposal Site

Phase II: Dredging Lake Sediments/ Demucking

COMPLETED



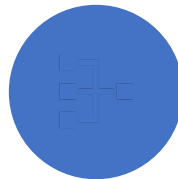
**SUBMIT ECOSYSTEM
RESTORATION
PERMIT**



**ENGINEERING/
ENVIRONMENTAL
DESIGN INCLUDING
CREATING COASTAL
MARSH/LANDS**



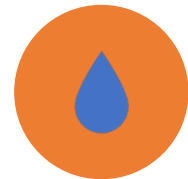
**CONTRACTING
DREDGING
CONTRACTOR**



**ACTUAL
DREDGING
OPERATION**



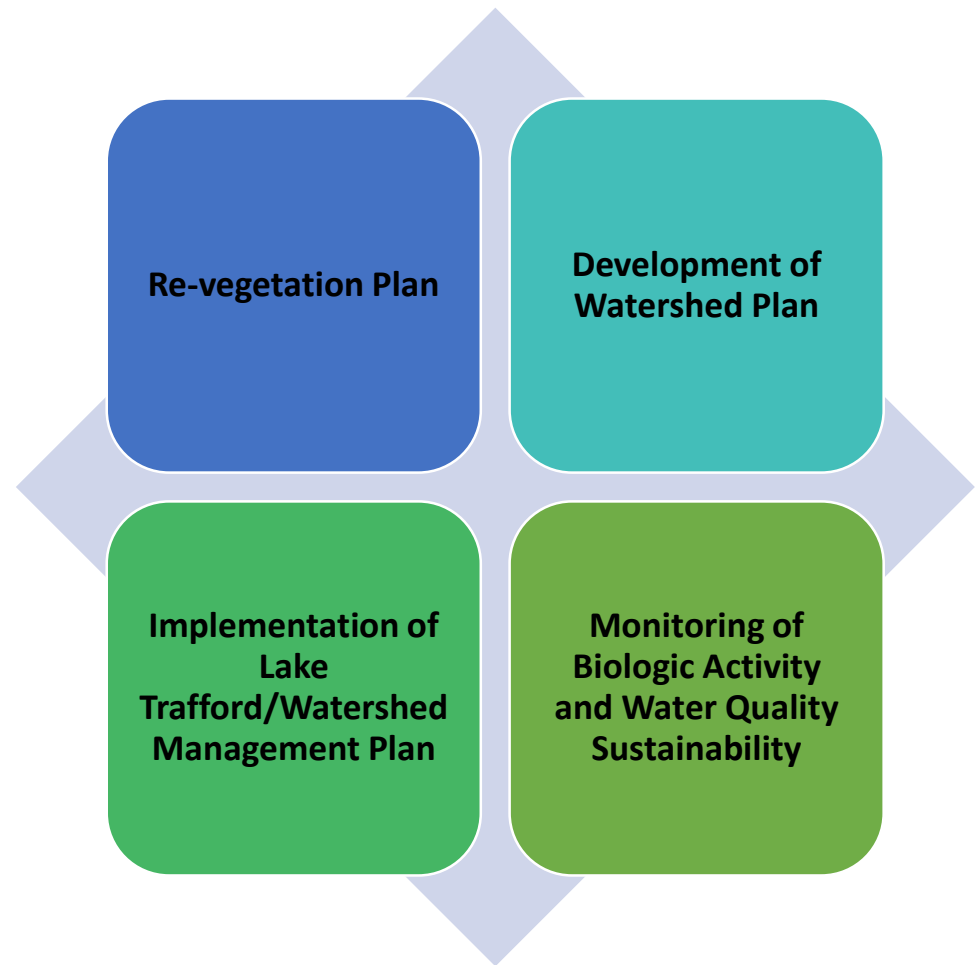
**AQUATIC
PLANT
CONTROL PLAN**



**MONITORING OF
WATER QUALITY**

Phase III: Lake Habitat and Watershed Restoration

ONGOING



Phase IV: Post- Project Monitoring

ONGOING

Long-term Monitoring:

- **Water Quality**
- **Fish & Vegetation**
- **Sediment Accumulation**
- **Disposal Site**

Educational Activities:

- **Education Center**

Phase V: Lake
Trafford Task
Force
Recommended
Management
Plan
(to sustain
investment)

**Long-term Sustainability
including:**

- Limited spraying
- Mechanical harvesting
- Mechanical exotics removal
- Reduction and/or elimination of muck to the lake
- Removing remaining nutrients including best management practices for point/non-point source reduction
- Develop and maintain healthy diverse living littoral zones



Lake Trafford May 2019



Lake Trafford Ecotourism – airboat rides, birding, fishing and sightseeing tours



CVB 2019

*See reference slide for photo credits

SFWMD
Lake Trafford
Management Plan –
Issued by Big Cypress
Basin Board in 2018

https://www.sfwmd.gov/sites/default/files/documents/lake_trafford_mgmt_plan.pdf



Lake Trafford Management Team

**Big Cypress
Basin/SFWMD**

**Florida Fish and
Wildlife
Conservation
Commission**

**Florida
Department of
Environmental
Protection**

Collier County

**U.S. Fish and
Wildlife Service**

**U.S. Geological
Survey**

**Florida Gulf Coast
University**

**University of
Florida**

**The Nature
Conservancy**

**Corkscrew
Audubon**

**Natural
Ecosystems**

**Peninsula
Engineering, Inc.**

Lessons Learned after Lake Restoration (including removal of muck and nutrients captured by the Lake)

- Limited spraying for exotic/invasive vegetation control
- Timely mechanical harvesting of mature exotic/invasive vegetation
- Timely mechanical harvesting provides for
 - FDEP standard or quality composting or other beneficial use
 - Additional muck to the lake and the removal of the remaining nutrients in water column
- Continued (BMP) best management practices for point and non-point sources of nutrients to the lake
- Continued applied research and development including a technically based feasible approach and solutions

Thoughts to consider regarding Lake Okeechobee Restoration

Where applicable, initiate pilot projects for solution sets to include partial demucking.

Research and development towards execution of the solutions with 80/20 rule, where we invest 20% to get 80% of the results in this endeavor.

*“...one third of Lake Okeechobee
could be marsh/lands...”*

Paul N. Gray, Ph.D.

Science Coordinator Everglades Restoration Program, Audubon Florida, 30
years studying Lake Okeechobee

In Summary

**We are not suggesting that Lake
Okeechobee be completely
dredged/de-mulched
as was Lake Trafford**

But what we are respectfully suggesting is that we concurrently address the nutrient removal and the addition of nutrients into the Lake through a pilot project in a section of the Lake.

One of this projects
important goals
would be target the
20/80 rule.

**20% in investment would
result in 80% in return**

References

1. Collier County Lake Trafford Restoration Task Force TDC Application Package; to be provided upon request.
2. South Florida Water Management District (SFWMD) Lake Trafford Restoration fact sheet, August 2006;
https://www.sfwmd.gov/sites/default/files/documents/lake_trafford_fact_sheet_2006.pdf.
3. SFWMD Lake Trafford Management Plan, October 2018, issued by Big Cypress Basin Board;
https://www.sfwmd.gov/sites/default/files/documents/lake_trafford_management_plan.pdf.
4. Referenced Articles: <https://myfwc.com/news/all-news/trafford-bass/>;
and <https://bassonline.com/florida-lakes/lake-trafford/>.
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<http://fl.audubon.org/>