# *DRAFT*

# *Everglades West Coast Basin Management Action Plan*

**Division of Environmental Assessment and Restoration**
**Water Quality Restoration Program**
**Florida Department of Environmental Protection**

with participation from the
**Everglades West Coast Stakeholders**

**April 2025**

**2600 Blair Stone Road**
**Tallahassee, FL 32399-2400**
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# Acknowledgments

This *2025 Everglades West Coast Basin Management Action Plan* was prepared as part of a statewide watershed management approach to restore and protect Florida's water quality. It was prepared by the Florida Department of Environmental Protection with participation from the Everglades West Coast stakeholders identified below.

| Type of Organization/Entity | Name |
|---|---|
| **Responsible Entities** | Agriculture<br>Lee County<br>City of Bonita Springs<br>Catalina at Winkler Preserve Community Development District (CDD)<br>Corkscrew Farms CDD<br>Laguna Lakes CDD |
| **Responsible Agencies** | County Health Departments<br>Florida Department of Agriculture and Consumer Services<br>Florida Department of Environmental Protection<br>Florida Department of Transportation District 1<br>South Florida Water Management District |

See **Appendix A** for links to resources referenced in this document. For additional information, contact:

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# List of Acronyms

| | |
|---|---|
| ACE | Agricultural Cooperative Regional Water Quality Elements |
| ALG | Agricultural Lands |
| AWT | Advanced Waste Treatment |
| BMAP | Basin Management Action Plan |
| BMP | Best Management Practice |
| CAFO | Concentrated Animal Feeding Operation |
| CDD | Community Development District |
| CHNEP | Coastal and Heartland National Estuary Partnership (formerly Charlotte Harbor National Estuary Program) |
| DEP | Florida Department of Environmental Protection |
| DO | Dissolved Oxygen |
| F.A.C. | Florida Administrative Code |
| FDACS | Florida Department of Agriculture and Consumer Services |
| FDOT | Florida Department of Transportation |
| FFS | Florida Forest Service |
| FLUCCS | Florida Land Use and Cover Classification System |
| FLWMI | Florida Water Management Inventory |
| F.S. | Florida Statutes |
| FSAID | Florida Statewide Agricultural Irrigation Demand (geodatabase) |
| GIS | Geographic Information System |
| IV | Implementation Verification |
| lbs/ac | Pounds Per Acre |
| lbs/yr | Pounds Per Year |
| L.O.F. | Laws of Florida |
| mgd | Million Gallons Per Day |
| mg/L | Milligrams Per Liter |
| MS4 | Municipal Separate Storm Sewer System |
| NA | Not Applicable |
| NMP | Nutrient Management Plan |
| NOI | Notice of Intent |
| NPDES | National Pollutant Discharge Elimination System |
| OAWP | Office of Agricultural Water Policy |
| OSTDS | Onsite Sewage Treatment and Disposal System |
| ROC | Regional Operations Center |
| SFWMD | South Florida Water Management District |
| SWMP | Stormwater Management Program |
| TBD | To Be Determined |
| TMDL | Total Maximum Daily Load |
| TN | Total Nitrogen |
| TP | Total Phosphorus |
| UF-IFAS | University of Florida-Institute of Food and Agricultural Sciences |
| WBID | Waterbody Identification (number) |
| WMD | Water Management District |
| WRF | Water Reclamation Facility |

| | |
|---|---|
| WWTF | Wastewater Treatment Facility |

# Executive Summary

## Background

Hendry Creek and Imperial River are both located in the Estero Bay Planning Unit within the Everglades West Coast Basin (**Figure ES-1**). Estero Bay proper is a shallow, subtropical lagoon with an area of 11,317 acres and is separated from the Gulf of Mexico by barrier islands. Seagrass beds are common in the bay, but high turbidity restricts seagrass growth to shallow depths. The Estero and Imperial rivers and Spring, Mullock, and Hendry creeks are the major tributaries that flow into Estero Bay.

The Estero Bay region is generally characterized by slow, sheet-flow drainage patterns that are typical of the flat, wetland-dominated, southern Florida landscape. In the past, the naturally dispersed water patterns distributed nutrients over broad areas of wetland vegetation. Seasonal fluctuations in flow from rainfall created the necessary salinity regime in Estero Bay for good estuarine productivity. Increased development since the 1960s has led to changes in the natural river systems around Estero Bay, altering freshwater inflow patterns (DEP, 2003).

Hendry Creek is located in the southwestern part of Lee County in southwest Florida, approximately 3 miles south of the city of Fort Myers and approximately 3 miles southeast of the city of Cape Coral. For assessment purposes, Hendry Creek is divided into a predominantly freshwater segment and a predominantly marine segment. U.S. Route 41 runs between the two segments. Hendry Creek flows south for approximately 6 miles into north Estero Bay and drains a watershed of about 9,824 acres. Most development is in the north end of the watershed, and wetlands and water dominate the southern portion.

The Imperial River watershed covers approximately 14,784 acres, of which 4,416 acres are surface waters. Oak Creek and Leitner Creek flow into the upstream portion of the Imperial River. Both of these drainage areas, as well as the adjacent watershed, contain extensive areas of cropland and pastureland. As the Imperial River runs adjacent to the city of Bonita Springs, it receives extensive amounts of urban runoff along most of its length (DEP, 2003).

As part of the original Basin Management Action (BMAP) process, DEP worked with the stakeholders to refine the basin boundaries for both the Imperial River and Hendry Creek basins to better represent actual conditions. These refined basin areas were then used for the purposes of assigning and allocating pollutant loads to the stakeholders in the original BMAP, as well as this 2025 BMAP update.

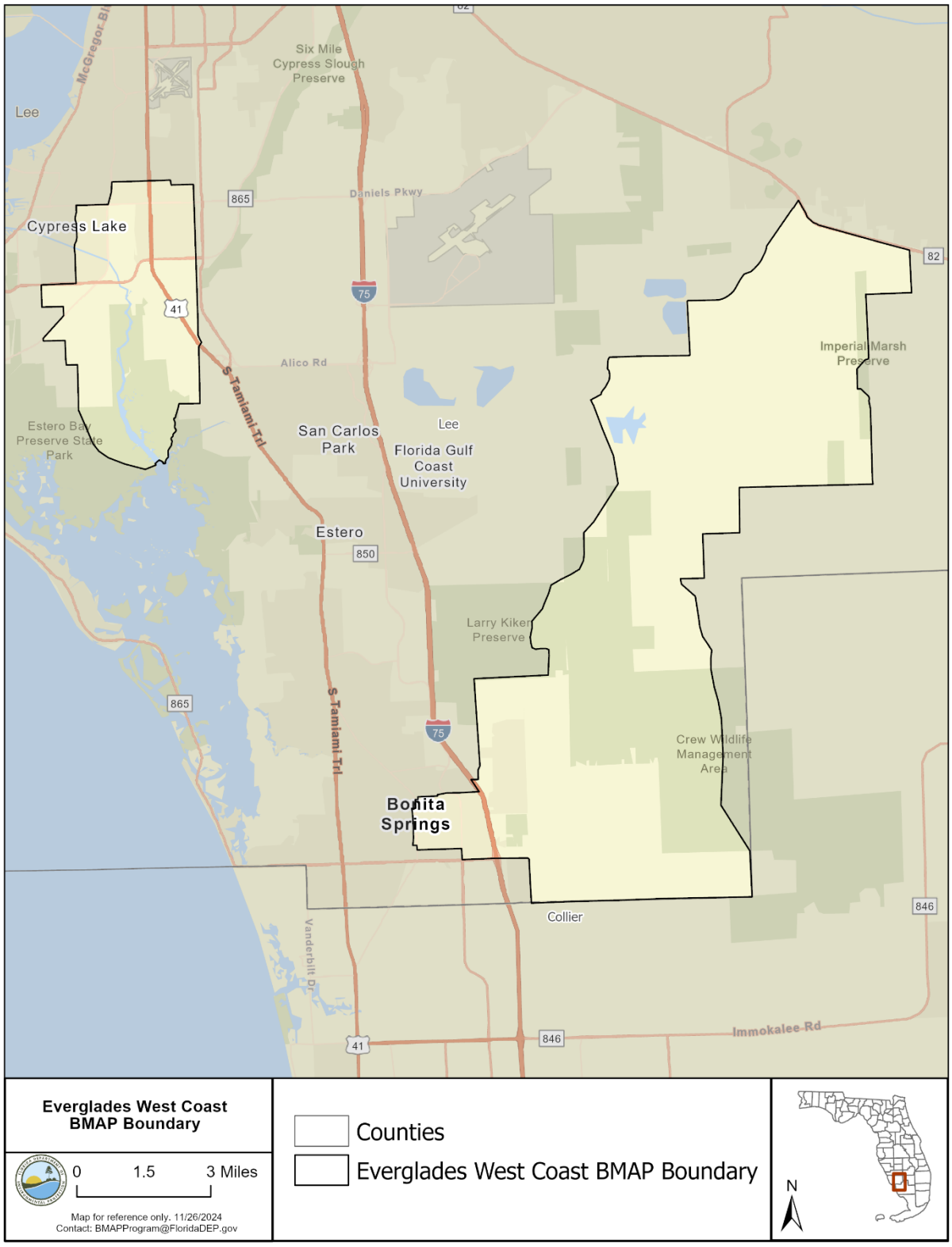


**Figure ES-1. Everglades West Coast BMAP area**

## Total Maximum Daily Loads

Total maximum daily loads (TMDLs) are water quality targets designed to address verified impairments for specific pollutants, such as total nitrogen (TN) and total phosphorus (TP). DEP identified Imperial River and Hendry Creek as impaired for low dissolved oxygen (DO) and, in August 2008, adopted TMDLs that target TN reductions in the river and creek segments to address the low DO condition (Tyler and Rhew, 2008; Laskis et al., 2008).

## Everglades West Coast BMAP

DEP first adopted the Everglades West Coast BMAP in 2012 to implement TMDLs in the Hendry Creek and Imperial River Basins. The BMAP provides for phased implementation under Subparagraph 403.067(7)(a)1., Florida Statutes (F.S.), and this adaptive management process will continue until the TMDLs are achieved and maintained. The phased BMAP approach allows for incrementally reducing loadings through the implementation of projects, while simultaneously monitoring and conducting studies to better understand water quality dynamics (sources and response variables) in each impaired waterbody.

This 2025 BMAP provides information on changes since the 2012 BMAP was adopted, including updated allocations of load reductions to the responsible stakeholders, specific 5-year milestones assigned to the responsible stakeholders, and updated management actions to achieve nutrient reductions. This update sets a goal for achieving load reductions no later than 2032, which is 20 years after the 2012 BMAP adoption.

### Summary of Load Reductions

Since the loading estimates from the 2012 Everglades West Coast BMAP were completed, TN loading in the Imperial River and Hendry Creek River basins has changed. This BMAP update uses 2017-2019 South Florida Water Management District (SFWMD) land use data to update the estimated TN loading in the BMAP. This information was used to modify entity allocations and estimated project reductions.

Through November 15, 2024, 45 projects were considered completed and ongoing and an additional 6 projects are underway or planned. The completed and ongoing projects in the Hendry Creek basin were estimated to achieve total reductions of 7,585 pounds per year (lbs/yr) of TN, or 47% of the reductions needed to meet the TMDL for the Hendry Creek basin. This 47% reduction, with additional reductions from underway and planned projects, is expected to achieve the 2027 50% milestone established for the basin in the BMAP update. The completed and ongoing projects in the Imperial River basin were estimated to achieve total reductions of 19,544 lbs/yr of TN, or 45% of the reductions needed to meet the TMDL for the Imperial River basin. This 45% reduction, with additional reductions from underway and planned projects, is expected to achieve the 2027 50% milestone established for the basin in the BMAP update.

**Table ES-1** and **Table ES-2** show progress towards the TN load reductions for the Hendry Creek and Imperial River basins, respectively. These tables show reductions from projects

reported through November 15, 2024. This date was chosen to allow adequate time to review project documentation and calculate reductions based on accepted methodologies and BMP efficiencies. Updated project information will be provided each year in the Statewide Annual Report and at an annual meeting.

**Table ES-1. TN load reductions for the Hendry Creek basin**

| Entity | TN Full Required Reduction (lbs/yr) | TN Completed and Ongoing Project Reductions Achieved (lbs/yr) | % of TN Reductions Achieved |
|---|---|---|---|
| **Agriculture** | 366 | 0 | 0% |
| **Florida Department of Transportation (FDOT) District 1** | 135 | 117 | 87% |
| **Catalina at Winkler Preserve Community Development District (CDD)** | 157 | 0 | 0% |
| **Laguna Lakes CDD** | 314 | 0 | 0% |
| **Lee County** | 15,182 | 7,468 | 49% |
| **Totals** | **16,154** | **7,585** | **47%** |

**Table ES-2. TN load reductions for the Imperial River basin**

| Entity | TN Full Required Reduction (lbs/yr) | TN Completed and Ongoing Project Reductions Achieved (lbs/yr) | % of TN Reductions Achieved |
|---|---|---|---|
| **Agriculture** | 27,936 | 13,384 | 48% |
| **FDOT District 1** | 94 | 77 | 82% |
| **Corkscrew Farms CDD** | 1,110 | 0 | 0% |
| **City of Bonita Springs** | 10,814 | 3,316 | 31% |
| **Lee County** | 3,498 | 2,767 | 79% |
| **Totals** | **43,452** | **19,544** | **45%** |

To achieve the TMDLs, stakeholders must identify and submit additional local projects and the Coordinating Agencies (DEP, Florida Department of Agriculture and Consumer Services [FDACS], SFWMD) must identify additional cost-share and regional projects. Enhancements to programs addressing basinwide sources will also be required.

### Source Requirements

Subparagraph 403.067(7)(a)9., F.S., specifies that local governments (county governments and municipalities) within a BMAP must develop a wastewater treatment plan and/or an onsite sewage treatment and disposal system (OSTDS) remediation plan containing information if DEP "identifies domestic wastewater treatment facilities or onsite sewage treatment and disposal systems as contributors of at least 20% of point source or nonpoint source nutrient pollution or if the Department determines remediation is necessary to achieve the [TMDL]."

DEP determined that the domestic wastewater treatment facilities and/or OSTDS sources within the Everglades West Coast BMAP met the 20% contribution and/or remediation of these sources is necessary to achieve the TMDL. A final order (23-0116) was issued to prescribe timelines for local governments to submit these plans on June 12, 2023. Draft wastewater treatment and OSTDS remediation plans were submitted by February 1, 2024, and final plans were submitted by August 1, 2024. Projects outlined in the plans addressing domestic wastewater sources are incorporated into this BMAP update.

Additionally, DEP has determined facilities that land apply reclaimed water identified in **Appendix D** are subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S. The facilities listed in **Appendix D** have 10 years from BMAP adoption to meet the applicable advanced waste treatment (AWT) standards. More information can be found in **Section 2.3.3**.

Agricultural nonpoint sources are a contributor of TN loading to the Everglades West Coast BMAP. The Everglades West Coast BMAP was originally adopted in 2012, and many agricultural producers have been enrolled and are implementing BMPs. FDACS has focused efforts to improve enrollment efforts, resulting in 77% of the agricultural lands in the BMAP being enrolled in the BMP program as of April 30, 2024. FDACS will continue to carry out its statutory authority and fulfill its statutory obligations by actively engaging agricultural nonpoint sources to enroll in BMPs and by adequately verifying BMP implementation.

FDACS is responsible for verifying that all eligible agricultural producers are enrolled in appropriate BMP programs. FDACS will perform onsite inspections of all agricultural operations enrolled in BMPs to ensure that these practices are being properly implemented every two years. FDACS will continue to collect nitrogen and phosphorus fertilization records during implementation verification visits from each agricultural producer enrolled in BMPs and is required to provide DEP the nutrient application records in accordance with subsection 403.067(7)(c)5., F.S.

Further reductions beyond the implementation of required agricultural owner–implemented BMPs will be necessary to achieve the TMDL. As such, pursuant to subsection 373.4595(3), F.S., where water quality problems are demonstrated despite the appropriate implementation of adopted BMPs, a reevaluation of the BMPs shall be conducted pursuant to subsection 403.067(7), F.S. If a reevaluation of the BMPs is needed, FDACS will also include DEP, the appropriate water management district, and other partners in the reevaluation and BMP update processes**.**

Further reductions can be achieved through the implementation of additional agricultural projects or activities. The Coordinating Agencies (DEP, FDACS, and SFWMD) will work together to identify cost-share practices and other projects that can be undertaken to achieve these nutrient reductions. Additional projects and activities are to be implemented in conjunction with the BMP Program, which needs to achieve full enrollment with verification to ensure that the BMAP goals are achieved.

Chapter 2023-169, Laws of Florida (L.O.F.), (403.067, F.S.) requires that BMAPs include milestones for implementation of TMDLs. Any responsible entity within the BMAP that has an assigned pollutant load reduction requirement must identify projects or strategies that such entity will undertake to meet their upcoming 5-year milestone. Each project must include a planning-level cost estimate and an estimated date of completion in the Statewide Annual Report.

Within five years of the adoption of this BMAP, DEP will evaluate any entity located in the BMAP area that serves a minimum resident population of at least 1,000 individuals who are not currently covered by a municipal separate storm sewer system (MS4) permit and designate eligible entities as regulated MS4s, in accordance with Chapter 62-624, Florida Administrative Code (F.A.C.).

**BMAP Cost**

The project costs provided for the BMAP may include capital costs as well as those associated with construction and routine operations and maintenance and monitoring. Many BMAP projects were built to achieve multiple objectives and not just nutrient reductions. Funds for some projects have already been spent, others have been obligated to ongoing projects, and the remainder are yet to be appropriated.

The funding sources for the projects range from local public and private contributions to state and federal legislative appropriations. DEP will continue to work with stakeholders to explore new opportunities for funding assistance to ensure that the activities listed in this BMAP can be maintained at the necessary level of effort and that additional projects can be constructed.

Chapter 2023-169, L.O.F., expanded grant opportunities for local governments and eligible entities working to address a TMDL. Previously, grant funding was available for specific project types, including septic-to-sewer, AWT expansion or upgrades, and OSTDS upgrades. Now, through the Water Quality Improvement Grant program, eligible entities can also apply for grant funding for stormwater, regional agricultural projects, and a broader suite of wastewater projects including collection systems and domestic wastewater reuse. Projects are prioritized that have the maximum nutrient load per project, demonstrate project readiness, are cost-effective, have a cost-share by the applicant (except for Rural Areas of Opportunity), have previous state commitment and are in areas where reductions are most needed.

Chapter 2024-180, L.O.F., created a program to expeditiously review new and innovative enhanced nutrient-reducing OSTDS to reduce the nutrients entering Florida’s waterways.

# Chapter 1. Context, Purpose, and Scope of Plan

## 1.1. Water Quality Standards and Total Maximum Daily Loads (TMDLs)

Florida's water quality standards are designed to ensure that surface waters fully support their designated uses, such as drinking water, aquatic life, recreation, and agriculture. Currently, most surface waters in Florida, including most of those in the Everglades West Coast watershed, are categorized as Class III waters, meaning they must be suitable for recreation and must support fish consumption and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife. **Table 1** lists all designated use classifications for Florida surface waters.

**Table 1. Designated use attainment categories for Florida surface waters**

[1] Class I and II waters additionally include all Class III uses.

| Classification | Description |
|---|---|
| **Class I[1]** | Potable water supplies |
| **Class II[1]** | **Shellfish propagation or harvesting** |
| **Class III** | **Fish consumption; recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife** |
| **Class III-Limited** | Fish consumption, recreation or limited recreation, and/or propagation and maintenance of a limited population of fish and wildlife |
| **Class IV** | Agricultural water supplies |
| **Class V** | Navigation, utility, and industrial use (*no current Class V designations*) |

Section 303(d) of the federal Clean Water Act requires that every two years each state must identify its "impaired" waters, including estuaries, lakes, rivers, and streams, that do not meet their designated uses. Florida Department of Environmental Protection (DEP) staff in the Division of Environmental Assessment and Restoration are responsible for assessing Florida's waters for inclusion on the Verified List of Impaired Waters (when a causative pollutant for the impairment has been identified) and Study List (when a causative pollutant for the impairment has not been identified and additional study is needed). These lists are then provided to the U.S. Environmental Protection Agency as an annual update to the state "303(d) list."

The impaired waters in the Everglades West Coast Basin addressed in this plan are all Class III waters. TMDLs have been established for these waters, identifying total nitrogen (TN) reductions to meet the dissolved oxygen (DO) standards.

### 1.1.1 Everglades West Coast TMDLs

A TMDL is the maximum amount of a specific pollutant that a waterbody can assimilate while maintaining its designated uses. In 2008, DEP adopted DO TMDLs for Hendry Creek and Imperial River (Tyler and Rhew, 2008; Laskis et al., 2008). The TMDLs target TN reductions in the river and creek segments to address the low DO condition. **Table 2** lists the TMDLs adopted by rule for each of the impaired segments with a waterbody identification (WBID) number in the Imperial River and Hendry Creek Basins.

**Table 2. Everglades West Coast TMDLs**

| WBID | Waterbody | Parameter | TMDL (milligrams per liter [mg/L]) | Wasteload Allocation for Wastewater (lbs/year) | Wasteload Allocation for NPDES Stormwater (% Reduction) | Load Allocation (% Reduction) |
|---|---|---|---|---|---|---|
| 3258B | Hendry Creek | TN | 0.74 | Not applicable | 44% | 44% |
| 3258B1 | Hendry Creek | TN | 0.60 | Not applicable | 44% | 44% |
| 3258E | Imperial River | TN | 0.74 | Not applicable | 24.87% | 24.87% |

It should be noted that since the development of the 2012 BMAP document, the WBID boundaries for Hendry Creek and Imperial River were modified to better reflect the marine and freshwater interface, and local hydrology. However, for the purposes of this BMAP update, the boundaries from the 2012 were not modified.

## 1.2. The Everglades West Coast Basin Management Action Plan (BMAP)

DEP implements TMDLs through permits and BMAPs; the latter contain strategies to reduce and prevent pollutant discharges through various cost-effective means. During the watershed restoration process, DEP and the affected stakeholders jointly develop BMAPs or other implementation approaches. Stakeholder involvement is critical to the success of the watershed restoration program and varies with each phase of implementation to achieve different purposes. The BMAP development process is structured to achieve cooperation and consensus among a broad range of interested parties, including the South Florida Water Management District (SFWMD), Florida Department of Agriculture and Consumer Services (FDACS), and stakeholders representing other agencies, governments, and interested parties.

In the context of the BMAP, there are different organizations named in the plan.

- Responsible entities are those organizations who are assigned load reductions and must comply with the BMAP provisions; these organizations are sometimes referred to as "Lead Entities."

- Responsible agencies may be accountable for reducing loads from their own activities or have an important public sector role in BMAP implementation such as regulatory oversight, monitoring, research, or other related duties.

- Interested stakeholders are those organizations that have engaged with BMAP development and implementation with the intention to influence the implementation process and outcomes.

- Stakeholders is a more general term often used in the BMAP context to include all three of the previously mentioned organizations—responsible entities, responsible agencies, and interested stakeholders.

The Florida Watershed Restoration Act, Subparagraph 403.067(7)(a)1., Florida Statutes (F.S.), establishes an adaptive management process for BMAPs that continues until the TMDLs are achieved and maintained. This approach allows for incrementally reducing loadings through the implementation of projects and programs, while simultaneously monitoring and conducting studies to better understand water quality dynamics (sources and response variables) in each impaired waterbody. The original Everglades West Coast BMAP was adopted in 2012.

The Clean Waterways Act passed in 2020 required local governments to develop and submit wastewater and onsite sewage treatment and disposal system (OSTDS) (also known as septic system) remediation plans to be incorporated into the BMAPs by July 1, 2025. This document serves as the update to the 2012 BMAP and to incorporate the Clean Waterways Act requirements. **Figure 1** shows the Everglades West Coast BMAP area.

**Table 3** summarizes the estimated progress toward meeting the required reductions with projects completed through November 15, 2024. This date was chosen to allow adequate time to review project documentation and calculate reductions based on accepted methodologies and BMP efficiencies. Updated project information will be provided each year in the Statewide Annual Report and at an annual meeting.

**Table 3. Estimated progress toward TN reductions**

| Basin | Sum of TN Reductions (pounds per year [lbs/yr]) | Total TN Reductions Required (lbs/yr) | TN Reductions Still Needed (lbs/yr) | Total TN Required Reductions Achieved (%) |
|---|---|---|---|---|
| **Hendry Creek** | 7,585 | 16,154 | 8,098 | 47% |
| **Imperial River** | 19,544 | 43,452 | 22,798 | 45% |

Subsection 373.4595(4)(d), F.S., requires DEP to set an implementation schedule for achieving the BMAP load reductions. To meet this requirement, DEP establishes a set of five-year milestones by which a certain percentage of the load reductions must be met. Additionally, stakeholders need to provide DEP with reasonable assurance that they have enough project credits to achieve their required reductions within the period established by the BMAP. This BMAP update establishes a set of entity-specific milestones with a goal of achieving the full load reductions in 2032, which is 20 years after the initial BMAP adoption. See **Section 2.2.1** for details on the established milestones by entity.

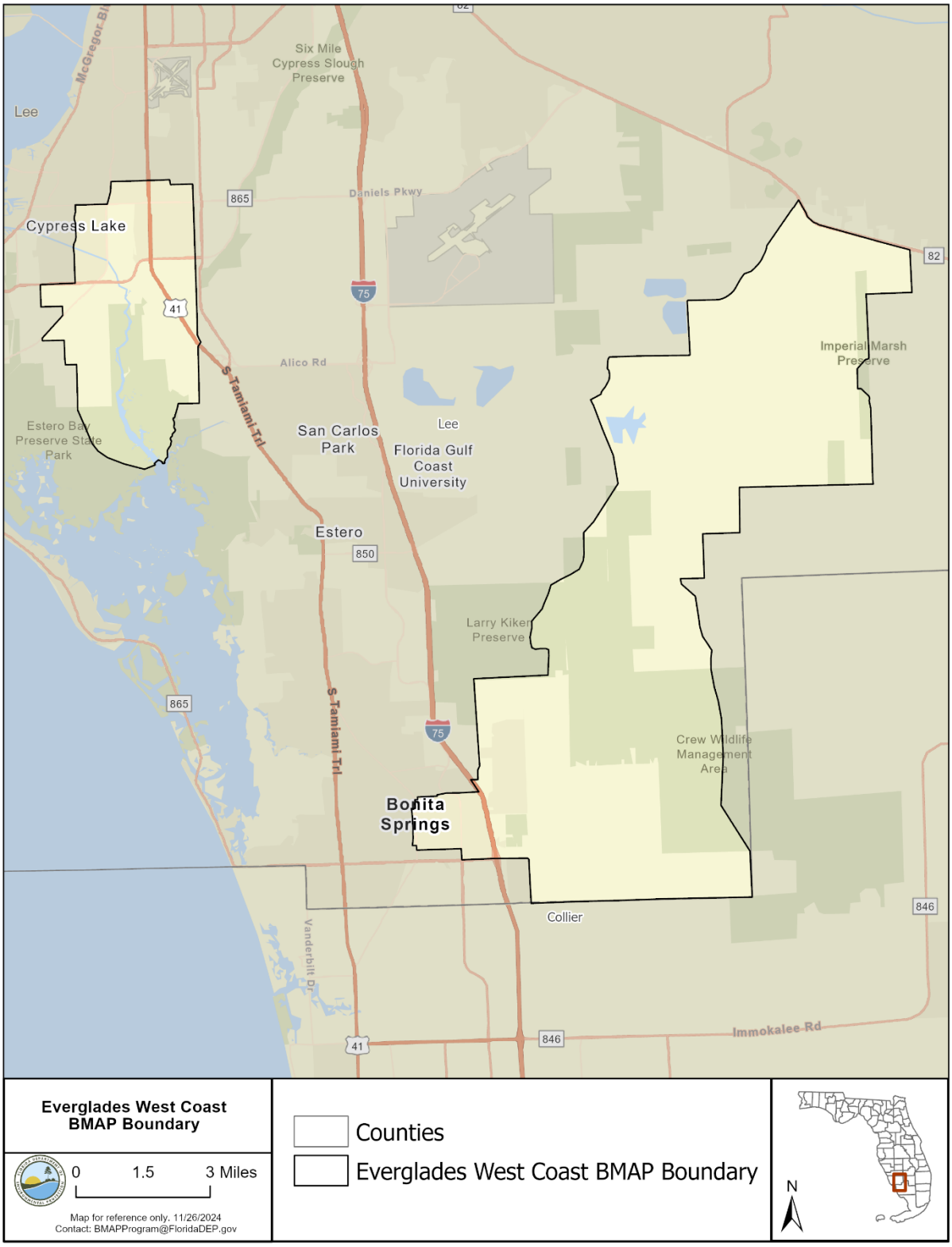


**Figure 1. Everglades West Coast BMAP**

### 1.2.1 Pollutant Sources

There are various sources of pollution in the Everglades West Coast BMAP. TN and total phosphorus (TP) loads to Hendry Creek and Imperial River include nonpoint (i.e., diffuse), urban, and agricultural stormwater runoff.

**Table 4** summarizes the percent contribution of TN to the Everglades West Coast BMAP from each land use category in each basin, as determined by the load estimation tool discussed in **Section 2.1**.

**Table 4. Summary of TN loads by land use category by basin**

| Basin | Land Use Category | TN Load (% Basin Total) |
|---|---|---|
| **Hendry Creek** | Urban | 72 |
| **Hendry Creek** | Agriculture | 2 |
| **Hendry Creek** | Natural | 26 |
| **Imperial River** | Urban | 20 |
| **Imperial River** | Agriculture | 36 |
| **Imperial River** | Natural | 43 |

#### 1.2.1.1 Agricultural Nonpoint Sources

For this 2025 BMAP update, FDACS used the parcel-level polygon agricultural lands (ALG) data that are part of the Florida Statewide Agricultural Irrigation Demand (FSAID) geodatabase to estimate agricultural acreages statewide. FSAID was not used in the BMAP load estimation tool to estimate agricultural acreages and associated nutrient loads. The percentage of agricultural land use within the Everglades West Coast BMAP was then determined by comparing the FSAID 11 ALG and total acreage of the BMAP boundary. The total agricultural land in the BMAP is 9,194 acres. To estimate the agricultural acres enrolled in the best management practice (BMP) program, FDACS Office of Agricultural Water Policy (OAWP) overlayed the FSAID ALG and BMP enrollment data to calculate the acres of agricultural land in an enrolled parcel. **Table 5** summarizes agricultural lands within the Everglades West Coast BMAP based on the FSAID 11 and the results of the FDACS unenrolled agricultural lands characterization.

FDACS will seek the further enrollment of producers in the BMAP area. As of April 30, 2024, there are 4,977 agricultural acres enrolled in the BMP program. **Table 6** summarizes the acres enrolled in the BMP Program by commodity. Currently, no producers are conducting water quality monitoring in lieu of implementing BMPs.

**Appendix F** provides more information on agricultural activities in the Everglades West Coast BMAP.

**Table 5. Summary of agricultural land use acreage in the BMP Program in the Everglades West Coast BMAP for enrollment through April 30, 2024**

| Crediting Location | Agricultural Acres | Unenrolled - Unlikely Enrollable Acres | Agricultural Acres - Adjusted | Agricultural Acres Enrolled |
|---|---|---|---|---|
| **Hendry Creek** | 103 | 0 | 102 | 0 |
| **Imperial River** | 9,091 | 2,758 | 6,333 | 4,977 |
| **Total** | **9,194** | **2,758** | **6,435** | **4,977** |

**Table 6. Agricultural lands enrolled in the in the Everglades West Coast BMAP by BMP Program commodity**

| Commodity | Agricultural Acres Enrolled |
|---|---|
| Citrus | 630 |
| Cow/Calf | 443 |
| Multiple Commodities | 99 |
| Nursery | 22 |
| Row/Field Crop | 3,783 |
| **Total** | **4,977** |
| **Percent of Agricultural Lands Enrolled in BMPs** | **77%** |

#### 1.2.1.2 Municipal Separate Storm Sewer Systems (MS4s)

Many of the municipalities in the watershed are regulated by the Florida National Pollutant Discharge Elimination System (NPDES) Stormwater Program. An MS4 is a conveyance or system of conveyances, such as roads with stormwater systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels, or storm drains. If an MS4 permittee is identified as a contributor in the BMAP, the permitted MS4 must undertake projects specified in the BMAP. The BMAP projects required to be undertaken by MS4s are detailed for each basin in **Appendix B.**

Regulated MS4s are required to implement stormwater management programs (SWMP) to reduce pollutants to the maximum extent practicable and address applicable TMDL allocations. Both Phase I and Phase II MS4 permits include provisions for the modification of SWMP activities. Phase I medium and large MS4s are regulated under an individual permit, with multiple permittees having coverage under the same permit as "co-permittees." Phase II small MS4s are regulated under a generic permit. Under the "NPDES Two-Step Generic Permit for Discharge of Stormwater from Phase II MS4s" (Paragraph 62-621.300(7)(a), Florida Administrative Code [F.A.C.].), regulated Phase II MS4s must develop a SWMP that includes BMPs with measurable goals and a schedule for implementation to meet six minimum control measures.

Additionally, in accordance with Section 403.067, F.S., if an MS4 permittee is identified in an area with an adopted BMAP, the permittee must comply with the adopted provisions of the BMAP that specify activities to be undertaken by the permittee. If the permittee discharges

stormwater to a waterbody with an adopted TMDL pursuant to Chapter 62-304, F.A.C., then the permittee must revise its SWMP to address the assigned wasteload in the TMDL.

DEP can designate an entity as a regulated MS4 if its discharges meet the requirements of the rule and are determined to be a significant contributor of pollutants to surface waters of the state in accordance with Rule 62-624.800, F.A.C. A Phase II MS4 can be designated for regulation when a TMDL has been adopted for a waterbody or segment into which the MS4 discharges the pollutant(s) of concern.

**Table 7** lists the Phase I MS4s in the Everglades West Coast BMAP. There are no local governments in the BMAP area designated as Phase II MS4s as of December 2024.

**Table 7. Entities in the Everglades West Coast BMAP designated as Phase I MS4s**

| Permittee | Permit Number |
|---|---|
| **Lee County** | **FLS000035** |
| *City of Bonita Springs* | *FLS648078* |
| *Florida Department of Transportation (FDOT) District 1* | *FLS266965* |

#### 1.2.1.3 Urban Nonpoint Sources

Subsubparagraph 403.067(7)(b)2.f., F.S., prescribes the pollutant reduction actions required for nonagricultural pollutant sources that are not subject to NPDES permitting. ″Non-MS4 sources‟ must also implement the pollutant reduction requirements detailed in a BMAP and are subject to enforcement action by DEP or a water management district (WMD) if they fail to implement their responsibilities under the BMAP. **Table 8** lists the nonpoint sources in the Everglades West Coast BMAP.

**Table 8. Urban nonpoint sources in the Everglades West Coast BMAP**

| Type of Entity | Participant |
|---|---|
| **Special Districts** | Catalina at Winkler Preserve Community Development District (CDD)<br>Corkscrew Farms CDD<br>Laguna Lakes CDD |

#### 1.2.1.4 Wastewater Treatment Facilities (WWTFs)

As of March 2025, there are no permitted NPDES facilities identified in the Everglades West Coast BMAP. However, there are three Non-Surface Water Discharge facilities with disposal sites within the BMAP boundary. **Figure 2** shows the location of the facilities and disposal sites.

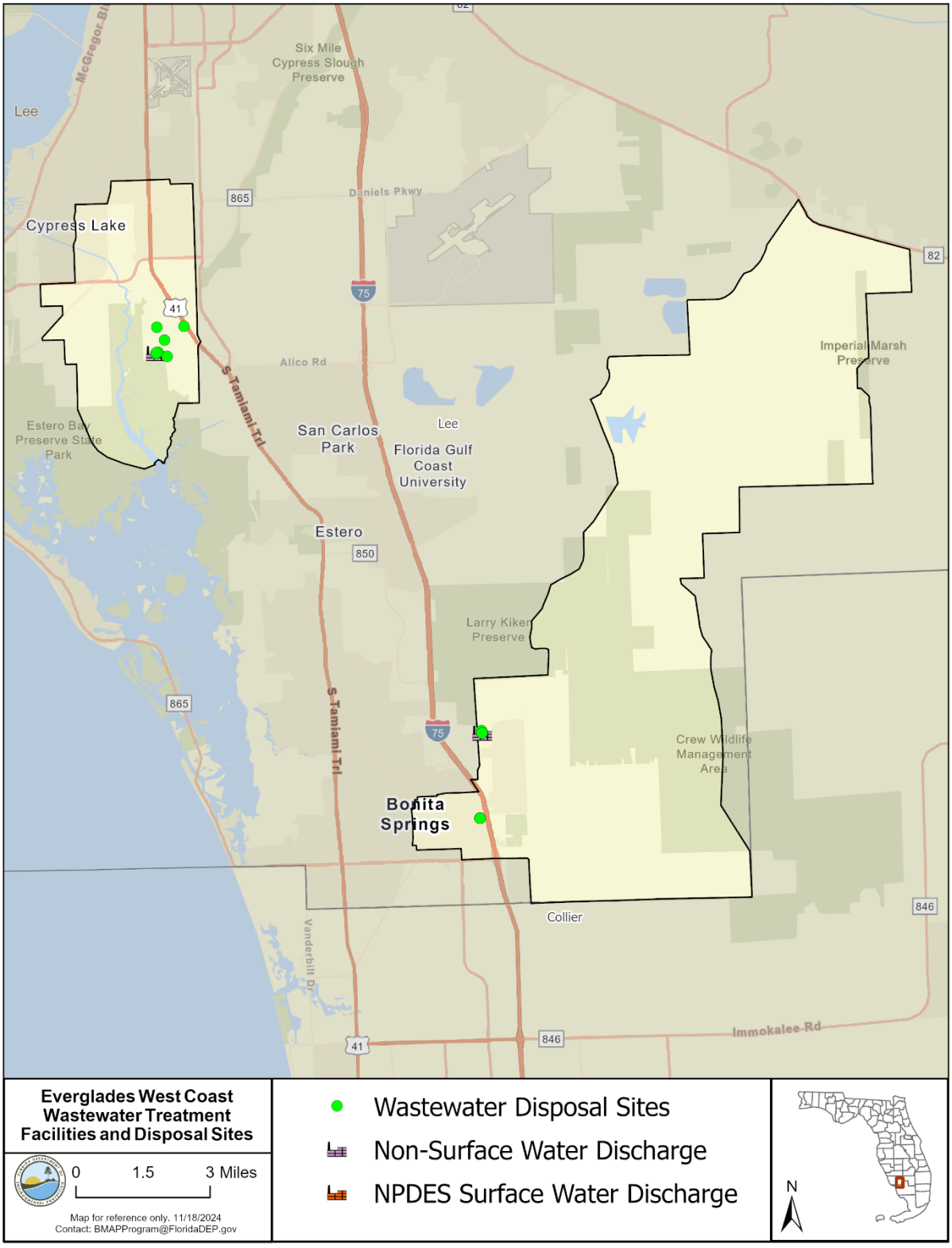


**Figure 2. WWTFs and disposal sites in the Everglades West Coast BMAP**

### 1.2.1.5 OSTDS

Based on the latest data from the Florida Department of Health, there are 1,800 known or likely OSTDS located throughout the Everglades West Coast BMAP (**Figure 3**). **Table 9** summarizes the number of OSTDS by basin.

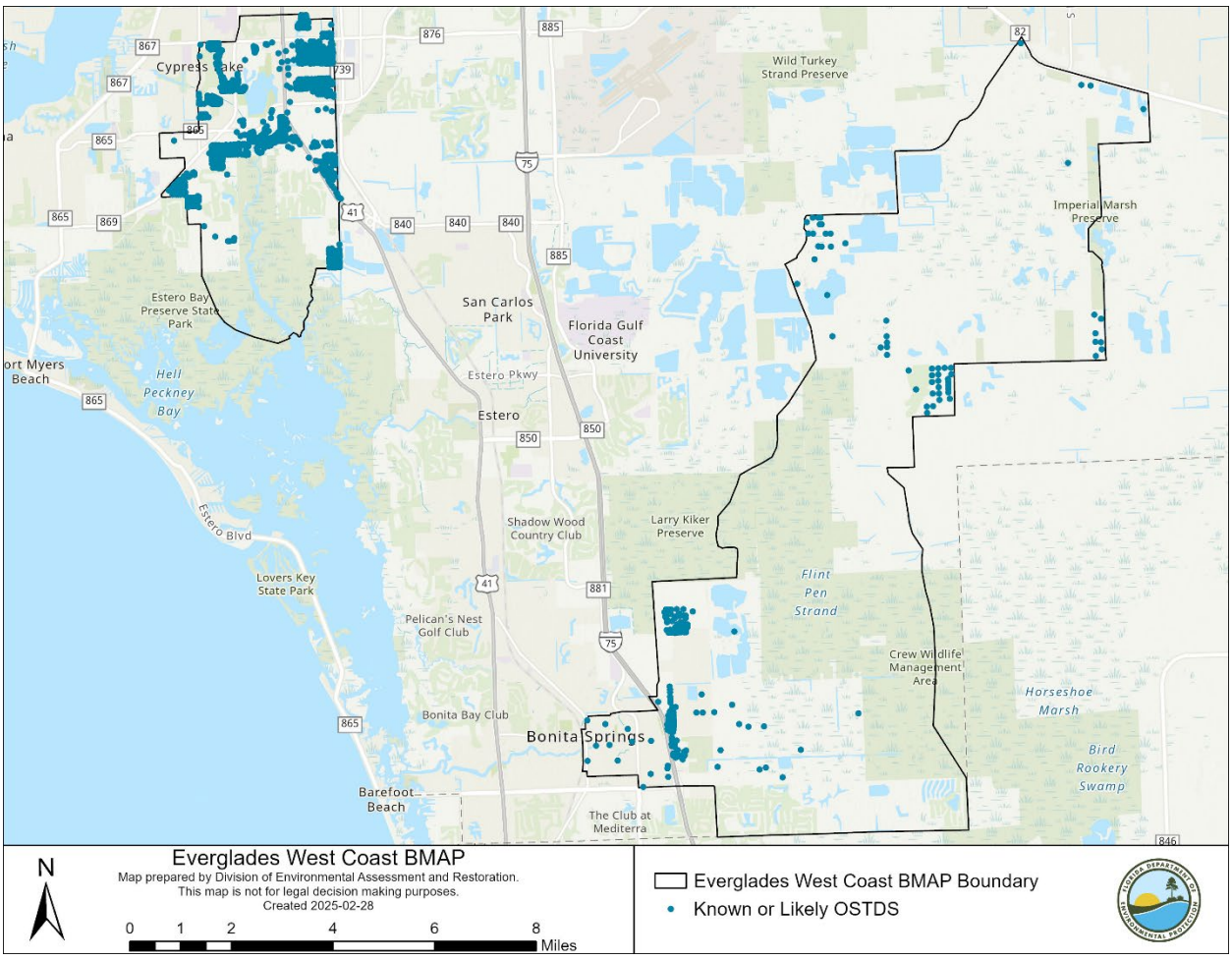


**Figure 3. Locations of OSTDS in the Everglades West Coast BMAP**

**Table 9. OSTDS counts by basin**

| Basin | Number of OSTDS |
|---|---|
| **Hendry Creek** | 1,517 |
| **Imperial River** | 283 |
| **Total** | **1,800** |

## 1.2.2 Assumptions

The water quality impacts of BMAP implementation are based on several fundamental assumptions about the pollutants targeted by the TMDLs, modeling approaches, waterbody

response, and natural processes. The following assumptions were used during the BMAP process:

- BMAP load reduction credits were considered only for projects and BMPs that were completed by July 1, 2000, and later and provided treatment over and above the permitted requirements. Other considerations for reduction credits included proper operation and maintenance of an existing project. Examples of BMPs that were given credit include wet detention, retention, fertilizer ordinance(s), public education, constructed wetlands, street sweeping, baffle boxes, and catch basin inserts.

- 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.

- No credit was given to projects located outside the Hendry Creek and Imperial River watersheds, projects that did not reduce TN loading, flood control projects with no ancillary water quality benefits, maintenance projects, litter removal, pipe replacement, or conservation land purchases without a change in land use.

- As the DO TMDL was based on the reduction of ambient TN concentrations to a reference site TN value, modeling of loading sources did not occur during TMDL development. To assign allocations based on a load reduction, DEP utilized simplified runoff and loading calculations to estimate the land-based TN load, and reduced the resulting value to the TMDL TN concentration. Runoff coefficients and factors were modified to those recommended by the Coastal and Heartland National Estuary Partnership, formerly Charlotte Harbor National Estuary Program (CHNEP), at the time of the 2012 BMAP development.

- Water and wetland land uses were not removed from allocation calculations because these areas were included in the TMDL modeling.

### 1.2.3 Considerations

This BMAP requires stakeholders to implement their projects to achieve reductions within the specified 5-year milestone period. However, full implementation of this BMAP will be a long-term, adaptively managed process. While some of the BMAP projects and activities were recently completed or are currently ongoing, several projects require more time to design, secure funding, and construct. Regular follow-up and continued coordination and communication by the stakeholders will be essential to ensure the implementation of management strategies and assessment of incremental effects.

During the BMAP process, several items were identified that should be addressed in future updates to ensure that future BMAPs use the most accurate information:

- **Land Uses**. The loading estimates in the BMAP are based on land uses at a particular point in time, which allows the model to be validated and calibrated. The loading estimates for this BMAP iteration were based on 2017-2019 SFWMD land use data. Agricultural land use data are updated annually in the FSAID. The land use data used for modeling loads in this BMAP may not match information published by FDACS.

- **Updated TN Loads**. Since the loading estimates from the 2012 Everglades West Coast BMAP were completed, TN loading in the Imperial River and Hendry Creek River basins has changed. This BMAP update uses 2017-2019 SFWMD land use data to update the estimated TN loading in the BMAP.

- **Jurisdictional Boundaries** – Entities may experience shifts in their jurisdictional boundaries over time that require allocation adjustments. Changes to the boundaries and/or allocations for these stakeholders may be made as necessary and reflected in future BMAP iterations.

- **Previous Restoration Efforts** – DEP recognizes that stakeholders throughout the watershed have implemented stormwater management projects prior to the implementation of the TMDL and that these efforts have benefited water quality. Projects completed in 2000 or later are considered for credits and inclusion in the BMAP.

- **Agricultural land uses**. The estimates of nutrient loading from agricultural land uses are based on the types of commodities and total acreages within the basin. Growers often change commodities, allow land to be fallow, or sell land for urban development. It will be necessary, therefore, to evaluate the agricultural land uses in future BMAP iterations to adjust the loads and reductions from agricultural land uses. If more current information about specific loading rates and BMP effectiveness is known, those will be considered in future iterations.

- **CDD Responsibilities** – CDDs were assigned allocations only if three criteria were met: (1) there is development—i.e., roads and infrastructure—on the CDD; (2) the CDD discharges to a city or county MS4; and (3) the CDD is responsible for managing stormwater. As further details are provided (e.g., discharge locations from these CDDs), revisions to the allocations and boundaries will be made in future BMAP iterations. Furthermore, some of the CDDs that did not receive an allocation in this BMAP iteration may receive allocations in future BMAP iterations.

# Chapter 2. Modeling, Load Estimates and Restoration Approach

## 2.1. Model Development

The DO TMDLs for Hendry Creek and Imperial River were based on the reduction of ambient TN concentrations to the chosen reference site TN value; therefore, no modeling of loading sources was conducted. For the 2012 BMAP, DEP utilized runoff and loading calculations to estimate the land-based TN load and reduced the resulting value to the TMDL TN concentration to assign allocations based on a load reduction. Runoff coefficients and factors were modified to those recommended by CHNEP.

The Florida Land Use and Cover Classification System (FLUCCS) codes in the raw data were converted to the categories in the CHNEP report by assigning each FLUCCS code in the raw data to a single CHNEP report category. These categories were then used to select appropriate loading rates and runoff coefficients. The resulting land use categories and loading factors are listed in **Table 10**. Yearly total nitrogen loadings were calculated by multiplying each land use polygon's acreage by its appropriate loading rate. Refer to **Chapter 4** and **Chapter 10** of the 2012 BMAP for a complete description of the methodologies for the Everglades West Coast model development.

**Table 10. Land Use categories and loading factors**

| Key | Category | Included FLUCCS Codes | Loading (pounds per acre [lbs/acre]) | Built-up | Runoff Coefficient |
|---|---|---|---|---|---|
| 1100 | Single-Family Residential | 1100s | 3.27 | 1 | 0.270 |
| 1200 | Medium-Density Residential | 1200s | 6.55 | 1 | 0.430 |
| 1300 | Multi-Family Residential | 1300s | 10.37 | 1 | 0.640 |
| 1400 | Commercial | 1400 | 12.87 | 1 | 0.850 |
| 1550 | Industrial | 1550 | 12.15 | 1 | 0.830 |
| 1610 | Mining | 1610, 1620, 1630, 7400, 7430 | 1.72 | 1 | 0.500 |
| 1660 | Mining - Holding Ponds | 1660 | 7.13 | 1 | 0.830 |
| 1700 | Institutional/Transportation/Utilities | 1700, 1710, 8140, 8310, 8320 | 3.60 | 1 | 0.580 |
| 1800 | Golf Courses and Parks | 1800, 1820, 1850 | 2.27 | 1 | 0.250 |
| 1900 | Rangeland | 1900, 1920, 3100, 3200, 3210, 3300 | 1.53 | 0 | 0.250 |
| 2000 | Agriculture | 2000s | 10.35 | 1 | 0.288 |
| 4000 | Upland Forested | 4000s | 0.41 | 0 | 0.210 |
| 5000 | Freshwater - Open Water | 5000s | 7.13 | 0 | 0.830 |
| 6120 | Forested - Freshwater Wetlands | 6120-6300 | 4.30 | 0 | 0.680 |
| 6410 | Non-Forested Freshwater Wetlands | 6410, 6430, 6440 | 3.47 | 0 | 0.630 |
| 6420 | Saltwater Wetlands | 6420, 6510 | 0.00 | 0 | 0.000 |

The loading estimates in the 2012 BMAP were based on the 2004 SFWMD land use information. This 2025 BMAP update uses the SFWMD 2017–2019 land cover and land use, which is the most current version available, to determine loading estimates using the lbs/acre from **Table 10**. A series of geographic information system (GIS) clipping steps were used to assign the BMAP area and associated loading to the responsible entities based on jurisdictional boundaries or land use codes. The updated starting loads by entity are shown in **Table 11** for Hendry Creek and **Table 12** for Imperial River. DEP providing revised starting loads and allocations is an expected part of the iterative BMAP process where loading estimates are reassessed as land uses and other loading sources change over time as. Responsible entities and agencies should expect periodic adjustments to the basin reduction assignments during the BMAP process.

**Table 11. Hendry Creek TN starting loads**

| Entity | Area (acres) | TN Load (pounds per year [lbs/yr]) |
|---|---|---|
| **Natural Lands** | 4,490 | 15,711 |
| **Agriculture** | 98 | 1,017 |
| **FDOT D1** | 78 | 374 |
| **Catalina at Winkler Preserve CDD** | 67 | 435 |
| **Laguna Lakes CDD** | 119 | 871 |
| **Lee County** | 5,642 | 42,160 |
| **Total** | **10,493** | **60,568** |

**Table 12. Imperial River TN starting loads**

| Entity | Area (acres) | TN Load (lbs/yr) |
|---|---|---|
| **Natural Lands** | 27,270 | 101,565 |
| **Agriculture** | 8,821 | 86,206 |
| **FDOT D1** | 71 | 291 |
| **Corkscrew Farms CDD** | 524 | 3,426 |
| **City of Bonita Springs** | 5,660 | 33,372 |
| **Lee County** | 2,602 | 10,794 |
| **Total** | **44,947** | **235,654** |

## 2.2. Allocations

As part of the TMDL, DEP used a reference target of 0.74 mg/L for TN to achieve DO water quality standards. The TN target load associated with this concentration is 44,414 lbs/yr for Hendry Creek and 192,202 lbs/yr for Imperial River. The difference between the natural lands starting load and the TMDL allowable load is the anthropogenic allowable load (see **Table 13**). While reductions to attain the TMDLs may come from any source, the focus is on reductions from anthropogenic sources. Therefore, the loads associated with the natural lands were

subtracted from the allowable TMDL loads to determine the allowable loads for anthropogenic (urban and agricultural) lands.

**Table 13. Everglades West Coast BMAP load reductions**

| Basin | TN Anthropogenic Starting Load (lbs/yr) | TN TMDL Allowable Load (lbs/yr) | TN Natural Load (lbs/yr) | TN Anthropogenic Allowable Load (lbs/yr) | TN Required Reduction (lbs/yr) |
|---|---|---|---|---|---|
| **Hendry Creek** | 44,856 | 44,414 | 15,711 | 28,703 | 16,154 |
| **Imperial River** | 134,089 | 192,202 | 101,565 | 90,637 | 43,452 |
| **Total** | **178,945** | **236,616** | **117,276** | **119,340** | **59,606** |

The required reductions per basin were then determined by calculating the difference between the anthropogenic allowable load and the sum of the anthropogenic entity starting loads. Required reductions were assigned to the stakeholders based on the percentage of the starting load from each stakeholder. **Table 14** summarizes the required reductions by entity for Hendry Creek and **Table 15** summarizes the required reductions by entity for Imperial River.

**Table 14. Hendry Creek TN required reductions by entity**

| Entity | % of TN Starting Load (lbs/yr) | TN Required Reduction (lbs/yr) |
|---|---|---|
| **Agriculture** | 2.3% | 366 |
| **FDOT District 1** | 0.8% | 135 |
| **Catalina at Winkler Preserve CDD** | 1.0% | 157 |
| **Laguna Lakes CDD** | 1.9% | 314 |
| **Lee County** | 94.0% | 15,182 |
| **Total** | **100.0%** | **16,154** |

**Table 15. Imperial River TN required reductions by entity**

| Entity | % of TN Starting Load (lbs/yr) | TN Required Reduction (lbs/yr) |
|---|---|---|
| **Agriculture** | 64.3% | 27,936 |
| **FDOT District 1** | 0.2% | 94 |
| **Corkscrew Farms CDD** | 2.6% | 1,110 |
| **City of Bonita Springs** | 24.9% | 10,814 |
| **Lee County** | 8.0% | 3,498 |
| **Total** | **100.0%** | **43,452** |

### 2.2.1 Milestones

Section 403.067, F.S., requires that BMAPs include 5-year milestones for the implementation of TMDLs. Any responsible entity within the BMAP that has an assigned pollutant load reduction requirement must identify projects or strategies to meet their upcoming 5-year milestone, even if the identified project or strategy will not be completed by the milestone. Each project must include a planning-level cost estimate and an estimated date of completion that is included in the BMAP and statewide annual reporting process.

**Table 16** and **Table 17** summarize the required reduction milestones for each entity in the Everglades West Coast BMAP. Consistent with the timeline outlined in the 2012 BMAP, this 2025 BMAP update includes two future milestones. As required by statute, 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.

Responsible entities must submit a sufficient list of additional projects and management strategies to DEP no later than January 14, 2026, to be compliant with the upcoming BMAP milestone or be subject to further department enforcement.

If any lead entity is unable to submit a sufficient list of eligible management strategies to meet their next 5-year milestone reductions, specific project identification efforts are required to be submitted by January 14, 2026. Any such project identification efforts must define the purpose of and a timeline to identify sufficient projects to meet the upcoming milestone. The project description and estimated completion date for any such project identification effort must be provided and reflect the urgency of defining, funding, and implementing projects to meet the upcoming and future BMAP milestones. These planning efforts are ineligible for BMAP credit themselves but are necessary to demonstrate that additional eligible management actions will be forthcoming and BMAP compliance will be achieved. Examples of project identification efforts are included in **Appendix C**. Only those entities that provide sufficient project identification efforts will be deemed as possessing a defined compliance schedule. Those entities without an adequate project list nor a defined compliance schedule to meet their upcoming 5-year milestone may be subject to enforcement actions

**Table 16. Entity-specific TN reduction milestones for the Hendry Creek basin**

| Entity | 2027 Required Reduction (50% Milestone) (lbs/yr) | 2032 Required Reduction (100% Milestone) (lbs/yr) |
|---|---|---|
| **Agriculture** | 183 | 366 |
| **FDOT District 1** | 68 | 135 |
| **Catalina at Winkler Preserve CDD** | 79 | 157 |
| **Laguna Lakes CDD** | 157 | 314 |
| **Lee County** | 7,591 | 15,182 |
| **Total** | **8,077** | **16,154** |

**Table 17. Entity-specific TN reduction milestones for the Imperial River basin**

| Entity | 2027 Required Reduction (50% Milestone) (lbs/yr) | 2032 Required Reduction (100% Milestone) (lbs/yr) |
|---|---|---|
| **Agriculture** | 13,968 | 27,936 |
| **FDOT District 1** | 47 | 94 |
| **Corkscrew Farms CDD** | 555 | 1,110 |
| **City of Bonita Springs** | 5,407 | 10,814 |
| **Lee County** | 1,749 | 3,498 |

| Entity | 2027 Required Reduction (50% Milestone) (lbs/yr) | 2032 Required Reduction (100% Milestone) (lbs/yr) |
|---|---|---|
| **Total** | **21,726** | **43,452** |

### 2.2.2 Project Progress

**Table 18** and **Table 19** summarize the total required reductions and the estimated reductions achieved for completed and ongoing projects as of November 15, 2024, for each entity in each basin. **Appendix B** includes the project details. As part of the annual reporting process, stakeholders will be required to provide a detailed and quantified description of their ordinance enforcement and environmental education activities to receive credits for these activities. Based on progress towards meeting the TMDL and water quality monitoring results, reductions from ordinances and education efforts may be reevaluated in future BMAP updates, particularly with respect to enforcement of ordinances.

DEP continues to work with the appropriate agencies and other stakeholders to identify and prioritize needed projects and management strategies required to meet the reduction milestones.

**Table 18. TN load reductions for the Hendry Creek basin**

| Entity | TN Full Required Reduction (lbs/yr) | TN Completed and Ongoing Project Reductions Achieved (lbs/yr) | % of TN Reductions Achieved |
|---|---|---|---|
| **Agriculture** | 366 | 0 | 0% |
| **FDOT District 1** | 135 | 117 | 87% |
| **Catalina at Winkler Preserve CDD** | 157 | 0 | 0% |
| **Laguna Lakes CDD** | 314 | 0 | 0% |
| **Lee County** | 15,182 | 7,468 | 49% |
| **Totals** | **16,154** | **7,585** | **47%** |

**Table 19. TN load reductions for the Imperial River basin**

| Entity | TN Full Required Reduction (lbs/yr) | TN Completed and Ongoing Project Reductions Achieved (lbs/yr) | % of TN Reductions Achieved |
|---|---|---|---|
| **Agriculture** | 27,936 | 13,384 | 48% |
| **FDOT District 1** | 94 | 77 | 82% |
| **Corkscrew Farms CDD** | 1,110 | 0 | 0% |
| **City of Bonita Springs** | 10,814 | 3,316 | 31% |
| **Lee County** | 3,498 | 2,767 | 79% |
| **Totals** | **43,452** | **19,544** | **45%** |

## 2.3. Basinwide Sources Approach

### 2.3.1 Agriculture

#### 2.3.1.1 Agricultural BMPs

To address nutrient loading from agricultural operations effectively, a balanced approach is necessary—one that supports agricultural productivity while safeguarding water resources. This entails promoting farming practices that optimize nutrient and water use efficiency, minimize runoff, and enhance soil health. Section 403.067, F.S., requires agricultural producers in adopted BMAPs to either enroll and properly implement the applicable FDACS BMPs for their operation or to conduct water quality monitoring activities as required by Chapter 62-307, F.A.C. Agricultural BMPs include practices such as nutrient management, irrigation management and water resource protection, and can mitigate nutrient loading while promoting environmental stewardship among Florida's agricultural producers. In many BMAPs, however, the implementation of BMPs alone will not be sufficient to meet water quality restoration goals. BMP manuals adopted by FDACS are available at https://www.fdacs.gov/Agriculture-Industry/Water/Agricultural-Best-Management-Practices. Agricultural landowners that do not enroll in BMPs are referred to DEP for water quality monitoring or enforcement under sections 403.121, 403.141 and 403.161, F.S.

Every two years FDACS is required to perform onsite inspections of each agricultural producer that enrolls in BMPs to ensure that the practices are being properly implemented. The verification includes review and collection of nutrient application records that producers must maintain to demonstrate compliance with the BMP Program; verification that all other applicable BMPs are being properly implemented; verification that any cost shared practices are being properly implemented; and identification of potential cost share practices, projects or other applicable BMPs not identified during enrollment. Rule 5M-1.008, F.A.C., outlines the procedures used to verify the implementation of agricultural BMPs. Producers not implementing BMPs according to the process outlined in Chapter 5M-1, F.A.C., are referred to DEP for enforcement action after attempts at remedial action by FDACS are exhausted. Failure to implement BMPs or conduct water quality monitoring that demonstrates compliance with pollutant reductions may result in enforcement action by DEP (paragraph 403.067(7)(b), F.S.).

Pursuant to paragraph 403.067(7)(c), F.S., where water quality problems are demonstrated despite the appropriate implementation, operation and maintenance of adopted BMPs, DEP, a WMD or FDACS, in consultation with DEP, must conduct a reevaluation of the BMPs. If a reevaluation of the BMPs is needed, FDACS will also include DEP, the appropriate WMD, and other partners in the reevaluation and BMP update processes.

Although it is anticipated that additional enrollment in agricultural BMPs along with more frequent implementation verification site visits by FDACS will increase nutrient reductions from agricultural nonpoint sources, it is also recognized that further reductions, beyond the implementation of required owner-implemented BMPs, will be necessary to achieve the TMDLs.

In 2024 FDACS updated its existing BMP manuals to incorporate updated BMPs based on the latest scientific and technical research.

Further nutrient reductions can be achieved through implementation of additional agricultural projects or activities. Chapter 2023-169, Laws of Florida (L.O.F.) amended 403.067, F.S., to include regional water quality improvement projects that will be developed by DEP and FDACS, in cooperation with agricultural landowners, where these projects are necessary to achieve TMDLs.

SFWMD is implementing projects that encourage low-input agriculture and water quality improvement technologies. FDACS also provides funding to some agricultural operations to add other practices beyond owner-implemented BMPs. Examples include drainage improvements, fencing, water control structures, precision agriculture technology, and fertigation.

Other reductions associated with the implementation and modification of BMPs may be realized through ongoing studies, data collection, and WMD initiatives. These additional projects and activities are to be implemented in conjunction with the BMP Program, which needs to achieve full enrollment with verification to ensure that the BMAP goals are achieved.

#### 2.3.1.2 Dairies and Other Concentrated Animal Feeding Operations (CAFOs)

CAFO dairies permitted under Chapter 62-670, F.A.C., located within a BMAP, may not cause or contribute to a violation of water quality standards and must implement nutrient management practices identified in the permits. To minimize infiltration of liquid manure, waste storage ponds must be lined using a concrete or geosynthetic liner. If a clay liner exists, then the dairy will need to upgrade to a concrete or geosynthetic liner when funding is available, or it must demonstrate that the liner does not allow leaching that results in water quality exceedances.

Additionally, sampling for TN and TP of land applied effluent/wastewater must be included in the DEP-approved nutrient monitoring plan in the permit and implemented in accordance with the monitoring plan.

#### 2.3.1.3 Livestock Operations Without CAFO Permits

Livestock operations may not cause or contribute to a violation of water quality standards. Not all livestock operations are large enough to require an NPDES CAFO permit under Chapter 62-670, F.A.C. For these operations, section 403.067, F.S., requires the operation to enroll in the FDACS BMP Program and implement applicable BMPs or to conduct a monitoring program according to Chapter 62-307, F.A.C., that is approved by DEP or the WMD.

#### 2.3.1.4 Aquaculture

Under the federal Clean Water Act, aquaculture activities are defined as a point source. In 1999, the Florida Legislature amended Chapter 597, F.S., Florida Aquaculture Policy Act, to create a program within FDACS 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.

#### 2.3.1.5 Silviculture

The Florida Forest Service (FFS) within FDACS is the lead agency responsible for assisting landowners, loggers and forestry professionals with silviculture BMP implementation as well as conducting statewide silviculture BMP training and compliance monitoring. FFS 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. Compliance with the rule involves submitting a Notice of Intent to Implement BMPs (NOI) to FFS and thereby committing to follow BMPs during all current and future forestry operations.

#### 2.3.1.6 Agricultural Cooperative Regional Elements

Section 403.067, F.S., requires FDACS, DEP and agricultural producers to work together to establish Agricultural Cooperative Regional Water Quality Elements (ACE) in BMAPs where agricultural nonpoint sources contribute at least 20% of nonpoint source nutrient discharges to impaired waterbodies, or where DEP determines this element is necessary to achieve the TMDLs. FDACS 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. The list of projects included in the ACE must include a planning-level cost estimate of each project along with the estimated amount of nutrient reduction that such project will achieve. Partner agencies and key stakeholders referred to in this process include FDACS, DEP and agricultural producers.

Addressing nutrient loading from agricultural sources in Florida's waterways requires collective action and partnership among key stakeholders, and in consultation with the WMDs. By fostering cooperation and engagement, the ACE framework facilitates the exchange of knowledge, resources and expertise, leading to innovative solutions and effective strategies for tackling water quality challenges. Engaging producers in the decision-making process ensures that projects are practical, feasible, and tailored to the needs and realities of agricultural operations. Partner agencies provide technical support, regulatory guidance, and funding opportunities that will enhance the implementation and success of regional water quality improvement initiatives. This cooperative effort is essential for implementing targeted actions that balance the economic and social benefits of agriculture with the obligation to address agricultural nonpoint source loading beyond statutorily required BMP implementation and cost share.

The ACE framework leverages resources and technical expertise to efficiently identify regional projects and other strategies tailored to the diverse agriculture production methods, landscapes, and watersheds that will need to be implemented to achieve the TMDLs. Regional project types will vary among the different BMAPs, and can include, but are not limited to, a combination of traditional projects that focus on water treatment, land acquisition in fee or conservation easements on the lands of willing sellers, site-specific water quality improvement projects,

dispersed water management projects, innovative technologies, and regional projects funded through existing or enhanced cost share programs administered by FDACS or the WMDs.

While FDACS is assigned the lead role on project solicitation, development, selection and implementation, FDACS 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 and to leverage existing programs and resources. FDACS will lead engagement with producers and industry groups through annual workshops to identify potential regional projects. Identified regional projects will be implemented through various mechanisms, such as existing agency cost share or grant programs or through a legislative budget request and eventual appropriation. Upon identification of a project, FDACS will update DEP on project development and implementation, including the funding strategy.

FDACS and DEP will work together to track progress on agricultural water quality projects under the ACE framework through the development of performance metrics and collection of water quality monitoring data in the basin or, if necessary, at the project level. The default performance measures will be the expected range of pollutant removal efficiencies associated with a project or strategy. Tools may be needed to determine the effectiveness of projects, such as modeling and, where feasible, onsite water quality monitoring.

FDACS will report on projects annually through DEP's Statewide Annual Report 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. The ACE process provides for adaptive management, allowing flexibility to adapt and improve based on regional project or management strategy results.

Agricultural nonpoint sources contribute 2.3% of the TN nutrient sources in the Hendry Creek basin and 64.3% of the TN nutrient sources in the Imperial River basin in the Everglades West Coast BMAP. Pursuant to subparagraph 403.067(7)(e)1., F.S., an ACE is required in this BMAP.

Most agricultural lands are engaged in row crops production. **Table 20** shows the three dominant crop types within the Everglades West Coast BMAP.

**Table 20. Three dominant crop types within the Everglades West Coast BMAP**

| Crop Type | Acres |
|---|---|
| **Row Crops** | 4,434 |
| **Grazing Land** | 2,951 |
| **Citrus** | 464 |

Targeting future funding toward precision agriculture, manure management, innovative technologies or soil health practices, including combining practices where applicable, to address nutrient impacts from row crop production on a regional scale could provide additional reductions.

FDACS will continue to work with key stakeholders in the Everglades West Coast BMAP to identify additional options for addressing agricultural nonpoint source nutrient loading. For more information on the FDACS Regional Projects Program, please see the links in **Appendix F**.

#### 2.3.1.7 Description of BMPs Adopted by Rule

**Appendix F** provides detailed information on BMPs and agricultural practices in the BMAP area. **Table 21** identifies the adopted BMPs and BMP manuals relevant to this BMAP.

**Table 21. BMPs and BMP manuals adopted by rule as of July 2025**

| Agency | F.A.C. Chapter | Chapter Title |
|---|---|---|
| FDACS OAWP | 5M-1 | Office of Agricultural Water Policy |
| FDACS OAWP | 5M-06 | Florida Nursery Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices |
| FDACS OAWP | 5M-08 | Florida Vegetable and Agronomic Crop Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices |
| FDACS OAWP | 5M-09 | Florida Sod Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices |
| FDACS OAWP | 5M-11 | Florida Cattle Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices |
| FDACS OAWP | 5M-12 | Conservation Plans for Specified Agricultural Operations |
| FDACS OAWP | 5M-13 | Florida Specialty Fruit and Nut Crop Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices |
| FDACS OAWP | 5M-14 | Florida Equine Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices |
| FDACS OAWP | 5M-16 | Florida Citrus Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices |
| FDACS OAWP | 5M-17 | Florida Dairy Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices |
| FDACS OAWP | 5M-18 | Florida Agriculture Wildlife Best Management Practices |
| FDACS OAWP | 5M-19 | Florida Poultry Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices |
| FDACS OAWP | 5M-21 | Florida Small Farms and Specialty Livestock Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices |
| FDACS Division of Agriculture Environmental Services | 5E-1 | Fertilizer |
| FDACS Division of Aquaculture | 5L-3 | Aquaculture Best Management Practices |
| FFS | 5I-6 | Best Management Practices for Silviculture |
| DEP | 62-330 | Environmental Resource Permitting |

### 2.3.2 Stormwater

Urban stormwater is a considerable source of nutrient loading to the Everglades West Coast BMAP, and many urban areas are already regulated under the MS4 NPDES Stormwater Program. An MS4 is a conveyance or system of conveyances, such as roads with stormwater systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels, or storm

drains. If an MS4 permittee is identified as a contributor in the BMAP, the permitted MS4 must undertake projects specified in the BMAP.

Regulated MS4s are required to implement SWMP to reduce pollutants to the maximum extent practicable and address applicable TMDL allocations. Both Phase I and Phase II MS4 permits include provisions for the modification of SWMP activities. Phase I medium and large MS4s are regulated under an individual permit, with multiple permittees having coverage under the same permit as "co-permittees." Phase II small MS4s are regulated under a generic permit. Under the "NPDES Two-Step Generic Permit for Discharge of Stormwater from Phase II MS4s" (paragraph 62-621.300(7)(a), F.A.C.), regulated Phase II MS4s must develop a SWMP that includes BMPs with measurable goals and a schedule for implementation to meet six minimum control measures.

DEP can designate an entity as a regulated MS4 if its discharges meet the requirements of the rule and are determined to be a significant contributor of pollutants to surface waters of the state in accordance with Rule 62-624.800, F.A.C. A Phase II MS4 can be designated for regulation when a TMDL has been adopted for a waterbody or segment into which the MS4 discharges the pollutant(s) of concern. Because urban areas located in the BMAP that are not currently covered by an MS4 permit also significantly contribute to nutrient loading, individually or in aggregate, 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.

On June 28, 2024, Governor Ron DeSantis signed Senate Bill 7040 into law, which updates Florida's stormwater rules and design criteria, including Chapter 62-330, F.A.C., to protect the state's waterways. The new regulations aim to manage runoff from developments, ensuring that future stormwater systems are better maintained. Operation and maintenance entities will be required to have estimates for the expected routine maintenance costs and to certify that they have the financial capability to maintain the stormwater system over time. The rule will also provide for more consistent oversight through a required periodic inspection routine and reporting on the inspection results to the permitting agency.

Additionally, under Chapter 62-330, F.A.C., the new rule establishes requirements for applicants to demonstrate, through calculations or modeling, that the future stormwater management systems would provide additional treatment to meet new Environmental Resource Permits stormwater treatment performance standards for an 80% reduction for TP and 55% reduction for TN, along with additional requirements that would apply where a project discharges to Outstanding Florida Waters or impaired waters. Additional permitting requirements to protect ground water can be found within the Applicant Handbook Volume I, Section 8.5.2.

#### 2.3.2.1 Urban BMPs and Eligibility

Management actions must reduce TN and/or TP loads and meet certain criteria to be considered eligible for credit in the BMAP. Urban structural projects completed since January 1, 2000, and

planned in the future were eligible for BMAP credit. Urban structural projects only received credit for the portion of the load reduction that was over and above any permit requirements. This criterion was needed because permit conditions are established to prevent impacts from the new development and do not contribute to water quality improvement.

Public education and outreach efforts and nonstructural projects were eligible for BMAP credit regardless of when they were implemented because these efforts were excluded in the Everglades West Coast model. Estimates of TN and TP reductions from street sweeping and BMP clean out were made using a tool developed by the Florida Stormwater Association in 2012, based on data collected by Sansalone et al. (2011) that uses the volume or weight of material removed to estimate the pounds of TN and TP removed.

#### 2.3.2.2 Sports Turfgrass and Golf Courses

Sports turfgrass sources include golf courses and other sporting facilities. Sporting facilities are required to follow the 2025 Sports Turf BMP Manual to protect water resources.

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 DEP's golf course BMP manual, *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses* (DEP, 2021). All golf courses located within a BMAP are required to submit a nutrient management plan (NMP) to DEP that is designed to sustain even plant growth while minimizing excessive growth and nutrient losses. Required information for the NMP is available in **Appendix E**. A draft NMP must be submitted to DEP within one year of BMAP adoption and a final document is due two years after adoption. All soil, water, and tissue sampling must include appropriate nitrogen and phosphorous analyses.

If a facility (either golf course or other sporting facility) uses fertilizer rates greater than those in the BMP manuals, the facility is required to conduct water quality monitoring prescribed by DEP or a WMD that demonstrates compliance with water quality standards.

### 2.3.3 WWTFs

#### 2.3.3.1 Facility Improvements and Effluent Limits

DEP issues permits for facilities and activities to discharge wastewater to surface waters and groundwaters of the state. DEP is authorized by the U.S. Environmental Protection Agency to issue permits for discharges to surface waters under the NPDES Program. Permits for discharges to groundwaters are issued by DEP based on Florida law and rules. Wastewater discharge permits establish specific limitations and requirements based on the location and type of facility or activity releasing industrial or domestic wastewater from a point source. In areas with an adopted, nutrient-related BMAP prior to July 1, 2023, section 403.086, F.S., requires any facility discharging to a waterbody to upgrade to advanced waste treatment (AWT) by January 1, 2033. Further, waterbodies determined not to be attaining nutrient or nutrient-related standards after

July 1, 2023, or subject to a BMAP or reasonable assurance plan after July 1, 2023, have 10 years to provide AWT after such determination or adoption.

The nitrogen and phosphorus effluent limits set forth in **Table 22** and **Table 23** 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. DEP will evaluate the need for more stringent nutrient effluent limits as appropriate.

**Table 22. Nitrogen effluent limits for WWTFs**

mgd = Million gallons per day
mg/L = milligrams per liter

| 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 | Not applicable (NA) | 10 | 10 |

**Table 23. Phosphorus effluent limits for WWTFs**

mgd = Million gallons per day
mg/L = milligrams per liter

| 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 | NA | 6 | 6 |

Where the law does not provide for a compliance timeframe, new effluent standards will take effect at the time of permit renewal or no later than five years after BMAP adoption, whichever is sooner.

Additionally, new and existing wastewater permits in the BMAP area must require at least quarterly sampling of the effluent discharge for TN and TP and report these sampling results in the discharge monitoring reports submitted to DEP.

In 2021, subsection 403.064(16), F.S., was amended where domestic wastewater utilities that dispose of effluent, reclaimed water, or reuse water by surface water discharge were required to submit for DEP review and approval, a plan for eliminating non-beneficial surface water discharge by January 1, 2032. A utility must fully implement the approved plan by January 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 January 1, 2028. Violations are subject to administrative and civil penalties pursuant to sections 403.121, 403.131 and 403.141, F.S.

#### 2.3.3.2 Reclaimed Water Effluent Limits

In accordance with section 403.086. F.S., by July 1, 2034, any WWTF providing reclaimed water that will be used for commercial or residential irrigation or be otherwise land applied within a nutrient BMAP or Reasonable Assurance Plan area is required to meet AWT standards for TN and TP such that the reclaimed water product contains not more, on a permitted annual average basis, of 3 mg/L of TN and 1 mg/L of TP. DEP has determined that the use of reclaimed water is causing or contributing to the nutrient impairments being addressed in this BMAP area. These requirements do not apply to reclaimed water that is land applied as part of a water quality restoration project or water resource development project approved by DEP to meet a TMDL or minimum flow or level and where the TN and TP will be at or below AWT standards prior to entering groundwater or surface water.

DEP has determined that certain WWTFs providing reclaimed water for the purpose of commercial or residential irrigation or that is otherwise being land applied within this BMAP area are causing or contributing to the nutrient impairments being addressed in this BMAP. Based on DEP's determination, these facilities are identified in **Appendix D** are subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S. The facilities listed in **Appendix D** have 10 years from BMAP adoption to meet the applicable AWT standards. This requirement does not prevent the department from requiring an alternative treatment standard, if the department determines the alternative standard is necessary to achieve the TMDL(s) or applicable water quality criteria. For facilities that did not have adequate information to complete an evaluation or where a change occurs to the facility's application of reclaimed water after the initial evaluation (e.g. increase in facility capacity or change in location of reclaimed water application), the department will evaluate the land application of reclaimed water as more information becomes available pursuant to section 403.086, F.S.

All new permitted facilities providing reclaimed water that will be used for commercial or residential irrigation or be otherwise land applied in the BMAP, are required to meet AWT standards for TN and TP in accordance with section 403.086, F.S.

#### 2.3.3.3 WWTF Plans

Subparagraph 403.067(7)(a)9., F.S., requires local governments within a BMAP to develop WWTF plans to be adopted as part of nutrient BMAPs no later than July 1, 2025, if DEP identifies domestic wastewater as contributors of at least 20% of point source or nonpoint source nutrient pollution or if DEP determines remediation is necessary to achieve the TMDL. The WWTF plans must be developed by each local government in cooperation with DEP, WMDs, and public and private domestic WWTFs within the jurisdiction of the local government. Each local government's wastewater treatment plan for this BMAP must contain the information

outlined in Final Order 23-0116 for each existing or proposed domestic wastewater facility in the local government's jurisdiction.

Subparagraph 403.067(7)(a)9., F.S., was amended in 2024 to clarify that private domestic wastewater facilities must provide this information to local governments effective July 1, 2024. Information related to private facilities will need to be included in future local government WWTF plans if not captured in the initial plans.

#### 2.3.3.4 Connection to Sewer

The installation of new OSTDS within a BMAP area is prohibited where connection to sewer lines is available. For existing OSTDS, the owner must connect to sewer within 365 days of written notification by the utility that connection to its sewer line is available. A utility is statutorily required (section 381.00655, F.S.) to provide written notice to existing OSTDS owners regarding the availability of sewer lines for connection. Additionally, existing OSTDS needing repair or modification must connect to available sewer lines within 90 days of notification by DEP.

To facilitate an inventory of noncompliant properties, by February 2, 2026, and every two years thereafter, each utility with sewer lines in the BMAP shall provide DEP a list of properties with existing OSTDS where sewer is available but has not connected. For each identified property, include the date(s) which the utility provided written notice to the owners of the availability of sewer.

#### 2.3.3.5 Biosolids and Septage Application Practices

To provide assurance that nitrogen and phosphorus losses to surface water and groundwater are minimized from the permitted application of biosolids and septage in the BMAP area, the requirements in Chapter 62-640, F.A.C., apply to newly permitted application sites and existing application sites upon permit renewal. Where biosolids materials mixed with yard waste or other organic materials are distributed as compost or soil amendments, DEP recommends the recipients of these materials be notified of their increased nutrient content, so that any fertilization practices on the site can be adjusted accordingly. FDACS and University of Florida Institute of Food and Agricultural Sciences (UF-IFAS) are coordinating efforts to ensure that the distribution process for these kinds of materials includes notification of the nutrient content to the site manager.

### 2.3.4 OSTDS

Beginning July 1, 2023, section 403.067, F.S., prohibits any new conventional OSTDS serving a lot of one acre or less where central sewer is available. Within all BMAP areas, if central sewer is unavailable, then the owner must install a DEP-approved enhanced nutrient-reducing OSTDS that achieves 65% nitrogen reduction, or other wastewater system that achieves 65% reduction. BMAP OSTDS Remediation Plan

This BMAP contains a remediation plan for OSTDS consisting of management actions, including those described in **Appendix B** and updated annually through the statewide reporting process, that reduce loads from existing OSTDS through either sewer connection, adding enhancement nitrogen treatment to OSTDS, or installing another type of wastewater system on the property, as applicable.

Subparagraph 403.067(7)(a)9.b., F.S., also requires local governments within a BMAP to develop an OSTDS remediation plan to be adopted as part of the BMAP no later than July 1, 2025, if DEP identifies OSTDS as contributors of at least 20% of point source or nonpoint source nutrient pollution or if DEP determines remediation is necessary to achieve the TMDL. When applicable, the OSTDS remediation plans must be developed by each local government in cooperation with DEP, WMDs, and public and private domestic wastewater facilities. Each OSTDS remediation plan for this BMAP must contain the information outlined in DEP Final Order 23-0116. Stakeholders submit projects describing how OSTDS loads are addressed as part of BMAP reporting and estimate the load reductions associated with each project. The estimated reductions to the basin from addressing these OSTDS will be based on several factors, including location, how they are addressed, and the amount of attenuation that occurs.

#### 2.3.4.1 Local Government Ordinances

Local governments may have existing ordinances or could adopt new ordinances that add additional requirements for enhancement of OSTDS. To expedite remediation of wastewater sources and to facilitate achievement of assigned milestones in this BMAP, DEP encourages local governments to adopt such ordinances.

## 2.4. Future Growth

Nutrient impacts from new development are addressed through a variety of mechanisms outlined in this BMAP, as well as provisions of Florida law. While most of the restoration projects and management strategies listed in this BMAP address current nutrient loading, there is a need to plan and implement sound management strategies to address loading associated with population growth. DEP has included in this BMAP specific elements to address current and future WWTF effluent, OSTDS and stormwater sources. Broader requirements—such as local land development regulations, comprehensive plans, ordinances, incentives, environmental resource permit requirements, and consumptive use permit requirements—all provide additional mechanisms and avenues to protect water resources and reduce the impact of new development and other land use changes as they occur.

Further strengthening of comprehensive plans is required under section 163.3177 F.S., which required local governments to amend their comprehensive plans with the following considerations:

- Identify and prioritize projects to meet the TMDLs.
- Update the wastewater section to include plans for treatment updates, not just capacity, and AWT must be prioritized.

- In developments with more than 50 lots with more than one OSTDS per acre, the plan must consider the feasibility of providing sanitary sewer within a 10-year planning horizon and identify the facility that could receive the flows. The plan must review the capacity of the facility and any associated transmission facilities; projected wastewater flow at that facility for the next 20 years, including expected future new construction and connections of OSTDS to sanitary sewer; and timeline for the construction of the sanitary sewer system. The plan was required to be updated by July 1, 2024.
- Comprehensive plans must contain capital improvements element to consider the need for and the location of public facilities.
    - Construction, extension, or increase in capacity of public facilities as well as principals for correcting existing public facility deficiencies. Components must cover at least a 5-year period.
    - Costs, timeline, general location and projected revenue sources to fund the facilities.
    - Standards to meet acceptable level of service.
    - Schedule of capital improvements, which may include privately funded projects.
    - Must include a list of projects necessary to achieve the pollutant load reductions attributable to the local government, as established in a BMAP.
    - The plan must include a general sanitary sewer, solid waste, drainage, potable water, and natural groundwater aquifer recharge element correlated to principals and guidelines for future land use.
    - The element must address coordinating the extension of, increase in the capacity of, or upgrade in treatment of facilities to meet future needs; prioritizing AWT while maximizing the use of existing facilities and discouraging urban sprawl; conserving potable water resources; and protecting the functions of natural groundwater recharge areas and natural drainage features.

Through this array of laws and the requirements in this BMAP, new development must undertake nutrient-reduction measures before the development is complete. DEP recommends that all local governments revise their planning and land use ordinance(s) to adequately address future growth and the associated environmental impact. Maintaining land at lower intensity uses through land purchases or easements for conservation and recreational use is one strategy that can help reduce water quality impacts in the basin. Any additional nutrient loading from land use intensification will be evaluated during future BMAP review efforts. If an increase in loading occurs an entity may receive additional reduction requirements that will require additional restoration actions by the responsible entity to remediate impact.

### 2.4.1 Future Growth Analysis

An analysis was done to consider the impacts of future population growth and urban development on loading in the basin. Wastewater sources were evaluated using per-person estimations calculated for portions of the population estimated to be served by OSTDS and those connected to central sewer. Stormwater sources were evaluated using per-acre estimations calculated for portions of a jurisdictional area that may be developed.

First, population growth for each county was taken from the Bureau of Economic and Business Research 2040 Medium Growth Projections. Then, a spatial analysis was performed to determine the proportion of developable land area attributed to each entity within each county. Areas where there are permanent waterbodies, or which have been set aside for conservation are unlikely to see future development or increased population so the National Hydrography Database for lake and ponds and the Florida Natural Areas Inventory conservation lands were used to remove lands from the analysis. The percentage of remaining land attributed to each entity was applied to the county projected population growth to determine the number of additional people anticipated to contribute to loading by 2040.

The next step was to distinguish the future population expected to be served by sewer versus those with OSTDS based on the most recent Florida Water Management Inventory (FLWMI) for each BMAP county. For this, FLWMI parcels within each entity's jurisdiction were counted and categorized based on the Wastewater Type field. The number of points in "Known Sewer," "Likely Sewer," and "Somewhat Likely Sewer" divided by the total number of points estimated a portion of the population that are served by central wastewater collection system. The remainder are assumed to have an OSTDS.

Per person loading calculations were used to estimate future loads from WWTFs and OSTDS under different planning scenarios, as described below. DEP's Domestic Wastewater Program estimates each person in Florida generates 100 gallons of wastewater per day. For OSTDS, the Florida Department of Health estimates each person in Florida generates 10 lbs/yr of TN. US-IFAS estimates each person in Florida generates 10 grams of TP per day. Phosphorus loading rates from OSTDS are not affected by new technologies or BMAP management strategies. An attenuation rate of 50% for wastewater effluent disposal was applied to loading calculations to derive the estimated future load to the basin.

Per acre loading calculations were used to estimate future loads from increased urban runoff as a result of development under different planning scenarios, described below. First, a number of developed acres were derived by applying percentages to the developable land areas from the initial GIS analysis for each entity. Then, the loadings were based on DEP's statewide event mean concentrations and runoff coefficients for low density residential, with a generalized rainfall for Central Florida from Harper 2007. Finally, a generalized attenuation rate of 70% for urban runoff was applied to loading calculations to derive the estimated future load to the basin.

Scenario 1 represents a future planning scenario with the highest levels of treatment feasible. It assumes all local governments within the BMAP have a minimum of 90% of their population served by centralized sewer, and all domestic wastewater will be treated to AWT standards (3 mg/L TN or less and 1mg/L TP or less) by 2040 based on current Florida law and BMAP management strategies. This scenario also assumes that all future OSTDS will be enhanced nutrient-reducing systems or other wastewater systems with a nitrogen treatment efficiency of at least 65%. For urban development, this scenario represents a conservative growth future where 2% of developable land is converted to low density residential.

Scenario 2 utilizes the current rates of sewer availability based on the FLWMI parcels to estimate the population served by central wastewater collection system. This future planning scenario assumes that all domestic wastewater will be treated to AWT standards (3 mg/L TN or less and 1mg/L TP or less) by 2040 based on current Florida law and BMAP management strategies. This scenario also assumes that all future OSTDS will be enhanced nutrient-reducing systems or other wastewater systems with a nitrogen treatment efficiency of at least 65%. For urban development, this scenario represents a moderate growth future where 10% of developable land is converted to low density residential.

Scenario 3 represents a future planning scenario with the lowest levels of treatment feasible. It utilizes the current rates of sewer availability based on the FLWMI parcels to estimate the population served by central wastewater collection system and assumes that all domestic wastewater will be treated to 6 mg/L TN and 3 mg/L TP by 2040. This scenario also assumes that all future OSTDS will be conventional systems. For urban development, this scenario represents an extreme growth future where 17% of developable land is converted to low density residential.

Future development will likely also result in an increase in loading from turfgrass. This change is difficult to model because much of it depends on the type and location of development, enforcement of local ordinances, future home values, and future social attitudes towards turfgrass lawns. There are also complex dynamics associated with new urban development in which loading from human activities is compounded by potential removal or conversion of forest lands or green spaces, which had previously provided natural remediation of atmospheric and soil nitrogen.

Based on the methodology above, using nitrogen loads as an example, **Table 24** shows the estimated future loads from wastewater and urban stormwater sources that may be assigned to local governments if growth continues as projected under the three planning scenarios. DEP encourages local governments to consider these additional nutrient loads when authorizing new development or changes in land uses, and when developing local plans for wastewater infrastructure expansion and maintenance, to ensure that the TMDL target is achieved and maintained.

**Table 24. Estimated nitrogen load from future growth in the BMAP area**

| Entity | 2040 Additional Population | 2040 Additional TN Loading Scenario 1 (lbs/yr) | 2040 Additional TN Loading Scenario 2 (lbs/yr) | 2040 Additional TN Loading Scenario 3 (lbs/yr) |
|---|---|---|---|---|
| Lee County | 11,453 | 6,451 | 12,402 | 24,769 |
| Bonita Springs | 4,175 | 2,254 | 2,288 | 4,564 |
| **Basin Totals** | **15,628** | **8,705** | **14,690** | **29,333** |

Scenario 1 resulted in an additional basin load of 8,705 lbs/yr TN. Scenario 3 resulted in an additional basin load of 29,333 lbs/yr TN.

While it is unlikely that additional nutrient loading from future populations can be entirely avoided, the results of this analysis provide local governments information on how they can mitigate future nitrogen loading by pursuing planning scenarios which prioritize the expansion of centralized sewer services that meet or exceed AWT standards for wastewater effluent. Entities with minor changes in 2040 loading under Scenarios 1 and 2 already have a high rate of sewering in their jurisdiction.

This broad analysis is not being used to determine allocated reductions for responsible entities because it does not capture all local considerations and complexities of mixed land use, or current allocation approaches for wastewater. In addition, changes in nutrient loading from future population and development are difficult to model because much of it is dependent on the type and location of development, enforcement of local ordinances, future home values, and future social attitudes towards lawn maintenance and waste management. There are also complex dynamics associated with new urban development in which loading from human activities is compounded by potential removal or conversion of forest lands or green spaces, which had previously provided natural remediation of atmospheric and soil nutrients, as well as other ecosystem benefits. However, the results show trends in how loading in the basin might change in the coming decades without comprehensive local and regional planning.

Other mechanisms discussed above in **Section 2.4** are available to local governments to further mitigate future nutrient loading from existing and future developed land. For example, strengthening and enforcing fertilizer ordinances, working with homeowners' associations or neighborhood groups to reduce fertilizer use on community landscaping, or incentivizing Florida Friendly development practices could reduce the overall impact of additional nutrient loading associated with urban fertilizer. Additionally, wastewater can be treated to higher standards than those built into this analysis through upgrades to WWTFs and use of enhanced nutrient-reducing OSTDS certified with higher nitrogen treatment efficiencies or other wastewater treatment systems with higher treatment levels. Local governments can use this information to incorporate water quality considerations when developing and implementing local ordinances, comprehensive plans, stormwater planning, and enhanced OSTDS incentive programs in areas of urban expansion.

## 2.5. Funding Opportunities

Chapter 2023-169, L.O.F., expanded grant opportunities for local governments and eligible entities working to address TMDLs or impaired waters. Through the DEP Water Quality Improvement Grant program, eligible entities can apply for grant funding for wastewater, stormwater, and regional agricultural projects. Projects are prioritized that have the maximum nutrient load per project, demonstrate project readiness, are cost-effective, have cost-share by the applicant (except for Rural Areas of Opportunity), have previous state commitment, and are in areas where reductions are most needed. Multiple competitive funding resources are available under the Protecting Florida Together website.

Financial and technical assistance through FDACS and WMDs are available to agricultural producers within the Everglades West Coast BMAP. FDACS and conservation district technicians provide outreach and education on BMP implementation for enrolled agricultural operations, as well as work with interested producers to provide cost share funding for projects to improve on-farm nutrient and irrigation efficiencies that work in tandem with the applicable practices from the producer's BMP checklist. The WMDs cost share program also provides outreach and funding for projects that provide nutrient and irrigation management benefits. FDACS and the WMDs work closely to ensure their cost share programs complement each other to meet the needs of the producers while considering the specific characteristics of the region.

# Chapter 3. Monitoring Strategy

## 3.1. Monitoring Objectives

The Everglades West Coast monitoring plan is described in detail in the 2012 BMAP. The primary objectives are used to evaluate progress in the BMAP. Secondary objectives contribute to this evaluation, can help interpret data collected, and provide information for potential future refinements of the BMAP.

***Primary Objective***

- Enhance the understanding of basin loads, identify areas with high nutrient concentrations, and track water quality trends. This information will measure progress toward achieving the TMDL and provide a better understanding of the watershed loading.

***Secondary Objective***

- Identify areas within the basin with high loadings of TN to better focus management efforts.

To achieve these objectives, the monitoring strategy focuses on the following core and supplemental parameters shown in **Table 25**.

**Table 25. Water quality parameters monitored**

| Analyte | Core Parameter | Supplemental Parameter |
|---|---|---|
| Alkalinity | - | X |
| Ammonia (N) | - | X |
| Biochemical Oxygen Demand | X | - |
| Carbon- Organic | - | X |
| Carbon-Total | - | X |
| Chlorophyll-a (corrected) | X | - |
| Color* | X | - |
| DO | X | - |
| DO Saturation | - | X |
| Flow | - | X |
| Nitrate-Nitrite (N) | X | - |
| Nitrogen- Total Kjeldahl | X | - |
| Nitrogen- Total | - | X |
| Orthophosphate (P) | - | X |
| pH | X | - |
| Phosphorus- Total | X | - |
| Specific Conductance/Salinity | X | - |
| Temperature, Water | X | - |
| Total Suspended Solids | - | X |
| Turbidity | X | - |

The monitoring network comprises a tiered system for the sampling stations, as follows:

- **Tier 1**: Stations listed in the BMAP monitoring plan as essential and mandatory for tracking water quality trends in Hendry Creek and Imperial River and stations that document watershed reductions. Stations should be sampled monthly for all core parameters. Sampling stations, parameters, frequency, and other elements of this strategy may be modified as appropriate to match changing environmental conditions and funding resources. However, any modifications made shall not affect the ability of the monitoring network to fulfill the objectives noted below.
- **Tier 2**: Stations that are currently sampled either within the BMAP basin or in a tributary contributing to the overall load. These stations will help in the understanding of the total load within the watershed, and DEP supports the continued monitoring.

**Table 26** summarizes the water quality monitoring stations in the Everglades West Coast BMAP, and **Figure 4** shows the stations locations.

**Table 26. Water quality monitoring stations in the Everglades West Coast BMAP**

| Basin | Entity | Station ID | Tier |
|---|---|---|---|
| Hendry Creek | DEP South Regional Operations Center (ROC)/Lee County | HENDGR01 | 1 |
| Hendry Creek | DEP South ROC/Lee County | HENDGR02 | 1 |
| Hendry Creek | DEP South ROC/Lee County | MULLGR01 | 2 |
| Hendry Creek | DEP South ROC/Lee County | MULLGR02 | 2 |
| Hendry Creek | Lee County | 10MIGR10 | 2 |
| Hendry Creek | Lee County | 46B-9GR | 2 |
| Hendry Creek | Lee County | EB-12 | 2 |
| Hendry Creek | Lee County | HENDGR11A | 1 |
| Hendry Creek | Lee County | HENDGR20 | 1 |
| Hendry Creek | Lee County | HENDGR30 | 1 |
| Hendry Creek | Lee County | HENDGR40 | 1 |
| Hendry Creek | Lee County | HENDGR41 | 1 |
| Hendry Creek | Lee County | ISPARK01 | 1 |
| Hendry Creek | Lee County | ISPARK02 | 1 |
| Imperial River | City of Bonita Springs | CBS 11 | 1 |
| Imperial River | City of Bonita Springs | CBS 14 | 1 |
| Imperial River | City of Bonita Springs | CBS 18 | 1 |
| Imperial River | City of Bonita Springs | CBS 9 | 2 |
| Imperial River | Lee County | IMPRGR41 | 2 |
| Imperial River | Lee County | IMPRGR51 | 1 |
| Imperial River | Lee County | IMPRGR80 | 1 |
| Imperial River | Lee County | IMPRGR90 | 1 |
| Imperial River | Lee County | KEHLGR | 1 |

### 3.1.1 Data Management and Quality Assurance/Quality Control

Stakeholders participating in the monitoring plan must collect water quality following DEP standard operating procedures, and the results must be analyzed by a National Environmental Laboratory Accreditation Program–certified laboratory.

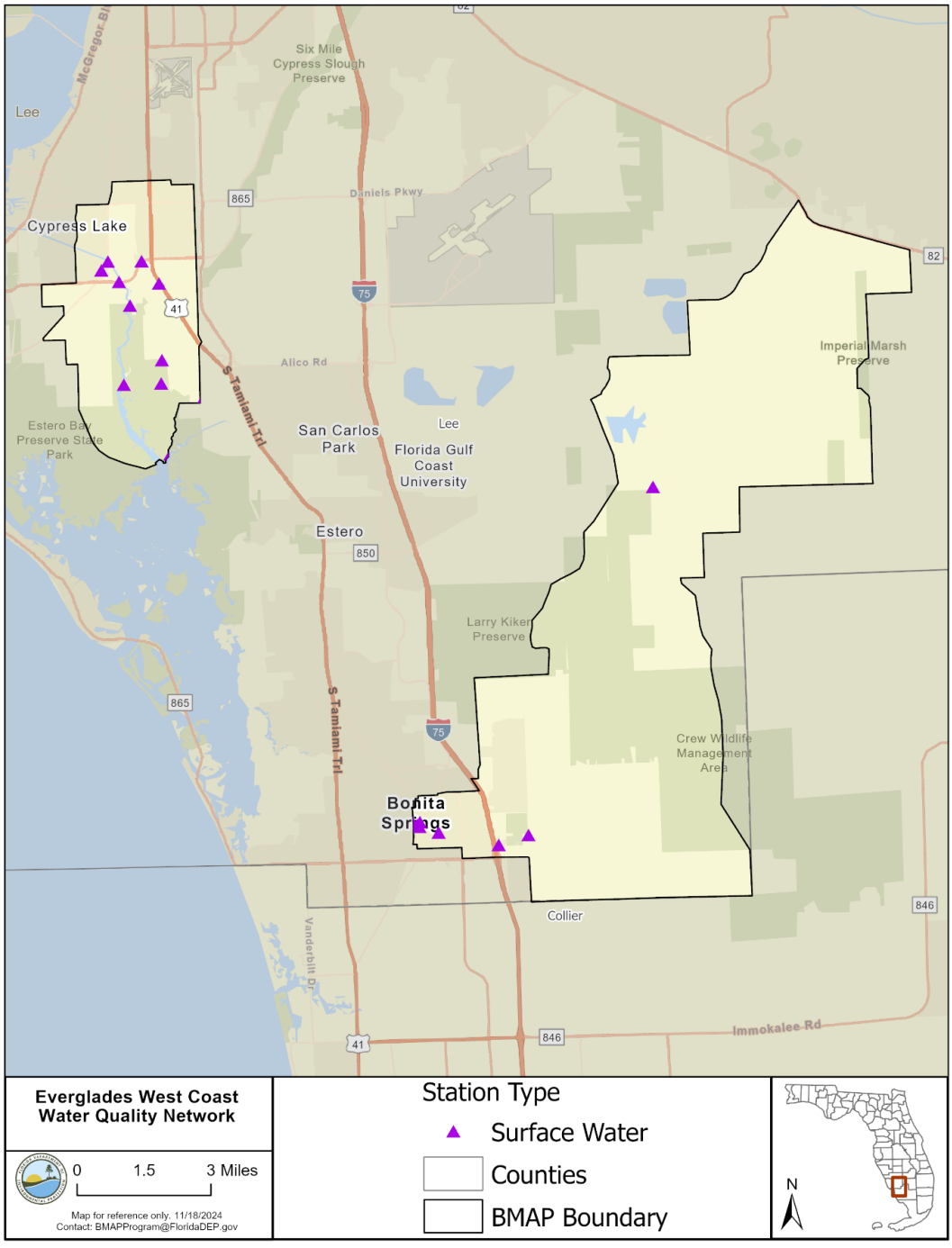


**Figure 4. Everglades West Coast BMAP water quality monitoring network**

## 3.2. Hot Spot Analysis

To better prioritize and focus resources to most efficiently achieve restoration in the Everglades West Coast BMAP, DEP developed the Hotspot Analysis approach. This approach uses measured data collected throughout the watershed to evaluate TN concentrations. 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 or compliance; they will only be used to prioritize resources.

The measured nutrient concentrations were compared with selected benchmarks to identify areas that should be the highest priority for restoration. Four statistics are calculated for the whole BMAP and are used to compare against each station average: TN concentration average, TN 90th percentile, TN standard deviation, and TN percent frequency of samples over the BMAP threshold. Stations are assigned a rank of 0, 1, or 2 for each category, as shown in **Figure 5**.

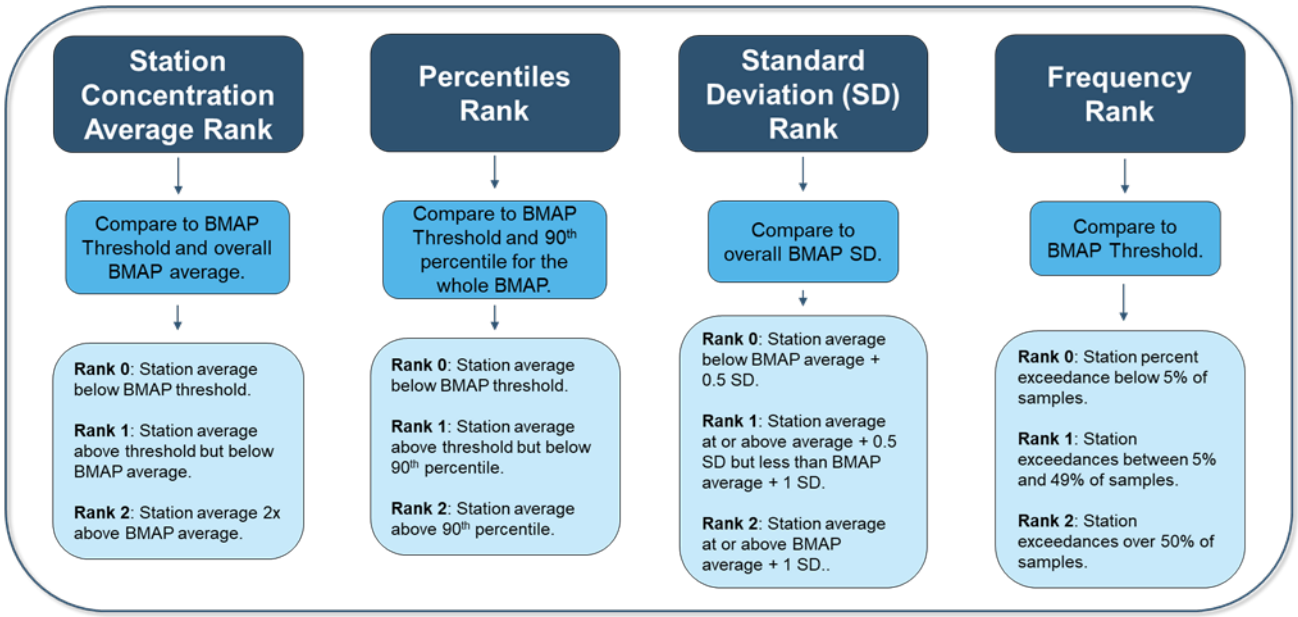


**Figure 5. Summary of hot spot analysis approach**

The scores for the four categories are added for a total index rank. The total index rank ranges between 0-8, with high rank values (8, 7, 6) being stations of high concern and low ranks (0, 1, 2) least concern. This analysis will be run as needed to identify areas of concern within the BMAP. Results will be shared with stakeholders at annual BMAP meetings.

**Figure 6** summarizes the most recent TN hot spot analysis results. The period of record used was 2018 to 2022, using ambient monitoring sites with at least four samples per year and at least two years of data.

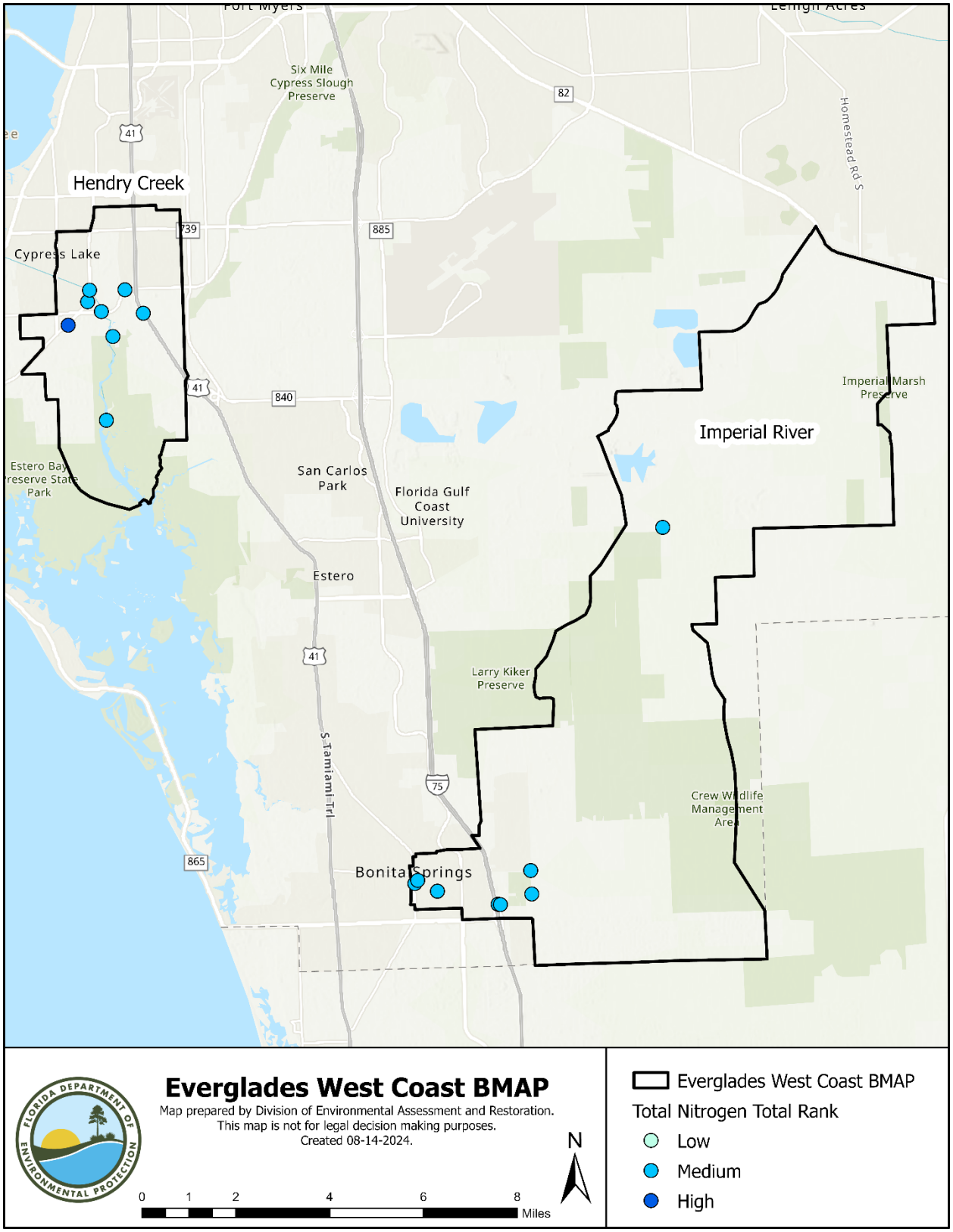


**Figure 6. TN hot spot results**

# Chapter 4. Commitment to Plan Implementation

## 4.1. Adoption Process

The 2025 BMAP update is adopted by Secretarial Order and assigns TN load reductions to the responsible stakeholders in the Everglades West Coast BMAP.

## 4.2. Tracking Reductions

The required loading reductions are expected to be met by 2032. Each entity responsible for implementing management actions to meet their upcoming 5-year milestone as part of the BMAP will provide DEP, via the statewide annual report process, with an annual update of progress made in implementing load reductions. The update will track the implementation status of the management actions listed in the BMAP and document additional projects undertaken to further water quality improvements in the basin. FDACS will continue to report acreage enrolled in NOIs at least annually to DEP.

## 4.3. Revisions to the BMAP

Adaptive management involves setting up a mechanism for making course corrections in the BMAP when circumstances change, or feedback mechanisms indicate that a more effective strategy is needed. Section 403.067, F.S., requires that the plan be revised, as appropriate, in collaboration with basin stakeholders. All or part of a revised BMAP must be adopted by Secretarial Order. Adaptive management measures include the following:

- Need to update based on new information, including model updates.
- New law requirements.
- Procedures to determine whether additional cooperative actions are needed.
- Criteria/process for determining whether and when plan components need to be revised because of changes in costs, environmental impacts, social effects, watershed conditions, or other factors.
- Descriptions of the stakeholders' role after BMAP completion.

Tracking implementation, monitoring water quality and pollutant loads, and holding periodic meetings to share information and expertise are key components of adaptive management.

# Chapter 5. References

DEP. 2003. *Water quality assessment report: Everglades West Coast*. Florida Department of Environmental Protection.

DEP. 2021. Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses. Florida Golf Course Superintendents Association.

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Sansalone, J., Raje, S., Berretta, C. 2011. *Quantifying Nutrient Loads Associated with Urban Particulate Matter (PM), and Biogenic/Litter Recovery Through Current MS4 Source Control and Maintenance Practices.* University of Florida College of Engineering. Final Report to the Florida Stormwater Association.

Tyler, D. and Rhew K. 2008. *Dissolved Oxygen TMDLs for Hendry Creek (WBIDs 3258B and 3258B1)*. TMDL Report. Florida Department of Environmental Protection.

# Appendices

## Appendix A. Important Links

The links below were correct at the time of document preparation. Over time, the locations may change and the links may no longer be accurate. None of these linked materials are adopted into this BMAP.

- DEP Website: http://www.floridadep.gov
- DEP Map Direct Webpage: https://ca.dep.state.fl.us/mapdirect/
- Florida Statutes: http://www.leg.state.fl.us/statutes:
    a. Florida Watershed Restoration Act (Section 403.067, F.S.)
- DEP Model Ordinances: http://fyn.ifas.ufl.edu/fert_ordinances.html
- DEP Standard Operating Procedures for Water Quality Samples: https://floridadep.gov/dear/quality-assurance/content/dep-sops
- FDACS BMPs: Best Management Practices (BMPs) / Agriculture Industry / Home - Florida Department of Agriculture & Consumer Services
- FDACS BMP and Field Staff Contacts: Agricultural Water Policy / Divisions & Offices / Home - Florida Department of Agriculture & Consumer Services
- FDACS Regional Projects Program: https://www.fdacs.gov/Divisions-offices/Agricultural-Water-Policy
- Florida Administrative Code (Florida Rules): https://www.flrules.org/
- Florida Stormwater Rule: https://floridadep.gov/water/engineering-hydrology-geology/content/erp-stormwater-resource-center
- National Environmental Laboratory Accreditation Council, National Environmental Laboratory Accreditation Program: https://floridadep.gov/dear/florida-dep-laboratory/content/nelap-certified-laboratory-search
- South Florida Environmental Report: https://www.sfwmd.gov/science-data/scientific-publications-sfer
- UF–IFAS Research: http://research.ifas.ufl.edu/
- MS4 Permittee list: https://floridadep.gov/water/stormwater/content/stormwater-facilities-lists

# Appendix B. Projects to Reduce Nutrient Sources

## Table B-1. Stakeholder projects

TBD = To be determined.

| Project ID | Lead Entity | Project Number | Project Name | Project Description | Project Type | Project Status | Estimated Completion Date | Estimated TN Reduction (lbs/yr) | Crediting Location | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|
| 2326 | City of Bonita Springs | BS-01 | Fertilizer Ordinance | Ordinance. | Regulations, Ordinances, and Guidelines | Ongoing | NA | 167 | Imperial River | $0.00 |
| 2325 | City of Bonita Springs | BS-02 | Florida Yards and Neighborhood Program | Education program utilizing the Florida Yards and Neighborhood Program. | Education Efforts | Ongoing | NA | 1,001 | Imperial River | $0.00 |
| 2323 | City of Bonita Springs | BS-04 | Residential Dry Detention | Dry detention. | Dry Detention Pond | Completed | 2012 | 0 | Imperial River | $0.00 |
| 2322 | City of Bonita Springs | BS-05 | Morton Avenue Swales | Dry retention. | Grass swales with swale blocks or raised culverts | Completed | 2012 | 83 | Imperial River | $0.00 |
| 2321 | City of Bonita Springs | BS-06 | Marni Fields | Dry detention. | Dry Detention Pond | Completed | 2012 | 6 | Imperial River | $0.00 |
| 2320 | City of Bonita Springs | BS-07 | Felts Avenue Stormwater Treatment | Dry detention. | Dry Detention Pond | Completed | 2012 | 21 | Imperial River | $0.00 |
| 2319 | City of Bonita Springs | BS-08 | Street Sweeping | Monthly street sweeping. | Street Sweeping | Ongoing | NA | 151 | Imperial River | $0.00 |
| 2341 | City of Bonita Springs | BS-09 | Felts Avenue Bio-Reactor Project | Utilize woodchips in an anaerobic environment to strip nitrogen from incoming stormwater. The 40-acre watershed will be treated on a 2-acre site on Felts Ave. | BMP Treatment Train | Completed | 2017 | 166 | Imperial River | $623,389.00 |
| 2333 | City of Bonita Springs | BS-10 | Pine Lake Preserve Rehydration Project | City initiated monitoring plan from Oct 22 to Nov 23 tracking Numeric Nutrient Criteria and TMDL at 4 locations in the preserve. Joint project with Lee County to rehydrate/reestablish hydraulic connectivity with Imperial River. | Hydrologic Restoration | Completed | 2024 | 217 | Imperial River | $0.00 |

| Project ID | Lead Entity | Project Number | Project Name | Project Description | Project Type | Project Status | Estimated Completion Date | Estimated TN Reduction (lbs/yr) | Crediting Location | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|
| 2334 | City of Bonita Springs | BS-11 | Downtown Redevelopment Drainage Project | Created two miles of interconnected drainage infrastructure to improve water quality through the use of exfiltration trenches. A total of 8.84 acre feet of exfiltration storage is provided by the project. | BMP Treatment Train | Completed | 2017 | 592 | Imperial River | $6,330,000.00 |
| 2335 | City of Bonita Springs | BS-12 | Septic System Removal | Conversion of septic systems to central sewer. | OSTDS Phase Out | Completed | 2016 | 912 | Imperial River | $17,205.00 |
| 5758 | City of Bonita Springs | BS-13 | Felts Avenue Bio-Reactor Project Phase II | Continuous withdrawal and treatment of water from the Imperial River. Project will connect Felts Avenue Bio-Reactor Phase I project via pump and piping system to create a continuous flow treatment system. | Regional Stormwater Treatment | Completed | 2024 | TBD | Imperial River | $800,000.00 |
| 6303 | City of Bonita Springs | BS-14 | Septic to Sewer Phase 2 | City in partnership with Bonita Springs Utilities has completed the design/construction plans for Sun Village (140 units) and Lakes of San Souci (48 units) conversion. Projects re-bid and proceeding to construction FY 24-25. | OSTDS Phase Out | Planned | 2026 | TBD | Imperial River | $4,000,000.00 |
| 6301 | City of Bonita Springs | BS-16 | Logan Boulevard Phase 1 | Development of approximately 1.5 miles of interconnected drainage from Bonita Beach Road south to the City limits. | Stormwater System Rehabilitation | Completed | 2019 | 0 | Imperial River | $3,000,000.00 |
| 7531 | City of Bonita Springs | BS-17 | Felts Avenue Bio-Reactor Phase III | Installing sub-aqueous intake piping. Design complete. | Stormwater Aeration System | Planned | 2026 | 0 | Imperial River | $559,656.00 |
| 2336 | FDACS | FDACS-01 | BMP Implementation and Verification | Enrollment and verification of BMPs by agricultural producers. Acres treated based on FDACS June 2024 Enrollment and FSAID XI. Reductions based on FDACS April 2024 Enrollment and 2023 BMAP Load Estimation Tool. | Agricultural BMPs | Ongoing | NA | 0 | Hendry Creek | $0.00 |
| 2337 | FDACS | FDACS-02 | BMP Implementation and Verification | Enrollment and verification of BMPs by agricultural producers. Acres treated based on FDACS June 2024 Enrollment and FSAID XI. Reductions based on FDACS April 2024 Enrollment and 2023 BMAP Load Estimation Tool. | Agricultural BMPs | Ongoing | NA | 8,219 | Imperial River | $0.00 |

| Project ID | Lead Entity | Project Number | Project Name | Project Description | Project Type | Project Status | Estimated Completion Date | Estimated TN Reduction (lbs/yr) | Crediting Location | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|
| TBD | FDACS | FDACS-03 | Credit for Changes in Land Use | Credit for changes in land use. | Agricultural BMPs | Completed | 2024 | 5,002 | Imperial River | $0.00 |
| TBD | FDACS | FDACS-04 | Cost-Share BMP Projects | Cost-share projects paid for by FDACS. | Agricultural BMPs | Ongoing | NA | 163 | Imperial River | TBD |
| 2338 | FDOT District 1 | HC-FDOT-01 | Wet Detention Ponds (1, 2, and 3) Facility ID: 12010-3561-01 | Wet detention. | Wet Detention Pond | Completed | Prior to 2012 | 23 | Hendry Creek | $0.00 |
| 2240 | FDOT District 1 | HC-FDOT-01b | Wet Detention Ponds (1, 2, and 3) Facility ID: 12010-3561-02 | Wet detention. | Wet Detention Pond | Completed | Prior to 2012 | 22 | Hendry Creek | $0.00 |
| 2244 | FDOT District 1 | HC-FDOT-01c | Wet Detention Ponds (1, 2, and 3) Facility ID: 12010-3561-03 | Wet detention. | Wet Detention Pond | Completed | Prior to 2012 | 23 | Hendry Creek | $0.00 |
| 2245 | FDOT District 1 | HC-FDOT-02 | Roadside Swales | Swale with ditch blocks. | Grass swales with swale blocks or raised culverts | Completed | 2013 | TBD | Hendry Creek | $0.00 |
| 2246 | FDOT District 1 | HC-FDOT-03 | Street Sweeping | Street sweeping. | Street Sweeping | Ongoing | NA | 45 | Hendry Creek | $0.00 |
| 2242 | FDOT District 1 | HC-FDOT-04 | Education Efforts | Pamphlets, Public Service Announcements, Illicit Discharge Program. | Education Efforts | Ongoing | NA | 4 | Hendry Creek | $0.00 |
| 2247 | FDOT District 1 | IR-FDOT-01 | Wet Detention Ponds (Pond 5D) Facility ID: 12075-3500-02 | Wet detention. | Wet Detention Pond | Completed | 2010 | 2 | Imperial River | $0.00 |
| 2248 | FDOT District 1 | IR-FDOT-01b | Wet Detention Ponds (Pond 7C) Facility ID: 12075-3500-03 | Wet detention. | Wet Detention Pond | Completed | 2010 | 26 | Imperial River | $0.00 |

| Project ID | Lead Entity | Project Number | Project Name | Project Description | Project Type | Project Status | Estimated Completion Date | Estimated TN Reduction (lbs/yr) | Crediting Location | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|
| 2254 | FDOT District 1 | IR-FDOT-01c | Wet Detention Ponds Pond 9B) Facility ID: 12075-3500-04 | Wet detention. | Wet Detention Pond | Completed | 2010 | 29 | Imperial River | $0.00 |
| 2253 | FDOT District 1 | IR-FDOT-02 | Roadside Swales | Swale with ditch blocks. | Grass swales with swale blocks or raised culverts | Completed | 2013 | TBD | Imperial River | $0.00 |
| 2251 | FDOT District 1 | IR-FDOT-03 | Education Efforts | Pamphlets, Public Service Announcements, Illicit Discharge Program. | Education Efforts | Ongoing | NA | 3 | Imperial River | $0.00 |
| 5243 | FDOT District 1 | IR-FDOT-04 | Street Sweeping | Street sweeping. | Street Sweeping | Ongoing | NA | 17 | Imperial River | $0.00 |
| 2241 | Lee County | HC-LC-01 | Lakes Park Water Quality Restoration | Retrofit Lakes Park to improve water quality of stormwater runoff by routing flows through a created filter marsh system. | Constructed Wetland Treatment | Completed | 2016 | 4,842 | Hendry Creek | $3,500,000.00 |
| 2250 | Lee County | HC-LC-02 | Street Sweeping | Street sweeping. | Street Sweeping | Ongoing | NA | 167 | Hendry Creek | $694,176.00 |
| 2256 | Lee County | HC-LC-03 | Education/ Fertilizer Ordinance | Public education on implementation of adopted fertilizer ordinance. | Education Efforts | Ongoing | NA | 2,319 | Hendry Creek | $392,441.00 |
| 2249 | Lee County | HC-LC-04 | Island Park Filter Marsh | Wetland creation and enhancement that included exotic removal, filter marsh creation, and native replanting. | Constructed Wetland Treatment | Completed | Prior to 2012 | 0 | Hendry Creek | $925,000.00 |
| 2266 | Lee County | HC-LC-05 | Lakes Park Littoral Zone Project | Creation of littoral shelves with native plantings for nutrient uptake. | Constructed Wetland Treatment | Completed | 2018 | 140 | Hendry Creek | $1,200,000.00 |
| 5241 | Lee County | HC-LC-07 | Lakes Park Phase III | Filter marsh. | Stormwater - Alum Injection System | Underway | 2025 | 6,568 | Hendry Creek | $2,654,000.00 |
| 5242 | Lee County | HC-LC-08 | Microbial Source Tracking in Lee County Waterways | Watershed study to investigate interactions between OSTDS and surface water in the Everglades West Coast BMAP. | Study | Completed | 2022 | 0 | Hendry Creek | $422,628.18 |

| Project ID | Lead Entity | Project Number | Project Name | Project Description | Project Type | Project Status | Estimated Completion Date | Estimated TN Reduction (lbs/yr) | Crediting Location | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|
| 5757 | Lee County | HC-LC-09 | Master Wastewater Treatment Feasibility Analysis | Study to support the development of a County-wide Septic Conversion Master Plan. | Study | Completed | 2023 | 0 | Hendry Creek | $0.00 |
| 7226 | Lee County | HC-LC-10 | Lakes Park Forestry Project | This project increased the density of trees in the riparian buffers of Lakes Park to improve stormwater runoff capture and to protect the water quality of the watershed. | Vegetated Buffers | Completed | 2024 | TBD | Hendry Creek | $32,500.00 |
| 7346 | Lee County | HC-LC-11 | Septic to Sewer Conversion (Group 4) | Septic to sewer conversions group 4: Lakes Park, Hendry Creek, Heritage Farms, and Lingon CT. | OSTDS Phase Out | Planned | 2028 | TBD | Hendry Creek | $0.00 |
| 2349 | Lee County | IR-LC-01 | Corkscrew Regional Ecosystem Watershed | Properties will be added every year until all the desired properties are purchased and joined to the preserve. | Land Use Change | Completed | 2024 | 0 | Imperial River | $208,818.00 |
| 2350 | Lee County | IR-LC-02 | Pine Lake Preserve | Land purchase and conversion to conservation land use. | Land Use Change | Completed | Prior to 2012 | 7 | Imperial River | $2,366,273.00 |
| 2351 | Lee County | IR-LC-03 | Street Sweeping | Street sweeping. | Street Sweeping | Ongoing | NA | 150 | Imperial River | $694,176.00 |
| 2365 | Lee County | IR-LC-04 | Imperial Marsh Preserve | Land purchase and conversion to conservation land use. | Land Use Change | Completed | 2020 | 1,176 | Imperial River | $14,640,676.00 |
| 2353 | Lee County | IR-LC-05 | Education/ Fertilizer Ordinance | Public education on implementation of adopted fertilizer ordinance. | Education Efforts | Ongoing | NA | 594 | Imperial River | $392,441.00 |
| 2342 | Lee County | IR-LC-06 | Pine Lake Preserve Rehydration Project | Joint project with Bonita Springs that will rehydrate and reestablish hydraulic connectivity between the Imperial River and the undisturbed Corkscrew Regional Ecosystem Watershed wetlands which lay to the east of the preserve on the Corkscrew Swamp. | Hydrologic Restoration | Completed | 2022 | 757 | Imperial River | $900,000.00 |
| 2355 | Lee County | IR-LC-07 | Larry Kiker Preserve | Land purchase and conversion to conservation land use. | Land Use Change | Completed | 2017 | 83 | Imperial River | $42,435,000.00 |

| Project ID | Lead Entity | Project Number | Project Name | Project Description | Project Type | Project Status | Estimated Completion Date | Estimated TN Reduction (lbs/yr) | Crediting Location | Cost Estimate |
|---|---|---|---|---|---|---|---|---|---|---|
| 5759 | Lee County | IR-LC-08 | Master Wastewater Treatment Feasibility Analysis | Study to support the development of a County-wide Septic Conversion Master Plan. | Study | Completed | 2023 | 0 | Imperial River | $0.00 |
| 7270 | Lee County | IR-LC-09 | South East Water Reclamation Facility (WRF) | The South East WRF project will provide Lee County with a 6 million gallons per day advanced water reclamation facility that can be expanded to 10 million gallons per day. | Wastewater Service Area Expansion | Planned | 2028 | 0 | Imperial River | $295,000,000.00 |
| 7283 | Lee County | IR-LC-10 | Southeast Force Mains | This is a multi-phase project that will provide new transmission force mains. This will provide the influent for the new SE Water Reclamation Facility, and it will allow operational flexibility to enable transport of flow to Three Oaks WRF or South East WRF. | Wastewater Service Area Expansion | Planned | 2028 | 0 | Imperial River | $30,000,000.00 |

# Appendix C. Planning for Additional Management Strategies

Responsible entities must submit a sufficient list of additional projects and management strategies to DEP no later than January 14, 2026, to be compliant with the upcoming BMAP milestone or be subject to further department enforcement.

If any lead entity is unable to submit a sufficient list of eligible management strategies to meet their next 5-year milestone reductions, specific project identification efforts are required to be submitted by January 14, 2026. Any such project identification efforts must define the purpose of and a timeline to identify sufficient projects to meet the upcoming milestone. The project description and estimated completion date for any such project identification effort must be provided and reflect the urgency of defining, funding, and implementing projects to meet the upcoming and future BMAP milestones.

These planning efforts are ineligible for BMAP credit themselves but are necessary to demonstrate that additional eligible management actions will be forthcoming and BMAP compliance will be achieved. Only those entities that provide sufficient project identification efforts will be deemed as possessing a defined compliance schedule. Those entities without an adequate project list nor a defined compliance schedule to meet their upcoming 5-year milestone may be subject to enforcement actions. Examples of project identification efforts include the following:

- Planning and identifying water quality projects and related costs and schedules in specific plans:
  - Feasibility studies (e.g., stormwater feasibility studies or wastewater feasibility studies).
  - Flood mitigation plans with nutrient management components.
  - Basinwide water quality management plans.
  - Nutrient management plans.
- Applying for external project funding.
- Developing interagency/interdepartmental agreements or memorandum of understanding for collaboration on nutrient reduction projects that cross jurisdictional or administrative boundaries.
- Updating future growth considerations in local comprehensive plans, land development reviews, and audits of relevant codes and ordinances
- Updating existing remediation plans.
- Monitoring water quality in support of project planning and implementation.
- Researching innovative technologies.

# Appendix D: Wastewater Facilities

DEP has determined that certain WWTFs providing reclaimed water for the purpose of commercial or residential irrigation or that is otherwise being land applied within this BMAP area are causing or contributing to the nutrient impairments being addressed in this BMAP. Based on DEP's determination, the facilities listed below are subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S.

These facilities have 10 years from BMAP adoption to meet the applicable AWT standards. This requirement does not prevent the department from requiring an alternative treatment standard, if the department determines the alternative standard is necessary to achieve the TMDL(s) or applicable water quality criteria.

For facilities that did not have adequate information to complete an evaluation or where a change occurs to the facility's application of reclaimed water after the initial evaluation (e.g., an increase in facility capacity or change in location of reclaimed water application), the department will evaluate the land application of reclaimed water as more information becomes available pursuant to section 403.086, F.S.

**Table D-1. Wastewater facilities subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S.**

| Facility Name | Permit Number |
|---|---|
| FLA012343 | Bonita Springs Utilities East WRF |
| FLA014478 | Forest Utilities WWTP |

# Appendix E: Golf Course NMPs

The fertilizers used to maintain golf courses can be significant sources of nutrients in watersheds that are impaired for nitrogen and/or phosphorous. To achieve the TMDL target(s), all nutrient sources need to reduce their nutrient loading. Similar to other sources, golf courses are required to implement management strategies to mitigate their nutrient loading and be in compliance with the BMAP. Florida BMAPs are adopted by Secretarial Order and therefore legally enforceable by the DEP. Requirements for golf courses located in BMAPs are below.

1. **Golf Course BMP Certification, Implementation, and Reporting.**
   a. In areas with an adopted BMAP, all golf courses must implement the BMPs described in DEP's golf course BMP manual, *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses* (DEP, 2021).
   b. At minimum, the superintendent for each publicly owned golf course must obtain and maintain certification through the UF-IFAS Florida Golf Courses Best Management Practices Program. It is highly recommended that course managers and landscape maintenance staff also participate in the certification program to ensure proper BMP implementation and understanding of nutrient-related water quality issues and the role of golf courses in water quality restoration and protection. By no later than January 14, 2026, the golf course superintendents must confirm to DEP whether they have completed the certification. Certification must be completed by December 31, 2026. This certification must be renewed every four years.
   c. Beginning in 2026 a nutrient application record (fertilizer, reuse, etc.) must be submitted each year during the BMAP statewide annual reporting process.
   d. Fertilizer rates should be no greater than the UF-IFAS recommendations to help prevent leaching. This includes nutrients from reuse or any other source applied. If a facility uses fertilizer rates greater than those in the BMP manual they are required to conduct water quality monitoring prescribed by DEP or WMD that demonstrates compliance with water quality standards (**Table E-1**).
   e. Example golf course BMPs applicable to protecting water quality are listed below.
      - Use slow release fertilizer to prevent volatilization.
      - Use of lined media in stormwater features.
      - Use of denitrification walls.
      - Use of rain gardens.
      - Use of tree boxes.
      - Use of bioswales.

**Table E-1. Nutrient ranges for warm-season turfgrass species**

Note: For more information refer to the *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses* (DEP, 2021).

| Nutrient | Bermudagrass (%) | St. Augustinegrass (%) | Seashore Paspalum (%) | Centipedegrass (%) | Zoysia (%) |
|---|---|---|---|---|---|
| **Nitrogen** | 1.95 - 4.63 | 1.53 - 2.41 | 2.80 -3.50 | 1.5 - 2.9 | 2.04 - 2.36 |

| Nutrient | Bermudagrass (%) | St. Augustinegrass (%) | Seashore Paspalum (%) | Centipedegrass (%) | Zoysia (%) |
|---|---|---|---|---|---|
| **Phosphorus** | 0.15 - 0.43 | 0.30 - 0.55 | 0.30 - 60 | 0.18 - 0.26 | 0.19 - 0.22 |
| **Potassium** | 0.43 - 1.28 | 1.1 - 2.25 | 2.00 - 4.00 | 1.12 - 2.50 | 1.05 - 1.27 |
| **Calcium** | 0.15 - 0.63 | 0.24 - 0.54 | 0.25 - 1.50 | 0.50 - 1.15 | 0.44 - 0.56 |
| **Magnesium** | 0.04 - 0.10 | 0.20 - 0.46 | 0.25 - 0.60 | 0.12 - 0.21 | 0.13 - 0.15 |
| **Sulfur** | 0.07 - 0.02 | 0.15 - 0.48 | 0.20 - 0.60 | 0.20 - 0.38 | 0.32 - 0.37 |
| **Sodium** | 0.05 - 0.17 | 0.00 - 0.17 | - | - | - |

2. **All golf courses located within a BMAP are required to submit a NMP that is designed to, while maintaining even plant growth, prevent nutrient losses to the Floridan aquifer and surrounding surface waters. A draft NMP must be submitted to DEP within one year of BMAP adoption and a final document is due two years after adoption. The NMP must include the following:**
   a. ***A brief description of the goals of the nutrient management plan.***

   This should be a paragraph that describes the goals of your NMP. Talk about how you are managing for high quality turf and water quality. Remember your goal is to protect water quality while maintaining the golf course in premium condition.

   b. ***Identification of areas where nutrient applications will be made including greens, tees, fairways and roughs.***

   Discuss the areas of the course where you plan to use fertilizer, and why. Also discuss the areas that do not need or get any fertilizer applications.

   Include a GIS shapefile identifying all of these areas.

   Complete the table(s) detailing your nutrient application practices.

**Turf Details**

| Turf Type | Turf Species | Acreage |
|---|---|---|
| **Tees** | | |
| **Greens** | | |
| **Fairways** | | |
| **Roughs** | | |
| **Totals** | | |

## Fertilizer Applications

| Month | Turf Type | TN Application Rate (lbs/acre) | TP Application Rate (lbs/acre) | Number of Applications | Total TN Applied (lbs/acre) | Total TP Applied (lbs/acre) |
|---|---|---|---|---|---|---|
| **January** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **February** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **March** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **April** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **May** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **June** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **July** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **August** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **September** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |

| Month | Turf Type | TN Application Rate (lbs/acre) | TP Application Rate (lbs/acre) | Number of Applications | Total TN Applied (lbs/acre) | Total TP Applied (lbs/acre) |
|---|---|---|---|---|---|---|
| **October** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **November** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **December** | Tees | | | | | |
| | Greens | | | | | |
| | Fairways | | | | | |
| | Roughs | | | | | |
| **Totals** | | | | | | |

## Amount of Reuse/Reclaimed Water Applied

**Supply reuse/reclaimed water volumes applied, if applicable.*

| Month | Reuse/Reclaimed Water Quantity (Gallons) | Monthly Average TN (mg/L) | Monthly Average TP (mg/L) | Quantity of TN Applied (lbs) | Running Total of TN Applied per Acre (lbs/acre) | Quantity of TP Applied (lbs) | Running Total of TP Applied per Acre (lbs/acre) |
|---|---|---|---|---|---|---|---|
| **January** | | | | | | | |
| **February** | | | | | | | |
| **March** | | | | | | | |
| **April** | | | | | | | |
| **May** | | | | | | | |
| **June** | | | | | | | |
| **July** | | | | | | | |
| **August** | | | | | | | |
| **September** | | | | | | | |
| **October** | | | | | | | |
| **November** | | | | | | | |
| **December** | | | | | | | |
| **Totals** | | | | | | | |

Are any other sources of nutrients (i.e. manure, etc.) applied to the grounds? If so, please detail in a table similar to the reuse and fertilizer tables.

c. ***Soil sampling methods and results for each area receiving fertilizer applications. Areas receiving fertilizer applications shall be sampled once every three years. Soil samples shall be collected and analyzed according to UF-IFAS/DEP recommendations or standard industry practice. Soil samples shall be analyzed, at minimum, for:***

1. Nitrogen.
2. Phosphorus.

Describe existing soil sampling here. Describe what your planned soil sampling schedule looks like. Have you been soil testing for years already? Please describe. If you are just getting started with soil testing the course, you can discuss that. What parts of the course are priority?

If soil samples from areas of similar soil, fertilizer use and management are combined, then describe that process and justify why you feel they are similar enough to combine into a "representative" sample. That's fine, just describe why.

Keep all soil test results (or copies of them) in this file as part of your nutrient management plan. Please do not send them in to DEP individually. If you've been soil testing for years, remember to add copies of all those past results to your NMP file.

d. ***Water quality sampling methods and results. Water quality sampling and analysis should be conducted in accordance with DEP's Standard Operating Procedures. Water quality samples shall be analyzed, at minimum, for:***

1. Nitrogen.
2. Phosphorus.

Describe your existing water quality sampling here. Describe what your planned water quality sampling schedule looks like. Have you been sampling for years already? If you are just getting started with soil testing the course, you can discuss that. What parts of the course are priority?

Keep all water quality test results (or copies of them) in this file as part of your nutrient management plan. Please do not send them in to DEP individually. If you've been testing for years, remember to add copies of all those past results to your NMP file.

e. ***Tissue sampling methods and results. Tissue samples shall be collected and analyzed according to UF-IFAS/DEP recommendations or standard industry practice.***
Describe existing tissue sampling plan here. Keep all test results (or copies of them) in this file as part of your nutrient management plan. Please do not send them in to DEP

individually. If you've been testing for years, remember to add copies of all those past results to your NMP file.

f. ***Soil, tissue and water quality sample results shall be maintained for a minimum of 5 years. Please provide records.***

***When developing new (or expanding) golf courses, pre- and pos- monitoring should be implemented in accordance with UF-IFAS/DEP recommendations.***

# Appendix F: Agricultural Enrollment and Reductions

FDACS provides the information for this appendix for each BMAP. The information in this appendix does not represent DEP's position.

## Agricultural Landowner Requirements

Section 403.067, F.S., requires agricultural producers and landowners located within BMAP areas to either enroll in the FDACS BMP Program and properly implement BMPs applicable to their property and operation or to conduct water quality monitoring activities as required by Rule Chapter 62-307, F.A.C. Producers or agricultural landowners who are enrolled in the FDACS BMP Program and are properly implementing the applicable BMPs identified on the BMP Checklist, or who are in compliance with the Equivalent Program requirements of Rule Chapter 5M-1, F.A.C., are entitled to a presumption of compliance with state water quality standards per section 403.067(7)(c)3., F.S.

## FDACS OAWP BMP Program

*BMPs Definition*

For the purposes of the OAWP BMP Program, the term "best management practice" means a practice or combination of practices determined based on research, field-testing, and expert review, to be the most effective and practicable on-location means, including economic and technological considerations, for improving water quality in agricultural discharges. Section 403.067, F.S., requires that BMPs reflect a balance between water quality improvements and agricultural productivity. FDACS works closely with DEP, WMDs, industry experts, and academic institutions to understand the environmental and agronomic effects addressed by BMPs.

Section 403.067, F.S., authorizes and directs FDACS to develop and adopt by rule BMPs that will help Florida's agricultural industry achieve the pollution reductions allocated in BMAPs. To date, FDACS OAWP has adopted 11 commodity specific BMP manuals by rule, covering cattle, citrus, equine, dairy, nurseries, poultry, sod, small farms and specialty livestock, specialty fruit and nut, vegetable and agronomic crops, and wildlife operations. All OAWP BMP manuals are periodically revised, updated, and subsequently reviewed and preliminarily verified by DEP before re-adoption. BMPs serve as part of a multidisciplinary approach to water resource restoration and protection that includes public/private partnerships, landowner agreements and regional treatment technologies, which together form the comprehensive strategy needed to meet the goals established in BMAPs.

*Enrolling in an FDACS BMP Program*

To initially enroll in the FDACS BMP Program, agricultural landowners and producers must meet with an FDACS representative on site to determine the appropriate practices that are applicable to their operation(s) and to document the BMPs on the NOI and BMP Checklist.

FDACS representatives consider site-specific factors when determining the applicability of BMPs including commodity type, topography, geology, location of production, soil type, field size, and type and sensitivity of the ecological resources in the surrounding areas. Producers collaborate with the FDACS representative to complete an NOI to implement the BMPs and the BMP Checklist from the applicable BMP manual.

Once the NOI and Checklist are completed, signed, and submitted to OAWP, the producer is formally enrolled in the BMP Program. Because many agricultural operations are diverse and are engaged in the production of multiple commodities, a landowner may sign multiple NOIs for a single parcel. Producers must properly implement all applicable BMPs as soon as practicable, but no later than 18 months after completion and execution of the NOI and associated BMP Checklist.

*Enrollment Prioritization*

To address the greatest resource concerns, OAWP utilizes a phased approach based on commodity type, irrigation, and agricultural acreages, while ensuring that all entities identified as agriculture will be notified. Enrollment efforts have previously focused on enrolling parcels that are most impactful to water quality including parcels containing many agricultural acres, irrigated acres, or more intense agricultural land uses.

*Implementation Verification*

Section 403.067, F.S., requires FDACS to conduct an Implementation Verification (IV) site visit at least every two years to ensure that agricultural landowners and producers are properly implementing the applicable BMPs identified in the BMP Checklist. An IV site visit includes: review and collection of nutrient application records that producers must maintain to demonstrate compliance with the BMP Program; verification that all other applicable BMPs are being properly implemented; verification that any cost shared practices are being properly implemented; and identification of potential cost share practices, projects or other applicable BMPs not identified during enrollment. During the IV site visit, FDACS representatives also identify opportunities for achieving greater nutrient, irrigation, or water resource management efficiencies, including opportunities for water conservation. Procedures used to verify the implementation of agricultural BMPs are outlined in Rule 5M-1.008, F.A.C.

*Nutrient Application Records*

Enrolled landowners and producers are required to keep records on the total pounds of nitrogen and phosphorus fertilizer from all sources that are applied to their operations to comply with BMP program requirements, including AA biosolids. Nutrient records from Class A or B biosolids applied in accordance with Chapter 62-640, F.A.C. are collected through the DEP permitting process as described in 5M-1.008(5). FDACS will collect information pertaining to these records for a two-year period identified when an IV site visit is scheduled. OAWP adopted a Nutrient Application Record Form (NARF) (FDACS-04005, rev. 06/24, incorporated in 5M-

1.008(4), F.A.C.), to help simplify the record keeping requirement. The form is available under Program Resources at https://www.fdacs.gov/Agriculture-Industry/Water/Agricultural-Best-Management-Practices. As these records relate to processes or methods of production, costs of production, profits, other financial information, fertilizer application information collected during an IV site visit is considered confidential and may be exempt from public records under chapters 812 and 815, F.S., and Section 403.067, F.S. In accordance with subsection 403.067(7)(c)5., F.S., FDACS is required to provide DEP the nutrient application records.

*Compliance Enforcement*

If multiple efforts to contact agricultural landowners and producers within BMAPs about enrollment in the BMP Program are unsuccessful or if the landowner or producer chooses not to enroll in the BMP Program FDACS refers them to DEP for enforcement action per Section 403.067(7)(b), F.S.

If a producer is enrolled in the FDACS BMP program and the producer chooses not to properly implement the applicable BMPs, FDACS representatives provide the landowner or producer with a list of corrective measures and the timeframes within which they must be implemented. If a landowner or producer does not cooperate with FDACS to identify or implement corrective or remedial measures, or refuses an IV site visit, FDACS refers them to DEP for enforcement action after attempts at corrective and remedial action are exhausted. Chapter 5M-1, F.A.C. outlines the process to ensure compliance with the BMP Program requirements.

*Equivalent Programs*

Enrollees operating under one of the Equivalent Programs listed in Rule 5M-1.001(7), F.A.C., are required to complete an NOI and meet the other requirements for Equivalent Programs specified in Rule Chapter 5M-1, F.A.C. Compliance with BMPs on the area(s) of the NOI property subject to the Equivalent Program instrument is demonstrated by fulfilling the requirements of Rule 5M-1.008(8), F.A.C. An Enrollee under an Equivalent Program listed in Rule 5M-1.001(7)(a)-(b), F.A.C., that is not required to complete a BMP Checklist is not subject to IV site visits. For Enrollees under an Equivalent Program listed in Rule 5M-1.001(7)(a)-(b), F.A.C., implementation verification shall be undertaken by the agency that issued the permit pursuant to its statutory and/or rule authority.

**Other FDACS BMP Programs**

FDACS implements other regulatory programs that help minimize nonpoint source pollution from agricultural activities.

*Aquaculture*

The FDACS Division of Aquaculture develops and enforces regulations governing the commercial aquaculture industry in Florida. Chapter 597, F.S., Florida Aquaculture Policy Act, requires Floridians who engage in commercial aquaculture to annually acquire an Aquaculture

Certificate of Registration and implement all applicable Aquaculture BMPs listed in Rule Chapter 5L-3.004, F.A.C. Facilities with certain production and discharge rates also require an NPDES permit from DEP. The Aquaculture BMPs were last updated by rule in November 2023.

FDACS Division of Aquaculture conducts annual site visits at certified facilities to confirm compliance with BMPs. These include management practices in areas of construction, containment, shrimp culture, sturgeon culture, shellfish culture, live rock culture, aquatic plants, including fertilizer application, and health management. For more information about FDACS Division of Aquaculture and Aquaculture BMPs go to https://www.fdacs.gov/Divisions-Offices/Aquaculture.

Within the Everglades West Coast BMAP, there are no aquaculture facilities under certification with the FDACS Division of Aquaculture as of November 2024. As with agricultural land use in Florida, aquaculture facilities are frequently in and out of production. The facilities being provided may no longer be in operation and/or there may be new companies in different parts of the basin by the next BMAP iteration.

*Forestry*

The FDACS FFS develops, implements (through education and training), and monitors Silviculture BMPs in Florida. Silviculture BMPs are applicable to *bona-fide* ongoing silviculture operations and are not intended for use during tree removal or land clearing operations that are associated with a land-use change to a non-forestry objective. The FFS Silviculture BMP Manual is adopted under Chapter 5I-6.002 F.A.C. and was last updated in 2008. FFS is currently in the process of updating the manual with guidance from the FDACS Silviculture BMP Technical Advisory Council. The current manual is composed of fourteen BMP categories covering many aspects of silviculture operations including timber harvesting, site preparation, forest roads, stream and wetland crossings, and forest fertilization. The primary objectives of Silviculture BMPs are to minimize the risks to Florida's water resources from silviculture-related sources of nonpoint source pollution and maintain overall ecosystem integrity. Section 403.067, F.S., provides silviculture practitioners implementing Silviculture BMPs a presumption of compliance with state water quality standards for the pollutants addressed by the BMPs.

The FFS Silviculture BMP implementation monitoring program was initiated in 1981 and follows the criteria which have been established for state forest agencies in the southeastern United States by the Southern Group of State Foresters. Monitoring surveys are conducted biennially on a random sample of recently conducted silviculture operations throughout Florida with the goal of determining the level of implementation and compliance with Silviculture BMPs. For the period of record (1981 to 2023), Florida's statewide Silviculture BMP compliance rates range from 84% (1985) to 99.7% (2019) and have shown an overall average compliance rate above 98% since 2005. For more information about Silviculture BMPs and to download a copy of the latest FFS Silviculture BMP Implementation Survey Report go to https://www.fdacs.gov/bmps.

## Agricultural Land Use

*Agricultural Land Use in BMAPs*

Land use data are helpful as a starting point for estimating agricultural acreage, determining agricultural nonpoint source loads, and developing strategies to reduce those loads in a BMAP area, but there are inherent limitations in the available data. Agriculture acreages fluctuate when volatile economic markets for certain agricultural commodities provide incentive for crops to change at a fast pace, properties are sold, leases are terminated, production areas decrease, or production ceases, among other reasons. Florida's recent population growth has also resulted in accelerated land use changes statewide, some of which include transitioning agricultural or fallow agricultural lands to developed land uses. The dynamic nature of Florida's agricultural industry creates challenges with comparing agricultural acres from year to year.

When developing a BMAP, agricultural nonpoint source loading is estimated using a broad methodology based on statewide land use data. Oftentimes, this results in properties being designated as agricultural nonpoint pollution sources and creates an obligation for these properties to enroll in the FDACS BMP Program when they may be better addressed under other programs more applicable to the practices occurring on those properties. Examples of these properties include: rural residential/homesteads, ranchettes, or single-family homes with accessory structures for livestock or groves that serve the needs of those living on the property. Continued identification of these properties as agricultural nonpoint sources limits the ability to reliably direct programmatic resources to meet water quality restoration goals.

FDACS uses the parcel-level polygon ALG data that is part of the FSAID Geodatabase to estimate agricultural acreages statewide. FSAID provides acreages and specific crop types of irrigated and non-irrigated agricultural lands statewide. FSAID is updated annually based on water management district land use data, county property appraiser data, OAWP BMP enrollment data, U.S. Department of Agriculture data for agriculture, such as the Cropland Data Layer and Census of Agriculture, FDACS Division of Plant Industry citrus data, as well as field verification performed by the U.S. Geological Survey, WMDs, and OAWP. As the FSAID is detailed and updated on an annual basis, it provides a reliable characterization of agricultural land uses that accounts for the fast-growing population and resultant land use changes taking place statewide. The FSAID also provides FDACS a clearer picture of agriculture's impact on the landscape and consistent method to better track, direct, and assess BMP implementation, cost share projects, and regional projects.

**Table F-1** shows the percentage of agricultural land use within the Everglades West Coast BMAP, determined by comparing the FSAID 11 ALG and total acreage of the BMAP boundary. Understanding what proportion of a BMAP is comprised of agriculture provides insight as to the potential contribution of agricultural nonpoint sources.

**Table F-1. Agricultural Land Use in Everglades West Coast BMAP**

| Acreage Type | Acres |
|---|---|
| **BMAP acres** | 55,469 |
| **Agricultural acres** | 6,435 |

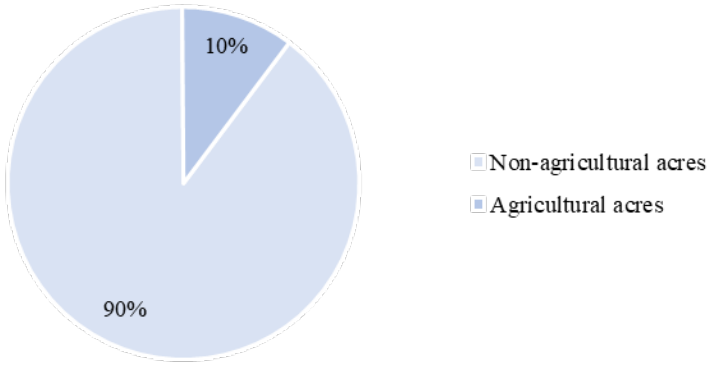


**Figure F-1. Relative agricultural land use in the Everglades West Coast BMAP**

*Recommended Updates to Land Use Data*

Land use data is the basis for estimating nonpoint source nutrient loading during TMDL and BMAP development. Differentiation between what was classified as agricultural land use in the TMDL or BMAP and what is no longer agricultural land use is an ongoing exercise that requires cooperation among BMAP stakeholders. Agricultural lands are regularly converted to conservation or developed into residential, industrial, commercial, or multiuse properties, but still appear in various land use datasets as agricultural lands.

Using GIS, OAWP compared the 2017-2019 SFWMD land use used by DEP to establish land uses within the Everglades West Coast BMAP with the FSAID 11 ALG, the latest OAWP BMP enrollment, and Lee County Property Appraiser data. OAWP identified areas classified as agriculture in the BMAP that did not overlap with the FSAID ALG or OAWP BMP enrollment data. OAWP reviewed the output of this overlay analysis with Lee County property appraiser data to verify information such as parcel owner, agricultural tax valuation for exemption purposes, and other parcel land use details. OAWP also reviewed aerial imagery to determine if the nonoverlapping areas were still in production and consulted with OAWP field staff to verify any agricultural activity. For parcels determined to be owned by local governments or water management districts, OAWP staff contacted the respective agency and confirmed the land use classification and the intended use of property.

Within the Everglades West Coast BMAP, OAWP identified 2,582 acres initially classified as agriculture within the 2017-2019 SFWMD land use that have been converted to another land use. 1,740 acres are currently being used as mitigation bank areas, preserves, or Conservation 20/20 properties and are either state-owned lands or are owned by Lee County or SFWMD. 842 acres comprise residential, mining, and industrial land use types. The TN loading from these 2,582

acres, based on the model used to estimate loading in the Everglades West Coast BMAP, amounts to 26,537 lbs per year. These acreages no longer contain agricultural activity and therefore cannot be addressed through existing management actions aimed at agricultural nonpoint source loading. FDACS and DEP will continue coordination to utilize the most recent sources of agricultural land use information and work with stakeholders to refine the loading associated with the land use changes in the Everglades West Coast BMAP.

**FDACS BMP Program Metrics**

*Enrollment Delineation and BMAP Metrics*

BMP enrollments are delineated in GIS using county property appraiser parcels. In terms of NOIs, enrolled acreage fluctuates when parcels are sold, when leases end or change hands, or when production areas downsize or production ceases, among other reasons. Nonproduction areas such as forest, roads, urban structures, and water features are often included within the parcel boundaries. Conversely, agricultural lands in the FSAID ALG only include areas identified as agriculture. To estimate the agricultural acres enrolled in the BMP program, OAWP overlays the FSAID ALG and BMP enrollment data within GIS to calculate the acres of agricultural land in an enrolled parcel.

*Summary Tables*

**Table F-2. Agricultural lands enrolled in the Everglades West Coast BMAP by BMP Program Commodity**

| Commodity | Agricultural Acres Enrolled |
|---|---|
| Citrus | 630 |
| Cow/Calf | 443 |
| Multiple Commodities | 99 |
| Nursery | 22 |
| Row/Field Crop | 3,783 |
| **Total** | **4,977** |
| **Percent of Agricultural Lands Enrolled in BMPs** | **77%** |

As of July 31, 2024, 77% of the agricultural acres in the Everglades West Coast BMAP area are enrolled in FDACS' BMP program. **Table F-2** shows the acreages enrolled in the BMP Program by commodity. **Figure F-2** shows a map of the enrolled acres in the basin. It is important to note that producers often undertake the production of multiple commodities on their operations, resulting in the requirement to implement the applicable BMPs from more than one BMP manual. When this occurs, the acres enrolled under more than one BMP manual are classified as “multiple commodity” and not included in the individual commodity totals to prevent duplication.

*Enrollment Map*

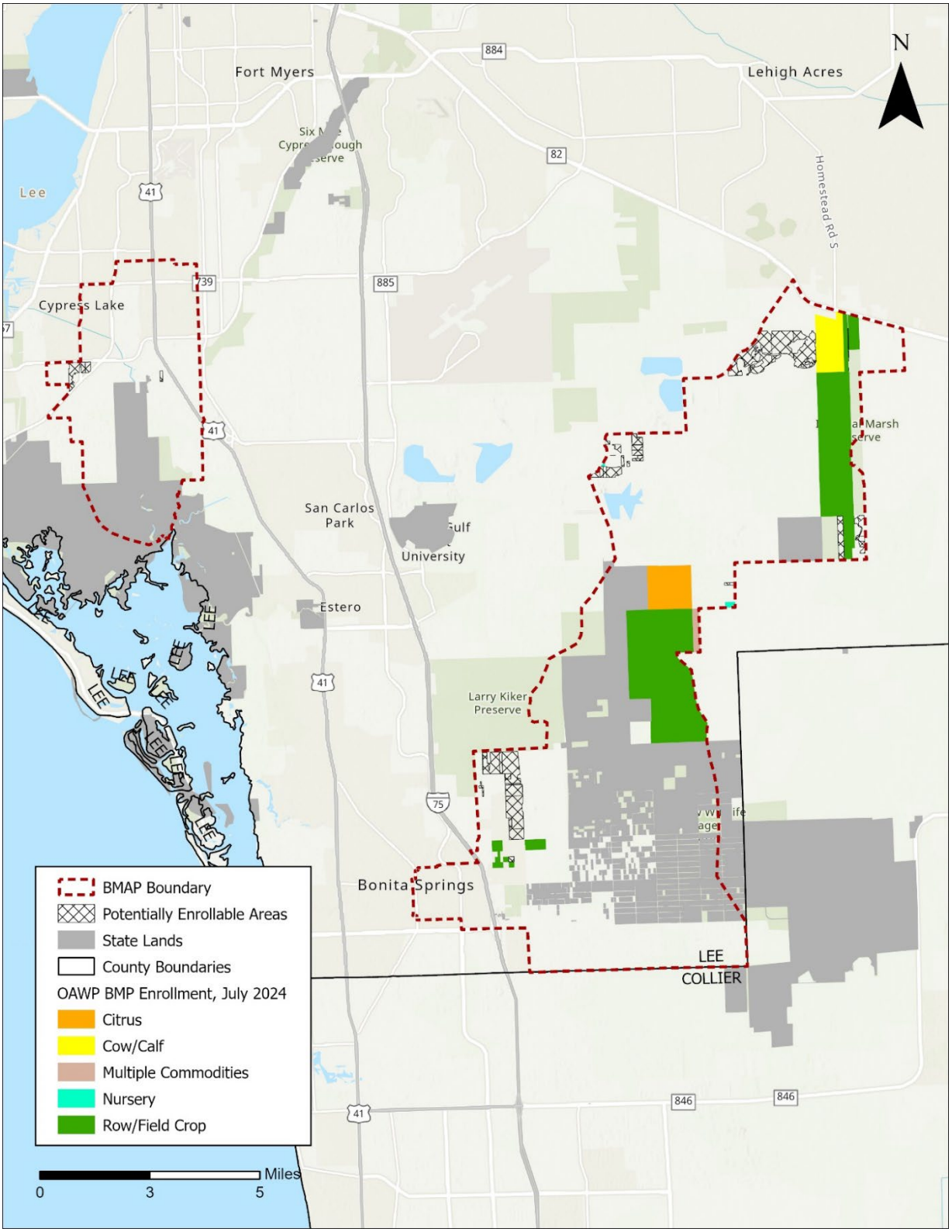


**Figure F-2. Agricultural enrollment in the Everglades West Coast BMAP**

*Unenrolled Agricultural Lands*

Oftentimes, there are lands initially identified as agriculture which, upon closer evaluation, raise questions as to whether there is agricultural activity and whether it is enrollable within the purview of OAWP. FDACS characterizes lands classified as agriculture in the FSAID ALG, but not currently enrolled in the FDACS BMP Program using property appraiser data such as parcel owner information, agricultural tax valuation for exemption purposes, other parcel land use details to determine whether the remaining lands are potentially enrollable. More information about the "Unenrolled agricultural lands" characterization analyses is available in ***FDACS Annual Status of Implementation of BMPs Report***.

The assessment of unenrolled agricultural lands at a more granular scale provides an indication of which areas are more likely (or unlikely) to have enrollable agricultural activities occurring on them. It also provides an estimate of the number of parcels and the associated agricultural acres deemed to be enrollable. The number of parcels is a useful proxy for the level of resource dedication needed to enroll the associated agricultural acres and where best to focus finite resources and staffing needs. It is often the case that much of the potentially enrollable acreage is encompassed within many smaller parcels which may require additional resources to enroll and require further evaluation, such as those that have agricultural activity intended solely for personal use ancillary to a residence, those that do not have an agricultural land use per the property appraiser, as well as parcels where there is no current activity to enroll.

**Table F-3** shows the breakdown of agricultural lands within the Everglades West Coast BMAP by crediting location based on the FSAID 11 and the results of the FDACS unenrolled agricultural lands characterization.

**Table F-3. Agricultural Lands in Everglades West Coast BMAP by crediting location**

* Enrollment information current as of June 30th, 2024

| Crediting Location | Agricultural Acres | Unenrolled - Unlikely Enrollable Acres | Agricultural Acres - Adjusted | Agricultural Acres Enrolled* |
|---|---|---|---|---|
| Hendry Creek | 103 | 0 | 102 | 0 |
| Imperial River | 9,091 | 2,758 | 6,333 | 4,977 |

*Potentially Enrollable Lands*

There are 1,728 acres of potentially enrollable lands within the Everglades West Coast BMAP based on the assessment of unenrolled agricultural lands performed by FDACS. **Table F-4** shows the potentially enrollable acreages by crop type. **Figure F-3** shows the count of potentially enrollable parcels based on size classifications used by FDACS.

**Table F-4. Potentially Enrollable Acres by crop type**

| Crop Type | Acres |
|---|---|
| Cropland and/or Pastureland | 2 |
| Crops | 56 |

| Crop Type | Acres |
|---|---|
| Fallow | 338 |
| Grazing Land | 1,290 |
| Nursery | 33 |
| Open Lands | 8 |
| **Total** | **1,728** |

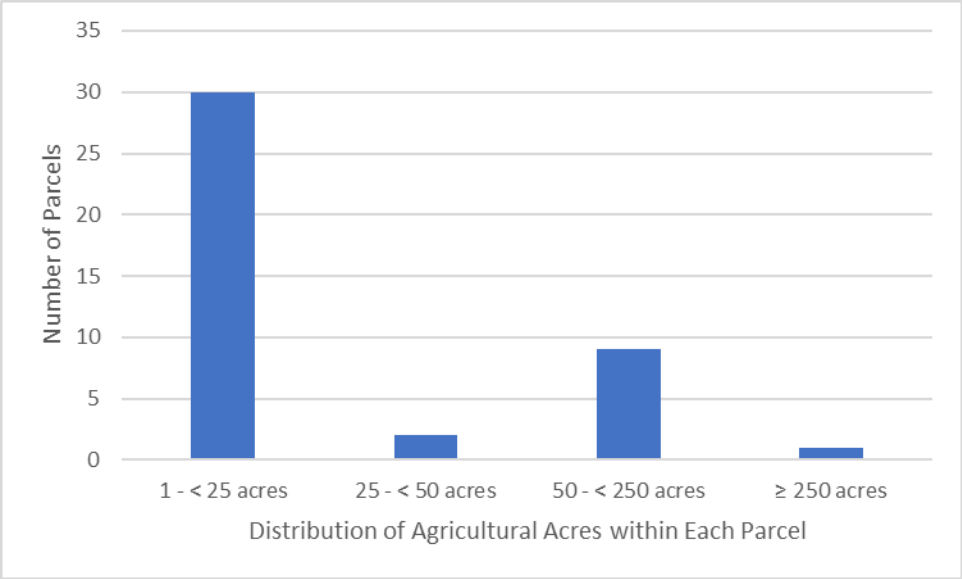


**Figure F-3. Count of potentially enrollable parcels by size class**

**FDACS Cost Share**

Enrollment in and proper implementation of BMPs makes a producer eligible for cost share for certain BMPs, other practices, and projects. The availability of cost share funds depends on annual appropriations by the Florida Legislature, and therefore, the amount available can vary each year. Cost share applications may be submitted once a producer has enrolled in the BMP Program and has been assigned an NOI number. Cost share practices are categorized as nutrient management, irrigation management, or water resource protection. BMPs, other practices, and projects eligible for cost share funding may include precision agriculture technologies, variable rate irrigation methods, water control structures, and tailwater recovery systems. OAWP seeks to leverage its cost share funding with other cost share programs offered by FDACS and other state and federal agencies. The United States Department of Agriculture NRCS offers funding through its Environmental Quality Incentives Program, and certain WMDs have agricultural cost share programs. Applicants are encouraged to use OAWP cost share in conjunction with other available conservation programs although funding cannot be duplicative.

**Table F-5** identifies the number of agricultural technologies that received cost-share assistance in the Everglades West Coast BMAP area and the associated nutrient reductions[1]. The nutrient reductions were used to develop a methodology to estimate nutrient reductions for NOIs that have received cost-share funding. The NOI boundary, based on property appraiser parcel data, was considered the area treated by the cost-shared agricultural technology or project. For parcels with more than one cost-share project, OAWP identified the order of treatment to determine the reductions for the multiple projects based on each cost-shared agricultural technology. Estimated nutrient reductions from FDACS cost share are shown in **Table F-6**.

**Table F-5. Cost Share Project Counts and Estimated Nutrient Reduction Efficiencies**

| Project Types | Total Reductions (TN) | Total Reductions (TP) | Project Count |
|---|---|---|---|
| Fence | 10% | 10% | 0 |
| Irrigation improvements, automation | 20% | 20% | 0 |
| Weather station | 20% | 5% | 1 |
| Chemigation/fertigation | 20% | 20% | 0 |
| Precision ag technology | 30% | 10% | 0 |
| Drainage improvements, mole drain, ditch cleaning | 10% | 15% | 0 |
| Well, pipeline, trough, pond, heavy use protection | 50% | 50% | 0 |
| Retention, detention, tailwater recovery, berms (Cow/Calf) | 25% | 18% | 0 |
| Retention, detention, tailwater recovery, berms (Vegetable and Agronomic Crops, Citrus) | 64% | 70% | 0 |
| Culvert | 17% | 29% | 0 |
| Structure for water control | 17% | 29% | 0 |
| Composting and/or storage project | --- | --- | 0 |
| Crop implements | --- | --- | 0 |
| Dairy work | 50% | 50% | 0 |
| Engineering, surveying, planning, modeling | --- | --- | 0 |

**Table F-6. Estimated Nutrient Reductions from FDACS Cost Share**

| Crediting Location | TN Total Reductions (lbs/yr) | TP Total Reductions (lbs/yr) |
|---|---|---|
| Imperial River | 163 | 0 |
| **Total** | **163** | **0** |

## Future Efforts

*Outreach*

To address resource concerns, FDACS continues enhancing coordination with producers, agencies, and stakeholders to increase enrollment in the BMP program. OAWP is sending correspondence to agricultural landowners within BMAPs that are not currently enrolled in the

[1] Soil and Water Engineering Technology, Inc. (2016). Estimation of Total Phosphorous & Nitrogen Loads Reductions. Soil and Water Engineering Technology, Inc.

BMP program to increase enrollment rates and verify land uses where additional focus may be required to achieve resource protection. This effort is utilizing a phased approach and targeting priority land uses, and then evaluating the amount of agricultural acreage for the remaining unenrolled lands, while ensuring that all entities identified as agriculture will be notified. Additionally, OAWP continues to coordinate with industry groups and outreach partners to educate and inform agricultural producers about the BMP program.

*Legacy Loads*

Legacy loading can present an additional challenge to measuring progress in many areas of Florida with adopted BMAPs. Based on research, initial verification by DEP, and long-term trends in water quality in the BMAP area, it is expected that current efforts, such as BMP implementation, will continue to provide improvements in overall water quality despite the impacts from legacy loads.

While the implementation of BMPs will improve the water quality in the basin, it is not reasonable to assume that BMP implementation alone can overcome the issues of legacy loads, conversion to more urban environments, and the effects of intense weather events. BMP implementation is one of several complex and integrated components in managing the water resources of a watershed.

Collaboration between DEP, FDACS, WMDs, and other state agencies, as well as local governments, federal partners, and agricultural producers, is critical in identifying projects and programs, as well as locating funding opportunities to achieve allocations provided for under this BMAP. To improve water quality while retaining the benefits that agricultural production provides to local communities, wildlife enhancement, and the preservation of natural areas requires a commitment from all stakeholders to implementing protective measures in a way that maintains the viability of agricultural operations.