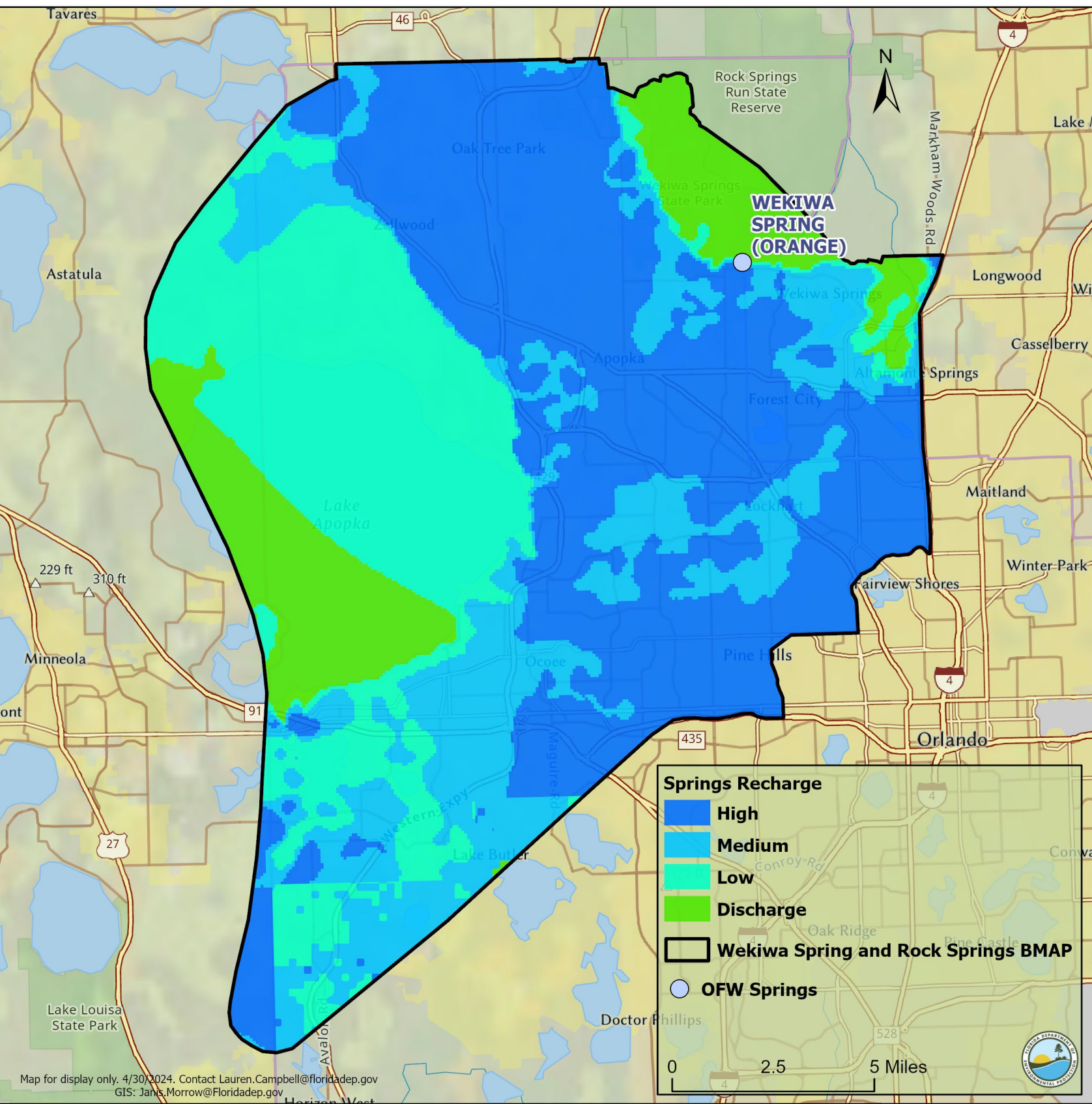


WEKIWA SPRING AND ROCK SPRINGS BASIN MANAGEMENT ACTION PLAN (BMAP) SUMMARY

Wekiwa BMAP

The first step to address nitrogen impairments in Wekiwa Spring and Rock Springs is to inventory the sources of the pollutant in the basin. This was completed through the **Nitrogen Source Inventory Loading Tool (NSILT)**. The NSILT evaluated the loading in pounds of nitrogen per year (lb-N/yr) after attenuation from various sources and considered the recharge potential based on spatial and geologic factors.



This figure shows the generalized recharge zones in the basin.

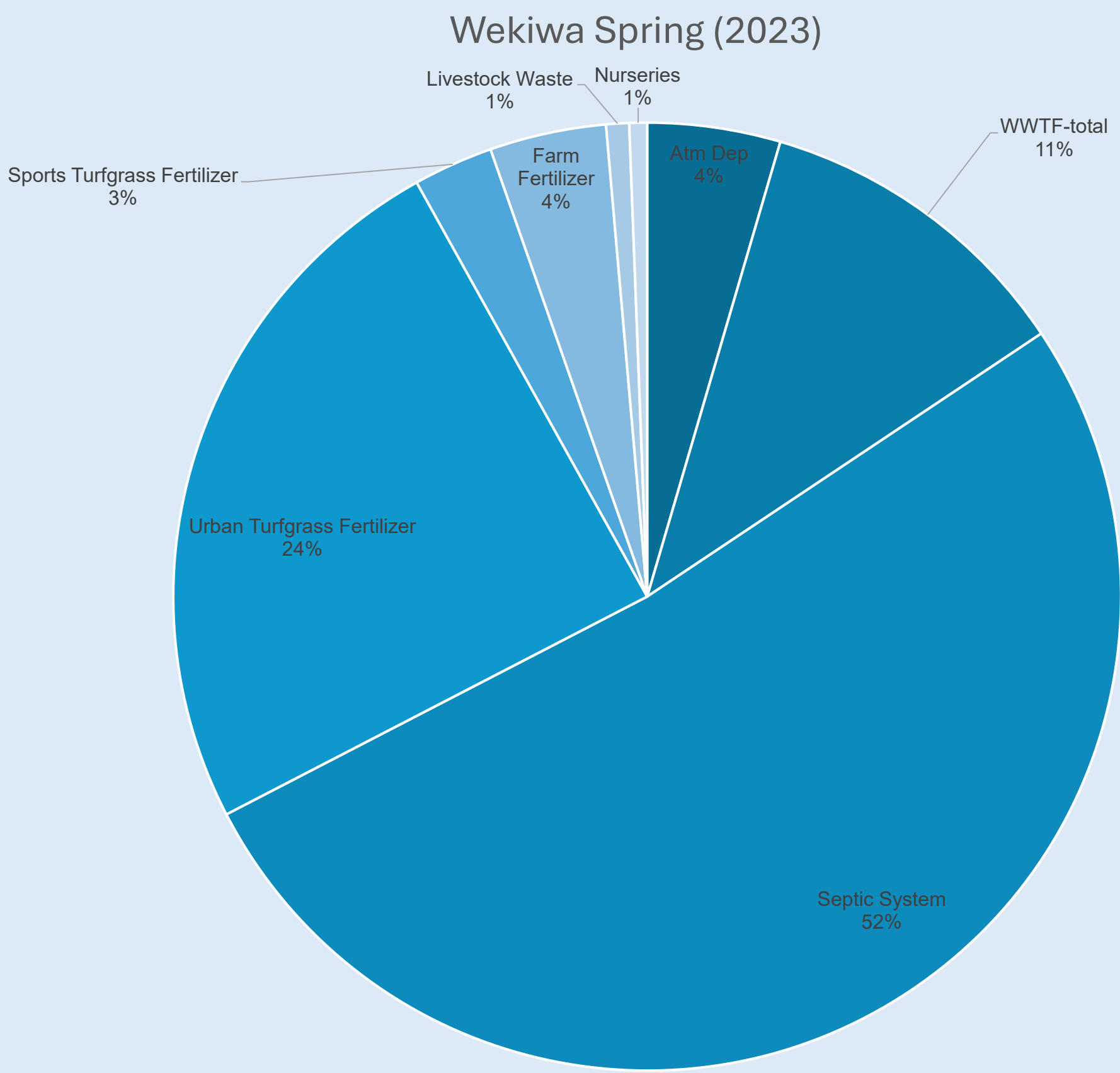
High recharge indicates areas where more water is expected to percolate into the Upper Floridan Aquifer and travel to the spring vent.

Discharge represents areas where water is expected to flow to a surface water body and, therefore, not impact groundwater (GW) quality.

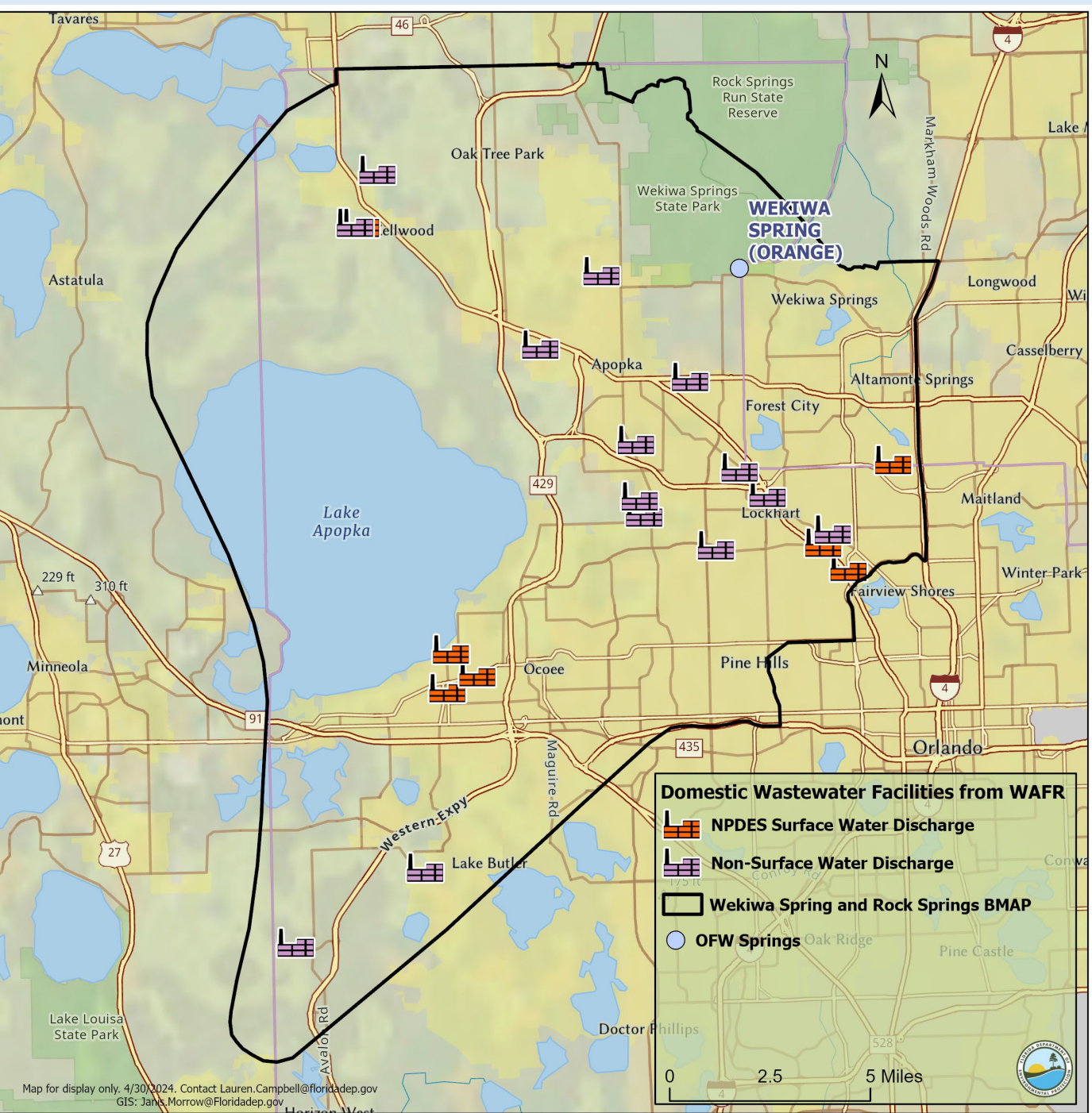
NSILT Summary

Wekiwa Spring and Rock Springs BMAP Area	
Nitrogen Source	Annual Loading (lb-N/yr)
Septic Systems	628,072
Urban Turf Fertilizer	297,425
Atmospheric Deposition	55,034
Farm Fertilizer	48,239
Nurseries	7,353
Sports Turf Fertilizer (STF)-Other	6,810
Sports Turf Fertilizer-Golf	26,227
Livestock	9,477
Wastewater Treatment Facilities	134,595
Total	1,213,232

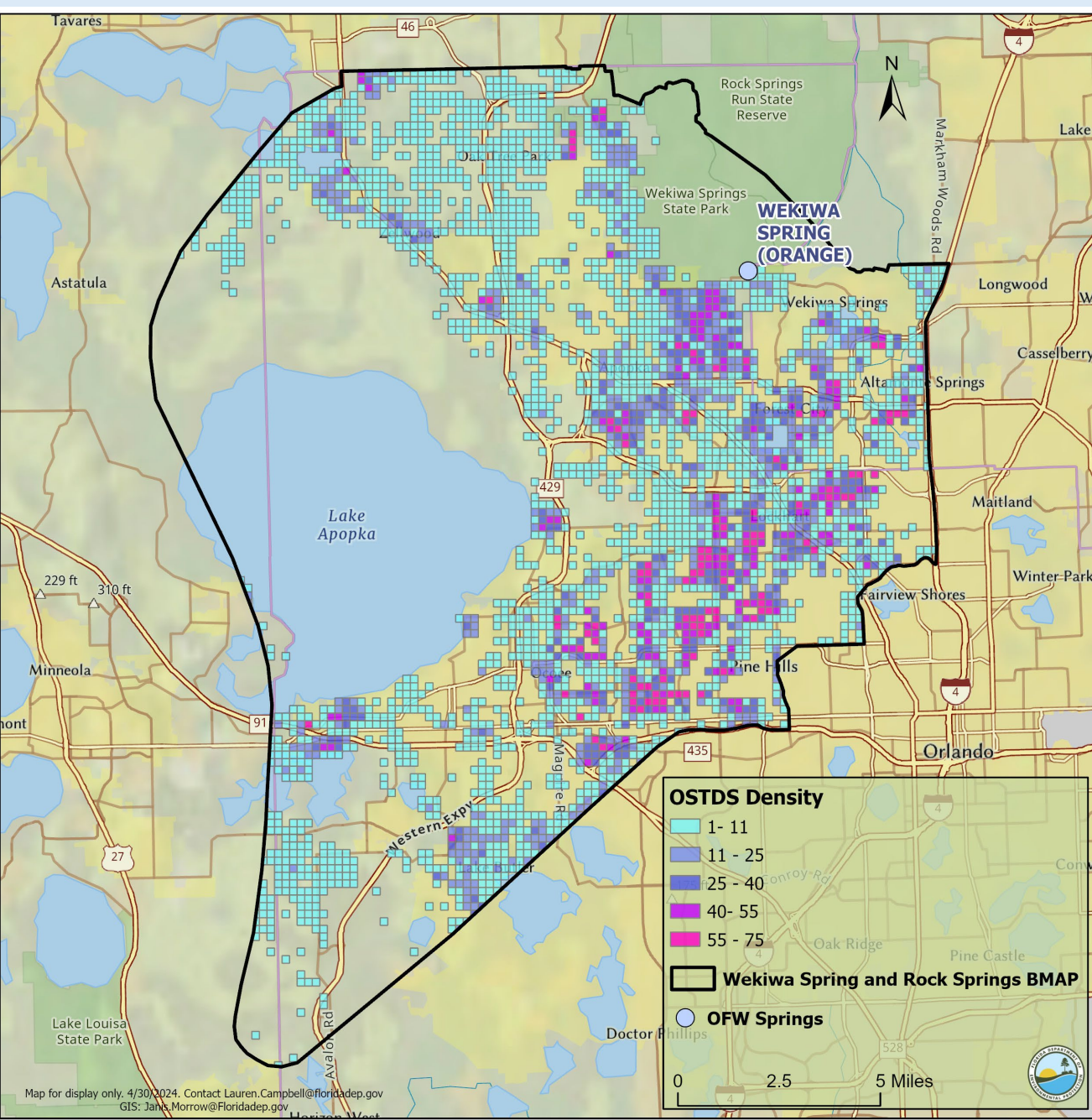
The pie chart below shows the comparative contribution of various nitrogen sources to the Wekiwa Spring and Rock Springs.



Urban Source Loading



Wastewater treatment facilities, including private facilities, contribute 11% of the total nitrogen load in the basin. The figure to the left shows the location of domestic wastewater facilities in the basin.



Onsite Sewage Treatment and Disposal Systems (OSTDS), also known as septic systems, contribute 52% of the nitrogen load in the BMAP.

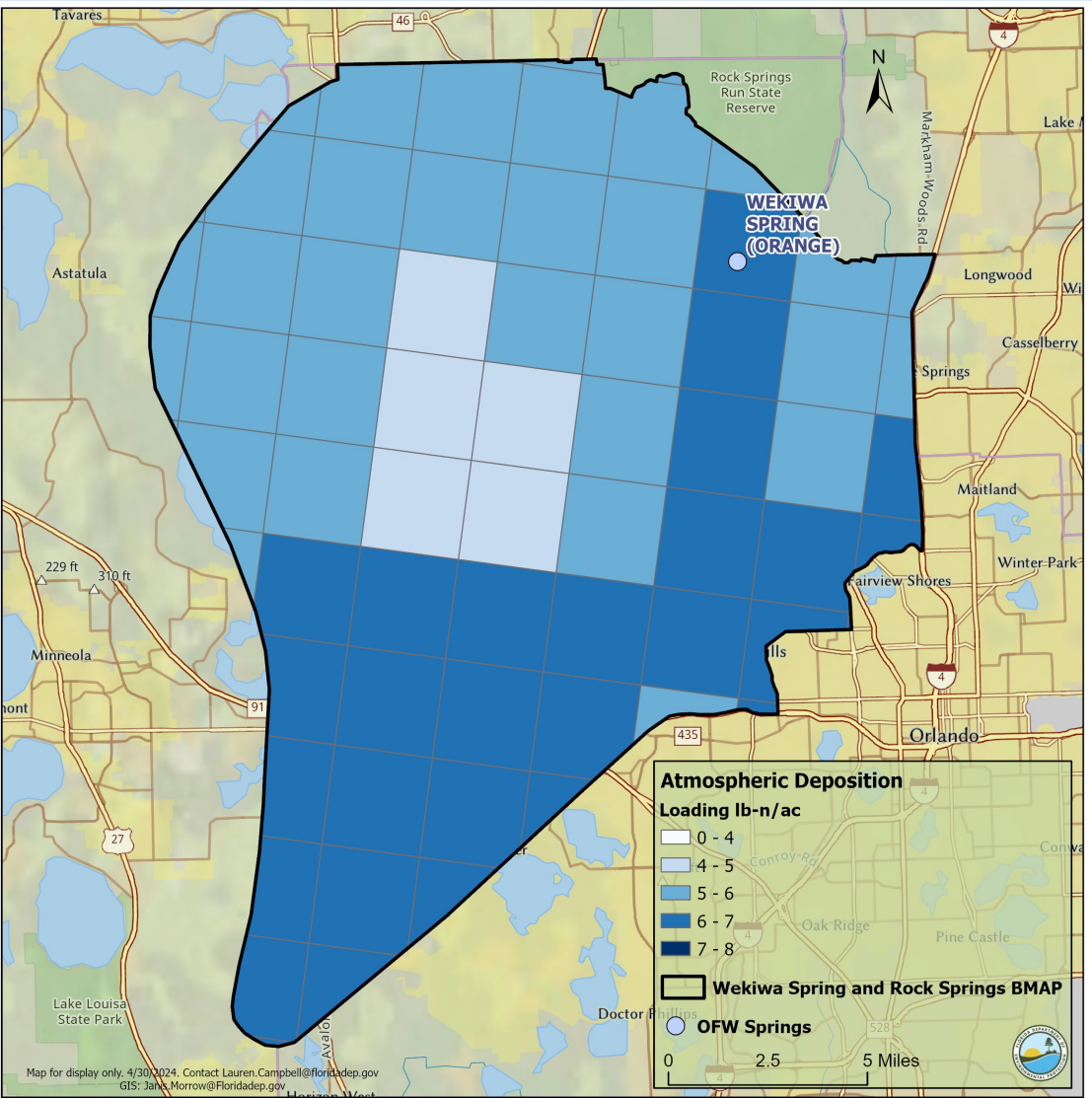
The figure to the right shows OSTDS density per 300-meter by 300-meter grid cell.

Urban turfgrass from single family residential and commercial sources, sports fields and golf contribute 27% of the total nitrogen load in the basin.

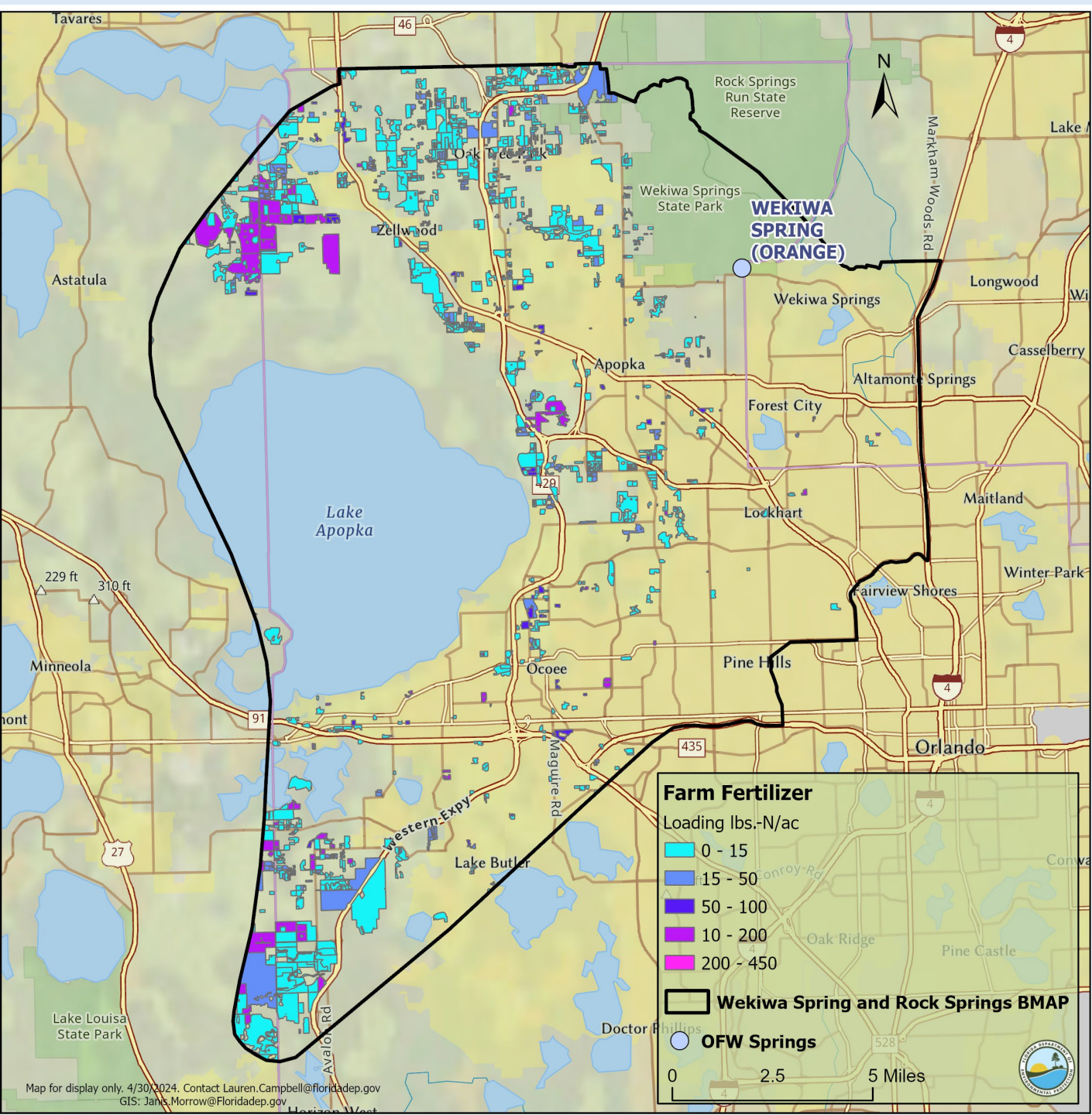
Atmospheric Deposition

Atmospheric deposition was estimated using data from the Total Deposition Science Committee (TDep) Model. TDep estimates annual deposition on 4-kilometer by 4-kilometer grid squares.

Atmospheric deposition accounts for 4% of total loading within the Wekiwa and Rock Springs BMAP area.



Agricultural Source Loading

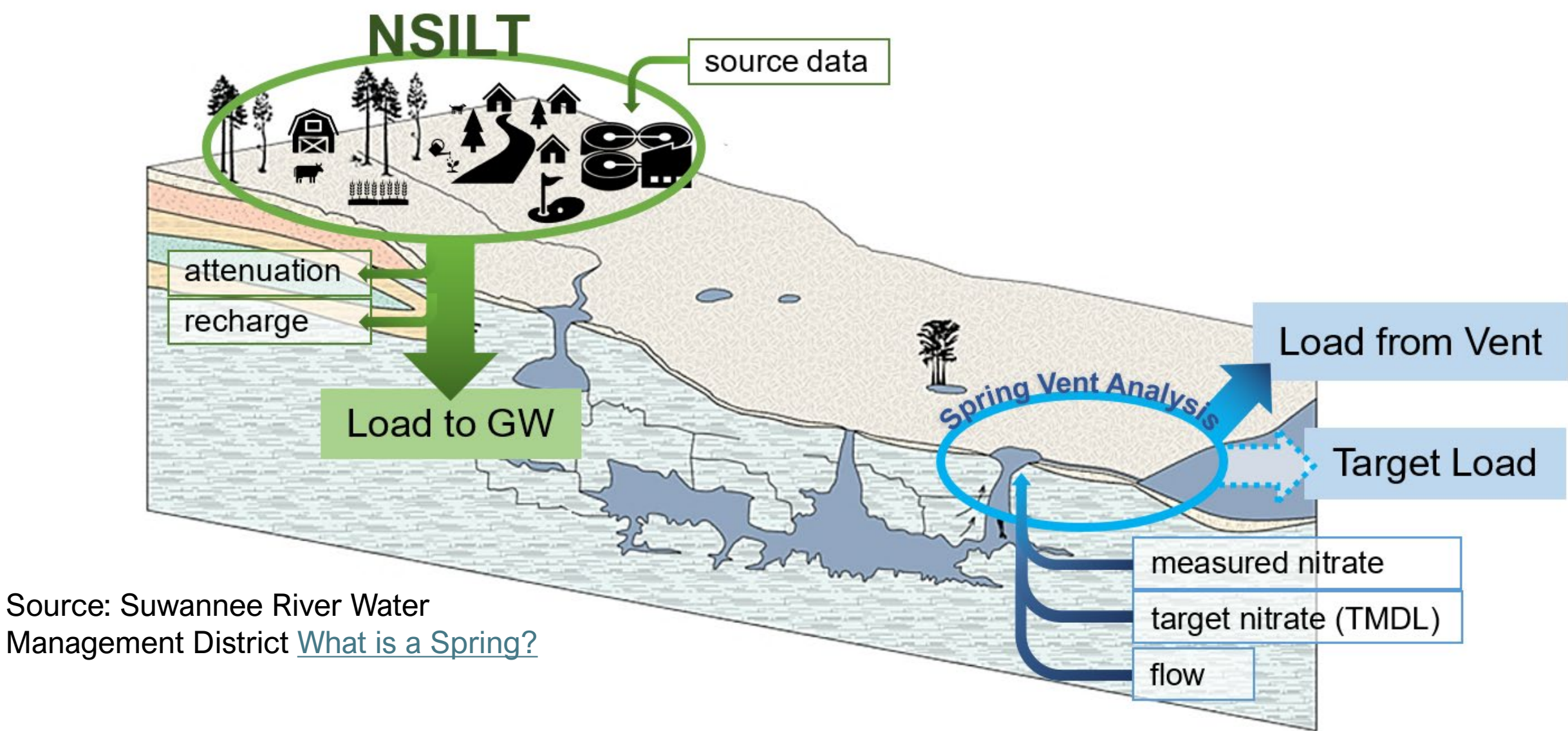


Agricultural sources include farm fertilizer and livestock waste. The Florida Department of Agriculture and Consumer Services (DACS) Florida Statewide Agriculture Irrigation Demand (FSAID) database were used to evaluate loading from farm fertilizer and nurseries. The FSAID and U.S. Department of Agriculture (USDA) Census of Agriculture data were used to estimate livestock loading.

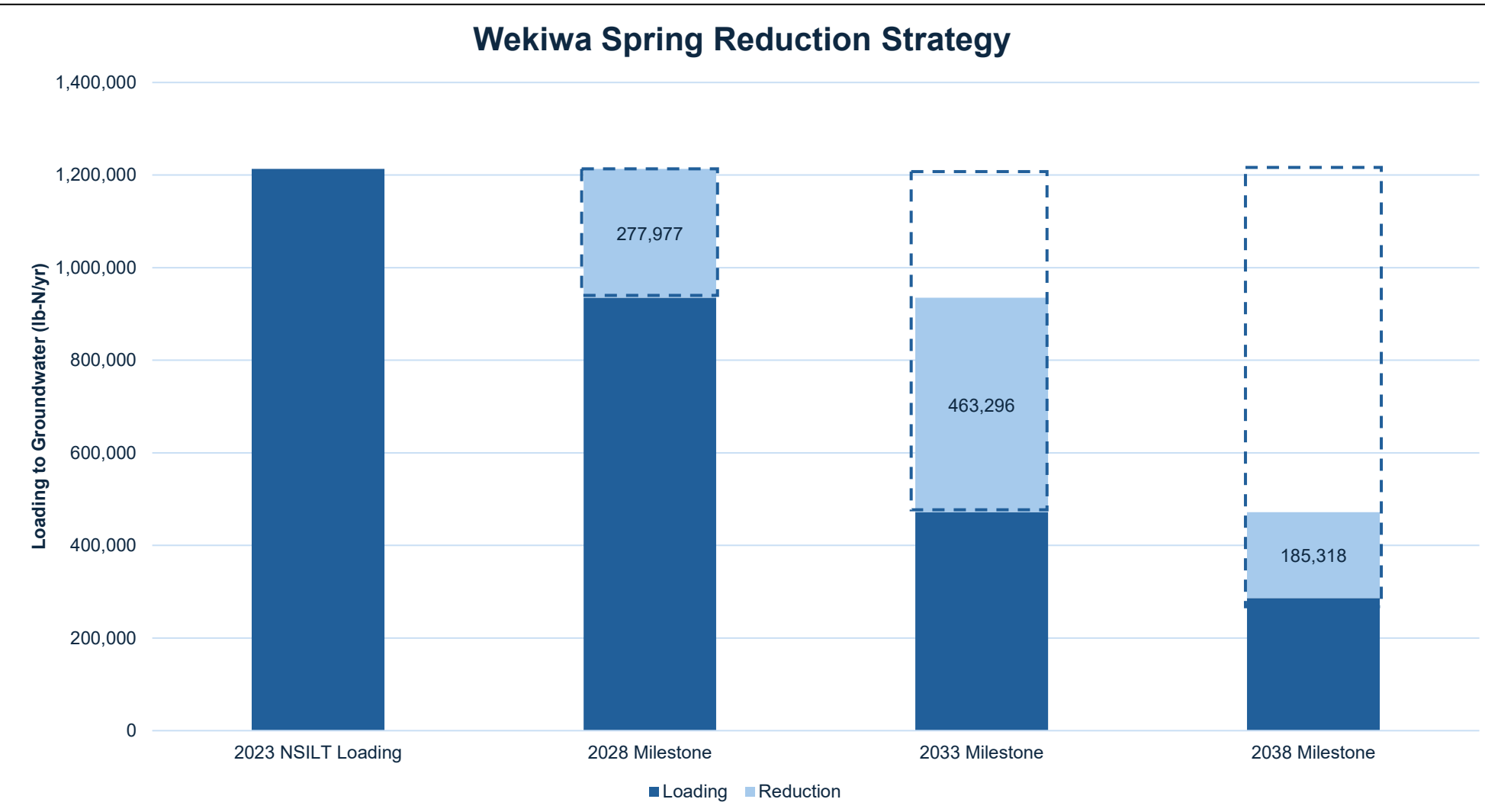
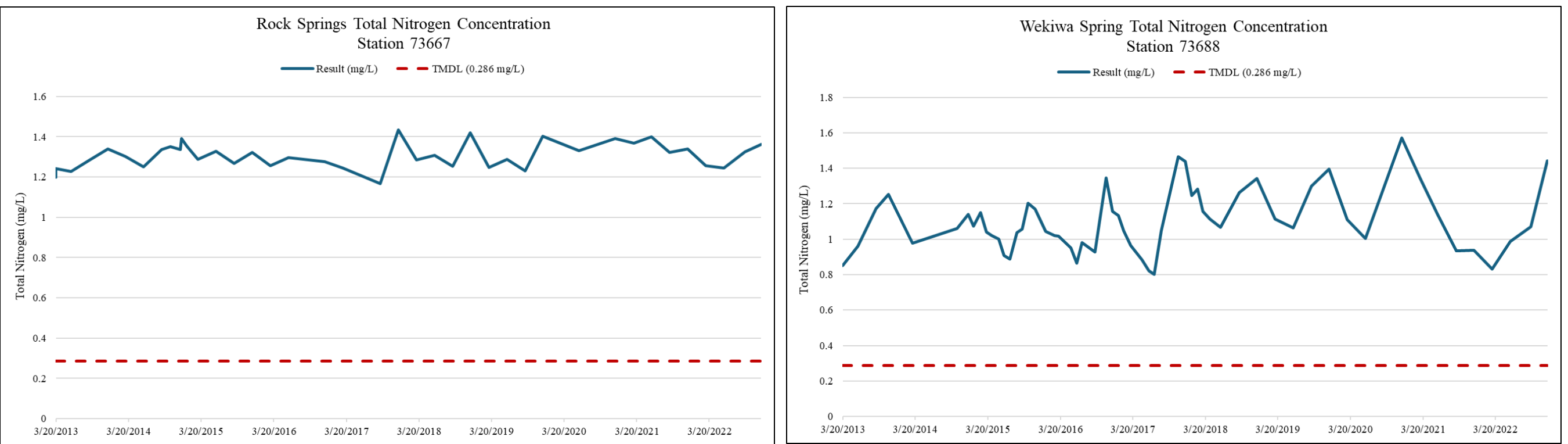
Spring Vent Analysis

Spring flow and nitrate concentration data were evaluated to estimate the total load (lb-TN/yr) of nitrate flowing at the spring vent.

Approximately 76% more nitrate loading is discharged than the waterbodies can assimilate without impairment. This represents the reductions needed to achieve the total maximum daily loads (TMDLs). A proportional decrease in loading from nitrogen sources is needed to restore the waterbodies.



Source: Suwannee River Water Management District [What is a Spring?](#)



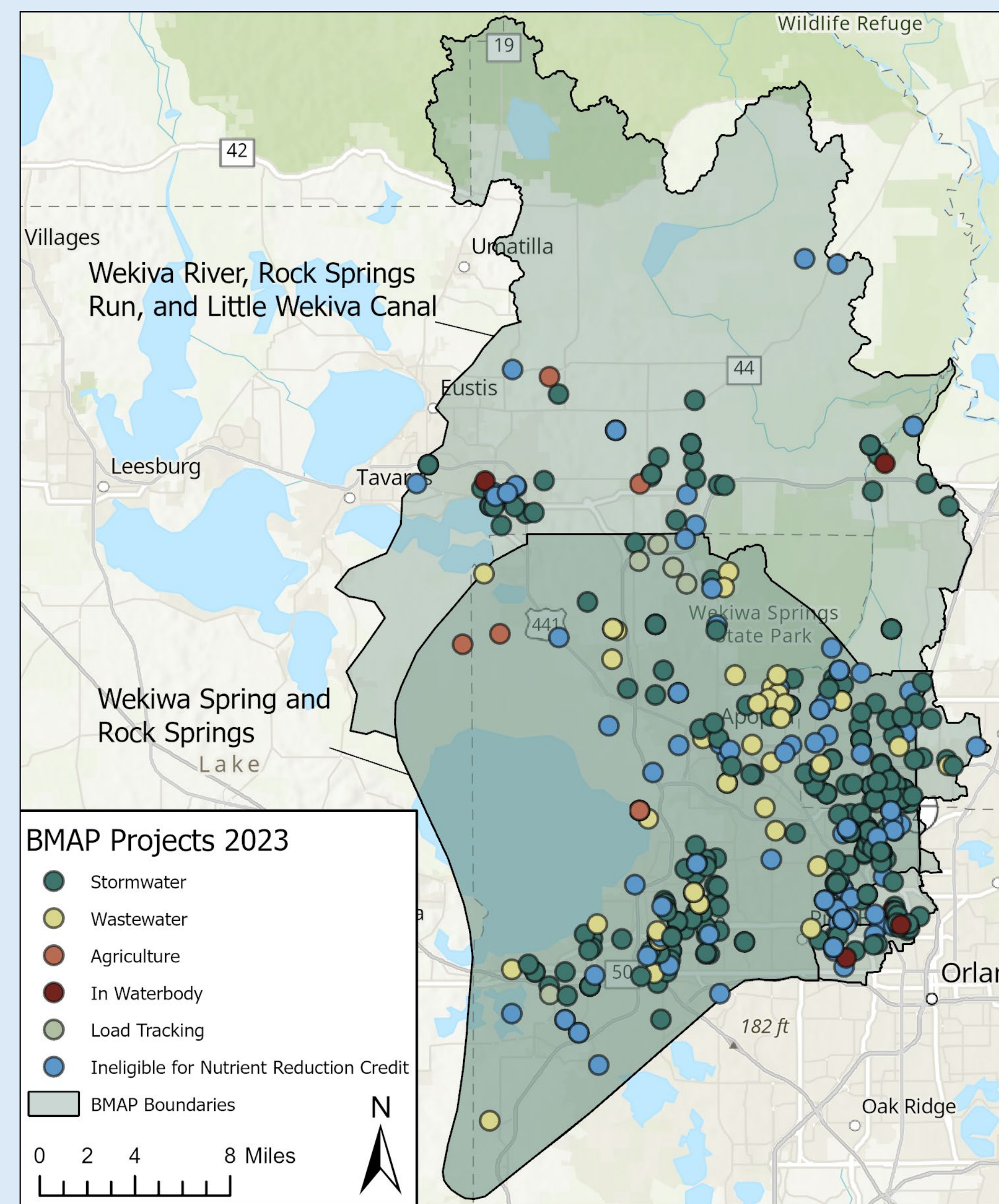
Wekiwa Rock Springs- Total Reduction Needed to Meet the TMDL		
	Nitrogen Loads (lbs-N/yr)	Information
Total Load at Spring Vents (October 2023)	286,567	Upper 95% confidence interval – nitrate and flow data 2012-2022
TMDL Load	67,705	TMDL target is 0.286 mg/L and using the same flow data and proportions
Percent Required Reductions	76%	Based on Spring Vent Load and TMDL Load
Total NSILT Load (October 2023)	1,213,232	2023 NSILT
Required Reductions	926,589	Based on NSILT Load and Percent Reduction at Spring Vent



WEKIVA RIVER AND WEKIWA SPRING AND ROCK SPRINGS BASIN MANAGEMENT ACTION PLANS (BMAPS)

Allocated Reductions, Milestones and Progress

Project Map



BMAP Management Strategies

General Approach for Entity Allocations and Reductions

While the loading evaluation and entity allocations were determined by source, nutrient reduction credits can be earned through implementing projects addressing any source. Reduction milestones must be met to ensure sufficient progress towards meeting the total maximum daily load (TMDL) target.

Source-Specific Management Strategies:

- Atmospheric Deposition:** Due to continuing air regulations, and fuel switching, emissions of atmospheric nitrogen have been trending downwards in Florida since at least 2005 (Himes & Dawson, 2017).
- Onsite Sewage Treatment and Disposal Systems:** New installations or repair permits for conventional septic systems are not permitted on lots 1 acre or less.
- Wastewater Treatment Facilities:** Surface water discharges must meet advanced waste treatment (AWT). Facilities with other disposal methods must meet AWT standards if the Florida Department of Environmental Protection (DEP) determines the treatment is needed.
- Farm Fertilizer Best Management Practice (BMPs) Implementation:** An assumed decrease in nitrogen loading of 15% when a producer enrolls in the Florida Department of Agriculture and Consumer Services (DACS) BMP program and implements BMPs.
- Livestock Waste BMP Implementation:** An assumed decrease in nitrogen loading of 10% when a livestock producer enrolls in the DACS BMP program and implements BMPs.
- Other Agricultural Activities:** The remainder of agricultural reductions will be addressed through a combination of regional projects, agricultural cooperative elements, innovative technologies and cost-share projects.
- Urban Turfgrass Fertilizer:** Ordinances, education, street sweeping and structural stormwater improvements to reduce impact from urban turfgrass fertilization.
- Sports Turfgrass Fertilizer – Golf:** Operators will be required to develop a nutrient management plan to demonstrate fertilizers are being managed responsibly.
- Sports Turfgrass Fertilizer – Other:** Owners/operators should follow the Sports Turfgrass BMP manual to ensure fertilizers are managed responsibly.

Wekiwa Springs Basin Reductions

Nitrogen Source	Allocations by Source (lbs-N/yr)	Percent of Total Reduction
Atmospheric Deposition (AD)*	42,032	4.54%
Onsite Sewage Treatment and Disposal System (OSTDS)	479,681	51.77%
Wastewater Treatment Facility (WWTF)	68,792	7.42%
Farm Fertilizer (BMP Enrollment)	7,236	0.78%
Livestock Waste-NonCAFO (BMP Enrollment)	948	0.10%
Other Agriculture	35,896	3.87%
Urban Turf Fertilizer (UTF)	227,154	24.52%
Sports Turf Fertilizer (STF) -Golf	20,031	2.16%
Sports Turf Fertilizer (STF) -Other	5,201	0.56%
Regional Projects*	39,618	4.28%
Total	926,589	100.00%

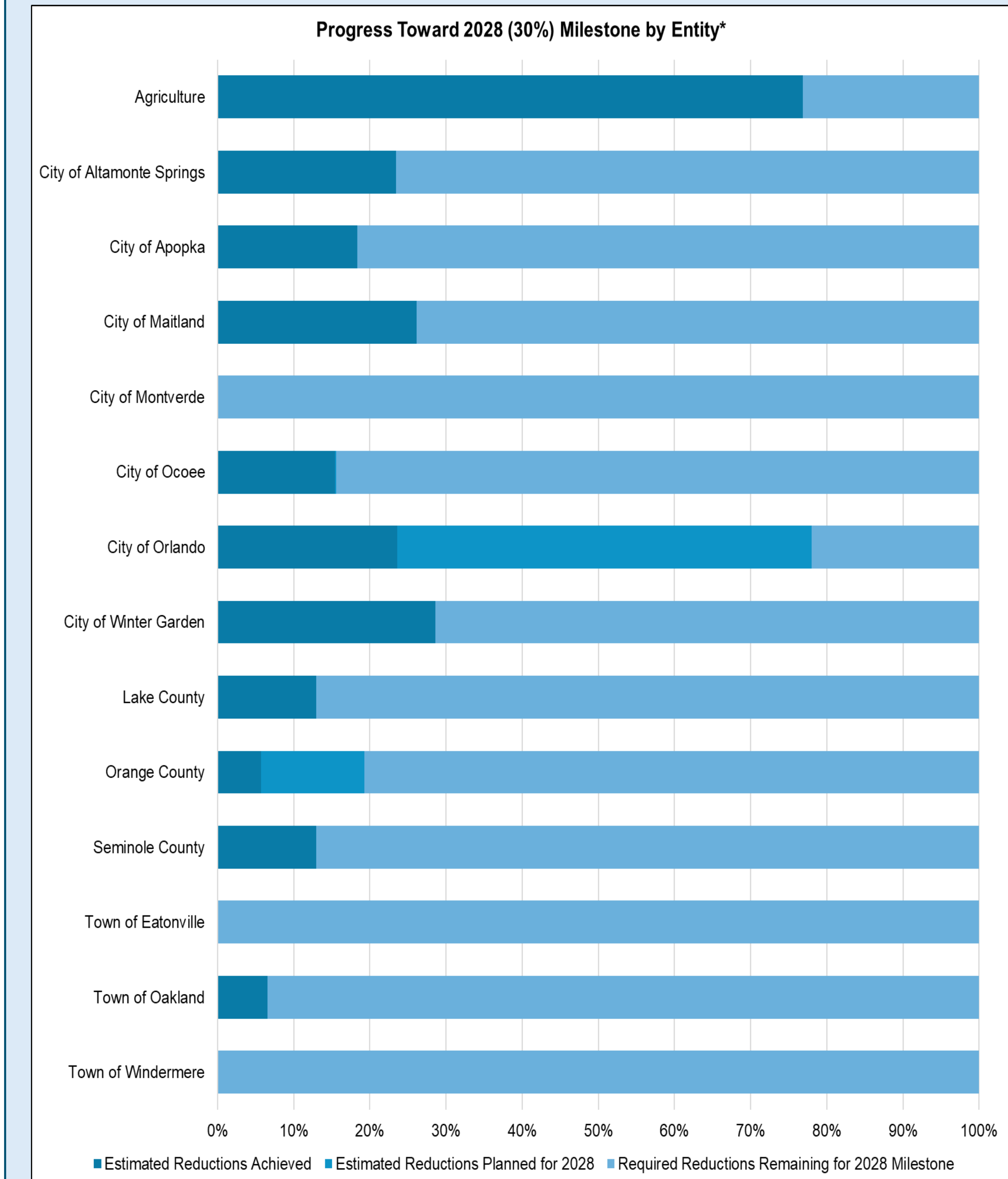
*Not allocated to entities.

Wekiwa Springs Entity Required Reductions

Entity	Milestone 2028 Required Reductions lbs-N/yr (30%)	Milestone 2033 Required Reductions lbs-N/yr (+50%=80%)	Milestone 2038 Required Reductions lbs-N/yr (+20%=100%)
City of Altamonte Springs	4,641	12,376	15,470
City of Apopka	16,842	44,913	56,141
City of Maitland	669	1,783	2,229
City of Montverde	1	3	4
City of Ocoee	22,240	59,308	74,135
City of Orlando	1,737	4,632	5,790
City of Winter Garden	4,412	11,766	14,708
Lake County	671	1,789	2,236
Orange County	155,672	415,126	518,907
Seminole County	21,998	58,662	73,327
Town of Eatonville	254	678	848
Town of Oakland	2,447	6,526	8,158
Town of Windermere	1,091	2,909	3,636
Mt. Dora WWTF	7	17	22
Private WWTF*	1,565	4,175	5,218
Private Golf Courses*	6,009	16,025	20,031
Agriculture (BMPs)	2,455	6,547	8,184
Ag-Cooperative Regional Elements and Cost Share	10,769	28,717	35,896
Regional Projects	11,885	31,695	39,618

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

Wekiwa Springs Entity 2028 Milestone*



*Estimates through December 2023.

- Project collection and reporting are crucial to the successful implementation and management of BMAPs.
- Projects are reported to DEP annually through the Statewide Annual Report (STAR) process.
- Stakeholders are required to report projects that are being implemented or planned to achieve reduction targets, along with an estimate of expected nutrient loading benefits and financial costs.
- Reporting projects in the STAR allows the state to evaluate funding needs and to assist in prioritizing projects to promote maximum environmental benefit.