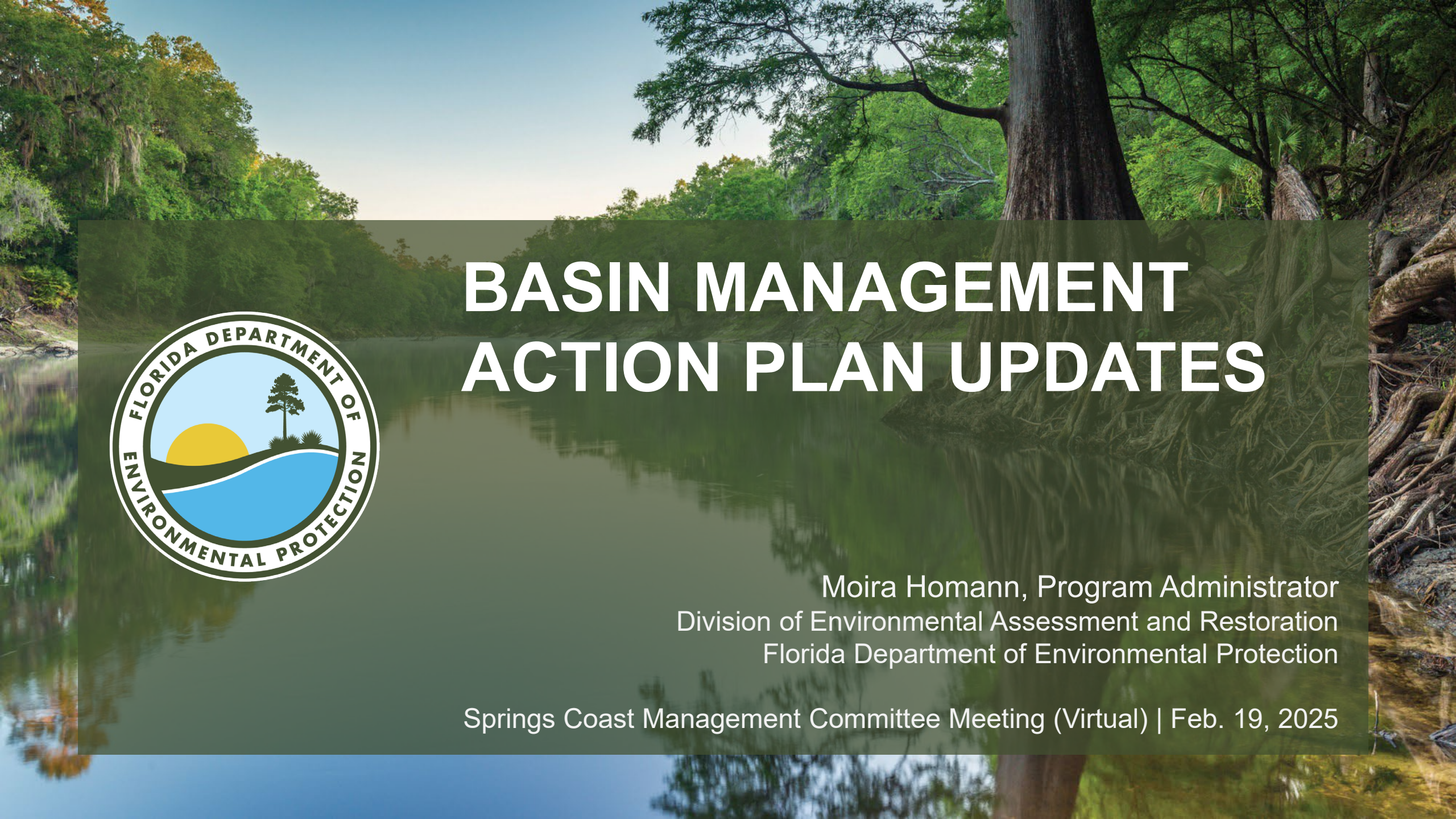


BASIN MANAGEMENT ACTION PLAN UPDATES

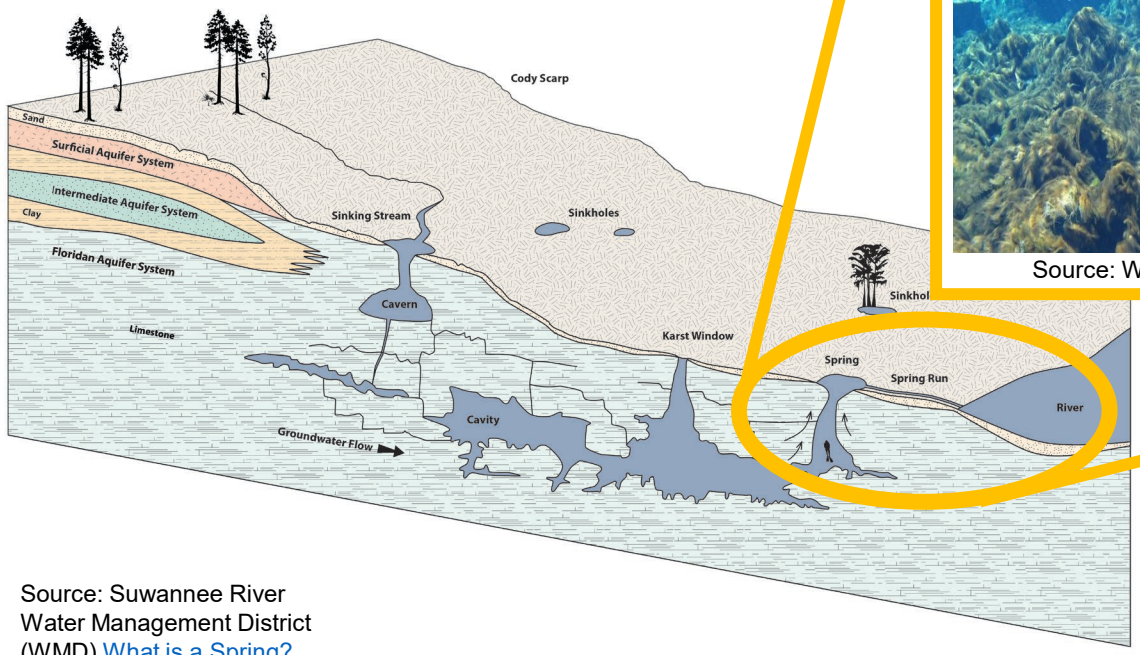
Moira Homann, Program Administrator
Division of Environmental Assessment and Restoration
Florida Department of Environmental Protection

Springs Coast Management Committee Meeting (Virtual) | Feb. 19, 2025

AGENDA

- Basin Management Action Plan (BMAP) Overview.
  - Background
  - Statutes and Legislation.
- Southwest Florida Water Management District (SWFWMD) Springs BMAPs status.
- BMAP Updates Next Steps.

BACKGROUND
SPRINGS RESTORATION

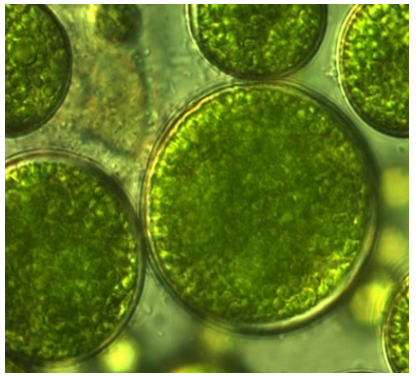


Source: Suwannee River Water Management District (WMD) What is a Spring?

Impairment: Not meeting water quality standards.

Source: Weeki Wachee TMDL

Algae growth can be caused by **excess nutrients.**



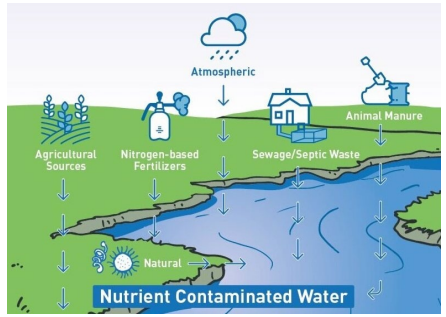
Source: Shutterstock

Total maximum daily load (TMDL): The maximum amount of a pollutant that a waterbody can receive and still maintain its designated uses. **This represents the target for restoration.**

Source: Florida Geological Survey - Rainbow Spring #4

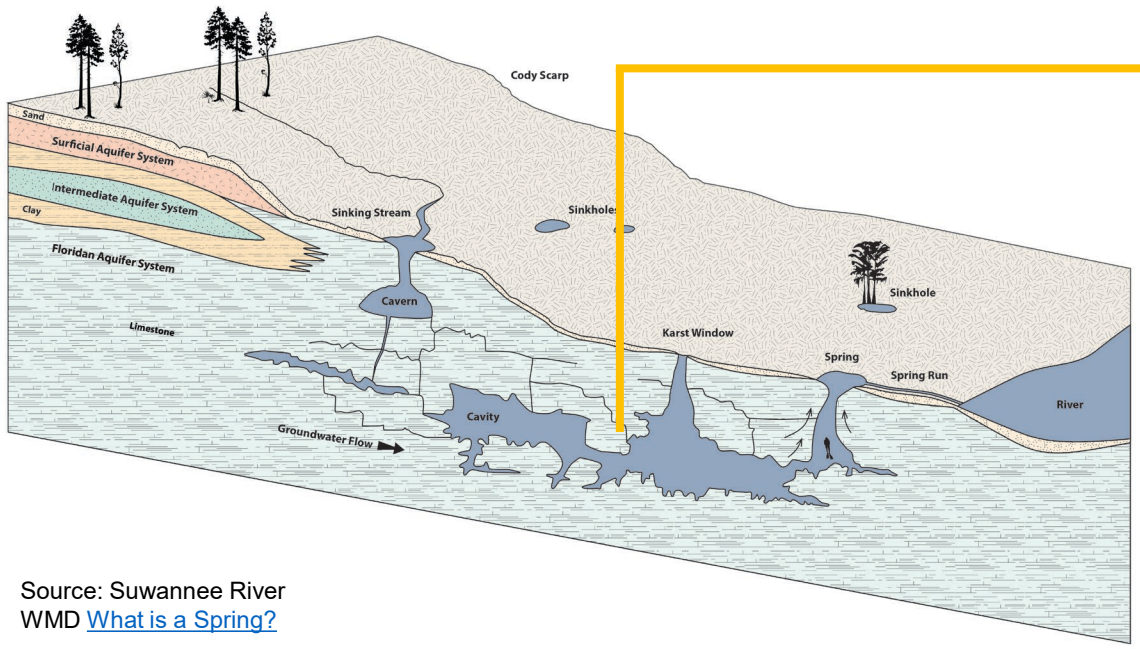
BACKGROUND
SPRINGS RESTORATION

Excess nutrients come from **sources on the landscape.**



Source: Beta Analytics

BMAP Projects: Efforts that result in the reduction or prevention of nutrients to the waterbodies addressed by the BMAP.



Source: Suwannee River WMD [What is a Spring?]

Complex groundwater dynamics lead to variable travel times to the spring vent.

Water quality monitoring is performed through a network of surface water, spring vent and groundwater stations to assess waterbodies and measure progress towards restoration targets.

BMAP: An adaptive framework for water quality restoration that contains a comprehensive set of solutions developed to achieve the pollutant reductions established by TMDL.

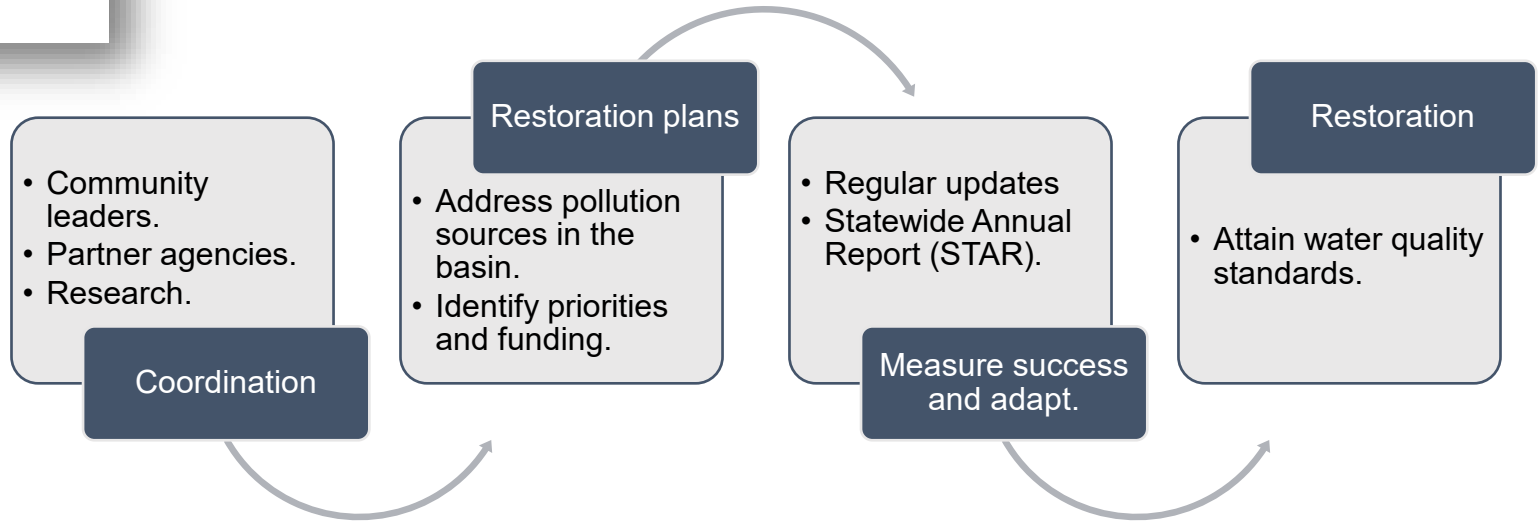

Source: Florida Geological Survey - Rainbow Spring #4

BMAPs

One of DEP's frameworks for **restoring water quality** in an impaired waterbody.

BMAPs are:

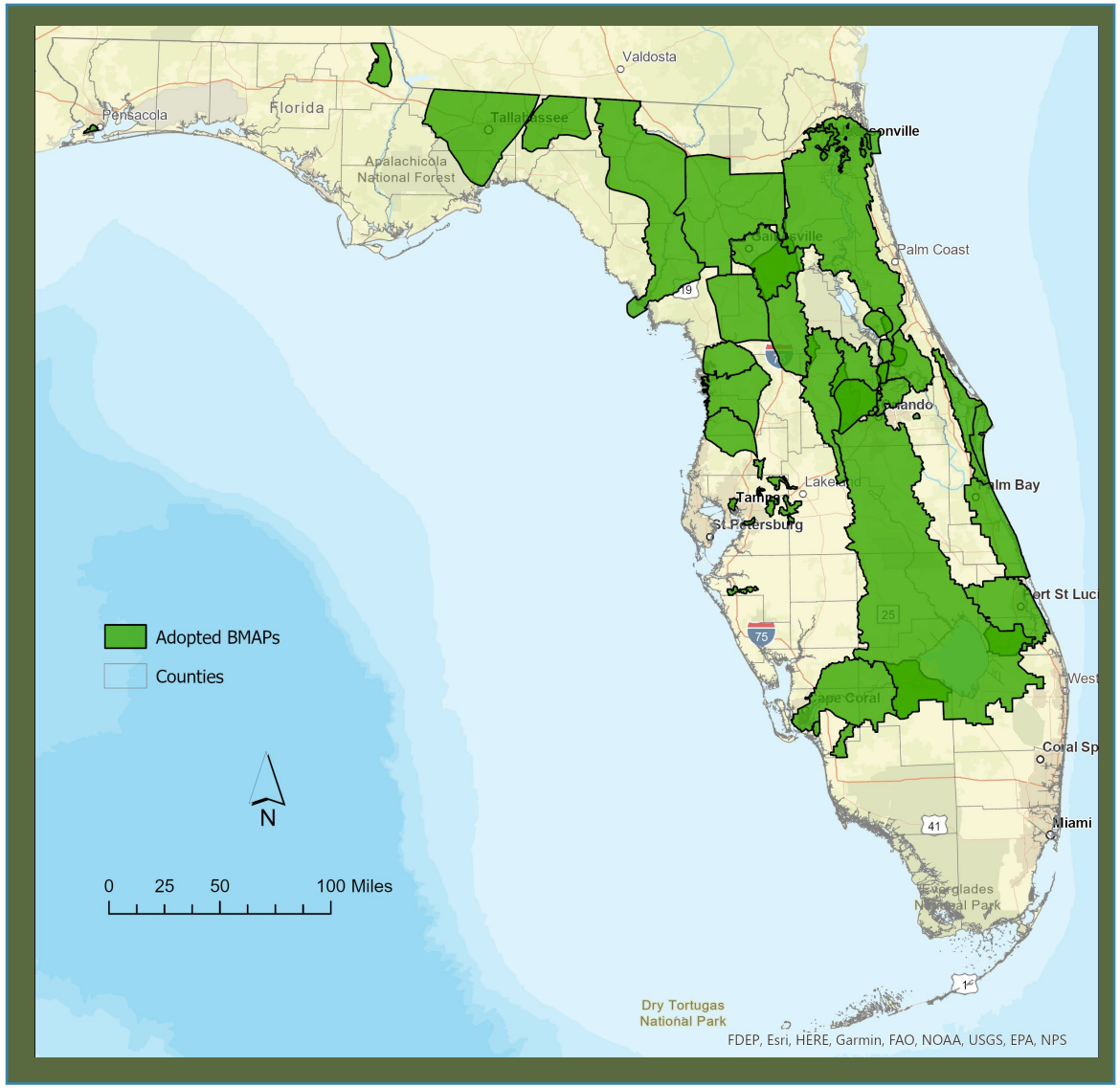
- Developed with stakeholder input.
- Adopted by the Florida Department of Environmental Protection (DEP) Secretarial Order.
- Enforceable.
- Implemented through a phased approach.
- Reported on annually.
- Updated regularly.



BMAPS ACROSS THE STATE

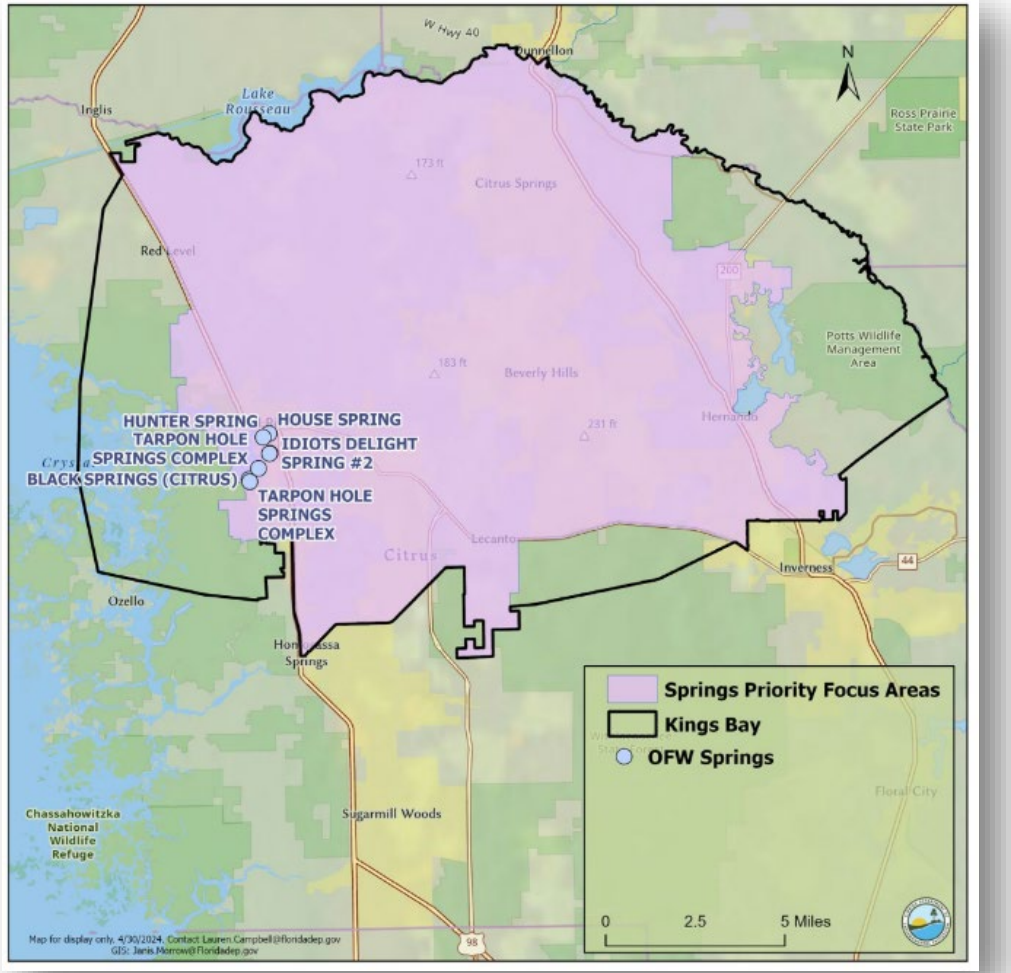
33 BMAPs:

- 14 springs.
- 19 surface water:
  - Three Northern Everglades and Estuaries Protection Program (NEEPP).
  - Three Indian River Lagoon.
  - Seven other nutrient.
  - Six bacteria.

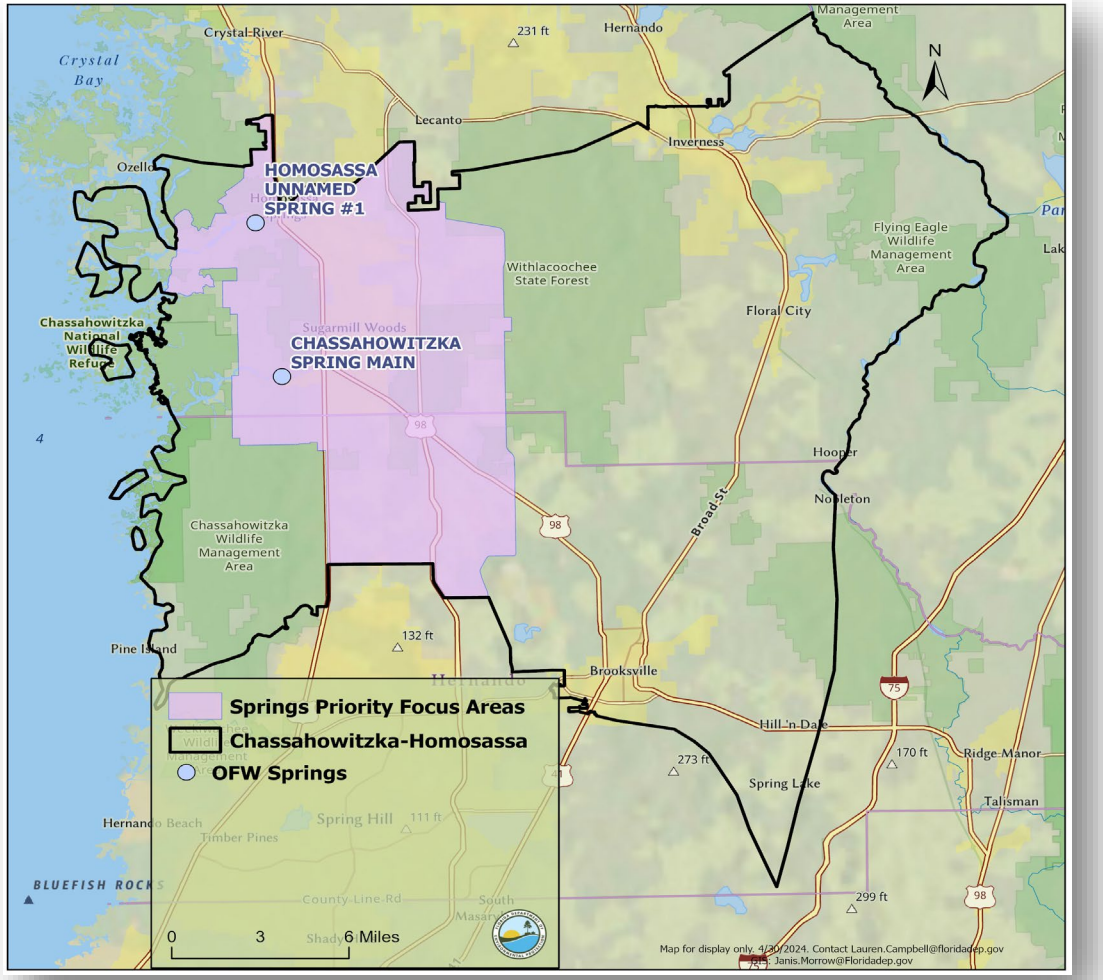


OUTSTANDING FLORIDA SPRINGS BMAPS IN THE SWFWMD

CRYSTAL RIVER - KINGS BAY

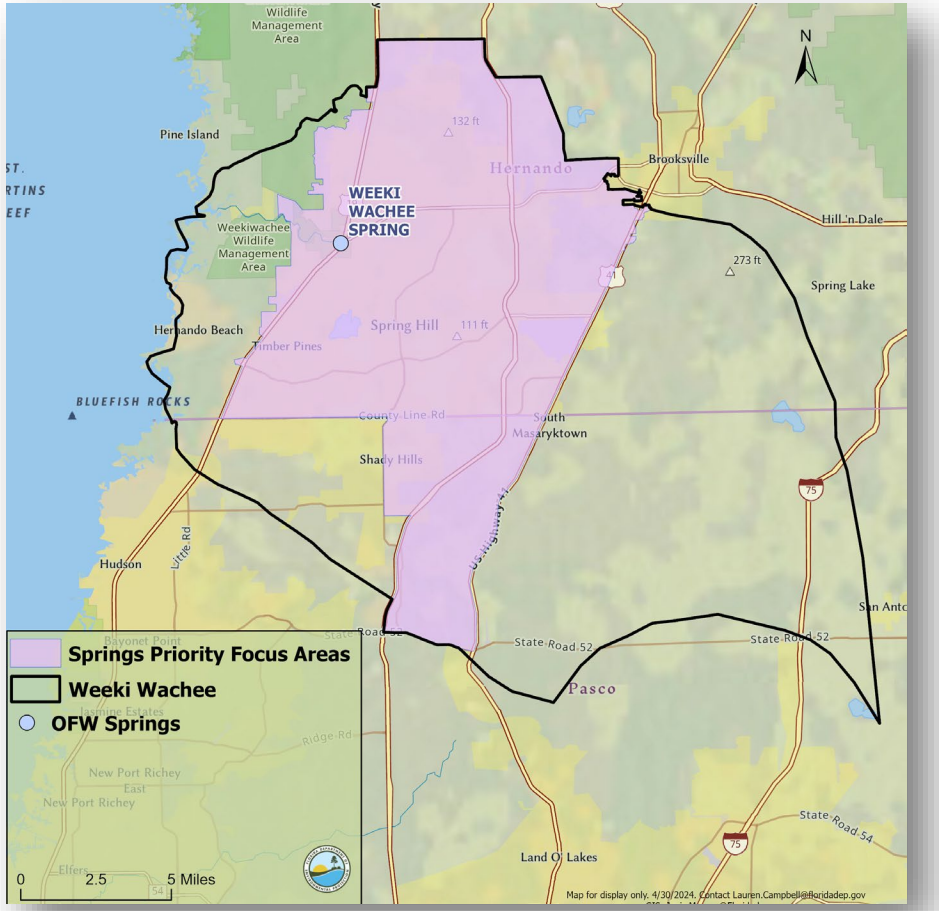


HOMOSASSA AND CHASSAHOWITZKA SPRING GROUPS

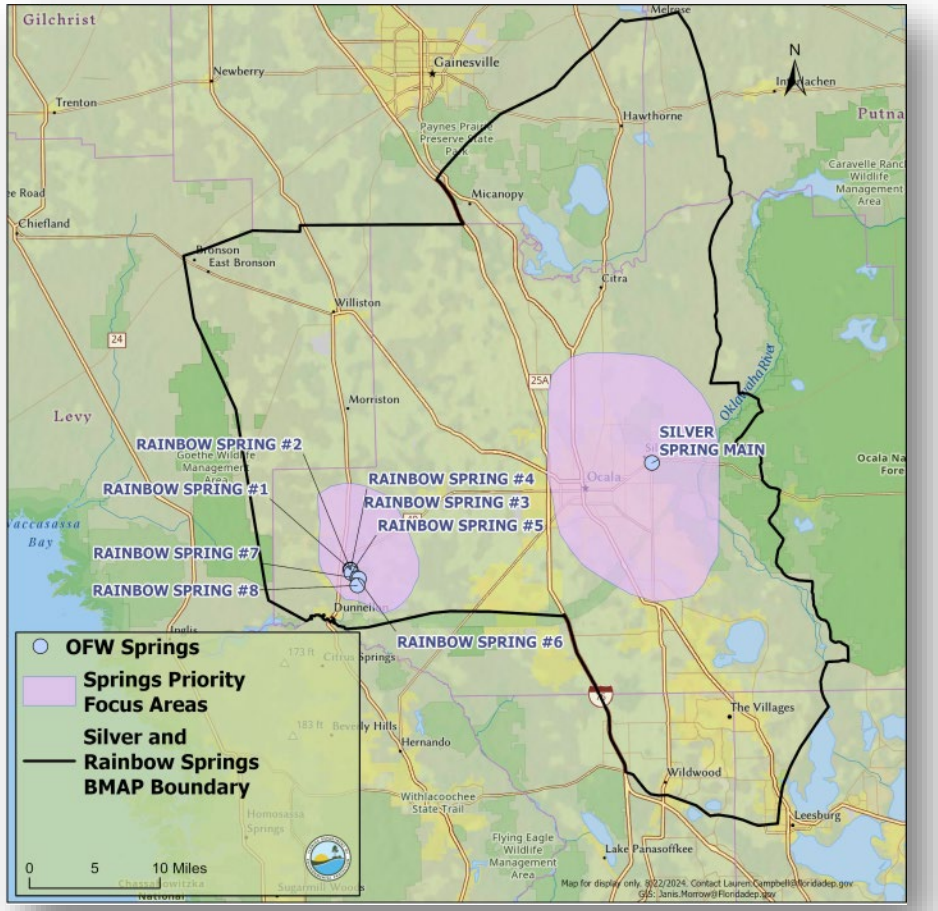


OUTSTANDING FLORIDA SPRINGS BMAPS IN THE SWFWMD

WEEKI WACHEE



RAINBOW SPRING GROUP AND RAINBOW RIVER AND SILVER SPRINGS AND UPPER SILVER RIVER



KEY BMAP COMPONENTS

- TMDLs being addressed.
- Area addressed by the restoration plan.
- Identify sources.
- Phased implementation approach.
- Milestones.
- Projects and management strategies.
- Future growth impacts.

Projects to meet the TMDL:

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

Process to assess progress toward achieving the TMDL:

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

GOVERNING FLORIDA STATUTES AND LEGISLATION

Recent legislation:

- Florida Watershed Protection Act (section 403.067, F.S.).
- Florida Springs and Aquifer Protection Act, Part VIII of Chapter 373, F.S.
- Senate Bill 712 (2020), Clean Waterways Act.
- House Bill (HB) 1379 (2023).
- HB 1557 (2024).

Recent legislative requirements:

- Wastewater treatment plans and/or onsite sewage treatment and disposal system (OSTDS) remediation plans from local governments.
- Prohibition of new conventional OSTDS on lots one acre or less in BMAPs.
- List of identified projects to meet five-year milestones.
- Agricultural Cooperative Regional Water Quality Improvement Elements.
- Prohibitions expanded from priority focus area (PFA) to entire BMAP.
- Advanced waste treatment (AWT) required for more treatment effluent, including certain reclaimed water.

BMAP UPDATES

ADOPTED BY JULY 1, 2025

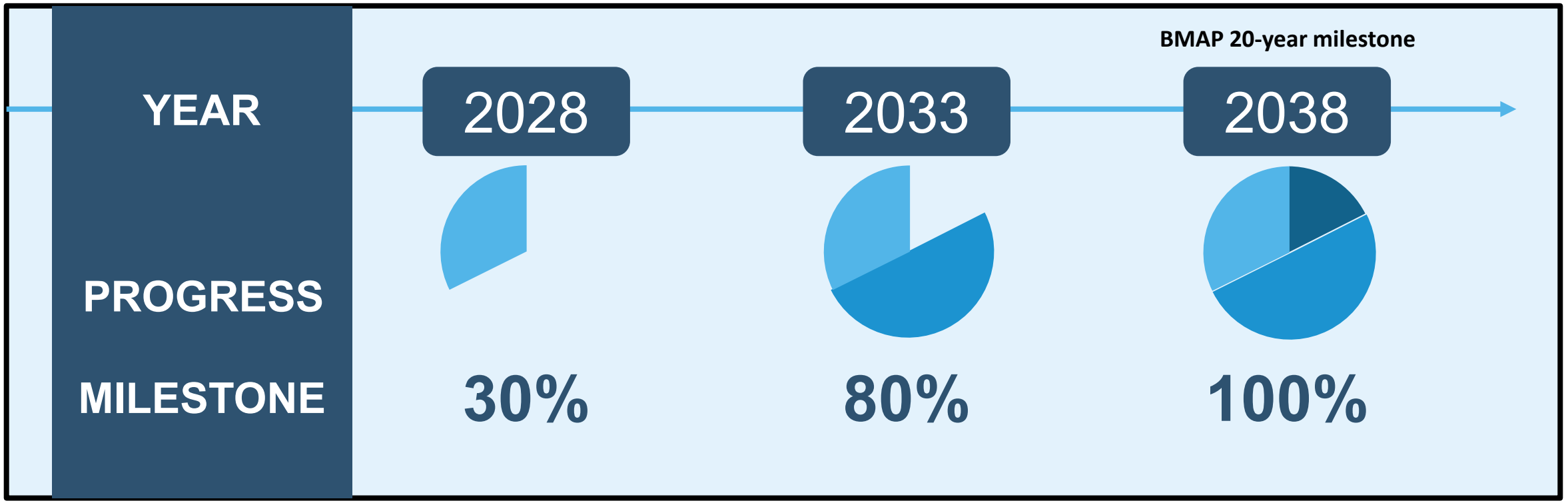
- Nitrogen Source Inventory Loading Tool (NSILT) updates.
- Spring vent load analyses.
- Entity allocation development.
- Future growth.
- Establish five-year milestones for project implementation.
- Incorporate additional projects.
- Incorporate Clean Waterways Act (2020) requirements.
- Incorporate HB 1379 (2023) and HB 1557

- Incorporate regional projects
- Water quality data evaluation:
  - Evaluation of the monitoring network (spring vent and groundwater).
  - Water quality trend analyses.
- Evaluate further OSTDS provisions.
- Evaluate the need for AWT or other more stringent effluent limits for wastewater facilities.
- Update the BMAP documents.

Source: WaterMatters.org

MILESTONES/REDUCTION SCHEDULE

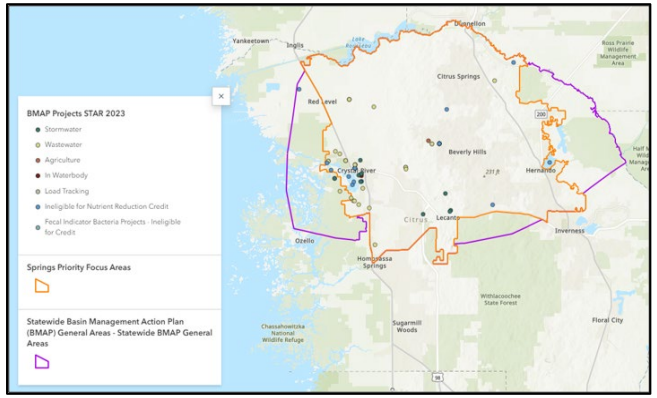
FIVE, 10 AND 15-YEAR PLAN

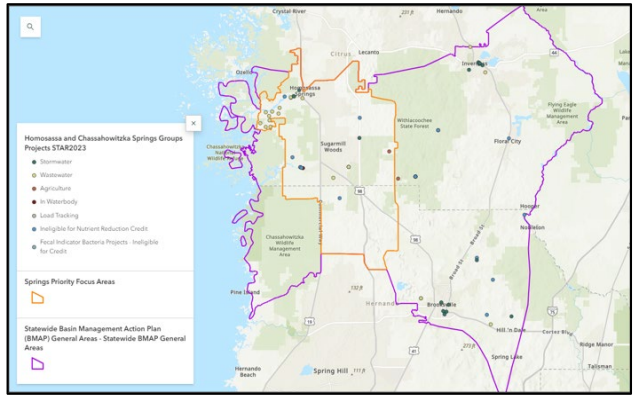


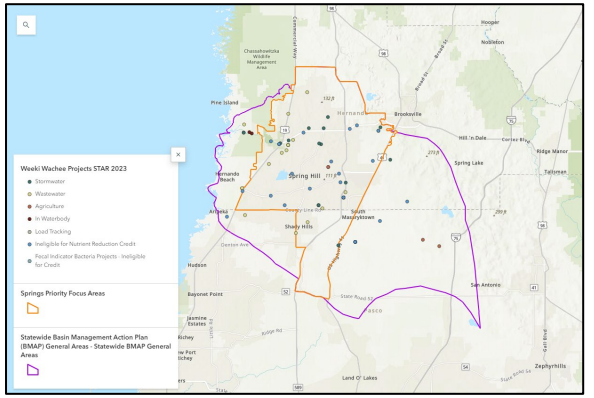
Assessment of progress toward these milestones must be conducted every five years and revisions to the plan must be made as appropriate. BMAPs use an adaptive management approach that allows for incremental load reductions through the implementation of projects and management strategies; however, the restoration target (the TMDL) remains the same.

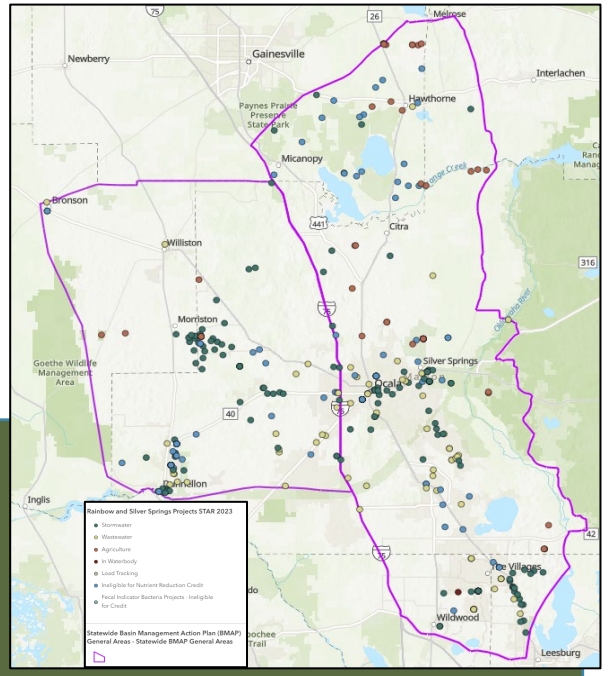
PROJECTS

HB 1379 (2023) REQUIREMENTS



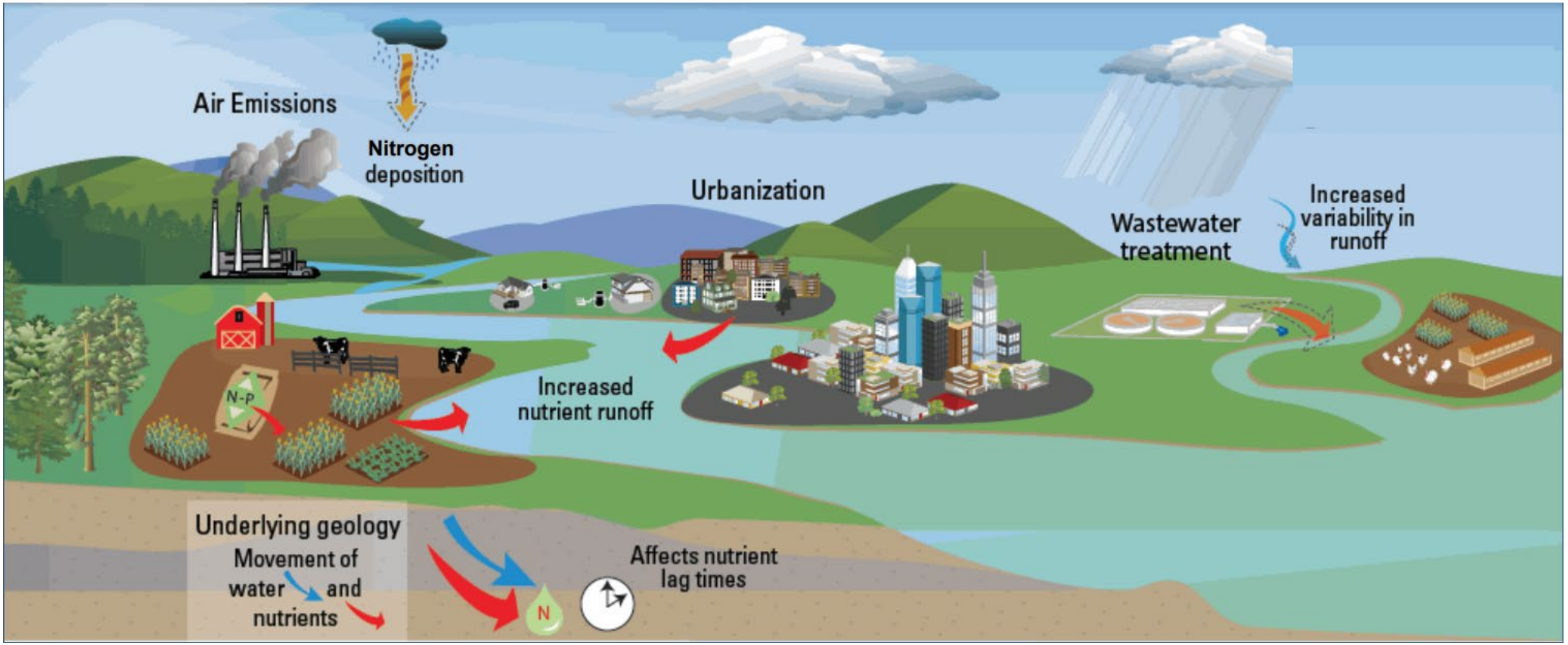






- Within a BMAP, it is critical that entities plan for and report projects and project updates to the state through the Statewide Annual Report (STAR) process.
- All projects needed to fulfill milestones should be included in the STAR, even if a funding source has not been identified.
- Reporting projects in the STAR allows the state to evaluate funding needs and prioritize projects to promote maximum environmental benefit and to meet milestones.
- Where entity allocations and milestones do not already exist, they will be added in the 2025 BMAP update or another BMAP update after completion of updated modeling. Interim management strategies will be included in the 2025 update for these BMAPs.

SOURCES OF NUTRIENTS

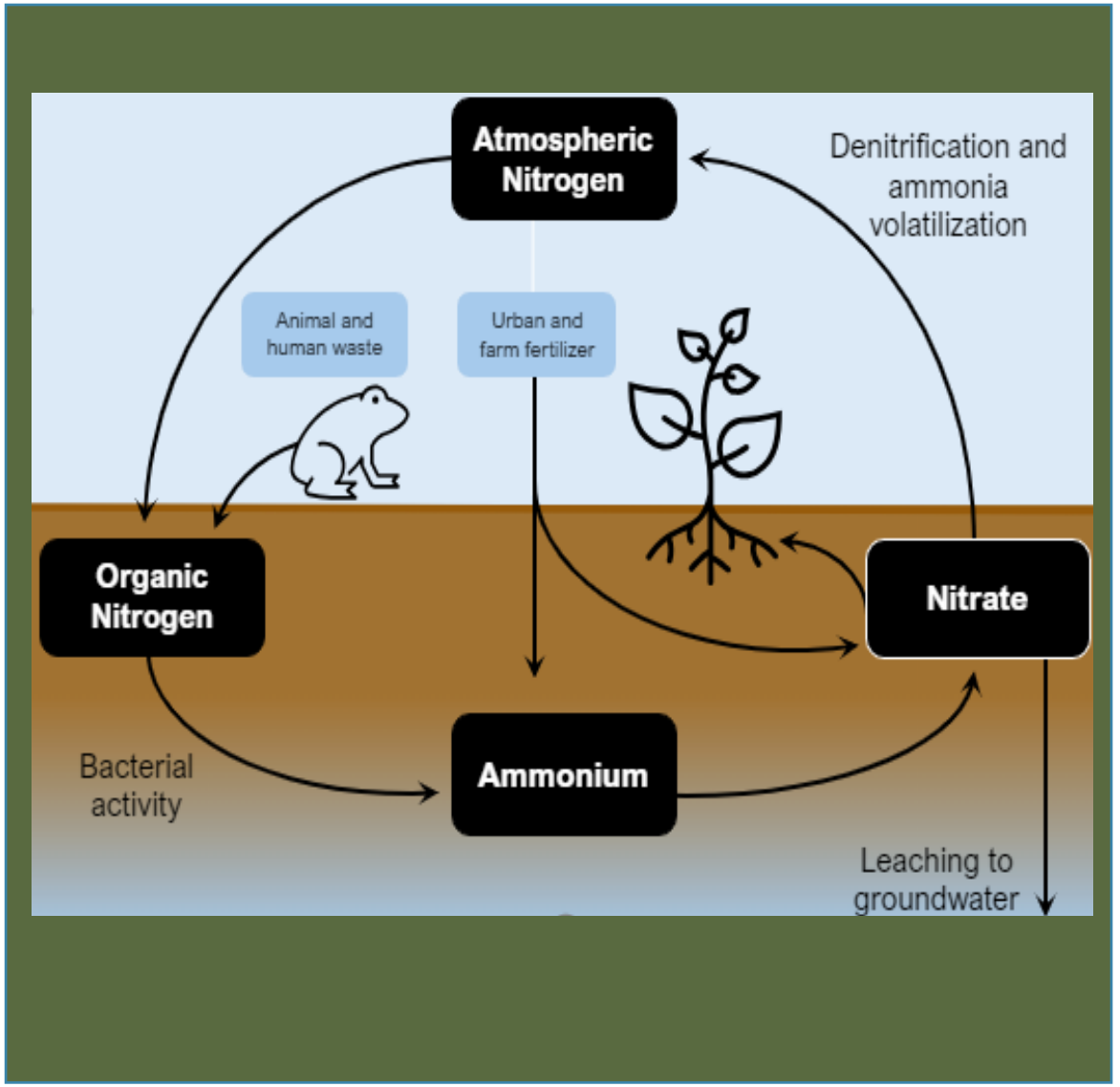


Source:
[Nutrient trends in the Chesapeake Bay watershed | U.S. Geological Survey]

THE NITROGEN CYCLE

Nitrogen goes through biological, physical and chemical processes as it travels through the environment. This series of interactions is known as the nitrogen cycle.

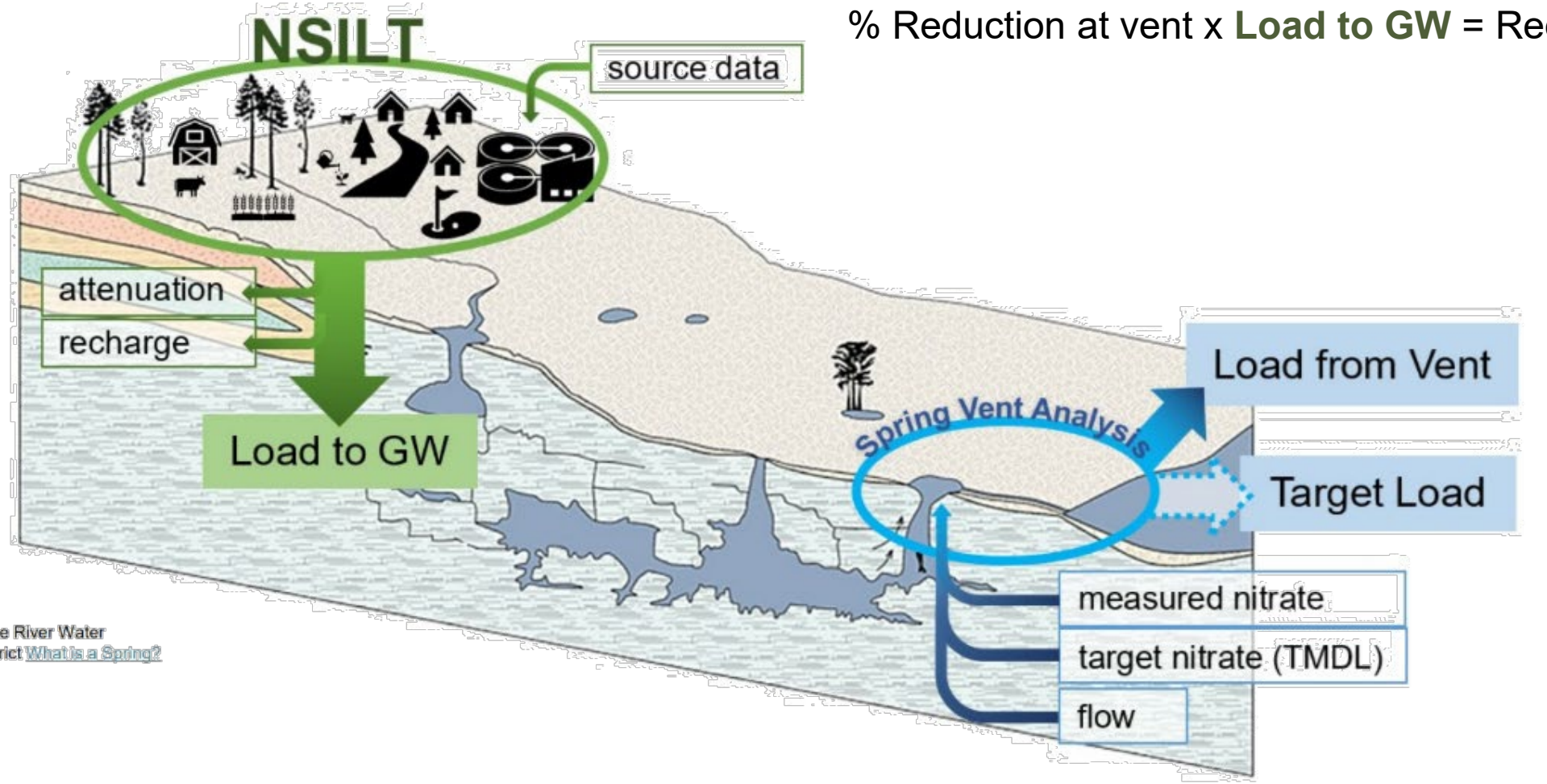
Attenuation of nitrogen refers to the processes of immobilization, denitrification, volatilization and cation exchange that prevent leaching of nitrogen.



SPRING VENT LOAD ANALYSIS

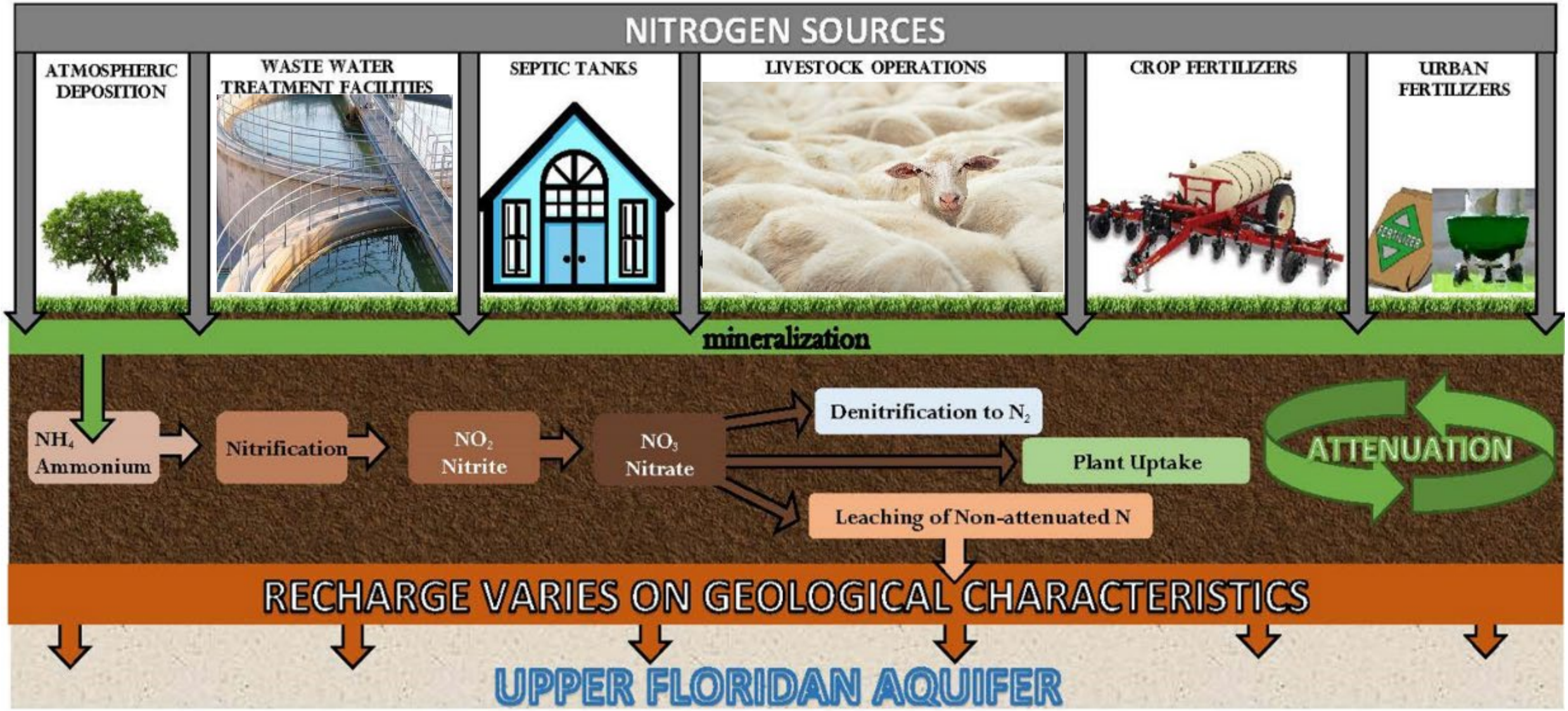
Load from Vent — Target Load = Reduction Goal

% Reduction at vent x **Load to GW** = Required Reductions



Source: Suwannee River Water Management District What is a Spring?

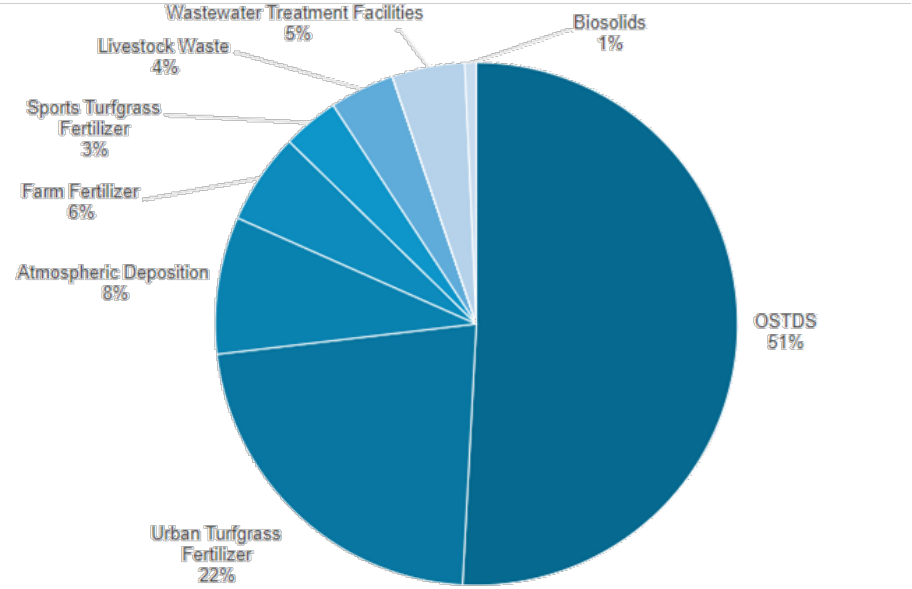
NITROGEN CYCLE AND ATTENUATION



DRAFT LOADS TO GROUNDWATER

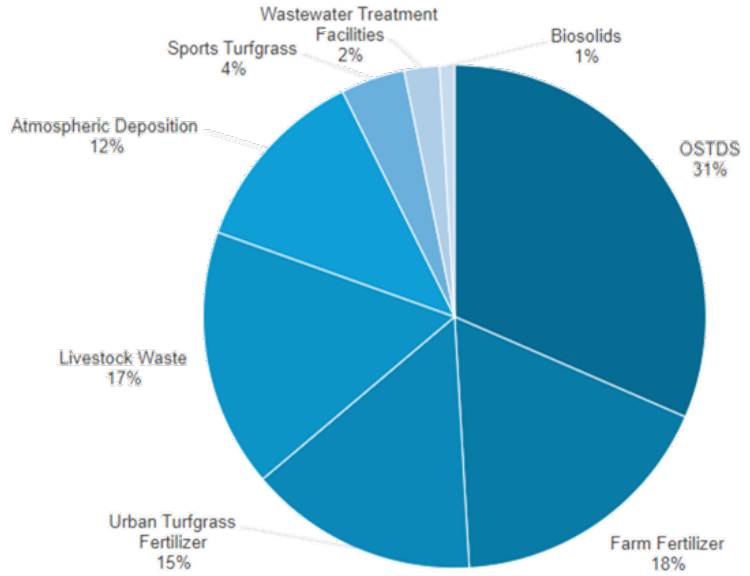
CRYSTAL RIVER - KINGS BAY

Kings Bay Spring Group	
Source	Annual Loading (lbs-N/yr)
Atmospheric Deposition	69,099
Wastewater Treatment Facilities	36,607
OSTDS	413,555
Urban Turfgrass Fertilizer	181,417
Sports Turfgrass Fertilizer	28,283
Farm Fertilizer	45,930
Livestock Waste	32,668
Biosolids	5,782
Total	**813,340**



HOMOSASSA AND CHASSAHOWITZKA SPRING GROUPS

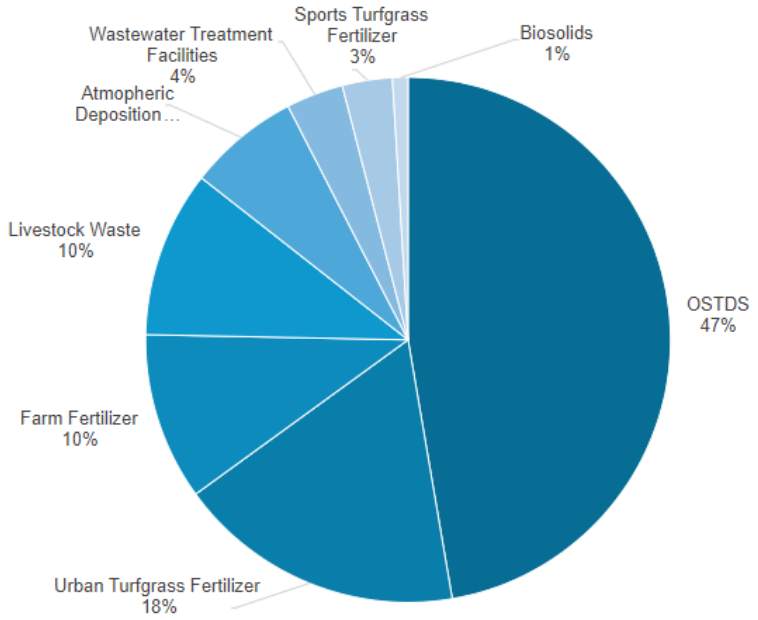
Homosassa Chassahowitzka Spring Groups	
Source	Annual Loading (lbs-N/yr)
Atmospheric Deposition	114,751
Wastewater Treatment Facilities	21,353
OSTDS	296,631
Urban Turfgrass Fertilizer	138,910
Sports Turfgrass Fertilizer	38,827
Farm Fertilizer	165,150
Livestock Waste	156,435
Biosolids	9,043
Total	**941,100**



DRAFT LOADS TO GROUNDWATER

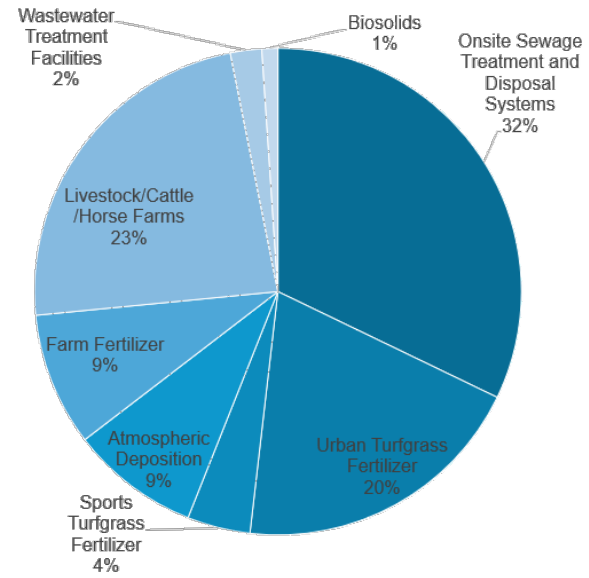
WEEKI WACHEE

Weeki Wachee Spring Group	
Source	**Annual Loading (lb-N/yr)**
Atmospheric Deposition	93,069
Wastewater Treatment Facilities	47,836
OSTDS	641,621
Urban Turfgrass Fertilizer	240,059
Sports Turfgrass Fertilizer	41,825
Farm Fertilizer	139,819
Livestock Waste	139,175
Biosolids	12,878
Total	**1,356,282**

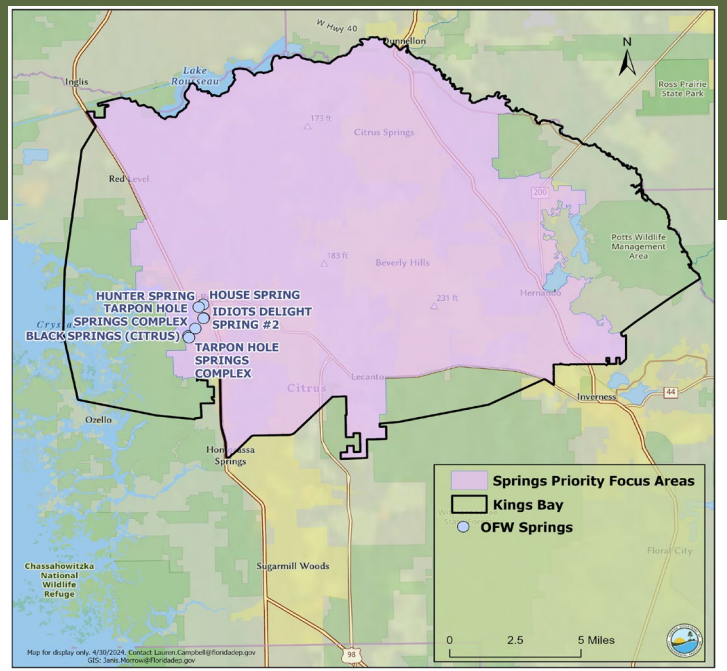


RAINBOW SPRING GROUP AND RAINBOW RIVER AND SILVER SPRINGS AND UPPER SILVER RIVER

Rainbow Spring Group and Rainbow River and Silver Springs and Upper Silver River BMAP Area	
Source	**Estimated Annual Loading (lbs-N/yr)**
Atmospheric Deposition	336,808
Wastewater Treatment Facilities	81,898
Onsite Sewage Treatment and Disposal Systems	1,265,209
Urban Turfgrass Fertilizer	774,333
Sports Turfgrass Fertilizer	164,784
Farm Fertilizer	348,742
Livestock/Cattle/Horse	921,420
Biosolids	41,561
Total	3,934,755



CRYSTAL RIVER-KINGS BAY BMAP



DRAFT Loading Summary

	Kings Bay Nitrogen Loads (lbs-TN/yr)	Source
Total Load at Spring Vents (October 2023)	453,400	Upper 95% confidence interval - nitrate data 2012-2022 and flow data from Crystal River and proportioned based on studies.
TMDL Load	259,009	TMDL target is 0.23 mg/L and using the same flow data from 2012-2021.
Percent Required Reductions	**43%**	
Total NSILT Load (October 2023)	**813,340**	2023 NSILT.
Required Reductions	**348,712**	Proportional decrease in NSILT load.

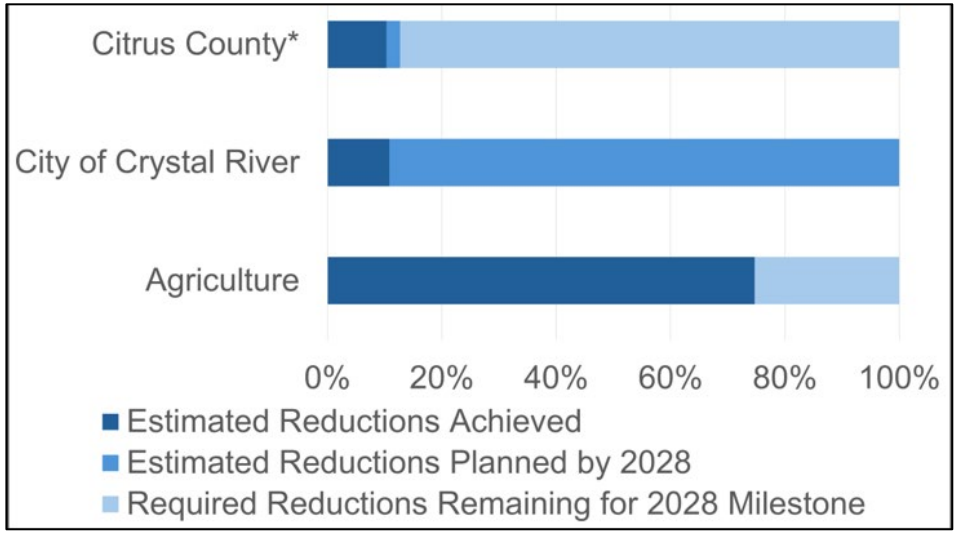
cfs: cubic feet per second
mg/L: milligram per liter

DRAFT Entity Required Reductions

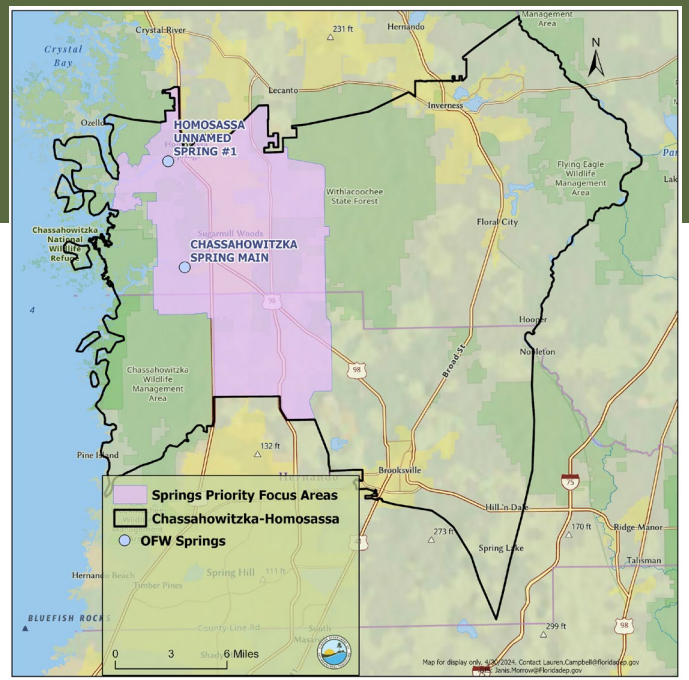
Entity	2028 Milestone (30%)	2033 Milestone (80%)	2038 Milestone (100%)
Citrus County	77,661	207,096	258,870
City of Crystal River	1,456	3,884	4,854
Agriculture	10,853	28,942	36,178
Private Wastewater Facilities	3,680	9,814	12,268
Private Golf Courses*	3,361	8,962	11,202

*Reductions for these entities will largely be tracked through permits and compliance actions.

Progress Toward 2028 Milestone by Entity



HOMOSASSA AND CHASSAHOWITZKA BMAP



DRAFT Loading Summary

	Homosassa Nitrogen Loads (lbs-TN/yr)	Chassahowitzka Nitrogen Loads (lbs-TN/yr)	Source
Total Load at Spring Vents (October 2023)	271,301	207,128	Upper 95% confidence interval - nitrate and flow data from 2012-2022 (nitrate assessed for all spring vents and updated flows used where available).
TMDL Load	94,924	82,543	TMDL target is 0.23 mg/L and using the same flow data.
Percent Required Reductions	**65%**	**60%**	
Total NSILT Load (October 2023)	**588,612**	**352,488**	2023 NSILT.
Required Reductions	**382,666**	**212,017**	Proportional decrease in NSILT load.

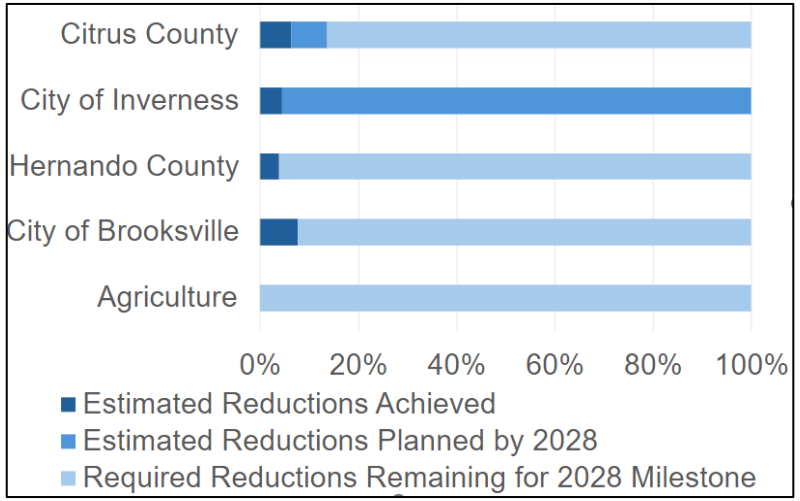
cfs: cubic feet per second
mg/L: milligram per liter

DRAFT Entity Required Reductions

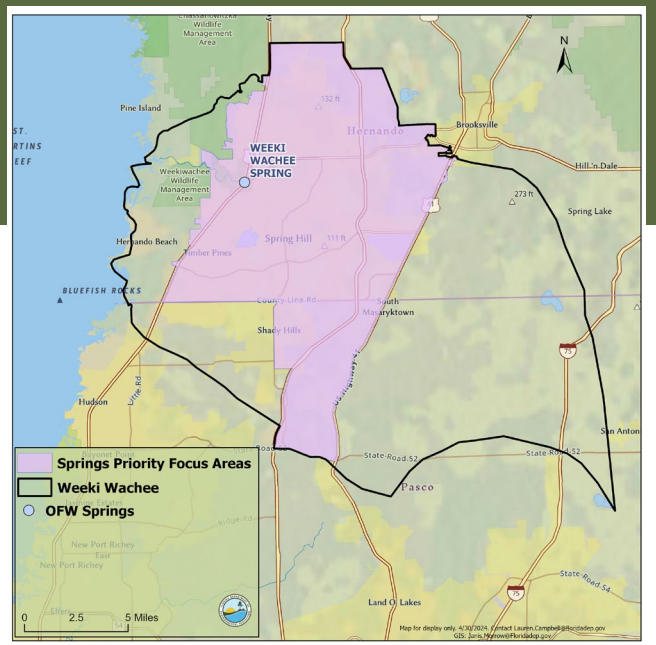
Entity	2028 Milestone (30%)	2033 Milestone (80%)	2038 Milestone (100%)
Citrus County	56,836	151,562	189,453
City of Inverness	2,254	6,010	7,512
Hernando County	26,068	69,515	86,894
City of Brooksville	1,483	3,955	4,944
Agriculture	301,405	835,747	208,966
Private Wastewater Facilities*	581	1,550	1,938
Private Golf Courses*	6,740	17,974	22,468

*Reductions for these entities will largely be tracked through permits and compliance actions.

Progress Toward 2028 Milestone by Entity



WEEKI WACHEE BMAP



DRAFT Loading Summary

	Nitrogen Loads (lbs-TN/yr)	Source
Total Load at Spring Vents (October 2023)	308,909	Upper 95% confidence interval - nitrate data from 2012 - 2022 (0.91 mg/L) and flow data from 2012-2021 (173.04 cfs).
TMDL Load	95,265	TMDL target is 0.28 mg/L and using the same flow data from 2012-2021.
Percent Required Reductions	**69%**	
Total NSILT Load (October 2023)	**1,356,282**	2023 NSILT.
Required Reductions	**938,016**	Proportional decrease in NSILT load.

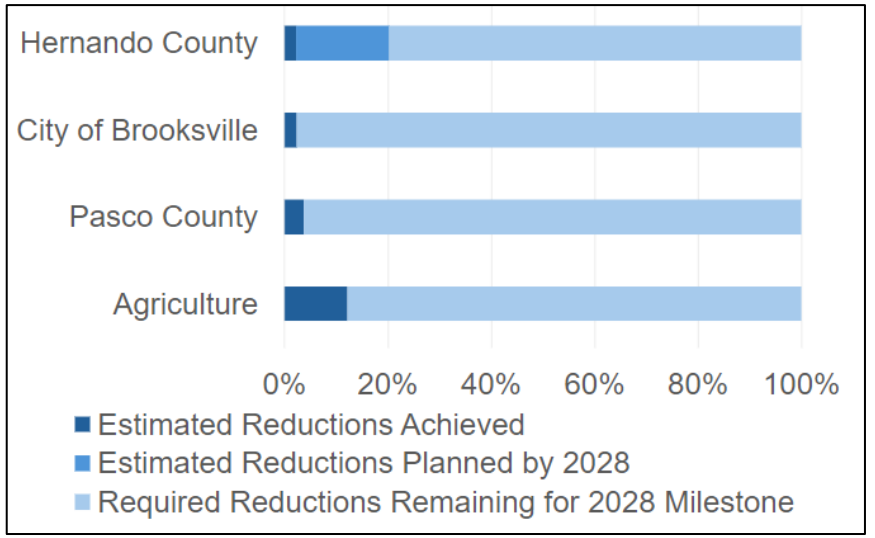
cfs: cubic feet per second
mg/L: milligram per liter

DRAFT Entity Required Reductions

Entity	2028 Milestone (30%)	2033 Milestone (80%)	2038 Milestone (100%)
Hernando County	155,894	415,718	519,648
City of Brooksville	960	2,559	3,199
Pasco County	33,361	88,962	111,202
Agriculture	60,558	161,489	201,861
Private Wastewater Facilities*	466	1,238	1,549
Private Golf Courses*	8,460	22,565	28,207

*Reductions for these entities will largely be tracked through permits and compliance actions.

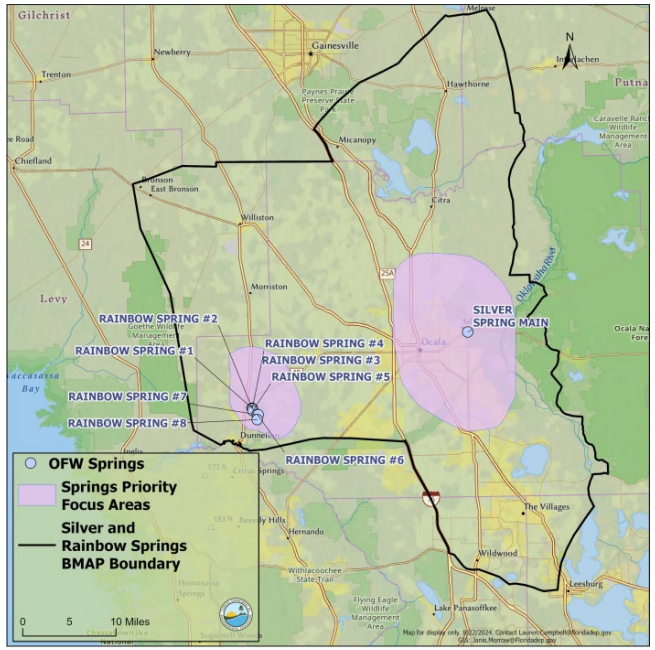
Progress Toward 2028 Milestone by Entity



RAINBOW AND SILVER SPRINGS BMAP

DRAFT Loading Summary

	Nitrogen Loads (lbs-N/yr)	Source
Total Load at Spring Vents (October 2023)	4,313,434	Upper 95 % confidence interval – nitrate and flow data 2012-2022
TMDL Load	872,682	TMDL target is 0.35 mg/L and using the same flow data and proportions
Percent Required	80%	
Total NSILT Load (October 2023)	3,934,755	2023 NSILT
Required Reductions	3,138,686	Proportional decrease in NSILT load

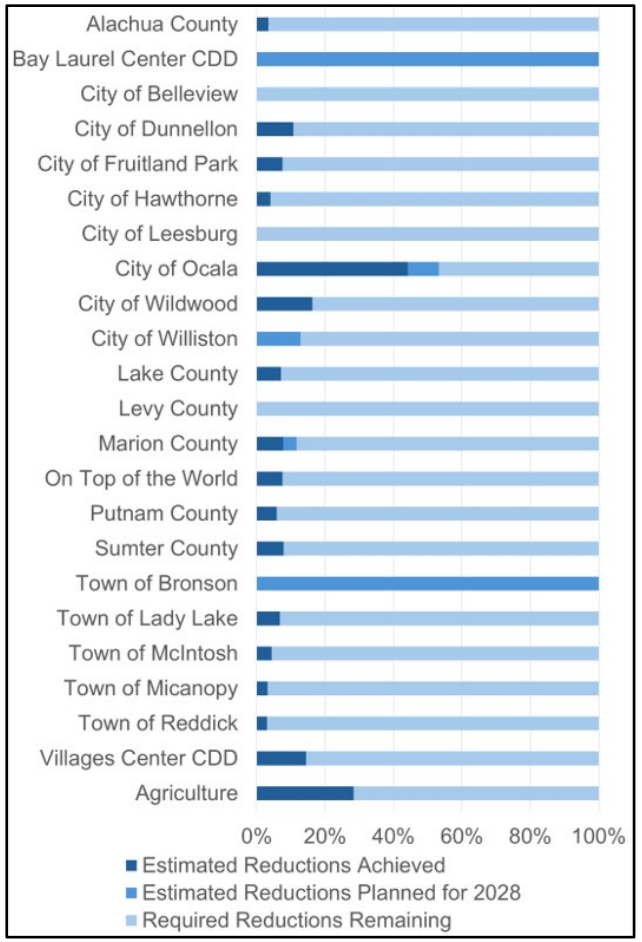


DRAFT Entity Required Reductions

Entity	2028 Milestone Required Reductions (lbs-N/yr) (30%)	2033 Milestone Required Reductions (lbs-N/yr) (80%)	2038 Milestone Required Reductions (lbs-N/yr) (100%)
Alachua County	4,801	12,803	16,004
Bay Laurel Center CDD	2,555	6,813	8,516
City of Belleview	2,302	6,139	7,674
City of Dunnellon	1,884	5,023	6,279
City of Fruitland Park	5,954	15,878	19,847
City of Hawthorne	646	1,722	2,153
City of Leesburg	307	818	1,023
City of Ocala	31,514	84,036	105,045
City of Wildwood	2,239	5,971	7,464
City of Williston	5,579	14,878	18,598
Lake County	15,749	41,996	52,495
Levy County	24,248	64,660	80,825
On Top of the World	9,201	24,535	30,668
Marion County	356,343	950,249	1,187,811
Putnam County	6,431	17,148	21,435
Sumter County	8,555	22,814	28,518
Town of Bronson	1,042	2,779	3,474
Town of Lady Lake	5,484	14,623	18,279
Town of McIntosh	1,154	3,078	3,848
Town of Micanopy	812	2,165	2,706
Town of Reddick	1,155	3,081	3,851
Villages Center CDD	19,932	53,152	66,440
Agriculture	301,405	835,747	1,004,684
Private Wastewater Facilities*	4,277	11,406	14,257
Private Golf Courses*	27,184	72,490	90,612

*Reductions for these entities will largely be tracked through permits and compliance actions.

Progress Toward 2028 Milestone by Entity



STAR
PROJECT REPORTING

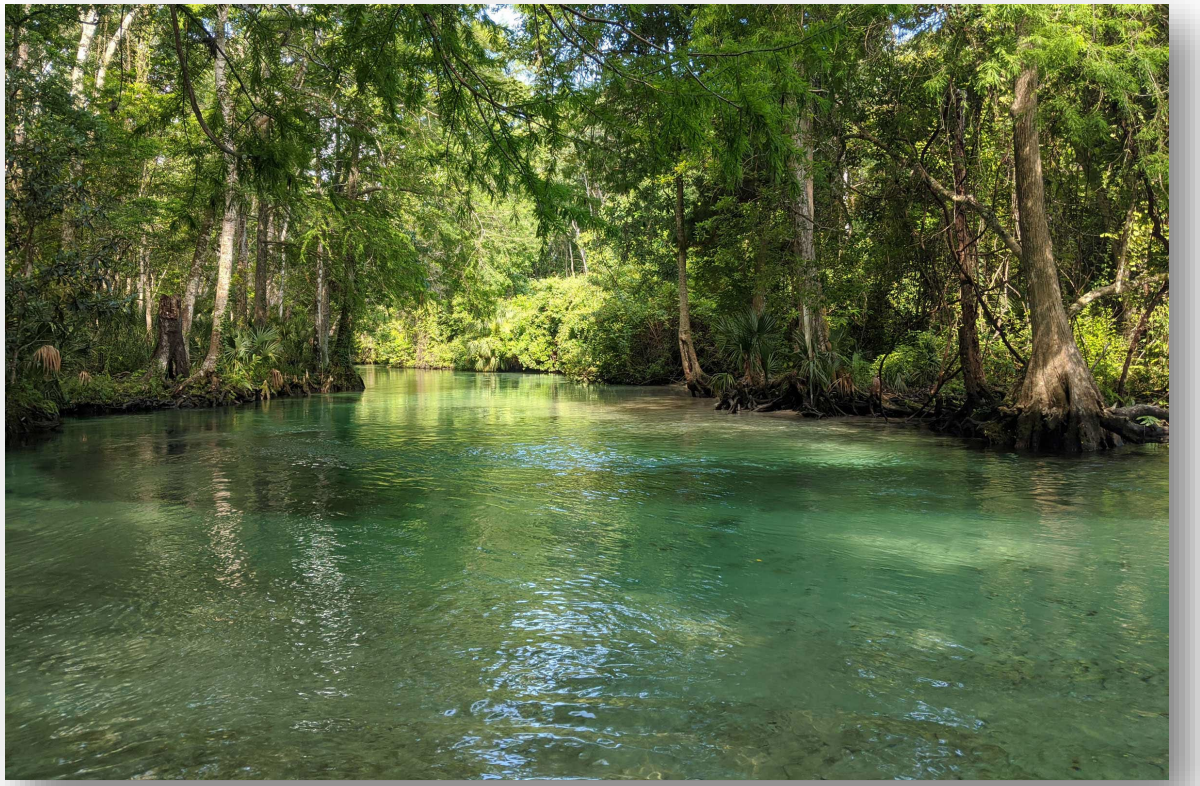
What is the STAR?

- Summarizes accomplishments in the BMAPs statewide.
- Reports on restoration projects and management strategies.
- Published July 1 of each year.
- STAR 2023 reports on project statuses through Dec. 31, 2023.

[STAR 2023 Intro (arcgis.com)]

STAR RESULTS FOR 2023
REDUCTIONS

BMAP	Estimated TN Reductions (lbs/yr) for Completed and Ongoing Projects
Weeki Wachee	61,083
Crystal River/Kings Bay	23,770
Homosassa/ Chassahowitzka	19,056
Silver and Rainbow	119,501



Source:
Weeki Wachee Springs, Hernando County | WaterMatters.org

DRAFT STAR RESULTS FOR 2024
NUMBER OF PROJECTS

Project Status	Count of Projects			
	Weeki Wachee	Crystal River/Kings Bay	Homosassa/ Chassahowitzka	Silver and Rainbow
Planned	23	18	12	44
Ongoing	16	7	14	95
Underway	9	11	18	55
Completed	40	35	26	267
Total	**88**	**71**	**70**	**461**

UPCOMING SCHEDULE

- Aug. 1, Final wastewater treatment plans and OSTDS remediation plans due.
- Fall 2024, Technical BMAP update public meetings.
- Feb./March 2025, Draft BMAP document available for review.
- Feb./March 2025, Draft BMAP update public meetings.
- March 2025, Draft BMAP update comment period.
- July 1, 2025, Statutory deadline for updated nutrient BMAPs.

RESOURCES
BMAP WEBSITE AND STORY MAPS

Florida Springs Basin Management Action Plans (BMAPs)

Welcome to the Florida Springs Basin Management Action Plan (BMAP) StoryMap

The springs BMAPs are developed with specific provisions for the protection and restoration of the state's Outstanding Florida Springs. This story map focuses on the springs-related BMAPs; for more details about other BMAPs or more information about the BMAP program in general, visit https://floridadep.gov/bmaps.

* The story map will display differently depending on the screen size and resolution being used. Story map best viewed in Chrome or Firefox.

Overview

The Florida Springs and Aquifer Protection Act (Part VIII of Chapter 373, F.S.) provides for the protection and restoration of the state"s Outstanding Florida Springs (OFS), which comprise 24 first magnitude springs, 6 additional named springs, and their associated spring runs. The act provides specific requirements for OFS BMAPs beyond those


1 Legislative Requirements


2 Crystal River - Kings Bay BMAP StoryMap


3 DeLeon Spring Story Map


4 Gemini Springs Story Map


5 Homosassa and Chassahowitzka Springs...

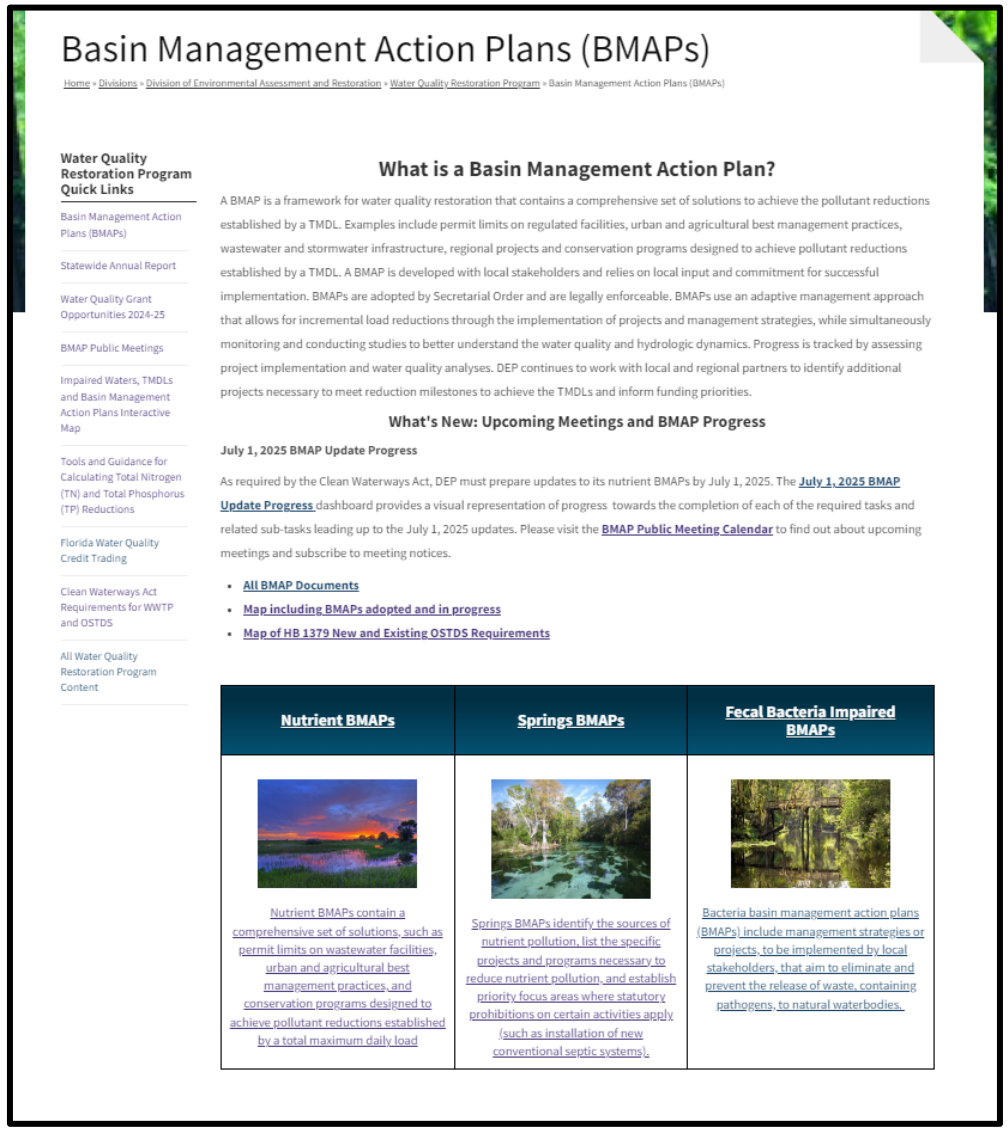

6 Jackson Blue and Merritts Mill Pond BMAP Story Map


7 Rainbow Springs Group and Rainbow Springs Group Run...


8 Santa Fe River BMAP Story Map


9 Silver Springs and Upper Silver River BMAP Story Map

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



Basin Management Action Plans (BMAPs)

Home » Divisions » Division of Environmental Assessment and Restoration » Water Quality Restoration Program » Basin Management Action Plans (BMAPs)

Water Quality Restoration Program Quick Links

- Basin Management Action Plans (BMAPs)
- Statewide Annual Report
- Water Quality Grant Opportunities 2024-25
- BMAP Public Meetings
- Impaired Waters, TMDLs and Basin Management Action Plans Interactive Map
- Tools and Guidance for Calculating Total Nitrogen (TN) and Total Phosphorus (TP) Reductions
- Florida Water Quality Credit Trading
- Clean Waterways Act Requirements for WWTP and OSTDS
- All Water Quality Restoration Program Content

What is a Basin Management Action Plan?

A BMAP is a framework for water quality restoration that contains a comprehensive set of solutions to achieve the pollutant reductions established by a TMDL. Examples include permit limits on regulated facilities, urban and agricultural best management practices, wastewater and stormwater infrastructure, regional projects and conservation programs designed to achieve pollutant reductions established by a TMDL. A BMAP is developed with local stakeholders and relies on local input and commitment for successful implementation. BMAPs are adopted by Secretarial Order and are legally enforceable. BMAPs use an adaptive management approach that allows for incremental load reductions through the implementation of projects and management strategies, while simultaneously monitoring and conducting studies to better understand the water quality and hydrologic dynamics. Progress is tracked by assessing project implementation and water quality analyses. DEP continues to work with local and regional partners to identify additional projects necessary to meet reduction milestones to achieve the TMDLs and inform funding priorities.

What's New: Upcoming Meetings and BMAP Progress

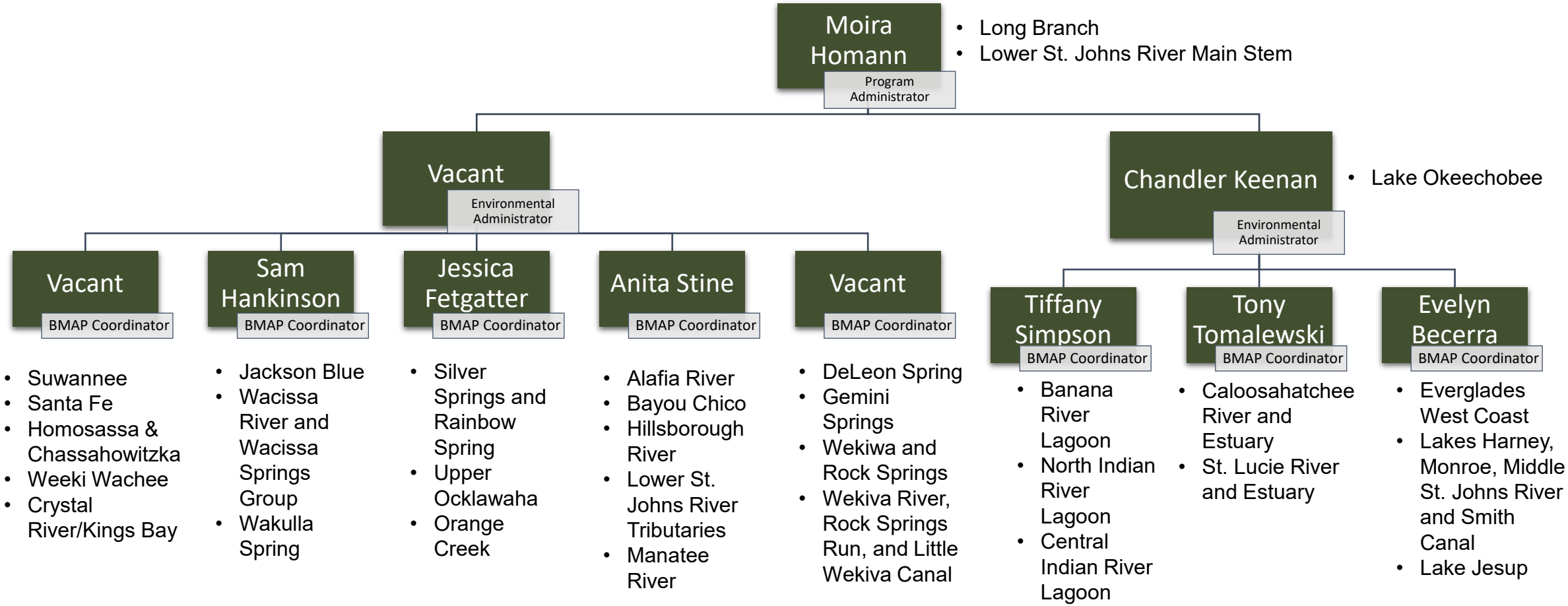
July 1, 2025 BMAP Update Progress

As required by the Clean Waterways Act, DEP must prepare updates to its nutrient BMAPs by July 1, 2025. The July 1, 2025 BMAP Update Progress dashboard provides a visual representation of progress towards the completion of each of the required tasks and related sub-tasks leading up to the July 1, 2025 updates. Please visit the BMAP Public Meeting Calendar to find out about upcoming meetings and subscribe to meeting notices.

- All BMAP Documents
- Map including BMAPs adopted and in progress
- Map of HB 1379 New and Existing OSTDS Requirements

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

BMAP PROGRAM STAFF UPDATE



THANK YOU

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Florida Department of Environmental Protection

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