

***DRAFT***  
***Volusia Blue Spring***  
***Basin Management Action Plan***

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

**with participation from the  
Volusia Blue Spring Stakeholders**

**April 2025**

**2600 Blair Stone Rd.  
Tallahassee, FL 32399  
[floridadep.gov](http://floridadep.gov)**



## Acknowledgments

The Florida Department of Environmental Protection adopted the *Volusia Blue Spring Basin Management Action Plan* by Secretarial Order as part of its statewide watershed management approach to restore and protect Florida's water quality. The plan was developed in coordination with stakeholders identified below, including participation from affected local, regional and state governmental entities, non-governmental organizations and entities, and residents.

Florida Department of Environmental Protection  
Alexis A. Lambert, Secretary

**Table ES-1. Volusia Blue Spring stakeholders**

Type of Entity	Name
<b>Responsible Entities</b>	Agriculture City of DeBary City of DeLand City of Deltona City of Lake Helen City of Orange City Volusia County Private Wastewater Treatment Facilities Private Golf Courses
<b>Responsible Agencies</b>	Florida Department of Agriculture and Consumer Services (FDACS) Florida Department of Environmental Protection (DEP) Florida Department of Health (FDOH) Florida Department of Transportation (FDOT) St. Johns River Water Management District (SJRWMD)
<b>Other Interested Stakeholders</b>	1000 Friends of Florida Blue Spring Alliance Florida Farm Bureau Florida Fish and Wildlife Conservation Commission Florida Native Plant Society Florida Onsite Wastewater Association Homeowners/Residents Save the Manatee Club Septic System Contractors Stetson University University of Florida Institute of Food and Agricultural Sciences Volusia Water Alliance

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

Florida Department of Environmental Protection/ Water Quality Restoration Program  
2600 Blair Stone Road, Mail Station 3565  
Tallahassee, FL 32399-2400  
Email: BMAPProgram@FloridaDEP.gov

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## **List of Acronyms and Abbreviations**

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ACE	Agricultural Cooperative Regional Water Quality Elements
ALG	Agricultural Land Acreage
AWT	Advanced Waste Treatment
BEBR	Bureau of Economic and Business Research
BMAP	Basin Management Action Plan
BMPs	Best Management Practices
CAFO	Concentrated Animal Feeding Operation
CASTNET	Clean Air Status and Trends Network
cfs	Cubic Feet Per Second
CMAQ	Community Multiscale Air Quality
DEP	Florida Department of Environmental Protection
DMR	Discharge Monitoring Report
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
F.A.C.	Florida Administrative Code
F.A.R.	Florida Administrative Register
FDACS	Florida Department of Agriculture and Consumer Services
FDOH	Florida Department of Health
FDOT	Florida Department of Transportation
FF	Farm Fertilizer
FFS	Florida Forest Service
FLWMI	Florida Water Management Inventory
FOWA	Florida Onsite Wastewater Association
F.S.	Florida Statutes
FSAID	Florida Statewide Agricultural Irrigation Demand
FYN	Florida Yards and Neighborhoods
GIS	Geographic Information System
gpd	Gallons Per Day
HB	House Bill
IV	Implementation Verification
in/yr	Inch Per Year
lbs	Pounds
lbs/yr	Pounds Per Year
lbs-N/yr	Pounds of Nitrogen Per Year
IDDE	Illicit Discharge Detection and Elimination
LVS	Linear Vegetation Survey
LW	Livestock Waste
MFLs	Minimum Flows and Levels
mgd	Million Gallons Per Day
mg/L	Milligrams Per Liter
N	Nitrogen
NA	Not Applicable
NADP	National Atmospheric Deposition Program
NELAC	National Laboratory Environmental Accreditation Conference

NELAP	National Environmental Laboratory Accreditation Program
NHD	National Hydrography Database
NMP	Nutrient Management Plan
NNC	Numeric Nutrient Criteria
NOI	Notice of Intent
NPDES	National Pollutant Discharge and Elimination System
NSF	NSF International (formerly National Sanitation Foundation)
NSILT	Nitrogen Source Inventory Loading Tool
NTN	National Trends Network
OAWP	Office of Agricultural Water Policy (FDACS)
OFS	Outstanding Florida Spring
OSTDS	Onsite Sewage Treatment and Disposal System
PFA	Priority Focus Area
PSA	Public Service Announcement
QA/QC	Quality Assurance/Quality Control
RAP	Reasonable Assurance Plan
RIB	Rapid Infiltration Basin
RPS	Rapid Periphyton Survey
SBIO	DEP Statewide Biological Database
SCI	Stream Condition Index
SJRWMD	St. Johns River Water Management District
SOP	Standard Operating Procedure
STF	Sports Turf Fertilizer
STORET	Florida Storage and Retrieval Database
SWIM	Surface Water Improvement and Management
SWMP	Stormwater Management Program
TBD	To Be Determined
TDEP	Total Atmospheric Deposition Model
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UFA	Upper Floridan aquifer
UF-IFAS	University of Florida-Institute of Food and Agricultural Sciences
USGS	U.S. Geological Survey
UTF	Urban Turfgrass Fertilizer
WBID	Waterbody Identification (Number)
WIN	Florida Watershed Information Network Database
WMD	Water Management District
WRF	Water Reclamation Facility
WWTF	Wastewater Treatment Facility

## **Executive Summary**

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The Florida Springs and Aquifer Protection Act (Chapter 373, Part VIII, Florida Statutes [F.S.]),

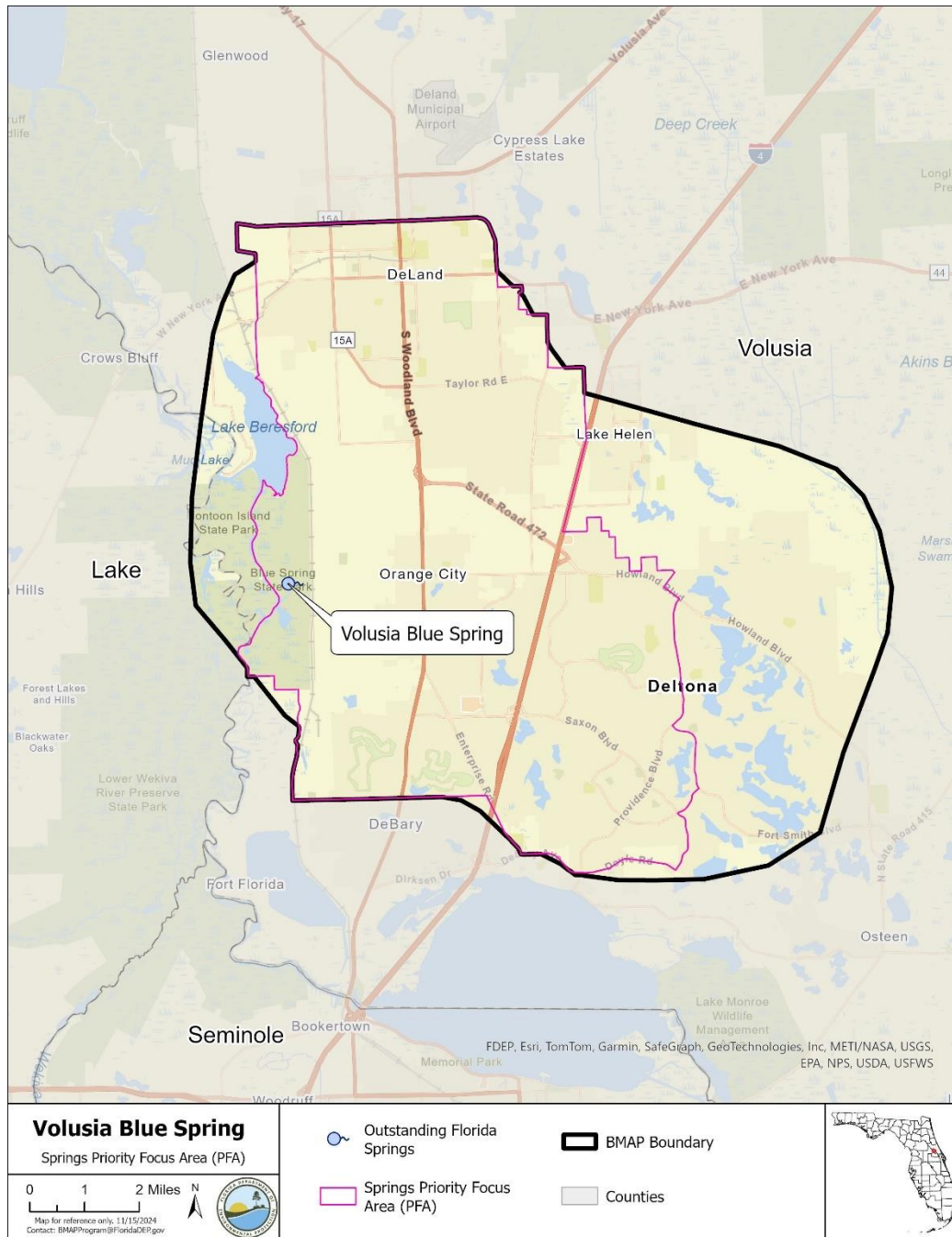


along with the Watershed Restoration Act (section 403.067, F.S.), provide for the protection and restoration of Outstanding Florida Springs (OFS), which comprise 24 first magnitude springs, 6 additional named springs, and their associated spring runs. DEP has assessed water quality in each OFS and has determined that 26 of the 30 OFS are impaired for the nitrate form of nitrogen. Volusia Blue Spring is one of the impaired first magnitude OFS.

The Volusia Blue Spring Basin Management Action Plan (BMAP) area (**Figure ES-1**) comprises 69,046 acres and encompasses portions of the City of DeBary, City of DeLand, City of Deltona, and City of Lake Helen; all of the City of Orange City; and a portion of unincorporated Volusia County.

### **Volusia Blue Spring Priority Focus Area (PFA)**

The PFA (see **Appendix D**) comprises 44,239 acres and includes the City of Orange City and portions of Volusia County, City of DeLand, City of DeBary, and City of Deltona. The PFA represents the area in the basin where the aquifer is most vulnerable to inputs and where there are the most connections between groundwater and Volusia Blue Spring.



**Figure ES-1. Volusia Blue Spring BMAP and PFA boundaries**

## Nitrogen Source Identification, Required Reductions, and Options to Achieve Reductions

Volusia Blue Spring was identified as impaired because of a biological imbalance caused by excessive concentrations of nitrate in the water. In 2014, total maximum daily loads (TMDLs) for nitrate were developed as water quality restoration targets for Volusia Blue Spring and Volusia Blue Spring Run. The TMDLs established a monthly average nitrate-nitrite target of 0.35 milligrams per liter (mg/L).

DEP developed the Nitrogen Source Inventory Loading Tool (NSILT) to provide information on the major categories of nitrogen sources in the groundwater and spring contributing areas for the springs. Among other sources, urban turfgrass fertilizer (UTF) represents 15% of the nitrogen loading to groundwater, onsite sewage treatment and disposal systems (OSTDS or septic systems) 74%, and sports turfgrass fertilizer (STF) 2% of the total loading to groundwater based on the DEP analysis conducted using the NSILT.

To achieve the TMDL target at the spring vent, the total load reduction required is 301,881 pounds of nitrogen per year (lbs-N/yr). The following milestones are being established to measure progress towards achieving the total necessary load reduction of 301,881 pounds (lbs):

- 2028 - Reduction of 90,564 lbs-N/yr (30%).
- 2033 - Additional reduction of 150,941 lbs-N/yr (50%).
- 2038 - Additional reduction of 60,376 lbs-N/yr (20%).

While reductions to groundwater will benefit the spring system, it is uncertain to know with precision how those reductions will impact the necessary reductions at the spring vent. DEP will continue to monitor the spring to better understand the benefits from the policies and implemented projects and management strategies within the springshed. The BMAP is designed to achieve 80% of the load reductions to the spring vent by 2033 and 100% by 2038. DEP will evaluate progress towards these milestones and will report to the Governor and Florida Legislature annually. Assessment of progress toward these milestones must be conducted every five years and revisions to the BMAP must be made as appropriate. BMAPs use an adaptive management approach that allows for incremental load reductions through the implementation of projects and management strategies; however, the restoration target, the TMDL, remains the same. If needed, policies and management strategies will be adjusted to ensure the target spring vent concentration is achieved. This may include requiring additional management strategies or expanding the area to which the existing OSTDS remediation policies apply. Any such change would be incorporated into a future updated BMAP through a formal adoption process.

Cost estimates were provided by stakeholders for more than 50% of the projects and management actions listed in the BMAP. The total estimated cost for these projects exceeds \$278 million. Approximately \$89 million have been expended to date on completed projects. While stakeholders are required to implement additional projects listed in the BMAP, accurate cost estimates have not yet been developed for every project. The total cost estimate for all projects referenced in the BMAP is unknown until more cost information is provided. By the next 5-year BMAP milestone, stakeholders are anticipated to achieve additional reductions in annual nutrient loadings to the Volusia Blue Spring Basin, including 5,652 pounds of total nitrogen (TN), based on conservative estimates of the planned and underway projects listed to date.

For the list of water quality improvement projects and management strategies, see **Appendix B**. Included are owner- implemented best management practices (BMPs) for farm fertilizer (FF), livestock waste (LW) and STF; wastewater treatment facility (WWTF) upgrades; projects to

reduce UTF application; and OSTDS remediation projects.

Successful BMAP implementation requires commitment, dedicated funding and ongoing follow-up. Stakeholders have expressed their intention to carry out the plan, monitor its effects, and continue to coordinate within and across jurisdictions to achieve nutrient reduction goals. As the BMAP and TMDL must be achieved by 2038, the DEP, water management districts (WMDs), FDOH, and FDACS will also implement state-level management strategies using relevant state and federal funding.

## **Restoration Approaches**

Reduction in the nitrogen loading to the aquifer is needed to achieve the load reduction requirements at the spring vent. To ensure that load reductions are achieved at the spring vent, the restoration actions described below are being implemented. These actions are designed to reduce nutrient loading to the aquifer, which will reduce the load at the vent and ultimately achieve the TMDL target. Monitoring at the spring vent during implementation will continue to assess progress.

- **New OSTDS** – Florida law (sections 373.811 and 403.067, F.S) and the OSTDS remediation plan required under subsection 373.807(3), F.S., prohibit new OSTDS on lots of one acre or less within the BMAP boundary, unless the systems are enhanced nutrient-reducing OSTDS systems or other wastewater treatment systems that achieve at least 65% nitrogen reduction.
- **Existing OSTDS** –For the BMAP remediation plan required under subsection 373.807(3), F.S. (detailed in **Appendix E**), within the PFA, any OSTDS on lots one acre or less that requires a permit to modify or replace an existing system pursuant to Chapter 62-6, Florida Administrative Code (F.A.C.), must connect to sewer if available, or if not available, upgrade or replace the OSTDS to meet enhanced nutrient reducing OSTDS requirements that achieve at least 65% nitrogen reduction, unless sewer connections will be available based on a BMAP-listed project. All OSTDS subject to this policy must include enhanced nitrogen treatment by 2038. Local governments may expand the geographic extent of this requirement by incorporating it into their local ordinances and local government specific remediation plans required under section 403.067, F.S., however, local governments are responsible for implementing their ordinances. In the 2020 Clean Waterways Act, local governments were required to submit OSTDS remediation plans in accordance with section 403.067, F.S., if applicable, to DEP by Aug. 1, 2024, to address existing OSTDS and the potential for future OSTDS.
- **WWTFs** – The required treatment of wastewater effluent to advanced waste standards applies to all surface water disposal and certain reuse disposal determined to be necessary by the department within the BMAP area. In the 2020 Clean Waterways Act, local governments were required to submit WWTF plans in accordance with section 403.067, F.S., if applicable, to DEP by Aug. 1, 2024, to address wastewater loads and the potential for future additional loads, including those created from sewerage OSTDS. 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.

- **Local governments with OSTDS or WWTF** are expected to meet their overall reduction milestones and to keep their project lists current, including any efforts to address OSTDS loading and any necessary wastewater facility improvements. Private wastewater facilities are also expected to meet their assigned reductions and keep their project lists current. The projects identified in these plans have been included in the BMAP project list under **Appendix B** and are adopted as part of the BMAP requirements.
- **UTF** – UTF consists of fertilizers applied to turfgrass typically found in residential and urban areas (including residential lawns and public green spaces). Fertilizers are applied either by the homeowner or a lawn service company on residential properties. On nonresidential properties, fertilizers may be applied by contractors or maintenance staff. UTF sources are assigned to the applicable local government. Strategies to address UTF include education, enforcement of local government ordinances related to appropriate use of fertilizer, and stormwater projects.
- **STF** – STF sources include golf courses and other sporting facilities. Reductions from most sports facilities, including publicly-owned golf courses and school district sites, are assigned to the applicable local government. Private sporting facilities are assigned to the owner. Sporting facilities are required to follow the 2025 Sports Turf BMP Manual to protect water resources. Reductions from private golf courses are assigned to the golf course owners. All golf courses within the BMAP are required to follow the 2021 DEP Golf Course BMP Manual and submit for approval a final nutrient management plan (NMP) to DEP within two years of BMAP adoption, and to follow their plan.
- **FF** – All FF sources are required to implement BMPs or perform monitoring to demonstrate compliance with the TMDL. A 15% reduction to groundwater is estimated for owner-implemented BMPs. Additional reduction credits could be attained through better documentation of nutrient reductions achieved through BMP implementation or implementation of additional agricultural cost-share BMPs, projects or practices, such as precision irrigation, soil moisture probes, controlled release fertilizer and cover crops.
- **LW** – All LW sources are required to implement BMPs or perform monitoring to demonstrate compliance with the TMDL. A 10% reduction to groundwater is estimated for owner-implemented BMPs. Additional credits could be attained through better documentation of nutrient reductions achieved through BMP implementation, NMP updates and implementation, and additional projects.
- **Other Agriculture** - Cooperative agricultural regional water quality improvement elements are being developed to reduce agricultural nutrient loading in combination with owner-implemented BMPs, cost-share BMPs, other measures, and state-sponsored regional projects. The BMAP outlines a collaborative framework for identifying, prioritizing and implementing regional projects that address nutrient loading from

agricultural operations. Partner agencies will work in annual cycles with agricultural landowners to provide technical support, regulatory guidance and funding opportunities to enhance implementation and the success of regional water quality improvement initiatives.

## Section 1: Background

### 1.1 Legislation

Chapter 373, Part VIII, F.S., the Florida Springs and Aquifer Protection Act, along with the Watershed Restoration Act (section 403.067, F.S.), provides for the protection and restoration of OFS, which comprise 24 first magnitude springs, 6 additional named springs, and their associated spring runs. DEP has assessed water quality in each OFS and determined that 26 of the 30 OFS are impaired for the nitrate form of nitrogen. Volusia Blue Spring is an impaired first magnitude OFS. Development of the BMAP to meet the requirements of the Florida Springs and Aquifer Protection Act for the Volusia Blue Spring Basin was initiated in 2016. Since adoption, additional statutory requirements in Chapter 373, F.S., and section 403.067, F.S., have been enacted into law that continue to enhance the protection and restoration of water quality throughout Florida. For specific requirements, please refer to the source management sections below.

### 1.2 Water Quality Standards and TMDLs

A TMDL represents the maximum amount of a given pollutant that a waterbody can assimilate and still meet water quality criteria. Volusia Blue Spring is a Class III waterbody with a designated use of recreation, propagation, and the maintenance of a healthy, well-balanced population of fish and wildlife. These waters are impaired by nitrate nitrogen, which in excess has been demonstrated to adversely affect flora or fauna through the excessive growth of algae. Excessive algal growth results in ecological imbalances in springs and rivers and can produce human health problems, foul beaches, inhibit navigation, and reduce the aesthetic value of the resources.

DEP adopted a nutrient TMDLs for Volusia Blue Spring in 2014 (**Table 1**) of 0.35 mg/L of nitrate-nitrite as monthly average to be protective of the aquatic flora and fauna. The period of record for water quality data evaluated for the TMDLs was January 1, 2001 through May 22, 2013.

**Table 1. Restoration target for Volusia Blue Spring**

Waterbody or Spring Name	Waterbody Identification (WBID) Number	Parameter	TMDL (mg/L)
Volusia Blue Spring	28933	Nutrients (Nitrate), monthly average	0.35
Volusia Blue Spring Run	28933A	Nutrients (Nitrate), monthly average	0.35

### 1.3 BMAP Requirements

Subsection 403.067(7), F.S., provides DEP with the statutory authority to develop and implement BMAPs. A BMAP is a comprehensive set of strategies to achieve the required pollutant load reductions. It requires any entity with a specific pollution load reduction to submit to DEP projects or strategies to meet 5-year pollution reduction milestones. In addition to this authority, the Florida Springs and Aquifer Protection Act (Part VIII of Chapter 373, F.S.) describes additional requirements and prohibitions for the 30 OFS.

## **1.4 BMAP Area**

The Volusia Blue Spring BMAP area (**Figure 1**) comprises 69,046 acres and encompasses portions of the City of DeBary, City of DeLand, City of Deltona, and City of Lake Helen; all of the City of Orange City; and a portion of unincorporated Volusia County.

This area includes the land, surface water basin and the groundwater contributing areas for the springs (or springshed). The springshed, an area of land that contributes water to a spring or group of springs mainly via groundwater flow, was delineated by SJRWMD based on U.S. Geological Survey (USGS) potentiometric surface contour maps. For Volusia Blue Spring, the BMAP area is the springshed.

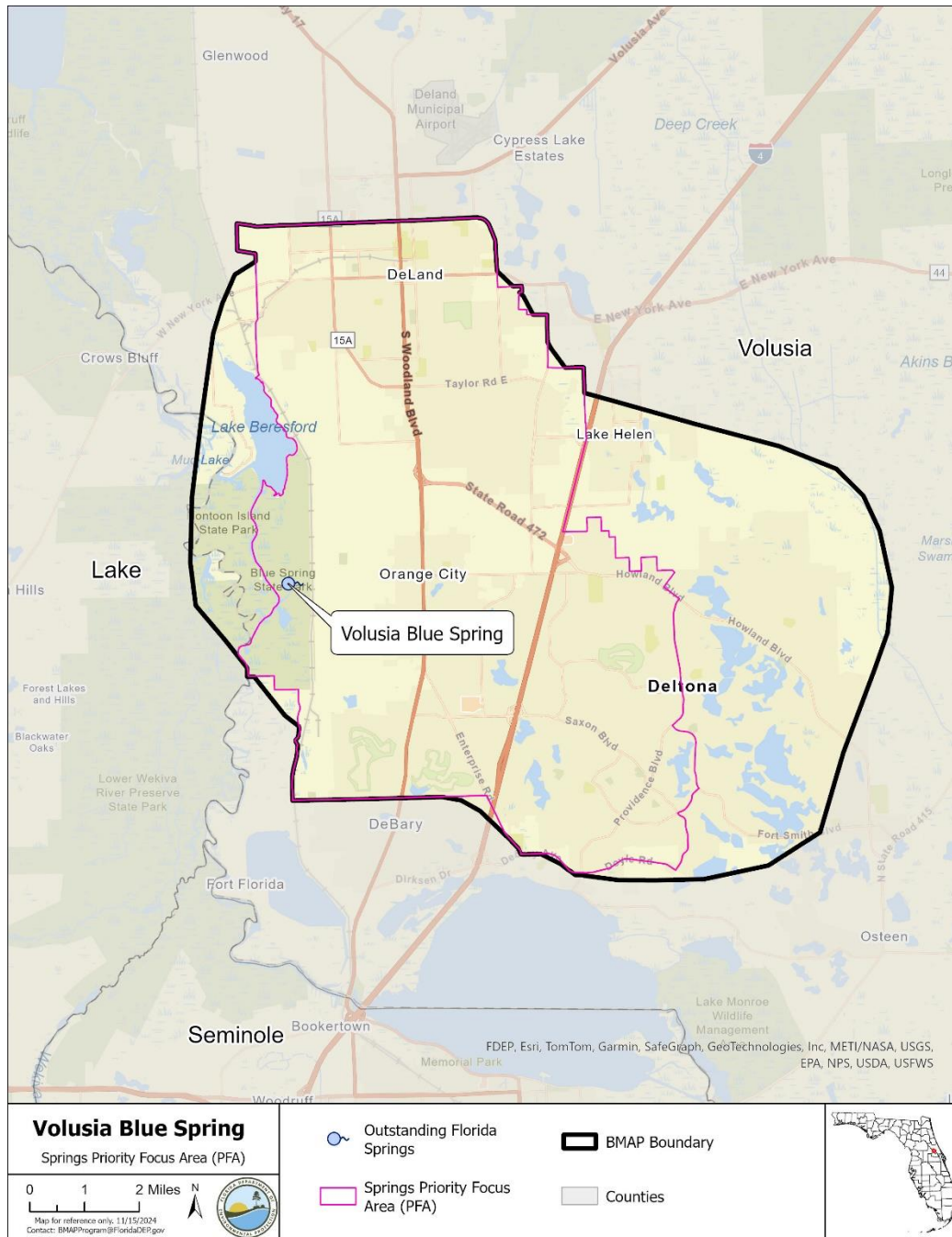
## **1.5 Priority Focus Area (PFA)**

In compliance with the Florida Springs and Aquifer Protection Act, the 2018 BMAP delineated a PFA, defined as the area of a basin where the Floridan aquifer is generally most vulnerable to pollutant inputs and where there is a known connectivity between groundwater pathways and an OFS. The PFA provides a guide for focusing restoration strategies where science suggests these efforts will most benefit the springs. The document describing the delineation process for the PFA is on the DEP website (link is provided in **Appendix D**).

### **1.5.1 Description**

Nitrogen sources are more likely to influence groundwater quality under certain conditions. For example, where soils are sandy and well drained, less nitrogen is converted to gas and released into the atmosphere or taken up by plants, compared with other soil types. Therefore, local soil types play a role in how much nitrogen travels from the land surface to groundwater in a specific springshed. Also, the underlying geologic material influences the vulnerability of the underlying aquifers and the rate of lateral movement within the Floridan aquifer toward the springs. These conditions, and others, were considered in the delineation of the PFA (see **Appendix D**). The geographic information system (GIS) files associated with the PFA boundary are available to the public on the DEP Map Direct webpage.





**Figure 1. Volusia Blue Spring BMAP and PFA boundaries**

### 1.5.2 Additional Requirements

In accordance with section 373.811, F.S., the following activities are prohibited in the BMAP boundary:

- New domestic wastewater disposal facilities, including rapid infiltration basins (RIBs), with permitted capacities of 100,000 gallons per day (gpd) or more, except for those facilities that meet an advanced waste treatment (AWT) standard of no more than 3 mg/L TN on an annual permitted basis.

- New OSTDS or septic systems on lots one acre or less inside the BMAP where central sewer is available. If central sewer is unavailable, then the owner must install a DEP-approved enhanced nutrient-reducing OSTDS that achieves 65% nitrogen reduction, or other wastewater system that achieves 65% reduction.
- New facilities for the disposal of hazardous waste.
- The land application of Class A or Class B domestic wastewater biosolids not in accordance with a DEP-approved NMP establishing the rate at which all biosolids, soil amendments, and sources of nutrients at the land application site can be applied to the land for crop production, while minimizing the amount of pollutants and nutrients discharged to groundwater or waters of the state.
- New agricultural operations that do not implement BMPs, measures necessary to achieve pollution reduction levels established by DEP, or groundwater monitoring plans approved by a WMD or DEP.

### ***1.5.3 Biosolids and Septage Application Practices***

The aquifer contributing to the springs is highly vulnerable to contamination by nitrogen sources and where soils have a high to moderate tendency to leach applied nitrogen. DEP previously documented elevated nitrate concentrations in groundwater beneath septage application zones in contributing areas to springs. Within BMAP areas for OFS, section 373.811, F.S. prohibits the land application of Class A or Class B domestic wastewater biosolids not in accordance with a department approved NMP establishing the rate at which all biosolids, soil amendments, and sources of nutrients at the land application site can be applied to the land for crop production while minimizing the amount of pollutants and nutrients discharges to groundwater or waters of the state. Further, there are additional requirements for biosolid and septage application practices under Chapter 62-640 F.A.C.

## **1.6 Other Scientific and Historical Information**

In preparing this BMAP, DEP collected and evaluated credible scientific information on the effect of nutrients, particularly forms of nitrogen, on springs and springs systems. Some of the information collected is specific to the Volusia Blue Spring Basin, while other references provide information on related knowledge for restoring springs, such as nitrogen-reducing technologies, the treatment performance of OSTDS, and runoff following fertilizer applications.

## **1.7 Stakeholder Involvement**

Stakeholder involvement is critical to develop, 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 Volusia Blue Spring 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, update the NSILT, develop entity required reductions, and update monitoring requirements. Public meetings were held virtually in January 2024 and May 2024. An in-person meeting was held on October 29, 2024, in Deltona, Florida. 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 April 17, 2025, that was noticed in the F.A.R. and in local newspapers.

In addition to public meetings, DEP held 7 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.

## 1.8 Description of BMPs Adopted by Rule

**Table 2** identifies FDACS adopted agricultural BMPs and BMP manuals relevant to this BMAP, along with environmental resource permitting requirements for certain land use activities.

**Table 2. BMPs and BMP manuals adopted by rule as of July 2025**

Agency	F.A.C. Chapter	Chapter Title
FDACS Office of Agricultural Water Policy (OAWP)	5M-1	Office of Agricultural Water Policy
FDACS OAWP	5M-6	Florida Nursery Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-8	Florida Vegetable and Agronomic Crop (VAC) Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-9	Florida Sod Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices

<b>Agency</b>	<b>F.A.C. Chapter</b>	<b>Chapter Title</b>
<b>FDACS OAWP</b>	5M-11	Florida Cattle Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
<b>FDACS OAWP</b>	5M-12	Conservation Plans for Specified Agricultural Operations
<b>FDACS OAWP</b>	5M-13	Florida Specialty Fruit and Nut Crop Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
<b>FDACS OAWP</b>	5M-14	Florida Equine Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
<b>FDACS OAWP</b>	5M-16	Florida Citrus Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
<b>FDACS OAWP</b>	5M-17	Florida Dairy Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
<b>FDACS OAWP</b>	5M-18	Florida Agriculture Wildlife Best Management Practices
<b>FDACS OAWP</b>	5M-19	Florida Poultry Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
<b>FDACS Division of Agricultural Environmental Services</b>	5E-1	Fertilizer
<b>FDACS Division of Aquaculture</b>	5L-3	Aquaculture Best Management Practices, 2023 Edition
<b>FDACS Florida Forest Service</b>	5I-6	Best Management Practices for Silviculture, 2008 Edition
<b>FDACS Florida Forest Service</b>	5I-8	Florida Forestry Wildlife Best Management Practices for State Imperiled Species
<b>DEP</b>	62-330	Environmental Resource Permitting

Additionally in 2024, the Florida Legislature ratified changes to the Statewide Stormwater Rule related to the minimum treatment requirements for Environmental Resource Permits for urban stormwater. The treatment requirements for nitrogen and phosphorus were increased to reduce the nutrient loading of future urban development and other structural changes to assist with water quality restoration in impaired waters.

## Section 2: Implementation to Achieve TMDL

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### 2.1 Allocation of Pollutant Loads

#### 2.1.1 *Nutrients in the Springs and Spring Systems*

DEP developed the NSILT to provide information on the estimated nitrogen loading from major sources to groundwater in the spring contributing area for the OFS (**Table 3**). The NSILT was updated in 2023 with more current data and some methodology improvements and revised in 2024 based on stakeholder feedback. The NSILT is a GIS- and spreadsheet-based tool that provides spatial estimates of the relative contribution of nitrogen from major nitrogen sources to groundwater and accounts for the transport pathways and processes affecting the various forms of nitrogen as they move from the land surface through the soil and geologic strata to groundwater.

The first major factor to be considered in estimating the loading to groundwater in the NSILT is the attenuation of nitrogen as it moves from its source through the environment, before it reaches the Upper Floridan aquifer (UFA). Biological and chemical processes that occur as part of the nitrogen cycle, as well as hydrogeological processes, control the movement of nitrogen from the land surface to groundwater. Many of these processes attenuate (impede or remove) the amount of nitrogen transported to groundwater. An understanding of how water moves through the subsurface and the processes that transform the different forms of nitrogen is essential for estimating nitrogen loading to groundwater from various sources.

A second major factor to consider in estimating the loading to groundwater is the geologic features in the springshed and the related "recharge rate." Water movement between the shallow groundwater (surficial aquifer, where present) and the deeper aquifer (UFA) is slowed by a low permeability layer of clay, silt and fine sand that retards the vertical movement of infiltrating water from the surface. The UFA is in limestone that can be prone to dissolving and, over geologic time, develop numerous karst features (sinkholes, caves and conduits).

These features allow water to move directly and relatively rapidly from the land surface into the aquifer, and in some areas, the groundwater in the aquifer then moves rapidly to the springs.

Potential recharge rates from the surface to the UFA are affected by variations in geologic materials and the presence of karst features. DEP estimated three recharge rate categories, which were applied to the NSILT:

- Low recharge (Less than 5 inches per year [in/yr]).
- Medium recharge (5 to 15 in/yr).
- High recharge (15 in/yr or greater).

In the NSILT, DEP applied different attenuation factors to different types of sources to estimate the various biological, chemical and hydrogeological effects. Attenuation is the process where the nitrogen source is removed or stored by chemical and biological processes before it reaches the groundwater. In the NSILT estimates, the attenuation rates ranged from 90% (for atmospheric deposition) to 25% (for wastewater disposal in a RIB). This means that, for these examples, only 10% of nitrogen from atmospheric deposition is expected to reach the aquifer, while 75% of nitrogen from a RIB is expected to reach groundwater, because the remainder is attenuated by various chemical and biological processes.

Phosphorus is naturally abundant in the geologic material underlying much of Florida and is often present in high concentrations in surface water and groundwater. Monitoring and evaluation of phosphorus and other chemical and biological influences on the springs continues as the nitrate-nitrite TMDL is implemented.

**Table 3. Estimated total nitrogen load to groundwater by source in the BMAP area**

<b>Nitrogen Source</b>	<b>Total Nitrogen Load to Groundwater in Pounds of Nitrogen Per Year (lbs/yr)</b>	<b>% Contribution</b>
<b>OSTDS</b>	437,414	74%
<b>UTF</b>	91,784	15%
<b>Atmospheric Deposition</b>	21,938	4%
<b>FF</b>	3,885	1%
<b>STF</b>	962	<1%
<b>STF- Golf</b>	11,330	2%
<b>LW</b>	4,051	1%
<b>WWTFs</b>	23,461	4%
<b>Total</b>	<b>594,824</b>	<b>100%</b>

### 2.1.2 Assumptions and Considerations

The NSILT estimates are based on the following assumptions and considerations:

- **NSILT Nitrogen Inputs** – The methods used to estimate nitrogen inputs for each pollutant source were based on a detailed synthesis of information, including direct water quality measurements, census data, surveys following University of Florida-Institute of Food and Agricultural Sciences (UF-IFAS) trainings, WWTF permits, published scientific studies and reports, and information obtained in meetings with agricultural producers, WMDs and FDACS. For some pollutant source categories, nitrogen inputs were obtained using assumptions and extrapolations and, as a result, these inputs may be further refined if more detailed

information becomes available. More details on the NSILT methodology and assumptions are in the NSILT Technical Support Document in **Appendix F**.

- **OSTDS Inventory and Load Contribution** – A per capita contribution to an OSTDS of 10 lbs-N/year was used to calculate the loading from OSTDS. The average household contribution was estimated based on 2020 U.S. Census Bureau Data on the average number of people per household by county (2.43 for Volusia County).

The total number of OSTDS in the basin is estimated based on the Florida Water Management Inventory (FLWMI) data. OSTDS loading calculations in future BMAPs may be adjusted based on improved information on the number, location and type (conventional and enhanced nutrient-reducing) of existing septic systems, and will include updates on additional OSTDS installed in the area since the previous BMAP adoption.

Note that all values listed in this report are rounded, while the actual calculations were completed using whole numbers.

Other assumptions and considerations for BMAP implementation include the following:

- **Unquantified Project Benefits** – Nitrogen reductions for some of the projects and activities listed in this BMAP cannot currently be quantified. However, these projects are included because of their assumed positive impact to reduce pollutant loads, and estimated loading reductions may be determined at a later date.
- **Atmospheric Deposition** – Atmospheric sources of nitrogen are local, national and international. Local sources include the petroleum-fueled combustion engines of cars and trucks as well as fertilizers used for agricultural and residential uses. Other local or regional sources may include power plants and industrial facilities. Atmospheric sources have generally low nitrogen concentrations compared with other sources and are further reduced through additional biological and chemical processes before they reach groundwater. Recent data (Himes and Dawson, 2017) indicate that the deposition of nitrogen has been generally decreasing in Florida with an up to 55% decrease in atmospheric deposition by 2028, possibly related to power plant fuel source changes and air treatment upgrades as well as the increased use of electric vehicles, decreasing mobile sources (Himes and Dawson, 2017) and increased use of solar energy. This gradual decrease in atmospheric deposition of nitrogen will assist with creating the necessary reductions for this source. However, atmospheric deposition is a nitrogen source and is, therefore, estimated as a loading factor to the springs. As other sources are addressed and decreased, the relative percentage contribution of atmospheric sources is expected to increase. For this BMAP, atmospheric deposition sources and trends will be re-evaluated periodically. The regulatory programs that limit atmospheric sources are

primarily national or international, which limits how this BMAP can regulate these sources.

- **PFA** – The PFA provides a guide for focusing strategies where science suggests efforts will best benefit the springs. The PFA boundary may be adjusted in the future if additional relevant information becomes available.
- **Project Collection Period** – The BMAP project collection period is limited to projects after a certain date, based on the data used to calculate the reductions needed. Reductions from older projects are accounted for in the updated baseline loading. The timing eligibility for projects is dependent on the data used to estimate the NSILT loads, which also depend on the source type. The following project cutoff dates apply in this BMAP document, which are based on the data used in the most recent NSILT update.
  - Urban and agricultural stormwater projects: Projects completed in the BMAP, on or after January 1, 2010.
  - WWTF Improvements: Projects completed on or after January 1, 2022, or later. Prior projects were included in the NSILT estimates.
  - OSTDS Enhancements/50% Treatment or OSTDS Connection to Sewer: Projects completed on or after January 1, 2022, based on the FLWMI data year used for Volusia County in the 2023 NSILT update.
- **Legacy Sources** – Land uses, activities or management practices not currently active in the basin may still be affecting the nitrate concentration of the springs. The movement of water from the land surface through the soil column to the UFA and through the UFA to the spring system varies both spatially and temporally and is influenced by local soil and aquifer conditions. As a result, there may be a time lag between when nitrogen input to the UFA occurs and, ultimately, when that nitrogen arrives at the impaired spring. The timing of this delay is not fully known.
- **Milestones** – Assessment of progress toward the milestones must be conducted every five years and revisions to the plan must be made as appropriate. BMAPs use an adaptive management approach that allows for incremental load reductions through the implementation of projects and management strategies; however, the restoration target, or TMDL, remains the same.
- **Implementation Schedule** – Nutrient load reduction in BMAP implementation is intended to occur over 20 years. To meet the TMDL within this timeframe, this plan defines nitrogen reduction milestones for 2028 (30%), 2033 (+50%) and 2038 (+20%) implementation (see **Section 2.1.5** for further details). Further, the total reductions and the project credits may be adjusted under the adaptive management approach used for the BMAP. This approach requires regular follow-up to ensure that management strategies are carried out and that their incremental effects are

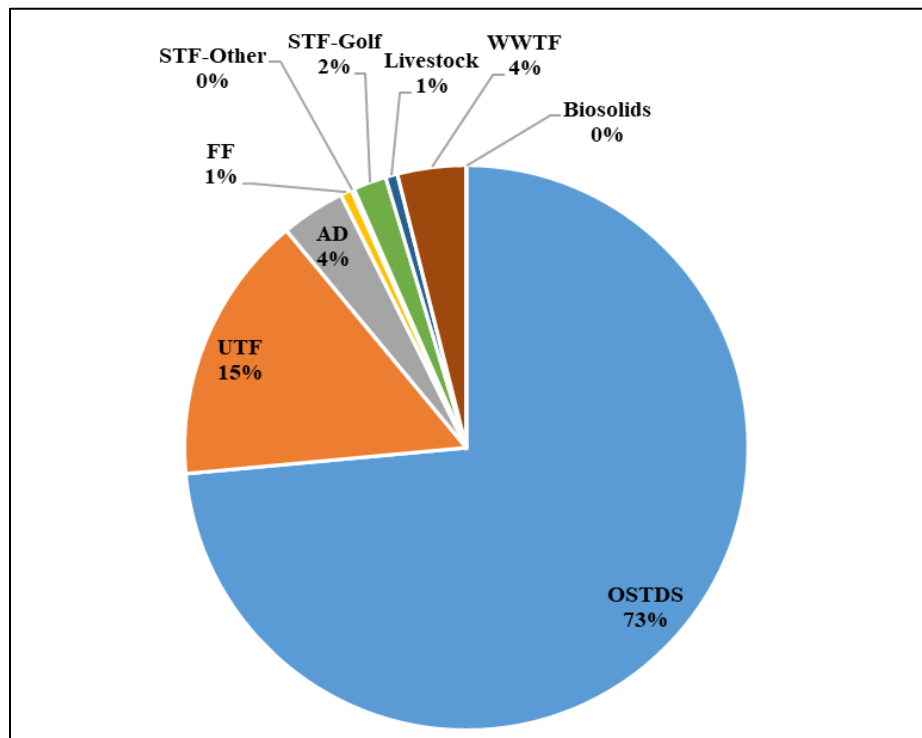


assessed. The process acknowledges that there is some uncertainty associated with the outcomes of proposed management strategies and the estimated response in nitrogen concentration at the springs. As more information is gathered and progress towards each milestone is reviewed, additional management strategies may be developed or existing strategies refined to better address the sources of nitrogen loading to achieve the TMDL.

- **Changes in Spring Flows** – The role of this BMAP is specifically to address the implementation of projects that reduce nitrogen load to groundwater, while the minimum flows and levels (MFLs) established for specific springs address water flows and levels. To maximize efforts between the two programs, it is recommended that when practicable, springs protection projects provide both water quality and quantity benefits.

### 2.1.3 Loading by Source

Based on the updated NSILT results, **Figure 2** depicts the estimated percentage of nitrogen loading to groundwater by source in the BMAP. For example, UTF represents 15% of the total nitrogen loading to groundwater, OSTDS loads are 74%, and STF loads are 2%. Stormwater loading to groundwater is incorporated into the various source categories.



**Figure 2. Loading to groundwater by source in the Volusia Blue Spring BMAP area**

### 2.1.4 Loading Allocation

The nitrogen source reductions are based on the estimated current nitrogen loading to groundwater in the NSILT, the measured nitrate concentrations and flows at the vent, and the TMDL target

nitrate concentration. **Table 4** lists the measured nitrate (as nitrogen) loads at the spring vent compared with the TMDL nitrate target concentration of 0.35 mg/L. The difference between the spring vent loading and the TMDL loading target is the required percent reduction to meet the TMDL. The total required load reduction is allocated to sources and to entities based on existing loads.

**Table 4. Total reduction required to meet the TMDL**

Description	Nitrogen Loads (lbs/yr)	Notes Regarding Data Used
<b>Total Load at Spring Vent</b>	196,247	Upper 95% confidence interval - nitrate data and flow data from 2012 to 2022 (0.71 mg/L and 140.45 cubic feet per second [cfs])
<b>TMDL Load</b>	96,649	TMDL target is 0.35 mg/L and using the spring vent flow data from 2012 to 2022
<b>Percent Reduction</b>	51	Calculated reduction needed based on the total load at the spring vent and the TMDL load
<b>NSILT Load</b>	594,824	Total load to groundwater from the updated NSILT
<b>Required Reduction</b>	<b>301,881</b>	<b>Percent reduction multiplied by the NSILT load</b>

### **2.1.5 Description of 2028, 2033, and 2038 Milestones/Reduction Schedule**

Under House Bill (HB) 1379 (2023), section 403.067, F.S., was amended to require that TMDL implementation be addressed through milestones that include a list of projects that will achieve the pollutant load reductions to meet the TMDL or the load allocations established pursuant to subsection 403.067(6), F.S. Each project must include a planning-level cost estimate and an estimated completion date. Any responsible entity within the BMAP that has a pollutant load reduction requirement must identify projects or strategies to undertake to meet the current 5-year pollution reduction milestone. The overall load reduction targets are 30% of the total by 2028, 80% of the total by 2033, and 100% of the total by 2038. DEP will evaluate progress towards these milestones and will report implementation progress and project information to the Governor and Florida Legislature annually through the statewide annual report. DEP will adjust management strategies if needed to reduce loading to the aquifer to ensure the target concentrations at the spring vent are achieved. This may include expanding the area to which the OSTDS remediation policies apply, requiring additional projects or management strategies, or developing other nutrient reduction policies. Any changes would be incorporated into a future BMAP update through a formal adoption process.

**Table 5** lists the estimated nitrogen reduction schedule by milestone. Progress will be tracked yearly and adjustments made as needed. At the 2028 milestone, progress will be assessed and load reductions adjusted as necessary. Entities have flexibility in the types and locations of projects as long as they achieve their required load reductions. Consideration may be given to entities with projects that are planned or underway that will be completed in a future milestone

phase, to allow adequate time for projects to be fully implemented. **Section 2.2** describes detailed source reduction strategies.

**Table 5. Nitrogen reduction schedule (lbs/yr)**

<b>2028 Milestone (30% of Total)</b>	<b>2033 Milestone (+50% of Total)</b>	<b>2038 Milestone (+20% of Total)</b>	<b>Total Nitrogen Reduction (100%)</b>
90,564	150,941	60,376	301,881

## 2.2 Load Reduction Strategy

A precise total load reduction to groundwater needed to meet the TMDL is dependent on a number of complex factors and may be refined if additional information becomes available. Based on current information, there must be a reduction of at least 301,881 lbs/yr TN by 2038 to achieve the TMDL. However, due to the distance of some reductions in relation to the spring vent and the uncertainties of fate and transport in the karst geology, additional actions may be necessary to ensure that loading at the spring vent is reduced to achieve the TMDL target within the timeline of the BMAP.

To increase our understanding of the relationship between project reductions and changes in concentrations at the spring vent, as well as the time lag of water movement within the springshed to the spring, water quality monitoring of existing groundwater within the BMAP and at the spring vent is essential.

## 2.3 Entity Allocations

The results from the NSILT and spring vent load analysis were used to calculate the nitrogen loads associated with each responsible stakeholder. **Table 6** summarizes the total required reductions assigned to each entity.

**Table 6. Total required reductions by entity**

Entity	Total Assigned Reductions by Entity (lbs/yr)
Agriculture	4,028
Volusia County	74,243
City of DeBary	7,694
City of Deland	41,036
City of Deltona	133,432
City of Lake Helen	6,089
City of Orange City	16,351
Blue Spring State Park	151
Private WWTFs	485
Private Golf Courses	5,750
Regional Projects	1,490
<b>Total, All Reductions</b>	<b>290,747</b>

**Table** includes the 5-year milestone required reductions for each entity. **Table 8** compares the current list of planned, underway, and completed projects to the first 5-year milestone. The management actions provided by responsible stakeholders to achieve these reductions are described in **Appendix B**. Regional projects are state-sponsored management actions that treat nutrient loading from one or many sources. A list of private WWTFs and private golf courses with allocations can be found in **Appendix J**.

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

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

**Table 7. 5-year milestone required reductions by entity**

Entity	2028 Milestone Assigned Reductions (30%) (lbs/yr)	2033 Milestone Assigned Reductions (80%) (lbs/yr)	2038 Milestone Assigned Reductions (100%) (lbs/yr)
Agriculture	1,208	3,222	4,028
Volusia County	22,273	59,394	74,243
City of DeBary	2,308	6,155	7,694
City of Deland	12,311	32,829	41,036
City of Deltona	40,029	106,745	133,432
City of Lake Helen	1,827	4,871	6,089
City of Orange City	4,905	13,080	16,351
Blue Spring State Park	45	121	151
Private WWTFs	145	388	485
Private Golf Courses	1,725	4,600	5,750
Regional Projects	447	1,192	1,490
<b>Total, All Reductions</b>	<b>87,224</b>	<b>232,598</b>	<b>290,747</b>

**Table 8. Progress towards next 5-year milestone by entity**

\* Planned and underway project reduction estimates are not verified by DEP.

\*\* Projected reductions include projects with a project status of completed, ongoing, planned, and underway.

Entity	2028 Milestone Assigned Reductions (30%) (lbs/yr)	TN Reductions from Completed & Ongoing Projects (lbs/yr)	TN Reductions from Planned & Underway Projects* (Not Verified) (lbs/yr)	Total Projected** Project TN Reductions by Entity Through 2028 (lbs/yr)
Agriculture	1,208	1,185	0	1,185
Volusia County	22,273	1,662	0	1,662
City of DeBary	2,308	235	0	235
City of Deland	12,311	542	5,652	6,194
City of Deltona	40,029	1,317	0	1,317
City of Lake Helen	1,827	68	0	68
City of Orange City	4,905	2,389	0	2,389
Blue Spring State Park	45	0	0	0
Private WWTFs	145	0	0	0
Private Golf Courses	1,725	0	0	0
Regional Projects	447	174	0	174
<b>Total, All Reductions</b>	<b>87,224</b>	<b>7,572</b>	<b>5,652</b>	<b>13,224</b>

## 2.4 Prioritization of Management Strategies

Required under Chapter 373.807, F.S., management strategies listed in **Appendix B** are ranked with a priority of high, medium, or low. To help prioritize projects towards the next milestone as required under 403.067, F.S., planning-level details for each listed project, along with their priority ranking have been determined.

Project status was selected as the most appropriate indicator of a project's priority ranking based primarily on if the project is going towards the next 5-year milestone, as well as need for funding. Overall, any project that is needed by a responsible entity to meet their next reduction milestone is considered a priority. Projects classified as "underway" were assigned a high or medium priority because some resources have been allocated to these projects, but additional assistance may be needed for the project to be completed. High priority was assigned to projects listed with the project status "planned" that are needed to meet the next milestone, as well as certain "completed" projects that are designated as "ongoing" each year, and select projects that are elevated because substantial, subsequent project(s) are reliant on their completion.

## **2.5 OSTDS Management Strategies**

### **2.5.1 Management of New OSTDS Loads**

Beginning July 1, 2023, sections 373.811 and 403.067, F.S., prohibit any new conventional OSTDS serving a lot of one acre or less where central sewer is available. Within this BMAP area, if central sewer is unavailable on lots of one acre or less, then the owner must install a DEP-approved enhanced nutrient-reducing OSTDS that achieves 65% nitrogen reduction, or other wastewater system that achieves 65% reduction.

### **2.5.2 Existing OSTDS Remediation**

Existing OSTDS in the PFA on lots of one acre or less must receive additional nitrogen treatment. This BMAP contains remediation plans 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.

Enhanced OSTDS can achieve an estimated 50% improvement in the load to groundwater compared to a conventional system. OSTDS replaced by sewer reduce the conventional nitrogen inputs by an estimated 95%, assuming a sewer connection to a WWTF meeting AWT levels. For projects addressing OSTDS loads, load reductions are estimated based on average nitrogen loads per person and the U.S. Census information on the county's average number of persons per household. The OSTDS location determines the applicable county. The improvement to groundwater is calculated by applying an attenuation rate as well as a location-based recharge factor, which estimates how likely the improved loading will travel into the deep groundwater system. For more information about how OSTDS loads were estimated, see the NSILT Technical Support Document in **Appendix F**.

#### **2.5.2.1 Section 373.807, F.S.**

Subsection 373.807(3), F.S., specifies that if, during the development of a BMAP for an OFS, DEP identifies OSTDS as contributors of at least 20% of nonpoint source nitrogen pollution in a PFA or if DEP determines OSTDS remediation is necessary to achieve the TMDL, the BMAP must include an OSTDS remediation plan. The OSTDS remediation plan requires policies for new and existing OSTDS to provide loading reductions consistent with achieving the TMDL within 20 years of plan adoption (subparagraph 373.807(1)(b)8., F.S.).

DEP assessed the overall OSTDS loading compared to other nitrogen sources in the BMAP area. Based on these assessments, DEP has determined that OSTDS contribute more than 20% of nonpoint source nitrogen pollution to the OFS. Based on the Volusia Blue Spring NSILT update, OSTDS contribute 74% pollutant loading in the springshed area (437,414 lbs/yr). Cumulatively, nitrogen loading from OSTDS within this springshed results in significant degradation of groundwater that impacts the Volusia Blue Spring BMAP area. Therefore, the comprehensive remediation of OSTDS, consistent with the requirements of this BMAP, is necessary to restore associated groundwater and surface to achieve the TMDL and to minimize nitrogen loads from future growth. As noted above, existing OSTDS in the PFA on lots of one acre or less must receive additional nitrogen treatment. The OSTDS remediation plan pursuant to section 373.807, F.S., is

incorporated as **Appendix E**.

Based on FLWMI data (2023), there are approximately 28,106 known and likely OSTDS in the PFA and approximately 43,763 known and likely OSTDS in the BMAP (**Figure 3**).

**Table E-1** in **Appendix E** summarizes the estimated count of OSTDS on lots one acre or less within the PFA.

**Figure E-1** shows the locations of all OSTDS in the BMAP area based on FLWMI; however, local governments or utilities may have more current information about OSTDS locations in their jurisdiction.

This remediation plan (**Appendix E**) establishes the remediation policy applicable to all existing OSTDS within the PFA on lots of one acre or less, based on (a) potential for reducing nitrogen loads by converting existing OSTDS to enhanced nitrogen removing systems or other wastewater systems achieving 65% nitrogen reduction, or by connecting existing OSTDS to central sewer; (b) total nitrogen load that must be reduced to achieve the TMDL; and (c) relative contribution of nitrogen load from existing OSTDS. Upon the need for a repair (major or minor) or a replacement OSTDS permit, an existing OSTDS must be upgraded to an enhanced nutrient-reducing OSTDS or other wastewater treatment system that achieves at least 65% nitrogen reduction. Repairs that qualify as new OSTDS permits will follow the requirements for new OSTDS as described above.

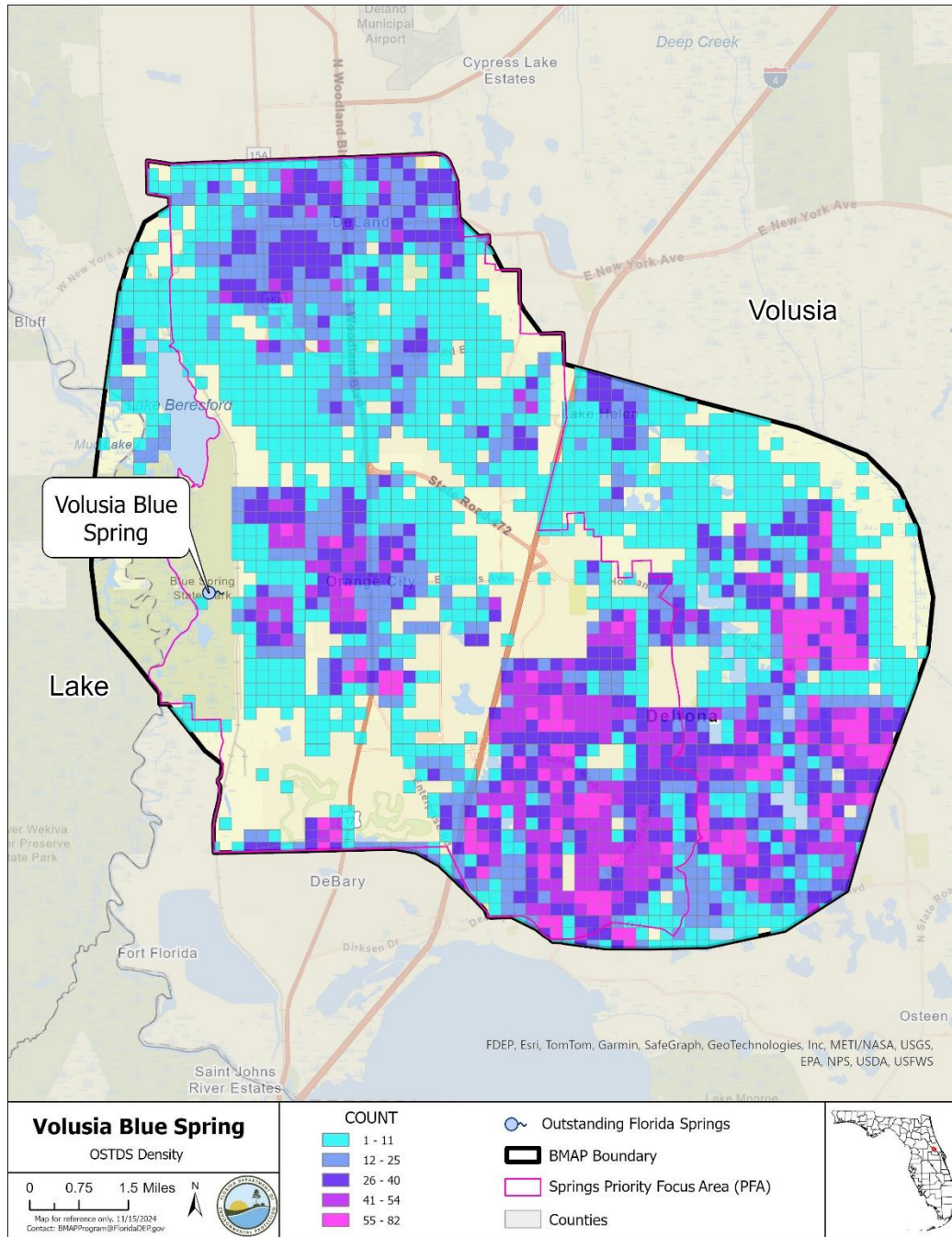
#### **2.5.2.2 Subsection 403.067(7)(a)9., F.S**

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, WMDs, and public and private domestic wastewater facilities. Each OSTDS remediation plan for this BMAP must contain the information outlined in DEP Final Order 23-0133. 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. Local governments are required to submit projects describing how OSTDS loads are addressed as part of BMAP reporting and estimate the load reductions associated with each project. The estimated reductions to the spring from addressing these septic systems will be based on several factors, including how they are addressed (i.e., connection to sewer or enhancement) and the amount of attenuation and recharge that occurs. These projects are described in **Appendix B**.

#### **2.5.2.3 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.





**Figure 3. Estimated OSTDS location density in the Volusia Blue Spring BMAP area and PFA**

## 2.6 WWTF Management Strategies

### 2.6.1 Facility Improvements and Effluent Limits

There are several WWTFs located in the Volusia Blue Spring BMAP area, including five domestic WWTFs permitted to discharge more than 100,000 gallons of treated effluent per day (or 0.1 million gallons per day [mgd]). **Figure 4** shows the locations of domestic WWTFs in the Volusia Blue Spring BMAP.

In the Volusia Blue Spring BMAP area, treated effluent containing nitrogen is discharged to sprayfields and RIBs, or is reused for irrigation water. The nitrogen load from WWTFs is 23,461 lbs-N/year. The discharge location (such as proximity to the spring, highly permeable soils, etc.) and level of wastewater treatment are important factors to consider when calculating loadings to groundwater.

The U.S. Environmental Protection Agency (EPA) authorizes DEP to issue permits for discharges to surface waters under the National Pollutant Discharge and Elimination System (NPDES) Program. Permits for discharges to groundwater are issued by DEP based on Florida law and rules. Wastewater discharge permits establish specific limitations and requirements based on the location and type of facility or activity releasing industrial or domestic wastewater from a point source. In areas with an adopted, nutrient-related BMAP prior to July 1, 2023, section 403.086, F.S., requires any facility discharging to a waterbody to upgrade to AWT by January 1, 2033. Further, waterbodies determined not to be attaining nutrient or nutrient-related standards after July 1, 2023, or subject to a BMAP or reasonable assurance plan (RAP) after July 1, 2023, have 10 years to provide AWT after such determination or adoption.

Further, section 373.811, F.S., prohibits new domestic wastewater disposal facilities, including those discharging to RIBs, with permitted capacities of 100,000 gallons per day or more, unless the discharge meets the AWT standard of no more than 3 mg/L TN, on an annual permitted basis, or a more stringent treatment standard if the department determines the more stringent standard is necessary to attain a TMDL for the OFS.

The nitrogen effluent limits set forth in **Table 9** 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. If a facility has effluent disposal located in an area where the boundaries of a surface water and an OFS BMAP overlap, the more stringent nitrogen effluent limits apply. DEP will evaluate the need for more stringent nutrient effluent limits as appropriate.

**Table 9. Wastewater effluent standards for the BMAP area**

95% of the Permitted Capacity (gpd)	Surface Water Discharges (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 100,000	3	3	3
20,000 to 100,000	3	3	6
Less than 20,000	3	6	6

Where the law does not provide 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 concentrations and report these sampling results in the discharge monitoring reports (DMRs) submitted to DEP.

In 2021, subsection 403.064(16), F.S., was amended where domestic wastewater utilities that dispose of effluent, reclaimed water, or reuse water by surface water discharge were required to submit for DEP review and approval, a plan for eliminating non-beneficial surface water discharge by January 1, 2032. A utility must fully implement the approved plan by January 1, 2032. If a plan was not timely submitted or approved by DEP, the utility's domestic WWTFs may not dispose of effluent, reclaimed water, or reuse water by surface water discharge after January 1, 2028. Violations are subject to administrative and civil penalties pursuant to sections 403.121, 403.131, and 403.141, F.S.

### **2.6.2 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 total phosphorus (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 if the department has determined in an applicable basin management action plan or reasonable assurance plan that the use of reclaimed water as described in this subparagraph is causing or contributing to the nutrient impairment being addressed in such plan.. 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** and 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., 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.

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

DEP encourages the reuse of treated wastewater for irrigation as a water conservation measure.

The expansion of reuse water for irrigation can reduce reliance on the Floridan aquifer for water supply. The nitrogen load to groundwater from reuse water is expected to be reduced through these WWTF policies, as improvements in reuse water quality will both reduce loads from this source and minimize future increases in nutrient loading from reuse because of higher treatment levels.

### ***2.6.3 Wastewater Treatment Facility Plans***

Subparagraph 403.067(7)(a)9., F.S., requires local governments within a BMAP to develop WWTF plans to be adopted as part of nutrient BMAPs no later than July 1, 2025, if DEP identifies domestic wastewater as contributors of at least 20% of point source or nonpoint source nutrient pollution or if DEP determines remediation is necessary to achieve the TMDL. The WWTF plans must be developed by each local government in cooperation with DEP, WMDs, and public and private domestic wastewater facilities 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 23-0133 for each existing or proposed domestic wastewater facility in the local government's jurisdiction.

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

### ***2.6.4 Connection to Sewer***

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

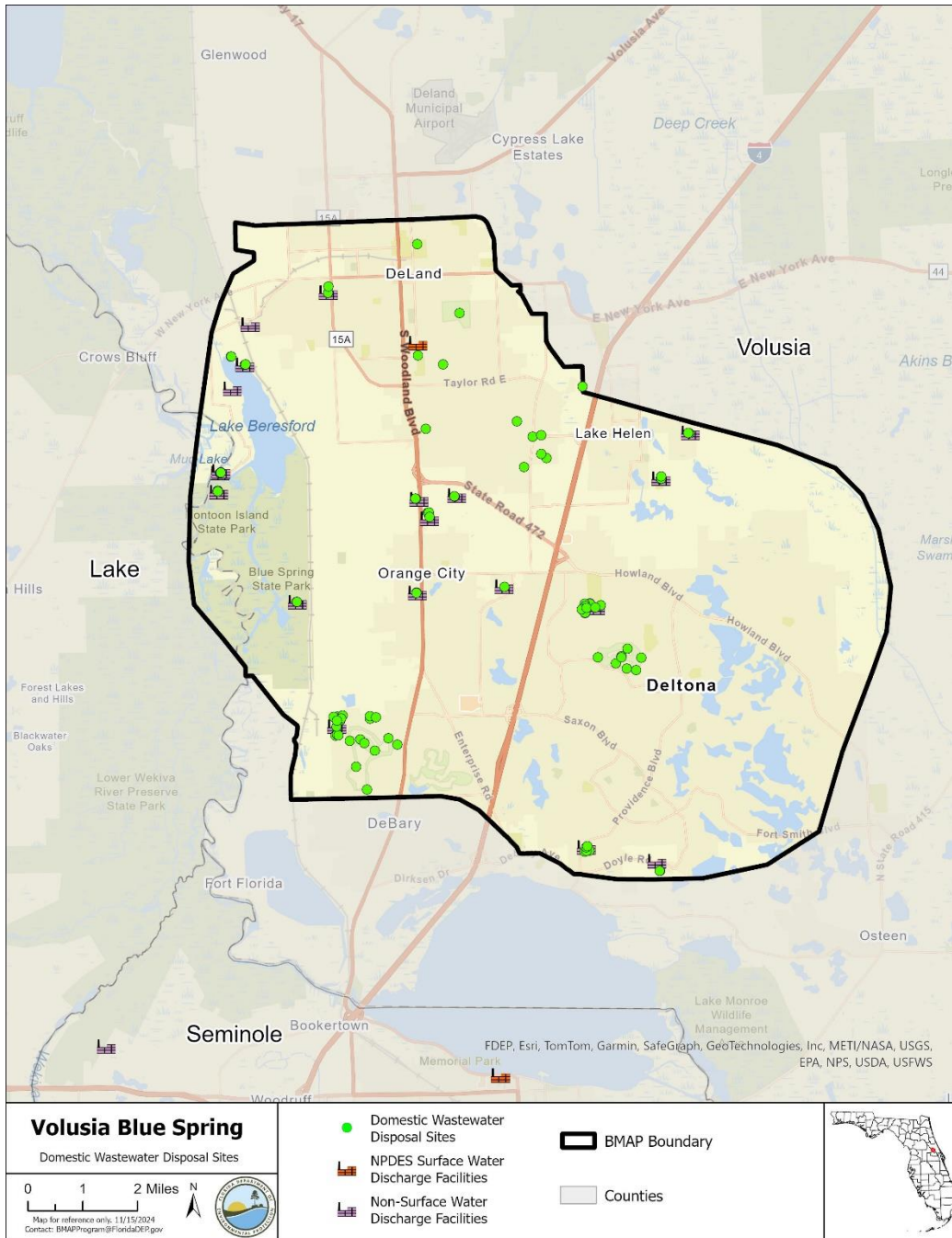
To facilitate an inventory of noncompliant properties, by February 2, 2026, and every two years thereafter, each utility with sewer lines in the BMAP shall provide DEP a list of properties with existing OSTDS where sewer is available but has not connected. For each identified property, include the date(s)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

### ***2.6.5 Biosolids and Septage***

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 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.





**Figure 4. Locations of domestic WWTFs in the Volusia Blue Spring BMAP Area**

## 2.7 UTF Management Strategies

UTF consists of fertilizers applied to turfgrass typically found in residential and urban areas (including residential lawns and public green spaces). It is applied by either the homeowner or a lawn service company on residential properties, while on nonresidential properties they may be applied by contractors or maintenance staff. UTF can be addressed through a mix of efforts, including public education, enforcement of local ordinances (regulating fertilizer use and irrigation), land development codes or stormwater projects. Based on progress towards meeting

the TMDL and water quality monitoring results, reduction requirements and crediting of projects such as fertilizer ordinances and education efforts may be reevaluated in future BMAP updates, particularly with respect to enforcement of fertilizer ordinances. As part of the annual reporting process, stakeholders will be required to provide a detailed and quantified description of their ordinance enforcement and environmental education activities to receive credits for these activities.

It is recommended that appropriate grasses are used based on soil characteristics, irrigation needs and fertilization needs. It is recommended that Bahia grass (*Paspalum notatum*), which is a durable grass that can be drought and heat tolerant should be used over St. Augustinegrass (*Stenotaphrum secundatum*) on sandy soils within spring BMAPs. Both homeowners and developers should follow the recommendations within the BMAP. If a local government has recommendations for what grasses should be used, DEP recommends that homeowners and developers follow them for the protection of water resources, if they are different than the BMAP.

Using reclaimed water is a way to distribute nutrients that need to be disposed of onto locations where nutrients are needed. However, caution needs to be exercised when applying nutrients (through fertilizer or reclaimed water) in the recharge area for the springs. For areas using reclaimed water for irrigation, it is important to understand the amount of nitrogen and phosphorus that is needed for the landscape and how much is being applied through reclaimed water. Monitoring the concentration of nitrogen and phosphorus in reclaimed water is important for understanding how much nutrients are being applied onto the urban landscape. The result may be that reclaimed water customers will not need to add more phosphorus or nitrogen, resulting in lower fertilizer costs and possibly fewer maintenance requirements and costs (e.g., mowing, turf replacement).

Given the limitations with the data used in the NSILT to estimate the UTF loading to groundwater, DEP will work with entities and other agencies to collect better data by requiring more detailed documentation on behavior changes and water quality improvements. In addition, DEP will work with stakeholders to improve on additional measures to reduce residential and commercial property fertilizer application, such as requiring annual reporting on ordinance enforcement and results from local governments.

### **2.7.3 Fertilizer Ordinance Adoption**

Subsection 373.807(2), F.S., requires local governments with jurisdictional boundaries that include an OFS or any part of a springshed or delineated PFA of an OFS to develop, enact and implement a fertilizer ordinance by July 1, 2017. The ordinance is required to be based, at a minimum, on the DEP model ordinance for Florida-friendly fertilizer use on urban landscapes. As part of the annual reporting process, stakeholders will be required to provide a detailed and quantified description of their ordinance enforcement to receive credits for these activities.

### **2.7.4 Municipal Separate Storm Sewer System (MS4) Designations**

Although loading from urban stormwater is not specifically estimated in the NSILT, urban stormwater is a considerable source of nutrient loading to Volusia Blue Spring 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. Refer to **Appendix A** for a link to a list of MS4 permittees.

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

DEP can designate an entity as a regulated MS4 if its discharges meet the requirements of the rule and are determined to be a significant contributor of pollutants to surface waters of the state in accordance with Rule 62-624.800, F.A.C. A Phase II MS4 can be designated for regulation when a TMDL has been adopted for a waterbody or segment into which the MS4 discharges the pollutant(s) of concern. Because urban areas located in the BMAP that are not currently covered by an MS4 permit also significantly contribute to nutrient loading, individually or in aggregate, the NPDES Stormwater Program will, within five years of BMAP adoption, evaluate any entity located in the BMAP area that serves a minimum resident population of at least 1,000 individuals that is not currently covered by an MS4 permit and designate eligible entities as regulated MS4s, in accordance with Chapter 62-624, F.A.C.

### ***2.7.5 Stormwater Rule***

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 groundwater can be found within the Applicant Handbook Volume I, Section 8.5.2.



## 2.8 STF Management Strategies

Sports turfgrass areas fall into two main categories that are evaluated separately: golf courses and sporting facilities (such as baseball, football, soccer and other fields). There are four golf courses covering 755 acres in the Volusia Blue Spring BMAP area. The golf course acreage is primarily located in high recharge areas. There are several sports fields covering 136 acres in the BMAP area. The majority of the sports field acreage is located in high recharge areas. DEP and UF-IFAS are collaborating to create a BMP manual addressing sports turfgrass management for public and private entities, which will be complete in 2025.

DEP will work with sports field managers and golf course superintendents to ensure relevant BMPs are implemented and to estimate reductions associated with these efforts. To improve the golf course loading estimate to groundwater over a literature-based approach, DEP will also confer with golf course superintendents to update fertilizer application rates based on site-specific data.

For other sports facilities besides golf courses, managers of sports fields can assist by reducing fertilizer use, using products that reduce leaching, and irrigating sports turf more efficiently irrigating.

### 2.8.3 Golf Courses

All golf course superintendents 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 H**. A draft NMP must be submitted to DEP within one year of BMAP adoption and a final document is due two years after adoption. All soil, water and tissue sampling must include appropriate nitrogen and phosphorous analyses.

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

## 2.9 Agricultural Sources Management Strategies

As presented in **Appendix I**, based on data including Florida Statewide Agricultural Irrigation Demand (FSAID) IX geodatabase land use, FDACS identified agricultural acreage within the BMAP. An estimated 1,245 acres of land in the BMAP are considered agricultural based on FDACS' assessment.

While agriculture is essential, it is important to manage potential environmental impacts associated with agricultural operations. Nitrogen and phosphorus, essential for crop growth, can enter waterways through various agricultural activities, including fertilizer application, livestock

waste disposal and irrigation runoff. To address nutrient loading from agricultural operations effectively, it is necessary to have a balanced approach 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 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. BMPs include practices such as nutrient management, irrigation management, and water resource protection. They can mitigate nutrient loading while promoting environmental stewardship. In many BMAPs, however, the implementation of BMPs alone will not be sufficient to meet water quality restoration goals, and regional projects and innovative technologies will be needed.

Information on agricultural enrollment and reductions in this BMAP was provided by FDACS and is available in **Appendix I**.

### ***2.9.1 FF Loading***

Nitrogen in agricultural fertilizer is applied at varying rates, depending on the crop and individual farm practices. The NSILT estimated total nitrogen load to groundwater from FF is 3,885 lbs/yr TN, or 0.7% of the total nitrogen load to groundwater in the BMAP area. FF includes commercial inorganic fertilizer applied to row crops, field crops, pasture, hay fields, and nurseries.

### ***2.9.2 LW Loading***

Agricultural practices specific to livestock management were obtained through meetings with UF-IFAS extension, FDACS, agricultural producers and stakeholders. The NSILT estimated total nitrogen load to groundwater from LW is 4,051 lbs/yr TN, or 0.7% of the total nitrogen load to groundwater in the BMAP area.

#### ***2.9.2.1 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 operation 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 established in the permit and implemented in accordance with the monitoring plan.

#### ***2.9.2.2 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 applicable WMD.

### **2.9.3 Aquaculture**

Under the federal Clean Water Act, aquaculture activities are defined as a point source. In 1999, the Florida Legislature amended Chapter 597, F.S., Florida Aquaculture Policy Act, to create a program within FDACS that requires those who sell aquatic species to annually acquire an Aquaculture Certificate of Registration and implement Chapter 5L-3, F.A.C., Aquaculture BMPs. Permit holders must be certified every year.

### **2.9.4 Silviculture**

The Florida Forest Service (FFS) within FDACS is the lead entity responsible for assisting landowners, loggers, and forestry professionals with silviculture BMP implementation as well as for conducting statewide silviculture BMP training and compliance monitoring. The FFS 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 FFS and thereby committing to follow BMPs during all current and future forestry operations.

### **2.9.5 Prioritized Management Strategies and Milestones**

In addition to the above requirements, subsection 373.811(5), F.S., prohibits any new agricultural operations that do not implement either applicable FDACS BMPs, or measures necessary to achieve pollution reduction levels established by DEP, or groundwater monitoring plans approved by a WMD or DEP. 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.).

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 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.

FDACS will work with applicable producers within the BMAP area to implement BMPs. As of

July 2024, NOIs covered 278 acres in the Volusia Blue Spring BMAP area (278 of 1,245 adjusted agricultural acres). Currently, no producers are conducting water quality monitoring in lieu of implementing BMPs. **Appendix B** lists project information. **Appendix I** provides detailed information on BMPs and agricultural practices in the BMAP area.

### ***2.9.6 Agricultural Cooperative Regional Elements***

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

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

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

While FDACS is assigned the lead role on project solicitation, development, selection, and implementation, they will work closely with all the key stakeholders, including DEP as a partner agency, to define and identify regional projects that will be included in the BMAP and to leverage existing programs and resources. FDACS will lead engagement with producers and industry groups through workshops to identify potential regional projects. Identified projects will be implemented through various mechanisms, such as existing agency cost share or grant

programs or through a legislative budget request and eventual appropriation. Upon identification of a project, FDACS will update DEP on project development and implementation, including the funding strategy.

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

FDACS will report on projects annually through DEP's Statewide Annual Report (STAR) process and during BMAP update and/or development. Projects and other management strategies implemented through the ACE will be evaluated cooperatively by partner agencies using the predetermined performance metrics. 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 TN nutrient sources in the Volusia Blue Spring BMAP; therefore, 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 Volusia Blue Spring 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 I**.

## **2.10 Atmospheric Deposition Management Strategies**

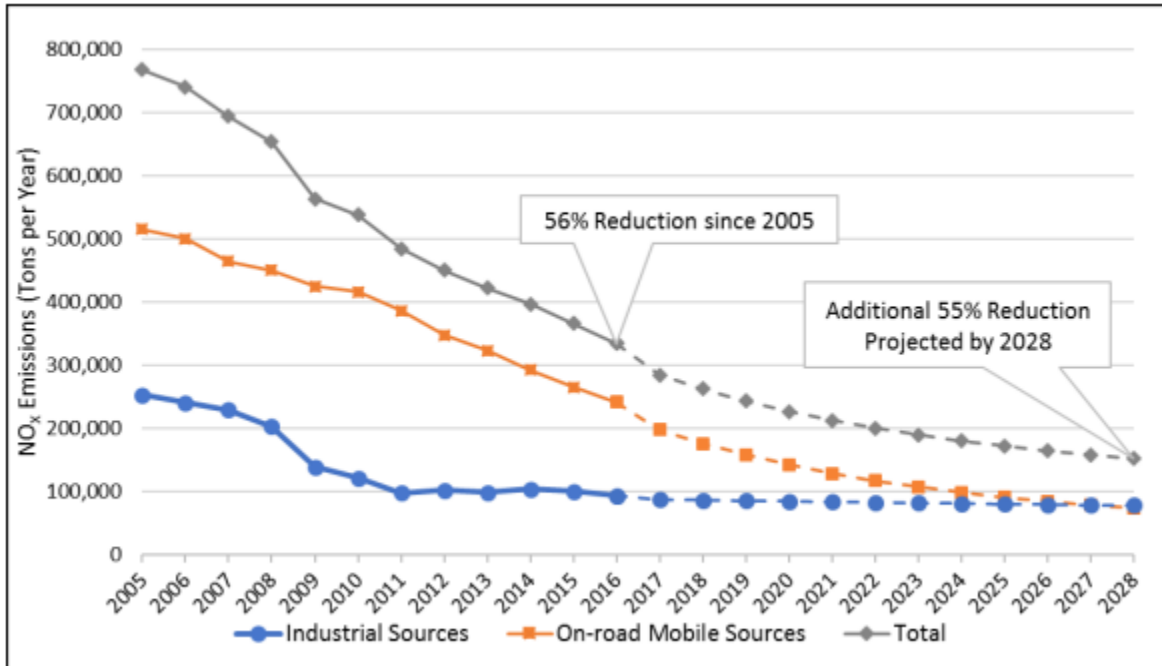
### ***2.10.1 Summary of Loading***

Atmospheric deposition is largely a diffuse, albeit continual, source of nitrogen. Nitrogen species and other chemical constituents are measured in wet and dry deposition at discrete locations around the U.S. In 2014, Schwede and Lear developed a hybrid model for estimating the total atmospheric deposition of nitrogen and sulfur for the entire U.S., referred to as the total atmospheric deposition model (TDEP). Deposition data from several monitoring networks--including the Clean Air Status and Trends Network (CASTNET); the National Atmospheric Deposition Program (NADP) Ammonia Monitoring Network; the Southeastern Aerosol Research and Characterization Network; and modeled data from the Community Multiscale Air Quality (CMAQ) Modeling System -- are combined in a multistep process with National Trends Network (NTN) wet deposition values to model total deposition. The TDEP model run used for the NSILT included data from 2019 to 2020.

### ***2.10.2 Description of Approach***

Atmospheric sources of nutrients are local, national, and international. Nitrogen atmospheric sources are generally of low concentration compared with other sources and are further diminished through additional biological and chemical processes before they reach groundwater. Recent data (Himes and Dawson, 2017) indicate that the deposition of nitrogen has been

generally decreasing in Florida with an up to 55% decrease in atmospheric deposition by 2028, possibly related to power plant fuel source changes and air treatment upgrades as well as the increased use of electric vehicles, decreasing mobile sources (Himes and Dawson, 2017). This gradual decrease in atmospheric deposition will result in the necessary reductions from this source to meet the next 5-year milestone (**Figure 5**). Currently, since the scale of the national and international programs to address these air deposition loads are difficult to integrate into the much smaller scale of this water quality plan, there are no specific reductions assigned to this source category. Atmospheric deposition sources and trends will be re-evaluated periodically.



**Figure 5. Florida NO<sub>x</sub> emissions for 2005 to 2016 and projected emission decreases for 2017 to 2028 from industrial and on-road mobile sources**

## 2.11 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, the need to plan and implement sound management strategies to address additional population growth must be considered.

DEP has included in this BMAP specific elements to address current and future WWTF effluent, OSTDS loading 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 an acceptable level of service.
  - Schedule of capital improvements, which may include privately funded projects.
  - A list of projects necessary to achieve the pollutant load reductions attributable to the local government, as established in a BMAP.
  - 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 certain nutrient-reduction measures before the development is complete. DEP recommends that 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 update efforts. If an increase in loading occurs, a responsible entity may receive additional reduction allocations that will require additional management actions by the responsible entity to mitigate those water quality impacts.

#### ***2.11.1 Future Growth Analysis***

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

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

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

Per person loading calculations were used to estimate future loads from WWTFs and OSTDS under different planning scenarios, described below. DEP's Domestic Wastewater Program estimates each person in Florida generates 100 gallons of wastewater per day. For OSTDS, FDOH estimates each person in Florida generates 10 lbs TN/yr. Average attenuation for wastewater effluent disposal and a weighted basin recharge factor were applied to loading calculations to derive the estimated future load to groundwater.

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 UF-IFAS recommended fertilization rates for different turfgrass species. Finally, attenuation for UTF and a weighted basin recharge factor were applied to loading calculations to derive the estimated future load to groundwater.

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



2% of developable land is converted to urban, development codes only allow a 10% coverage of turfgrass, and the species used is centipedegrass, which has low TN fertilization requirements.

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

Scenario 3 represents a future planning scenario with the lowest levels of treatment feasible. It utilizes the current rates of sewer availability based on the FLWMI parcels to estimate the population served by central wastewater collection system and assumes that all domestic wastewater will be treated to 6 mg/L TN and 3 mg/L TP by 2040. This scenario also assumes that all future OSTDS will be conventional systems. For urban development, this scenario represents an extreme growth future where 17% of developable land is converted to urban, development codes allow up to 25% coverage of turfgrass, and the species used is St. Augustine grass, which has higher TN fertilization requirements.

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

**Table 10. Estimated nitrogen load from future growth in the BMAP area**

Entity	BEBR 2040 Additional Population	2040 Additional Nitrogen Loading – Scenario 1 (lbs/yr)	2040 Additional Nitrogen Loading – Scenario 2 (lbs/yr)	2040 Additional Nitrogen Loading - Scenario 3 (lbs/yr)
Lake County	55	32	116	447
Volusia County	5028	2,667	10,234	49,284
City of DeBary	888	396	978	7,045
City of DeLand	1911	1,321	4,961	20,872
City of Deltona	4663	3,225	17,712	62,150
City of Lake Helen	520	178	199	3,378
City of Orange City	1187	405	548	7,898
<b>Basin Totals</b>		8,224	34,747	151,075

Scenario 1 resulted in an additional basin load of 8,224 lbs/yr TN. Scenario 3 resulted in an additional basin load of 151,075 lbs/yr TN. When compared to the results of the Volusia Blue Spring NSILT (594,824 lbs/yr TN), it is estimated that growth in the basin could result in an 1.4% to 25% increase in nitrogen loading to the groundwater by 2040.

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 sewerage in their jurisdiction.

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

Other mechanisms discussed 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 nutrient loading associated with urban fertilizer. Additionally, wastewater can be treated to higher standards than those built into this analysis through upgrades to WWTFs and use of enhanced nutrient-reducing OSTDS certified with higher nitrogen treatment efficiencies or other wastewater treatment systems with higher treatment levels. Local governments can use this information to incorporate water quality considerations when developing and implementing local ordinances, comprehensive plans, stormwater planning, and enhanced OSTDS incentive programs in areas of urban expansion.

## **2.12 Funding Opportunities**

Chapter 2023-169, Laws of Florida, expanded grant opportunities for local governments and eligible entities working to address a TMDL or impaired water. Through the Water Quality Improvement Grant program, eligible entities can apply for grant funding for wastewater, stormwater and regional agricultural projects. Projects are prioritized that have the maximum nutrient load per project, demonstrate project readiness, are cost-effective, have cost-share by the applicant (except for Rural Areas of Opportunity), have previous state commitment, and are in areas where reductions are most needed. There are multiple competitive funding resources available under the Protecting Florida Together website, including \$50 million in springs-

specific funding.

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

## **Section 3: Monitoring and Reporting**

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### **3.1 Methods for Evaluating Progress**

DEP will work with stakeholders to track project implementation and organize and evaluate the monitoring data collected each year. The project and monitoring information will be presented in an annual update. Stakeholders have agreed to meet annually after the adoption of the BMAP to follow up on plan implementation, share new information, and continue to coordinate on TMDL restoration related issues. The following activities may occur at annual meetings~

Implementation data and reporting:

- Collect project implementation information from stakeholders, including FDACS agricultural BMP enrollment and FDOH-issued permits, and compare with the BMAP schedule.
- Discuss the data collection process, including any concerns and possible improvements to the process.
- Review the monitoring plan implementation, as detailed in **Section 3.3**.

Sharing new information:

- Report on results from water quality monitoring and trend information.
- Provide updates on new management strategies in the basin that will help reduce nutrient loading.
- Identify and review new scientific developments on addressing nutrient loads and incorporate any new information into annual progress reports.

Coordinating on TMDL restoration-related issues:

- Provide updates from DEP on the basin assessment cycle and activities related to any impairments, TMDL, and BMAP.
- Obtain reports from other basins where tools or other information may be applicable to the TMDL.

### **3.2 Adaptive Management Measures**

Adaptive management involves making adjustments in the BMAP when circumstances change or monitoring indicates the need for additional or more effective restoration strategies. Adaptive management measures may include the following:

- Implementing procedures to determine whether additional cooperative strategies are needed.

- Using criteria/processes for determining whether and when plan components need revision because of changes in costs, project effectiveness, social effects, watershed conditions or other factors.
- Revising stakeholders' roles during BMAP implementation and after BMAP completion.
- Updating information on corrective actions (and any supporting documentation) being implemented as data are gathered to refine project implementation schedules and performance expectations.

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

### **3.3 Water Quality Monitoring**

#### **3.3.1 Objectives**

Focused objectives are critical for a monitoring strategy to provide the information needed to evaluate implementation success. Since the BMAP implementation involves an iterative process, the monitoring efforts are related to primary and secondary objectives. The primary objectives focus on achieving water quality targets, while the secondary objectives focus on sub-regional effectiveness of projects and management strategies and other water quality parameters that can be used to provide information for future refinements of the BMAP. The monitoring strategy may be updated as necessary.

#### **Primary objectives:**

- Measure the water quality and biological response in the impaired springs and groundwater at the beginning of the BMAP period and during implementation.
- Document nutrient trends in the Volusia Blue Spring Basin.

#### **Secondary objectives:**

- Identify areas where groundwater data and modeling might help in understanding the hydrodynamics of the system.
- Evaluate groundwater quality trends and nutrient loading to the aquifer across the basin.
- Confirm and refine nutrient removal efficiencies of agricultural and/or urban BMPs, projects and other management efforts.

#### **3.3.2 Parameters, Frequency and Network**

To achieve the objectives listed above, the monitoring strategy will focus on two types of indicators to track improvements in water quality at the spring vent and in the groundwater: core

and supplemental (**Table 11** and **Table 12**, respectively). The core indicators are directly related to the parameters causing impairment in the associated springs. Supplemental indicators will be monitored primarily to support the interpretation of core water quality parameters. The monitoring network is established for a variety of purposes.

For this BMAP, nitrate is the core parameter measured, to track progress in decreasing nitrogen concentrations in groundwater and the water surfacing at the spring vent. The other parameters are considered supplementary parameters for the BMAP, as they build information about groundwater and the spring but are not direct measurements of impairment.

At a minimum, the core parameters will be tracked to determine the progress that has been made towards meeting the TMDL and/or achieving the numeric nutrient criteria (NNC). Resource responses to BMAP implementation may also be tracked. A significant amount of time may be needed for changes in water chemistry to be observed.

**Table 11. Core water quality indicators and field parameters for spring vent and groundwater**

Core Parameters
TN
Total Kjeldahl Nitrogen
Nitrate as Nitrogen
Orthophosphate as Phosphorus
TP

**Table 12. Supplemental water quality indicators and field parameters for spring vent and groundwater**

Supplemental Parameters
Specific Conductance
Dissolved Oxygen (DO)
pH
Temperature
Total Suspended Solids (TSS)
Total Dissolved Solids (TDS)
Turbidity
Chloride
Color
Ammonia (as nitrogen [N])
Total Organic Carbon
Calcium
Magnesium
Sodium
Potassium
Sulfate

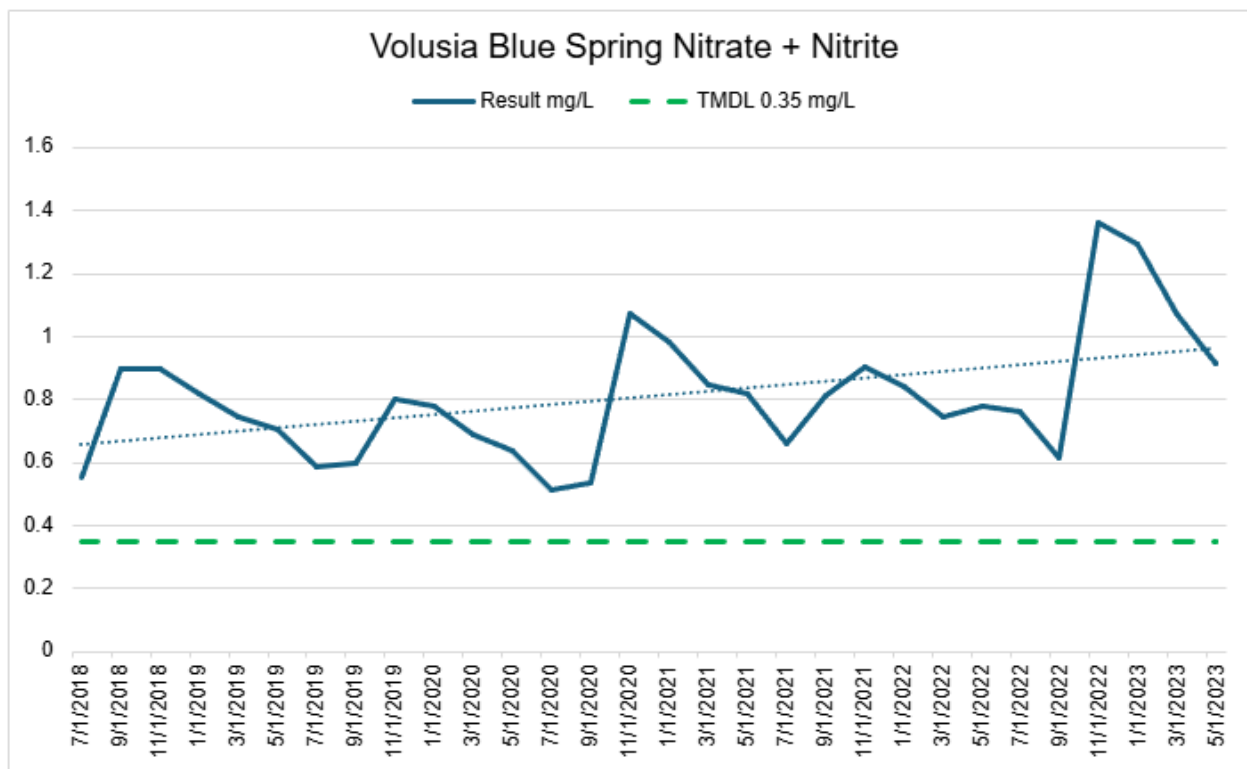
Supplemental Parameters
Fluoride
Alkalinity

### 3.3.3 Nutrient Monitoring

Water quality is monitored to evaluate progress towards achieving the TMDL target of 0.35 milligrams per liter (mg/L) of nitrate-nitrite to be protective of the aquatic flora and fauna. Surface water quality data are collected at the spring vent to determine if the TMDL nitrate targets are being achieved, and once achieved, are being maintained. Flow data are collected in support of the secondary objective of estimating total mass loading of nitrate at the vent and can be used to evaluate TN loading in the BMAP. Groundwater well data are collected to evaluate aquifer conditions in the source water for the springs. A robust groundwater monitoring program can be used to evaluate TN loading in the BMAP, and may give an indication of future changes in spring vent concentrations as nutrient levels in the groundwater are expected to respond to changes in loading prior to the spring vent due to transport time to the spring vent.

#### 3.3.4.1 Spring Sampling

Samples at the spring vent are collected monthly at the spring vent. Discharge measurements are recorded daily by USGS. **Figure 6** displays the nitrate plus nitrite concentration at the BLUSPG spring vent station.



**Figure 6. Nitrate plus nitrite concentration over time at the BLUSPG station**

#### 3.3.4.2 Groundwater Results and Discussion

Data from groundwater monitoring wells were obtained from DEP’s Water Information Network (WIN) database and SJRWMD. To determine what wells would be included in the analysis, the frequency of sampling was considered. Wells that were sampled regularly through the period of record were considered “fixed”. Wells with inconsistent sampling (i.e. less than four samples over the period of record) were considered “sporadic”. Data from the fixed wells were preferred for analyses because comparisons between time periods represent changes in the same set of wells. In Volusia Blue Springs BMAP there has been limited collection of groundwater samples. There is insufficient data to perform an analysis of fixed or sporadic groundwater data within the Volusia Blue Springs BMAP area.

DEP is working to evaluate monitoring networks in this basin and develop a sampling schedule that will allow for trend analysis of groundwater conditions in future iterations of the BMAP. A review of spatial distribution and well construction details will allow DEP to focus monitoring efforts that will provide the most informative data about groundwater trends and potentially nitrogen loading.

### 3.3.4 Biological Monitoring

Biological resource responses represent improvements in the overall ecological health of the Volusia Blue Spring BMAP area (see **Table 13**). DEP recommends that several types of biological monitoring be conducted to assess the health of the Volusia Blue Spring.

**Table 13. Biological response measures for spring runs**

Biological Response Measures	Target Community	Sampling Methods
Chlorophyll <i>a</i>	Phytoplankton	DEP standard operating procedure (SOP) FS 2100
Stream Condition Index (SCI) score	Aquatic Macroinvertebrates	DEP SOP SCI 1000
Linear Vegetation Survey (LVS) score	Aquatic Vegetation	DEP SOP FS 7320
Rapid Periphyton Survey (RPS) score	Attached Algae (Periphyton)	DEP SOP FS 7230

The RPS is a rapid assessment tool for evaluating streams’ ecological condition based on the attached algae. The RPS quantifies periphyton length and extent in a 100-meter stretch of a stream by assigning a rank category to the length of periphyton filaments. The LVS is a rapid assessment tool for evaluating the ecological condition of streams based on the nativity status and relative human disturbance tolerance of vascular plants. The RPS, LVS, and chlorophyll *a* are used to evaluate the floral integrity of the spring.

The SCI evaluates the aquatic macroinvertebrate community present in the river and/or springs. In addition, habitat assessments are conducted per DEP SOP FT 3100 to assess the habitat present to support the aquatic macroinvertebrates. Water quality samples and field measurements of physical water quality are collected with the biological monitoring.

### 3.3.5 Data Management and Assessment

As of June 30, 2017, entities that collect water quality data in Florida enter the data into the Florida WIN Database, which replaced the Florida Storage and Retrieval System (STORET).



DEP pulls water quality data directly from WIN and USGS databases to evaluate waters according to the Impaired Waters Rule, Chapter 62-303, F.A.C., and for TMDL development. Data providers must upload their data regularly, so DEP can use the information as part of the water quality assessment process, for annual reporting and trend analyses. Data providers should upload their data to WIN upon completion of the appropriate quality assurance/quality control (QA/QC) checks. All data collected in the last quarter of the calendar year should be uploaded no later than April 1 of the following year.

DEP sampling teams enter their biological data into the DEP Statewide Biological (SBIO) database. Biological data should be collected and regularly provided to DEP following the applicable standard operating procedures. All biological data collected in the last quarter of the calendar year should be uploaded or provided no later than April 1 of the following year.

Available water quality data will be analyzed during BMAP implementation to determine trends in water quality and the health of the biological community. A wide variety of statistical methods are available for the water quality trend analyses. The selection of an appropriate data analysis method will depend on the frequency, spatial distribution, and period of record available from existing data. Specific statistical analyses were not identified during BMAP development.

#### **3.3.5 QA/QC**

Stakeholders participating in the BMAP monitoring plan must collect water quality data in a manner consistent with Chapter 62-160, F.A.C. Therefore, field samples must be collected following the DEP SOPs, and lab analyses must be conducted by National Environmental Laboratory Accreditation Conference (NELAC)–accredited laboratories.

## **Section 4. Commitment to Plan Implementation**

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### **4.1 Adoption Process**

The 2025 BMAP update is adopted by Secretarial Order and assigns TN load reductions to the responsible stakeholders in the Volusia Blue Spring BMAP area.

### **4.2 Tracking Reductions**

The required loading reductions are expected to be met by 2038. Each entity responsible for implementing management actions to meet their upcoming 5-year milestone as part of the BMAP will provide DEP, via the statewide annual report process, with an annual update of progress made in implementing load reductions. The update will track the implementation status of the management actions listed in the BMAP and document additional projects undertaken to further water quality improvements in the basin. FDACS will continue to report acreage enrolled in NOIs at least annually to DEP.

### **4.3 Revisions to the BMAP**

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

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

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

## **Section 5. References**

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Florida Department of Environmental Protection. 2021. *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses*. Tallahassee, FL.

Florida Stormwater Association. 2012. *Methodology for calculating nutrient load reductions using the FSA assessment tool*.

Himes, B. and Dawson, J. 2017. *Florida Nitrogen Oxides Emissions Trends*. Division of Air Resource Management, Florida Department of Environmental Protection. August 11, 2017

University of Wisconsin. December 2024. *National Trends Network*. National Atmospheric Deposition Program. Retrieved December 31, 2024, from <https://nadp.slh.wisc.edu/networks/national-trends-network/>.

Schwede, D.B., and G.G. Lear. 2014. A novel hybrid approach for estimating total deposition in the United States. *Atmospheric Environment* 92: 207–220.

## **Appendices**

## **Appendix A. Important Links**

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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/>
- PFA information: <https://floridadep.gov/dear/water-quality-restoration/content/bmap-public-meetings><https://www.floridadep.gov/pfamap>
- Florida Statutes: <http://www.leg.state.fl.us/statutes>:
  - a. Florida Watershed Restoration Act (Section 403.067, F.S.)
  - b. Florida Springs and Aquifer Protection Act (Part VIII of Chapter 373, F.S.)
- DEP Model Ordinances: <https://ffl.ifas.ufl.edu/ffl-and-you/gi-bmp-program/fertilizer-ordinances/>
- DEP Onsite Sewage Program: <https://floridadep.gov/water/onsite-sewage/content/permitting-enhanced-nutrient-reducing-onsite-sewage-treatment-and>
- DEP Standard Operating Procedures for Water Quality Samples: <https://floridadep.gov/dear/quality-assurance/content/dep-sops>
- NELAC National Environmental Laboratory Accreditation Program (NELAP): <https://floridadep.gov/dear/florida-dep-laboratory/content/nelap-certified-laboratory-search>
- FDACS BMPs: <https://www.fdacs.gov/Agriculture-Industry/Water/Agricultural-Best-Management-Practices>
- FDACS BMP and Field Staff Contacts: <https://www.fdacs.gov/Divisions-Offices/Agricultural-Water-Policy/Organization-Staff>
- Florida Administrative Code (Florida Rules): <https://www.flrules.org/>
- SJRWMD 2002 Middle St. Johns River Surface Water Improvement and Management (SWIM) Plan: [https://www.sjrwmd.com/static/plans/2002\\_MSJRB\\_SWIM\\_Plan.pdf](https://www.sjrwmd.com/static/plans/2002_MSJRB_SWIM_Plan.pdf)
- SJRWMD 2025 Consolidated Annual Report: <https://aws.sjrwmd.com/SJRWMD/plans/SJRWMD-2025-Consolidated-Annual-Report.pdf>
- SJRWMD Springs: <https://www.sjrwmd.com/waterways/springs/>

- UF-IFAS Research: <http://research.ifas.ufl.edu/>

## **Appendix B. Projects to Reduce Nitrogen Sources**

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### **B.1 Prioritization of Management Strategies**

BMAPs must now include projects that show how responsible entities will meet their 5-year milestones. To help prioritize projects towards the next milestone as required under 403.067, F.S., planning-level details for each listed project, along with their priority ranking have been determined. The management strategies listed in **Appendix B** are ranked with a priority of high, medium, or low.

Project status was selected as the most appropriate indicator of a project's priority ranking based primarily on if the project is going towards the next 5-year milestone, as well as need for funding. Overall, any project that is needed by a responsible entity to meet their next reduction milestone is considered a priority. Projects classified as "underway" were assigned a high or medium priority because some resources have been allocated to these projects, but additional assistance may be needed for the project to be completed. High priority was assigned to projects listed with the project status "planned" that are needed to meet the next milestone, as well as certain "completed" projects that are designated as "ongoing" each year, and select projects that are elevated because substantial, subsequent project(s) are reliant on their completion.

### **B.2 Description of the Management Strategies**

Responsible entities submitted these management strategies to the department with the understanding that the strategies would be included in the BMAP, thus requiring each entity to implement the proposed strategies as soon as practicable. However, this list of strategies is meant to be flexible enough to allow for changes that may occur over time. Any change in listed management strategies, or the deadline to complete these actions, must first be approved by the department. Substituted strategies must result in equivalent or greater nutrient reductions than expected from the original strategies.

While the 20-year planning period for this BMAP is 2018 to 2038, urban and agricultural stormwater projects completed since January 1, 2010 and OSTDS and wastewater projects completed since January 1, 2022, count toward the overall nitrogen reduction goals. Estimated nitrogen reductions provided by the responsible entity are subject to refinement based on DEP verification and/or on adjustment to calculations based on loading to groundwater that takes into consideration recharge and attenuation.

Projects with a designation of TBD (to be determined) denote information is not currently available but will be provided by the responsible entity when it is available. Projects with a designation of NA (not applicable) indicate the information for that category is not relevant to that project. Projects with a designation of "Not Provided" denote that information was requested by DEP but was not provided by the responsible entity.

**Table B-1. Stakeholder projects to reduce nitrogen sources**

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
5945	City of DeBary	NA	DB-01	Public Education and Outreach	Fertilizer ordinance and FYN Program.	Education Efforts	Ongoing	NA	235	\$0.00	Internal - \$0.00
5946	City of DeLand	NA	DL-01	Public Education and Outreach	Fertilizer ordinance and FYP Program.	Education Efforts	Ongoing	NA	542	\$0.00	Not provided - \$0.00
5947	City of DeLand	DEP; SJRWMD	DL-02	Reclaimed Water Main Extension Phase 3 and 3A	City of Deland reclaimed water main extension Phase 3 and 3A (Crystal Cove and Alexandria Point).	WWTF Diversion to Reuse	Completed	2019	NA	\$1,300,000.00	DEP - \$325,000; SJRWMD - \$325,000; City of DeLand - \$650,000
5948	City of DeLand	DEP; SJRWMD	DL-03	WWTF Upgrades	WWTF aeration and instrumentation upgrades to enhance nutrient removal. Original credit of 13,448 lbs-TN/yr. Project was captured in the updated loading estimates.	WWTF Upgrade	Completed	2017	0	\$1,210,000.00	DEP - \$302,000; SJRWMD - \$302,000; City of DeLand - \$606,000
5949	City of DeLand	DEP; SJRWMD	DL-04	Reclaimed Water Retrofit Project, Phase 1	City of Deland fiscal year 2016/2017 reclaimed water retrofit project, Phase 1B (Southridge, Southridge Point, East Brook).	WWTF Diversion to Reuse	Completed	2021	NA	\$1,212,000.00	DEP- \$303,000; SJRWMD- \$303,000; City of DeLand- \$606,000
5950	City of DeLand	DEP; SJRWMD	DL-05	Reclaimed Water Retrofit Project, Phase 2B	City of DeLand fiscal year 2016/2017 reclaimed water retrofit project, Phase 2B (Waterford Lakes and Heather Gleen).	WWTF Diversion to Reuse	Completed	2017	NA	\$1,518,751.00	DEP- \$379,688; SJRWMD- \$379,688; City of DeLand- \$759,375
6358	City of DeLand	DEP; SJRWMD	DL-06	Spring Hill Sewer Retrofit Project, Phase 3	Septic to sewer retrofit for 180 septic tanks. Original credit of 936 lbs-TN/yr. Project was captured in the updated loading estimates.	OSTDS Phase Out	Completed	2021	0	\$2,971,350.00	SJRWMD - \$871,596.00; City of Deland -



ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
											\$2,099,754.00; DEP - \$0.00
6359	City of DeLand	DEP; SJRWMD	DL-07	Spring Hill Sewer Retrofit Project - Phase 4	Septic to sewer retrofit for 120 septic tanks.	OSTDS Phase Out	Planned	2027	970	\$4,200,000.00	TBD - \$0.00
6360	City of DeLand	DEP; SJRWMD	DL-08	WRF Conversion to AWT Project	Upgrade of the Wiley M. Nash to an AWT and capacity increase of 2 MGD.	WWTF Upgrade	Underway	2026	4682	\$83,000,000.00	TBD - \$0.00
6361	City of DeLand	DEP; SJRWMD	DL-09	Longleaf Plantation LP-1 Sewer Retrofit Project	Septic to sewer retrofit for 70 septic tanks.	OSTDS Phase Out	Planned	2029	113	\$2,737,800.00	TBD - \$0.00
5951	City of Deltona	NA	DEL-01	Public Education and Outreach	Fertilizer ordinance, FYN, website, inspection program, and brochures/flyers.	Education Efforts	Ongoing	NA	1317	\$20,000.00	City of Deltona - \$20,000.00
5952	City of Deltona	DEP; SJRWMD	DEL-02	Deltona Alexander Ave. Water Management Site	Deltona Alexander Ave. water management site: WVWS Project #4A-Deltona Storage/Treatment.	WWTF Diversion to Reuse	Completed	2017	TBD	\$9,700,000.00	SJRWMD - \$1,875,000.00; City of Deltona - \$5,950,000.00; DEP - \$1,875,000.00
5953	City of Deltona	NA	DEL-03	Brickell Drive Stormwater Treatment System	The project intends to improve water quality discharging into Lake Monroe by re-routing an existing ditch through a wetland. The treatment obtained in the wetland will improve water quality and reduce water quantity downstream.	Natural Wetlands as Filters	Completed	2018	NA	\$600,000.00	City of Deltona - \$285,000.00; DEP - \$315,000.00
5954	City of Deltona	NA	DEL-04	Mapleshade St. Stormwater Improvements	Stormwater management improvements.	Stormwater System Upgrade	Completed	2014	TBD	\$144,150.00	City of Deltona - \$144,150.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
5955	City of Deltona	NA	DEL-05	Tipton Drive Stormwater Improvements	Stormwater management improvements.	Stormwater System Upgrade	Completed	2014	TBD	\$179,275.00	City of Deltona - \$179,275.00
5956	City of Deltona	NA	DEL-06	Courtland Skate Park Flood Control Improvements	Stormwater management improvements.	Stormwater System Upgrade	Completed	2014	TBD	\$139,440.00	City of Deltona - \$139,440.00
5957	City of Deltona	NA	DEL-07	Bannock and Holston St. Stormwater Improvements	Stormwater management improvements.	Stormwater System Upgrade	Completed	2013	TBD	\$116,456.00	City of Deltona - \$116,456.00
5958	City of Deltona	NA	DEL-08	Drysdale Drive and Chapel Drive Stormwater Improvements	Stormwater management improvements.	Stormwater System Upgrade	Completed	2012	TBD	\$704,468.50	City of Deltona - \$704,468.50
5959	City of Deltona	NA	DEL-09	Kraft Drive and Bluefield Drainage Improvements	Stormwater management improvements.	Stormwater System Upgrade	Completed	2013	TBD	\$174,767.50	City of Deltona - \$174,767.50
5960	City of Deltona	NA	DEL-10	Lackland Drive Retention Pond Improvements	Stormwater management improvements.	Stormwater System Upgrade	Completed	2012	TBD	\$320,504.97	City of Deltona - \$125,000.00
5961	City of Deltona	NA	DEL-11	Water Quality Pond MC-1	Stormwater management improvements.	Stormwater System Upgrade	Completed	2013	TBD	\$144,052.00	City of Deltona - \$144,052.00
5962	City of Deltona	NA	DEL-12	Courtland Blvd and Haulover Stormwater Improvements Project	Stormwater management improvements.	Stormwater System Upgrade	Completed	2015	TBD	\$209,330.00	City of Deltona - \$209,330.00
5963	City of Deltona	NA	DEL-13	Danforth Drive Stormwater Drainage Improvements	Stormwater management improvements.	Stormwater System Upgrade	Completed	2014	TBD	\$147,265.96	City of Deltona - \$147,265.96

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
5964	City of Deltona	NA	DEL-14	Dewberry Drive and Irondale St. Drainage Improvements	Stormwater management improvements.	Stormwater System Upgrade	Completed	2013	TBD	\$153,254.00	City of Deltona - \$153,254.00
5965	City of Deltona	NA	DEL-15	Catch Basin Sediment Removal	Cleaning of storm sewer system to include catch basins and connecting pipes	BMP Cleanout	Completed	2021	TBD	\$200,000.00	City of Deltona - \$200,000.00
5966	City of Deltona	NA	DEL-16	Future Deltona Street Sweeper	City is proposing to implement street sweeping program.	Street Sweeping	Planned	2030	TBD	\$425,000.00	City of Deltona - \$425,000.00
5967	City of Deltona	NA	DEL-17	Eastern Water Reclamation Facility (EWRF) Improvements	City constructed new greenfield East WRF to treat to AWT. Currently permitted at 1.0 MGD.	WWTF Upgrade	Completed	2016	NA	\$30,052,626.70	City of Deltona - \$30,052,626.70
5968	City of Deltona	NA	DEL-18	Green Industries BMP Training	Stormwater certifications.	Enhanced Public Education	Ongoing	NA	NA	\$8,500.00	City of Deltona - \$8,500.00
7510	City of Deltona	City of Deltona	DEL-19	Alexander ASR	Aquifer storage and recovery (ASR) for aquifer recharge.	Wastewater - Injection Well	Planned	2029	TBD	\$0.00	City of Deltona - \$0.00
7523	City of Deltona	City of Deltona	DEL-20	EWRF Expansion to 1.5MGD	Expansion of Eastern Water Reclamation Facility from 1.0 MGD to 1.5 MGD.	WWTF Capacity Expansion	Underway	2024	TBD	\$0.00	City of Deltona - \$0.00
7529	City of Deltona	City of Deltona	DEL-21	OSTDS Removal Phase 3	Conversion of OSTDS to advanced OSTDS.	Onsite Sewage Treatment and Disposal System (OSTDS) Enhancement	Planned	2045	97961	\$0.00	City of Deltona - \$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
7528	City of Deltona	City of Deltona	DEL-22	OSTDS Removal Phase 2	Current Inventory of OSTDS is 28,795, anticipated elimination of 20% or 5,759 of OSTDS concentrating in the PFA provided funding is available. Phase 2 is elimination of approximately 4,959 OSTDS.	OSTDS Phase Out	Planned	2040	72121	\$0.00	City of Deltona - \$0.00
7525	City of Deltona	City of Deltona	DEL-23	Deltona Lakes WRF Process Change to MLE	Deltona Lake Water Reclamation Facility upgrade of process from contact stabilization to Modified Ludzack-Ettinger process for improved nutrient removal. AWT credits listed in ProjID 7518.	WWTF Upgrade	Underway	2024	TBD	\$0.00	City of Deltona - \$0.00
7521	City of Deltona	City of Deltona	DEL-24	EWRF Expansion Phase II	Additional expansion of EWRF to accommodate future flows from conversion of OSTDS.	WWTF Capacity Expansion	Planned	2032	NA	\$0.00	City of Deltona - \$0.00
7527	City of Deltona	City of Deltona	DEL-25	OSTDS Removal Phase 1	Current inventory of OSTDS is 28,795, anticipated elimination of 20% or 5,759 concentrating in the PFA provided funding is available. 800 connections have been identified for Phase 1.	OSTDS Phase Out	Planned	2030	11635	\$0.00	City of Deltona - \$0.00
7518	City of Deltona	City of Deltona	DEL-26	Deltona Lakes AWT	Rehabilitation of Deltona Lakes WRF to advanced waste treatment.	WWTF Upgrade	Planned	2030	3291	\$0.00	City of Deltona - \$0.00
7526	City of Deltona	City of Deltona	DEL-27	Deltona Lakes Water Reclamation Filter Rehab	Rehabilitation of sand filters to result in improved effluent disposal quality.	Sanitary Sewer and Wastewater Treatment Facility (WWTF) Maintenance	Planned	2025	NA	\$0.00	City of Deltona - \$0.00
5976	City of Lake Helen	NA	LH-01	Public Education and Outreach	Fertilizer ordinance and FYN.	Education Efforts	Ongoing	NA	68	\$0.00	Not provided - \$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
5977	City of Orange City	Orange City; SJRWMD; State Legislation	OC-01	Mill Lake Park and Stormwater Treatment	Improvements to Mill Lake to reduce pollutant loading including: pretreatment pond, alum treatment, baffle boxes, aeration systems, sediment removal, increase residence time and planting of native plants.	BMP Treatment Train	Completed	2017	TBD	\$2,990,000.00	Not provided - \$0.00
7126	City of Orange City	Orange City; SJRWMD	OC-01a	Mill Lake Pond Upgrade	Improvements to Mill Lake to reduce pollutant loading including: pretreatment pond, alum treatment, baffle boxes, aeration systems, sediment removal, increase residence time and planting of native plants.	BMP Treatment Train	Completed	2019	NA	\$2,731,000.00	DEP - \$400,000.00
7127	City of Orange City	NA	OC-01b	Mill Lake Stormwater - Borrow Pit Purchase	Excess stormwater runoff causing flooding will be pumped from Mill Lake to the borrow pit for treatment and retention.	Stormwater System Upgrade	Completed	2024	TBD	\$800,000.00	City of Orange City - \$800,000.00
7128	City of Orange City	CDBG; Orange City	OC-01c	Mill Lake Park Stormwater Pump Upgrades	Pump station upgrades will address citywide stormwater collection and treatment with discharge to city owned borrow pit. Pump station will provide flood protection with water retention/treatment at borrow pit.	Stormwater System Rehabilitation	Planned	TBD	NA	\$0.00	CDBG - \$0.00
5978	City of Orange City	NA	OC-02	Maintenance of Stormwater Ponds	Inspection and clearing out of excess vegetation.	Stormwater System Rehabilitation	Ongoing	NA	NA	\$0.00	Not provided - \$0.00
5979	City of Orange City	State Legislation	OC-03	Master Stormwater Capital Improvements Program (1-3 Year Timetable)	Swales and catch basins; and as feasible ponds, aeration, alum treatment, reuse, baffle boxes and recharge.	Stormwater System Rehabilitation	Underway	TBD	NA	\$2,867,183.00	Not provided - \$0.00
7129	City of Orange City	NA	OC-03a	Master Stormwater Capital Improvement - East Graves and Orange Ave Pond	New stormwater pond to assist with Blue Spring nutrient reduction on E. Graves and Orange Ave. Pond to Mill Lake discharge.	Wet Detention Pond	Completed	2019	NA	\$0.00	DEP - \$0.00; City of Orange City - \$0.00
7130	City of Orange City	NA	OC-03b	Master Stormwater Capital Improvements - Holly Ave Stormwater	Stormwater inlet upgrades, lift station and stormwater collection for flood protection and nutrient reduction on Holly Avenue.	Stormwater System Rehabilitation	Completed	2020	NA	\$3,200,000.00	DEP SRF - \$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
5980	City of Orange City	NA	OC-04	Public Education and Outreach	FYN, PSAs, pamphlets, website, fertilizer, pet waste, irrigation, and landscape ordinances.	Education Efforts	Ongoing	NA	387	\$0.00	Not provided - \$0.00
5981	City of Orange City	TBD	OC-05	Street Sweeper Project	Project canceled pending enterprise dedicated funds.	Street Sweeping	Canceled	NA	NA	\$0.00	Not provided - \$0.00
5982	City of Orange City	TBD	OC-06	Master Stormwater Capital Improvements Program (5-10 Year Timetable)	Swales and catch basins; and as feasible ponds, aeration, alum treatment, reuse, baffle boxes and recharge.	Stormwater System Rehabilitation	Planned	2026	NA	\$2,251,170.00	Not provided - \$0.00
5983	City of Orange City	TBD	OC-07	Septic Tank Replacement - All Phases	Connecting septic tanks to sewer in strategic locations. This project will be linked to individual phases based on the OSTDS report provided. Funding Sources provided for phases completed through 2022. Project broken into phases in individual entries.	OSTDS Phase Out	Canceled	NA	NA	\$0.00	DEP 319 - \$281,081.00; DEP - \$7,200,000.00; DEP - \$500,000.00
6638	City of Orange City	NA	OC-07a	Blue Springs Septic to Sewer Phase 1A (P1 A1)	Expansion of sewer collection system and conversion of septic tanks to sewer. Tanks include residential and commercial systems. Previously credited at 3,139 lbs-TN/yr. Credit updated based on revised loading.	Onsite Sewage Treatment and Disposal System (OSTDS) Enhancement	Completed	2022	2002	\$7,600,000.00	EPA 319 - \$562,162.00; DEP SRF - \$7,757,679.00; LPA - \$500,000.00
6639	City of Orange City	DEP; SJRWMD	OC-07b	Blue Springs Septic to Sewer Phase 1B	Sewer collection expansion, including two (2) lift stations. Conversion of septic tanks to sewer. A conceptual map for this Phase is attached. Contractor selected in January 9, 2023.	OSTDS Phase Out	Underway	2025	TBD	\$3,256,662.00	SJRWMD - \$894,500.00; DEP - \$500,000.00; EPA 319 - \$562,162.00; Utility Funds - \$1,300,000.00

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<b>ProjID</b>	<b>Lead Entity</b>	<b>Partners</b>	<b>Project Number</b>	<b>Project Name</b>	<b>Project Description</b>	<b>Project Type</b>	<b>Project Status</b>	<b>Estimated Completion Date</b>	<b>Estimated Nitrogen Load Reduction (lbs/yr)</b>	<b>Cost Estimate</b>	<b>Funding Amount</b>
6584	City of Orange City	TBD	OC-07c	(P1A2) North 17-92 CRA	Sewer expansion and septic tank removal and sewer hookup.	OSTDS Phase Out	Planned	TBD	TBD	\$0.00	TBD - \$0.00
6583	City of Orange City	TBD	OC-07d	(P1A3) South 17 - 92 CRA	Septic tank removal and sewer hookup.	OSTDS Phase Out	Planned	TBD	TBD	\$0.00	TBD - \$0.00
6582	City of Orange City	TBD	OC-07e	(P1A5) E. University Ave	Septic tank removal and sewer hookup.	OSTDS Phase Out	Planned	TBD	TBD	\$0.00	TBD - \$0.00
6581	City of Orange City	TBD	OC-07f	(P2A7) I-4 and Graves	Septic tank removal and sewer hookup.	OSTDS Phase Out	Planned	TBD	TBD	\$0.00	TBD - \$0.00
6580	City of Orange City	TBD	OC-07g	Phase 2-9 Veterans Memorial Assisted Living Facility	Septic tank removal and sewer hookup.	OSTDS Phase Out	Planned	TBD	TBD	\$0.00	TBD - \$0.00
6579	City of Orange City	TBD	OC-07h	(P2A9) Veterans Memorial Parkway	Septic tank removal and sewer hookup.	OSTDS Phase Out	Planned	TBD	TBD	\$0.00	TBD - \$0.00
6578	City of Orange City	TBD	OC-07i	(P3A23) West Rhode Island and Sparkman Ave.	Septic tank removal and sewer hookup.	OSTDS Phase Out	Planned	TBD	TBD	\$0.00	TBD - \$0.00
6577	City of Orange City	TBD	OC-07j	(P3A24) Westside Parkway and Twin Lakes Train	Septic tank removal and sewer hookup.	OSTDS Phase Out	Planned	TBD	TBD	\$0.00	TBD - \$0.00
6187	City of Orange City	ARPA	OC-07k	CRA US17/92 Sewer Expansion and Septic to Sewer Conversion	Design is 90% completed. Expected to be advertised for construction in April 2022. Designed plans attached. Still reviewing construction costs.	Wastewater Service Area Expansion	Planned	2025	NA	\$1,382,916.00	City's CIP - \$0.00



ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
5984	City of Orange City	TBD	OC-08	(P1A1) Septic Tank Impact Study	Investigation to determine the water quality benefits in removing septic tanks in Orange City.	Study	Planned	TBD	NA	\$50,000.00	Not provided - \$0.00
5985	City of Orange City	NA	OC-09	Monastery Road Reclaimed Water Extensions	Extending reclaimed water to various locations as needed. This extension will serve John Knox Village and other undeveloped land near Monastery Ave and Graves Ave.	WWTF Diversion to Reuse	Completed	2021	TBD	\$309,541.00	SJRWMD - \$178,866.00
6200	City of Orange City	ARPA; SJRWMD	OC-10	Stormwater Infrastructure Upgrades	Expansion of stormwater collection system.	Stormwater System Upgrade	Planned	2025	NA	\$3,239,033.00	Stormwater Enterprise - \$3,239,033.00
6196	City of Orange City	DEP	OC-11	Orange City Industrial Drive Recharge Basin	Expanded stormwater/reclaimed water basin that would be designed to maximize recharge capabilities. The basin would receive stormwater from Industrial Drive and provide additional treatment.	BMP Treatment Train	Planned	2026	NA	\$3,239,033.00	DEP SRF - \$40,000.00
6573	City of Orange City	TBD	OC-12	Blue Springs State Park Wastewater Management Project Feasibility Study	Feasibility study to connect Blue Springs State Park to Sewer. Currently the Park treats about 24,000 gallons a day with onsite treatment plants and has 4 septic systems. This is to handle about 3/4 of million visitors per year.	Study	Planned	TBD	NA	\$0.00	TBD - \$0.00
6574	City of Orange City	TBD	OC-13	Blue Springs State Park Wastewater Management Project	Based on feasibility study Blue Springs State Park may connect to sewer thereby eliminating their OSTDS treating about 24,000 gallons a day with onsite treatment. This system is to handle about 3/4 of million visitors per year to the park.	OSTDS Phase Out	Planned	TBD	TBD	\$0.00	TBD - \$0.00
6197	City of Orange City	DEP 319	OC-14	Septic to Sewer Nutrient Reduction Public Information	Nutrient reduction - septic to sewer public information.	Enhanced Public Education	Ongoing	NA	NA	\$93,000.00	DEP 319 - \$93,200.00
6362	FDACS	Agricultural Producers	FDACS-01a	BMP Implementation and Verification - Farm Fertilizer	Enrollment and verification of BMPs by agricultural producers. Acres treated and reductions estimated using FDACS June 2024	Agricultural BMPs	Ongoing	NA	582	\$0.00	FDACS - \$0.00



ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
					Enrollment and NSILT Loading tool (based on FSAID IX) developed by FDACS.						
6363	FDACS	Agricultural Producers	FDACS-02a	BMP Implementation and Verification - Livestock Waste	Enrollment and verification of BMPs by agricultural producers. Acres treated and reductions estimated using FDACS June 2024 Enrollment and NSILT Loading tool (based on FSAID IX) developed by FDACS.	Agricultural BMPs	Ongoing	NA	405	\$0.00	FDACS - \$0.00
	FDACS	Agricultural Producers	FDACS-03	Cost-Share BMP Projects	Cost-share projects paid for by FDACS. Project treatment areas and reductions based on FDACS June 2024 Enrollment and NSILT Loading tool (based on FSAID IX) developed by FDACS.	Agricultural BMPs	Ongoing	NA	198	\$0.00	Not provided - \$0.00
5971	FDOT District 5	NA	FDOT-01	Street Sweeping	Reduction of TN and TP loading from state highway system.	Street Sweeping	Ongoing	NA	13	\$0.00	Florida Legislature - \$0.00
5972	FDOT District 5	NA	FDOT-02	Fertilizer Cessation	Elimination of fertilizer use along state highway system. Removal of TN and TP loading.	Fertilizer Cessation	Completed	2018	132	\$0.00	Florida Legislature - \$0.00
5973	FDOT District 5	NA	FDOT-03	Public Education and Outreach	IDDE inspection program, NPDES flyer distribution, and website.	Education Efforts	Ongoing	NA	0	\$0.00	Florida Legislature - \$0.00
5974	FDOT District 5	NA	FDOT-04	Swale	Swale cleanout.	BMP Cleanout	Ongoing	NA	29	\$0.00	Florida Legislature - \$0.00
5975	Management Strategies	TBD	GC-01	Private Golf Course Approach	Private golf courses are expected to follow the BMP manual. Additionally, all golf courses will be required to submit nutrient management plans to DEP.	Golf Course or Sports Field BMPs	Planned	TBD	NA	\$0.00	NA - \$0.00

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6000	Management Strategies	TBD	WU-01	Wastewater Treatment Facility Approach	Achieved by WWTF policy if implemented BMAP-wide. The policy will be implemented through the permit renewal process.	WWTF Upgrade	Planned	TBD	NA	\$0.00	TBD - \$0.00
5987	Volusia County	NA	VC-01	Street Sweeping	3,813.3 cubic yards of material removed since January 1, 2010.	Street Sweeping	Ongoing	NA	TBD	\$0.00	Not provided - \$0.00
5988	Volusia County	NA	VC-02	Roadside Ditch Cleaning	14,396.4 cubic yards of material removed since January 1, 2010.	BMP Cleanout	Ongoing	NA	NA	\$0.00	Not provided - \$0.00
5989	Volusia County	NA	VC-03	Open Channel Ditch Cleaning	819.6 cubic yards of material removed since January 1, 2010.	BMP Cleanout	Ongoing	NA	NA	\$0.00	Not provided - \$0.00
5990	Volusia County	NA	VC-04	Retention Pond Restoration	15,875 cubic yards of material removed since January 1, 2010.	BMP Cleanout	Ongoing	NA	NA	\$0.00	Not provided - \$0.00
5991	Volusia County	NA	VC-05	Tanglewood Drive Pond Expansion	Expansion of existing stormwater retention pond. Increased treatment volume.	On-line Retention BMPs	Completed	2011	TBD	\$250,000.00	Not provided - \$0.00
5992	Volusia County	NA	VC-06	Miller Lake	Purchasing of property adjacent to Miller Lake to expand storage/treatment volume for stormwater runoff. Increased treatment volume.	On-line Retention BMPs	Completed	2014	TBD	\$2,123,000.00	Not provided - \$0.00
5993	Volusia County	NA	VC-07	Voorhis Pond	Construction of a new retention pond to provide treatment/storage for stormwater runoff. Provide a new retention pond for stormwater treatment.	On-line Retention BMPs	Completed	2012	TBD	\$150,000.00	Not provided - \$0.00
5994	Volusia County	NA	VC-08	Beresford Pond	Construction of a new retention pond to provide treatment/storage for stormwater runoff. Provide a new retention pond for stormwater treatment.	On-line Retention BMPs	Completed	2015	TBD	\$90,000.00	Not provided - \$0.00

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5995	Volusia County	NA	VC-09	New Hampshire Pond	Construction of a new retention pond to provide treatment/storage for stormwater runoff. Provide a new retention pond for stormwater treatment.	On-line Retention BMPs	Completed	2015	TBD	\$70,000.00	Not provided - \$0.00
5996	Volusia County	NA	VC-10	Lake Diana Sidney Control Structure Improvements	Construction of a weir to control the elevation of the water upstream of Lake Diana. Longer residence time in Lake Sidney.	Control Structure	Completed	2011	TBD	\$160,000.00	Not provided - \$0.00
5997	Volusia County	NA	VC-11	Exfiltration System Installation	Installation of an exfiltration trench system.	Exfiltration Trench	Underway	TBD	TBD	\$0.00	Not provided - \$0.00
5998	Volusia County	NA	VC-12	Public Education and Outreach	Ordinances for fertilizer, pet waste, landscape, and irrigation. Public education including FYN and PSAs, websites, and brochures. Full suite of public education and ordinances covered under Volusia County.	Education Efforts	Ongoing	NA	1662	\$0.00	Not provided - \$0.00
5999	Volusia County	DEP; SJRWMD	VC-13	Volusia County AWT	Volusia County AWT for the protection of Blue Springs water quality and supply. Project expands capacity and allows for improved treatment. ProjID 7659 will achieve AWT for VC Southwest #2.	WWTF Upgrade	Completed	2017	TBD	\$12,129,500.00	DEP - \$3,465,000; DEP First Amendment - \$2,000,000; SJRWMD - \$2,062,500; Volusia County - \$4,602,000
6238	Volusia County	NA	VC-14	Pooser Pond Stormwater Improvements	The project serves to mitigate flooding conditions during rain events as well as the removal of nutrient loading into the Blue Spring priority focus area by pumping Pooser Pond to a proposed infiltration pond.	BMP Treatment Train	Planned	2024	TBD	\$1,500,000.00	NA - \$0.00
6945	Volusia County	DEP; SJRWMD	VC-15	Advanced Wastewater Treatment and Alternative Water Supply Storage Expansion for	To accommodate OSTDS remediation within Volusia Blue, Gemini Springs, and Lake Harney Monroe this project is currently in design to: (1) expand treatment capacity from	WWTF Capacity Expansion	Underway	2026	NA	\$77,244,996.00	Volusia County - \$34,670,400.00; SJRWMD -

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
				the Protection of Volusia Blue and Gemini Springs	2.7 to 4.5 MGD (2) increase reclaimed storage capacity from 4.5 to 9.5 MGD.						\$1,749,596.00; DEP - \$40,825,000.00
7647	Volusia County	DEP	VC-16	Volusia Blue Wastewater Feasibility Analysis Report	Involves coordination among cities of DeLand, Deltona, DeBary, Lake Helen & Orange City. The project efforts will be re-initiated following the DEP's BMAP update on responsible entity requirements (October 2024).	Study	Underway	2026	NA	\$250,000.00	DEP - \$250,000.00
7649	Volusia County	Volusia County	VC-17	Hydraulic Modeling & Capacity Analysis	The project was calibrated/verified based on historical and current data. Future scenarios (including OSTDS retrofits) were simulated to identify key wastewater infrastructure deficiencies or upgrades necessary to support springs water quality goals.	Monitoring/ Data Collection	Completed	2023	NA	\$91,065.00	Volusia County - \$91,065.00
7651	Volusia County	SJRWMD	VC-18	VC Southwest #2 WRF (Del North WRF) Master Lift Station and Force Main	Project interconnects Volusia County's VC Southwest #2 WRF to VC/Southwest Regional WRF. This interconnect enables a plant flow from Southwest #2 WRF to be routed to Southwest Regional WRF for advanced wastewater treatment.	WWTF Upgrade	Completed	2022	NA	\$5,710,761.00	Volusia County - \$2,785,761.00; SJRWMD - \$2,925,000.00
7652	Volusia County	Volusia County	VC-19	Master Lift Station SW-71M and Force Main Improvements	Through a 2023 hydraulic model report, this project is a critical need to support OSTDS plans for Orange City and Deltona regions of the BMAP. Project design is complete and shovel-ready. DEP grant request submitted July, 2024.	WWTF Capacity Expansion	Planned	2026	NA	\$2,980,000.00	Volusia County - \$1,490,000.00
7659	Volusia County	Volusia County	VC-20	VC Southwest #2 WRF Advanced Wastewater Treatment/Expansion	This includes the design and construction of existing WRF to advanced wastewater treatment and expansion from 0.6 MGD to 1.2 MGD. This project supports Volusia Blue water quality goals by reducing nutrient loading discharged from the WRF.	WWTF Upgrade	Planned	2029	1287	\$0.00	Volusia County - \$0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	Estimated Nitrogen Load Reduction (lbs/yr)	Cost Estimate	Funding Amount
7653	Volusia County	Volusia County	VC-21	Wastewater Force Main Capacity Upgrade at Donald Smith Road	Design has been initiated to increase capacity between Highbanks Rd. and SW Regional WRF. This project was submitted for DEP Springs grant funding (2025). The project is necessary to support growth/OSTDS remediation in the Debary portion of the PFA.	WWTF Capacity Expansion	Planned	2027	NA	\$0.00	Volusia County - \$0.00
7658	Volusia County	Volusia County	VC-22	Lift Station Upgrade SW-60	Upgrade/expand existing lift station #60 serving the Volusia Blue Spring springshed in Orange City. As OSTDS remediation plans evolve, this lift station upgrade will be necessary to serve the additional sewer flows (per hydraulic model report).	WWTF Upgrade	Planned	2026	NA	\$0.00	Volusia County - \$0.00

## **Appendix C. Planning for Additional Management Strategies**

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

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

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

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

## **Appendix D. Volusia Blue Spring PFA Report**

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During the development of the 2018 Volusia Blue Spring BMAP, the PFA was defined as the area of the basin where the Floridan aquifer is generally most vulnerable to pollutant inputs and where there is a known connectivity between groundwater pathways and an OFS. As required by the Florida Springs and Aquifer Protection Act, DEP defined a PFA which is incorporated by reference into this BMAP. Information on this and other springshed PFAs are available at the following link: <https://floridadep.gov/dear/water-quality-restoration/content/bmap-public-meetings>.

## Appendix E. OSTDS Remediation Plan

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Section 373.807, F.S., requires that if, during the development of a BMAP for an OFS, DEP identifies OSTDS as contributors of at least 20% of nonpoint source nitrogen pollution in a PFA or if DEP determines remediation is necessary to achieve the TMDL, the BMAP must include an OSTDS remediation plan. Based on the Volusia Blue Spring NSILT estimates and GIS coverages, OSTDS contribute approximately 74% of the pollutant loading in the BMAP. Irrespective of the percent contribution from OSTDS, DEP has determined that an OSTDS remediation plan is necessary to achieve the TMDLs and to limit the increase in nitrogen loads from future growth.

Permitting for OSTDS is implemented either by DEP, delegated counties, or by County Health Departments under an interagency agreement. To aid in implementation, the DEP Map Direct webpage includes a detailed downloadable springs PFA boundary shapefile for planning purposes. DEP also maintains on its website an interactive map of the PFA and BMAP boundaries; the map can be easily searched for specific street address locations (currently available at <https://floridadep.gov/BMAPs-ARP-OSTDS>).

### E.1 Plan Elements

#### *E.1.1 Installation of New OSTDS*

Beginning July 1, 2023, sections 373.811 and 403.067, F.S., prohibit any new conventional OSTDS serving a lot of one acre or less where central sewer is available. Within this BMAP area, if central sewer is unavailable on lots of one acre or less, then the owner must install a DEP-approved enhanced nutrient-reducing OSTDS that achieves 65% nitrogen reduction, or other wastewater system that achieves 65% reduction.

Installation of new OSTDS is permitted pursuant to Chapter 62-6, F.A.C., and includes not only systems installed on a property where one has not previously been installed, but also systems installed to replace illegal systems, systems installed in addition to existing systems, and other new systems. Permitting requirements with respect to the definition of "new" or "one acre or less" will be followed for this remediation plan. To meet the enhanced nitrogen treatment requirement, the system must be a DEP-approved enhanced nutrient reducing system meeting 65% nitrogen reduction.

#### *E.1.2 Modification or Repair of Existing OSTDS*

The OSTDS remediation plan must provide loading reductions consistent with achieving the TMDL within 20 years of plan adoption (see subparagraph 373.807(1)(b)8., F.S.). This plan therefore establishes the following remediation policy for existing systems, based on (a) the potential for reducing nitrogen loads by converting existing OSTDS to enhanced nitrogen removing systems or by connecting homes to central sewer, (b) the total amount of nitrogen load that must be reduced to achieve the TMDL, and (c) the relative contribution of nitrogen load from existing OSTDS.

The remediation policy for existing systems in the Volusia Blue Spring BMAP applies to all existing OSTDS within the PFA on lots one acre or less. The remediation policy for existing systems is



effective upon BMAP adoption. Upon the need for any construction permit under chapter 62-6, F.A.C. to repair, modify, or replace an existing OSTDS affected by the remediation policy, a DEP-approved enhanced nutrient reducing system meeting 65 percent nitrogen reduction must be installed unless the OSTDS permit applicant provides documentation that sewer connection to the property is planned and funded, and structures on the lot will be connected.

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.

#### ***E.1.3 Achieving Necessary Load Reductions***

All conventional OSTDS in areas subject to the remediation policy for existing systems are required to meet enhanced nutrient reducing OSTDS requirements, install other wastewater systems that can achieve at least 65% reduction, or connect to central sewer no later than 20 years after BMAP adoption.

#### ***E.1.4 Other Plan Elements***

Section 373.807, F.S., also requires that the OSTDS remediation plan contain the following elements.

- An evaluation of credible scientific information on the effect of nutrients, particularly forms of nitrogen, on springs and spring systems. (See **Section E.2.**)
- Options for repair, upgrade, replacement, drain field modification, the addition of effective nitrogen-reducing features, connection to a central sewer system, or other action. (See **Section E.3.**)
- A public education plan to provide area residents with reliable, understandable information about OSTDS and springs. (See **Section E.4.**)
- Cost-effective and financially feasible projects necessary to reduce the nutrient impacts from OSTDS. (See **Section 2** and **Appendix B.**)
- A priority ranking for each project for funding contingent on appropriations in the General Appropriations Act. (See **Section 2** and **Appendix B.**)

Section 373.807, F.S., defines an OSTDS as a system that contains a standard subsurface, filled, or mound drain field system; an aerobic treatment unit; a graywater system tank; a laundry wastewater system tank; a septic tank; a grease interceptor; a pump tank; a solids or effluent

pump; a waterless, incinerating, or organic waste–composting toilet; or a sanitary pit privy that is installed or proposed to be installed beyond the building sewer on land of the owner or on other land on which the owner has the legal right to install such a system. The term includes any item placed within, or intended to be used as a part of or in conjunction with, the system. The term does not include package sewage treatment facilities and other treatment works regulated under Chapter 403, F.S.

## **E.2 Collection and Evaluation of Credible Scientific Information**

As discussed in **Section 2**, DEP developed the Volusia Blue Spring NSILT, a planning tool that provides estimates of nitrogen loading to groundwater based on best available scientific data for a particular geographic area. The NSILT results were peer reviewed by SJRWMD and FDACS. Additional technical support information concerning the NSILT can be found in **Appendix F**.

DEP developed calculation methods to estimate nitrogen reductions associated with OSTDS enhancement and replacement projects, WWTF projects, golf course BMPs, other sports turfgrass BMPs, and urban turfgrass BMPs.

Monitoring and research:

- Improve understanding of the ecological responses to nutrient enrichment and reductions.
- Maintain and expand water quality monitoring programs.
- Report annual status and trends.
- Evaluate new and emerging technologies.
- Research and develop advanced septic systems.
- Monthly water sampling at the spring.

Completed projects:

- Florida Onsite Sewage Nitrogen Reduction Strategies Study.
- Long Term Performance and Operational Experience for Non-Proprietary Passive Nitrogen Reducing Onsite Sewage Treatment And Disposal Systems (<https://floridadep.gov/water/onsite-sewage/content/onsite-sewage-research-reports>)

Ongoing projects:

- Quarterly springs water quality monitoring.
- Stream water quality monitoring.

- UFA nutrient modeling.
- Springs initiative modeling.
- Monitoring of in-ground nitrogen reducing biofilters.

Proposed projects:

- Groundwater quality monitoring for BMAP assessment.
- Performance monitoring on advanced OSTDS in Florida.
- Other DEP projects.

### E.3 Remediation Options

As required by Florida law, this OSTDS remediation plan identifies remediation options for existing OSTDS, including repair, upgrade, replacement, drain field modification, the addition of effective nitrogen-reducing features, connection to a central sewer system, or other action. More simply, remediation options can be classified as enhancement or replacement. DEP's Onsite Sewage Program maintains a list of approved nitrogen-reducing systems on its website: <https://floridadep.gov/water/onsite-sewage/content/permitting-enhanced-nutrient-reducing-onsite-sewage-treatment-and>.

The NSILT estimates that OSTDS contribute approximately 74% of the pollutant loading to groundwater in the BMAP. **Table E-1** lists the number of existing OSTDS in the PFA and the estimated nitrogen reductions associated with enhancement or connection to sewer.

**Figure E-1** shows the areas where OSTDS are located.

**Table E-1. Estimated reduction credits for OSTDS enhancement or sewer**

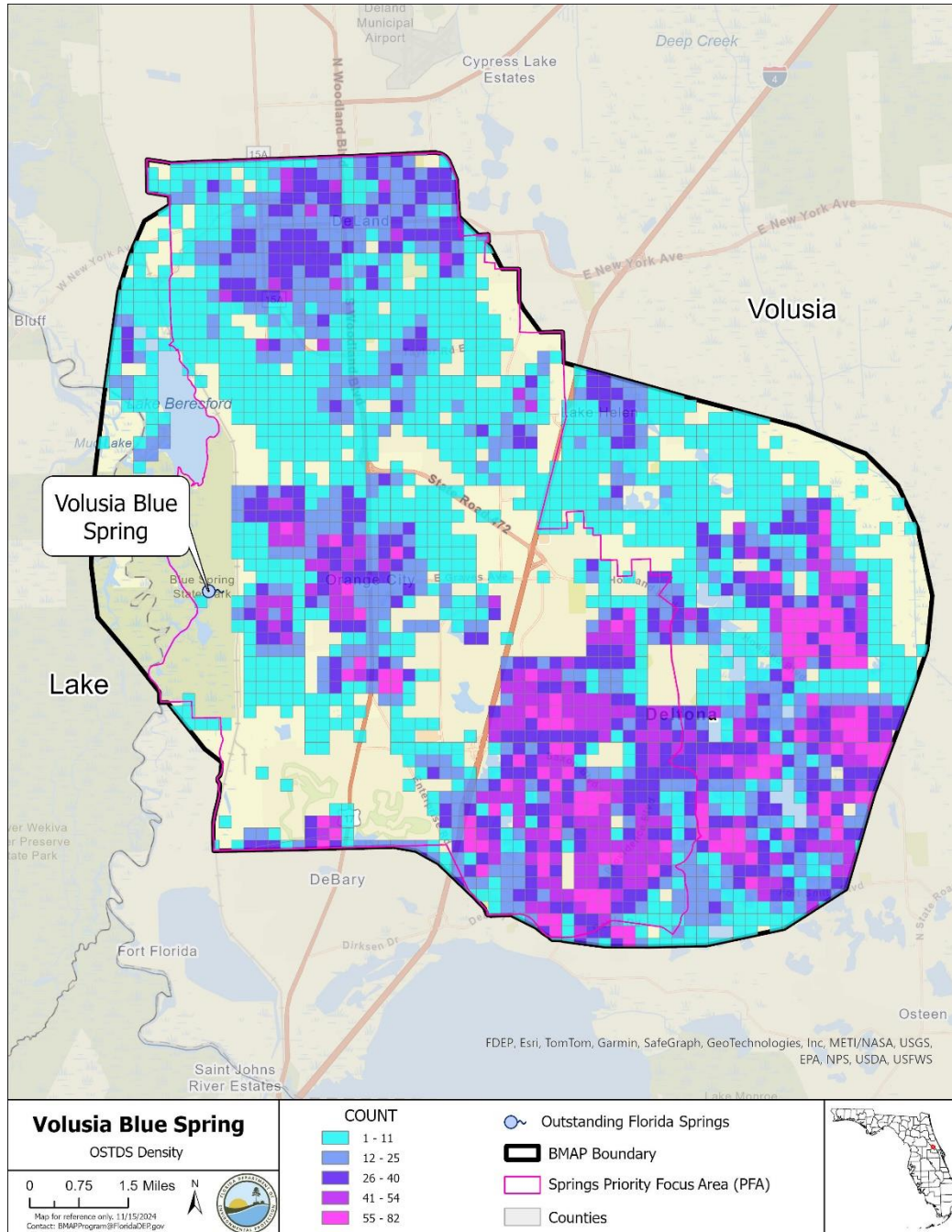
\*Estimated reductions are for either enhancement or sewer per parcel classification. Reductions cannot be combined for the same parcel classification but can be combined between the different classifications. For example, the sewer credit associated with parcels one acre or less in size can be combined with the sewer credit associated with parcels one acre or greater in size.

Recharge Area	OSTDS Parcels One Acre or Less in PFA	Credit for Enhancement (lbs/yr)	Credit for Sewer (lbs/yr)
High	15,917	121,837	231,490
Medium	8,385	35,657	67,749
Low	1,433	1,219	2,316
<b>Totals</b>	<b>25,735</b>	<b>158,713</b>	<b>301,554</b>

Estimated reductions are for either enhancement or sewer per parcel classification. Reductions cannot be combined for the same parcel classification but can be combined between the different classifications.

Nitrogen impacts from new development could also be reduced through prohibiting new conventional OSTDS on all lot sizes throughout the BMAP area. Local governments can develop

programs to help fund the additional costs required to upgrade existing OSTDS to include nutrient reducing features. The funding program will be designed to prioritize OSTDS where it is most economical and efficient to add nutrient reducing features (i.e., systems needing a permit for a repair or modification, within the PFA, and on lots of one acre or less). Local governments can apply for competitive grant funding from DEP programs, which are available at [ProtectingFloridaTogether.com](https://www.floridadep.com/protecting-florida-together).



**Figure E-1. Locations of OSTDS in the PFA in the Volusia Blue Spring BMAP**

## E.4 Public Education Plan

DEP will develop and disseminate educational material focused on homeowners and guidance for builders and septic system contractors. The materials will identify the need for enhanced nitrogen reducing OSTDS along with the requirements for installing nitrogen reducing technologies under this OSTDS remediation plan. DEP will coordinate with industry groups such as Florida Home Builders Association and Florida Onsite Wastewater Association (FOWA).

DEP's Onsite Sewage Program's website provides information on the following:

- The requirements for nitrogen-reducing systems for springs protection and BMAPs (<https://floridadep.gov/water/onsite-sewage/content/springs-protection-and-basin-management-action-plans-bmaps>).
- Information for septic system owners and buyers (<https://floridadep.gov/water/onsite-sewage/content/information-septic-system-owners-and-buyers>).
- Information for septic tank contractor (<https://floridadep.gov/water/onsite-sewage/content/septic-tank-contractor-registration>).

UF-IFAS has developed a website that includes frequently asked questions, and extensive information for septic system owners and local governments (<https://water.ifas.ufl.edu/septic-systems/your-septic-system/>).

## **Appendix F. Technical Support Information**

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This appendix is being shared as a separate file until the BMAP documents are finalized.

## **Appendix G: Wastewater Facilities**

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

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

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

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

<b>Facility Name</b>	<b>Permit Number</b>
Deland/ Wiley M Nash WRF	FL0020303
Deltona Lakes	FLA111724
Deltona/Eastern WRF	FLA709883
Southwest Regional WRF BNR Removal	FLA011128
VC/Southwest WWTF-2	FLA011121



## Appendix H: Golf Course NMPs

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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 H-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 H-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
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	-	-	-

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

- A 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.
- 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		
<b>Totals</b>		

#### Fertilizer Applications

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

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)
	Greens					
	Fairways					
	Roughs					
November	Tees					
	Greens					
	Fairways					
	Roughs					
December	Tees					
	Greens					
	Fairways					
	Roughs					
<b>Totals</b>						

#### Amount of Reuse/Reclaimed Water Applied

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

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

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

- c. Soil sampling methods and results for each area receiving fertilizer applications. Areas receiving fertilizer applications shall be sampled once every three years. Soil samples

shall be collected and analyzed according to UF-IFAS/DEP recommendations or standard industry practice. Soil samples shall be analyzed, at minimum, for:

1. Nitrogen
2. Phosphorus

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

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

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

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

1. Nitrogen
2. Phosphorus.

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

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

e. Tissue sampling methods and results. Tissue samples shall be collected and analyzed according to UF-IFAS/DEP recommendations or standard industry practice.

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

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

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

## **Appendix I. Agricultural Enrollment and Reductions**

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FDACS provided 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**

#### *Best Management Practices (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 a 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 Volusia Blue Spring BMAP, there are no aquaculture facilities under certification with the FDACS Division of Aquaculture as of November 2024. As with agricultural land use in Florida, aquaculture facilities are frequently in and out of production. The facilities being provided may no longer be in operation and/or there may be new companies in different parts of the basin by the next BMAP iteration.

### *Forestry*

The FDACS 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.

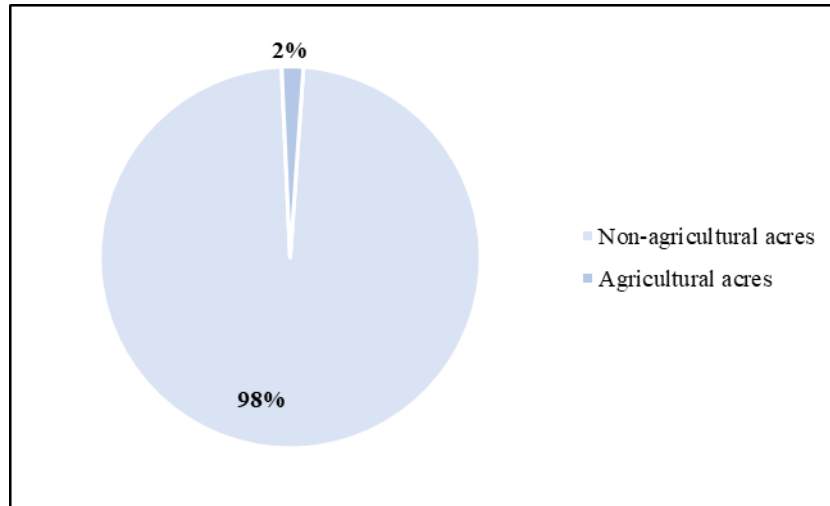
When developing a BMAP, agricultural nonpoint source loading is estimated using a broad methodology based on statewide land use data. Oftentimes, this results in properties being designated as agricultural nonpoint pollution sources and creates an obligation for these properties to enroll in the FDACS 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 I-1** and **Figure I-1** show the percentage of agricultural land use within the Volusia Blue Spring 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 I-1. Agricultural land use in the Volusia Blue Spring BMAP**

Non-agricultural acres	66,707
Agricultural acres	1,245



**Figure I-1. Agricultural acres compared to non-agricultural acres in the BMAP area**

## FDACS BMP Program Metrics

### *Enrollment Delineation and BMAP Metrics*

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

### *Summary Tables*

**Table I-2. Agricultural lands enrolled in the Volusia Blue Spring BMAP area by BMP Program Commodity**

Commodity	Agricultural Acres Enrolled
Citrus	1
Cow/Calf	243
Multiple Commodities	11
Nursery	23
<b>Total</b>	<b>278 (22%)</b>

As of July 2024, 22% of the agricultural acres in the Volusia Blue BMAP area are enrolled in FDACS' BMP program. **Table I-2** shows the acreages enrolled in the BMP Program by commodity. It is important to note that producers often undertake the production of multiple commodities on their operations, resulting in the requirement to implement the applicable BMPs from more than one BMP manual. When this occurs, the acres enrolled under more than one BMP manual are classified as “multiple commodity” and not included in the individual commodity totals to prevent duplication.



Enrollment Map

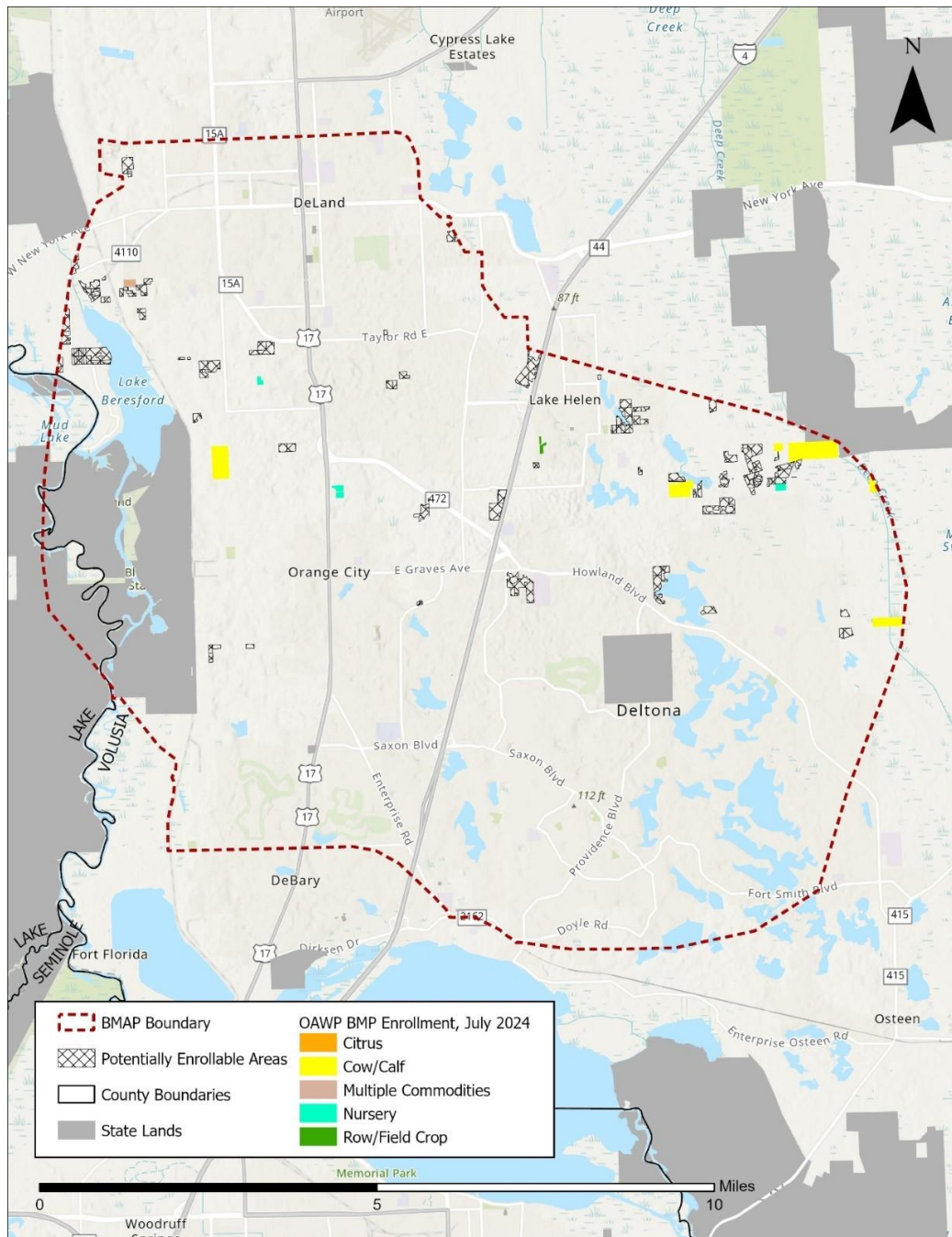


Figure I-2. Agricultural enrollment in the Volusia Blue Spring BMAP

### 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 I-3** shows the breakdown of agricultural lands within the Volusia Blue Spring BMAP based on the FSAID 11 and the results of the FDACS unenrolled agricultural lands characterization.

**Table I-3. Agricultural lands in Volusia Blue Spring BMAP**

\* Enrollment information current as of July 2024.

Crediting Location	Agricultural Acres	Unenrolled - Unlikely Enrollable Acres	Agricultural Acres - Adjusted	Agricultural Acres Enrolled*
BMAP Wide	2,318	1,074	1,245	278

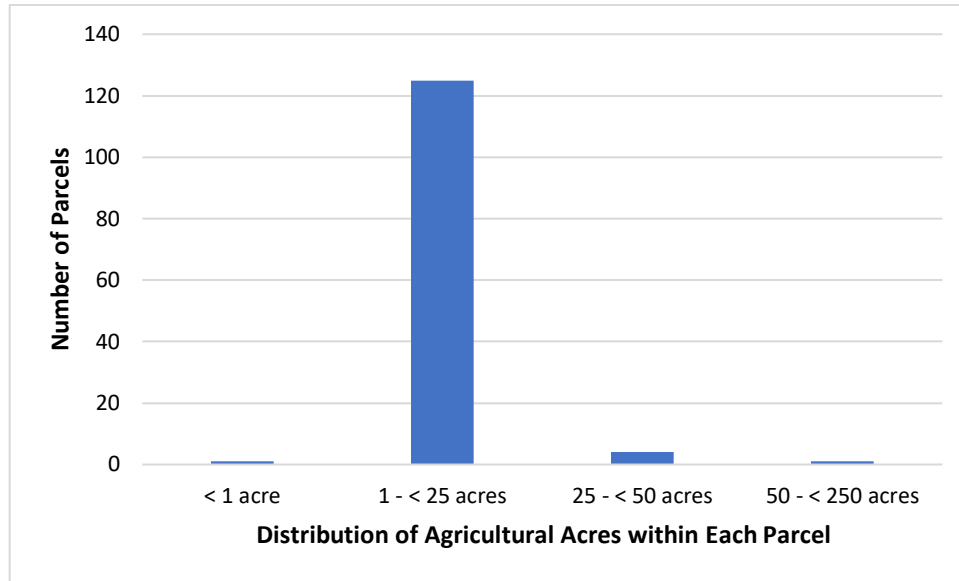
### Potentially Enrollable Lands

There are 967 acres of potentially enrollable lands within the Volusia Blue Spring BMAP based on the assessment of unenrolled agricultural lands performed by FDACS. **Table I-4** shows the potentially enrollable acreages by crop type. **Figure I-3** shows the count of potentially enrollable parcels based on size classifications used by FDACS.

**Table I-4. Potentially enrollable acres by crop type**

Crop Type	Acres
Crops	17
Fallow	57
Fruit (Non-citrus)	3

Crop Type	Acres
Grazing Land	815
Livestock	68
Nursery	6
<b>Total</b>	<b>967</b>



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

### FDACS Cost Share

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

### *Cost share project types and estimated nutrient reduction efficiencies*

**Table I-5** identifies agricultural technologies eligible for funding through cost-share assistance



and the associated nutrient reductions<sup>1</sup>. The nutrient reductions were used to develop a methodology to estimate nutrient reductions for NOIs that have received cost-share funding<sup>2</sup>. The NOI boundary, based on property appraiser parcel data, was considered the area treated by the cost-shared agricultural technology or project. For parcels with more than one cost-share project, OAWP identified the order of treatment to determine the reductions for the multiple projects based on each cost-shared agricultural technology. Estimated nutrient reductions from FDACS cost share in the Volusia Blue Spring BMAP are shown in **Table I-6**.

**Table I-5. Cost share project types and estimated nutrient reduction efficiencies**

<b>Project Types</b>	<b>BMP Category</b>	<b>Mechanism</b>	<b>N Impact</b>
Nutrient Management Plan	Precision Nitrogen Management	N application reduction	15%
Plastic Mulch Layer - Drip Tape	Precision Nitrogen Management	N leaching reduction	18%
Controlled Release Fertilizer	Precision Nitrogen Management	N leaching reduction	20%
Applicator (Hoop Sprayer)	Precision Nitrogen Management	N application reduction	20%
Applicator (Liquid)	Precision Nitrogen Management	N application reduction	15%
Spreader (Dry Variable)	Precision Nitrogen Management	N application reduction	15%
Applicator (Dry Banding)	Precision Nitrogen Management	N application reduction	25%
Cover Crops	Tillage, Cover Crops and Soil Health BMPs	N leaching reduction	30%
Vertical Till	Tillage, Cover Crops and Soil Health BMPs	N leaching reduction	6%
Flail Mower	Tillage, Cover Crops and Soil Health BMPs	N application reduction	8%
Integrated Crop-Livestock Rotations	Livestock BMPS	N leaching reduction	50%
Rhizoma Peanut Mix Pasture System	Livestock BMPS	N application reduction	31%
Fencing	Livestock BMPS	N leaching reduction	20%
Livestock Water Exclusion	Livestock BMPS	N runoff reduction	33%
Alternative Water Supply - Livestock	Livestock BMPS	N runoff reduction	33%
Free Stall Barn	Livestock BMPS	N leaching reduction	30%
Culvert/Riser	Drainage and Erosion Reduction BMPs	N runoff reduction	16%
Water Control Structures or Stormwater Improvement	Drainage and Erosion Reduction BMPs	N runoff reduction	17%
Tailwater Recovery Ponds	Drainage and Erosion Reduction BMPs	N runoff reduction	42%
Storage – Compost	Storage	N leaching reduction	26%

<sup>1</sup> FDACS, 2024. Nitrogen Benefits of Agricultural Best Management Practices for Florida: Summary of Findings. Florida Department of Agriculture and Consumer Services (FDACS) Office of Agricultural Water Policy. In collaboration with The Balmoral Group.

<sup>2</sup> FDACS, 2024. Nitrogen Reductions BMP Analysis: Results and Process Description. Florida Department of Agriculture and Consumer Services (FDACS) Office of Agricultural Water Policy. In collaboration with The Balmoral Group.



Project Types	BMP Category	Mechanism	N Impact
Storage – Potting Soil	Storage	N leaching reduction	23%
Rotation – mobile corral	Livestock BMPS	N leaching reduction	20%
Rotation – portable feeder/wagon	Livestock BMPS	N leaching reduction	20%

**Table I-6. Nutrient reductions from FDACS cost share**

BMP Category	Estimated TN Reductions to Groundwater
Livestock BMPS	196
Tillage, Cover Crops and Soil Health BMPs	2
Total	198

## 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 J. Private Facilities with BMAP Responsibilities

The tables below list privately owned and operated facilities that have been identified as contributing sources of nitrogen loading to the groundwater in the Volusia Blue Spring BMAP. Publicly-owned facilities have been assigned as a part of the responsible entities allocation. The golf courses in **Table J-1** are subject to nutrient management strategies identified in section 2.8.3 and **Appendix H** of this document. The WWTFs in **Table J-2** are subject to relevant nutrient management strategies identified in section 2.6 and **Appendix G** of this document. All facilities or entities listed below have been assigned required TN reductions to meet the TMDLs. DEP encourages coordination between public and private entities as necessary to address loading in the basin.

**Table J-1. Privately owned or operated golf courses in the Volusia Blue Spring BMAP**

County	Golf Course Name
Volusia	DeBary Golf and Country Club
Volusia	Deltona Hills Golf & Country Club
Volusia	Glen Abbey Golf Course
Volusia	Victoria Hills Golf Course

**Table J-2. Privately owned or operated WWTFs in the Volusia Blue Spring BMAP**

Facility ID	WWTF Name
FLA011197	Arlington Squares Apartments WWTF
FLA011265	Candlelight WWTF
FLA011237	Luna Sands Resort WWTF
FLA011220	Days Inn of Orange City WWTF
FLA011199	Lake Helen Mobile Home Villas WWTF
FLA011219	Land O Lakes MHC WWTF
FLA011234	Paradise Lakes Campground WWTF
FLA011203	Quality Inn WWTF