# Lake Okeechobee Basin Management Action Plan (BMAP) Update Meeting

**Via Webinar**
Webinar Registration Link:
https://attendee.gotowebinar.com/register/5143996326554013783

*April 9, 2025*
*10:00 AM EDT*

## Agenda

- Lake Okeechobee Basin Management Action Plan (BMAP) Background.
- Overview of Draft Lake Okeechobee BMAP Update
- Questions/Comments.

Please note the site for documents pertaining to the St. Lucie River and Estuary:
BMAP Public Meetings | Florida Department of Environmental Protection
For more information on the Lake Okeechobee BMAP, contact: Chandler Keenan, 850-245-8555.
Chandler.B.Keenan@FloridaDEP.gov

# LAKE OKEECHOBEE BASIN MANAGEMENT ACTION PLAN DOCUMENT UPDATE

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Florida Department of Environmental Protection

GoTo Webinar | April 9, 2025

Photo Credit: SFWMD

# WEBINAR TIPS

## Audience Participation

Open your control panel.

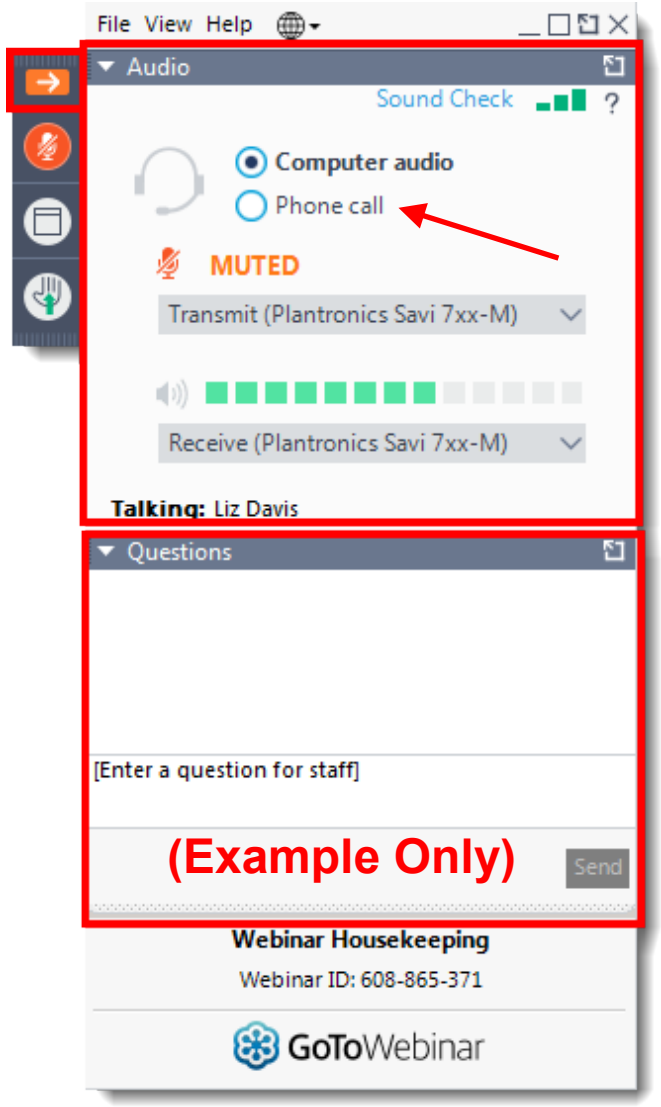
Join audio:
- Choose Computer Audio **or**
- Choose Phone Call and dial using the information provided with your registration

Attendee audio will automatically be muted.

Submit questions and comments via the **Questions** panel.

If viewing this webinar as a group, please provide a list of attendees via the **Questions** panel.

**Note:** Today's presentation is being recorded and will be provided on the website after the webinar.



# AGENDA

- Basin Management Action Plan (BMAP) Background.
- 2025 BMAP Update Draft Document.
- Next Steps.

Source: SFWMD

# KEY BMAP COMPONENTS

- Total maximum daily loads (TMDLs) being addressed.
- Area addressed by the restoration plan.
- Identify sources.
- Phased implementation approach.
- Milestones.
- Projects and management strategies.
- Future growth impacts.

**Projects to meet the TMDL:**

- Implementation timeline.
- Commitment to projects.
- Expected water quality improvement from projects and management strategies.

**Process to assess progress toward achieving the TMDL:**

- Monitoring plan.
- Project reporting.
- Periodic follow-up meetings.
- Water quality analyses.

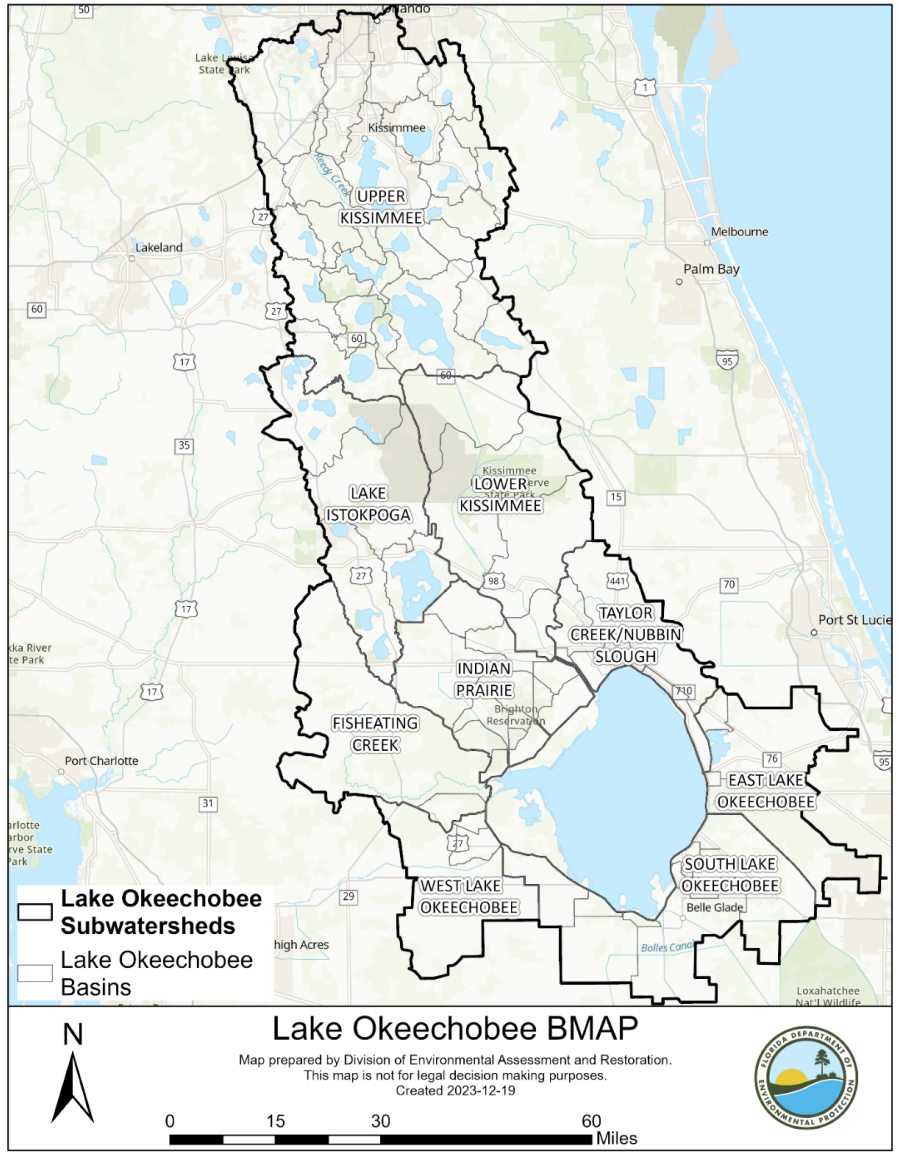
# LAKE OKEECHOBEE BMAP
## BACKGROUND

### TMDL Adopted in August 2001

- Annual total phosphorus (TP) load: 140 metric tons per year (mt/yr).
  - Atmospheric deposition: 35 mt/yr.
  - Remaining: 105 mt/yr.
  - Allocated to the 9 subwatersheds in the Lake Okeechobee Watershed (LOW).
- Authorized by subparagraph 403.067(7)(a)2., Florida Statutes (F.S.).

### Attaining the TMDL

- Calculated using a 5-year rolling average based on monthly loads (measured flow x concentration).
- Adopted TMDL assigned all reductions to the permitted and unpermitted nonpoint source inflows to the lake.



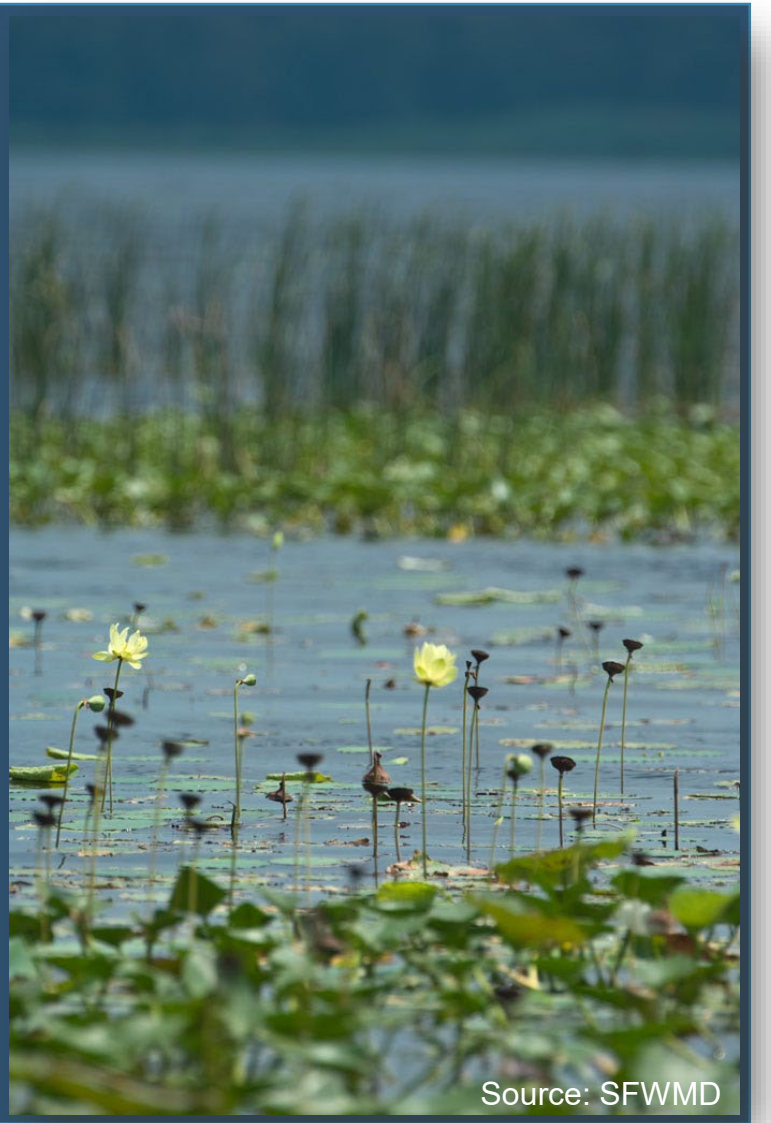
# LAKE OKEECHOBEE BMAP
## STAKEHOLDERS

| Type of Organization/Entity | Name | |
|---|---|---|
| **Responsible Entities** | Agriculture | City of Moore Haven |
| | Glades County | City of Okeechobee |
| | Hendry County | City of Orlando |
| | Highlands County | City of Sebring |
| | Martin County | Town of Lake Placid |
| | Okeechobee County | Town of Windermere |
| | Orange County | Avon Park Air Force Range |
| | Osceola County | Central Florida Tourism Oversight District |
| | Palm Beach County | Istokpoga Marsh Watershed Improvement District |
| | Polk County | |
| | City of Avon Park | Okeechobee Utility Authority |
| | City of Clewiston | Spring Lake Improvement District |
| | City of Edgewood | South Florida Conservancy District |
| | City of Kissimmee | Valencia Water Control District |
| **Responsible Agencies** | County Health Departments | |
| | Florida Department of Agriculture and Consumer Services (DACS) | |
| | Florida Department of Environmental Protection (DEP) | |
| | South Florida Water Management District (SFWMD) | |
| | Florida Department of Transportation (DOT) District 1 | |
| | DOT District 4 | |
| | DOT District 5 | |
| | DOT Turnpike Enterprise | |

# LAKE OKEECHOBEE BMAP

## ADOPT BY JULY 1, 2025

- Management strategies.
- Future growth update.
- Incorporate the 2020 Clean Waterways Act, 2023 House Bill (HB) 1379 and 2024 HB 1557 requirements.
- Incorporate regional projects.
- Water quality data evaluation:
  - Evaluation of the monitoring networks.
  - Hotspot Analysis.
- Evaluate further onsite sewage treatment and disposal systems (OSTDS) provisions.
- Evaluate the need for advanced wastewater treatment (AWT) or other more stringent effluent limits for domestic wastewater treatment facilities (WWTF).



Source: SFWMD

# LAKE OKEECHOBEE BMAP

## DRAFT BMAP DOCUMENT

Chapter 1 – Context, Purpose and Scope of the Plan.

Chapter 2 – Modeling, Load Estimates and Restoration Approach.

Chapter 3 – Subwatersheds.

Chapter 4 – Summary.

Chapter 5 – References.

Appendices.

# LAKE OKEECHOBEE BMAP

## CHAPTER 1 — CONTEXT, PURPOSE AND SCOPE OF PLAN

### Chapter 1 Components:

- Water Quality Standards and TMDLs.
- Lake Okeechobee BMAP.
  - 5-Year Review.
  - Pollutant Sources.
  - Assumptions.
  - Considerations.

Kissimmee Prairie Preserve State Park

# LAKE OKEECHOBEE BMAP
## CHAPTER 1 — ASSUMPTIONS AND CONSIDERATIONS

### Assumptions:

- Certain best management practices (BMPs) were assigned provisional nutrient reduction benefits for load reductions in this BMAP iteration while additional monitoring and research are conducted to quantify their effectiveness. These estimated reductions may change in future BMAP iterations as additional information becomes available.

- Nutrient reduction benefits of the stakeholders' projects were calculated using the best available methodologies. Project-specific monitoring, where available, will be used to verify calculations and reduction benefits may be adjusted as necessary.

# LAKE OKEECHOBEE BMAP

## CHAPTER 1 — ASSUMPTIONS AND CONSIDERATIONS

### Considerations

- Land Uses: The loading estimates for this BMAP iteration used 2009 land use data updated by the SFWMD during 2013 to refine the land use categories. DEP is developing a new Hydrological Simulation Program – FORTRAN (HSPF) model for the LOW to support a future BMAP update. The HSPF model will be based on the latest land use coverage available at the time.
- Legacy Phosphorus: Legacy phosphorus is present and this watershed load has the potential to be transported to Lake Okeechobee. In June 2023, SFWMD kicked-off the Basinger Dairy Legacy Phosphorus Project aimed at researching methods to address legacy phosphorus.
- Other TMDLs in the LOW: DEP is prioritizing waterbody TMDLs in the LOW. DEP has adopted nutrient TMDLs for 33 waterbodies throughout the LOW and is prioritizing an additional five lakes in the 2024–2026 list for nutrient TMDL development. The statewide priority list is posted on the DEP website.
- Total Nitrogen (TN): Although the Lake Okeechobee TMDL only addresses TP, TN is of particular importance to the Northern Everglades and Estuaries system, which receive flows directly from Lake Okeechobee.
- Estuary BMAP Overlap: Portions of the LOW overlap with the watersheds for the Caloosahatchee River and Estuary and St. Lucie River and Estuary.

# LAKE OKEECHOBEE BMAP

## CHAPTER 2 — MODELING, LOAD ESTIMATION, AND RESTORATION APPROACH.

### Chapter 2 Components:

- Watershed Model.
- Milestones.
- Basinwide Sources Approach.
  - Agriculture.
  - Stormwater.
  - WWTFs.
  - OSTDS.
- Targeted Restoration Area (TRA) Approach.
- Hot Spot.
- Water Quality Monitoring Plan.

Source: SFWMD

# LAKE OKEECHOBEE BMAP

## CHAPTER 2 — WATERSHED MODEL

**Watershed Assessment Model (WAM):** Evaluates the impact of alternative land uses and management practices associated with the implementation of BMPs and nutrient load reduction projects.

- **2020 WAM Update:**
  - Utilized more recent land use, soils, hydrography, control projects and weather databases for the six northern subwatersheds.
  - Extend the model to include the three southern subwatersheds.
- **2017 Load Estimation Tool (LET):**
  - Provided separate estimates of TP and TN loads for surface and groundwater at the source cells, after attenuation to the nearest stream/reach and loads from the source cells that ultimately reach Lake Okeechobee.
  - Used to estimate project load reductions.

### Attenuation factors in the LOW by subwatershed

| Subwatershed | TP Attenuation Rate | TN Attenuation Rate |
|---|---|---|
| Fisheating Creek | 0.38 | 0.70 |
| Indian Prairie | 0.03 | 0.37 |
| Lake Istokpoga | 0.69 | 0.64 |
| Lower Kissimmee | 0.38 | 0.68 |
| Taylor Creek/Nubbin Slough | 0.21 | 0.40 |
| Upper Kissimmee | 0.47 | 0.67 |
| East Lake Okeechobee | 0.66 | 0.70 |
| South Lake Okeechobee | 0.90 | 0.53 |
| West Lake Okeechobee | 0.93 | 0.90 |

# LAKE OKEECHOBEE BMAP

## CHAPTER 2 — MILESTONES

- TP milestones for each subwatershed are based on loads from the 2025 South Florida Environmental Report (SFER).
- **5-Year Milestones**
  - Requirement under section 403.067, Florida Statutes (F.S.) (amended in 2023 HB 1379).

Source: SJRMWD

# LAKE OKEECHOBEE BMAP

## CHAPTER 2 — MILESTONES

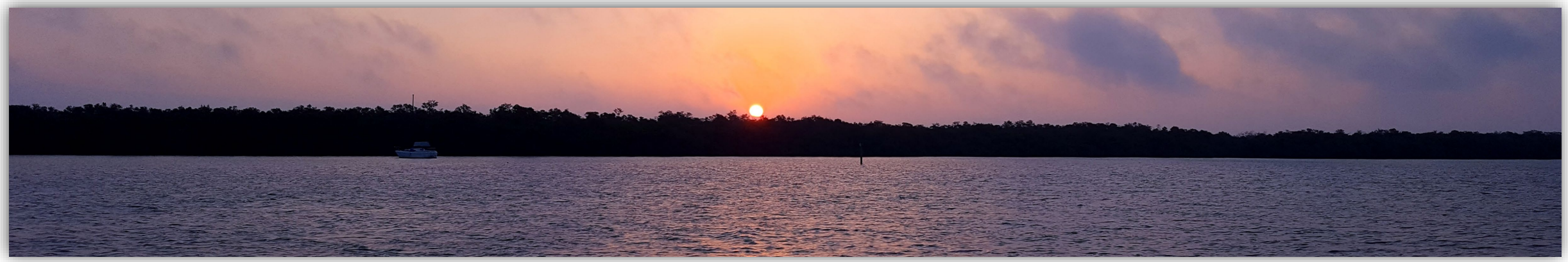
| Subwatershed | 5-year (2019) TP Reduction Milestone (lbs/yr) | 10-year (2024) TP Reduction Milestone (lbs/yr) | 15-year (2029) TP Reduction Milestone (lbs/yr) | 20-year (2034) TP Reduction Milestone (lbs/yr) |
|---|---|---|---|---|
| Fisheating Creek | 8,917.7 | 23,780.4 | 44,588.3 | 59,451.1 |
| Indian Prairie | 11,713.1 | 31,234.8 | 58,565.3 | 78,087.0 |
| Lake Istokpoga | 7,993.5 | 21,316.1 | 39,967.7 | 53,290.3 |
| Lower Kissimmee | 18,851.8 | 50,271.6 | 94,259.2 | 125,678.9 |
| Taylor Creek/Nubbin Slough | 12,267.6 | 32,713.5 | 61,337.8 | 81,783.7 |
| Upper Kissimmee | 16,749.5 | 44,665.3 | 83,747.4 | 111,663.2 |
| East Lake Okeechobee | 3,165.1 | 8,440.2 | 15,825.4 | 21,100.5 |
| South Lake Okeechobee | 831.7 | 2,217.9 | 4,158.5 | 5,544.7 |
| West Lake Okeechobee | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total** | **80,490.0** | **214,639.8** | **402,449.6** | **536,599.4** |

lbs/yr = pounds per year.

# LAKE OKEECHOBEE BMAP

## CHAPTER 2 — MILESTONES

- Consistent with statutes, entities must provide a list of projects and strategies to DEP that show how entities will meet their required reductions to achieve the next upcoming BMAP milestone, even if the identified project or strategy will not be completed by the milestone.
- All projects needed to achieve milestone targets should be included in the Statewide Annual Report (STAR), even if a funding mechanism is not currently identified, as this information gives the state an understanding of the support is necessary to achieve BMAP goals and assists with the prioritization of projects.
- It is critical for each BMAP that entities plan for and report projects and project updates to the state through the STAR process.



Source: DEP Staff Photo – Estero Bay Aquatic Preserve

# LAKE OKEECHOBEE BMAP

## CHAPTER 2 — MILESTONES

- Responsible entities must submit a **sufficient list** of additional projects and management strategies to DEP by **Jan. 14, 2026**, to be compliant with the upcoming BMAP milestone or be subject to further department enforcement.
- If any lead entity's management strategies list falls short of meeting the next 5-year milestone reduction for their subwatershed, additional projects and management strategies are required.
- Responsible entities with project deficits must identify management strategies to meet their milestone reduction requirements **by Jan. 14, 2026.**
- Examples of management strategies are listed in the document.

# LAKE OKEECHOBEE BMAP

## Chapter 2 – Basinwide Sources Approach

Bills and legislation updates.

- 2020 Clean Waterways Act, 2021 Senate Bill (SB) 64.
- 2023 HB 1379 and 2024 HB 1557.

Management actions by source.

- Agriculture – BMPs and agricultural cooperative regional elements.
- Stormwater.
- Sports turfgrass.
- Wastewater — OSTDS, WWTFs and biosolids.

Source: DEP Staff Photo – Estero Bay Aquatic Preserve

# LAKE OKEECHOBEE BMAP
## CHAPTER 2 — AGRICULTURE

### Dairy Operations with Confined Animal Feeding Operations (CAFO) Permits, Chapter 62-670 Florida Administrative Code (F.A.C.)

- Waste storage ponds must be lined and demonstrate no leaking.
- Sampling for TN and TP or land-applied effluent/wastewater must be included in the monitoring plan.

### Livestock Operations Without CAFO Permits

- Section 403.067, F.S., requires livestock operations not large enough to require a National Pollutant Discharge Elimination System (NPDES) CAFO permit must enroll in and implement the applicable DACS BMP program **OR**
- Conduct a monitoring program approved by DEP or the water management district.

### Aquaculture

- Chapter 597, F.S., required DACS to create a program that requires those who sell aquatic species to annually acquire an Aquaculture Certificate of Registration and implement Chapter 5L-3, F.A.C., aquaculture BMPs. Permit holders must be certified every year.

### Silviculture

- The Florida Forest Service implements Chapter 5I-6, F.A.C. and encourages both private and public forest landowners across the state to comply with BMPs and the rule.

# LAKE OKECHOBEE BMAP
## CHAPTER 2 — AGRICULTURE

### Agricultural Cooperative Regional Elements (ACE)

- Section 403.067, F.S., requires DACS, DEP and agricultural producers to work together to establish an ACE.
- DACS is responsible for providing DEP a list of projects which, in combination with BMPs, state-sponsored regional projects and other management strategies will achieve the needed pollutant load reductions established for agricultural nonpoint sources.
- DACS is assigned the lead role on project solicitation, development, selection and implementation. However, they will work closely with all the key stakeholders, including DEP as a partner agency, to define and identify regional projects that will be included in the BMAP.
- DACS and DEP will work together to track progress on agricultural water quality projects under the ACE framework through the development of performance metrics and evaluation of water quality monitoring data in the basin.
- DACS will report on projects annually through the DEP STAR process and during BMAP update and/or development.
- Projects and other management strategies implemented through the ACE will be evaluated cooperatively by partner agencies using the predetermined performance metrics.

# LAKE OKEECHOBEE BMAP
## CHAPTER 2 — STORMWATER FACILITIES

### Stormwater:

- The NPDES Stormwater Program will, within five years of BMAP adoption, evaluate any entity located in the BMAP area that serves a minimum resident population of at least 1,000 individuals that is not currently covered by an MS4 permit and designate eligible entities as regulated MS4s, in accordance with Chapter 62-624, F.A.C.
- Chapter 62-330 F.A.C. (2024).
  - Updated Florida's stormwater rule for design criteria and to strengthen the operation and maintenance requirements.
  - Applicants must demonstrate a level of treatment sufficient to accomplish the greater of the following nutrient load reduction criteria through calculations or modeling that the future stormwater management systems would provide additional treatment to meet new Environmental Resource Permits stormwater treatment performance standards of 80% reduction for TP and 55% reduction for TN or post-development condition average annual loading of nutrients does not exceed the predevelopment condition nutrient loading, along with additional requirements that would apply where a project discharges to Outstanding Florida Waters or impaired waters.

# LAKE OKEECHOBEE BMAP
## CHAPTER 2 — SPORTING FACILITIES

### Sports Turfgrass and Golf Courses

- Sporting facilities are required to follow the 2025 Sports Turf Best Management Practices (BMP) Manual.
- Superintendents of all publicly owned golf courses within the BMAP must obtain a certification for golf course BMPs under section 403.9339 F.S. and all golf courses must implement the BMPs described in the 2021 DEP golf course BMP manual.
- All publicly owned golf courses located within a BMAP are required to submit a Nutrient Management Plan (NMP).

# LAKE OKEECHOBEE BMAP
## CHAPTER 2 — WWTFS AND OSTDS

Source: Florida Geological Survey (FGS)

### Clean Waterways Act (2020):

- Required local governments within a nutrient BMAP to develop wastewater treatment plans and/or OSTDS remediation plans to be incorporated into BMAP updates.

### Reclaimed Water Senate Bill (SB) 64 (2021)

- Subsection 403.064(16), F.S., requires domestic wastewater utilities that dispose of effluent, reclaimed water or reuse water by surface water discharge to submit for DEP review and approval, a plan for eliminating non-beneficial surface water discharge by Jan. 1, 2032.
  - A utility must fully implement the approved plan by Jan. 1, 2032.
- If a plan was not timely submitted or approved by DEP, the utility's domestic WWTFs may not dispose of effluent, reclaimed water or reuse water by surface water discharge after Jan. 1, 2028.

# LAKE OKEECHOBEE BMAP
## CHAPTER 2 — WWTFS AND OSTDS

### Environmental Protection HB 1379 (2023)

- Requires facilities discharging to a waterbody impaired for nutrients or subject to a BMAP to upgrade to AWT within 10 years.
- Requires applicants for new septic systems serving lots of one acre or less within BMAPs to connect to central sewer if available, or if unavailable, to install an enhanced nutrient-reducing system or other wastewater system that achieves a nitrogen reduction of 65%.

### Environmental Protection HB 1557 (2024)

- Requires advanced treatment of reclaimed water within BMAPs (403.086, F.S.).
- DEP has determined that the use of reclaimed water is causing or contributing to the nutrient impairments being addressed in this BMAP area.
- The facilities listed in the BMAP - Appendix D have 10 years from BMAP adoption to meet the applicable AWT standards.

Source: DEP

# LAKE OKEECHOBEE BMAP

## CHAPTER 2 — WWTFS

The nitrogen and phosphorus effluent limits will be applied as an annual average, taken at end of pipe before any land disposal (or other authorized compliance point), to all new and existing WWTFs with a DEP-permitted discharge or disposal area within this BMAP.

### Nitrogen effluent limits for wastewater facilities

| Facility Capacity (mgd) | Surface Water Discharges (mg/L) | WWTFs Listed in Appendix D (mg/L) | WWTFs Not Listed in Appendix D – Rapid Rate Land Application Effluent Disposal System (mg/L) | WWTFs Not Listed in Appendix D – All Other Disposal Methods, Including Reuse (mg/L) |
|---|---|---|---|---|
| ≥ 0.5 | 3 | 3 | 3 | 10 |
| < 0.5, ≥ 0.1 | 3 | 3 | 6 | 10 |
| < 0.1 | 3 | N/A | 10 | 10 |

### Phosphorus effluent limits for wastewater facilities

| Facility Capacity (mgd) | Surface Water Discharges (mg/L) | WWTFs Listed in Appendix D (mg/L) | WWTFs Not Listed in Appendix D – Rapid Rate Land Application Effluent Disposal System (mg/L) | WWTFs Not Listed in Appendix D – All Other Disposal Methods, Including Reuse (mg/L) |
|---|---|---|---|---|
| ≥ 0.5 | 1 | 1 | 1 | 6 |
| < 0.5, ≥ 0.1 | 1 | 1 | 3 | 6 |
| < 0.1 | 1 | N/A | 6 | 6 |

mgd = million gallons per day. mg/L = milligrams per liter.
N/A = Not applicable.

# LAKE OKEECHOBEE BMAP

## CHAPTER 3 — SUBWATERSHEDS

**Chapter 3 Components:**

- Nine subwatersheds and in-lake strategies.
  - Each subwatershed section in the document includes water quality monitoring, basin evaluation results and project lists.
  - Basin evaluation results are presented for the whole BMAP area in Chapter 4.

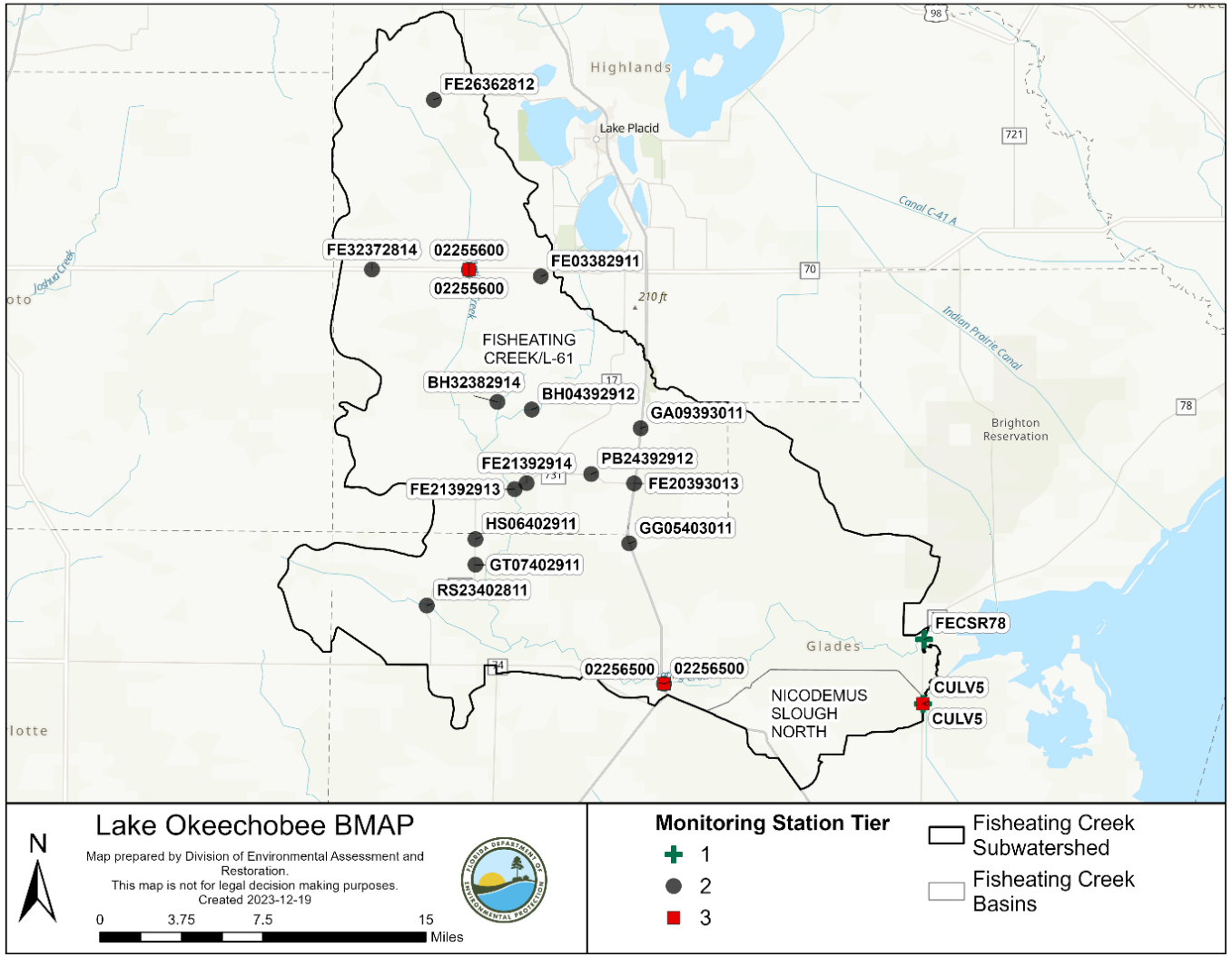
Highlands Hammock State Park

# LAKE OKEECHOBEE BMAP

## CHAPTER 3 — FISHEATING CREEK LAND USE AND MONITORING

### Summary of land uses in the Fisheating Creek Subwatershed

| Level 1 Land Use Code | Land Use Description | Acres | % Total |
|---|---|---|---|
| 1000 | Urban and Built-Up | 5,581 | 1.8 |
| 2000 | Agriculture | 174,019 | 54.7 |
| 3000 | Upland Nonforested | 14,163 | 4.5 |
| 4000 | Upland Forests | 45,809 | 14.4 |
| 5000 | Water | 1,050 | 0.3 |
| 6000 | Wetlands | 75,623 | 23.8 |
| 7000 | Barren Land | 1,025 | 0.3 |
| 8000 | Transportation, Communication and Utilities | 774 | 0.2 |
| - | **Total** | **318,044** | **100.0** |

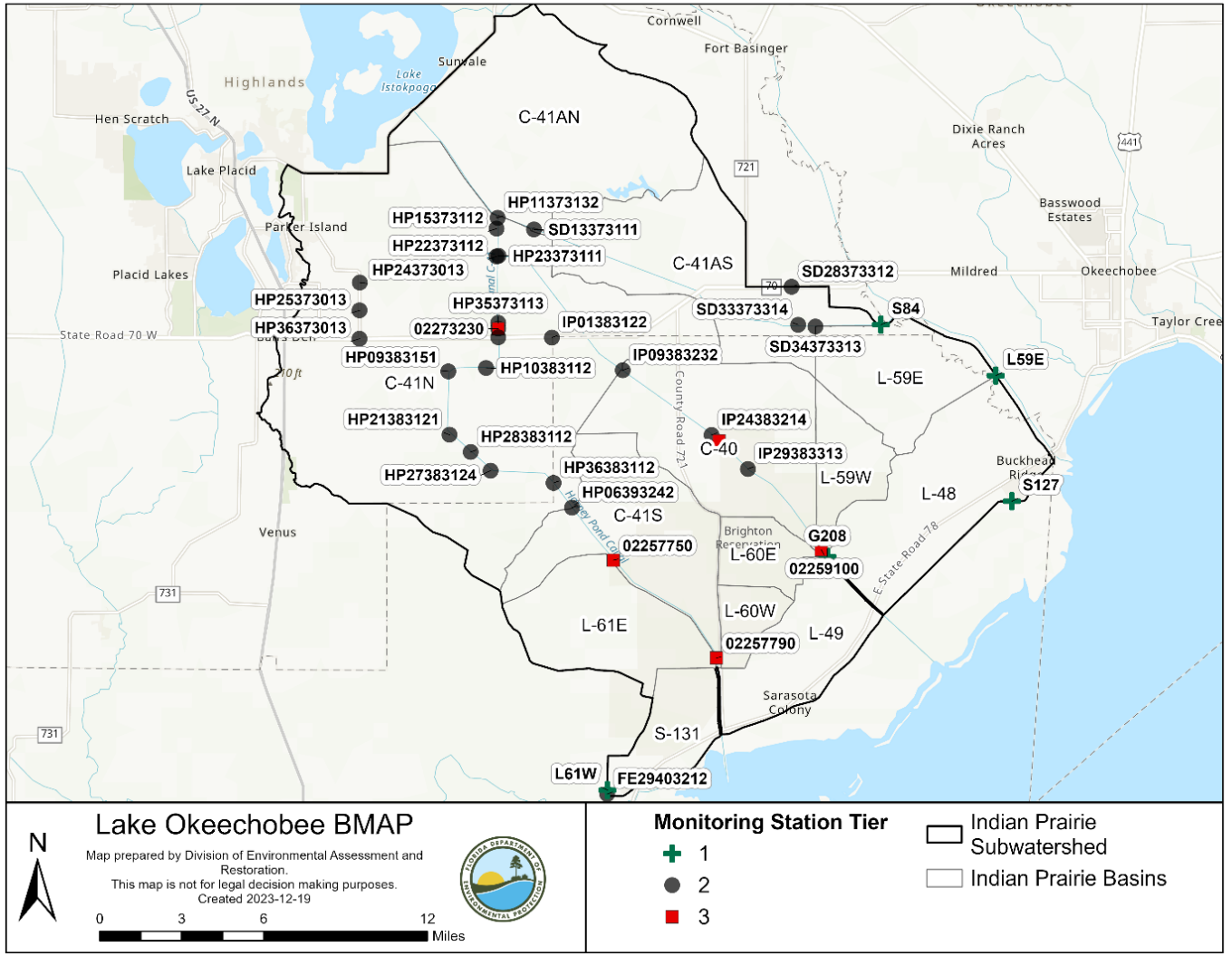


# LAKE OKEECHOBEE BMAP

## CHAPTER 3 — INDIAN PRAIRIE LAND USE AND MONITORING

### Summary of land uses in the Indian Prairie Subwatershed

| Level 1 Land Use Code | Land Use Description | Acres | % Total |
|---|---|---|---|
| 1000 | Urban and Built-Up | 5,201 | 1.9 |
| 2000 | Agriculture | 220,921 | 79.9 |
| 3000 | Upland Nonforested | 5,677 | 2.1 |
| 4000 | Upland Forests | 3,776 | 1.4 |
| 5000 | Water | 3,588 | 1.3 |
| 6000 | Wetlands | 33,602 | 12.1 |
| 7000 | Barren Land | 3,663 | 1.3 |
| 8000 | Transportation, Communication and Utilities | 150 | 0.1 |
| - | **Total** | **276,578** | **100.0** |

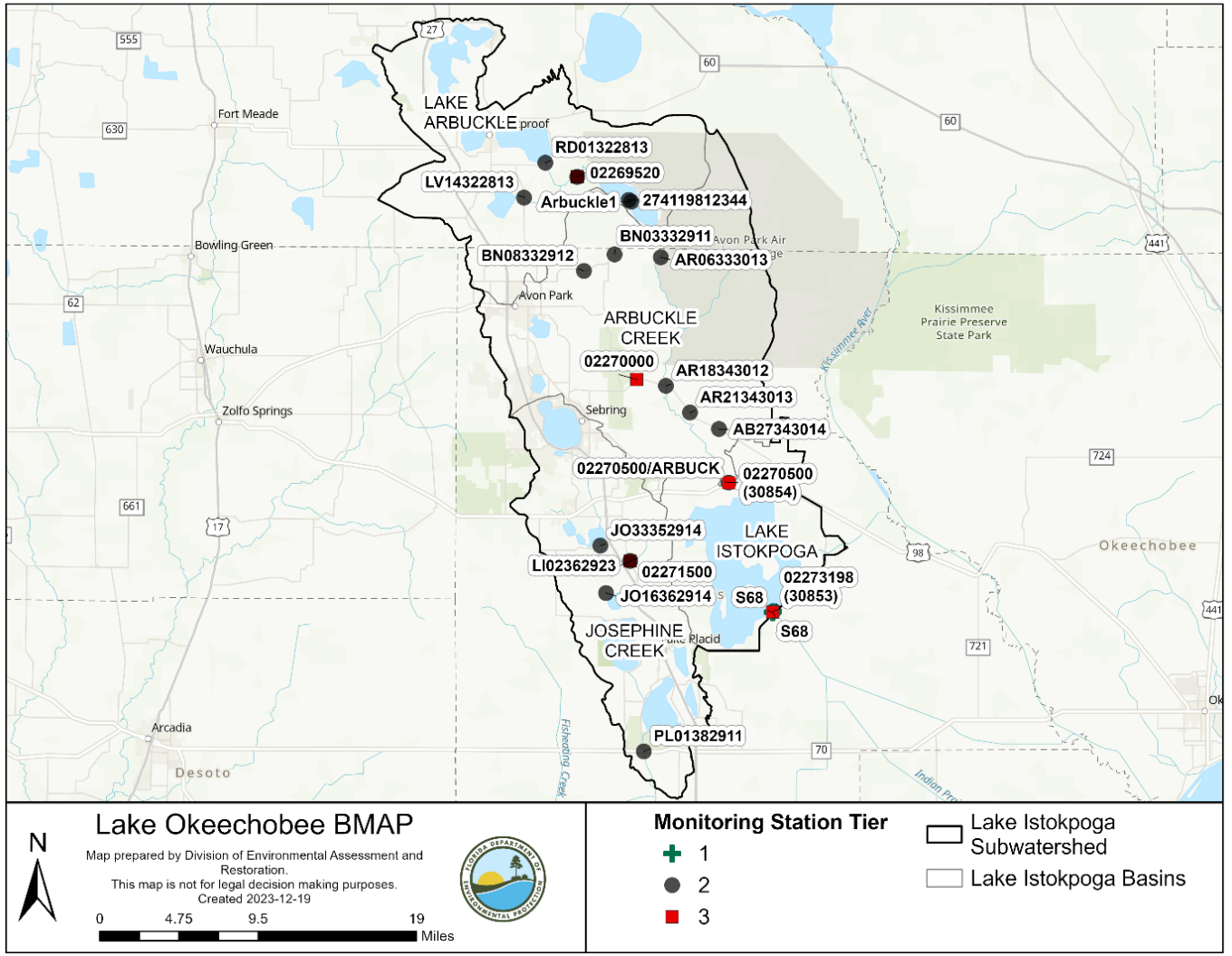


# LAKE OKEECHOBEE BMAP

## CHAPTER 3 — LAKE ISTOKPOGA LAND USE AND MONITORING

### Summary of land uses in the Lake Istokpoga Subwatershed

| Level 1 Land Use Code | Land Use Description | Acres | % Total |
|---|---|---|---|
| 1000 | Urban and Built-Up | 64,880 | 16.5 |
| 2000 | Agriculture | 130,399 | 33.1 |
| 3000 | Upland Nonforested | 27,597 | 7.0 |
| 4000 | Upland Forests | 44,330 | 11.2 |
| 5000 | Water | 58,141 | 14.7 |
| 6000 | Wetlands | 63,824 | 16.2 |
| 7000 | Barren Land | 563 | 0.1 |
| 8000 | Transportation, Communication and Utilities | 4,472 | 1.1 |
| - | **Total** | **394,206** | **100.0** |

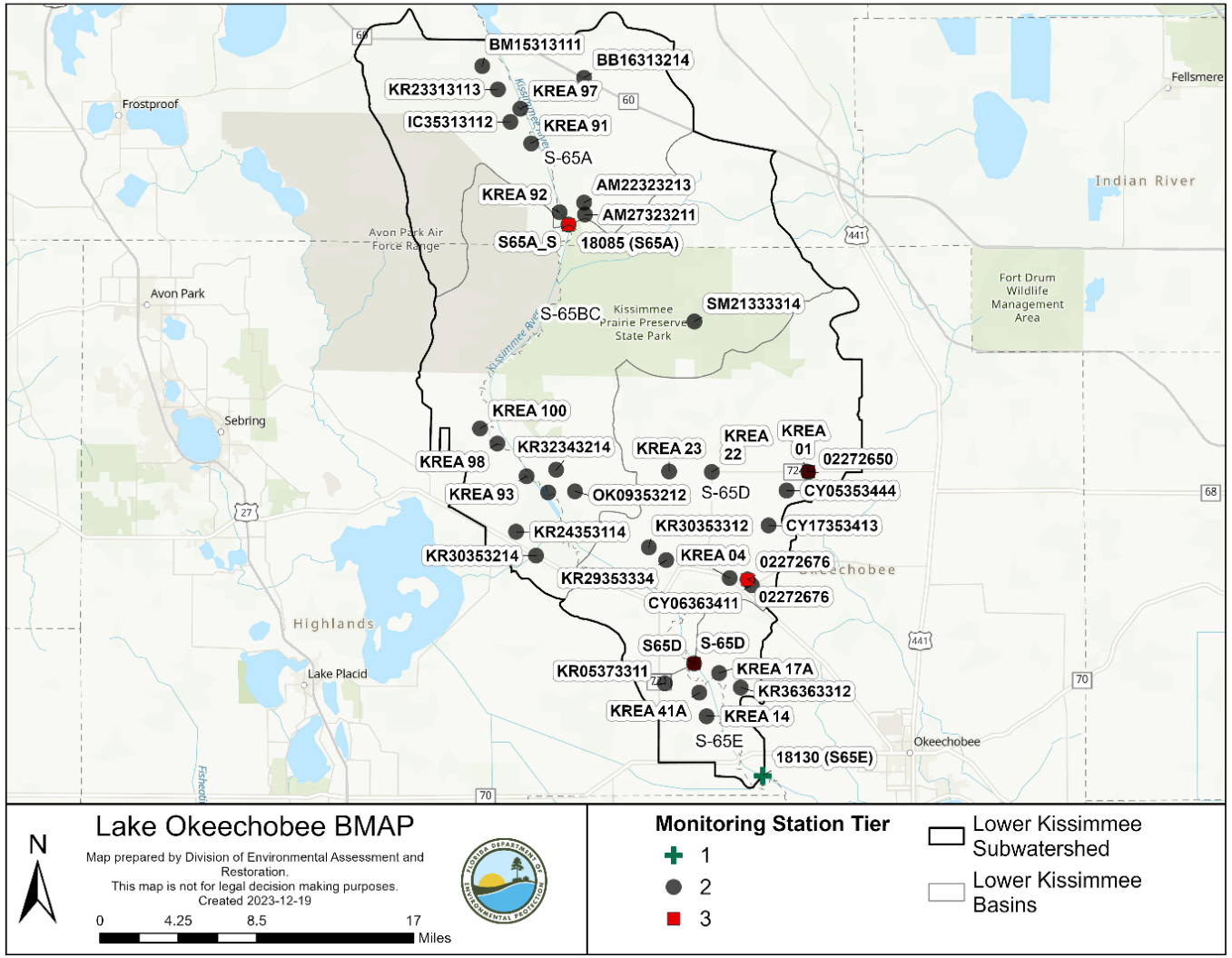


# LAKE OKEECHOBEE BMAP

## CHAPTER 3 — LOWER KISSIMMEE LAND USE AND MONITORING

### Summary of land uses in the Lower Kissimmee Subwatershed

| Level 1 Land Use Code | Land Use Description | Acres | % Total |
|---|---|---|---|
| 1000 | Urban and Built-Up | 11,061 | 2.6 |
| 2000 | Agriculture | 220,226 | 51.3 |
| 3000 | Upland Nonforested | 77,511 | 18.1 |
| 4000 | Upland Forests | 25,065 | 5.8 |
| 5000 | Water | 3,432 | 0.8 |
| 6000 | Wetlands | 90,035 | 21.0 |
| 7000 | Barren Land | 1,583 | 0.4 |
| 8000 | Transportation, Communication and Utilities | 277 | 0.1 |
| - | **Total** | **429,190** | **100.0** |

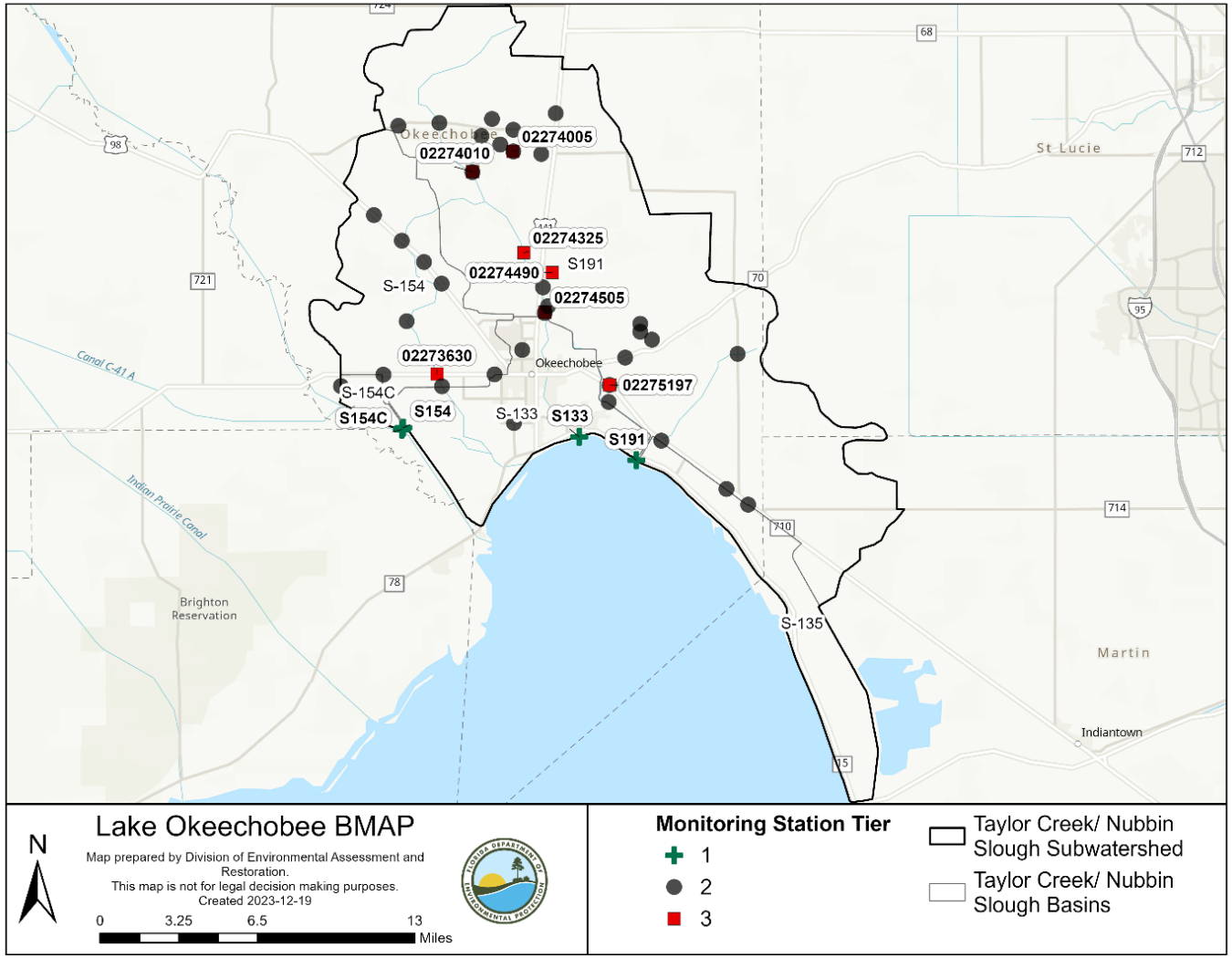


# LAKE OKEECHOBEE BMAP

## CHAPTER 3 — TAYLOR CREEK/ NUBBIN SLOUGH LAND USE AND MONITORING

### Summary of land uses in the Taylor Creek/ Nubbin Slough Subwatershed

| Level 1 Land Use Code | Land Use Description | Acres | % Total |
|---|---|---|---|
| 1000 | Urban and Built-Up | 18,126 | 9.2 |
| 2000 | Agriculture | 141,605 | 71.6 |
| 3000 | Upland Nonforested | 2,699 | 1.4 |
| 4000 | Upland Forests | 4,519 | 2.3 |
| 5000 | Water | 2,401 | 1.2 |
| 6000 | Wetlands | 17,486 | 8.8 |
| 7000 | Barren Land | 1,545 | 0.8 |
| 8000 | Transportation, Communication and Utilities | 813 | 0.4 |
| 9000 | Inactive Dairy | 8,602 | 4.3 |
| - | **Total** | **197,796** | **100.0** |

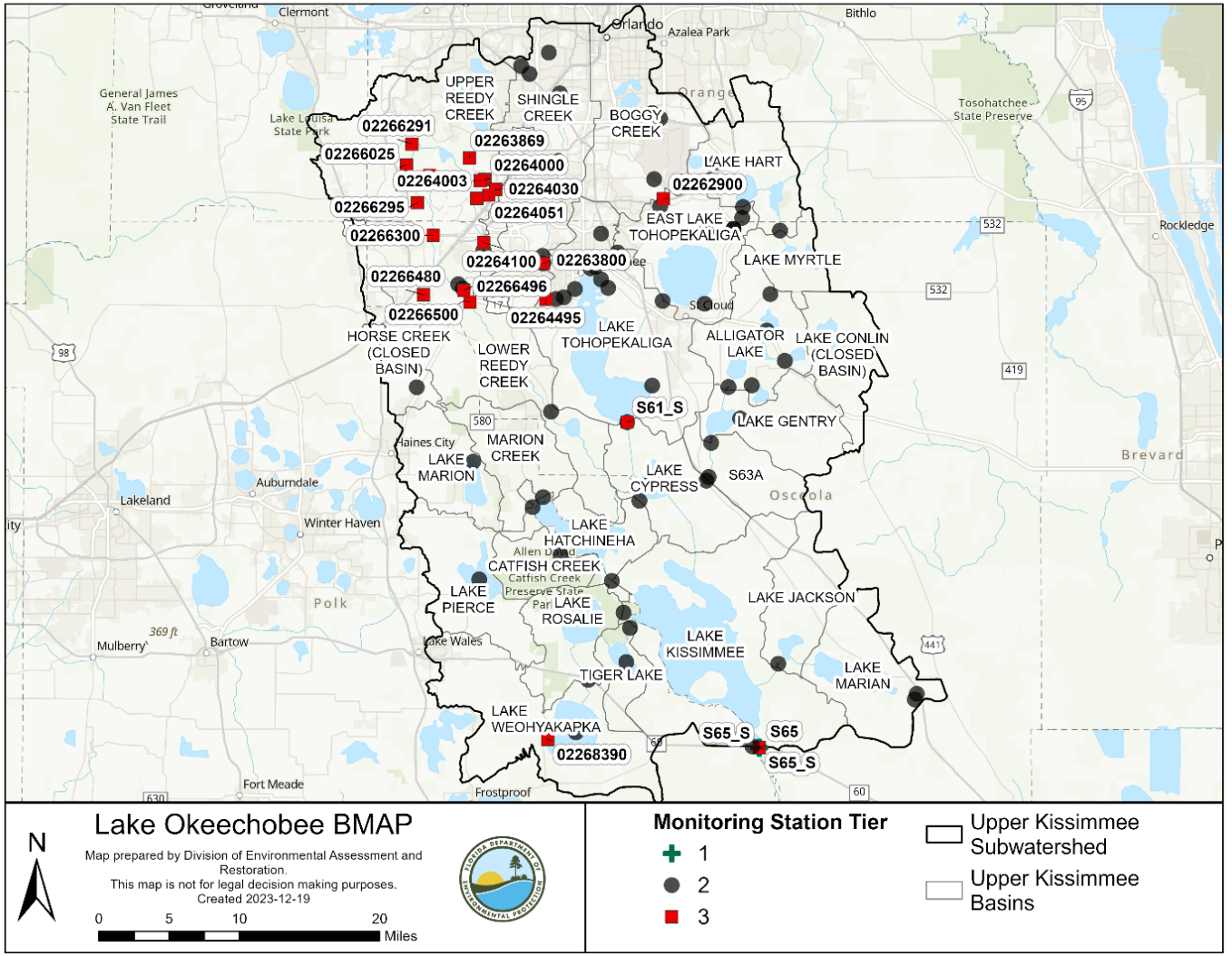


# LAKE OKEECHOBEE BMAP

## CHAPTER 3 — UPPER KISSIMMEE LAND USE AND MONITORING

### Summary of land uses in the Upper Kissimmee Subwatershed

| Level 1 Land Use Code | Land Use Description | Acres | % Total |
|---|---|---|---|
| 1000 | Urban and Built-Up | 216,916 | 21.1 |
| 2000 | Agriculture | 268,628 | 26.1 |
| 3000 | Upland Nonforested | 59,930 | 5.8 |
| 4000 | Upland Forests | 71,457 | 6.9 |
| 5000 | Water | 25,743 | 2.5 |
| 6000 | Wetlands | 355,682 | 34.6 |
| 7000 | Barren Land | 5,235 | 0.5 |
| 8000 | Transportation, Communication and Utilities | 24,834 | 2.4 |
| - | **Total** | **1,028,425** | **100.0** |

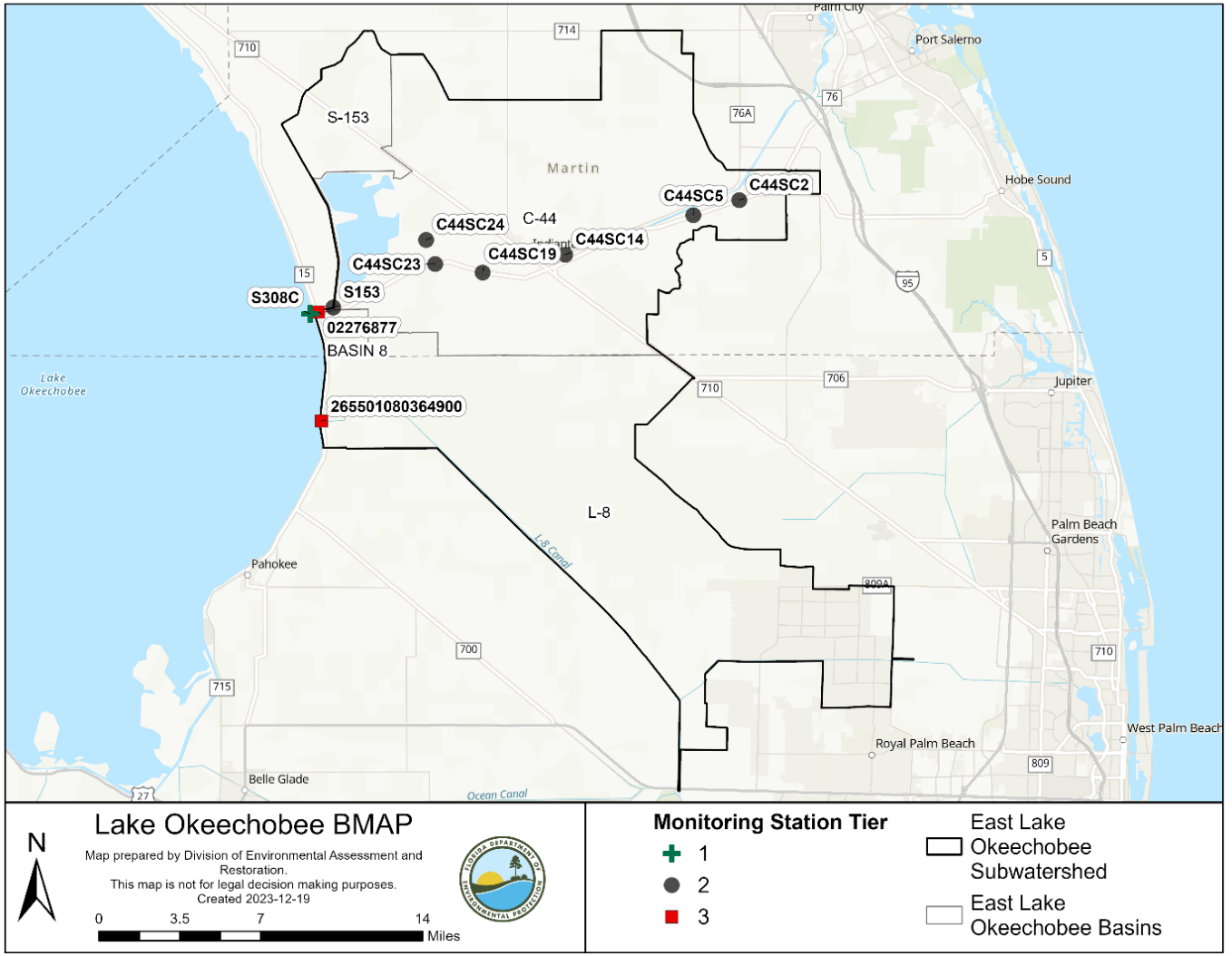


# LAKE OKEECHOBEE BMAP

## CHAPTER 3 — EAST LAKE OKEECHOBEE LAND USE AND MONITORING

### Summary of land uses in the East Lake Okeechobee Subwatershed

| Level 1 Land Use Code | Land Use Description | Acres | % Total |
|---|---|---|---|
| 1000 | Urban and Built-Up | 23,846 | 10.0 |
| 2000 | Agriculture | 102,425 | 42.9 |
| 3000 | Upland Nonforested | 8,978 | 3.8 |
| 4000 | Upland Forests | 32,277 | 13.5 |
| 5000 | Water | 9,560 | 4.0 |
| 6000 | Wetlands | 56,481 | 23.6 |
| 7000 | Barren Land | 1,978 | 0.8 |
| 8000 | Transportation, Communication and Utilities | 3,468 | 1.5 |
| - | **Total** | **239,013** | **100.0** |

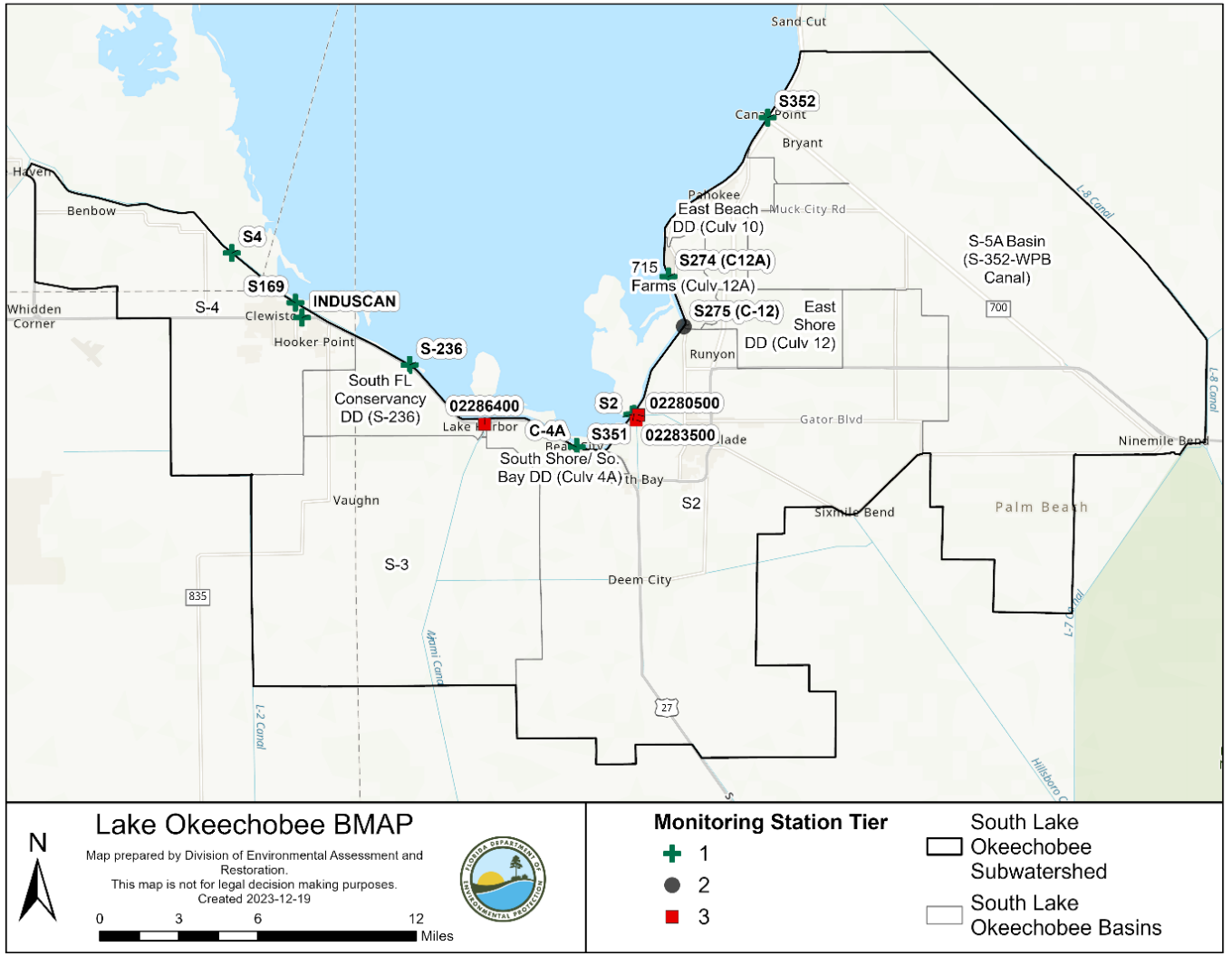


# LAKE OKEECHOBEE BMAP

## CHAPTER 3 — SOUTH LAKE OKEECHOBEE LAND USE AND MONITORING

### Summary of land uses in the South Lake Okeechobee Subwatershed

| Level 1 Land Use Code | Land Use Description | Acres | % Total |
|---|---|---|---|
| 1000 | Urban and Built-Up | 13,432 | 3.7 |
| 2000 | Agriculture | 335,878 | 92.5 |
| 3000 | Upland Nonforested | 1,369 | 0.4 |
| 4000 | Upland Forests | 150 | 0.0 |
| 5000 | Water | 3,645 | 1.0 |
| 6000 | Wetlands | 2,331 | 0.6 |
| 7000 | Barren Land | 3,346 | 0.9 |
| 8000 | Transportation, Communication and Utilities | 2,992 | 0.8 |
| - | **Total** | **363,143** | **100.0** |

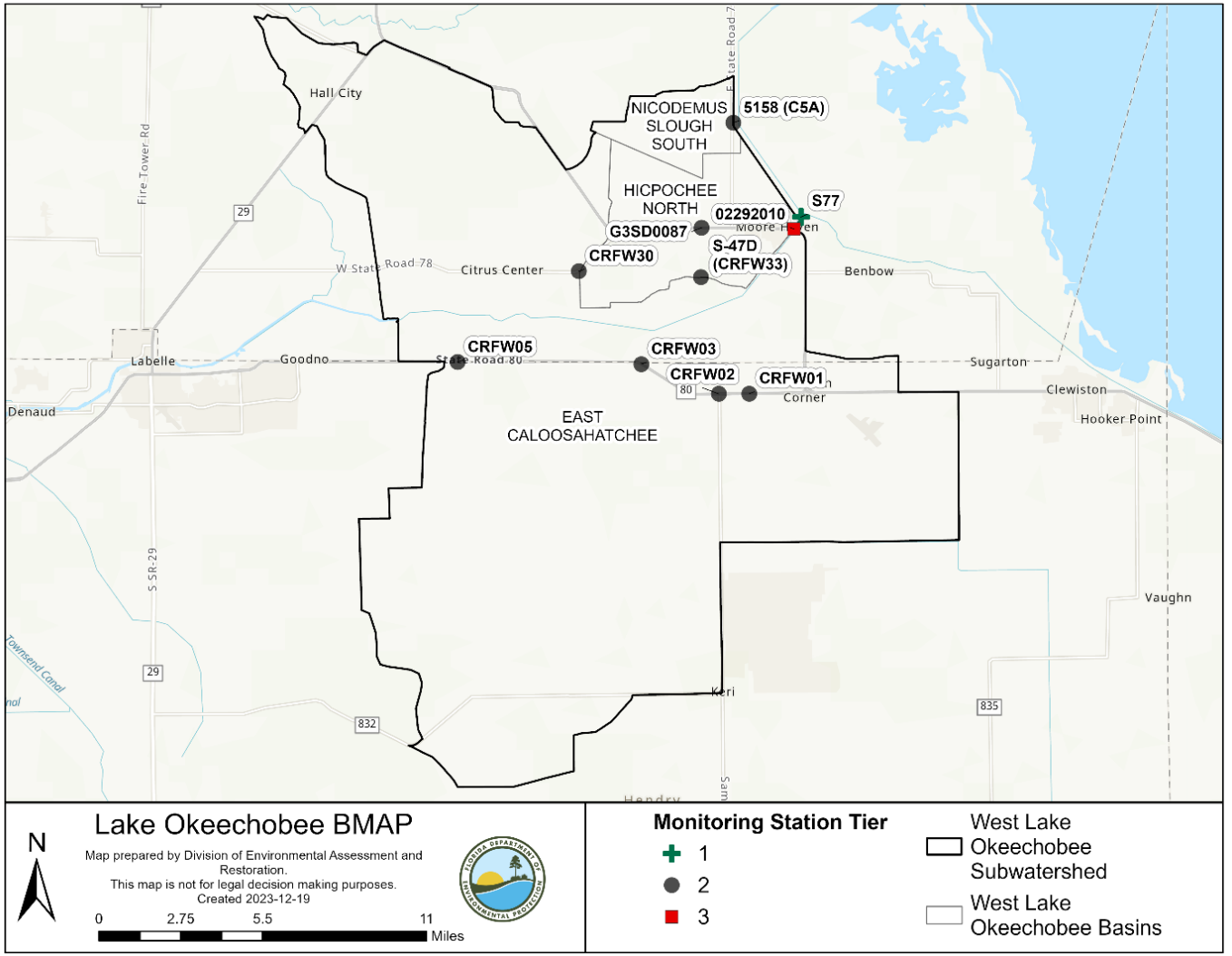


# LAKE OKEECHOBEE BMAP

## CHAPTER 3 — WEST LAKE OKEECHOBEE LAND USE AND MONITORING

### Summary of land uses in the West Lake Okeechobee Subwatershed

| Level 1 Land Use Code | Land Use Description | Acres | % Total |
|---|---|---|---|
| 1000 | Urban and Built-Up | 7,457 | 3.7 |
| 2000 | Agriculture | 135,032 | 66.2 |
| 3000 | Upland Nonforested | 5,894 | 2.9 |
| 4000 | Upland Forests | 20,659 | 10.1 |
| 5000 | Water | 2,166 | 1.1 |
| 6000 | Wetlands | 29,317 | 14.4 |
| 7000 | Barren Land | 2,084 | 1.0 |
| 8000 | Transportation, Communication and Utilities | 1,485 | 0.7 |
| - | **Total** | **204,094** | **100.0** |



# LAKE OKEECHOBEE BMAP
## CHAPTER 3 — IN-LAKE STRATEGIES

### Lake Okeechobee Internal Phosphorus Management Program:

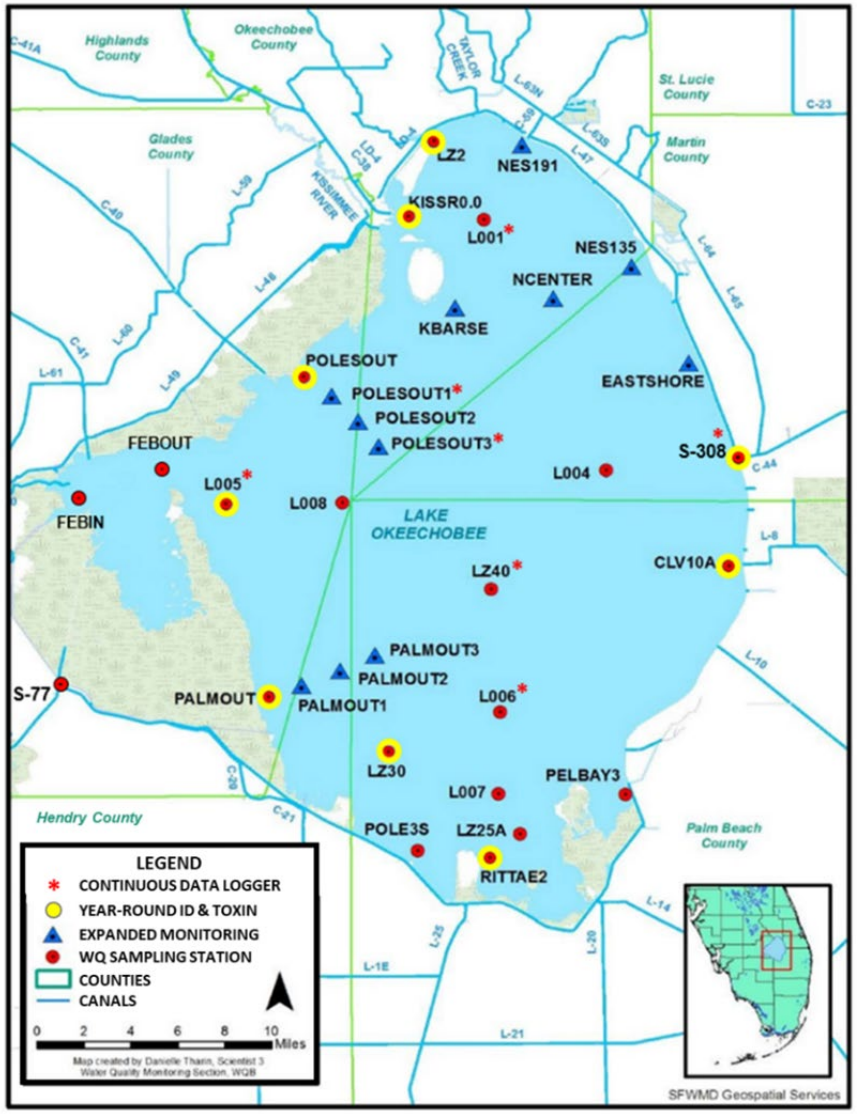
- Final 2020 SFER – Volume I, Appendix 8A-1 (Betts et al. 2020).
- Final 2025 SFER – Volume I, Chapter 8B and supporting appendices.

### Existing and Planned Projects:

- Rocky Reef Modeling.
- Turbidity Curtains.
- Sediment Mapping.

### Future Projects:

- Wave Attenuation Devices.
- Long-Term Sediment Monitoring Sites.



# LAKE OKEECHOBEE BMAP

## CHAPTER 4 — SUMMARY

### Chapter 4 Components:

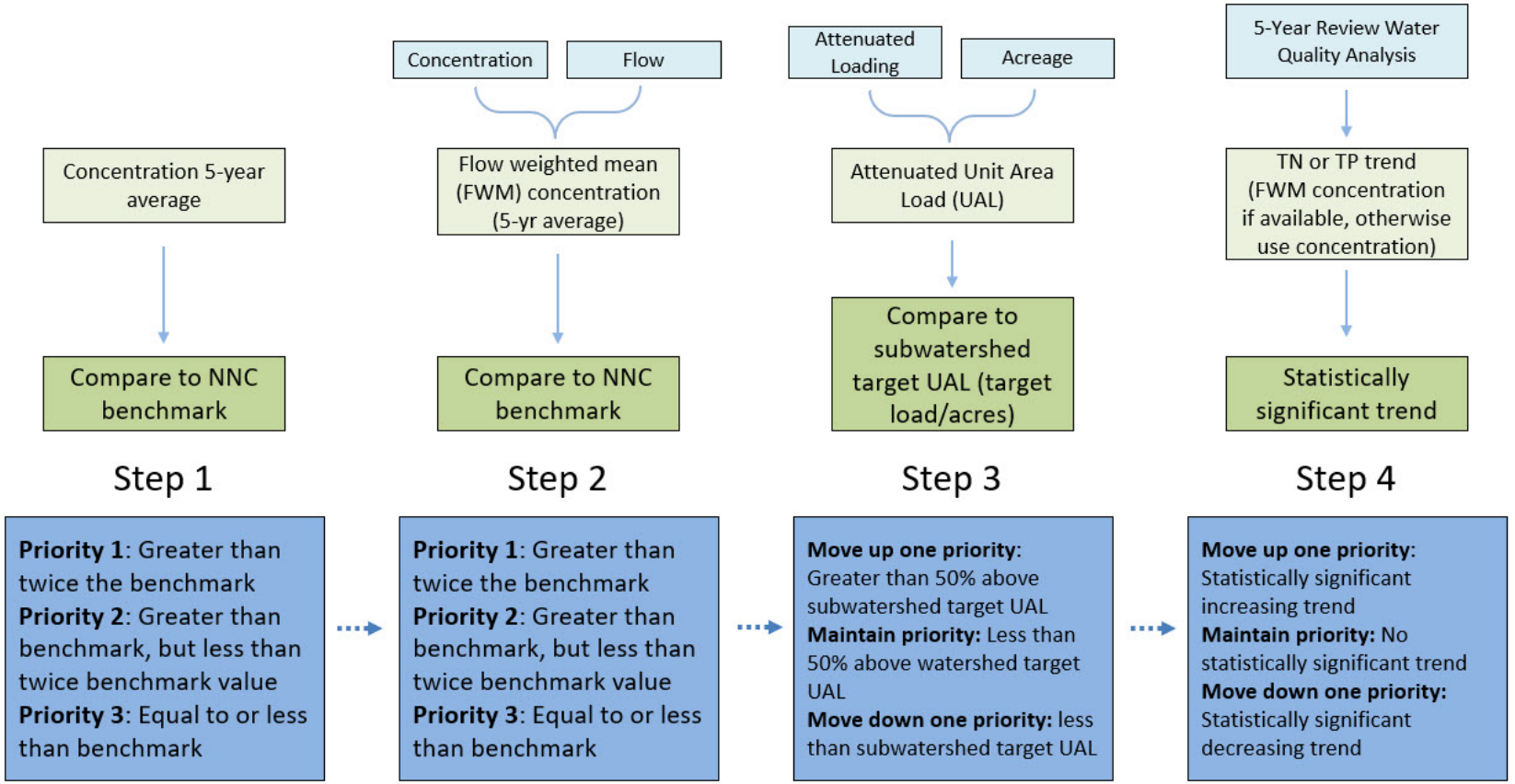
- Basin Evaluation Results.
  - TRA Evaluation.
  - Trend Analysis.
  - Hot Spot Analysis.
- Future Growth.
- Compliance.

Source: Kissimmee Prairie Preserve State Park

# LAKE OKEECHOBEE BMAP

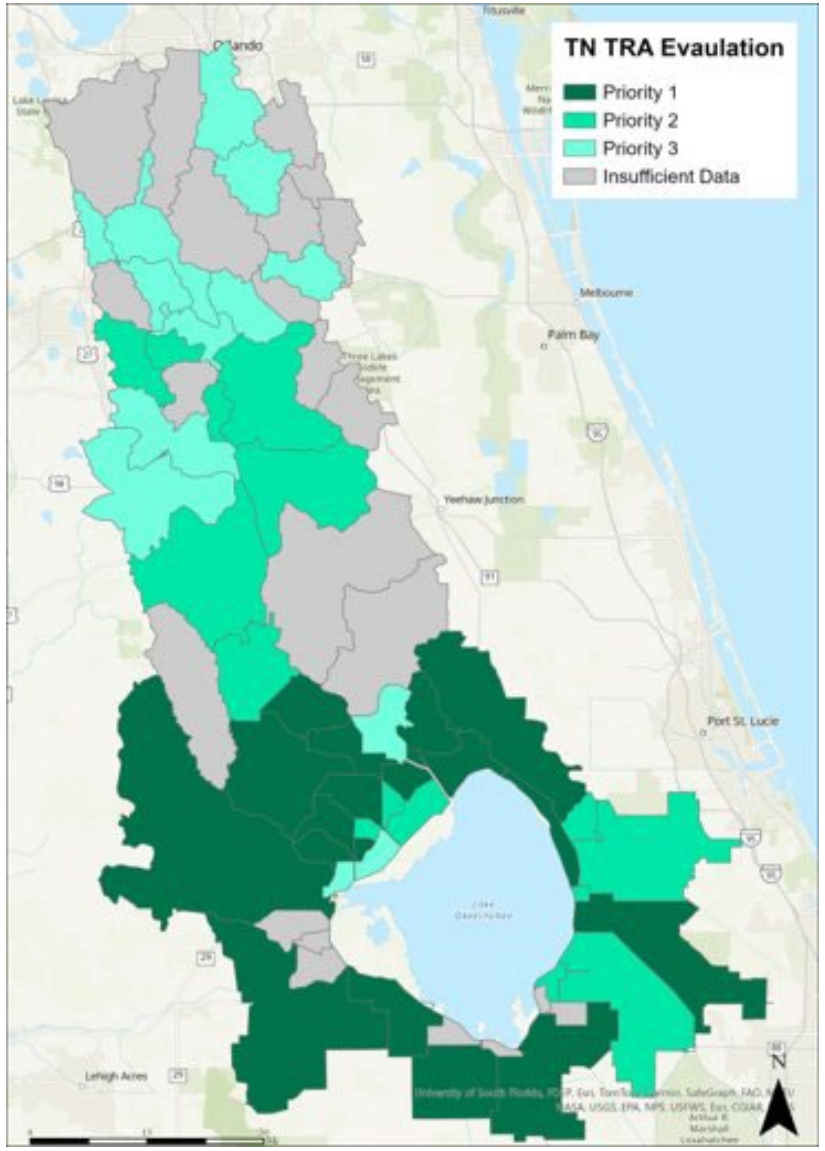
## CHAPTER 4 — TRA APPROACH

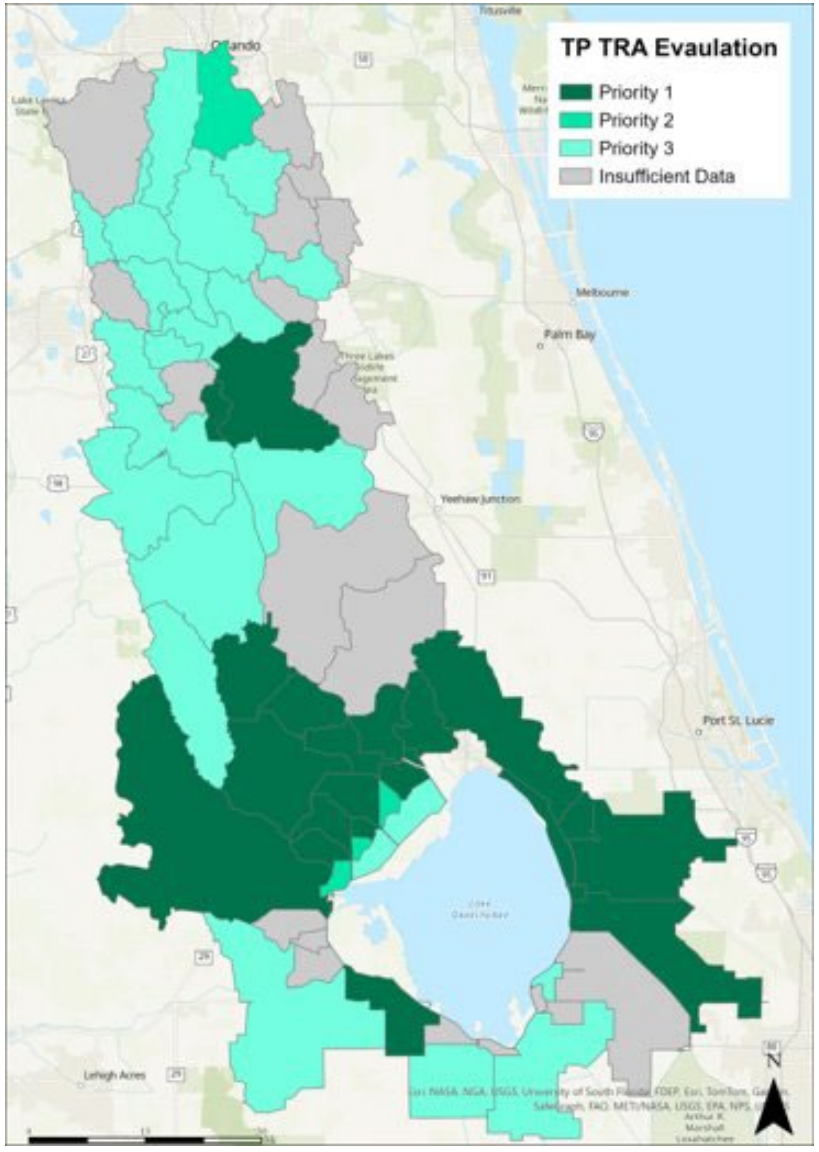
Developed to help prioritize certain basins and focus resources on most efficient restoration using measured data throughout the watershed.



# LAKE OKEECHOBEE BMAP

## CHAPTER 4 — TRA RESULTS



# LAKE OKEECHOBEE BMAP

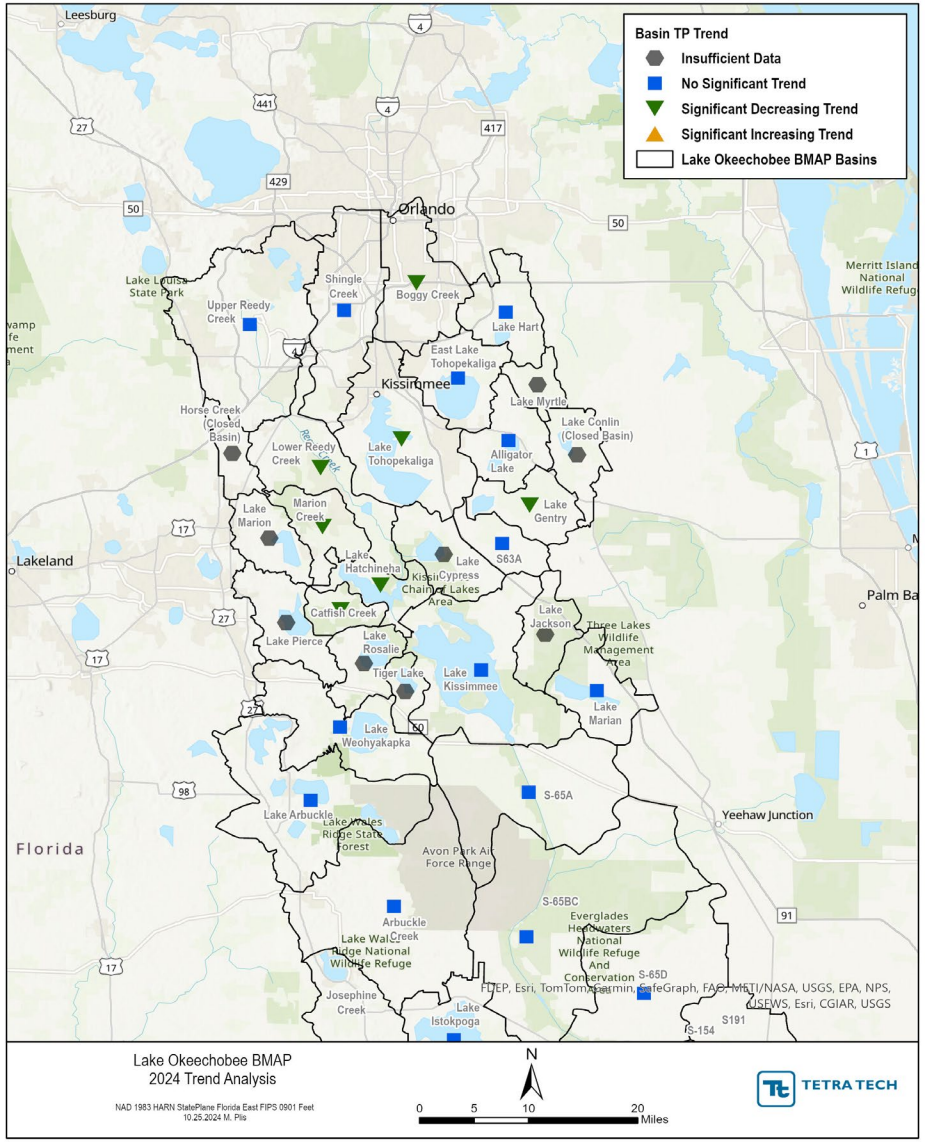
## CHAPTER 4 — TREND ANALYSIS APPROACH

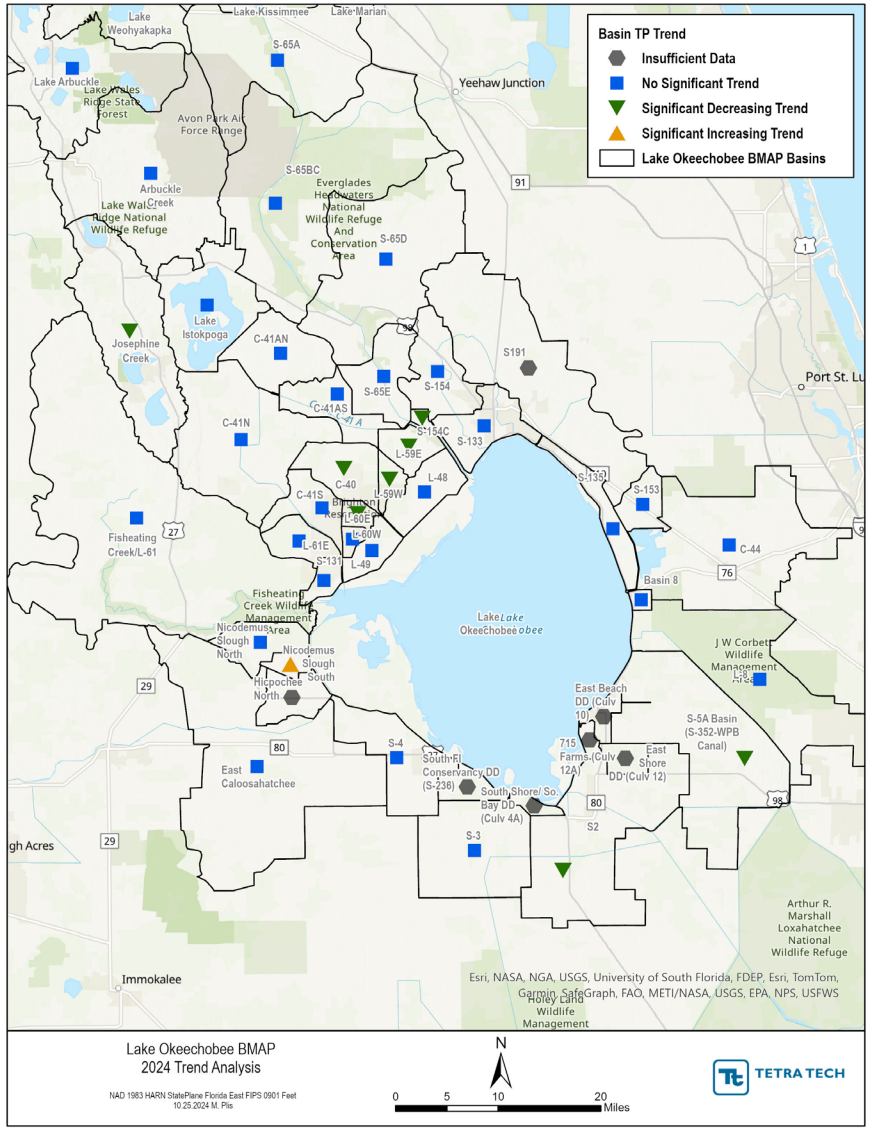
- The trend analysis from the second 5-Year Review was updated to add data through water year (WY) 2024.
- The latest analysis uses data from five water years before BMAP adoption and 12 years after adoption for a period of record extending from May 1, 2008, through April 30, 2024.

Allen Broussard Catfish Creek Preserve State Park

# LAKE OKEECHOBEE BMAP

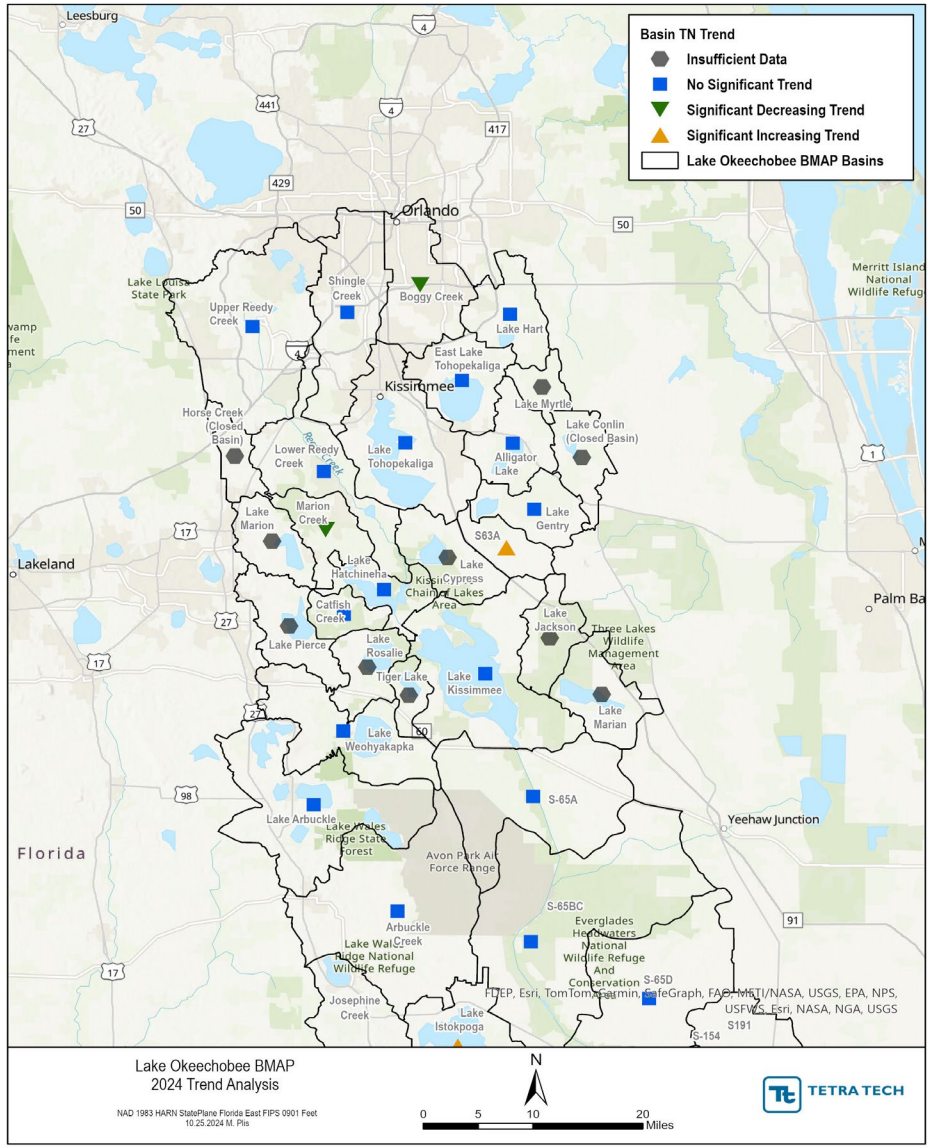
## CHAPTER 4 — TREND RESULTS: TP

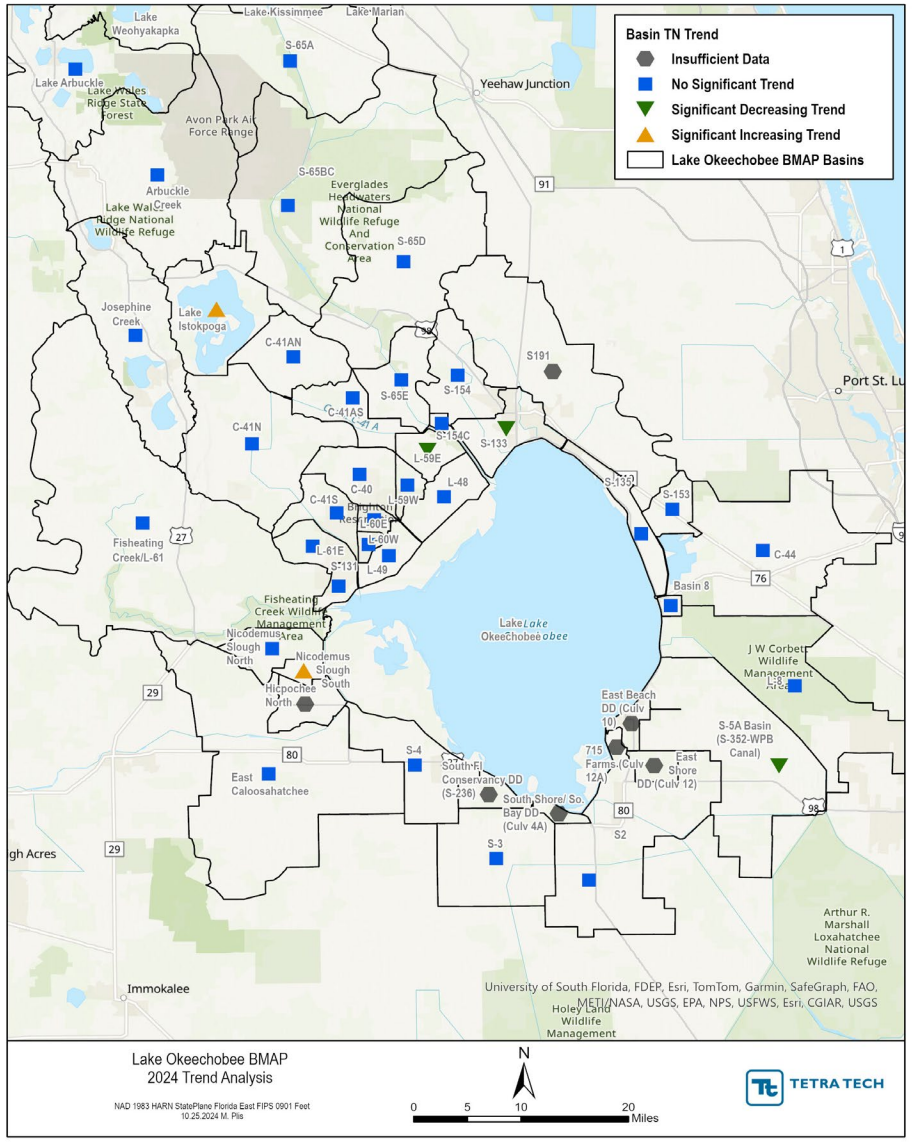


# LAKE OKEECHOBEE BMAP

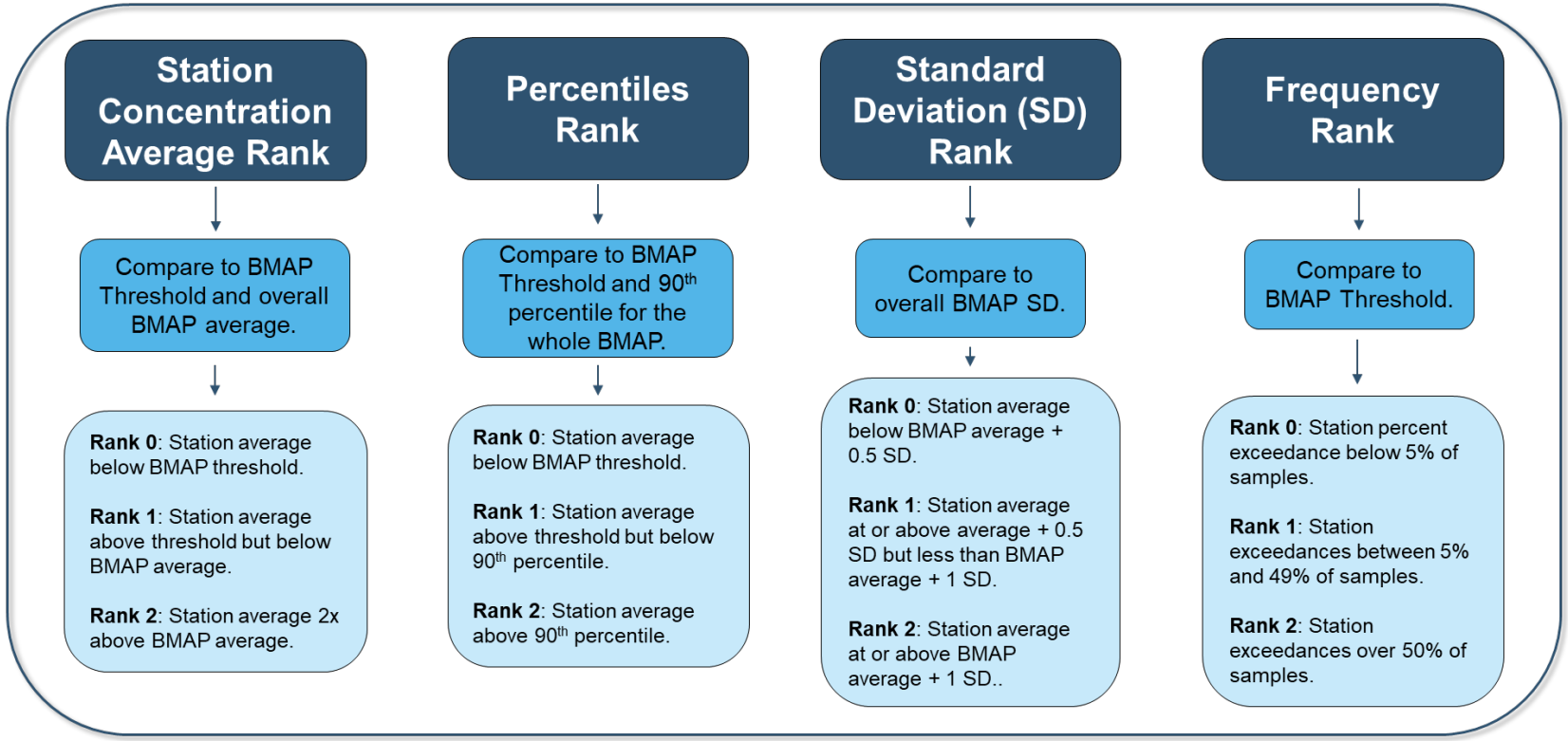
## CHAPTER 4 — TREND RESULTS: TN



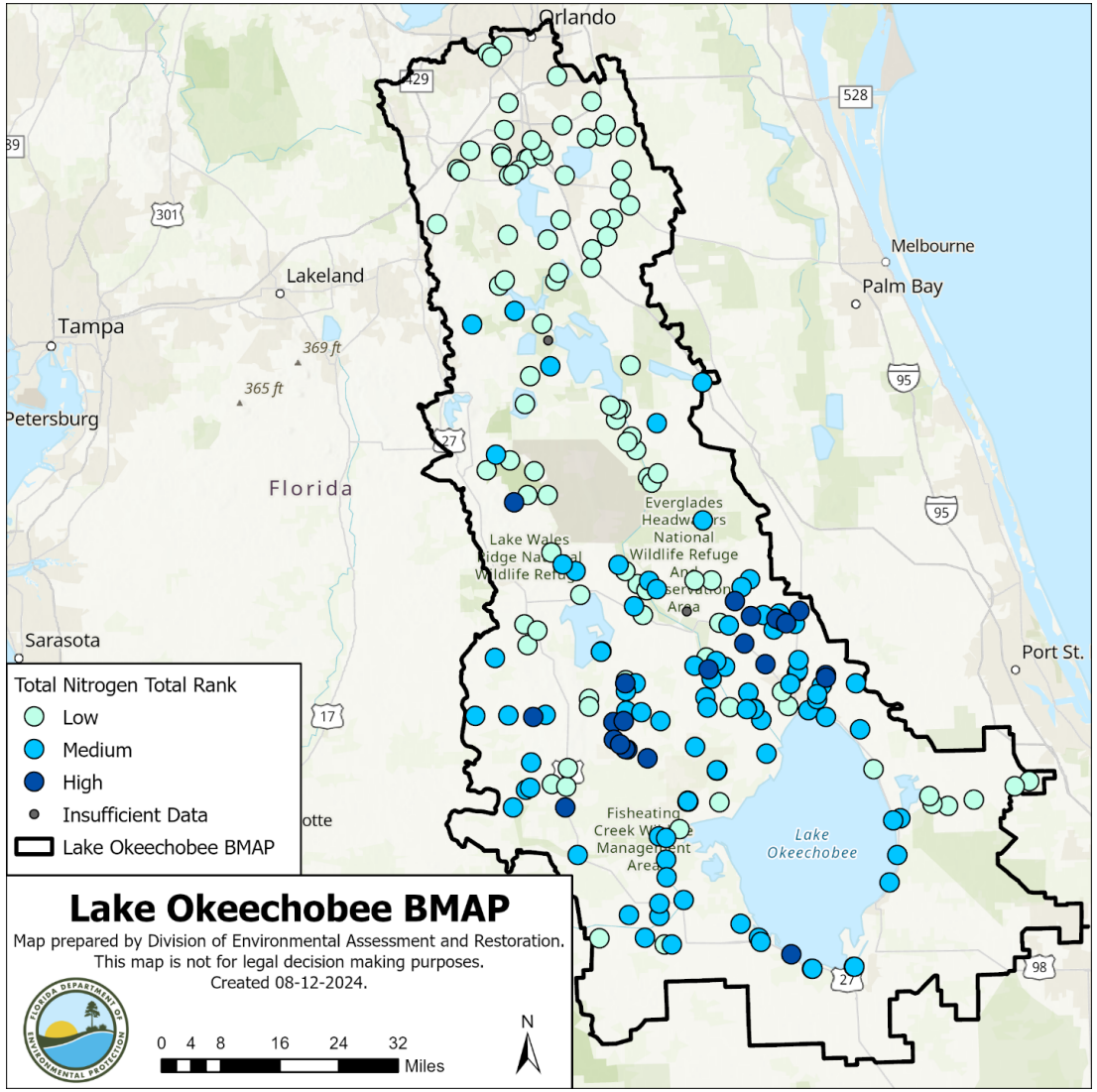
# LAKE OKEECHOBEE BMAP
## CHAPTER 4 — HOT SPOT APPROACH

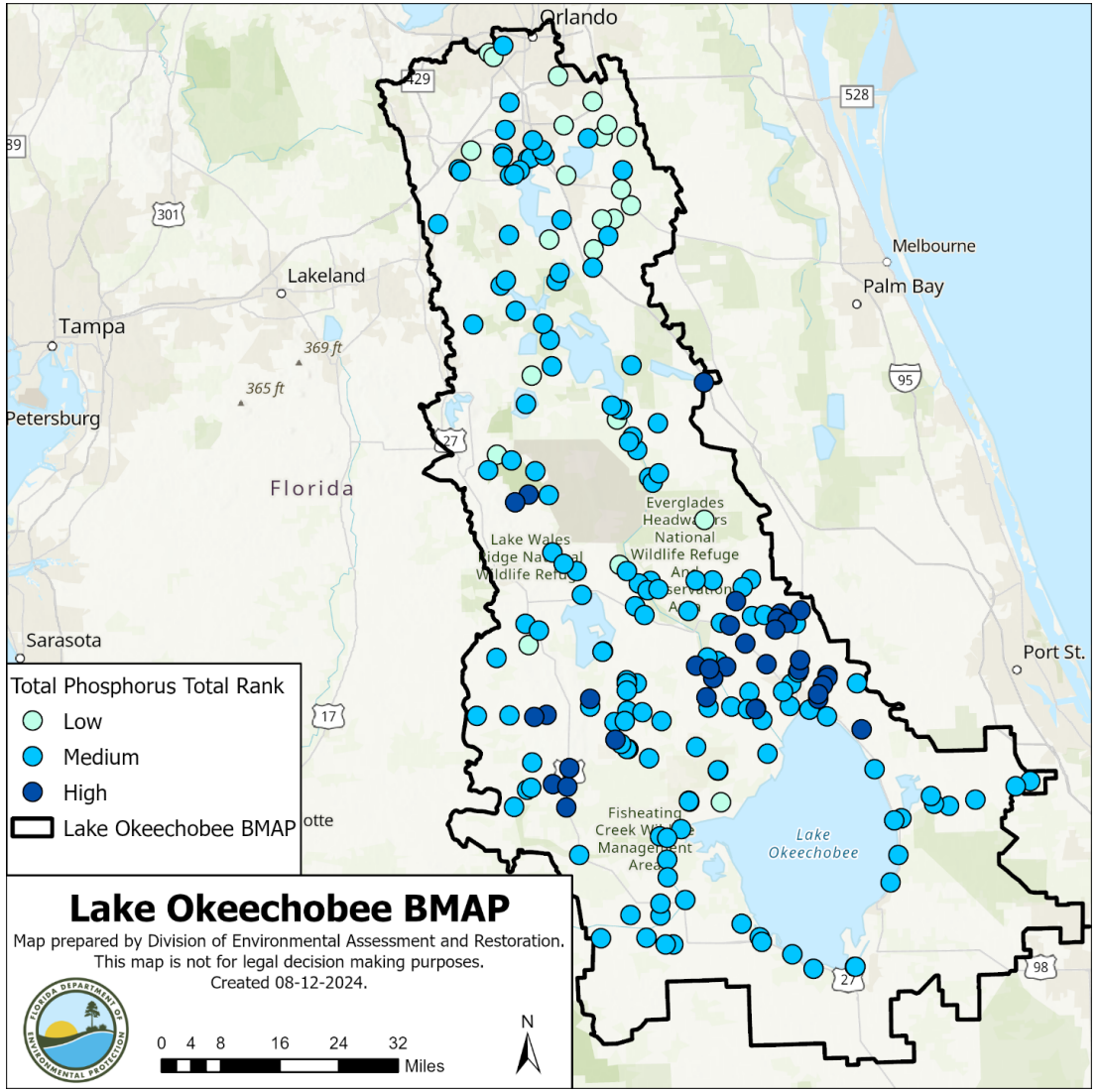
- Uses measured data collected throughout the watershed to evaluate TN and TP concentrations at monitoring stations.
- This process is not intended to be a management strategy under Chapter 403.067, F.S.
- The benchmarks are not intended to measure progress towards restoration; they will only be used to prioritize resources.



# LAKE OKEECHOBEE BMAP

## CHAPTER 4 — HOT SPOT ANALYSIS RESULTS



# LAKE OKEECHOBEE BMAP
## CHAPTER 4 — FUTURE GROWTH

**Assessed additional loading to the basin by 2040 under different growth management scenarios.**

- 2040 population “additional people” based on Bureau of Business and Economic Research (BEBR) medium growth projections by county.
- Growth distributed to jurisdictional boundaries based on available land area.
- Determined percentage of population sewered based on Florida Water Management Inventory (FLWMI) parcel-to-point data.
- Applied per person loading values for portions of future population on centralized sewer or OSTDS.
- Assumed increase in urban stormwater loading based on percentage of undeveloped acres converted to low density residential land use, using statewide event mean concentrations (EMCs) and runoff coefficients (ROCs).
- Ran three management scenarios to look at loading by entity, source and overall basin.

# LAKE OKEECHOBEE BMAP
## CHAPTER 4 — FUTURE GROWTH

| Scenario 1 | Scenario 2 | Scenario 3 |
|---|---|---|
| By 2040: | By 2040: | By 2040: |
| • **90%** or more of **new population** is connected to central sewer. | • **New population** is connected to central sewer at **same rate as today.** | • **New population** is connected to central sewer at **same rate as today**. |
| • All wastewater treating to **3 mg/L TN.** | • All wastewater treating to **3 mg/L TN.** | • All wastewater treating to **6 mg/L TN.** |
| • Remainder of new population has **enhanced OSTDS.** | • Remainder of new population has **enhanced OSTDS.** | • Remainder of new population has **conventional OSTDS.** |
| • **2% of undeveloped land** converted to low density development | • **10% of undeveloped land** converted to low density development | • **17% of undeveloped land** converted to low density development |

# LAKE OKEECHOBEE BMAP

## Chapter 4 — Future Growth

| Entity | Developable Land (acres) | 2040 Additional TP loading under Scenario 1 (2%) (lbs/yr) | 2040 Additional TP loading under Scenario 2 (10%) (lbs/yr) | 2040 Additional TP loading under Scenario 3 (17%) (lbs/yr) |
|---|---|---|---|---|
| **Basin Totals** | **2,197,387** | **791** | **3,953** | **6,720** |

Future considerations: Updated OSTDS data layers, incorporate attenuation rates, develop methodology for agricultural lands.

**In every scenario, additional loading is expected in the basin by 2040 due to increasing populations. However, entities should proactively be working to both remediate existing loading AND plan to mitigate loading from future growth.**

# LAKE OKEECHOBEE BMAP

## CHAPTER 4 — COMPLIANCE

### Load reductions and targets by subwatershed

| Subwatershed | WY2020–WY2024 TP Load (mt/yr) | % Contribution of Load | TP Load Required Reduction (mt/yr) | TP Target (mt/yr) |
|---|---|---|---|---|
| Fisheating Creek | 38.6 | 11.1 | 27.0 | 11.6 |
| Indian Prairie | 50.7 | 14.6 | 35.4 | 15.3 |
| Lake Istokpoga | 34.6 | 9.9 | 24.2 | 10.4 |
| Lower Kissimmee | 81.6 | 23.4 | 57.0 | 24.6 |
| Taylor Creek/Nubbin Slough | 53.1 | 15.2 | 37.1 | 16.0 |
| Upper Kissimmee | 72.5 | 20.8 | 50.7 | 21.8 |
| East Lake Okeechobee | 13.7 | 3.9 | 9.6 | 4.1 |
| South Lake Okeechobee | 3.6 | 1.0 | 2.5 | 1.1 |
| West Lake Okeechobee | 0.0 | 0.0 | 0.0 | 0.0 |
| **Total** | **348.4** | **100.00** | **243.4** | **105.0** |

# LAKE OKEECHOBEE BMAP

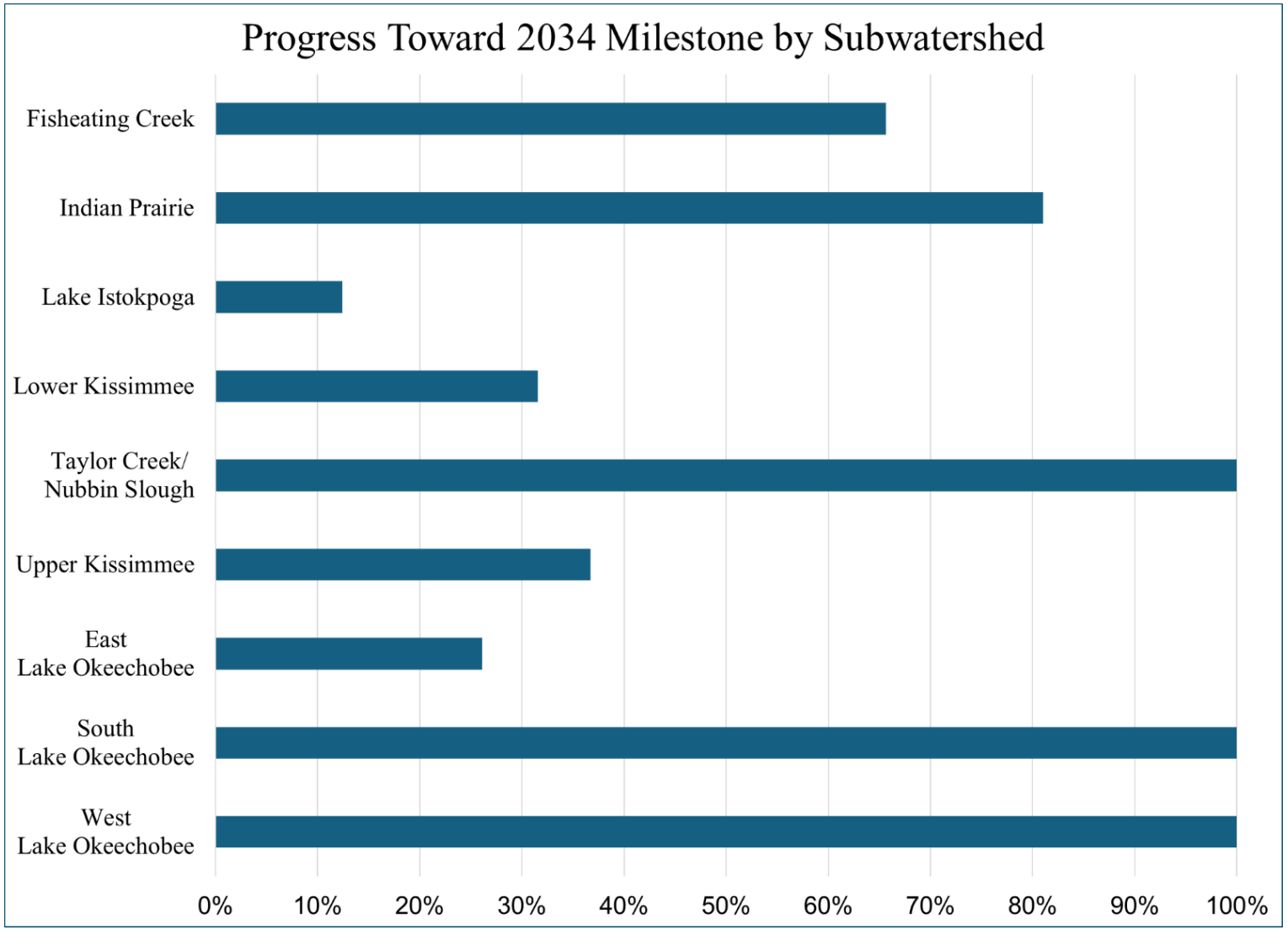
## CHAPTER 4 — COMPLIANCE

### Load reductions achieved through November 15, 2024, by subwatershed

| Subwatershed | TP Load Required Reduction (mt/yr) | TP Reductions Achieved Through November 15, 2024 (mt/yr) | TP Reductions Achieved Through November 15, 2024 (%) |
|---|---|---|---|
| Fisheating Creek | 27.0 | 17.7 | 66% |
| Indian Prairie | 35.4 | 28.7 | 81% |
| Lake Istokpoga | 24.2 | 3.0 | 12% |
| Lower Kissimmee | 57.0 | 18.0 | 32% |
| Taylor Creek/Nubbin Slough | 37.1 | 39.5 | 106% |
| Upper Kissimmee | 50.7 | 18.6 | 37% |
| East Lake Okeechobee | 9.6 | 2.5 | 26% |
| South Lake Okeechobee | 2.5 | 3.0 | 119% |
| West Lake Okeechobee | 0.0 | 0.7 | 100% |
| **Total** | **243.4** | **131.7** | **54%** |

# LAKE OKEECHOBEE BMAP

## CHAPTER 4 — PROGRESS CHART



# LAKE OKEECHOBEE BMAP

## APPENDICES

Kissimmee Prairie Preserve State Park

- **Updated:** Appendix A. Important links.
- **Updated:** Appendix B. Agricultural Enrollment and Reductions (provided by DACS).
- **NEW:** Appendix C. Golf Course NMPs.
- **NEW:** Appendix D. Wastewater Treatment Facilities
  - List of facilities with reclaimed water that are causing or contributing to nutrient impairments.

# NEXT STEPS

**BMAP update document draft review:**

- Draft document sent out via GovDelivery **April 1, 2025**.
- Stakeholder review comments due **April 30, 2025**.

Submit comments to:
**Chandler.B.Keenan@FloridaDEP.gov**

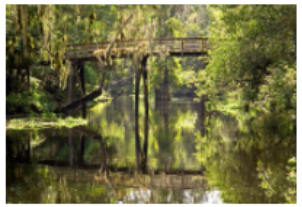

Source: SFWMD

# UPCOMING SCHEDULE

- Nov. 2024, Technical BMAP update public meeting.
- March 2025, Draft BMAP document available for review.
- April 2025, Draft BMAP update public meetings.
- April 2025, Draft BMAP update comment period.
- July 1, 2025, Statutory deadline for updated nutrient BMAPs.

# RESOURCES
## BMAP WEBSITE AND STORYMAPS


[Basin Management Action Plans (BMAPs) | Florida Department of Environmental Protection]

| Nutrient BMAPs | Springs BMAPs | Fecal Bacteria Impaired BMAPs |
|---|---|---|
|  |  |  |
| Nutrient BMAPs contain a comprehensive set of solutions, such as permit limits on wastewater facilities, urban and agricultural best management practices, and conservation programs designed to achieve pollutant reductions established by a total maximum daily load | Springs BMAPs identify the sources of nutrient pollution, list the specific projects and programs necessary to reduce nutrient pollution, and establish priority focus areas where statutory prohibitions on certain activities apply (such as installation of new conventional septic systems). | Bacteria basin management action plans (BMAPs) include management strategies or projects, to be implemented by local stakeholders, that aim to eliminate and prevent the release of waste, containing pathogens, to natural waterbodies. |

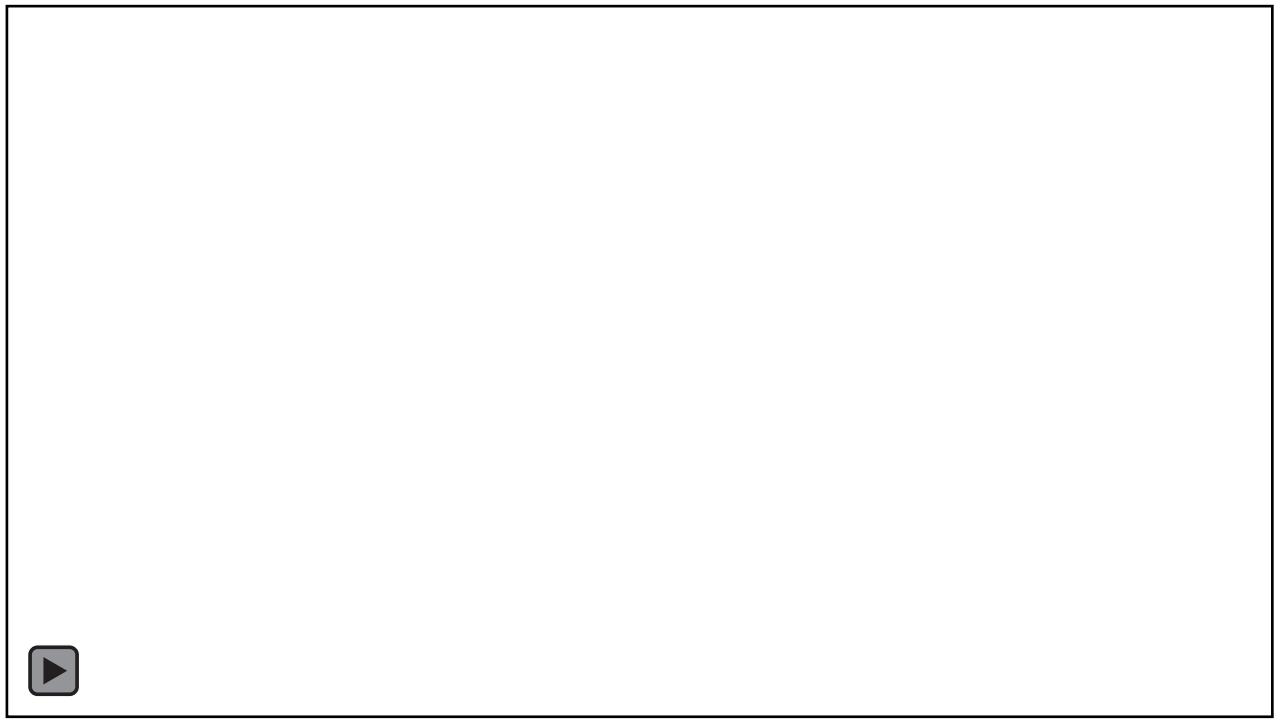
# BMAP MEETING
## PUBLIC QUESTIONS PERIOD

### Verbal Questions

- We ask that questions and comments be limited to **two minutes** so that we may hear from everyone.

### Written Comments

- Submit written comments concerning today's meeting to: BMAPProgram@FloridaDEP.gov.



# THANK YOU

**Chandler Keenan**
Environmental Administrator

Contact Information:
850-245-8555
Chandler.B.Keenan@FloridaDEP.gov

Photo Credit: SFWMD

**Lake Okeechobee Basin Management Action Plan (BMAP) Update**
**Webinar Summary**
*Wednesday, April 9, 2025*
*10:00 am – 10:59 am*

## Participants

Santiago Acevedo, SFWMD
Silvia Alderman, Akerman
Robert Allen, Citizen
Christian Avila, SFWMD
Bill Baker, MacVicar Consulting
Terrie Bates, Citizen
Evelyn Becerra, DEP
Julie Bortles, Orange County
Lindsey Brewer, Palm Beach County
Patricia Burke, SFWMD
Caryn Crabb-Nelson, FDACS
Kelly Cranford, Keith Engineering
Nina Cudahy, Toho Water
Susan Dahod, Citizen
Sara Davis, DEP
Shawn DeSantis, DEP
Lisa Diaz, Lewis, Longman & Walker
Jessica Douglas, DEP
Amy Eason, Martin County
Bill Eggers, Evans
Katherine English, Pavese Law
Stacie Flood, SFWMD
Marcy Frick, Tetra Tech
Jake Fojtik, FFBF
Aubrey Frye, SFWMD
Christina Gauthier, SFWMD
Lawrence Glenn, DEP
Susan Gosselin, Osceola County
Paul Gray, Audubon
Roxanne Groover, FOWA
Patricia Grunwald, Tetra Tech
Raichel Gulde, RES
Sam Hankinson, DEP
John Hayford, Okeechobee Utility Authority
Kenny Hayman, DEP
Margarita Hernandez, DEP
Ray Hodge, United Dairy Farmers
Moira Homann, DEP
Laila Hudda, EPA
Mallie Hunt, FDEP
Danielle Ivey, Audubon
Megan Jacoby, SFWMD
Jennifer Johnson, FDOT
Paul Julian, Everglades Foundation
Chandler Keenan, DEP
Elizabeth Kelly, Martin County
Greg Kennedy, OUA
Lee Killinger, Florida Crystals
Travis Kirk, Seminole Tribe
Peter Koch, Citizen
Mitchell Latzman, Friends of the Everglades
Heather Lindell, Orange County
Lisa Lotti, City of Orlando
Celeste Lyon, RES
Daniel Magro, Aculus Engineering
Jessica Martin, USACE
Jeremy McBryan, Ecosystem Partners
Jessica Mostyn, DEP
Charles Murphy, Glades Media
Kevin O'Donnell, DEP
Stacey Ollis, SFWMD
Steffany Olson, SFWMD
Jose Otero, SFWMD
Steve Peene, ATM
Timothy Perry, Gardner Bist Attorneys
Mark Perry, Florida Oceanographic
Luna Phillips, Gunster
Libby Pigman, SFWMD
Angelica Ocampo Pinzon, Seminole Tribe
Irene Quincey, Pavese Law
Ashok Raichoudhury, Broward County
Maxwell Redan, DEP
Jennifer Reynolds, SFWMD
Mary Kay Robbins-Kralapp, Citizen
Olivia Rocket, Drummond Carpenter
Rhonda Roff, Citizen
Albert Simons, Citizen
Eric Simpson, DEP
Philip Sliger, Gunster
Mailin Sotolongo-Lopez, DEP
Vanessa Stephen, US Sugar
Jordan Tedio, DEP

Jennifer Thera, FDACS
Raychel Thomas, Pavese Law
Todd Thurlow, Thurlow & Thurlow
Tony Tomalewski, DEP
Diana Turner, DEP
Oscar Vera, Liquid Solutions
Rachel Vitek, RES
Youchao Wang, SFWMD
Ken Weaver, DEP
Tanya Welborn, DEP
Manuel Zamorano, SFWMD

The full webinar recording and supporting materials are posted to the Florida Department of Environmental Protection (DEP) website at: https://floridadep.gov/dear/water-quality-restoration/content/bmap-public-meetings.

**Questions and Answers**

**Comment:** You are missing Troup Indiantown Water Control District in the East Okeechobee Basin.
**Answer:** Noted. We will double check the stakeholder list.

**Question:** What is the deadline for public comment?
**Answer:** The deadline for public comment is April 30.

**Question:** Is LOW the newest abbreviation for the Lake O BMAP?
**Answer:** LOW is an abbreviation for "Lake Okeechobee Watershed." It is the overall watershed area that is included in the BMAP.

**Question:** The sufficient list required by January 14, 2026, are these the projects we submit to the Statewide Annual Report (STAR) or is this a separate set of materials?
**Answer:** That would be as part of the STAR submittal. You can add those projects into the STAR with any other updates. If anyone needs help when the project collection portal opens, usually that is in the fall, or has any questions or wants to set up time to walk through it, we are more than happy to do that.

**Question:** If the total maximum daily load (TMDL) is total phosphorus (TP), why are we looking at total nitrogen (TN) as well? I understand why that they go together, but TP is the priority.
**Answer:** TP is the priority for this watershed but we have made a commitment in past versions of the BMAP to also track TN since that is important for the estuaries. We are looking at trends in both, although TP is the priority since that is the TMDL in this watershed.

**Question:** Do the future growth scenarios account for the new stormwater rule?
**Answer:** No, they do not. They are using the generalized event mean concentrations (EMCs) and runoff coefficients (ROCs) that have not been updated since the new stormwater rule went into effect.

**Question:** Did you look at municipalities future land use or zoning regulations? These may limit future growth in these areas.
**Answer:** No, we did not have that level of detail at the time since we were working on all the BMAPs. That has been brought up as something we can look to incorporate into future iterations of our future growth scenarios. The future growth scenarios are not meant to be prescriptive or part of updated allocations. They are really to help folks get a range of values of what could happen. If there are ways we can strengthen it, we are interested in hearing about those.

**Question:** Will you do this presentation in the afternoon or is this the only session?
**Answer:** This is the only presentation for Lake Okeechobee BMAP update but the recording will be posted.

**Question:** With the new stormwater rule, there should be reductions in loading. Will DEP track projects that are showing reductions?
**Answer:** All projects provided will be tracked in STAR**.**

**Question:** Can you discuss enforcement?
**Answer:** Enforcement varies by source and is discussed in the BMAP update document.

**Question:** The Chapter 2 milestones are in pounds per year and the Chapter 4 compliance numbers are in metric tons per year – make these the same.
**Answer:** The units used throughout the BMAP will be reviewed and made consistent, where possible.