DRAFT

Indian River Lagoon Basin

Banana River Lagoon Basin Management Action Plan

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

with participation from the
Banana River Lagoon Stakeholders

April 2025

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Acknowledgments

The *Banana River Lagoon Basin Management Action Plan (BMAP)* 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 (DEP) with participation from the Banana River Lagoon stakeholders identified below.

Table ES-1. Banana River Lagoon stakeholders

Type of Organization/Entity	Name
Responsible Stakeholders	Agriculture Brevard County City of Cape Canaveral City of Cocoa Beach City of Indian Harbour Beach City of Satellite Beach
Responsible Agencies	County Health Departments Florida Department of Agriculture and Consumer Services (FDACS) DEP Florida Department of Transportation (FDOT) District 5 Florida Turnpike Enterprise Indian River Lagoon Estuary Program Kennedy Space Center (KSC) Port Canaveral St. Johns River Water Management District (SJRWMD) U.S. Space Force
Other Interested Stakeholders	East Central Florida Regional Planning Council (ECFRPC) Florida Farm Bureau Florida Onsite Wastewater Association (FOWA) Residents/Homeowners Septic System Contractors

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

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ACE	Agricultural Cooperative Regional Elements
ALG	Agricultural Land Geodatabase
AWT	Advanced Waste Treatment
BAM	Biosorption Activated Media
BEBR	Bureau of Economic and Business Research
BMAP	Basin Management Action Plan
BMP	Best Management Practice
BRL	Banana River Lagoon
CAFO	Concentrated Animal Feeding Operation
CDD	Community Development District
CDS	Continuous Deflection Separation
CERP	Comprehensive Everglades Restoration Plan
CIRL	Central Indian River Lagoon
CWA	Clean Water Act
DEP	Florida Department of Environmental Protection
DO	Dissolved Oxygen
DWM	Dispersed Water Management
EELS	Environmentally Endangered Lands
ECFRPC	East Central Florida Regional Planning Council
EMC	Event Mean Concentration
EPA	U.S. Environmental Protection Agency
F.A.C.	Florida Administrative Code
F.S.	Florida Statutes
FDACS	Florida Department of Agriculture and Consumer Services
FDOH	Florida Department of Health
FDOT	Florida Department of Transportation
FIND	Florida Inland Navigation District
FLWMI	Florida Water Management Inventory
FNAI	Florida Natural Areas Inventory
FOWA	Florida Onsite Wastewater Association
FSAID	Florida Statewide Agricultural Irrigation Demand (Geodatabase)
ft	Foot
FWRA	Florida Watershed Restoration Act
GIS	Geographic Information System
HAB	Harmful Algal Bloom
IMPLAN	Impact Analysis for Planning
IRL	Indian River Lagoon
IWR	Impaired Surface Waters Rule
kg	Kilogram
km	Kilometer
KSC	Kennedy Space Center

L.O.F.	Laws of Florida
lbs	Pounds
LET	Load Estimation Tool
LPA	Load Per Acre
m	Meter
MAPS	Managed Aquatic Plant System
mgd	Million Gallons Per Day
mg/L	Milligrams Per Liter
MS4	Municipal Separate Storm Sewer System
N/A	Not Applicable
NELAC	National Environmental Laboratory Accreditation Council
NELAP	National Environmental Laboratory Accreditation Program
NEP	National Estuary Program
NHD	National Hydrography Database
NIRL	North Indian River Lagoon
NMP	Nutrient Management Plan
NOI	Notice of Intent
NOx	Nitrate + Nitrite
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
OAWP	Office of Agricultural Water Policy
OSTDS	Onsite Sewage Treatment and Disposal System
PAR	Photosynthetically Active Radiation
PLSM	Pollutant Load Screening Model
PSA	Public Service Announcement
QA/QC	Quality Assurance/Quality Control
RAP	Reasonable Assurance Plan
ROC	Runoff Coefficient
RRLA	Rapid Rate Land Application
SJRWMD	St. Johns River Water Management District
SOP	Standard Operating Procedure
SR	State Road
STORET	STOrage and RETrieval (Database)
SWIL	Spatial Watershed Iterative Loading
SWMP	Stormwater Management Program
TCRPC	Treasure Coast Regional Planning Council
TKN	Total Kjeldahl Nitrogen
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UF–IFAS	University of Florida-Institute of Food and Agricultural Sciences
USACE	U.S. Army Corps of Engineers
WBID	Waterbody Identification (number)

WCD	Water Control District
WIN	Watershed Information Network (Database)
WMD	Water Management District
WRF	Water Reclamation Facility
WQMN	Water Quality Monitoring Network
WWTF	Wastewater Treatment Facility

Executive Summary

Background

The Indian River Lagoon (IRL) is a 156-mile-long estuary along Florida's east coast. The impaired portions of the IRL are directly adjacent to lands in only Volusia, Brevard, Indian River, and St. Lucie counties. The northern portion of the watershed extends to near the Ponce De Leon Inlet in Volusia County and the southern portion to near the Fort Pierce Inlet at the Indian River County–St. Lucie County boundary line. Because of the large geographical extent of the IRL Basin and the hydrological differences throughout the basin, the DEP determined the best way to address the total maximum daily loads (TMDLs) and impairments for the IRL Basin was to divide the watershed into three subbasins: (1) Central IRL (CIRL); (2) North IRL (NIRL); and (3) Banana River Lagoon (BRL). Separate BMAPs were developed for each subbasin; this document focuses solely on the BRL subbasin. The BRL is located between the barrier island communities of the City of Cape Canaveral to Indian Harbour Beach and Merritt Island and connects to the IRL at its south end (**Figure ES-1**). The BRL has a limited outlet to the Atlantic Ocean through the lock at Port Canaveral. Net water flow is from the IRL to the BRL because the rate of evapotranspiration exceeds rainfall and basin inflows. The BRL system is a "negative estuary," characterized by low freshwater inflows and poor flushing, resulting in high water residence time. The Mosquito Lagoon, to the north, is being addressed through a reasonable assurance plan (RAP).

Intense and extensive algal blooms in the IRL began in 2011 and have returned periodically. Harmful algal blooms (HABs) cause shading that stresses seagrass in the IRL, adverse effects on wildlife, and in some cases, detrimental effects on human health. The SJRWMD launched the Indian River Lagoon Protection Initiative in 2013, including a multiyear investigation that increased the understanding of these blooms. This and other research indicate it is important to continue implementing projects that decrease nutrient loads to the IRL, because that approach will limit the severity of HABs and their impact on the system.

In 2023, the Florida Legislature created Section 5 of section 373.469, Florida Statutes (F.S.) called the *Indian River Lagoon Protection Program (IRLPP)*, including the *Indian River Lagoon Watershed Research and Water Quality Monitoring Program*. The IRLPP enacted specific evaluation and protection measures for the three IRL BMAPs and Mosquito Lagoon Regional Assurance Plan (RAP) areas. The IRLPP included the following provisions:

- Evaluating and updating the IRL BMAPs every five years.
- Identifying any further load reductions necessary to comply with the TMDLs.
- Inclusion of a water quality monitoring component to evaluate progress over time.
- Identification and prioritization of strategies and projects that are included in the BMAPs and RAP.

- Prohibiting new onsite sewage treatment and disposal systems where central sewer is available, as defined in section 381.0062(2)(a), Florida Statutes (F.S.).

- Where central sewer is not available for new OSTDS, requiring enhanced nutrient-reducing systems of at least 65% nitrogen treatment.

- Requiring existing OSTDS to connect to central sewer or have enhanced nutrient-reducing systems by July 1, 2030.

The research and monitoring program directs DEP, in coordination with other public entities, to establish a comprehensive water quality monitoring network and to fund research related to water quality, ecosystem restoration, and seagrass impacts and restoration. DEP will use the results to prioritize projects and revise the BMAPs, as appropriate.

TMDLs

A TMDL is a water quality restoration goal establishing the maximum amount of a pollutant that a waterbody can assimilate without causing exceedances of water quality standards. The nutrient TMDLs for the main stem of the IRL were adopted by DEP in March 2009. The TMDLs focus on the water quality conditions necessary for seagrass regrowth at water depth limits where seagrass historically grew in the lagoon, based on a multiyear composite of seagrass coverage. The median depth limits of seagrass coverage in the IRL decreased over the years because of changes in water quality conditions resulting from anthropogenic influences. As polluted runoff reaches the lagoon, it contributes to conditions that prevent the seagrass from growing in deeper water.

Additionally, TMDLs were adopted in 2013 for certain tributaries to the BRL that are addressed in this BMAP. For Sykes Creek/Barge Canal (waterbody identification [WBID] number 3044B), the reductions were based on the main stem nutrient TMDL for Segment BR6 in the BRL. The TMDL reductions of 66% for total nitrogen (TN) and 70% for total phosphorus (TP) in Sykes Creek/Barge Canal only apply to the existing nutrient loads from the immediate Sykes Creek-Newfound Harbor segment.

BRL BMAP

In addition to dividing the overall IRL Watershed into subbasins, the BRL was further divided into "project zones." The project zone boundaries are based on the distinct hydrology in different areas of the basin and their corresponding annual residence times. These zones are important because the flushing times vary greatly among locations and consequently affect how nutrient reductions will impact these distinct areas of the basin. The project zones identify large areas where projects should be implemented to ensure that the load reductions achieve the desired response for each subbasin. BRL Subbasin was split into two project zones, as follows:

- **Banana River A** – The area north of and including the State Road 528 Causeway.

- **Banana River B** – The area south of State Road 528 Causeway.

For this BMAP the project zones have not been used for allocations, and so the loadings and allocations are reported for the BRL as a whole. Projects will still be tracked by their location and if the future restoration of the BRL indicates that project zones should be applied again through the BMAP, that adjustment can be made in future iterations.

DEP first adopted the BRL BMAP in 2013 to implement TN and TP TMDLs. BMAPs are designed to be implemented in a phased approach. In 2018, DEP and several local stakeholders were developing several components of an updated BMAP, including the local completion and DEP review of a new water quality model, the Spatial Watershed Iterative Loading (SWIL) Model. The SWIL Model was developed through cooperative funding provided by Brevard County, all of its cities, and FDOT District 5, as well as support from the U.S. Space Force, in an effort to update the data being used to predict loading. An updated version of the SWIL model (Version 4.0) was used in the 2021 BMAP. In this 2025 BMAP update, the same version of the SWIL Model (Version 4.0) was used to estimate loading to the BRL; the loading estimates have not been updated. Similarly to the 2021 BMAP, for this BMAP update the percent reductions adopted in the original TMDL rules are applied as the water quality targets.

This 2025 update retains the changes made in the 2021 BMAP including the SWIL Model (Version 4.0) estimates, boundary adjustments, 2021 allocations and load reductions to the responsible stakeholders, and a revised monitoring plan to continue to track trends in water quality. This BMAP retains the deadline for achieving load reductions no later than 2035, which is 22 years after the initial BMAP adoption in 2013. This 2025 BMAP incorporates new legislative requirements that are now in effect and includes updates to the management actions to achieve nutrient reductions.

As part of the adaptive management process for this BMAP, DEP is well underway with refinements to the SWIL Model, creating Version 5.0, which will be used to revise BMAP allocations and adjust project credits. This extensive effort includes updates to some of the SWIL Model input layers (e.g., land use, soils, etc.), verification of watershed boundaries in some areas, revisions to the model period of record, and the validation of predicted flows in selected calibration basins. DEP anticipates that this effort will be completed in 2025. After the SWIL model refinement is complete, DEP will reevaluate and, if necessary, adopt another iteration of the BRL and IRL BMAPs, most likely before 2030. The next iteration will include updated loading estimates and required reductions.

Summary of Load Reductions

DEP requested stakeholders to provide information on management actions, including projects, programs, and activities, that may reduce nutrient loads to the BRL. Management actions are included in the BMAP to address nutrient loads to the lagoon and must meet several criteria to be considered eligible for credit. The estimated reductions of activities completed through October 2024, are provided in **Table ES-2**. This date was chosen to allow adequate time to review project documentation and calculate reductions based on accepted methodologies and best management practice (BMP) efficiencies. Updated project information will be provided each year in the Statewide Annual Report and at an annual meeting.

To achieve the TMDLs, stakeholders must identify and submit additional local projects as well as determine the significant funding that will be necessary. Enhancements to programs addressing basinwide sources will also be required.

Table ES-2. Progress to date in the BRL BMAP area

lbs/yr = Pounds per year.

TN Reduction (lbs/yr)	% Achieved towards TN Target	TP Reduction (lbs/yr)	% Achieved towards TP Target
60,865	46.2	9,209	46.5

Source Requirements

Florida law (Section 403.086, [F.S.], and Chapter 2020-150, Laws of Florida [L.O.F.]) beginning July 1, 2025, requires all domestic wastewater facilities directly discharging to surface waters of the state within or connected to the IRL to meet advanced wastewater treatment requirements. Additionally, this BMAP sets TN and TP effluent limits in the BRL for individually permitted domestic wastewater facilities and their associated effluent disposal systems and reuse activities. Local governments must develop remediation plans to address loads from wastewater facilities and septic systems in the BMAP area.

In 2023, Executive Order 23-06 led the way for adoption of the IRLPP, section 373.469, F.S. The IRLPP prohibits new conventional onsite sewage treatment and disposal systems (OSTDS) by January 1, 2024, and transitioning all existing conventional systems to sewer or advanced treatment systems by July 1, 2030.

Subparagraph 403.067(7)(a)9., Florida Statutes (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 CIRL BMAP met the 20% contribution and/or remediation of these sources is necessary to achieve the TMDL. A final order (23-0113) 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 G** are subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S.

The facilities listed in **Appendix G** have 10 years from BMAP adoption to meet the applicable advanced wastewater treatment (AWT) standards. More information can be found in **Section 3.**

Agricultural nonpoint sources are a contributor of TN and TP loading to the BRL. Attainment of the TMDLs is contingent upon addressing the agricultural loading to the lagoon and tributaries. The BMAP for BRL was originally adopted in 2013, yet no agricultural producers have been enrolled. 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.

Chapter 2023-169, Laws of Florida (L.O.F.), (403.067, F.S.) requires that BMAPs include milestones for implementation of total maximum daily loads. 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.).

Water Quality Monitoring

The IRLPP also requires the BMAPs to focus on expanding water quality monitoring for tracking sources of nutrients and expanded coordination to achieve the TMDLs in the basin. The BRL BMAP monitoring network consists of seven stations sampled by SJRWMD. The monitoring plan also includes research priorities to better understand the lagoon, nutrient sources, and the responses of seagrass to nutrient loading, both internal and external, to the lagoon.

BMAP Cost

The project costs provided for the BMAP may include capital costs as well as those associated with construction, routine operations and maintenance, and monitoring. Many BMAP projects were built to achieve multiple objectives, 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 by 2035.

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, advanced wastewater treatment 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.

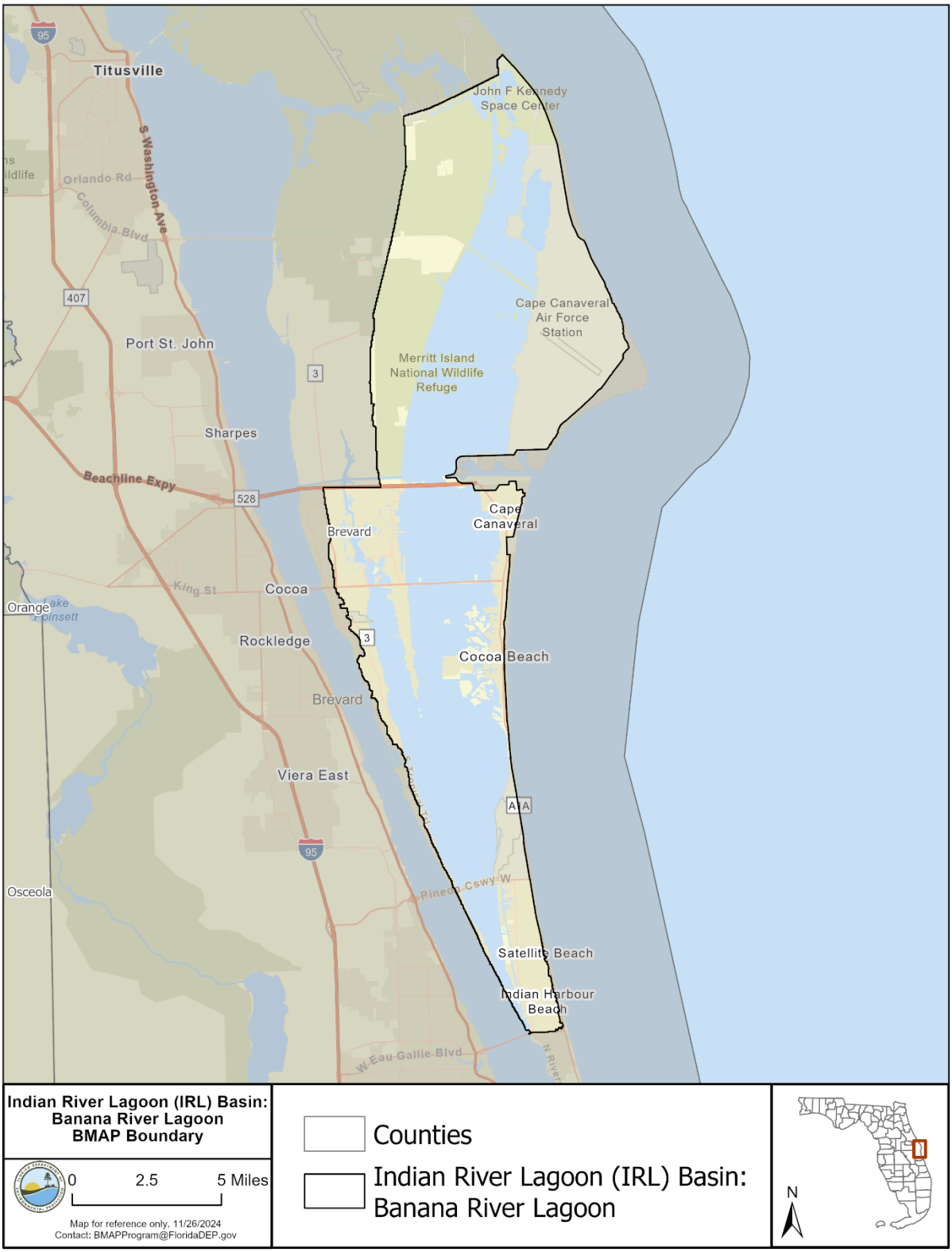

Figure ES-1. BRL BMAP area

Section 1. Background Information

1.1 Water Quality Standards and 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 many of those in the BRL, 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. In addition, many waterbody segments (also known as WBIDs) are categorized as Class II waters, which have a designated use of shellfish propagation or harvesting. **Table 1** lists all designated use classifications for Florida surface waters.

Table 1. Designated use attainment categories for Florida surface waters

[1] Class I, I-Treated, and II waters additionally include all Class III uses. Yellow shading indicates classifications in the IRL waters.

Classification	Description
Class I[1]	Potable water supplies
Class I-Treated[1]	Treated 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*)

Class II waters in the BRL may be used for aquaculture. The WBIDs that are designated as Class II waters are listed in **Table 2.** If not listed, the remaining WBIDs are Class III waters.

Section 303(d) of the federal Clean Water Act (CWA) requires that each state must identify its impaired waters every two years, including estuaries, lakes, rivers, and streams, that do not meet their designated uses. 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 (EPA) as an update to the state's 303(d) list.

In 2009, DEP adopted, by Secretarial Order, revisions to the Verified List of Impaired Waters for the BRL that identified several estuarine segments as impaired for dissolved oxygen (DO) and nutrients. The DO impairment was based on low DO concentrations measured in milligrams per liter (mg/L), and the nutrient impairment was based on an imbalance in flora and fauna because of decreases in seagrass distribution.

Table 2. Class II waters in the BRL

Classification	WBID Number	Waterbody Name
Class II	3044A	Newfound Harbor
Class II	3057A	Banana River Below 520 Causeway
Class II	3057B	Banana River Above 520 Causeway

1.1.1 BRL TMDLs

TMDLs are water quality restoration goals establishing the maximum amount of a pollutant that a waterbody can assimilate without causing exceedances of water quality standards. The IRL TMDLs focus on the water quality conditions necessary for seagrass recruitment at water depth limits where seagrass historically grew in the lagoon, based on a multiyear composite of seagrass coverage. The median depth limits of seagrass coverage in the IRL decreased over the years (see **Section 4.3**) because of changes in water quality conditions resulting from anthropogenic influences.

As polluted runoff reaches the lagoon, it contributes to conditions that prevent the seagrass from growing in deeper water because of elevated light attenuation. The full restoration depth-limit target for seagrass was established for each segment based on a deep edge boundary delineating the composite of seven years of historical seagrass data for the period from 1943 to 1999. The restoration targets were set at depths where the deep edge of the seagrass beds previously grew and created a maximum depth limit for seagrass distribution. The TMDL targets allowed for a 10% departure (shoreward) from the full restoration target seagrass depth. The 10% departure in target depths was selected to be consistent with the water quality criteria in Chapter 62-302, F.A.C., which allows for up to a 10% reduction in the photo compensation point.

To determine nutrient targets and reductions needed to improve lagoon water quality in each subbasin, regression relationships were used between 4 years of loading levels and the same years' seagrass depth limit (the percent departure from the full restoration). TN and TP targets were developed from the median concentrations observed where seagrass depth limits were within the 10% departure (shoreward) from their full restoration levels. These targets should result in nutrient reductions that allow seagrass to grow almost to the depths previously seen in the area. **Table 3** lists the TMDLs and pollutant load allocations adopted by rule for the BRL.

Table 3. BRL TMDLs

NPDES = National Pollutant Discharge Elimination System.

WBID	Waterbody	NPDES Stormwater TN (% reduction)	NPDES Stormwater TP (% reduction)
3057C	Banana River above Barge Canal	67	72
3057A+3057B	Banana River below 520 Causeway + Banana River above 520 Causeway	59	64
3044A	Newfound Harbor	66	70

Additionally, there is an adopted TMDL for one tributary to the BRL, also addressed in this BMAP. As provided in **Table 3**, the reductions were based on the main stem nutrient TMDL for Segment BR6 in the BRL. The TMDL reductions in Sykes Creek/Barge Canal only apply to the existing nutrient loads from the immediate Sykes Creek–Newfound Harbor segment. **Table 4** lists the tributary TMDLs in the BRL.

Table 4. BRL tributary TMDLs

WBID	Waterbody	NPDES Stormwater TN (% Reduction)	NPDES Stormwater TP (% Reduction)
3044B	Sykes Creek/Barge Canal (the portion of WBID 3044B south of State Route 528 and WBID 3044A)	66	70

1.2 BRL Basin Management Action Plan (BMAP)

A BMAP is a framework for water quality restoration that contains local and state commitments to reduce pollutant loading through current and future projects and strategies. BMAPs contain a comprehensive set of solutions, such as permit limits on wastewater facilities, urban and agricultural BMPs, and conservation programs designed to achieve pollutant reductions established by a TMDL. These broad-based plans are developed with local stakeholders and rely on local input and commitment for development and successful implementation. BMAPs are adopted by DEP Secretarial Order and are legally enforceable.

The Florida Watershed Restoration Act (FWRA), Subparagraph 403.067(7)(a)1., 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 BRL BMAP was first adopted in February 2013. An adaptive management process that is statutorily required, such as the changes made in this updated BMAP, will continue until the TMDLs are achieved and maintained as new information becomes available or every five years under the IRLPP.

This document serves as an update to the 2021 BMAP. **Figure 1** shows the BRL BMAP area with project zones.

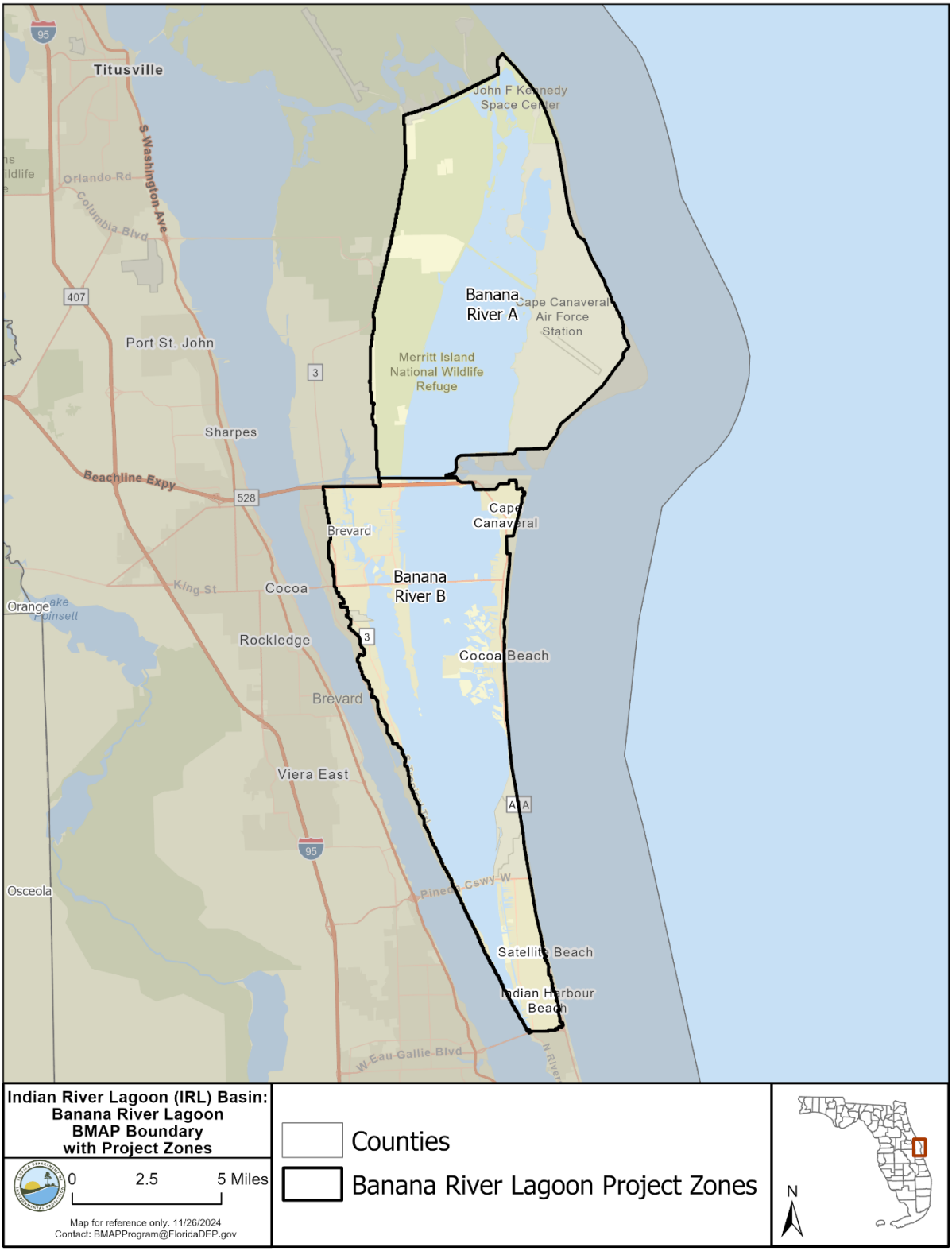

Figure 1. BRL BMAP area with project zones

1.2.1 Milestones and Tracking Progress

The projects and activities in the BMAP are key to the overall goal of recovering seagrass in the lagoon. The estimated benefits of these implemented activities are tracked to show stakeholder efforts by determining a percentage towards the total required reductions to be achieved at each milestone. Chapter 2023-169, L.O.F., (section 403.067, F.S.) requires that BMAPs include milestones for implementation of TMDLs. This statute requires any responsible entity within a BMAP that has an assigned pollutant load reduction requirement to identify projects or strategies to meet the upcoming 5-year milestone, even if the identified project or strategy will not be completed by the milestone. Stakeholders must provide DEP with reasonable assurance that they have enough project credits to achieve their required reductions within the period established by the BMAP (**Section 4)**. Each project must include a planning-level cost estimate and an estimated date of completion in the Statewide Annual Report.

Subparagraph 403.067(7)(a)6., F.S., indicates that an assessment of progress towards the BMAP milestones shall be conducted every five years, and plan revisions made as appropriate. To meet these requirements, DEP has established milestones for the years 2025, 2030, and 2035. The percent reductions in the milestones apply to all stakeholder required reductions, so that as various entities implement their projects, the overall milestones are also being met.

The following percent reduction goals are proposed for each milestone and may be adjusted as the BMAP is adaptively managed through future phases:

- 5-year milestone in 2025: 50% or 56,269 pounds per year (lbs/yr) of TN and 45% or 7,773 lbs/yr of TP. Based on the forthcoming model revisions, reset the 10-year and 15-year milestones, as needed.
- 10-year milestone in 2030: 80% or 90,031 lbs/yr of TN and 75% or 12,955 lbs/yr of TP.
- 15-year milestone in 2035: 100% or 112,539 lbs/yr of TN and 100% or 17,273 lbs/yr of TP.

By the next milestone in 2030, at least 80% of the TN and 75% of the TP required reductions must be met. The deadline established by this BMAP for achieving the full load reductions is 2035, which is 22 years after the initial adoption of the 2013 BMAP.

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 are included in **Appendix E**.

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:

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

- The 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.

- The TMDLs require TN and TP reductions from the watershed to improve water quality in the BRL to allow seagrass to grow at greater water depths. High watershed nutrient loadings result in high chlorophyll *a* concentrations in the lagoon, which may indicate algal growth and a reduction in light availability to the seagrass, thus limiting the depth at which seagrass can grow. Therefore, reducing nutrient loading to the BRL is an important factor in improving seagrass depth limits.

- The allocations do not require load reductions from areas identified as natural land use areas in the modeled land use/land cover information. These loads are considered uncontrollable, background sources, and the stakeholders are not required to make reductions on natural lands. The BMAP allocations focus on urban and agricultural stormwater sources as well as septic and sewage treatment systems in the watershed.

- Water is exchanged between the BRL and other nearby waterbodies (the NIRL, CIRL, and St. Lucie River and Estuary), and water quality conditions

in the BRL may be influenced by conditions in nearby waters. To help address these nearby conditions, separate BMAPs have been adopted for these watersheds.

1.2.3 Considerations

This BMAP requires stakeholders to implement their projects to achieve reductions within the specified 5-year milestone period. However, the 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, a number of items were identified that should be addressed in future watershed management cycles to ensure that future BMAPs use the most accurate information:

- **HABs** – HABs cause shading that stresses seagrass in the IRL, adverse effects on wildlife, and in some cases, detrimental effects on human health. Intense and extensive algal blooms in the IRL began in 2011 and have returned periodically, with clear impacts on the extent, density, and depth where seagrasses grow; some fish kills; and, fortunately, little direct impact on human health. Compared with earlier blooms (1996 to 2010), the recent blooms (2011 to 2020) have been dominated by smaller types of algae called nanoplankton and picoplankton. SJRWMD launched the Indian River Lagoon Protection Initiative in 2013, including a multiyear investigation that increased the understanding of the blooms. This and other research indicate it is important to persevere with projects that decrease TN and TP loads to the IRL, because that approach will limit the severity of HABs and their impacts on the system.

- **Land Uses** – The loading estimates in the BMAP are based on land uses at a point in time, allowing the model to be calibrated. The loading estimates for this BMAP iteration were based on land use/land cover data from approximately 2015 from the water management districts as well as property appraiser data. Land uses in the model will be updated during future model revisions based on the most recent and accurate data available; this may result in changes to loading estimates. 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.

- **Basin Boundaries** – In the 2021 BMAP update there were 1,423 acres added to the BMAP area and 632 acres removed, resulting in a net addition of 791 acres. When the 2013 basin boundary was developed, there was uncertainty about whether some areas drained to the IRL, to the Upper St. Johns River, or

to other adjacent waterbodies. The boundaries were adjusted based on the best information available about the hydrology of the IRL, but future adjustments may be made because of flow diversions or updated information. There were no additional changes to the BMAP boundary for this update.

- **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.

- **SWIL Model** – The SWIL Model was initially developed through cooperative funding provided by Brevard County, all its cities, and FDOT District 5, as well as support from the U.S. Space Force, for purposes other than the BMAPs. In 2021, DEP began development of the SWIL Model, Version 5.0, making refinements that will improve the SWIL Model for use in the IRL BMAPs in the near future. This BMAP continues use of the SWIL Model, Version 4.0, loading estimates used in the 2021 BMAP. These loading estimates are described further in **Section 3**.

- **Community Development District (CDD) Responsibilities** – There are no water quality-related CDDs found in BRL. Where applicable, CDDs are assigned allocations only if three criteria are met: (1) there is development—i.e., roads and infrastructure—in the CDD area; (2) the CDD does not discharge to an MS4; and (3) the CDD pays a stormwater fee and receives a refund of this fee. New CDDs may receive allocations in future BMAP iterations.

- **Special Districts** – Water control districts (WCDs) and similar types of special districts have been assigned qualitative allocations for the canals and rights-of-way to the special districts, as the districts have control over these portions of their jurisdictions. These districts are required to implement specific canal and right-of-way BMPs to be compliant with the BMAP. The BMPs for each special district are based on the activities and land uses within the district, and reporting on those BMPs is due annually. This BMAP area currently has no applicable special districts identified. The existence of water control districts with stormwater responsibilities will be reevaluated in each five-year BMAP update. The evaluation will be based on the special district's operations, authorities, and utilization of those authorities.

- **Complexity of the Problem** – DEP acknowledges the complexity of the dynamics affecting the water quality of the BRL; therefore, this BMAP is designed to encompass a wide variety of projects and management strategies that will cumulatively act to significantly reduce nutrient loads. In estuarine-based systems, the interaction with ocean waters and freshwater inflows adds variability to the water quality conditions (including those associated with

climate shifts and elevated sea levels). Other factors such as inconsistency in annual rainfall amounts, changing land uses and farming practices, and internal nutrient sources such as muck deposits also complicate measuring the benefits of projects and management strategies and understanding the relationship between nutrient loading and the biological response of the seagrass deep edge.

- **Water Depths** – Elevated sea levels and changes in lagoon water depth over time affect the depth at which seagrass growth is measured for TMDL compliance and for assessing seagrass restoration. Improved depth estimates and seagrass deep edge assessment techniques are needed.

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

- **Atmospheric Deposition** – Reductions in atmospheric deposition have occurred over time and are expected to continue. This BMAP and all subsequent nutrient reduction requirements and allowable loads factor only those inputs directly from the watershed. DEP will continue to monitor atmospheric deposition and may address it in future BMAP iterations as part of the adaptive management process.

- **Muck Deposition** – Muck deposits contain nutrients that flux into the water column, increasing the abundance of phytoplankton, drift macroalgae, and epiphytes that attenuate light and constrain seagrass growth and propagation. Most IRL muck originates from upland soils and vegetation. For this reason, stringent watershed soil-erosion control and soil/vegetation containment measures are needed. Without such measures in place, muck removal will need to be frequently repeated, which is neither cost-effective nor time efficient. Ideally, muck removal projects should be performed in conjunction with soil and vegetation retention programs, including public awareness activities, that limit the amount of muck material deposited into the IRL. The SWIL Model does not automatically take this process into account; however, guidance documentation has been developed for crediting muck removal projects specifically from the lagoon.

1.3 Pollutant Sources

There are various sources of pollution in the BRL. Nonpoint (i.e., diffuse) sources in the watershed contribute the majority of TN and TP loads to the BRL and include urban and agricultural runoff.

1.3.1 Land Use

The BRL BMAP area covers more than 51,000 acres. As shown in **Table 5**, urban areas make up 33.7% of the area, followed by upland prairie and shrublands with 23.9%. Stakeholders in the BRL BMAP area are Brevard County, FDOT District 5, City of Cape Canaveral, City of Cocoa Beach, City of Satellite Beach, City of Indian Harbour Beach, Patrick Space Force Base, Cape Canaveral Space Force Station, and KSC.

Table 5. Summary of land uses in the BRL subbasin

Note: Land use code 5000 (water) acreage excludes lagoon water in this table.

Level 1 Land Use Code	Land Use Description	Acres	% Total
1000	Urban	17,207	33.7
2000	Agricultural	123	0.2
3000	Upland Prairie and Shrublands	12,215	23.9
4000	Upland Forested Areas	7,194	14.1
5000	Water	2,171	4.3
6000	Wetlands	10,182	19.9
7000	Disturbed Lands	28	0.1
8000	Transportation	1,963	3.8
Total		**51,083**	**100.0**

DEP asked stakeholders to provide information on management actions, including projects, programs, and activities that may reduce nutrient loads to the BRL. Management actions are included in the BMAP to address nutrient loads to the lagoon and must meet several criteria to be considered eligible for credit. In **Appendix B, Table B-1** and **Table B-2** show progress towards the required TN and TP load reductions allocated to each project zone from projects completed through October 2024.

1.3.2 Agricultural Nonpoint Sources

The primary agricultural land uses in the BRL BMAP area are grazing and fallow land. Other agricultural land uses include nurseries and horse farms/specialty farms. Most of the horse farms are small, noncommercial hobby farms. Because of urban encroachment, citrus health issues (freeze/disease) and the downturn in the economy, a majority of previously existing citrus operations have been destroyed or abandoned, have significantly lowered their production acreage, or have transitioned to another commodity. In recent years, some of this acreage may have also shifted to nonagricultural/urban uses.

Table 6 summarizes the agricultural land use enrolled in BMP programs for the entire BRL BMAP area as reported by FDACS. The enrollment figures are current as of June 2024, and the agricultural acreage is based on the Florida Statewide Agricultural Irrigation Demand (FSAID) XI Geodatabase. **Appendix D** provides more information on agricultural activities in the BRL BMAP area.

Table 6. Agricultural land use acreage enrolled summary in the BMP Program in the BRL BMAP area as of June 2024

Category	Acres
FSAID VII agricultural acres in the BMAP area	44
Total agricultural acres enrolled	0
% of FSAID VII agricultural acres enrolled	0

1.3.3 MS4s

Many of the municipalities in the watershed are regulated by the Florida 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. Refer to **Appendix A** for a link to a list of MS4 permittees.

1.3.4 Urban Nonpoint Sources

Subparagraph 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 if they fail to implement their responsibilities under the BMAP.

1.3.5 Wastewater Treatment

Recent legislative updates have expanded the requirements for addressing onsite sewage treatment and disposal systems (OSTDS or septic systems) and wastewater treatment facility (WWTF) sources within BMAPs. These requirements are addressed in **Section 3.3**.

1.3.5.1 OSTDS

Based on data from the Florida Department of Health (FDOH) Florida Water Management Inventory (FLWMI), there are 7,294 known or likely septic systems (OSTDS) located throughout the BRL. **Table 7** summarizes the number of known and likely septic systems and **Figure 2** illustrates the location of known or likely septic systems in the BRL.

Table 7. BRL septic system counts

OSTDS Classification	Total Number of Septic Systems
Known	832
Likely	6,462
Total	**7,294**

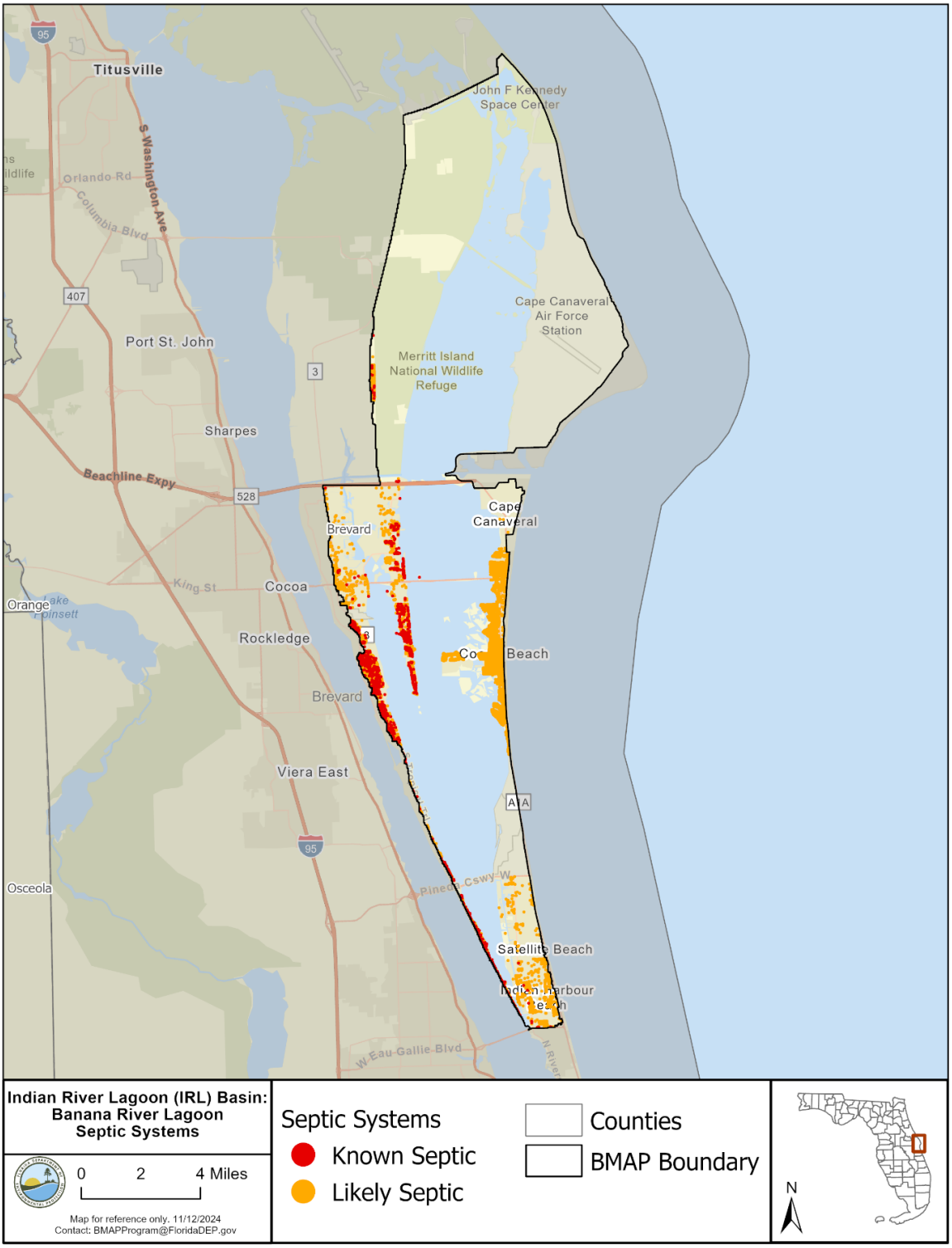

Figure 2. Location of known or likely septic systems in the BRL

1.3.5.2 WWTFs

WWTFs located in the BRL are shown in **Figure 3** and **Table 8.** As of January 2025, DEP identified three individually permitted wastewater facilities or activities in the BRL Subbasin. The U.S. EPA authorizes DEP to issue permits for discharges to surface waters under the NPDES Program.

Table 8. Wastewater facilities in the BRL as of January 2025

*WRF: Water reclamation facility. * This is a preliminary list of facilities. Additional facilities may also dispose of effluent in the BMAP area and identified at a later date.*

Facility ID	Facility Name
FL0020541	Cape Canaveral WRF
FL0021105	City of Cocoa Beach WRF
FL0102920	Cape Canaveral Space Force Station Regional WWTF

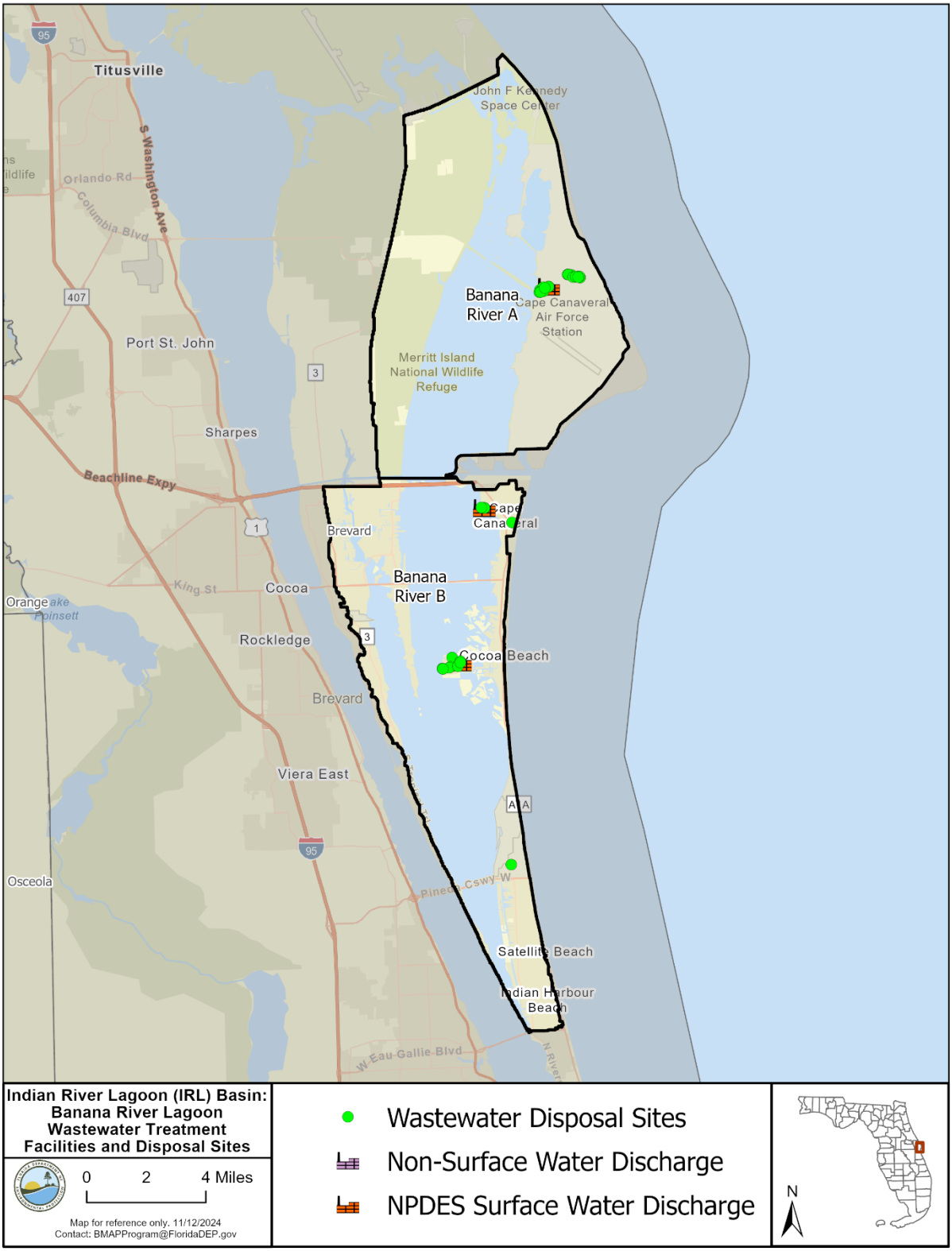

Figure 3. Map of wastewater facilities in the BRL

1.4 IRLPP

In 2023, the IRLPP was established in Section 373.469, F.S. The IRLPP includes the Banana River Lagoon, Central IRL, and North IRL BMAPs. Specific requirements within the IRLPP include:

- **BMAP Updates**: Requires BMAPs to be evaluated and updated every five years with implementation milestones with strategies and projects and sufficient water quality monitoring to evaluate whether reasonable progress in pollutant load reductions is being achieved over time.

- **Achieving Water Quality Standards**: Requires DEP to coordinate with partners to identify, prioritize, and incorporate into BMAP/RAPs strategies and projects necessary to achieve water quality standards and meet the TMDL within the IRL watershed.

- **IRL Watershed Research and Water Quality Monitoring Program**: Requires DEP to work with partners to establish and implement a comprehensive water quality monitoring network throughout the IRL and fund research to identify sources and prioritize projects for water quality and seagrass restoration.

- **OSTDS Requirements**: Beginning on January 1, 2024, prohibits new conventional OSTDS where sewer is available. Where sewer is not available, enhanced-nutrient reducing systems are required. All existing (residential and commercial) conventional OSTDS must be connected to sewer or upgraded to enhanced nutrient-reducing OSTDS by July 1, 2030.

DEP is working with its partners to identify data gaps, expand the monitoring network in the lagoon, and identify research projects. Since its inception, the IRL water quality grants have funded $309 million dollars for 48 projects.

1.5 Stakeholder Involvement

Stakeholder involvement is critical to develop, update, gain support for, and secure commitments in a BMAP. 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 BMAP process engages responsible entities, responsible agencies, and interested stakeholders and promotes coordination and collaboration to address the pollutant load reductions necessary to achieve the TMDL. DEP invited stakeholders to participate in the BMAP development process and encouraged public participation and consensus to the greatest practicable extent. **Table ES-1** identifies the stakeholders who participated in the development of this BMAP.

During the development and update of the BMAP, DEP held a series of meetings involving stakeholders and the public. The purpose of these meetings was to consult with stakeholders to gather information, evaluate the best available science, define management strategies and milestones, develop entity required reductions, and update monitoring requirements DEP held a series of individual meetings with responsible stakeholders to review their BMAP progress and ensure they are aware of the legislative changes that apply to the BMAP. Public meetings were held virtually in April 2024. All meetings were open to the public and noticed in the *Florida Administrative Register* (F.A.R.). Additionally, a final public meeting was held on May 7, 2025, that was noticed in the F.A.R. and in local newspapers.

In addition to public meetings, DEP held several one-on-one meetings with the responsible stakeholders for this BMAP. Throughout the process, DEP made themselves available to answer stakeholder questions.

Upon BMAP adoption, DEP intends to facilitate annual meetings with stakeholders to review progress towards meeting entity required reductions identified for the milestones that are needed to achieve the TMDL.

Section 2. Seagrass and Water Quality Monitoring Plan

2.1 Water Quality Monitoring

This monitoring plan is designed to track seagrass distribution and to identify long-term water quality trends. Sampling stations, parameters, frequency, and other elements of this strategy may be modified as appropriate to match changing environmental conditions, funding resources, and understanding of the IRL system.

2.1.1 Objectives

The primary and secondary monitoring objectives for the BRL monitoring plan are described as follows:

Primary Monitoring Objective

- Track seagrass depth extent responses to BMAP implementation.

Secondary Monitoring Objectives

- Track trends in ambient water quality in the BRL and its watershed, including major tributaries.
- Determine if watershed nutrient loading is decreasing and resulting in improved lagoon water quality, which will allow seagrass to grow to target depths.

Additional information about the seagrass depth and compliance with the TMDL targets is discussed in **Section 4.3**, including the most recent results based on the 2023 aerial mapping data. To read more about the process for analyzing the seagrass data and depth analysis, see **Appendix C**.

2.1.2 Monitoring Parameters, Frequency, and Network

To achieve the primary monitoring objective, the main parameter that will be tracked is the seagrass depth by project zone, which is identified through flyover mapping and aerial photography interpretation. DEP and SJRWMD are partnering to fund and conduct flyovers and mapping. In the past, SJRWMD and partners typically have contracted for seagrass mapping every two to three years, and DEP will continue to work with the district to maintain this frequency for the BMAP monitoring plan.

The aerial photography is taken from spring to early summer, during the seagrass growing season. Field sampling conducted around the time of the flights provides data for assessing the accuracy of the maps, and additional field sampling is conducted to address uncertainty regarding areas mapped as seagrass. Using aerial photography, a map is created showing seagrass extent in the lagoon. These maps are used in evaluations to assess progress towards the

TMDL seagrass depth targets for the BRL. Additional details on the seagrass assessment methodology are contained in **Appendix C**.

To achieve the secondary monitoring objective above, the existing SJRWMD monthly stations in the BRL BMAP will be monitored. On average, seagrass transects are 1 kilometer (km) away from a long-term water quality station. The monitoring strategy for these stations focuses on the following parameters listed in **Table 9**.

Table 9. Core water quality indicators and field parameters

Parameters
Alkalinity
Ammonium
Chlorophyll *a*
Depth of Collection
Dissolved Organic Carbon
Dissolved Oxygen
Field Conditions
Nitrite/Nitrate
Orthophosphate
pH.
Photosynthetically Active Radiation (PAR)
Salinity
Secchi Depth
Silica
Specific Conductivity
Total Depth of Sample Site
Total Kjeldahl Nitrogen
TN
Total Organic Carbon
TP
Total Suspended Solids (TSS)
True Color
Turbidity
Volatile Suspended Solids
Water Temperature

Table 10 lists the stations that SJRWMD currently samples in the BRL BMAP area, and these stations are shown by project zone in **Figure 4**. Data collection generally occurs from three types of stations: flow stations where volume is primarily determined; tributary water quality stations near the junction of tributaries where parameters are sampled as these waters mix with the lagoon; and lagoon water quality stations that measure parameters in the lagoon itself.

Table 10. Monitoring stations in the BRL BMAP area

Entity	Station ID	Project Zone	Status	Latitude	Longitude	Station Type	Frequency
SJRWMD	IRLB02	BRL-A	Active	28.4408	-80.6344	Lagoon Water Quality	Monthly
SJRWMD	IRLB04	BRL-B	Active	28.3670	-80.6330	Lagoon Water Quality	Monthly
SJRWMD	IRLB05	BRL-B	Active	28.3319	-80.6533	Lagoon Water Quality	Monthly
SJRWMD	IRLB06	BRL-B	Active	28.2836	-80.6331	Lagoon Water Quality	Monthly
SJRWMD	IRLB09	BRL-B	Active	28.1991	-80.6253	Lagoon Water Quality	Monthly
SJRWMD	IRLNFH01S	BRL-B	Active	28.3307	-80.6744	Lagoon Water Quality	Monthly
SJRWMD	IRLSCPW	BRL-B	Active	28.3684	-80.6822	Tributary Water Quality	Monthly
SJRWMD	IRLSG008	BRL-A	Active	28.5899	-80.6106	Biological	Bi-annual
SJRWMD	IRLSG009	BRL-A	Active	28.5048	-80.5953	Biological	Bi-annual
SJRWMD	IRLSG010	BRL-A	Active	28.5058	-80.5884	Biological	Bi-annual
SJRWMD	IRLSG011	BRL-A	Active	28.4873	-80.6199	Biological	Bi-annual
SJRWMD	IRLSG012	BRL-A	Active	28.4309	-80.6588	Biological	Bi-annual
SJRWMD	IRLSG013	BRL-B	Active	28.363	-80.6613	Biological	Bi-annual
SJRWMD	IRLSG014	BRL-B	Active	28.348	-80.6819	Biological	Bi-annual
SJRWMD	IRLSG015	BRL-B	Active	28.3084	-80.6726	Biological	Bi-annual
SJRWMD	IRLSG016	BRL-B	Active	28.3031	-80.6321	Biological	Bi-annual
SJRWMD	IRLSG017	BRL-B	Active	28.1989	-80.6314	Biological	Bi-annual

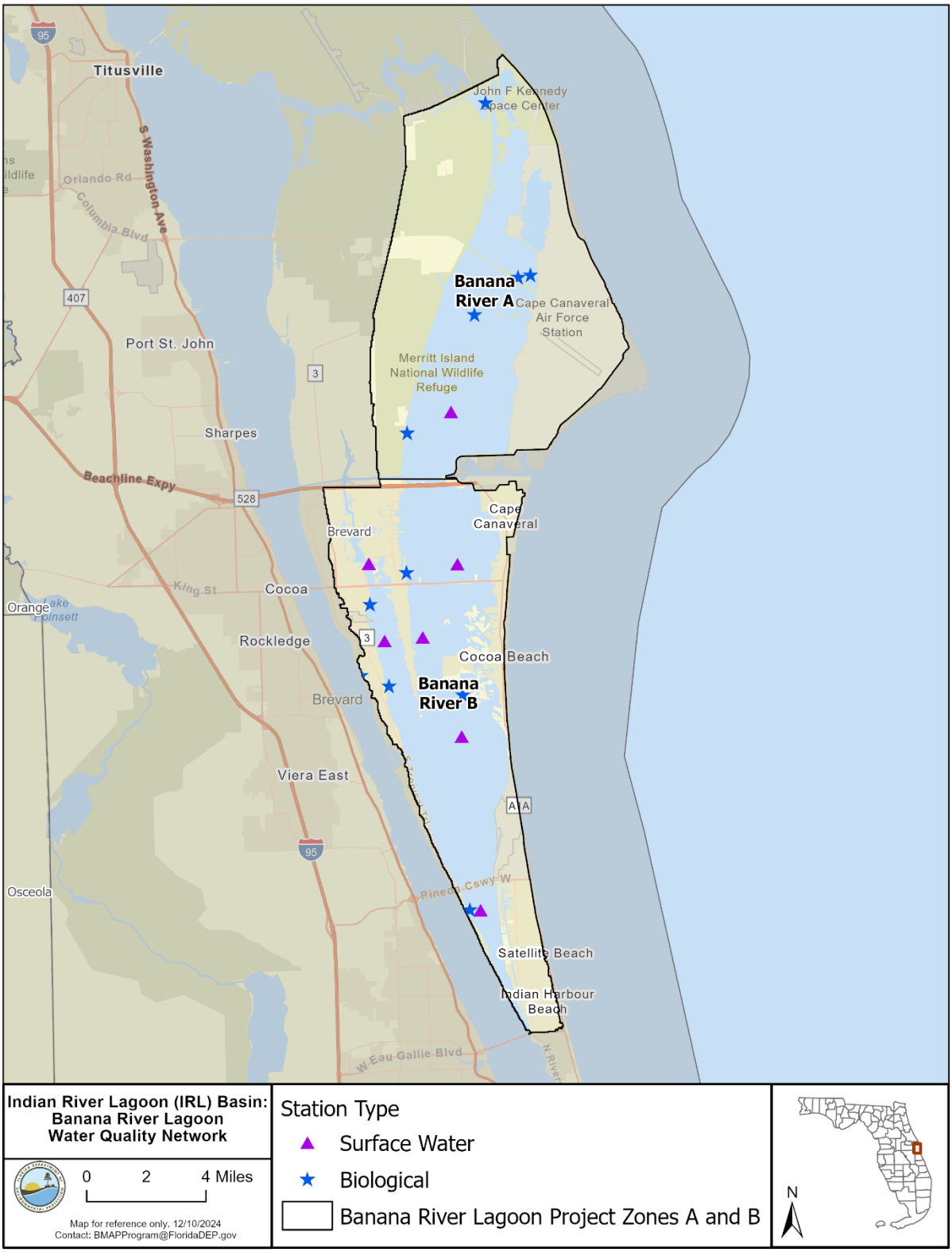

Figure 4. Monitoring network in the BRL with project zones

2.1.3 Data Management and Assessment

In 2017, the Florida Watershed Information Network (WIN) replaced the Florida Storage and Retrieval (STORET) Database. WIN now serves as the primary repository of ambient water quality data for the state of Florida. Water quality data from the WIN database are used for Impaired Surface Waters Rule (IWR) assessments and TMDL development. Ambient water quality data collected as part of the BMAP will be uploaded into WIN for long-term storage and availability. All BMAP data providers have agreed to upload ambient water quality data to WIN at least quarterly, upon the completion of the appropriate quality assurance/quality control (QA/QC) checks.

Other data relevant to monitoring restoration efforts, such as the extent and abundance of seagrass coverages, groundwater quality, and storm events, may be collected. Stakeholders agree to provide these data to other BMAP partners on request, and when appropriate, for inclusion in BMAP data analyses and adaptive management evaluations. Data used to assess the biological health of streams and lakes may be provided to DEP staff in the Watershed Assessment Section. For more information on submitting external biological data, visit the DEP website.

The water quality data will be analyzed periodically to determine trends in water quality in the lagoon. Specific statistical analyses were not identified during BMAP development; however, commonly accepted methods of data analysis will be used.

2.1.4 Quality Assurance/Quality Control

Stakeholders participating in the monitoring plan must collect water quality data in a manner consistent with the DEP standard operating procedures (SOPs) for QA/QC. The most current version of these procedures can be downloaded from the DEP website. For BMAP-related data analyses, entities should use National Environmental Laboratory Accreditation Council (NELAC) National Environmental Laboratory Accreditation Program (NELAP)–certified laboratories or other labs that meet the certification and other requirements outlined in the DEP SOPs.

2.2 Water Quality Trends

Since the data collected in the BRL BMAP water quality monitoring network (WQMN) is supplied by the SJRWMD, station status and trends assessments are also conducted by the SJRWMD annually. Assessment results of the 2023 status and trends report is referenced in **Table 11** below. Note that all ranges are expressed as low, medium or high relative to each other, and high values do not necessarily indicate poor water quality – i.e. data from the SJRWMD status and trends assessment is not compared to TMDL or DEP Water Quality Assessment Standards. Additional details may be found in **Appendix H** on the specific methodology of the assessment. See **Appendix A** for link to information about the trends analysis.

Table 11. Water quality trends for monitoring stations in BRL BMAP area

Subbasin	Project Zone	Station	Total Nitrogen As N (mg/L)	Total Phosphorus As P (ug/L)
BRL	BRL-A	IRLB02	High-range, Increasing (<5%)	Mid-range, Increasing (>5%)
BRL	BRL-B	IRLB04	High-range, Stable	Mid-range, Increasing (<5%)
BRL	BRL-B	IRLB05	High-range, Stable	Low-range, Stable
BRL	BRL-B	IRLB06	High-range, Stable	Mid-range, Increasing (<5%)
BRL	BRL-B	IRLB09	Mid-range, Stable	Mid-range, Increasing (<5%)
BRL	BRL-B	IRLNFH01S	High-range, Stable	Mid-range, Stable
BRL	BRL-B	IRLSCPW	High-range, Stable	Mid-range, Stable

2.3 Bathymetry

Bathymetry is the measurement of the bottom depths of a waterbody and is important for understanding how the seagrass deep edge migrates across the lagoon as time passes. The current bathymetric dataset used by the SJRWMD and SFWMD was collected in 1995 and has been used in all of the seagrass assessments to date. Additional methods of mapping the lagoon bathymetry need to be pursued to assess the change in the deep edge where seagrass has historically been found.

2.4 Hot Spot Analysis

2.4.1 Approach

To better prioritize and focus resources to most efficiently achieve restoration in the BRL BMAP, DEP developed the hot spot analysis approach. This approach uses measured data collected throughout the watershed to evaluate TN and TP 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 or TP concentration average, TN or TP 90th percentile, TN or TP standard deviation, and TN or TP 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**. The scores for each category are summed by station to determine an overall rank.

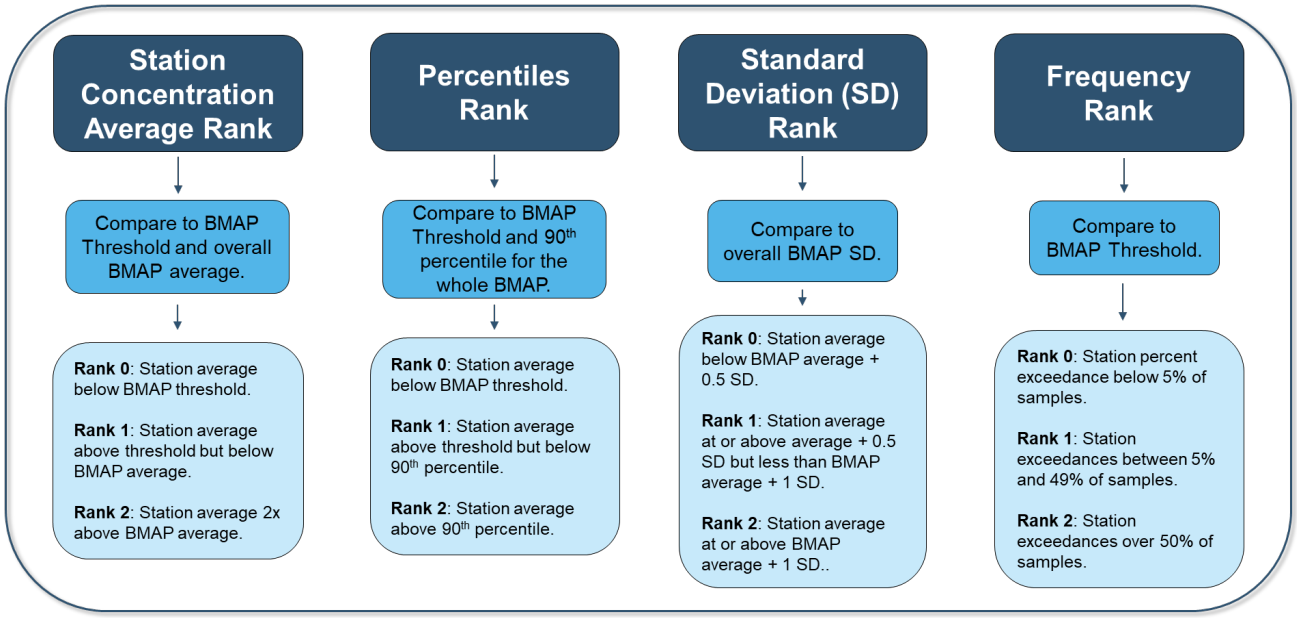

Figure 5. Summary of hot spot analysis approach

2.4.2 Results

Figure 6 and **Figure 7** show the spatial results of the TN and TP hot spot analysis in BRL. The hot spot analysis used ambient surface water data from 2019 to 2023. To be included in the analysis, each station must have at least four samples per year and at least two years of data. This analysis will continue to be reviewed and completed as needed.

Figure 6. Total nitrogen hot spots in the BRL

Figure 7. Total phosphorus hot spots in the BRL

Section 3. Modeling, Load Estimates, and Restoration Approach

3.1 BMAP Modeling

The seagrass depth limits were developed by SJRWMD based on a series of photo-interpreted seagrass coverages from 1943 through 2001. DEP reviewed these models and the seagrass depth limits and used them to develop the IRL TMDLs that were adopted by rule (Gao 2009). For the original 2013 BMAP, nutrient loading estimates were calculated using the Pollutant Load Screening Model (PLSM) which was developed by SJRWMD to represent year 2000 loading (Adkins et al. 2004) in most of the IRL Watershed (excluding the IRL south of the Indian River County –St. Lucie County boundary).

Through cooperative local effects, the MS4 permittees within the Brevard County section of the IRL (17 entities) partnered in a study to update and refine the information that was used in the PLSM and associated IRL TMDLs. One outcome of this study was the development of the geographic information system- (GIS-) based SWIL model, which incorporated more data, recent conditions, and temporally fine datasets. SWIL is a custom ESRI ArcGIS toolset, originally designed to provide a continuous monthly simulation of runoff over a 16-year period (Applied Ecology 2019).

3.1.1 SWIL Modeling

The SWIL model uses input parameters derived from observed datasets to create a spatial and temporal representation of nutrient loads and volumes for the IRL watershed. The SWIL model estimates the volume of water, TN, and TP loads discharged by segmenting the hydrological and nutrient contributions of subsurface flow and direct rainfall runoff. The contributions from portions of a basin are determined by land use, soil type, precipitation, evapotranspiration, peer-reviewed event mean concentrations, and runoff coefficients (Applied Ecology 2024).

The initial version of SWIL (SWIL 1.0) was developed in 2012, and updates were made over time to improve execution, processing time, and calibration. SWIL 4.0 was used by DEP in the 2021 BMAP Update. Following the BMAP update in 2021, stakeholders requested updates to the SWIL model given the rapid growth occurring within the basin. DEP began effort in 2021, through a contract with Applied Ecology, to update the SWIL model to create SWIL 5.0. The updated model will incorporate new land use, rainfall, soils, and event mean concentration information. These updates are expected to lead to an overall better model for estimating nutrient loading in the watershed as a planning tool for reducing loads allocated to stakeholders. After the SWIL model refinement (SWIL 5.0) is complete, DEP will reevaluate and, if necessary, adopt another iteration of the BRL BMAP, most likely before 2030. The next iteration will include updated loading estimates and required reductions.

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 well as the response of environmental conditions to improved loading rates are

assessed. Responsible entities and agencies should expect periodic adjustments to their reduction assignments during the BMAP process.

The SWIL Model starting loads for BRL are described in **Table 12**.

Table 12. BRL SWIL Model, Version 4.0, starting loads

Starting TN Load (lbs/yr)	Starting TP Load (lbs/yr)
271,752	36,028

3.1.2 Allocation Process

The allocation process remains the same as the 2021 BMAP. To generate average annual TN and TP loads from the IRL Watershed, SWIL Version 4.0 was run using rainfall inputs that were thought to be from a representative period covering various conditions from high to low rainfall years. The outputs from this model run were used to generate a GIS-based Load Estimation Tool (LET) that included annual average loads from the watershed and was the basis of the allocation calculations.

The LET based on the SWIL Model can produce polygon outputs with loading data included. The determination of each entity's loading was performed using the LET and a GIS process. Through a series of GIS steps, polygons were generated for each stakeholder. GIS data were used to overlay and unite the area within the BMAP boundary associated with each entity's jurisdictional boundary or the codes from the model land cover data related to natural and agricultural lands. The union overlay process was layered sequentially, as follows:

1. Dispersed Water Management (DWM) or Comprehensive Everglades Restoration Plan (CERP) projects.
2. A percentage of atmospheric deposition was removed from the loading calculations.
3. Roads (FDOT and Florida's Turnpike Enterprise).
4. WCDs and improvement district canals and rights-of-way.
5. Remaining estuary and tributary area with land use codes of 5000.
6. Natural lands (land use codes 3000 [not including 3300], 4000, and 6000).
7. Agriculture (land use codes 2000 and 3300).
    a. Agricultural fertilizer (land use codes 3300).
    b. Livestock waste (land use codes 3300).
8. Urban fertilizer, OSTDS, WWTF Reuse

a. CDDs, if they meet the criteria.

b. Municipalities.

c. Remaining area assigned to each county.

3.1.3 Required Reductions

The assigned required reductions are based off the starting loads and allocation approach used in the 2021 BMAP. However, following BMAP adoption DEP worked with responsible entities to make corrections to the LET based on the identification of additional natural land areas and other local considerations. The assigned required reductions below are a result of those corrections. The TN and TP reductions required by each entity are shown in **Table 13**.

Table 13. TN and TP load required reductions by entity (lbs/yr)

Lead Entity	TN Reductions (lbs/yr)	TP Reductions (lbs/yr)
Agriculture	2,901	384
Brevard County	40,367	6,337
City of Cape Canaveral	6,262	1,051
City of Cocoa Beach	11,528	1,851
City of Indian Harbour Beach	7,650	1,241
City of Satellite Beach	10,238	1,600
FDOT District 5	3,035	445
Kennedy Space Center	8,023	1,112
Port Canaveral	292	40
U.S. Space Force	22,243	3,213
Totals	**112,539**	**17,273**

3.1.4 Project Credit Process

Updated in the 2021 BMAP and with additional projects added annually after that time, the LET (based on SWIL Version 4.0) was used to calculate updated TN and TP baseloads from all existing project treatment areas in the BMAP. The DEP BMP Efficiencies Guidance document was used to determine the appropriate credit calculations for the various project types. Some project types that have credits based on measured data or weighed material, such as street sweeping, did not need to be updated using the LET.

3.2 Project Zones

There are two project zones in the BRL. All projects identified as part of this BMAP are listed by project zone in **Appendix B**. For projects that treat lands in multiple project zones, the nutrient reductions provided in the table are only the estimated reductions for the project zone specified. To calculate the total benefits from these projects, credits from all project zones treated by the project should be summed. The table of existing and planned projects lists those projects

submitted by stakeholders to help meet their obligations under the BMAP. Information on the tables was provided by the lead entity and is subject to change as the project develops and more information becomes available. In **Appendix B, Table B-1** and **Table B-2** show progress towards the required TN and TP load reductions allocated to each project zone from projects completed through October 2024.

It should be noted that only projects completed in 2000 and beyond are eligible for BMAP credit. Since the treatment input data for the hydrology calibration was from an earlier period in the model simulation, most projects beyond permit requirements installed from 2000 onward were not included in the calibration and are not well represented in the SWIL Model loading estimates. Therefore, projects completed from 2000 onward are eligible for BMAP credit. Projects completed prior to 2000 are accounted for in the period of record used for calibration of the SWIL Model, Version 4.0.

3.3 Basinwide Sources Approach

3.3.1 Agriculture

3.3.1.1. 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.

For this 2025 BMAP update, FDACS used the parcel-level polygon Agricultural Land Geodatabase (ALG) data that is part of the Florida Statewide Agricultural Irrigation Demand (FSAID) Geodatabase to estimate agricultural acreages statewide. The percentage of agricultural land use within the BRL BMAP was then determined by comparing the FSAID 11 ALG and total acreage of the BMAP boundary. Based on FSAID 11, the total agricultural land in the BMAP is 44 acres. To estimate the agricultural acres enrolled in the BMP program, FDACS Office of Agricultural Water Policy (OAWP) overlayed the FSAID ALG and BMP enrollment data within GIS to calculate the acres of agricultural land in an enrolled parcel. **Table 14** summarizes agricultural lands within the BRL BMAP based on the FSAID 11 and the results of the FDACS unenrolled agricultural lands characterization.

Table 14. Agricultural lands in the BRL Basin by crediting location

* Enrollment information current as of June 30, 2024.

Crediting Location	Agricultural Acres	Unenrolled - Unlikely Enrollable Acres	Agricultural Acres - Adjusted	Agricultural Acres Enrolled*
Project Zone A	59	19	39	0
Project Zone B	16	11	5	0

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. Currently, no producers are conducting water quality monitoring in lieu of implementing BMPs. 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.

Other reductions associated with the implementation and modification of BMPs may be realized through ongoing studies, data collection, and water management district 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.

3.3.1.2. 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.

3.3.1.3. 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 water management district.

3.3.1.4. 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.

3.3.1.5. Silviculture

The Florida Forest Service 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. The Florida Forest Service implements Chapter 5I-6, F.A.C., and requires 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 the Florida Forest Service and thereby committing to follow BMPs during all current and future forestry operations.

3.3.1.6. Agricultural Cooperative Regional Elements (ACEs)

Section 403.067, F.S., requires FDACS, DEP and agricultural producers to work together to establish ACEs 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.

Addressing nutrient loading from agricultural sources in Florida's waterways requires collective action and partnership among key stakeholders. 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 storage and/or 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 or innovative projects funded through existing or enhanced cost share programs administered by FDACS or the water management districts.

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 regional 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. The default performance measures will be the expected range of pollutant removal efficiencies. Tools may be needed to determine the effectiveness of projects, such as modeling.

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.

Currently, agricultural nonpoint sources contribute less than 1% of the nutrient sources in the BRL BMAP, an ACE is not required in this BMAP. DEP will re-evaluate the need for ACE projects during the next BMAP update.

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

3.3.1.7. Description of BMPs Adopted by Rule

Appendix D provides detailed information on BMPs and agricultural practices in the BMAP area. **Table 15** identifies the adopted BMPs and BMP manuals relevant to this BMAP.

Table 15. 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

Agency	F.A.C. Chapter	Chapter Title
Florida Forest Service	5I-6	Best Management Practices for Silviculture
DEP	62-330	Environmental Resource Permitting

3.3.2 Urban Stormwater

Urban stormwater is a considerable source of nutrient loading to the BRL, 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 stormwater management plans (SWMPs) 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.

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. 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 Stormwater Applicant Handbook Volume I, Section 8.5.2.

3.3.2.1 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 SWIL 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.

3.3.2.2 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 within the BMAP must obtain a certification for golf course BMPs (UF-IFAS Florida Golf Course Best Management Practices Program) under section 403.9339 F.S. and all golf courses must implement the BMPs described in the DEP 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 an 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 F**. 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.

3.3.3 Wastewater Treatment

3.3.3.1 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. EPA 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. Section 403.086, F.S. requires that beginning July 1, 2025, in the IRL or any river, canal, bay, bayou, sound, or other tributary thereto, sewage disposal facilities may not dispose any wastes without providing advanced waste treatment or a more stringent treatment standard if the department determines the more stringent standard is necessary to achieve the TMDL.

The nitrogen and phosphorus effluent limits set forth in **Table 16** and **Table 17** 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 16. 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 G (mg/L)	WWTFs Not Listed in Appendix G – Rapid Rate Land Application (RRLA) Effluent Disposal System (mg/L)	WWTFs Not Listed in Appendix G – All Other Disposal Methods, Including Reuse (mg/L)
Greater than or equal to 0.5	3	3	3	10
Less than 0.5 and greater than or equal to 0.01	3	3	6	10
Less than 0.01	3	N/A	10	10

Table 17. 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 G (mg/L)	WWTFs Not Listed in Appendix G – Rapid Rate Land Application Effluent Disposal System (mg/L)	WWTFs Not Listed in Appendix G – All Other Disposal Methods, Including Reuse (mg/L)
Greater than or equal to 0.5	1	1	1	6
Less than 0.5 and greater than or equal to 0.01	1	1	3	6
Less than 0.01	1	N/A	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.

3.3.3.2 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 RAP 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. 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 G** are subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S. The facilities listed in **Appendix G** 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.

3.3.3.3 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, water management districts (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 23-0113 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.

3.3.3.4 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.

3.3.3.5 Biosolids and Septage Application Processes

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.

3.3.4 OSTDS

In accordance with section 373.469, F.S., beginning on January 1, 2024, unless previously permitted, the installation of new OSTDS were prohibited within the Banana River Lagoon BMAP, Central Indian River Lagoon BMAP, North Indian River Lagoon BMAP, and Mosquito Lagoon RAP areas where a publicly owned or investor-owned sewerage system is available as defined in paragraph 381.0065(2)(a), F.S. Where central sewerage is not available, only enhanced nutrient-reducing OSTDS or other wastewater treatment systems that achieve at least 65% nitrogen reduction are authorized.

Also in accordance with section 373.469, by July 1, 2030, any commercial or residential property with an existing OSTDS located within the Banana River Lagoon BMAP, Central Indian River Lagoon BMAP, North Indian River Lagoon BMAP, and Mosquito Lagoon RAP areas must connect to central sewer if available or upgrade to an enhanced nutrient-reducing OSTDS or other wastewater treatment system that achieves at least 65% nitrogen reduction.

3.3.4.1 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., F.S., also requires local governments within a BMAP to develop an OSTDS remediation plan that is 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, water management districts (WMDs), and public and private domestic wastewater facilities. Each OSTDS remediation plan for this BMAP must contain the information outlined in DEP Final Order 23-0113. Stakeholders submit projects describing how septic system 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 septic systems will be based on several factors, including location, how they are addressed, and the amount of attenuation that occurs.

3.3.4.2 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.

3.3.5 Funding Opportunities

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.

Section 4. Compliance and Adaptive Management

4.1 Economic Benefits of the IRL System

The IRL is a valuable ecological and economic asset for the state of Florida and the counties that border the lagoon and its tributaries. It is considered one of the most biologically diverse estuaries in North America and was recognized as part of the National Estuary Program (NEP) in 1990. The lagoon directly and indirectly supports a large part of the region's and the state's economy. The basin supports the multimillion-dollar Indian River citrus industry and boat and marine sales industries. Finfish and shellfish harvesting from the lagoon also contribute to local economies.

An economic study prepared by the East Coast Florida Regional Planning Council (ECFRPC) and Treasure Coast Regional Planning Council (TCRPC) (ECFRPC and TCRPC 2016) estimated the total annual value of the lagoon's benefits at $7.6 billion, measured in 2014 dollars. This does not include the estimated $934 million in annualized real estate value added for property located on or near the IRL (Hazen and Sawyer 2008). The study area spanned from Ponce de Leon Inlet in Volusia County to the Jupiter Inlet in Palm Beach County, and included all of Brevard, Indian River, St. Lucie, and Martin counties. The economic analysis was primarily conducted using the Impact Analysis for Planning (IMPLAN) Regional Economic Input/Output Model, which estimates direct, indirect, and induced economic effects, as outlined in **Figure 8.**

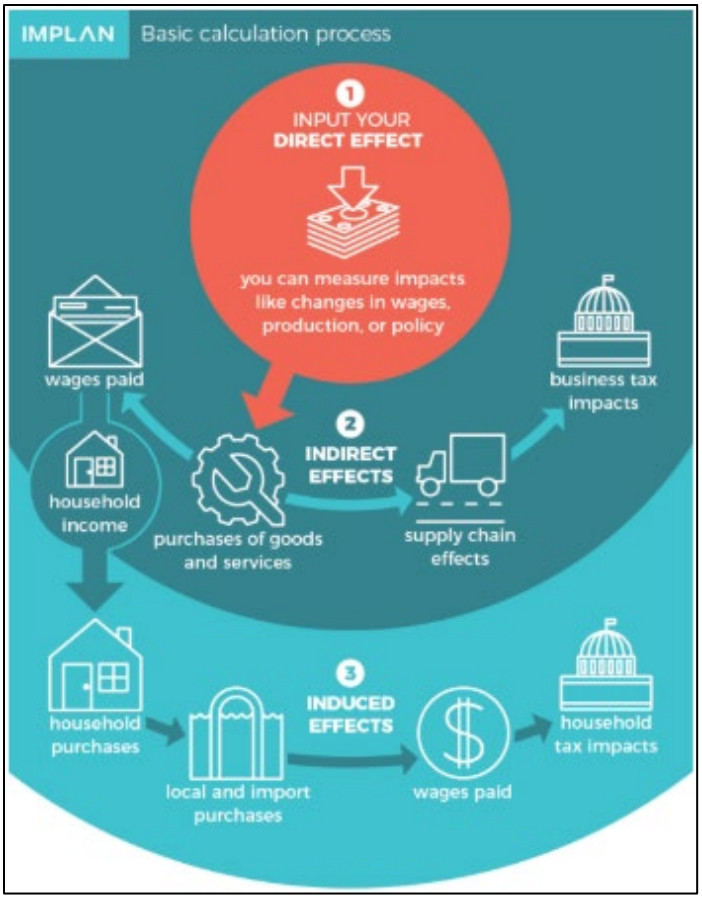

Figure 8. IMPLAN Model calculation process

The primary IRL-related industry groups identified in the study are living resources, marine industries, recreation and visitor-related, resource management, and defense and aerospace. The breakdown of the monetary contribution to the IRL regional economy is shown in **Figure 9.**

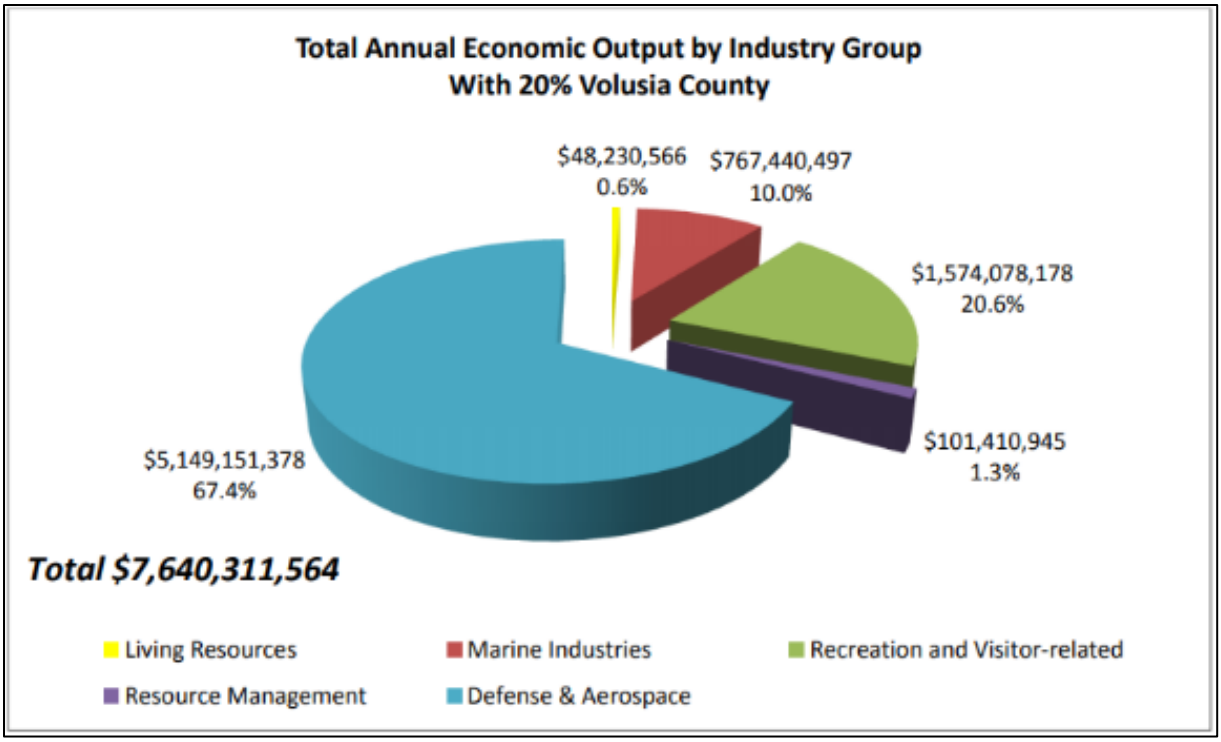

Figure 9. Total annual economic output by industry group in the IRL region, 2014

Money spent on recreation and visitor-related activities generated $1.57 billion of economic benefit. In 2014, over 7.4 million visitors traveled to the IRL region. Between 2.3 and 3.5 million visitors to the IRL region participate in IRL-related recreation, and each visitor spends an average of $162 a day. By 2025, the IRL region is anticipated to receive over 11 million visitors annually.

The study also estimated the cost of a sustainable IRL-based economy and return on investment for achieving water quality and seagrass restoration goals for the IRL. The annualized cost of achieving the nutrient load reductions required by the four BMAPs that span the entire area was estimated at $230 million. When compared with the $7.6 billion valuation of the region's average annual economic output, the return on investment from achieving water quality and seagrass restoration goals is 33 to 1. Therefore, investing in projects and programs to improve the lagoon's water quality and seagrass beds is not only important for environmental considerations but also to improve the regional economy.

4.2 Future Growth Management Strategies

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.

4.2.1 Future Growth Analysis

An analysis was done to consider the impacts of future population growth on loading from wastewater sources using per-person estimations calculated for portions of the population estimated to be on OSTDS and those connected to central sewer.

First, population growth for each county was taken from the Bureau of Economic and Business Research (BEBR) 2040 Medium Growth Projections. Then, a spatial analysis was performed to determine the proportion of developable land area attributed to each entity within the 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 (NHD) for lake and ponds and the Florida Natural Areas Inventory (FNAI) conservation lands were used to remove lands from the analysis. The percentage of remaining land ("developable 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.

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 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, described below. DEP's Domestic Wastewater Program estimates each person in Florida generates 100 gallons of wastewater per day. For OSTDS, DOH estimates each person in Florida generates 10 lbs TN/yr. UF-IFAS estimates each person in Florida generates 10 mg/L TP (Lusk, 2011). A generalized 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 turfgrass 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 lands from the initial GIS analysis for each entity. Then, the loadings were based on DEP's statewide event mean concentrations (EMCs) and runoff coefficients (ROCs) for low density residential, with a generalized rainfall for Central Florida from Harper 2007 Stormwater Evaluation. 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 treating to AWT standards (3mg/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 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 treating to AWT standards 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 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 treating to 6 mg/L TN and 3 mg/L TP by 2040. This scenario also assumes that all future OSTDS will be conventional systems with the only nitrogen treatment provided by soil attenuation. For urban development, this scenario represents an extreme growth future where 17% of developable land is converted to low density residential.

Based on the methodology above, and using TN as an example, **Table 18** shows the estimated future nitrogen loads from wastewater and urban 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 nitrogen 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 18. Estimated nitrogen load from future growth in the BRL

Entity	2040 Additional Population	2040 TN Loading (lbs/yr) Scenario 1	2040 TN Loading (lbs/yr) Scenario 2	2040 TN Loading (lbs/yr) Scenario 3
Brevard County	4,390	2,477	3,073	6,126
Cape Canaveral	347	196	243	484
Cocoa Beach	500	282	669	1,335
Indian Harbour Beach	408	230	286	569
Satellite Beach	543	306	348	694
Basin Totals	**6,188**	**3,492**	**4,619**	**9,209**

Scenario 1, representing a future in which local communities have pursued infrastructure expansion and the highest treatment levels of wastewater, resulted in an additional basin load of 3,492 lbs-TN/yr. Scenario 3, representing a future in which local communities have maintained the status quo in terms of both rate of service connections, treatment levels and OSTDS maintenance, resulted in an additional basin load of 9,209 lbs-TN/yr. When compared to the results of the overall TN load in the BMAP area (271,752 lbs-TN/yr), it is estimated that growth in the basin could result in a 1% to 3% increase in nitrogen loading to the groundwater by 2040.

This broad analysis is not being used to determine allocated reductions for responsible entities, but does help shed light on how loading in the basin might change in the coming decades without comprehensive local and regional planning. Future development will likely result in an increase in loading from stormwater and wastewater sources. These changes 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. This analysis did not capture all local considerations or complexities of mixed land use.

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. The analysis also identifies which entities have the potential for higher nitrogen reduction requirements under the BMAP if population growth trends continue as expected without major changes to wastewater management practices.

Other mechanisms discussed in this section 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 nutrients associated with urban stormwater and fertilizer use. 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. DEP encourages local governments to incorporate water quality considerations when developing and implementing local ordinances, comprehensive plans, stormwater planning, and septic incentive programs in areas of urban expansion.

4.3 Compliance

4.3.1 TMDL Compliance

The intent of the TMDLs is to recover the deeper water seagrass habitats, with the biological response of the seagrass being the most important factor in evaluating the success of achieving TMDL targets. To assess progress for the IRL Basin towards the median seagrass depth limit target, a two-step process was used in Project Zones A and B. For the 2013 implementation of the BMAP, DEP conducted this two-step evaluation using seagrass data from 2003, 2005, 2006, 2007, and 2009, which were the latest datasets available at the time of the analysis. Project Zone A was determined to be compliant with both Step 1 and Step 2 in 2013. Therefore, stakeholders in Project Zone A were not required to make additional reductions at the time and were not assigned detailed allocations in the first iteration of the BMAP. Project Zone B was not compliant and stakeholders in this zone were assigned detailed allocations in the first iteration of the BMAP. In the 2021 BRL BMAP, neither Project Zone A nor Project Zone B were compliant, so responsible entities were assigned detailed allocations in all project zones.

In 2025, the evaluation was conducted using the 2017, 2019, 2021, and 2023 seagrass mapping data, which were the latest datasets available at that time. **Figure 10** and **Figure 11** show the results of both steps of the 2025 evaluation for Project Zones A and B, respectively. None of the project zones with TMDLs were compliant. As indicated in the 2013 BMAP, DEP assigns detailed allocations in project zones where compliance is not maintained.

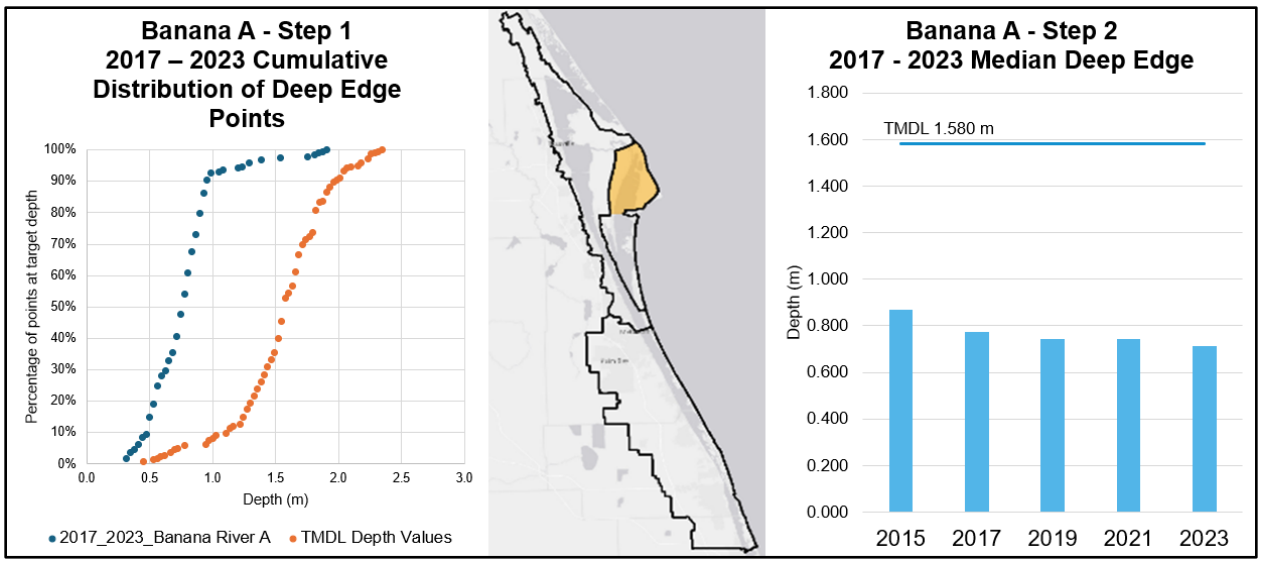

Figure 10. BRL Project Zone A seagrass evaluation results for compliance step 1 and step 2

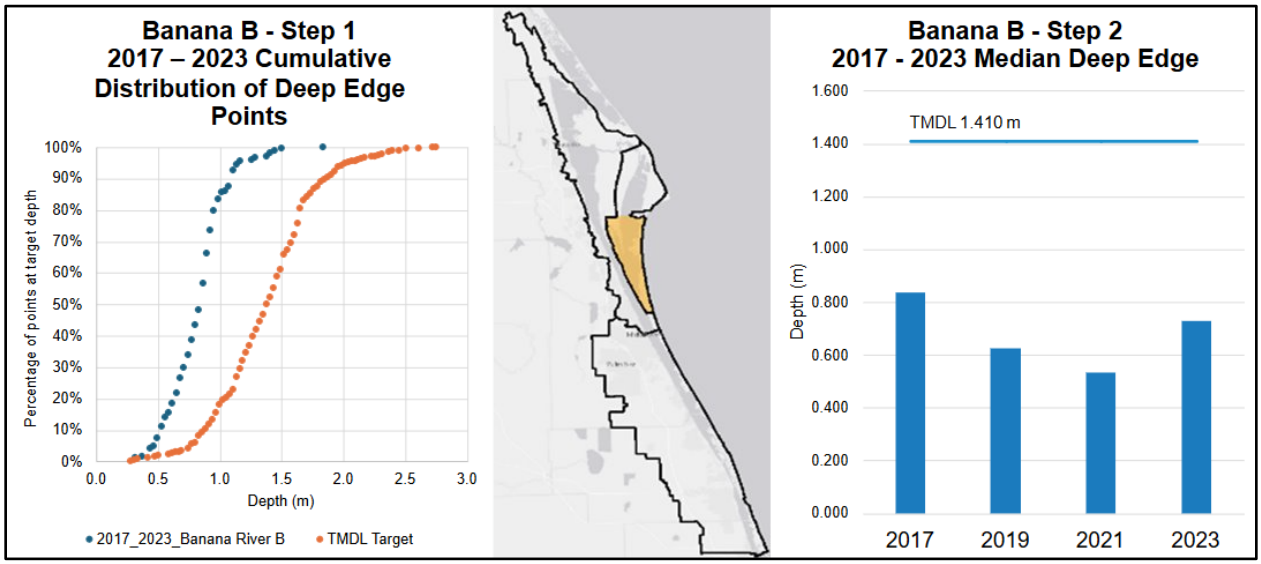

Figure 11. BRL Project Zone B seagrass evaluation results for compliance step 1 and step 2

Table 19. Seagrass compliance results, Step 1

Step 1	BRL A	BRL B
2007 – 2013	Pass	Fail
2009 – 2015	Pass	Fail
2011 – 2017	Fail	Fail
2013 – 2019	Fail	Fail
2015 – 2021	Fail	Fail
2017 – 2023	Fail	Fail

Table 20. Summary of seagrass compliance results, Step 2

Note: Parentheses indicate number of years passing of those assessed for the compliance period of record.

Step 2	BRL A	BRL B
2007 – 2013	Fail (2 of 4)	Fail (0 of 4)
2009 – 2015	Fail (1 of 4)	Fail (0 of 4)
2011 – 2017	Fail (0 of 4)	Fail (0 of 4)
2013 – 2019	Fail (0 of 4)	Fail (0 of 4)
2015 – 2021	Fail (0 of 4)	Fail (0 of 4)
2017 – 2023	Fail (0 of 4)	Fail (0 of 4)

4.3.2 BMAP Compliance

In addition to IRL TMDL compliance and the measurement of seagrass deep edge recovery, there are other compliance elements related to the BMAP. DEP has set BMAP TN and TP reduction milestones for the years 2025 and 2030 to ensure that significant progress will be made in each five-year increment prior to the 2035 total reduction deadline. The percent reductions in the milestones apply to the total BMAP required reductions; so as various entities implement their projects, the overall milestones are also being met. Pursuant to section 403.067, F.S., 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. Individual entities must achieve compliance by meeting their own required reductions by the 2035 deadline, as well as show progress towards the BMAP milestones by planning and implementing projects.

Section 5. References

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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:

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

NELAP Certified Laboratory Search: https://floridadep.gov/dear/florida-dep-laboratory/content/nelap-certified-laboratory-search

FDACS BMPs: https://www.fdacs.gov/Agriculture-Industry/Best-Management-Practices-BMPs

FDACS BMP and Field Staff Contacts: 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

SJRWMD Water Quality Trends: https://www.sjrwmd.com/data/water-quality/#status-trends

University of Florida Institute of Food and Agricultural Sciences Research: http://research.ifas.ufl.edu/

Link to data: https://www.sjrwmd.com/static/waterquality/All_Data_Status_Trends_2023.csv

Appendix B. Project List by Project Zone

Table B-1. Existing and planned projects in BRL project zone A

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2536	Brevard County	NA	BC-01	Education Efforts	Florida Yards and Neighbors (FYN); landscape, irrigation, fertilizer, and pet waste ordinances; public service announcements (PSAs); pamphlets; website; Illicit Discharge Program.	Education Efforts	Ongoing	NA	107	15	A	$0.00
2547	Brevard County	SJRWMD; Environmentally Endangered Lands (EELS)	BC-02	Pine Island Phase I and II	Regional Stormwater Management System includes two wet ponds (80-acres & 23 acres) with gravity flow and pump station.	Regional Stormwater Treatment	Completed	2015	109	101	A	$3,140,824.00
2398	Brevard County	NA	BC-15	Street Sweeping	Street sweeping on 786 miles eight times per year.	Street Sweeping	Ongoing	NA	21	13	A	$0.00
2577	Brevard County	NA	BC-31	BMP Cleanout	Quarterly baffle box/ sediment trap cleaning.	BMP Cleanout	Ongoing	NA	0	0	A	$0.00
5152	Brevard County	SOIRL	BC-50	Education Efforts	Fertilizer, grass clippings, and septic system maintenance.	Enhanced Public Education	Ongoing	NA	NA	NA	A	$187,500.00
5157	Brevard County	SOIRL	BC-54	Grass Clippings Campaign Phase 1	Marketing and surveying. Combined with BC-50 and BC-50a.	Education Efforts	Canceled	2019	NA	NA	A	$6,666.66
2575	Cape Canaveral Space Force Station	NA	CCSFS-01	Nonuse of Fertilizer/ Fertilizer Ordinance	No fertilizer is used at station.	Education Efforts	Ongoing	NA	234	32	A	$0.00
2574	Cape Canaveral Space Force Station	NA	CCSFS-02	Street Sweeping	Removed sediment and debris, disposed of it at a landfill.	Street Sweeping	Ongoing	NA	27	17	A	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2583	Cape Canaveral Space Force Station	USACE	CCSFS-03	Dry Detention Ponds after 2000	Identified 36 ERPs that were not included in the PLSM model that provide treatment.	Dry Detention Pond	Completed	Prior to 2013	120	16	A	$0.00
2569	Cape Canaveral Space Force Station	USACE	CCSFS-04	Online Wet Retention Ponds after 2000	Providing 3.187 inches of additional treatment within 5 ERP drainage basins that were not included in the PLSM model.	On-line Retention BMPs	Completed	Prior to 2013	863	116	A	$0.00
2401	Cape Canaveral Space Force Station	USACE	CCSFS-05	TMDL Monitoring and Data Collection	Collected stormwater and baseflow nutrient concentrations and rainfall data at 3 monitoring stations; collected baseflow and stormwater runoff flow volume data and groundwater elevation data at 6 monitoring stations.	Monitoring/Data Collection	Completed	2018	NA	NA	A	$1,850,000.00
2406	Cape Canaveral Space Force Station	NA	CCSFS-06	WWTF Upgrade Feasibility Study	Pilot study to improve removal rates of nitrates, total nitrogen, and ammonia in plant effluent. Pilot study was successful and will result in permanent changes that will be requested in RWWTF Permits.	Study	Completed	2017	NA	NA	A	$46,000.00
2474	Cape Canaveral Space Force Station	NA	CCSFS-07	Invasive Vegetation Management	Enhancement to wetlands at CCAFS occurs through invasive vegetation management including annual exotic vegetation removal.	Exotic Vegetation Removal	Underway	TBD	NA	NA	A	$0.00
2461	Cape Canaveral Space Force Station	NA	CCSFS-08	Sanitary Sewer Infiltration and Inflow Study	Conduct infiltration and inflow study of station's sanitary sewer system.	Study	Completed	2019	NA	NA	A	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2462	Cape Canaveral Space Force Station	NA	CCSFS-09	Public Education	Three outreach events were held that removed 30 tons of debris through beach cleanups.	Enhanced Public Education	Completed	2017	NA	NA	A	$0.00
2463	Cape Canaveral Space Force Station	NA	CCSFS-10	Wetlands as Filters	Station has canals and functional culvert openings that allow connection with the Banana River Lagoon at an estimated 11 surface acres: 65 surface acres of the Army wharf that connect with the Atlantic Ocean, and 106 surface acres of the Trident wharf.	Natural Wetlands as Filters	Canceled	NA	NA	NA	A	$0.00
4348	Cape Canaveral Space Force Station	NA	CCSFS-11	WWTF Upgrade	Improved removal rates of nitrates, total nitrogen, and ammonia in plant effluent.	WWTF Upgrade	Completed	2018	10320	NA	A	$0.00
4349	Cape Canaveral Space Force Station	NA	CCSFS-12	Shoreline Stabilization	2 Projects: 4 miles on both sides of Titan Road and ITL Causeway and 1,000 ft near the South Gate Entrance.	Shoreline Stabilization	Canceled	NA	NA	NA	A	$0.00
6335	Cape Canaveral Space Force Station	USACE	CCSFS-13	Site 2 Weir	Installing a weir in the Site 2 canal to reduce baseflow discharges into BRL.	Control Structure	Underway	2024	2400	500	A	$225,000.00
6724	Cape Canaveral Space Force Station	NA	CCSFS-14	South Gate Shoreline Stabilization	1,000 ft of shoreline stabilization near the South Gate Entrance.	Shoreline Stabilization	Completed	2021	TBD	TBD	A	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
6723	Cape Canaveral Space Force Station	NA	CCSFS-15	Titan Road and ITL Causeway Shoreline Stabilization	4 miles of shoreline stabilization on both sides of Titan Road and ITL Causeway.	Shoreline Stabilization	Completed	2021	893.96	196.05	A	$0.00
5549	FDACS	Agricultural Producers	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 June 2024 Enrollment and SWIL - LET.	Agricultural BMPs	Ongoing	NA	0	0	A	$0.00
5551	FDACS	Agricultural Producers	FDACS-03	Cost-Share BMP Projects	Cost-share projects paid for by FDACS.	Agricultural BMPs	Completed	NA	0	0	A	$0.00
2391	FDOT District 5	NA	FDOT-01	Street Sweeping	Street sweeping.	Street Sweeping	Ongoing	NA	49	31	A	$0.00
2392	FDOT District 5	NA	FDOT-02	Education Efforts	Pamphlets, illicit discharge program.	Education Efforts	Ongoing	NA	0	0	A	$0.00
2395	FDOT District 5	NA	FDOT-03	Fertilizer Cessation	Elimination of fertilizer application in rights-of-way.	Fertilizer Cessation	Completed	2005	102	0	A	$0.00
2403	Kennedy Space Center	NA	KSC-01	KSC Landscape Fertilizer Reduction	Reduction of fertilizer and composition change. Fertilizer use reduced from 60 tons/year in 2000 to 20 tons/year in 2010; formula changed from rapid nitrogen release 16-4-8 to slow nitrogen release, phosphate-free 15-0-15.	Fertilizer Reduction	Completed	2009	1872	265	A	$0.00
2417	Kennedy Space Center	NA	KSC-02	KSC Citrus Grove Termination Jerome Rd. East	Previous Citrus Grove lease termination allows termination of fertilizer use and irrigation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00
2431	Kennedy Space Center	NA	KSC-03	KSC Citrus Grove Termination TEL-IV	Previous Citrus Grove lease termination allows termination of fertilizer use and irrigation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2415	Kennedy Space Center	NA	KSC-04	Vertical Processing Facility M7-1469	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00
2414	Kennedy Space Center	NA	KSC-05	Spacecraft Assembly Encapsulation Facility 2 M7-1210	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00
2413	Kennedy Space Center	NA	KSC-06	Central Heat Plant M6-595	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00
2412	Kennedy Space Center	NA	KSC-07	Utility Shops K6-1246	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00
2411	Kennedy Space Center	NA	KSC-08	Fire Station 2 K6-1198	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00
2410	Kennedy Space Center	NA	KSC-09	Vehicle Loading Ramp M7-0651	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00
2409	Kennedy Space Center	NA	KSC-10	Hypergol Module Storage East M7-1412	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00
2408	Kennedy Space Center	NA	KSC-11	Hypergol Module Storage West M7-1410	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00
2407	Kennedy Space Center	NA	KSC-12	Regional Stormwater	Region 1 stormwater treatment system encompasses the KSC Industrial Area, permit 16585.	Wet Detention Pond	Completed	2014	1459	320	A	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
				Management System								
2404	Kennedy Space Center	NA	KSC-13	ARF Stormwater System	ARF stormwater treatment system encompasses the Booster Fabrication Facility complex, permit 16062.	On-line Retention BMPs	Completed	2014	174	21	A	$0.00
2426	Kennedy Space Center	NA	KSC-14	VAB South Wetland Treatment System	VAB South stormwater treatment system and Wetland treats south east VAB area and associated supporting facilities, permit 71538.	Constructed Wetland Treatment	Completed	2014	372	88	A	$0.00
2609	Kennedy Space Center	NA	KSC-15	Schwartz Road Landfill	This basin is completely closes and does not discharge under normal conditions.	100% On-site Retention	Completed	2014	792	105	A	$0.00
2728	Kennedy Space Center	NA	KSC-16	Closed Basin 4 (Spoil Site - Static Test Road)	This basin is completely closes and does not discharge under normal conditions.	100% On-site Retention	Completed	2014	438	43	A	$0.00
2890	Kennedy Space Center	NA	KSC-17	Impounded Areas	This basin is completely closes and does not discharge under normal conditions.	100% On-site Retention	Completed	2014	8024	783	A	$62,406.00
2889	Kennedy Space Center	NA	KSC-18	Depressional Storage (22nd St. to 28th St.)	This basin is completely closes and does not discharge under normal conditions.	100% On-site Retention	Completed	2014	3441	269	A	$491,976.00
2888	Kennedy Space Center	NA	KSC-19	Depressional Storage (Jerome Rd. to 22nd St.)	This basin is completely closes and does not discharge under normal conditions.	100% On-site Retention	Completed	2014	3056	279	A	$477,506.00
2887	Kennedy Space Center	NA	KSC-20	Demolition of Facilities M7-1521 and M7-1522	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00
2886	Kennedy Space Center	NA	KSC-21	Demolition of Facility M6-0339	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2014	TBD	TBD	A	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2885	Kennedy Space Center	NA	KSC-22	Demolition of Facility M7-0862	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2015	TBD	TBD	A	$0.00
2884	Kennedy Space Center	NA	KSC-23	Demolition of Facility M7-1012	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2015	TBD	TBD	A	$0.00
2874	Kennedy Space Center	NA	KSC-24	Demolition of Facility M7-1061	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2015	TBD	TBD	A	$0.00
2882	Kennedy Space Center	NA	KSC-25	Demolition of Facility M7-1112	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2015	TBD	TBD	A	$0.00
2891	Kennedy Space Center	NA	KSC-26	Demolition of Facility M7-0961	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2015	TBD	TBD	A	$0.00
2880	Kennedy Space Center	NA	KSC-27	Demolition of Facility K7-2468	Demolition of facility and associated impervious surface replaced with grass and natural vegetation.	Land Use Change	Completed	2015	TBD	TBD	A	$0.00
2879	Kennedy Space Center	NA	KSC-28	Cut 13 Dredging	Maintenance dredging.	Muck Removal/Restoration Dredging	Underway	2017	TBD	TBD	A	$14,000,000.00
5626	Kennedy Space Center	NA	KSC-29	Landscape Fertilizer Reduction	Total Fertilizer use at KSC reduced form 20 tons 2010 to 4 tons 2020. Of that reduction, 75% applies to BIRL Zone A.	Fertilizer Reduction	Underway	2020	TBD	TBD	A	$0.00
6944	Kennedy Space Center	None	KSC-30	KARS Park Septic to Sewer	Removal of 10 septic systems and installation of lift stations and force main at KARS Park 1 located at the Kennedy Space Center.	OSTDS Phase Out	Completed	2023	TBD	TBD	A	$1,400,000.00

Table B-2. Existing and planned projects in BRL project zone B

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2559	Brevard County	DEP	BC-03	Florida Blvd. Pond	Construction of a 2.3 acre wet detention pond to provide treatment to a residential area in Merritt Island.	Wet Detention Pond	Completed	2013	191	49	B	$350,384.00
2545	Brevard County	DEP	BC-04	Hampton North (Riverside)	Upgrading a 1st generation to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2013	25	3	B	$27,000.00
2544	Brevard County	DEP	BC-05	Hampton South (Needle Blvd)	Upgrading a 1st generation to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2013	29	4	B	$29,000.00
2543	Brevard County	DEP	BC-06	Albatross	Upgrading a 1st generation to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2013	42	5	B	$33,000.00
2789	Brevard County	DEP	BC-07	Surfside	Upgrading a 1st generation to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2013	41	5	B	$31,500.00
2457	Brevard County	DEP	BC-08	West Scots	Upgrading a 1st generation to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2013	14	2	B	$41,000.00
2428	Brevard County	DEP	BC-09	Johns Circle	Upgrading a 1st generation to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2013	28	3	B	$31,000.00
2393	Brevard County	DEP	BC-10	Farrington Drive	Upgrading a 1st generation to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2013	14	2	B	$37,500.00
2394	Brevard County	DEP	BC-11	Porpoise Street	Upgrading a 1st generation to a 2nd generation baffle box by	Baffle Boxes- Second Generation	Completed	2013	13	2	B	$42,000.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
					adding the nutrient separating screen.							
2402	Brevard County	DEP	BC-12	Angler Street	Upgrading a 1st generation to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2013	18	2	B	$30,700.00
2396	Brevard County	DEP	BC-13	Diana Shores	Installing a Vortech Unit to treat runoff form an old residential, multi family and commercial area.	Hydrodynamic Separators	Completed	2013	0	6	B	$102,000.00
2389	Brevard County	NA	BC-14	Education Efforts	FYN; landscape, irrigation, fertilizer, and pet waste ordinances; public service announcements (PSAs); pamphlets; website; Illicit Discharge Program.	Education Efforts	Ongoing	NA	3192	369	B	$0.00
7473	Brevard County	SOIRL	BC-150	Elliot Basin 1124	This project will focus on incorporating innovative technologies into traditional BMP treatments to reduce the nutrient loading identified as priority basins 1124 in the SWIL model loadings.	Stormwater System Upgrade	Planned	2025	TBD	TBD	B	$374,000.00
7221	Brevard County	SOIRL	BC-151	Canaveral South Muck Dredging	Muck removal of an estimated 738,000 cubic yards.	Muck Removal/Restoration Dredging	Planned	2028	TBD	TBD	B	$69,372,000.00
7222	Brevard County	SOIRL	BC-152	Pineda Banana River Lagoon Muck Dredging	Muck dredging of an estimated 195,000 cubic yards.	Muck Removal/Restoration Dredging	Planned	2032	TBD	TBD	B	$18,330,000.00
7223	Brevard County	SOIRL	BC-153	Patrick Space Force Base Muck Dredging	Muck dredging of an estimated 205,000 cubic yards.	Muck Removal/Restoration Dredging	Planned	2032	TBD	TBD	B	$19,270,000.00
7456	Brevard County	SOIRL	BC-154	Angel Ave - Basin 1066	Design and installation of a wet pond and a denitrification bioreactor on County property.	Biosorption Activated Media (BAM)	Underway	2026	TBD	TBD	B	$780,200.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
7497	Brevard County	SOIRL	BC-155	Richland Canal Stormwater Headwall and Water Quality Improvement	This project will help treat stormwater and provide various water quality improvements to an existing outfall near the Richland Avenue canal within basin B988.	Control Structure	Planned	2026	641	97	B	$415,000.00
2399	Brevard County	DEP	BC-16	Fortenberry Pond	22.3 Acre Regional Stormwater Detention Pond designed to accommodate water quality treatment for pre-existing development as well as for future build-out of commercial properties through the purchase of stormwater credits.	Wet Detention Pond	Completed	2015	544	127	B	$10,900,000.00
2400	Brevard County	DEP	BC-17	Merritt Island Airport Pond	Redirection of run-off from a drainage basin with no treatment through a swale and to a pond that was expanded to provide water quality.	Wet Detention Pond	Completed	2013	514	125	B	$652,056.00
2542	Brevard County	Not provided	BC-18	Florida Boulevard	Installation of floating vegetation islands to remove nitrogen from an existing wet detention pond.	Floating Islands/ Managed Aquatic Plant Systems (MAPS)	Completed	2013	39	3	B	$40,772.00
2541	Brevard County	DEP	BC-19	Third Ave Baffle Box	Upgrading a 1st generation baffle box to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2015	97	12	B	$31,452.00
2540	Brevard County	NA	BC-20	Bes Management Practice (BMP) Cleanout	Cleaning out the BMP such as baffle boxes, inlet baskets, and sediment basins.	BMP Cleanout	Ongoing	NA	1	1	B	$95,069.00
2539	Brevard County	DEP	BC-21	Fourth Place Baffle Box	Upgrading a 1st generation to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2015	94	11	B	$34,037.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2538	Brevard County	DEP	BC-22	Thrush 405 Baffle Box	Upgrading a 1st generation to a 2nd generation baffle box by adding the nutrient separating screen.	Baffle Boxes- Second Generation	Completed	2015	7	1	B	$12,507.00
2570	Brevard County	Not provided	BC-23	Fortenberry Pond MAPS	Installation of floating vegetation islands to remove nitrogen from an existing wet detention pond.	Floating Islands/ Managed Aquatic Plant Systems (MAPS)	Canceled	NA	NA	NA	B	$0.00
2546	Brevard County	DEP	BC-24	Merritt Ridge Pond 3A	Installation of floating vegetation islands to remove nitrogen from an existing wet detention pond.	Floating Islands/ Managed Aquatic Plant Systems (MAPS)	Completed	Prior to 2013	100	15	B	$114,914.00
2548	Brevard County	Satellite Beach	BC-25	Cassia Phase 3	Landscape buffer/ drainage swale along the adjoining roadway. Improvements include the construction of a dry detention area within an existing ditch and construction of roadside swales in the location of the existing bike/ pedestrian lane.	On-line Retention BMPs	Completed	2013	943	131	B	$100,000.00
2582	Brevard County	SJRWMD	BC-26	South Patrick Drive Baffle Box	2nd generation baffle box with denitrification bioreactor.	Baffle Boxes- Second Generation	Completed	2017	170	20	B	$320,256.00
2581	Brevard County	Not provided	BC-27	Kelly Park Reuse	Not provided.	Stormwater Reuse	Completed	2017	TBD	TBD	B	$0.00
2580	Brevard County	Not provided	BC-28	Patrick Air Force Base Golf Course Pond Stormwater Reuse	Conversion of a retention pond into a reuse pond to irrigate the golf course. Listed as PAFB-06.	Stormwater Reuse	Canceled	2016	NA	NA	B	$0.00
2578	Brevard County	NA	BC-30	Street Sweeping	Monthly street sweeping. Project completed in 2016 and changed to 8 times per year as described under BC-15.	Street Sweeping	Ongoing	NA	504	323	B	$0.00
2576	Brevard County	DEP	BC-32	Cocoa Beach Canal Dredging	Muck removal of 84,000 cubic yards of material. Brevard	Muck Removal/Restoration Dredging	Canceled	2017	NA	NA	B	$20,000,000.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
					County requested reassignment to Cocoa Beach.							
4330	Brevard County	All Cities	BC-35	Education Efforts	Fertilizer video, rain barrel workshops, Facebook page, bus wrap, and billboard.	Enhanced Public Education	Ongoing	NA	NA	NA	B	$0.00
4331	Brevard County	NA	BC-36	Merritt Island Airport	Two wet detention ponds (80-acres & 23 acres) with gravity flow and pump station.	Wet Detention Pond	Completed	2011	NA	NA	B	$672,464.37
4332	Brevard County	DEP	BC-37	Artemis Blvd. - BB #979	Biosorption Activated Media installed within existing Merritt Island drainage ditch system to remove nitrogen from groundwater baseflow with phosphorus removal media.	Biosorption Activated Media (BAM)	Completed	2019	TBD	TBD	B	$150,000.00
4333	Brevard County	DEP	BC-38	Oceana Drive - BB#997A	Biosorption Activated Media installed within existing Merritt Island drainage ditch system to remove nitrogen from groundwater baseflow.	Biosorption Activated Media (BAM)	Completed	2019	TBD	TBD	B	$50,000.00
4334	Brevard County	DEP	BC-39	Georgiana Drive - BB#997C	Biosorption Activated Media installed within existing Merritt Island drainage ditch system to remove nitrogen from groundwater baseflow.	Biosorption Activated Media (BAM)	Completed	2019	TBD	TBD	B	$50,000.00
4335	Brevard County	DEP	BC-40	Savannah Drive - BB#997B	Biosorption Activated Media installed within existing Merritt Island drainage ditch system to remove nitrogen from groundwater baseflow.	Biosorption Activated Media (BAM)	Completed	2019	TBD	TBD	B	$50,000.00
4336	Brevard County	DEP	BC-41	Needle Blvd. - BB #998	Biosorption Activated Media installed within existing Merritt Island drainage ditch system to remove nitrogen from groundwater baseflow.	Biosorption Activated Media (BAM)	Completed	2019	TBD	TBD	B	$55,000.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
4337	Brevard County	NA	BC-42	Piney Woods BB #1066	Biosorption Activated Media installed within existing Merritt Island drainage ditch system to remove nitrogen from baseflow.	Biosorption Activated Media (BAM)	Canceled	NA	NA	NA	B	$0.00
4338	Brevard County	DEP; SOIRL	BC-43	Seagull Drive Pond BAM Train BB#1304 (D-4)	Media will be installed along side slope of existing pond and will include solar panels.	BMP Treatment Train	Completed	2020	TBD	TBD	B	$125,000.00
5146	Brevard County	DEP; MIRA; SJRWMD; SOIRL	BC-44	MIRA Phase 2 Septic to Sewer (S. Tropical Tr.)	Connect 80 commercial properties to sewer.; Project canceled as entered as duplicate. See ProjID 5156 for updated project completion data.	OSTDS Phase Out	Canceled	NA	NA	NA	B	$0.00
5147	Brevard County	SOIRL; Brevard Zoo	BC-45	Bettinger Oyster Bar	Construct 120-linear foot oyster bar.	Creating/ Enhancing Oyster Reefs	Completed	2019	NA	NA	B	$101,680.00
5148	Brevard County	SOIRL; Brevard Zoo	BC-46	Gitlin Oyster Bar	Construct 180 linear foot oyster reef.	Creating/ Enhancing Oyster Reefs	Completed	2019	NA	NA	B	$16,020.00
5149	Brevard County	SOIRL; Brevard Zoo	BC-47	Marina Isles Oyster Restoration	Construct 1500 linear foot oyster reef.	Creating/ Enhancing Oyster Reefs	Completed	2019	NA	NA	B	$26,700.00
5150	Brevard County	SOIRL; MRC	BC-48	Cocoa Beach Living Shoreline	Plant 200 mangroves and 1000 spartina along shoreline of Cocoa Beach Country Club.	Creating/ Enhancing Living Shoreline	Completed	2018	TBD	TBD	B	$16,080.00
5151	Brevard County	SOIRL; Cocoa Beach	BC-49	Cocoa Beach Muck Dredging Phase III	Remove 300,000 cubic yards of muck. Brevard County requested reassignment to Cocoa Beach.	Muck Removal/Restoration Dredging	Canceled	2019	NA	NA	B	$2,236,566.00
5153	Brevard County	SOIRL	BC-50a	Education Efforts	Fertilizer, grass clippings, and septic system maintenance.	Enhanced Public Education	Ongoing	NA	NA	NA	B	$187,500.00
5154	Brevard County	DEP	BC-51	Andrix Blvd. - BB#973	Biosorption Activated Media installed within existing Merritt Island drainage ditch system to remove nitrogen from groundwater baseflow.	Biosorption Activated Media (BAM)	Completed	2019	TBD	TBD	B	$55,000.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
5155	Brevard County	MIRA; SJRWMD; SOIRL; DEP	BC-52	MIRA Phase 2 Bioswale Treatment Train (Merritt Ridge Pond)	Modification of existing wet pond to include bioswale with BAM.	BMP Treatment Train	Completed	2019	TBD	TBD	B	$0.00
5156	Brevard County	DEP; MIRA; SJRWMD; SOIRL	BC-53	MIRA Phase 2 Septic to Sewer (Cone Rd)	Connected 44 commercial properties to sewer.	OSTDS Phase Out	Completed	2021	TBD	NA	B	$3,138,098.00
5158	Brevard County	SOIRL	BC-54a	Grass Clippings Campaign Phase 1	Marketing and surveying. Combined with BC-50 and BC-50a.	Education Efforts	Canceled	2020	NA	NA	B	$6,667.66
5619	Brevard County	DEP; SJRWMD; SOIRL	BC-55	Sykes Creek Muck Dredging	Muck removal of 431,300 cubic yards of material.	Muck Removal/Restoration Dredging	Underway	2032	TBD	TBD	B	$42,912,800.00
5620	Brevard County	SOIRL	BC-56	Merritt Island Muck Removal Phase 1 of 2	Muck removal of 312,540 cubic yards of material.	Muck Removal/Restoration Dredging	Planned	2036	TBD	TBD	B	$26,878,440.00
5621	Brevard County	DEP; SOIRL	BC-57	Sykes M Septic to Sewer	56 septic tanks connected to sewer.	OSTDS Phase Out	Planned	2027	TBD	TBD	B	$9,373,382.00
5622	Brevard County	DEP; FDOT; SOIRL	BC-58	Sykes N Septic to Sewer	91 septic tanks connected to sewer.	OSTDS Phase Out	Planned	2027	TBD	TBD	B	$13,515,608.00
5623	Brevard County	DEP; SOIRL	BC-59	Sykes T Septic to Sewer	148 septic tanks connected to sewer.	OSTDS Phase Out	Planned	2027	TBD	TBD	B	$14,161,361.00
5624	Brevard County	DEP; SJRWMD; SOIRL	BC-60	Grand Canal Muck Dredging and Interstitial Treatment	Muck removal of approximately 657,849 cubic yards of material.	Muck Removal/Restoration Dredging	Underway	2027	TBD	TBD	B	$55,467,087.00
6312	Brevard County	NA	BC-61	Denitrification Basin - 1329	Upflow filter through a BAM media to treat baseflow. Previously NIRL BC-109 ProjID 5358.	Biosorption Activated Media (BAM)	Completed	2020	8	1	B	$155,113.00
6284	Brevard County	SOIRL	BC-62	Banana River Septic Upgrade 2021	Conventional septic system upgrade to advanced nitrogen reducing treatment, NSF-45 meeting at least 65% TN reduction. Credits of 10 lbs-TN/yr are accounted for in Credit Sharing project as	Onsite Sewage Treatment and Disposal System (OSTDS) Enhancement	Completed	2021	0	NA	B	$18,000.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
					project is 100% funded by SOIRL.							
7097	Brevard County	Florida Legislature; SOIRL	BC-62a	Banana River Lagoon Septic Upgrades 2023	Completed 8 septic upgrades; Conventional septic system upgrades to advanced nitrogen reducing treatment, NSF-45 meeting at least 65% TN reduction.	Onsite Sewage Treatment and Disposal System (OSTDS) Enhancement	Completed	2023	238.09	TBD	B	$168,601.00
6269	Brevard County	SOIRL	BC-63	Banana River Lagoon Quick Connects	Connected 2 properties in BIRL to sewer via quick connection. 1700 Harbor Oaks Dr, Merritt Island; 2085 Mona Ct, Merritt Island. Credits of 106 lbs-TN/yr are accounted for in Credit Sharing project as project is 100% funded by SOIRL.	OSTDS Phase Out	Completed	2021	0	NA	B	$21,789.00
6585	Brevard County	DEP; SOIRL	BC-64	South Banana Zone B Septic to Sewer	41 new septic to sewer connections.	OSTDS Phase Out	Planned	2027	TBD	TBD	B	$3,640,315.00
6597	Brevard County	DEP; SOIRL	BC-67	Merritt Island Zone C Septic to Sewer	Connect 43 properties septic to sewer.	OSTDS Phase Out	Planned	2028	TBD	TBD	B	$4,000,750.00
6596	Brevard County	DEP; SOIRL	BC-68	Merritt Island Zone F Septic to Sewer	Connect 73 properties septic to sewer.	OSTDS Phase Out	Planned	2027	TBD	TBD	B	$4,300,954.00
6598	Brevard County	DEP; SOIRL	BC-69	Sykes Creek Zone R Septic to Sewer	Connect 221 properties septic to sewer.	OSTDS Phase Out	Planned	2028	TBD	TBD	B	$16,777,897.00
6605	Brevard County	DEP; SOIRL	BC-70	Merritt Island Zone G Septic to Sewer	Connect 785 properties septic to sewer.	OSTDS Phase Out	Planned	2030	TBD	TBD	B	$68,120,481.00
6825	Brevard County	Brevard County	BC-71	Oceana Canal Vegetation Harvesting 2022	Harvested 6260 pounds of vegetation.	Aquatic Vegetation Harvesting	Completed	2022	NA	NA	B	$0.00
6836	Brevard County	Brevard County	BC-72	Florida Blvd Vegetation Harvesting 2022	Harvested 137,640 pounds of aquatic vegetation.	Aquatic Vegetation Harvesting	Completed	2022	NA	NA	B	$0.00
6861	Brevard County	Brevard County	BC-73	ALUM Pond Merritt Island Vegetation Harvesting	Harvested 213700 pounds of aquatic vegetation.	Aquatic Vegetation Harvesting	Completed	2022	NA	NA	B	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
6803	Brevard County	SOIRL; State Legislature	BC-74	Banana River Lagoon Septic Upgrades 2022	Completed 9 septic upgrades; Conventional septic system upgrades to advanced nitrogen reducing treatment, NSF-45 meeting at least 65% TN reduction. Credits of 28 lbs-TN/yr are accounted for in Credit Sharing project as project is 100% funded by SOIRL.	Onsite Sewage Treatment and Disposal System (OSTDS) Enhancement	Completed	2022	0	TBD	B	$178,991.00
6885	Brevard County	SJRWMD	BC-74	Pioneer Road Denitrification BB958	Vegetation removal through a skimmer system from drying prior to disposal.	Aquatic Vegetation Harvesting	Underway	2025	TBD	TBD	B	$195,101.00
6886	Brevard County	Brevard SOIRL	BC-75	Pioneer Road Swale BAM	BAM under an existing swale (Basin 958). See also BMAP Project Number 6885 that share ARPA funding.	Biosorption Activated Media (BAM)	Underway	2025	358	67.26	B	$240,000.00
6909	Brevard County	Cape Canaveral; Cocoa Beach; Indian Harbour Beach (IHB); Satellite Beach	BR-76	SOIRL Split 2017 - 2023	SOIRL credit splits.	Credit Sharing	Completed	2023	434.5	195.2	B	$0.00
2464	City of Cape Canaveral	SJRWMD	CC-01	Holman Road Baffle Box	First generation baffle box installation near Holman Road outfall.	Baffle Boxes- First Generation	Completed	2006	2	1	B	$75,000.00
2465	City of Cape Canaveral	SJRWMD	CC-02	Center Street Baffle Box	First generation baffle box installation near Center Street outfall.	Baffle Boxes- First Generation	Completed	2006	5	3	B	$75,000.00
2466	City of Cape Canaveral	SJRWMD	CC-03	International Drive Baffle Box	First generation baffle box installation near International Drive outfall.	Baffle Boxes- First Generation	Completed	2006	9	6	B	$75,000.00
2467	City of Cape Canaveral	SJRWMD	CC-04	Angel Isles Baffle Box	First generation baffle box installation near Angel Isles outfall.	Baffle Boxes- First Generation	Completed	2006	2	1	B	$75,000.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2468	City of Cape Canaveral	NA	CC-05	WWTP Baffle Box	First generation baffle box installation at WWTP.	Baffle Boxes- First Generation	Completed	2004	0	0	B	$15,000.00
2469	City of Cape Canaveral	SJRWMD	CC-06	West Central Boulevard Baffle Box	First generation baffle box installation at West Central Boulevard outfall to Central Ditch.	Baffle Boxes- First Generation	Completed	2005	12	9	B	$75,000.00
2470	City of Cape Canaveral	DEP	CC-07	Central Ditch Baffle Box (3 count)	Second generation baffle box installations (3) in northern portion of Central Ditch.	Baffle Boxes- Second Generation	Completed	2009	176	22	B	$443,003.00
2471	City of Cape Canaveral	NA	CC-08	Street Sweeping	Sweeping of streets/pedways.	Street Sweeping	Ongoing	NA	353	226	B	$12,322.00
2487	City of Cape Canaveral	NA	CC-09	Shorewood Drainage Subbasin	Basin with no stormwater discharge.	100% On-site Retention	Completed	Prior to 2013	315	45	B	$0.00
2473	City of Cape Canaveral	Brevard County	CC-10	Education Efforts	FYN (Blue Life); landscape, irrigation, fertilizer, and pet waste ordinances; public service announcements (PSAs); pamphlets; website; Illicit Discharge Program.	Education Efforts	Ongoing	NA	535	85	B	$3,300.00
2610	City of Cape Canaveral	NA	CC-11	Manatee Park Stormwater Improvements	Wet detention pond and swales.	Wet Detention Pond	Completed	2013	3	1	B	$193,000.00
2438	City of Cape Canaveral	NA	CC-12	Banana River Park Stormwater Improvements	Stormwater swales.	Grass swales without swale blocks or raised culverts	Completed	2013	10	1	B	$38,000.00
2437	City of Cape Canaveral	NA	CC-13	Exfiltration on North Atlantic Ave	Stormwater swales.	Grass swales without swale blocks or raised culverts	Completed	2016	39	6	B	$436,000.00
2436	City of Cape Canaveral	DEP	CC-14	Exfiltration at Canaveral City Park	Stormwater/wastewater vault system.	Exfiltration Trench	Completed	2017	109	18	B	$1,820,500.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2405	City of Cape Canaveral	TBD	CC-15	Stormwater Pond on West Central Blvd	Wet detention pond and swales.	Wet Detention Pond	Planned	2028	232	66	B	$3,130,200.00
2435	City of Cape Canaveral	NA	CC-16	Clean Out of Baffle Boxes	Maintenance of baffle boxes.	BMP Cleanout	Ongoing	NA	88	54	B	$4,500.00
2433	City of Cape Canaveral	NA	CC-17	Central Ditch Dredging Project	Dredging of southern portion of Central Ditch.	Muck Removal/Restoration Dredging	Planned	2025	TBD	TBD	B	$20,000.00
2434	City of Cape Canaveral	NA	CC-18	Exfiltration Piping Installations	Exfiltration piping installations - 8 locations.	Exfiltration Trench	Canceled	NA	NA	NA	B	$0.00
2472	City of Cape Canaveral	DEP; SJRWMD	CC-19	Reclaimed Water Tank	Reclaimed water system improvements (2.5 million gallon reclaimed water tank).	WWTF Upgrade	Completed	2016	2151	158	B	$3,030,000.00
2444	City of Cape Canaveral	SOIRL; DEP	CC-20	Central Boulevard Baffle Box Upgrade	Baffle box upgrade to 2nd generation - Central Ditch Baffle Box. SOIRL project.	Baffle Boxes- Second Generation	Completed	2017	67.49	8.83	B	$43,700.00
2446	City of Cape Canaveral	Brevard County; SOIRL	CC-21	Holman Road Swale	Swales and biosorption activated media (BAM).	BMP Treatment Train	Canceled	NA	NA	NA	B	$0.00
2486	City of Cape Canaveral	Brevard County; SOIRL	CC-22	Cocoa Palms LID	Exfiltration and BAM wall.	BMP Treatment Train	Canceled	NA	NA	NA	B	$0.00
2485	City of Cape Canaveral	NA	CC-23	Cherrie Down Park	Swale with biosorption activated media (BAM).	BMP Treatment Train	Canceled	NA	NA	NA	B	$0.00
2484	City of Cape Canaveral	Brevard County; SOIRL	CC-24	Carver Cove Swale	Swale with biosorption activated media (BAM).	BMP Treatment Train	Canceled	NA	NA	NA	B	$0.00
2483	City of Cape Canaveral	Brevard County; SOIRL	CC-25	Cape Shores Swales (3 count)	Swale with biosorption activated media (BAM).	BMP Treatment Train	Canceled	NA	NA	NA	B	$0.00
2482	City of Cape Canaveral	FDOT	CC-26	International Drive	Wet detention pond as part of SR A1A Streetscape Project.	Wet Detention Pond	Canceled	NA	NA	NA	B	$0.00

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2481	City of Cape Canaveral	Brevard County; SOIRL	CC-27	Justamere Road Swale	Dry detention swale without blocks or raised culverts and media filter.	BMP Treatment Train	Canceled	NA	NA	NA	B	$0.00
2480	City of Cape Canaveral	Brevard County; SOIRL	CC-28	Hitching Post Berm	Berm and associated grass swale without blocks or raised culverts and media filter.	BMP Treatment Train	Canceled	NA	NA	NA	B	$0.00
2479	City of Cape Canaveral	Brevard County; SOIRL	CC-29	Center Street Pond	Wet detention pond.	Wet Detention Pond	Planned	2026	TBD	TBD	B	$0.00
2478	City of Cape Canaveral	Brevard County; SOIRL	CC-30	Holman Road Pond	Wet detention pond.	Wet Detention Pond	Canceled	NA	NA	NA	B	$0.00
2477	City of Cape Canaveral	Brevard County; SOIRL	CC-31	Costa Del Sol Pond	Dry detention swale without blocks or raised culverts and media filter.	Dry Detention Pond	Canceled	NA	NA	NA	B	$0.00
2476	City of Cape Canaveral	Brevard County; SOIRL	CC-32	Costa del Sol Denitrification Wall	Exfiltration and BAM wall.	BMP Treatment Train	Canceled	NA	NA	NA	B	$0.00
4340	City of Cape Canaveral	NA	CC-33	WWTF Shoreline Restoration	Armor shoreline at WWTF.	Shoreline Stabilization	Completed	2018	NA	NA	B	$193,850.00
4341	City of Cape Canaveral	NA	CC-34	Beemats Installation (4 Count)	Beemats installation.	Floating Islands/ Managed Aquatic Plant Systems (MAPS)	Completed	2018	83	11	B	$15,000.00
4342	City of Cape Canaveral	DEP	CC-35	Oxidation Ditch Refurbishment	Oxidation Ditch rehab.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2018	NA	NA	B	$3,242,300.00
4343	City of Cape Canaveral	DEP	CC-36	Ls #2 Sewer Line Replacement	Replacement of sewer line for LS #2.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2018	NA	NA	B	$1,636,000.00

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4344	City of Cape Canaveral	NA	CC-37	Force Main #3 Replacement	Replacement and relocation of Force Main #3.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2018	NA	NA	B	$431,700.00
4345	City of Cape Canaveral	NA	CC-38	Canaveral City Park Exfiltration System Expansion	Improvements for discharge of reuse water (same as CC-14).	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2020	NA	NA	B	$95,000.00
4346	City of Cape Canaveral	FIND; SJRWMD	CC-39	Estuary Property Restoration	Habitat and water quality improvements.	Exotic Vegetation Removal	Ongoing	NA	NA	NA	B	$711,700.00
4347	City of Cape Canaveral	DEP	CC-40	Parks Shoreline Restoration	Armor shorelines at two City parks.	Creating/ Enhancing Living Shoreline	Completed	2016	NA	NA	B	$232,664.00
5159	City of Cape Canaveral	NA	CC-41	Carbon (Micro C) Feed System Installation	WWTF Effluent Polishing System.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2021	NA	NA	B	$1,249,700.00
6327	City of Cape Canaveral	DEP	CC-42	Intermediate Pump Station Improvements	Back-up Pump at intermediate lift station.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2020	NA	NA	B	$85,000.00
6328	City of Cape Canaveral	DEP	CC-43	LS #3 Improvements	Lift station replacement.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2021	NA	NA	B	$452,700.00
6329	City of Cape Canaveral	DEP	CC-44	Force Main #7 Replacement	Force main replacement.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2020	NA	NA	B	$321,200.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
6330	City of Cape Canaveral	DEP	CC-45	Belt Press Improvements	Add belt press machine.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2016	NA	NA	B	$1,314,400.00
6331	City of Cape Canaveral	DEP	CC-46	LS #8 Improvements	Lift station replacement.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2022	NA	NA	B	$0.00
6332	City of Cape Canaveral	DEP	CC-47	LS #5 Improvements	Lift station replacement.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2024	NA	NA	B	$0.00
6333	City of Cape Canaveral	DEP	CC-48	SCADA System	SCADA system replacement.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2022	NA	NA	B	$732,000.00
6334	City of Cape Canaveral	DEP	CC-49	Headworks/Filter Improvements	Headworks/Filters replacement.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Completed	2022	NA	NA	B	$1,787,000.00
6910	City of Cape Canaveral	Brevard County; Cocoa Beach; Indian Harbour Beach (IHB); Satellite Beach	CC-50	SOIRL Split 2017 - 2023	SOIRL credit splits.	Credit Sharing	Completed	2023	72.7	29.8	B	$0.00
6544	City of Cape Canaveral	Brevard Zoo; East Central Florida Regional Planning Council; Embry-Riddle Aeronautical	CC-51	Veterans Park LID Project	This swale/retention area is to be reconstructed to hold more water and turned into an LID area with rocks and Florida native vegetation.	Grass swales without swale blocks or raised culverts	Completed	2024	5.7	0.78	B	$460,000.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
		University; Ferguson Waterworks; Indian River Lagoon National Estuary Program; Marine Resource Council; National Science Foundation (NSF); Riverside Conservancy; St. Jo										
6907	City of Cape Canaveral	ARPA	CC-52	Central Ditch Improvements	Construct a pumping station to reduce flooding in the northern portion of the Central Ditch.	Control Structure	Planned	2025	NA	NA	B	$0.00
6908	City of Cape Canaveral	DEP Resiliency Grant	CC-53	Center Street Basin Pump Station	Construction of drainage improvements to address significant flooding in the Center Street Basin. The improvements include the installation of a tidal valve and pumping station.	Control Structure	Underway	2024	NA	NA	B	$935,000.00
6906	City of Cape Canaveral	SRF Loan	CC-54	Pump Enclosure Structural Buildings	Construction of overhead coverings for pumps and generators to limit corrosion and prolong the life of the pumps and motors.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Underway	2025	NA	NA	B	$1,443,700.00
7291	City of Cape Canaveral	NA	CC-55	Long Point Stormwater Retention	A wet detention pond to take on water from Long Point Road and surrounding area to keep from flooding.	Wet Detention Pond	Planned	2025	TBD	TBD	B	$280,000.00
7302	City of Cape Canaveral	NA	CC-56	Thurm Boulevard Improvements	Thurm Boulevard will be getting an underground stormwater piped system to an	Wet Detention Pond	Planned	2026	TBD	TBD	B	$3,200,000.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
					existing pond to eliminate flooding. The pond will be transitioned into a smart pond to allow for more water treatment in this area.							
2475	City of Cocoa Beach	Florida Community Trust	CB-01	Maritime Hammock Preserve Alum Pond	Wet detention pond with alum.	Stormwater - Alum Injection System	Completed	2008	767	217	B	$960,000.00
2460	City of Cocoa Beach	DEP	CB-02	Ocean Beach Blvd. Bioretention/ Exfiltration	Ocean Beach Blvd. biorentention/exfiltration.	Grass swales without swale blocks or raised culverts	Completed	2013	77	12	B	$1,150,000.00
2571	City of Cocoa Beach	Not provided	CB-03	2nd Street South PCD	Not provided.	Baffle Boxes- Second Generation	Completed	2005	127	18	B	$181,974.00
2560	City of Cocoa Beach	NA	CB-04	Cottage Row Parking Facilities Lot	Exfiltration trench providing 2.8 inches of retention.	Exfiltration Trench	Completed	2004	26	3	B	$0.00
2573	City of Cocoa Beach	Not provided	CB-05	Shepard Park Improvements	Not provided.	Exfiltration Trench	Completed	2007	3	0	B	$0.00
2549	City of Cocoa Beach	NA	CB-06	Burris Way (Alley) Exfiltration	Exfiltration trench providing 1.88 inches of retention.	Exfiltration Trench	Completed	2010	10	1	B	$18,695.00
2550	City of Cocoa Beach	NA	CB-07	Brevard Ave. Exfiltration	Exfiltration trench providing 0.94 inches of retention.	Exfiltration Trench	Completed	2003	35	5	B	$32,477.00
2551	City of Cocoa Beach	NA	CB-08	45 and 50 Danube River Exfiltration	Exfiltration trench providing 0.17 inches of retention.	Exfiltration Trench	Completed	2003	11	2	B	$4,876.00
2552	City of Cocoa Beach	NA	CB-09	12 Bougainvillea Dr. Exfiltration	Exfiltration trench providing 0.15 inches of retention.	Exfiltration Trench	Completed	2003	7	1	B	$3,982.00
2557	City of Cocoa Beach	NA	CB-10	9th St S & Brevard Ave. Exfiltration	Exfiltration trench providing 2.5 inches of retention.	Exfiltration Trench	Completed	2003	1	0	B	$1,600.00

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2592	City of Cocoa Beach	NA	CB-11	321 Jack Dr. Exfiltration	Exfiltration trench providing 0.22 inches of retention.	Exfiltration Trench	Completed	2006	3	0	B	$4,431.00
2558	City of Cocoa Beach	NA	CB-12	125 Cedar Ave. Exfiltration	Exfiltration trench providing 0.22 inches of retention.	Exfiltration Trench	Completed	2008	3	0	B	$1,700.00
2556	City of Cocoa Beach	NA	CB-13	Meade Bioretention	Grass swale providing 0.55 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2008	0	0	B	$0.00
2554	City of Cocoa Beach	NA	CB-15	4th St. N Bioretention	Grass swale providing 0.17 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2008	0	0	B	$0.00
2553	City of Cocoa Beach	NA	CB-16	4th St. S Bioretention	Grass swale providing 0.08 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2008	0	0	B	$0.00
2566	City of Cocoa Beach	NA	CB-19	Holiday Lane Bioretention	Grass swale providing 0.08 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2007	0	0	B	$9,570.00
2565	City of Cocoa Beach	NA	CB-20	S Banana/St. Lucie Swale	Grass swale providing 1.8 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2000	4	1	B	$5,015.00
2564	City of Cocoa Beach	NA	CB-21	S Banana/St. Lucie Swale	Grass swale providing 3.60 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2000	3	0	B	$3,402.00
2563	City of Cocoa Beach	NA	CB-22	Banana River Retention	Dry detention pond providing 2.26 inches of retention.	Dry Detention Pond	Completed	2000	1.2	0.4	B	$720.00
2562	City of Cocoa Beach	NA	CB-23	Banana River Retention	Dry detention pond providing 0.93 inches of retention.	Dry Detention Pond	Completed	2000	0	0	B	$6,488.00
2561	City of Cocoa Beach	NA	CB-24	Minutemen/ Country Club Swale	Grass swale providing 0.66 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2001	4	1	B	$1,326.00
2524	City of Cocoa Beach	NA	CB-25	Palm Ave. Swale	Grass swale providing 1.10 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2002	3	0	B	$4,640.00

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2489	City of Cocoa Beach	NA	CB-26	Minutemen/ CBHS	Grass swale providing 1.49 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2003	9.5	1.3	B	$571.00
2537	City of Cocoa Beach	NA	CB-27	Minutemen/ PW Complex Swale	Grass swale providing 0.29 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2003	6	1	B	$9,315.00
2509	City of Cocoa Beach	NA	CB-28	Tom Warriner/ PW Complex Swale	Grass swale providing 2.23 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2006	1.4	0.2	B	$4,189.00
2508	City of Cocoa Beach	NA	CB-29	Shepard Drive Swale	Grass swale providing 0.88 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2006	2	0	B	$2,950.00
2507	City of Cocoa Beach	NA	CB-30	Shepard Drive Swale	Grass swale providing 0.79 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2006	2	0	B	$2,950.00
2505	City of Cocoa Beach	NA	CB-32	W Pasco/ Banana Swale	Grass swale providing 0.88 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2006	3	1	B	$2,305.00
2504	City of Cocoa Beach	NA	CB-33	E Pasco/ Atlantic Swale	Grass swale providing 1.46 inches of retention.	Grass swales without swale blocks or raised culverts	Completed	2006	3	0	B	$2,305.00
2503	City of Cocoa Beach	NA	CB-34	32 Inlet Baskets	Regular cleaning of 32 suntrees and baskets.	BMP Cleanout	Ongoing	NA	32	10	B	$0.00
2502	City of Cocoa Beach	NA	CB-35	Dino Museum/ Store, 250 W CB Causeway	Not provided.	Dry Detention Pond	Canceled	NA	NA	NA	B	$0.00
2501	City of Cocoa Beach	FDOT	CB-36	332-334 N Orlando	Not provided.	Dry Detention Pond	Canceled	NA	NA	NA	B	$0.00
2488	City of Cocoa Beach	NA	CB-37	Street Sweeping	Approximately 40,000 kg debris collected annually.	Street Sweeping	Ongoing	NA	84	54	B	$41,405.00
2499	City of Cocoa Beach	NA	CB-38	Education Efforts	FYN; landscape, irrigation, fertilizer, and pet waste ordinances; public service	Education Efforts	Ongoing	NA	985	150	B	$5,000.00

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					announcements (PSAs); pamphlets; website; Illicit Discharge Program.							
2511	City of Cocoa Beach	DEP; EPA; SJRWMD	CB-39	Minutemen Corridor Stormwater Improvement/ LID	Tree canopy, rain gardens/ rain tanks/ previous pavers/ BAM.	BMP Treatment Train	Completed	2017	150	21	B	$4,537,602.77
2497	City of Cocoa Beach	Brevard SOIRL; EPA; SJRWMD	CB-40	Convair Cove SW LID	Rain gardens/ previous pavers/ BAM.	LID- Other	Completed	2021	TBD	TBD	B	$440,048.00
4339	City of Cocoa Beach	NA	CB-41	1st Street N./ Brevard SW LID	Tree canopy, rain gardens/ rain tanks/ previous pavers/ BAM.	BMP Treatment Train	Canceled	NA	NA	NA	B	$0.00
6834	City of Cocoa Beach	Brevard SOIRL; EPA	CB-42	McNabb Pkwy S Bioswale	Installation of bioswales with BAM at stub-ends of McNabb Pkwy and Naish Ave.	BMP Treatment Train	Underway	2025	TBD	TBD	B	$354,100.00
6819	City of Cocoa Beach	NA	CB-43	Cedar, Woodland, Brevard Flood Mitigation	Rain gardens, tree canopy, additional stormwater infrastructure.	BMP Treatment Train	Planned	2028	TBD	TBD	B	$8,500,000.00
6820	City of Cocoa Beach	NA	CB-44	Ramp Road Park Improvements	New piping, green stormwater infrastructure, and structures to redirect the park runoff into the adjacent pond. Pond will be retrofitted to include side bank filters and floating vegetated islands.	BMP Treatment Train	Planned	2026	TBD	TBD	B	$1,300,000.00
6823	City of Cocoa Beach	Brevard County SOIRL; Brevard TDC; IRL NEP; SJRWMD; UF/IFAS Sea Grant; University of Central Florida (UCF)	CB-45	McNabb Living Shoreline	Installation of oyster prisms, oyster gabions, vegetation planter boxes (Red Mangroves and spartina alternifloa). Living shoreline was seeded with live oysters ranging in size from XXmm - XXmm.	Creating/ Enhancing Oyster Reefs	Completed	2023	NA	NA	B	$45,245.11
6911	City of Cocoa Beach	Brevard County; Cape Canaveral; Indian Harbour	CB-46	SOIRL Split 2017 - 2023	SOIRL credit splits.	Credit Sharing	Completed	2023	80.8	33	B	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
		Beach (IHB); Satellite Beach										
7136	City of Cocoa Beach	NA	CB-47	City Hall Improvements	New City Hall improvements along with stormwater improvements including exfiltration and retention areas.	BMP Treatment Train	Underway	2025	TBD	TBD	B	$0.00
7134	City of Cocoa Beach	Florida Inland Navigation District (FIND)	CB-48	Bicentennial Park Improvements	Improvements to the park along with stormwater improvements, such as R-tanks.	Exfiltration Trench	Planned	2026	TBD	TBD	B	$0.00
7083	City of Cocoa Beach	NA	CB-49	Maritime Hammock Preserve Floating Managed Vegetation Island	Floating managed vegetation island at the Maritime Hammock Preserve. The 1 acre pond treats stormwater runoff from 127.62 acres of the surrounding area. Floating wetlands will cover 5-10% of pond.	Floating Islands/ Managed Aquatic Plant Systems (MAPS)	Planned	2025	TBD	TBD	B	$8,500.00
7157	City of Cocoa Beach	Brevard County SOIRL; SJRWMD	CB-50	WRF Upgrades	WRF upgrades.	WWTF Upgrade	Completed	2020	995.3	1494.4	B	$5,445,000.00
7156	City of Cocoa Beach	DEP	CB-51	WWTF Injection Well	WWTF injection well.	Wastewater - Injection Well	Completed	2014	1273.1	389	B	$2,400,000.00
7490	City of Cocoa Beach	NA	CB-52	Westin	Demolished hotel and whole site. Existing site does not treat stormwater. Redeveloping to a new hotel, convention center, parking garage and restaurants. The site will have exfiltration systems in a train before connecting to FDOT/City stormwater system.	BMP Treatment Train	Underway	2027	TBD	TBD	B	$241,039,248.00

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7493	City of Cocoa Beach	NA	CB-53	Waven Haven	Demolished building and parking area. Existing site does not treat stormwater. Redeveloping to a mixed use development. Treating stormwater through a treatment train of swales.	BMP Treatment Train	Underway	2025	TBD	TBD	B	$1,900,600.00
7496	City of Cocoa Beach	NA	CB-54	Mercado	Previously developed but demolished in 2005. Developing one building with multiple restaurants. Stormwater will be treated through exfiltration systems.	BMP Treatment Train	Planned	2026	TBD	TBD	B	$6,100,000.00
7498	City of Cocoa Beach	NA	CB-55	Westgate	Demolish parking lot. Existing site does not treat stromwater. Redevelop with hotel. This project is in the design phase and still determining stormwater treatment method.	BMP Treatment Train	Planned	2027	TBD	TBD	B	$0.00
7499	City of Cocoa Beach	NA	CB-56	Drift	Develop apartments and restaurants. This project is in the planning/design phase. Stormwater treatment is still being designed.	BMP Treatment Train	Planned	2027	TBD	TBD	B	$0.00
7500	City of Cocoa Beach	NA	CB-57	Cocoa Isles Blvd BAM Dry Pond	Install a bioretention area to treat and infiltrate runoff from a low-density residential area. Treatment will be enhanced by lining the retention area with bioactivated media (BAM) and planted with Florida native plants. About to go into design phase.	Bioswales	Planned	2027	TBD	TBD	B	$0.00
2496	City of Indian	NA	IHB-01	N. Osceola Drive	Exfiltration trench of 783 lf retrofitted with a 18" perforated pipe with gravel.	Exfiltration Trench	Completed	2013	39	6	B	$60,000.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
	Harbour Beach											
2495	City of Indian Harbour Beach	NA	IHB-02	Datura Drive	Exfiltration trench of 300 lf retrofitted with a 12" perforated pipe with graveled.	Exfiltration Trench	Completed	2013	5	1	B	$50,000.00
2494	City of Indian Harbour Beach	NA	IHB-03	Coquina Palms Subdivision	100% storage of the subdivision for the 25-year storm.	100% On-site Retention	Completed	2013	76	12	B	$0.00
2493	City of Indian Harbour Beach	NA	IHB-04	Education Efforts	Landscape, irrigation, fertilizer, and pet waste ordinances; pamphlets, illicit discharge program.	Education Efforts	Ongoing	NA	653	100	B	$2,900.00
2492	City of Indian Harbour Beach	NA	IHB-05	Inlet Cleaning	Ongoing inlet cleaning.	BMP Cleanout	Ongoing	NA	7	4	B	$0.00
2491	City of Indian Harbour Beach	NA	IHB-06	Street Sweeping	Ongoing street sweeping.	Street Sweeping	Ongoing	NA	250	160	B	$9,800.00
2490	City of Indian Harbour Beach	NA	IHB-07	Gleason Park Phase 1	Diversion of an existing pipe at Bay Dr. to the existing Gleason wet pond to increase the treatment drainage of the wet detention pond.	Wet Detention Pond	Completed	2013	354	109	B	$135,000.00
2522	City of Indian Harbour Beach	NA	IHB-08	Atlantic Ave. Swale	Swale cut in the median of Atlantic Ave.	Grass swales without swale blocks or raised culverts	Completed	2013	4	1	B	$0.00
2498	City of Indian Harbour Beach	NA	IHB-09	Gleason Park Irrigation Phase 1	Initial effort to reuse about 248,200 gallons a week from the Gleason wet pond.	Stormwater Reuse	Completed	Prior to 2013	107	17	B	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2500	City of Indian Harbour Beach	NA	IHB-10	Indian Harbour Beach Condo Pond	(Previously named Lift Station Pond); Dry Detention pond with 0.87" of retention.	Dry Detention Pond	Completed	2016	3	0	B	$13,277.00
2534	City of Indian Harbour Beach	NA	IHB-11	Fire Station Dry Pond	Dry detention pond with 0.62" of retention in the intersection of Pinetree Dr and Banana River Dr. Previously called "Fire Station Exfiltration."	Dry Detention Pond	Completed	2013	2	0	B	$11,481.00
2533	City of Indian Harbour Beach	NA	IHB-12	School Road at Park Drive	Exfiltration with 0.063" of retention in Park Dr.	Exfiltration Trench	Completed	2013	0	0	B	$59,810.20
2532	City of Indian Harbour Beach	NA	IHB-13	Yuma Drive Exfiltration	Exfiltration with 0.064" of retention in Yuma Dr.	Exfiltration Trench	Completed	2014	0	0	B	$167,837.60
2531	City of Indian Harbour Beach	NA	IHB-14	Lime Bay Exfiltration	Exfiltration with 0.014" of retention in Lime Bay subdivision.	Exfiltration Trench	Completed	2014	0	0	B	$88,739.60
2530	City of Indian Harbour Beach	NA	IHB-15	Andros Lane Exfiltration	Exfiltration with 0.066" of retention in Andros Lane.	Exfiltration Trench	Completed	2014	0	0	B	$20,120.00
2529	City of Indian Harbour Beach	NA	IHB-16	Indian Harbour Beach Condo Pond	Not provided.	Dry Detention Pond	Canceled	NA	NA	NA	B	$0.00
2528	City of Indian Harbour Beach	NA	IHB-17	Fire Station Exfiltration	Exfiltration with 0.38" of retention, implemented prior to IHB-11.	Exfiltration Trench	Completed	2016	16	2	B	$33,767.25
2527	City of Indian	NA	IHB-18	Inwood Lane Exfiltration	Exfiltration with 0.091" of retention in Inwood Lane.	Exfiltration Trench	Completed	2016	32	5	B	$43,925.55

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
	Harbour Beach											
2526	City of Indian Harbour Beach	SOIRL	IHB-19	Gleason Park Irrigation Phase 2	Expansion of irrigation in Gleason Park. SOIRL project.	Stormwater Reuse	Completed	2017	12.91	2.03	B	$11,000.00
2525	City of Indian Harbour Beach	NA	IHB-20	Oars and Paddles Dry Pond	Dry detention with BAM.	Dry Detention Pond	Canceled	NA	NA	NA	B	$0.00
2512	City of Indian Harbour Beach	TBD	IHB-21	FDOT Pond #3 Beemats	Beemats (6,700 sq. feet).	Floating Islands/ Managed Aquatic Plant Systems (MAPS)	Canceled	NA	NA	NA	B	$20,000.00
2523	City of Indian Harbour Beach	TBD	IHB-22	Kristi & Pinetree Dr. Swale	Bioswales located along the roadside of Pinetree, Kristi, and Mayaca Drives.	Bioswales	Underway	2024	67.86	11.57	B	$794,617.00
2535	City of Indian Harbour Beach	TBD	IHB-23	Wimico Drive Bioretention and Rain Garden	Installation of bioretention areas and raingardens along Wimico Drive. Formerly Wimico Drive Swale.	BMP Treatment Train	Planned	TBD	74.65	11.95	B	$718,598.00
2521	City of Indian Harbour Beach	TBD	IHB-24	Algonquin Sports Complex Redevelopment	Construction of 0.5-acre wet pond in Algonquin Sports Complex (city-owned). Formally known as Crispino Wet Pond.	Wet Detention Pond	Planned	2030	15.66	3.01	B	$431,400.00
2520	City of Indian Harbour Beach	SJRWMD; SOIRL	IHB-25	Big Muddy Canal Baffle Box at Cynthia	Baffle box installed at major outfall to Big Muddy Canal.	Baffle Boxes- Second Generation with Media	Completed	2021	323.71	56.33	B	$409,522.00
2519	City of Indian Harbour Beach	TBD	IHB-26	City Hall Baffle Box	Baffle Box installed at a major outfall to Big Muddy Canal near Indian Harbour Beach City Hall. Formerly known as Cheyenne Dr./ Marion Baffle.	Baffle Boxes- Second Generation	Planned	2025	421.5	86.17	B	$1,628,750.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2518	City of Indian Harbour Beach	TBD	IHB-27	Beach Funeral Home Pervious Parking	Provide retention using pervious parking.	Pervious Pavement Systems	Canceled	NA	NA	NA	B	$0.00
2517	City of Indian Harbour Beach	TBD	IHB-28	Townhouse Estates Exfiltration	Exfiltration trench in residential neighborhood. After soil tests were completed, water table deemed too high for exfiltration trench.	Exfiltration Trench	Canceled	NA	NA	NA	B	$0.00
2516	City of Indian Harbour Beach	NA	IHB-29	Palm Springs Swale	Swale in entire median (2,200 feet) of Palm Springs Blvd.; swales with blocks or raised culverts.	Grass swales with swale blocks or raised culverts	Completed	2020	48	8	B	$38,200.00
2515	City of Indian Harbour Beach	TBD	IHB-30	Alhambra Exfiltration	Construction of two 50 linear feet exfiltration pipes along Alhambra Street. After soil tests were completed, water table deemed too high for exfiltration trench.	Exfiltration Trench	Canceled	NA	NA	NA	B	$0.00
2514	City of Indian Harbour Beach	TBD	IHB-31	Ronnie Exfiltration Extension	Construction of 100 linear feet exfiltration pipes along Ronnie Drive. After soil tests were completed, water table deemed too high for exfiltration trench.	Exfiltration Trench	Canceled	NA	NA	NA	B	$0.00
2606	City of Indian Harbour Beach	NA	IHB-32	Atlantic Exfiltration East	Jamestown Phase 1 (master plan)with 4,600 ft exfiltration. ProjID 6767 submitted as Wish List in STAR 2022 and incorporates this project.	Exfiltration Trench	Canceled	NA	NA	NA	B	$0.00
2510	City of Indian Harbour Beach	TBD	IHB-33	Atlantic Exfiltration West	Jamestown Phase 2 (master plan) exfiltration with weirs, etc.	Exfiltration Trench	Canceled	NA	NA	NA	B	$0.00

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2572	City of Indian Harbour Beach	TBD	IHB-34	Pinetree Streetscaping	LID features including planters, rain garden, porous pavement, and BAM.	BMP Treatment Train	Planned	TBD	62.39	9.8	B	$610,078.00
2654	City of Indian Harbour Beach	SOIRL; State Legislature	IHB-35	Muck Dredging	Muck dredging along major canals, including Grand Canal.	Muck Removal/Restoration Dredging	Underway	2025	TBD	TBD	B	$10,380,000.00
2653	City of Indian Harbour Beach	NA	IHB-36	Save Our Lagoon Park	Wet detention pond, perhaps other LID features.	Wet Detention Pond	Canceled	NA	NA	NA	B	$0.00
5145	City of Indian Harbour Beach	NA	IHB-37	Gleason Park Irrigation Phase 3	Expansion of irrigation in Gleason Park to cover SE area of park.	Stormwater Reuse	Completed	2019	54	8	B	$12,000.00
6336	City of Indian Harbour Beach	NA	IHB-38	Pine Tree Drive & School Road Exfiltration	Exfiltration with 0.058" of retention at Pine Tree Drive and School Road.	Exfiltration Trench	Completed	2021	0	0	B	$26,832.80
6760	City of Indian Harbour Beach	TBD	IHB-39	Gleason Park Shoreline	Shoreline restoration of the Gleason Park pond.	Creating/ Enhancing Living Shoreline	Planned	2030	TBD	TBD	B	$501,066.00
6913	City of Indian Harbour Beach	Brevard County; Cape Canaveral; Cocoa Beach; Satellite Beach	IHB-40	SOIRL Split 2017 - 2023	SOIRL credit splits.	Credit Sharing	Completed	2023	61.3	24.8	B	$0.00
6767	City of Indian Harbour Beach	DEP	IHB-41	Atlantic Boulevard East and West Exfiltration	Construction of 300 linear feet of exfiltration pipes along Atlantic Boulevard. After soil tests were completed, water table deemed too high for exfiltration trench.	Exfiltration Trench	Canceled	NA	NA	NA	B	$0.00

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7075	City of Indian Harbour Beach	NA	IHB-42	Pine Tree Drive Swales	Addition of swales along Pine Tree Drive.	Grass swales with swale blocks or raised culverts	Underway	2024	6.74	0.64	B	$0.00
7325	City of Indian Harbour Beach	NA	IHB-43	Ronnie Drive Swales	Construction of 225 linear feet of dry retention swales, with Bold and Gold CTS 12 along Ronie Drive.	Grass swales without swale blocks or raised culverts	Planned	2025	5.03	0.64	B	$0.00
7477	City of Indian Harbour Beach	NA	IHB-44	Atlantic Boulevard East and West Swales	Construction of 8 swales along Atlantic Blvd.	Grass swales with swale blocks or raised culverts	Planned	2026	3.37	0.49	B	$0.00
6687	City of Indian Harbour Beach	TBD	IHB-45	Algonquin Sports Complex Canal Baffle Box	Construction of a 2nd generation baffle box located at the Algonquin Sports Complex Canal.	Baffle Boxes- Second Generation	Planned	2028	67.4	11.4	B	$945,772.00
2652	City of Satellite Beach	DEP	SB-01	Jackson Exfiltration	Exfiltration pipe.	Exfiltration Trench	Completed	2013	0	0	B	$0.00
2651	City of Satellite Beach	DEP	SB-02	Jackson Exfiltration	Exfiltration pipe.	Exfiltration Trench	Completed	2013	37	5	B	$0.00
2637	City of Satellite Beach	DEP	SB-03	Jackson Exfiltration	Exfiltration pipe.	Exfiltration Trench	Completed	2013	21	3	B	$0.00
2636	City of Satellite Beach	DEP	SB-04	Avocado Continuous Deflective Separation (CDS) Unit	CDS Unit downstream of Jackson Exfiltration.	Hydrodynamic Separators	Completed	2013	0	1	B	$0.00
2635	City of Satellite Beach	DEP	SB-05	Jackson Exfiltration	Exfiltration trench.	Exfiltration Trench	Completed	2013	0	0	B	$0.00
2634	City of Satellite Beach	DEP	SB-06	Coconut Exfiltration	Existing exfiltration pipe upstream of Desoto Exfiltration Pipe.	Exfiltration Trench	Completed	2013	0	0	B	$0.00

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2666	City of Satellite Beach	DEP	SB-07	Desoto Exfiltration	Existing exfiltration pipe at east end of Desoto pipes (wrapped pipe).	Exfiltration Trench	Completed	2013	0	0	B	$0.00
2642	City of Satellite Beach	DEP	SB-08	Desoto Exfiltration	Existing exfiltration pipe in middle of Desoto Treatment Train.	Exfiltration Trench	Completed	2013	35	5	B	$0.00
2644	City of Satellite Beach	DEP	SB-09	Jamaica Blvd. Ponds	Wet pond.	Wet Detention Pond	Completed	2013	527	165	B	$0.00
2678	City of Satellite Beach	DEP	SB-10	Jamaica Pond Reuse	Reuse.	Stormwater Reuse	Completed	2013	163	24	B	$0.00
2677	City of Satellite Beach	DEP	SB-11	Desoto Exfiltration	Baffle boxes located near the stormwater park and residential finger canal.	Exfiltration Trench	Completed	2013	16	2	B	$1,143,461.00
2676	City of Satellite Beach	DEP	SB-12	Desoto Baffle Boxes	Type 2 baffle box.	Baffle Boxes- Second Generation	Completed	2013	105	13	B	$0.00
2675	City of Satellite Beach	DEP	SB-13	Cassia Phase 1-22	Type 2 baffle box.	Baffle Boxes- Second Generation	Completed	2013	59	7	B	$1,796,800.00
2674	City of Satellite Beach	DEP	SB-14	Cassia Phase 1-23	Part of SB-13.	Baffle Boxes- Second Generation	Completed	2013	26	4	B	$0.00
2673	City of Satellite Beach	DEP	SB-15	Cassia Phase 1-24	Part of SB-13.	Exfiltration Trench	Completed	2013	0	0	B	$0.00
2672	City of Satellite Beach	DEP	SB-16	Cassia Phase 1-25	Part of SB-13.	Exfiltration Trench	Completed	2013	0	0	B	$0.00
2671	City of Satellite Beach	DEP	SB-17	Cassia Phase 1-26	Part of SB-13.	Exfiltration Trench	Completed	2013	0	0	B	$0.00
2670	City of Satellite Beach	DEP	SB-18	North Basin Stormwater Retrofit	Retention swales.	On-line Retention BMPs	Completed	2013	4	1	B	$1,112,052.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2669	City of Satellite Beach	NA	SB-19	Street Sweeping	Quarterly street sweeping.	Street Sweeping	Ongoing	NA	47	30	B	$0.00
2656	City of Satellite Beach	Not provided	SB-20	Education Efforts	FYN; landscape, irrigation, fertilizer, and pet waste ordinances; public service announcements (PSAs); pamphlets; website; Illicit Discharge Program.	Education Efforts	Ongoing	NA	875	130	B	$0.00
2614	City of Satellite Beach	DEP	SB-21	Cassia Phase 3 - C3A	Retention swales.	On-line Retention BMPs	Completed	2013	2	0	B	$1,255,230.80
2613	City of Satellite Beach	DEP	SB-22	Cassia Phase 3 - C3B	Retention swales.	On-line Retention BMPs	Completed	2013	1	0	B	$0.00
2612	City of Satellite Beach	DEP	SB-23	Cassia Phase 3 - C3C	Retention swales.	On-line Retention BMPs	Completed	2013	1	0	B	$0.00
2611	City of Satellite Beach	DEP	SB-24	Cassia Phase 3 - C3D	Retention swales.	On-line Retention BMPs	Completed	2013	1	0	B	$0.00
2439	City of Satellite Beach	DEP	SB-25	Cassia Phase 3 - C3E	Retention swales.	On-line Retention BMPs	Completed	2013	1	0	B	$0.00
2440	City of Satellite Beach	DEP	SB-26	Cassia Phase 3 - C3F	Retention swales.	On-line Retention BMPs	Completed	2013	4	1	B	$0.00
2441	City of Satellite Beach	DEP	SB-27	Cassia Phase 3 - C3G	Retention swales.	On-line Retention BMPs	Completed	2013	4	1	B	$0.00
2442	City of Satellite Beach	DEP	SB-28	Cassia Phase 3 - C5A	Retention swales.	On-line Retention BMPs	Completed	2013	2	0	B	$0.00
2443	City of Satellite Beach	DEP	SB-29	Cassia Phase 3 - C5B	Retention swales.	On-line Retention BMPs	Completed	2013	10	1	B	$0.00

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2459	City of Satellite Beach	DEP	SB-30	Cassia Phase 3 - C7A	Retention swales.	On-line Retention BMPs	Completed	2013	2	0	B	$0.00
2445	City of Satellite Beach	DEP	SB-31	Cassia Phase 3 - C7B	Retention swales.	On-line Retention BMPs	Completed	2013	23	3	B	$0.00
2432	City of Satellite Beach	DEP	SB-32	Cassia Phase 3 - C9A	Retention swales.	On-line Retention BMPs	Completed	2013	4	1	B	$0.00
2447	City of Satellite Beach	DEP	SB-33	Cassia Phase 3 - C9B	Retention swales.	On-line Retention BMPs	Completed	2013	17	3	B	$0.00
2448	City of Satellite Beach	DEP	SB-34	Cassia Phase 3 - C13A	Retention swales.	On-line Retention BMPs	Completed	2013	3	0	B	$0.00
2449	City of Satellite Beach	DEP	SB-35	Cassia Phase 3 - C13B	Retention swales.	On-line Retention BMPs	Completed	2013	1	0	B	$0.00
2450	City of Satellite Beach	DEP	SB-36	Cassia Phase 3 - C13C	Retention swales.	On-line Retention BMPs	Completed	2013	6	1	B	$0.00
2451	City of Satellite Beach	DEP	SB-37	Cassia Phase 3 - C13D	Retention swales.	On-line Retention BMPs	Completed	2013	4	1	B	$0.00
2452	City of Satellite Beach	DEP	SB-38	Cassia Phase 3 - C13E	Retention swales.	On-line Retention BMPs	Completed	2013	6	1	B	$0.00
2453	City of Satellite Beach	DEP	SB-39	Cassia Phase 3 - C13F	Retention swales.	On-line Retention BMPs	Completed	2013	7	1	B	$0.00
2454	City of Satellite Beach	DEP	SB-40	Cassia Phase 3 - C13G	Retention swales.	On-line Retention BMPs	Completed	2013	6	1	B	$0.00
2455	City of Satellite Beach	DEP	SB-41	Roosevelt Avenue	Off-line retention swales.	Off-line Retention BMPs	Completed	2016	TBD	TBD	B	$43,482.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2456	City of Satellite Beach	DEP	SB-42	Roosevelt Avenue	Off-line retention pipes.	Exfiltration Trench	Completed	2016	0	0	B	$34,350.00
2390	City of Satellite Beach	DEP	SB-43	Desoto Park	Wet detention pond that also features stormwater reuse and biosorption activated media (BAM).	Wet Detention Pond	Completed	2018	201	172	B	$950,000.00
4350	City of Satellite Beach	Brevard County SOIRL; SJRWMD	SB-44	Lori Laine Trunk Replacement	Replace main Lori Laine trunk and install BAM to reduce nutrient loading to the BRL.	Biosorption Activated Media (BAM)	Underway	2024	TBD	TBD	B	$3,294,803.18
4351	City of Satellite Beach	DEP; SJRWMD	SB-45	Lori Laine Outfall Treatment	Treat stormwater at Lori Laine outfall.	Baffle Boxes- Second Generation	Completed	2021	204.9	25.55	B	$173,707.00
4352	City of Satellite Beach	DEP; SJRWMD	SB-46	Elwood/Temple Facility Upgrade	Change existing dry pond to wet detention pond and divert stormwater to pond.	Wet Detention Pond	Completed	2021	3.26	0.52	B	$43,580.00
4353	City of Satellite Beach	DEP; SJRWMD	SB-47	Jackson Ct. Treatment Facility	Construct wet detention pond.	Wet Detention Pond	Completed	2021	TBD	TBD	B	$232,156.00
4354	City of Satellite Beach	DEP; SJRWMD	SB-48	Schechter Community Center Bioretention	Add bioretention to parking lot area.	LID- Rain Gardens	Completed	2021	8.62	1.24	B	$116,840.00
4355	City of Satellite Beach	TBD	SB-49	Robert Way Diversion/Library Dry Retention	Divert Robert Way into dry detention pond.	Dry Detention Pond	Planned	2026	5.07	0.8	B	$178,630.00
4356	City of Satellite Beach	TBD	SB-50	Robin Way Diversion/Library Dry Retention	Divert Robin Way into dry detention pond.	Dry Detention Pond	Planned	TBD	56.49	8.92	B	$168,601.00
4357	City of Satellite Beach	TBD	SB-51	Roosevelt BAM Filter	Add BAM filter to Roosevelt outfall baffle box.	Baffle Boxes- Second Generation with Media	Planned	2026	TBD	TBD	B	$162,236.00
4358	City of Satellite Beach	TBD	SB-52	South Ditch BAM Swales	Addition of BAM swales along South Ditch trunkline.	Biosorption Activated Media (BAM)	Planned	2026	30.15	4.76	B	$185,098.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
4359	City of Satellite Beach	TBD	SB-53	Sports Park Treatment	Install in-ditch BAM.	Biosorption Activated Media (BAM)	Planned	2026	0.83	0.14	B	$114,035.00
4360	City of Satellite Beach	TBD	SB-54	Eastwood LID Improvements (SRF)	Adding roadside swales to Glenwood.	Grass swales without swale blocks or raised culverts	Planned	2027	TBD	TBD	B	$241,868.00
4361	City of Satellite Beach	TBD	SB-55	North Drainage BAM Filter	Add BAM filter to North Drainage baffle box.	Baffle Boxes- Second Generation with Media	Planned	2028	TBD	TBD	B	$138,661.00
4362	City of Satellite Beach	TBD	SB-56	Westside Outfall Treatment Improvements (SRF)	Insert inlet trap at the end of Emerald Court.	Catch Basin Inserts/Inlet Filter Cleanout	Planned	2028	TBD	TBD	B	$0.00
4363	City of Satellite Beach	TBD	SB-57	City Hall Pond Living Shoreline	Replace an existing concrete retaining wall with a terraced living wall. Install MAPS within existing wet detention pond along with a new recirculation fountain.	Floating Islands/ Managed Aquatic Plant Systems (MAPS)	Planned	2024	14.62	1.55	B	$0.00
4364	City of Satellite Beach	TBD	SB-58	Jamaica Pond Outfall BAM Filter	Adding BAM filters to Jamaica Pond outfalls.	Biosorption Activated Media (BAM)	Planned	2026	72.02	15.18	B	$77,506.00
5625	City of Satellite Beach	Brevard County SOIRL	SB-59	Canal Muck Removal	Dredge muck from grand canal and finger canals; interstitial water treatment.	Muck Removal/Restoration Dredging	Planned	TBD	TBD	TBD	B	$8,296,940.00
6568	City of Satellite Beach	Brevard County SOIRL	SB-60	Hedgecock/Grabowsky & Desoto Fields Septic Conversion	Project will convert two park facilities to sanitary sewer. The project includes design, permitting, and construction and includes abandonment of the existing septic systems and installation of two lift stations and force main sewer line.	OSTDS Phase Out	Underway	2023	TBD	TBD	B	$271,668.10
6912	City of Satellite Beach	Brevard County; Cape Canaveral; Cocoa Beach;	SB-61	SOIRL Split 2017 - 2023	SOIRL credit splits.	Credit Sharing	Completed	2023	76.2	30.8	B	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
		Indian Harbour Beach (IHB)										
7201	City of Satellite Beach	NA	SB-62	Jackson Ave Bioswales	Install bioswales along Jackson Ave.	Bioswales	Planned	TBD	169.24	39.2	B	$0.00
5550	FDACS	Agricultural Producers	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 June 2024 Enrollment and SWIL - LET.	Agricultural BMPs	Ongoing	NA	0	0	B	$0.00
5552	FDACS	Agricultural Producers	FDACS-04	Cost-Share BMP Projects	Cost-share projects paid for by FDACS.	Agricultural BMPs	Completed	NA	0	0	B	$0.00
2418	FDOT District 5	NA	FDOT-04	FM: 237139 D5_70120-3518-01	Pond 7.	Wet Detention Pond	Completed	2013	35	5	B	$0.00
2397	FDOT District 5	NA	FDOT-12	FM: 237712 D5_70060-3519-01	French drains.	On-line Retention BMPs	Completed	2013	54	9	B	$0.00
2422	FDOT District 5	NA	FDOT-13	FM: 422691-01 D5_422691-01	French drains.	On-line Retention BMPs	Completed	2013	12	2	B	$0.00
2421	FDOT District 5	NA	FDOT-14	Street Sweeping	Street sweeping.	Street Sweeping	Ongoing	NA	354	193	B	$0.00
2420	FDOT District 5	NA	FDOT-15	Education Efforts	Pamphlets, illicit discharge program.	Education Efforts	Ongoing	NA	42	6	B	$0.00
2419	FDOT District 5	NA	FDOT-16	Fertilizer Cessation	Fertilizer cessation.	Fertilizer Cessation	Completed	2005	1544	56	B	$0.00
2430	FDOT District 5	NA	FDOT5-05	FM: 237454 D5_70100-3553-01	French drains. Project canceled. Start date prior to 2000. BMP is accounted for in new model.	On-line Retention BMPs	Canceled	NA	NA	NA	B	$0.00
2429	FDOT District 5	NA	FDOT5-06	FM: 237447 D5_70008-3505-02	Pond 2. Project canceled. Start date prior to 2000. BMP is accounted for in new model.	Wet Detention Pond	Canceled	NA	NA	NA	B	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2427	FDOT District 5	NA	FDOT5-07	FM: 237447 D5_70008-3505-03	Pond 3. Project canceled. Start date prior to 2000. BMP is accounted for in new model.	On-line Retention BMPs	Canceled	NA	NA	NA	B	$0.00
2425	FDOT District 5	NA	FDOT5-08	FM: 237447 D5_70008-3505-04	French drains. Project canceled. Start date prior to 2000. BMP is accounted for in new model.	On-line Retention BMPs	Canceled	NA	NA	NA	B	$0.00
2424	FDOT District 5	NA	FDOT5-09	FM: 237482 D5_70060-3533-01	French drains. Project canceled. Start date prior to 2000. BMP is accounted for in new model.	On-line Retention BMPs	Canceled	NA	NA	NA	B	$0.00
2416	FDOT District 5	NA	FDOT5-10	FM: 237453 D5_70008-3507-01	Pond 1. Project canceled. Start date prior to 2000. BMP is accounted for in new model.	Wet Detention Pond	Canceled	NA	NA	NA	B	$0.00
2423	FDOT District 5	NA	FDOT5-11	FM: 237453 D5_70008-3507-02	Pond 2. Project canceled. Start date prior to 2000. BMP is accounted for in new model.	Wet Detention Pond	Canceled	NA	NA	NA	B	$0.00
2878	Patrick Space Force Base	NA	PSFB-01	Youth Center Bldg. 3656	Added on-line retention.	On-line Retention BMPs	Completed	2013	4	0	B	$0.00
2877	Patrick Space Force Base	NA	PSFB-02	Building 543 Replace Main Gate	Added on-line retention.	On-line Retention BMPs	Completed	2013	3	0	B	$0.00
2876	Patrick Space Force Base	USACE	PSFB-03	Basin 6B No Discharge	No discharge.	100% On-site Retention	Completed	Prior to 2013	21	3	B	$0.00
2899	Patrick Space Force Base	USACE	PSFB-04	Basin 6C No Discharge	No discharge.	100% On-site Retention	Completed	Prior to 2013	75	10	B	$0.00
2881	Patrick Space	NA	PSFB-05	Education Efforts	No fertilizer use on base, stormwater awareness	Education Efforts	Ongoing	NA	506	70	B	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
	Force Base				training, website, IDDE brochures, and newsletters.							
2883	Patrick Space Force Base	NA	PSFB-06	Golf Course Pond Stormwater Reuse	Golf course pond stormwater reuse for irrigation.	Stormwater Reuse	Completed	2013	2476	347	B	$850,000.00
2908	Patrick Space Force Base	NA	PSFB-07	Street Sweeping	Removal of sediment and debris, disposed of it at a landfill.	Street Sweeping	Ongoing	NA	22	12	B	$0.00
2907	Patrick Space Force Base	NA	PSFB-08	Demo AFTEC Bldg.	Demolition/ loss of impervious area. Incorporated in 2021 model update.	Land Use Change	Canceled	NA	NA	NA	B	$0.00
2906	Patrick Space Force Base	NA	PSFB-09	Fuel Farm Baffle Box	PAFB 2nd generation baffle box located north of the Fuel Farm - Subbasins 13A and 13B.	Baffle Boxes- Second Generation	Completed	2016	136	15	B	$0.00
2905	Patrick Space Force Base	NA	PSFB-10	South Patrick Drive Baffle Box	PSFB Credit Sharing with Brevard County on this project. Calculations based on PSFB owned basins discharging to baffle box.	Baffle Boxes- Second Generation with Media	Completed	2016	45.3	5	B	$0.00
2904	Patrick Space Force Base	NA	PSFB-11	Canal/ Basin Clean Out	170 inlets/ pipes/ swales/ ponds were inspected, and 89 maintenance operations of stormwater systems were performed in 2022.	BMP Cleanout	Ongoing	NA	71	29	B	$134,500.00
2903	Patrick Space Force Base	USACE	PSFB-12	Ponds Without Discharge	Documenting no discharge from existing retention ponds. Subbasins 11A, 18A, and 18B.	Dry Detention Pond	Completed	2017	68	11	B	$0.00
2902	Patrick Space Force Base	USACE	PSFB-13	Dry Detention Ponds after 2000	Documenting treatment from existing completed ERP projects that were not included in the PLSM model.	Dry Detention Pond	Completed	2016	106	15	B	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
2892	Patrick Space Force Base	USACE	PSFB-14	Golf Course MAPS Install	Install 2 MAPS (900 sq feet) at the golf course within the retention ponds.	Floating Islands/ Managed Aquatic Plant Systems (MAPS)	Completed	2023	21.27	1.8	B	$0.00
2900	Patrick Space Force Base	USACE	PSFB-15	TMDL Monitoring and Data Collection	Collected stormwater and baseflow nutrient concentrations and rainfall data from 5 monitoring stations; collected baseflow and stormwater runoff flow volume data and groundwater elevation data from 9 monitoring stations.	Monitoring/Data Collection	Completed	2018	NA	NA	B	$1,850,000.00
2909	Patrick Space Force Base	FEMA; Installation Restoration Program (IRP); U.S. Air Force Civil Engineering Center (AFCEC)	PSFB-16	Shoreline Stabilization Projects	Six project areas with rip-rap and marsh sills to contribute to shoreline stabilization. Full details in the submitted Shoreline Stabilization Protocol technical memo.	Shoreline Stabilization	Canceled	NA	NA	NA	B	$0.00
2898	Patrick Space Force Base	NA	PSFB-17	Public Education	Six outreach events were held: Annual Spring Beach Cleanup; PAFB Riverside Cleanup; Earth Day Memorial Tree Planting; Earth Day Outreach at the BX; Space Wing Family Day; and PAFB Fall Beach Cleanup.	Enhanced Public Education	Completed	2017	NA	NA	B	$0.00
2897	Patrick Space Force Base	NA	PSFB-18	Manatee Cove Marina entrance Dredging Project	Removed 2,500 cubic yards of sand from the Manatee Cove Marina entrance.	Muck Removal/Restoration Dredging	Completed	2017	TBD	TBD	B	$0.00
2896	Patrick Space Force Base	NA	PSFB-19	Wetlands as Filters	Jurisdictional wetlands consist of four canals that directly connect to the Banana River totaling 35.7 surface acres.	Natural Wetlands as Filters	Canceled	NA	NA	NA	B	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
6739	Patrick Space Force Base	NA	PSFB-20	Building 961 Removal	Impervious area removal of Building 961.	Land Use Change	Planned	2025	1.4	0.4	B	$226,800.00
6748	Patrick Space Force Base	NA	PSFB-21	Basin 13 Dry Retention Ponds	Installation of two dry retention ponds at the site of the L-Shaped Concrete removal site. Paired with PSFB-29, loading already reduced before calculating TN and TP reduction.	On-line Retention BMPs	Completed	2023	43.44	5.34	B	$0.00
6747	Patrick Space Force Base	NA	PSFB-22	PSFB Canal Vegetation Harvesting	Vegetation harvesting within the PSFB canals.	Aquatic Vegetation Harvesting	Underway	TBD	TBD	TBD	B	$0.00
6746	Patrick Space Force Base	FEMA; Installation Restoration Program (IRP); U.S. Air Force Civil Engineering Center (AFCEC)	PSFB-23	North Housing Shoreline Stabilization	North Housing shoreline stabilization project.	Shoreline Stabilization	Completed	2019	TBD	TBD	B	$0.00
6745	Patrick Space Force Base	FEMA; Installation Restoration Program (IRP); U.S. Air Force Civil Engineering Center (AFCEC)	PSFB-24	PSFB Landfill No. 5 Shoreline Stabilization	PSFB Landfill No.5 shoreline stabilization project.	Shoreline Stabilization	Completed	2019	TBD	TBD	B	$0.00
6744	Patrick Space Force Base	FEMA; Installation Restoration Program (IRP); U.S. Air Force Civil Engineering Center (AFCEC)	PSFB-25	Rescue Road Shoreline Stabilization	Rescue Road shoreline stabilization project.	Shoreline Stabilization	Completed	2019	TBD	TBD	B	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
6743	Patrick Space Force Base	FEMA; Installation Restoration Program (IRP); U.S. Air Force Civil Engineering Center (AFCEC)	PSFB-26	ILS Glide Slope Shoreline Stabilization	ILS Glide Slope shoreline stabilization project.	Shoreline Stabilization	Completed	2019	TBD	TBD	B	$0.00
6742	Patrick Space Force Base	FEMA; Installation Restoration Program (IRP); U.S. Air Force Civil Engineering Center (AFCEC)	PSFB-27	Runway 11 Shoreline Stabilization	Runway 11 shoreline stabilization using rip-rap and marsh stills.	Shoreline Stabilization	Completed	2019	1046.2	9.84	B	$0.00
6741	Patrick Space Force Base	FEMA; Installation Restoration Program (IRP); U.S. Air Force Civil Engineering Center (AFCEC)	PSFB-28	Fuel Farm Shoreline Stabilization	Fuel Farm shoreline stabilization using rip-rap and marsh stills.	Shoreline Stabilization	Completed	2019	1088.71	22.53	B	$0.00
6738	Patrick Space Force Base	NA	PSFB-29	L-Shaped Concrete Removal	Removal of the L-Shaped Concrete impervious area.	Land Use Change	Completed	2023	4.3	1.1	B	$567,000.00
7203	Patrick Space Force Base	NA	PSFB-30	DEOMI Wet Detention Modifications	Deepening and expansion of DEOMI Pond at PSFB.	Stormwater System Upgrade	Planned	TBD	21.77	5.57	B	$0.00
7206	Patrick Space Force Base	NA	PSFB-31	FamCamp Shoreline Stabilization and Living Shoreline	Creation of the FamCamp shoreline stabilization and living shoreline.	Shoreline Stabilization	Planned	TBD	TBD	TBD	B	$0.00
7204	Patrick Space	NA	PSFB-32	Outfall 17 Basin Modifications	Addition of dry retention pond and modification to Fuel Farm Baffle Box (PSFB-09).	Stormwater System Upgrade	Planned	TBD	753.7	103.87	B	$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	TP Reduction (lbs/yr)	Crediting Location	Cost Estimate
	Force Base											
7205	Patrick Space Force Base	NA	PSFB-33	Additional PSFB Golf Course Ponds MAPS	Installation of 2,600 sq. feet of MAPS at the PSFB Golf Course.	Floating Islands/ Managed Aquatic Plant Systems (MAPS)	Planned	2026	9.32	1.31	B	$0.00
7207	Patrick Space Force Base	NA	PSFB-34	Basin 13 A/B Dry Retention Pond and Pump	Creation of a dry retention pond with nutrient reducing filtration bed, for the untreated PSFB industrial area.	Retention/Detention BMP with Nutrient Reducing Media	Planned	TBD	TBD	TBD	B	$0.00

Appendix C. Seagrass Analysis

Process to Conduct the Seagrass Depth Limit Compliance Evaluation

The goal of the IRL Basin TMDLs is to recover the deeper seagrass habitats. The seagrass response is the most important factor in evaluating the success of the nutrient TMDLs. Even if the relationship among nutrient loads and seagrass recovery is not as predicted by the regression model, the load reduction requirements themselves will not determine TMDL success. The assessment of success is based on whether the seagrass grows at sufficient depths.

The TMDL seagrass depth limit targets are based on a union coverage of the seagrass mapping data from 1943, 1986, 1989, 1992, 1994, 1996, and 1999. SJRWMD created this union coverage when it set pollutant load reduction goals for the IRL Basin. The TMDL targets are not based on the full restoration of seagrass depths represented by this union coverage; instead, they were set at 90% of the full restoration estimate. These targets allow for seagrass growth almost to the depths previously seen in the lagoon, while accounting for the fact that changes have been made to the lagoon system that may limit seagrass growth in some areas, such as dredged areas similar to the Intracoastal Waterway.

Compliance with the TMDL seagrass depth limit targets is assessed on a project zone scale using the latest four consecutive data sets of seagrass mapping data. For the assessment years to be compliant with the TMDL seagrass depth limit targets, the data must meet the requirements of a two-step evaluation process.

The first step is a comparison of the TMDL union coverage cumulative frequency distribution curve with the assessment years' union cumulative frequency distribution curve. The cumulative distribution curves show what percentage of the seagrass deep edge is located at different depths. To be compliant, at least 50% of the assessment years' curve, including the median, must be on or to the right of the TMDL curve.

The second step in the evaluation process is a comparison of the TMDL union coverage median value with each assessment year's median value. To be compliant in the second step, at least three of the four assessment year medians must be equal to or greater than the TMDL median. If the seagrass data from the four assessment years are compliant with both steps of the test, the project zone is achieving the TMDL depth limit target.

A series of GIS steps must be conducted to obtain the data necessary to complete the two-step evaluation process. These steps are as follows:

- Start with the seagrass GIS shapefiles for the four latest assessment years and edit these files to include only Categories 9113 and 9116, which represent seagrass. Other categories in the GIS shapefiles represent algae cover, which should not be included in this assessment. The seagrass shapefiles only represent the location of the seagrass beds.

- Use the dissolve function in GIS to create the union file of the assessment years. This union file results in a coverage of where seagrass beds were located during all four assessment years.
- Transform the polygons to a polyline in the assessment years' union file. This polyline represents the edges of the seagrass beds.
- Draw a 15.8-m buffer around the seagrass polyline that is 7.9 m inside and 7.9 m outside the seagrass bed. The bathymetry layer was created by SJRWMD in 1996, and the bathymetry was measured every 15.2 m. The 15.8 m buffer around the seagrass polyline ensures that 1 bathymetry point will be captured in the GIS analysis.
- Intersect the updated bathymetry shapefile with the seagrass coverage file that was transformed into a polyline. This intersection correlates the depth data with the seagrass locations so that depths along the seagrass bed edge can be determined.
- Intersect the deep edge file to each project zone (BRL A, BRL B, North A, North B, Central A, Central SEB, and Central B).
- Use the select by location function to identify and note points within dredged areas. The dredged areas are removed from this coverage because seagrass is not expected to grow in areas that have been dredged.
- Identify and note points that fall below 0.3 m and above 3.5 m from the coverage. This step is needed because seagrass growing at depths less than 0.3 m are likely not light-limited, and seagrass are not expected to grow at depths greater than 3.5 m.
- Identify and note points from the intersections of holes or bare areas, which do not represent the deep edge of the seagrass bed.
- These steps are also followed separately for each assessment year so that the median value can be calculated.

The final points that represent the seagrass deep edge boundary for the assessment years' union coverage are then exported from GIS into Excel to conduct the two-step evaluation. The depth points are sorted from highest to lowest, and the count of the number of points at each depth is determined. The cumulative count is determined by taking the count for the shallowest depth and adding it to the count for the next shallowest point until the counts for all the depths are added together to yield the total number of depth points. The cumulative count at each depth is divided by the total points to determine the percentage of the seagrass points at each depth. These points are then plotted as a curve on a graph for comparison with the TMDL cumulative distribution curve. For the Step 2 evaluation, the median depth point is calculated for each assessment year using Excel. These medians are then compared with the TMDL median to determine compliance.

The maps in **Figure C-1** and **Figure C-2** include the locations of ground truthing conducted before and during aerial surveys. Additionally, the transect locations where SJRWMD conducts seasonal monitoring are shown. For more information on how SJRWMD and partners conduct seagrass surveys, the SJRWMD SOP (SJRWMD 2020) is referenced in **Section 4**.

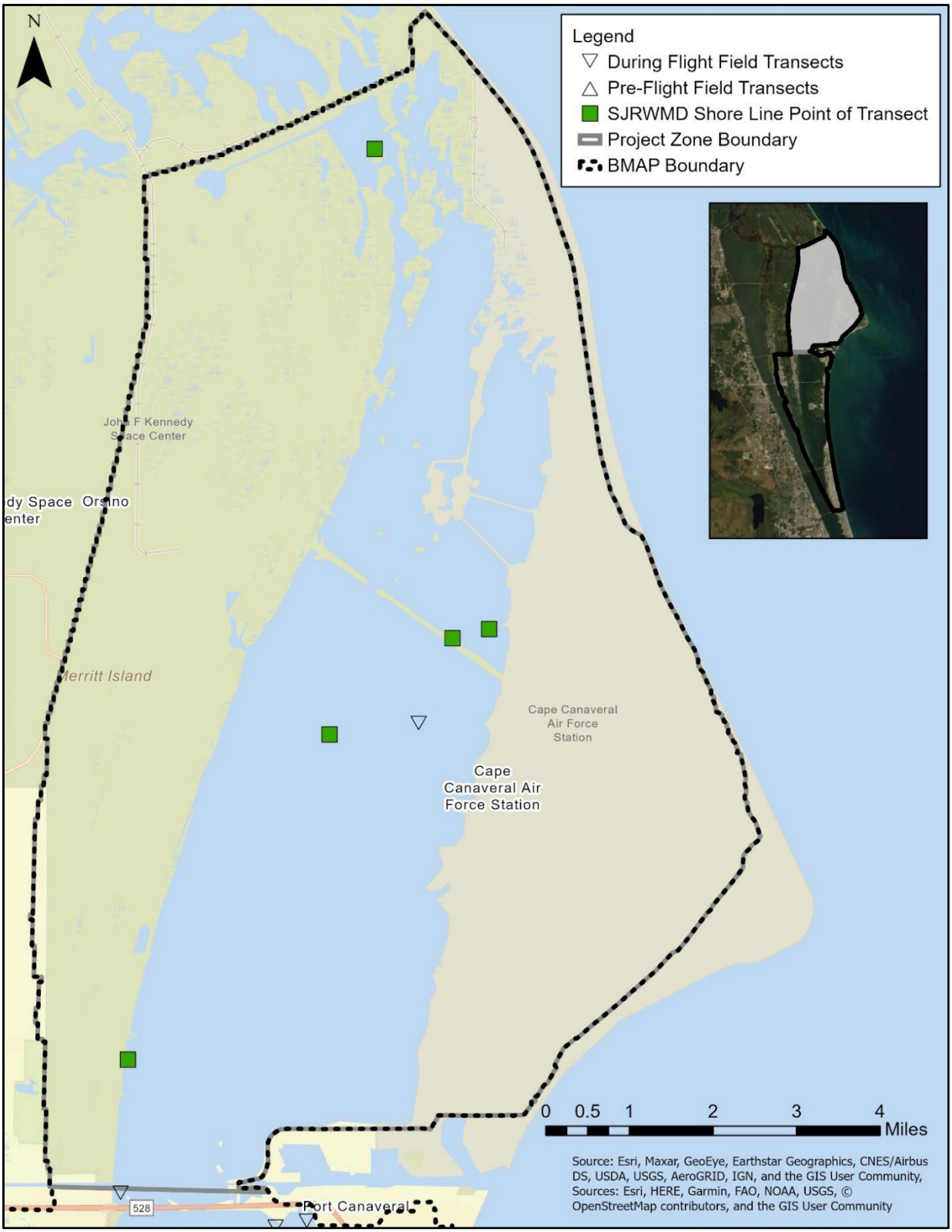

Figure C-1. Map of the seagrass transects in BRL A

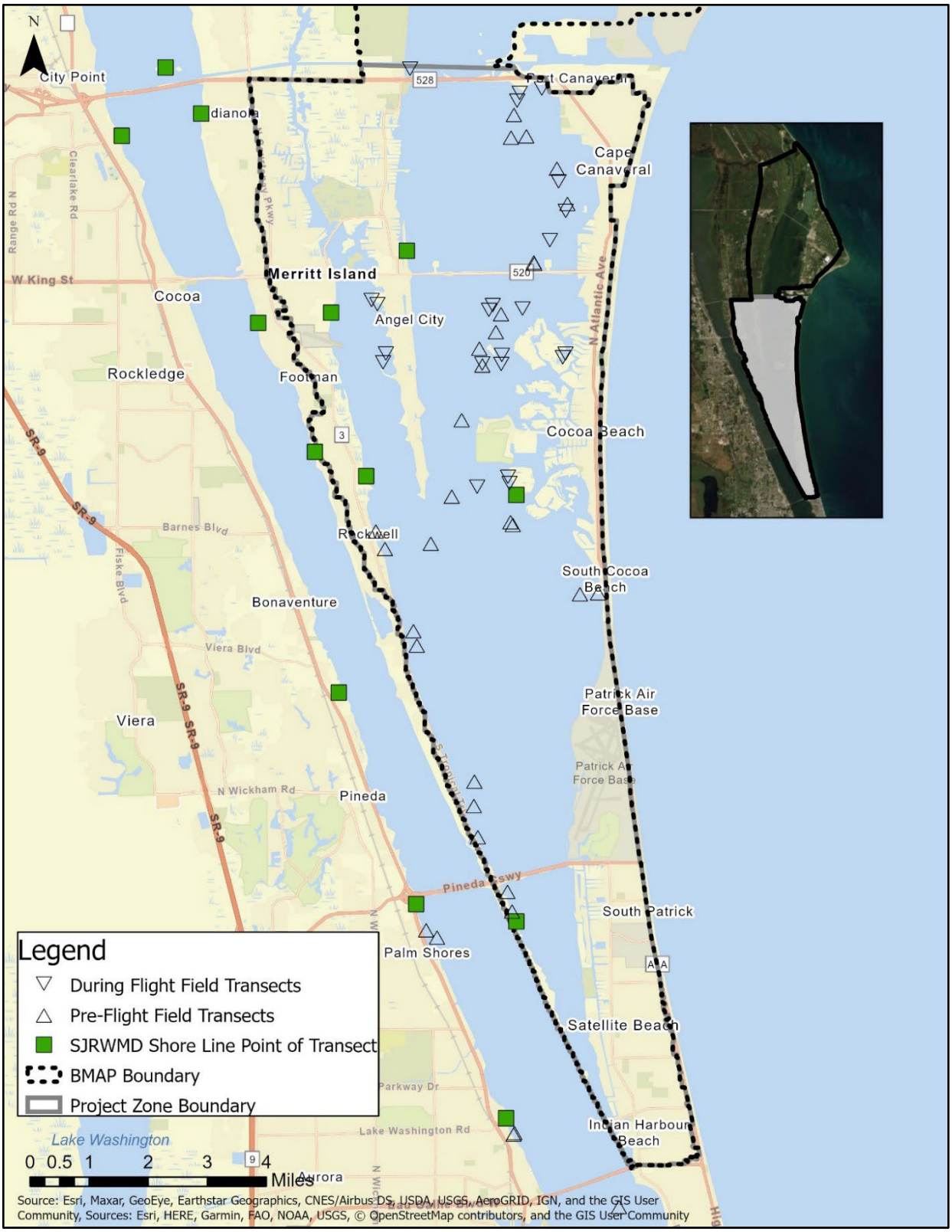

Figure C-2. Map of the seagrass transects in BRL B

Appendix D. 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 Best Management Practices (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 Office of Agricultural Water Policy (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 the FDEP, water management districts (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 Notice of Intent (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 (N) and phosphorus (P) fertilizer from all sources that are applied to their operations to comply with BMP program requirements, including AA bio-solids. 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, Florida Statutes (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 Best Management Practices 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 Banana River Lagoon BMAP, there is one aquaculture facility 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 Florida Forest Service (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 agricultural lands (ALG) data that is part of the Florida Statewide Agricultural Irrigation Demand (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, water management districts, 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 D-1 and **Figure D-1** show the percentage of agricultural land use within the Banana River Lagoon 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 D-1. Agricultural land use in the Banana River Lagoon BMAP

BMAP Acres	97,854
Agricultural acres in the BMAP	44

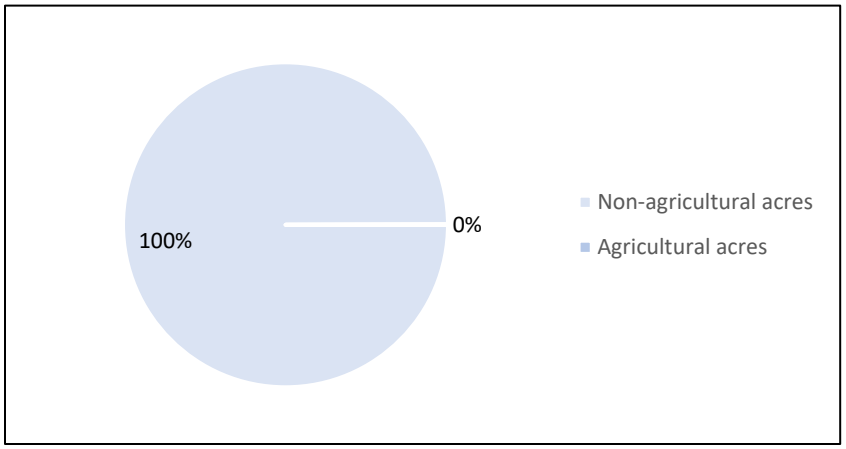

Figure D-1. Agricultural land use in the Banana River Lagoon BMAP

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

As of July 2024, 0% of the agricultural acres in the Banana River Lagoon BMAP area are enrolled in FDACS' BMP program. 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.

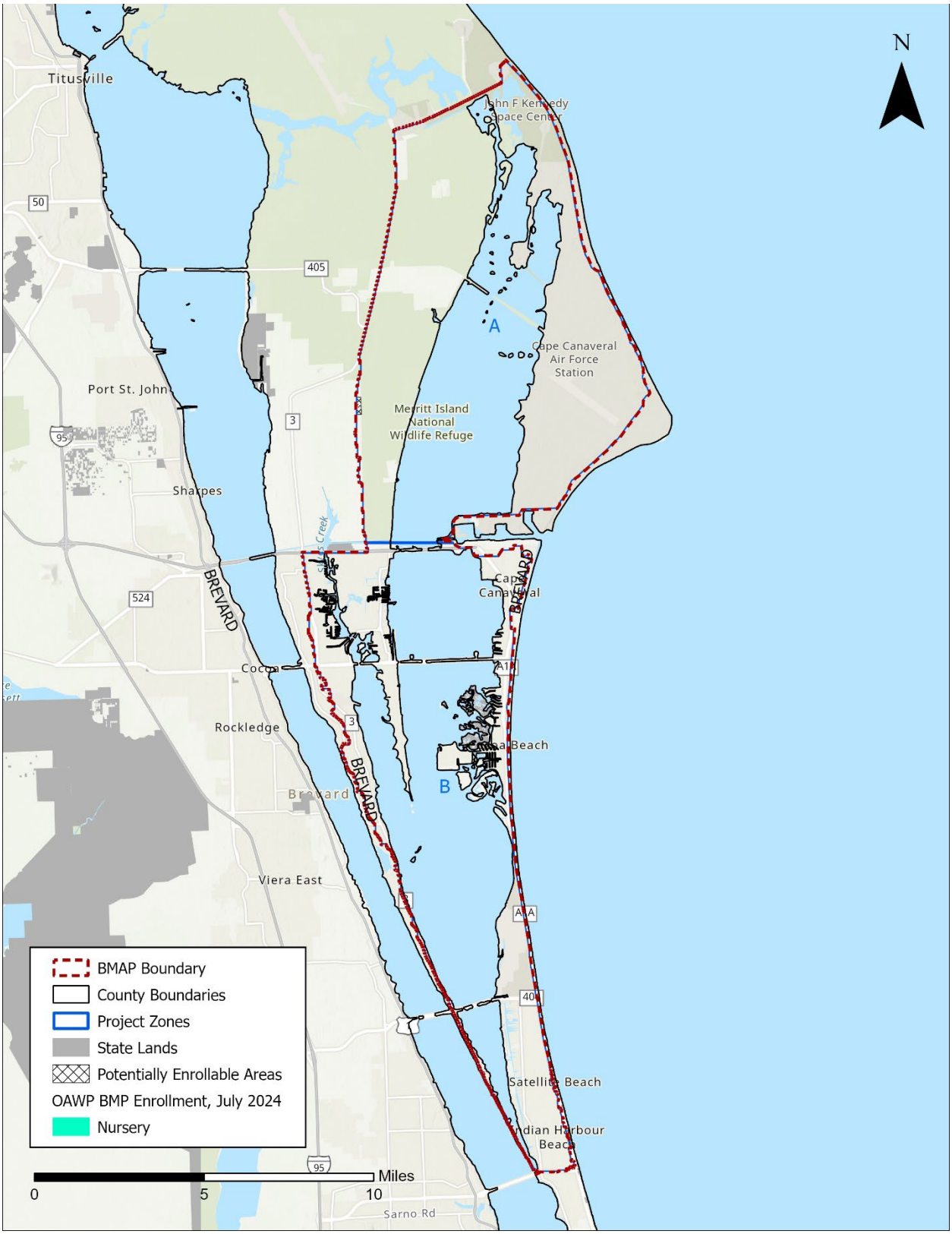

Figure D-2. Agricultural enrollment in the BRL BMAP

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 D-2 shows the breakdown of agricultural lands within the Banana River Lagoon BMAP by Crediting Location based on the FSAID 11 and the results of the FDACS unenrolled agricultural lands characterization.

Table D-2. Agricultural lands in Banana River Lagoon 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*
A	59	19	39	0
B	16	11	5	0

Potentially Enrollable Lands

There are 44 acres of potentially enrollable lands within the Banana River Lagoon BMAP based on the assessment of unenrolled agricultural lands performed by FDACS. **Table D-3** shows the potentially enrollable acreages by crop type. **Figure D-3** shows the count of potentially enrollable parcels based on size classifications used by FDACS.

Table D-3. Potentially enrollable acres by crop type

Crop Type	Acres
Fallow	5
Grazing Land	39
Total	**44**

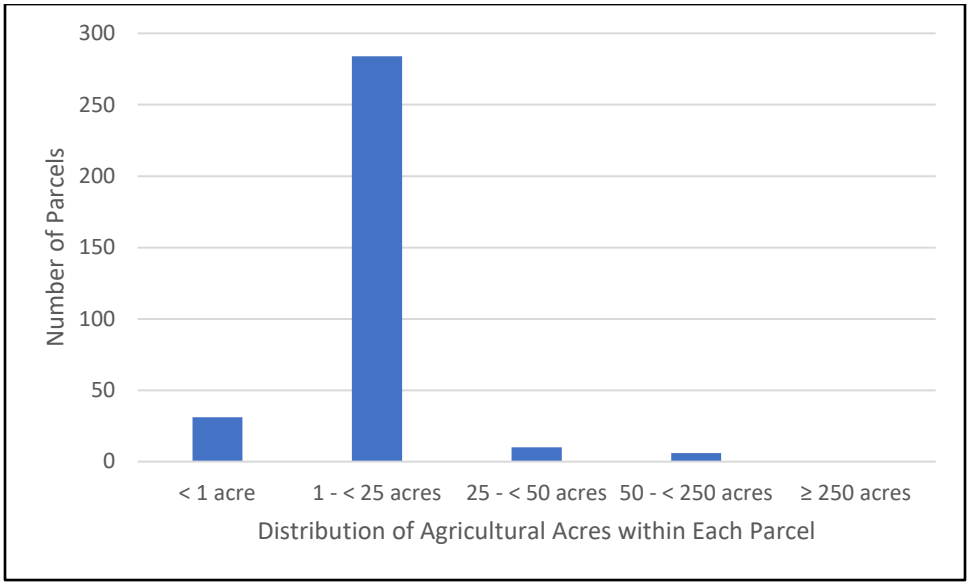

Figure D-3. Count of potentially enrollable parcels by size class in the Banana River Lagoon

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 U.S. Department of Agriculture Natural Resources Conservation Service (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.

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

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, the water management districts, 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.

Appendix E. 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:

- 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 F. Nutrient Management Plan Requirements

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 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 F-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 F-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 (%)
N	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 (%)
P	0.15 - 0.43	0.30 - 0.55	0.30 - 60	0.18 - 0.26	0.19 - 0.22
Potassium (K)	0.43 - 1.28	1.1 - 2.25	2.00 - 4.00	1.12 - 2.50	1.05 - 1.27
Calcium (Ca)	0.15 - 0.63	0.24 - 0.54	0.25 - 1.50	0.50 - 1.15	0.44 - 0.56
Magnesium (Mg)	0.04 - 0.10	0.20 - 0.46	0.25 - 0.60	0.12 - 0.21	0.13 - 0.15
Sulfur (S)	0.07 - 0.02	0.15 - 0.48	0.20 - 0.60	0.20 - 0.38	0.32 - 0.37
Sodium (Na)	0.05 - 0.17	0.00 - 0.17	-	-	-

f. All golf courses located within a BMAP are required to submit a nutrient management plan (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:

g. ***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.

h. ***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		

Turf Type	Turf Species	Acreage
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					

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)
	Roughs					
September	Tees					
	Greens					
	Fairways					
	Roughs					
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							

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)
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.

i. ***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.

j. ***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.

k. ***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.

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

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

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

Facility ID	Facility Name
FL0021105	City of Cocoa Beach
FL0020541	Cape Canaveral WRF
FL0102920	Cape Canaveral Air Force Station Regional WWTF

Appendix H. Methods for SJRWMD Status and Trends Assessment

Surface water quality data in the Indian River Lagoon were analyzed for status and trends from 23 stations in the CIRL, 16 stations in the BRL, and 7 stations in the NIRL. Water quality status is an indication of the condition of a waterbody for a given analyte or parameter (for example, color or total phosphorus). Water quality trends indicate whether a series of analyte or parameter values is increasing or decreasing over time.

Water Quality Status

The status assessment period was five years, from Jan. 1, 2018, to Dec. 31, 2022. At least three years of data during the five-year status assessment period were required to complete the status assessment, and the last year had to be 2022 (2020 for groundwater stations). Water quality status is represented by the median of annual median values from the five-year assessment period. Median values were chosen to represent water quality status as they are not greatly skewed by outliers, and thus serve as a robust indicator of central tendency.

Water quality status is indicated by symbol color in the status and trends maps. For surface water analytes and some springs and groundwater analytes, percentiles were assigned to ranked status results. Ranges of percentiles were established (low: 0th–25th percentile, medium: 25th–75th percentiles, high: 75th–100th percentile) and these three ranges are indicated with different shades of blue color, from light to dark. For most of the springs and groundwater analytes, the range is not based on a percentile distribution, but rather a numerical range. Note that all ranges are expressed as low, medium or high relative to each other, and high values do not necessarily indicate poor water quality.

Water Quality Trends

The trend assessment period was 15 years, from Jan. 1, 2008, to Dec. 31, 2022. At least 10 years of data were required from the 15-year period of record to calculate a trend. The 10-year period of record could be any 10 years within the 15-year period, including periods for which there was a gap in the data, although the last year in the period had to be 2022 (2020 for groundwater stations). Years in the period of record that had more samples than other years were adjusted such that each year was represented by the same number of samples, when possible. Trends were calculated using the nonparametric Mann-Kendall test. A non-seasonal version of the test was used if there were no statistically significant differences between monthly values (Kruskal-Wallis test, $p<0.05$). A seasonal version of the Mann-Kendall test was used if there were significant differences.

Water quality trends are described as increasing trend, decreasing trend, a statistically non-significant trend, or some stations may have insufficient data to conduct a trend analysis. Trends that are changing more than 5% per year are indicated in **Table 11** in **Section 2.2**. Stations may have insufficient data for a variety of reasons. For example, a newly established station that has not been sampled for at least 10 years will have insufficient data for a trend calculation. In some cases, a station will have results for some analytes, but not others. This report does not attempt to analyze the cause or impacts of any trends, nor are the trend results meant to be forecasts. Rather, trends indicate what has happened at the water quality station over the assessment period.

Water Quality Sample Collection and Laboratory Analysis

Water quality data were derived from samples collected primarily by SJRWMD field staff. For surface water and springs monitoring stations, most samples were "grab" samples, which means that they were collected using a technique of either inverting the sample bottle in the water column or pouring sample water from a separate collection device, such as a Van Dorn sampler, into the sample bottle. "Vertically integrated" samples were also included in the surface water and springs assessments. These samples were obtained with the use of a long sampling tube and indicate water quality over a range of depths. Since most waterbodies in the district are shallow and not stratified, data from all depths were used for the assessment, including vertically integrated samples. The samples for all three water resource types were analyzed using U.S. Environmental Protection Agency (EPA) methods at the district's laboratory or at various contract labs.

Water Quality Data Preparation

Prior to use in the assessment, sample data were evaluated and filtered in a multi-step process. Important details of this process are outlined below.

- All sample data were analyzed using both SAS and R software.
- Collection, analysis and processing of water quality samples and data can be an error-prone process, and problems can occur. On those rare occasions, the laboratory will associate qualifier codes with the data. In this assessment, qualifier codes were evaluated and any suspect data were omitted. In addition, any quality assurance samples such as duplicates and blanks were omitted.
- Total nitrogen (TN) was calculated for each day of data from the sum of total Kjeldahl nitrogen (TKN) and total nitrate + nitrite (NO_x), even if NO_x was missing. If TKN was missing, then TN was not calculated. If total NO_x was missing, then dissolved NO_x was used instead, if it was available. Calculated TN was then added to the data set.
- Daily median values were calculated for all data to ensure that there was only one value per day. The daily median value closest to the midpoint of each month was used to represent the month for trend calculations.
- Individual station and analyte datasets that contained more than 5% non-detect values were evaluated for status using survival statistics methods and for trends using the Kendall tau correlation coefficient with an Akritas-Theil-Sen regression estimate (Helsel 2005).
- Analytical results were combined with a spatial representation of sampling locations. The interactive maps were created using an ESRI ArcGIS Online web application template.