



Florida Department of Environmental Protection
Division of Environmental Assessment and Restoration

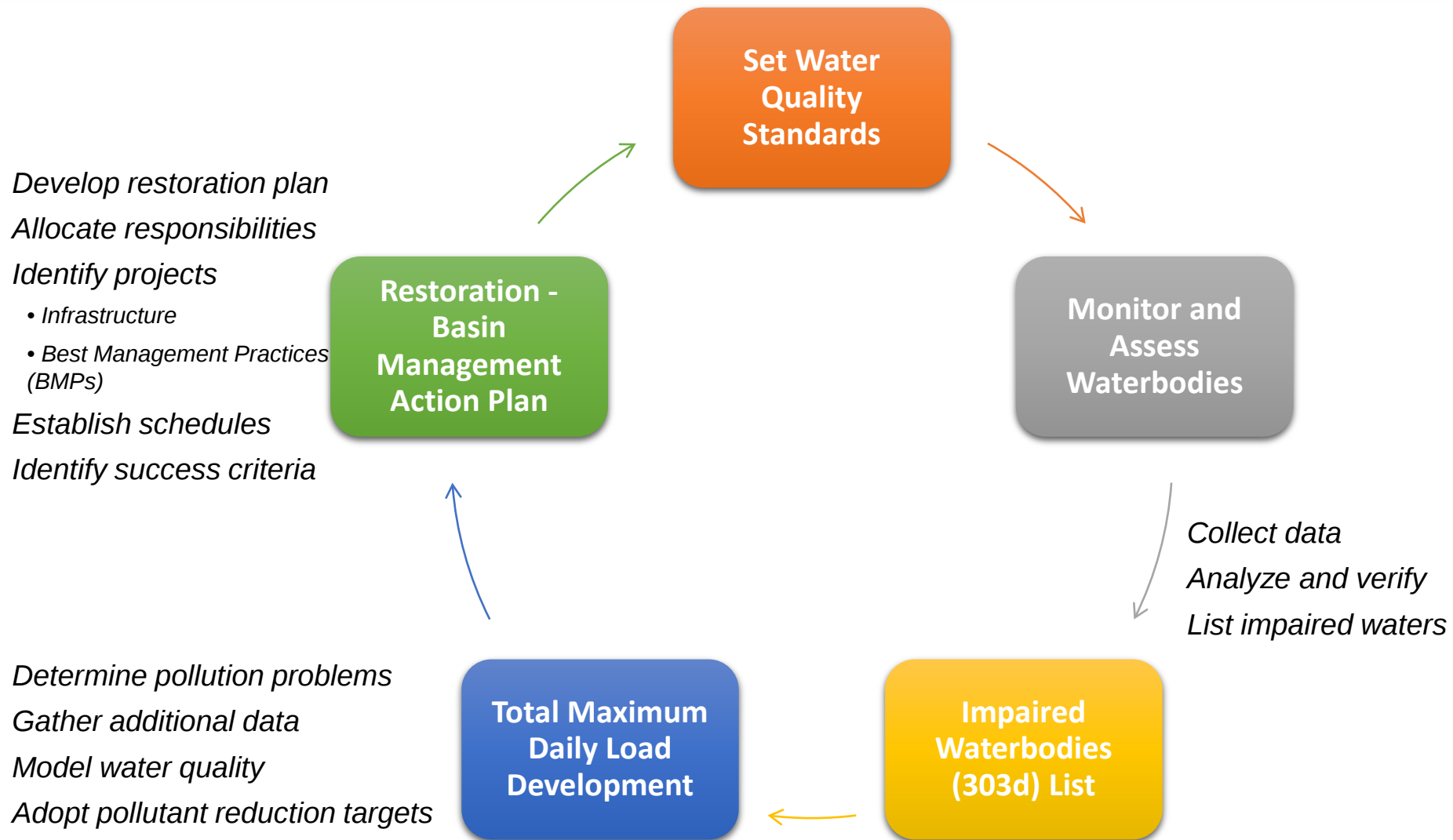
***Gemini Springs and DeLeon Spring
Basin Management Action Plans
(BMAPs)***

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Water Quality Framework





Florida Impaired Waters Rule (IWR) & Total Maximum Daily Loads (TMDLs)

Waterbody (WBID)	Parameter	TMDL ¹ (mg/L)	TMDL % Reduction	Wasteload Allocation for Wastewater	Wasteload Allocation for NPDES Stormwater % Reduction ²	Load Allocation % Reduction	MOS
DeLeon Spring (WBID 2921A)	Nutrients (Nitrate-Nitrite)	0.35	56	N/A	56	56	Implicit
Gemini Springs (WBID 2893)	Nutrients (Nitrate-Nitrite)	0.35	74	N/A	74	74	Implicit

N/A = Not applicable

¹ Nutrient concentrations represent AGM, not to be exceeded.

² Applies to existing and future NPDES discharges, if they occur.

- TMDLs adopted in 2017.
- Both TMDLs are 0.35 milligrams per liter (mg/L) nitrate as an annual geomean value, which is not to be exceeded more than once in any consecutive 3-year period.



Regulatory Framework

- Section 403.067, Florida Statutes (F.S.), known as the *Florida Watershed Restoration Act*.
- The 2016 Florida Springs and Aquifer Protection Act (2016-1), Sub-Sections 373.801– 373.813, F.S.
 - Lists requirements for BMAPs for Outstanding Florida Springs (OFS) including:
 - Priority Focus Area (PFA).
 - Identification and estimated pollutant load of each point source or category of non-point sources.
 - Onsite Sewage Treatment and Disposal Systems (OSTDS) Remediation Plan (if OSTDS >20% as a source or if the Florida Department of Environmental Protection [DEP] deems necessary).



Gemini Springs



Summary of Potential Credits to Meet the TMDL

Nitrogen Source	Credits to Load to Groundwater (lb-N/yr)	Description
OSTDS (Onsite Sewage Treatment and Disposal Systems)	10,126 – 14,800	Credits are based on lots of less than one acre in the PFA being remediated by either enhancing onsite system or connecting to sewer. An estimated 2,788 lb-N/yr have been provided as OSTDS remediation projects which may be on these lots, on lots of one acre or greater in the PFA, or in the larger BMAP area. Any projects outside of lots of one acre or greater in the PFA or outside the PFA would add additional reductions to the estimates listed.
UTF (Urban Turfgrass Fertilizer)	2,502	DEP approved credits (6 %) for public education activities as well as credits identified for stakeholder stormwater projects.
STF (Sports Turfgrass Fertilizer)	244	6 % BMP credit for sports fields and 10 % BMP credit for golf courses on STF load to groundwater, assuming 100 % BMP implementation on golf courses and sports fields.
FF (Farm Fertilizer)	87	15 % BMP credit on FF load to groundwater, assuming 100 % owner-implemented BMPs on all fertilized lands
LW (Livestock Waste)	6	10 % BMP credit on load to groundwater, assuming 100 % owner-implemented BMPs at all livestock facilities.
WWTF (Wastewater Treatment Facility)	2,875	Achieved by BMAP WWTF.
Total Credits from BMAP Policies and Submitted Projects	15,841 – 20,514	
Advanced Agricultural Practices and Procedures	1,180 – 2,124	Pursue additional practices over the next 20 years, contingent on funding.
Total Credits	17,020 – 22,638	Estimated load reduction to meet the TMDL is 14,270 lb-N/yr.



Potential Credits by Source: OSTDS

Recharge Area	OSTDS Parcels Less Than One Acre in PFA	Credit for Enhancement (lb-N/yr)	Credit for Sewer (lb-N/yr)
High	1,889	10,009	14,628
Medium	38	112	163
Low	10	6	9
Total	1,937	10,126	14,800

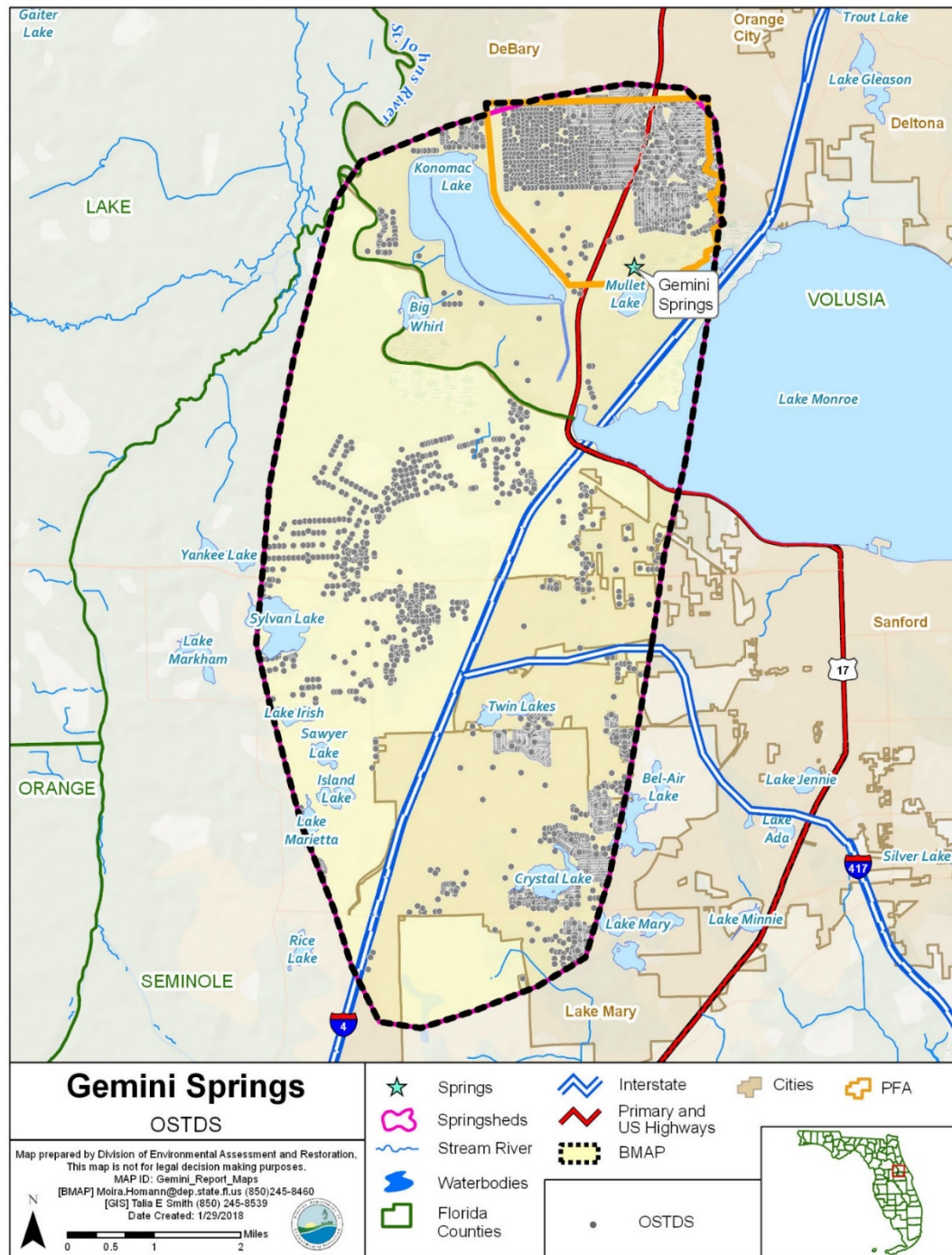
Total Estimated Credits So Far:

10,126 – 14,800 lb-N/yr

**Load reduction
to meet TMDL
14,270 lb-N/yr.**



Policy Area – Existing Septic Systems





Potential Credits by Source: UTF



Project Category	Project Credits (lb-N/yr) Based on Management Actions Listed in Appendix B
Fertilizer Ordinances and Public Education Activities	1,051
Stormwater Improvements	1,045
Total Project Credits	2,096
Total Possible Credits	2,502*

*Additional 406 lb-N/yr reduction could be achieved through public education and source control efforts.

Total Estimated Credits So Far:

$$10,126 + 2,502 = 12,628 \text{ lb-N/yr}$$

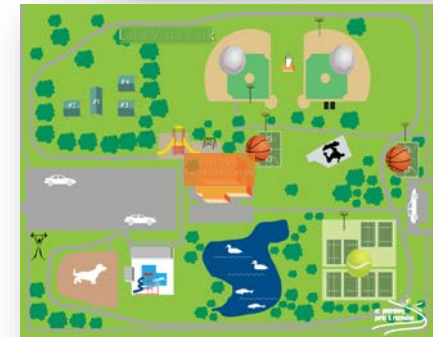
$$14,800 + 2,502 = 17,302 \text{ lb-N/yr}$$

**Load reduction
to meet TMDL
14,270 lb-N/yr.**



Potential Credits by Source: STF

STF Source Control Measures	Credit Based on Estimated Load to Groundwater (%)	Possible Nitrogen Credits (lb-N/yr)
Golf Course BMP Implementation	10	240
Sports Fields BMPs	6	4
Total Possible Credits		244



Total Estimated Credits So Far:

$$10,126 + 2,502 + 244 = 12,872 \text{ lb-N/yr}$$

$$14,800 + 2,502 + 244 = 17,546 \text{ lb-N/yr}$$

**Load reduction
to meet TMDL
14,270 lb-N/yr.**



Potential Credits by Source: FF and LW

Owner Implemented BMPs	Credit Based on Estimated Load to Groundwater (%)	Possible Nitrogen Credits (lb-N/yr)
Farm Fertilizer	15	87
Livestock Waste	10	6
Total Possible Credits		93

Total Estimated Credits So Far:

$$10,126 + 2,502 + 244 + 93 = 12,965 \text{ lb-N/yr}$$

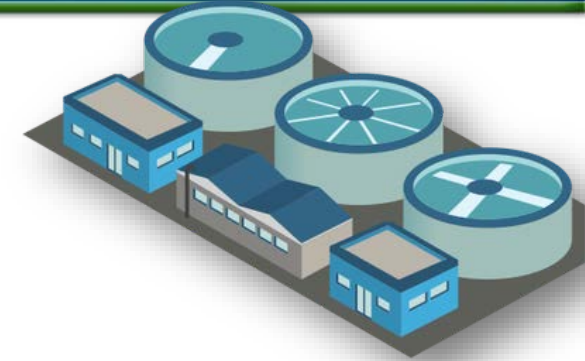
$$14,800 + 2,502 + 244 + 93 = 17,639 \text{ lb-N/yr}$$

**Load reduction
to meet TMDL
14,270 lb-N/yr.**



Potential Credits by Source: WWTF

95% of the Permitted Capacity (gpd)	TN Concentration Limits for RIBs and Absorption Fields (mg/L)	TN Concentration Limits for All Other Land Disposal Methods (mg/L)
Greater than 100,000	3	3
20,000 to 100,000	3	6
Less than 20,000	6	6



	Possible Nitrogen Credits (lb-N/yr)
Achieved by WWTF policy if implemented in PFA (achieving 3 or 6 mg/L)	2,875
Credits from submitted projects	NA
Total Possible Credits	2,875

Total Estimated Credits So Far:

$$10,126 + 2,502 + 244 + 93 + 2,875 = 15,840 \text{ lb-N/yr}$$

$$14,800 + 2,502 + 244 + 93 + 2,875 = 20,514 \text{ lb-N/yr}$$

**Load reduction
to meet TMDL
14,270 lb-N/yr.**



Potential Credits by Source: Advanced Agricultural Practices and Procedures

	Possible Nitrogen Credits (lb-N/yr)
Low Estimated Reduction Credit	1,180
High Estimated Reduction Credit	2,124

Total Estimated Credits So Far:

$$10,126 + 2,502 + 244 + 93 + 2,875 + 1,180 = 17,020 \text{ lb-N/yr}$$

$$14,800 + 2,502 + 244 + 93 + 2,875 + 2,214 = 22,638 \text{ lb-N/yr}$$

**Load reduction
to meet TMDL
14,270 lb-N/yr.**



Gemini Springs Current Load Compared to the TMDL

	Nitrogen Loads (lb-N/yr)	Source
Total Load at Spring Vents	20,496	Upper 95% confidence interval - nitrate data and flow data from years 2011 to 2017 (1.2mg/L and 9 cfs)
TMDL Load	6,226	TMDL target is 0.35 mg/L and using the same flow data from years 2011 to 2017
Required Reduction	14,270	

Total Credits from BMAP Policies and Submitted Projects	15,841 – 20,514
Total Credits*	17,020 – 22,638

*Including Advanced Agricultural Practices and Procedures credits



Gemini Springs Reduction Milestones

- To achieve TMDL, BMAP implementation will be a 20-year process
- Gemini Springs BMAP will define nitrogen reduction milestones:
 - 30 % reduction within 5 years – 4,281 lb-N/yr
 - 50 % reduction within 10 years – 7,135 lb-N/yr
 - 20 % reduction within 15 years – 2,854 lb-N/yr
 - Total reduction – 14,270 lb-N/yr





DeLeon Spring



Summary of Potential Credits to Meet the TMDL

Nitrogen Source	Credits to Load to Groundwater (lb-N/yr)	Description
OSTDS (Onsite Sewage Treatment and Disposal Systems)	11,797 – 17,241	Credits are based on lots of less than one acre in the PFA being remediated by either enhancing onsite system or connecting to sewer. There are not currently any OSTDS remediation projects listed. Any projects outside of lots of one acre or greater in the PFA or outside the PFA would add additional reductions to the estimates listed.
UTF (Urban Turfgrass Fertilizer)	2,332	DEP approved credits (6 %) for public education activities as well as credits identified for stakeholder stormwater projects.
STF (Sports Turfgrass Fertilizer)	13	6 % BMP credit for sports fields and 10 % BMP credit for golf courses on STF load to groundwater, assuming 100 % BMP implementation on golf courses and sports fields.
FF (Farm Fertilizer)	16,137	15 % BMP credit on FF load to groundwater, assuming 100 % owner-implemented BMPs on all fertilized lands
LW (Livestock Waste)	1,726	10 % BMP credit on load to groundwater, assuming 100 % owner-implemented BMPs at all livestock facilities.
WWTF (Wastewater Treatment Facility)	534	Achieved by BMAP WWTF policy.
Total Credits from BMAP Policies and Submitted Projects	32,540 – 37,984	
Advanced Agricultural Practices and Procedures	11,584 – 20,851	Pursue additional practices over the next 20 years, contingent on funding.
Total Credits	44,123 – 58,835	Estimated load reduction to meet the TMDL is 17,195 lb-N/yr.



Potential Credits by Source: OSTDS

Recharge Area	OSTDS Parcels Less Than One Acre in PFA	Credit for Enhancement (lb-N/yr)	Credit for Sewer (lb-N/yr)
High	2,028	10,531	15,392
Medium	436	1,258	1,838
Low	13	8	11
Total	2,477	11,797	17,241

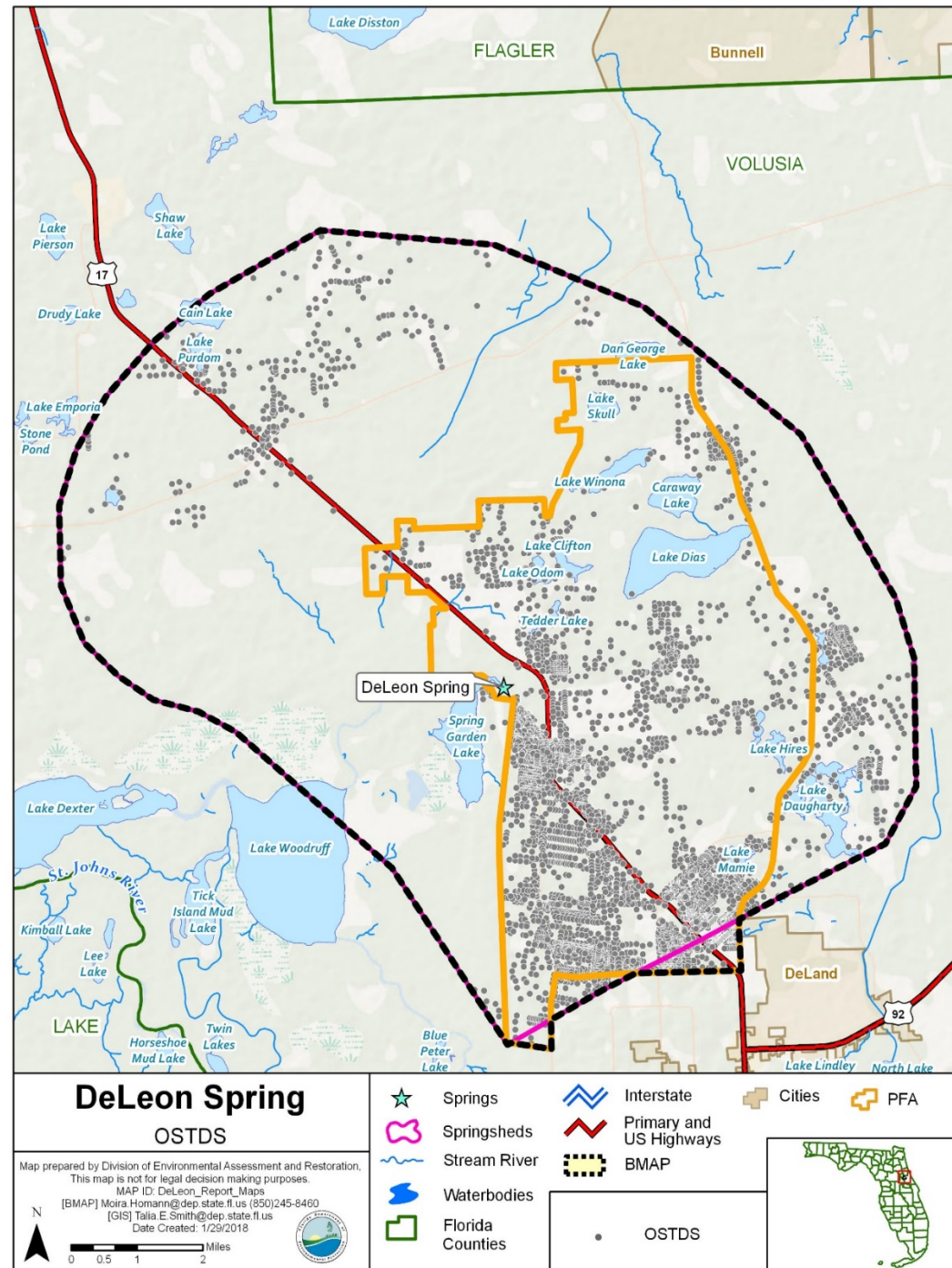
Total Estimated Credits So Far:

11,797 – 17,241 lb-N/yr

**Load reduction
to meet TMDL
17,195 lb-N/yr.**



Policy Area – Existing Septic Systems





Potential Credits by Source: UTF



Project Category	Project Credits (lb-N/yr) Based on Management Actions Listed in Appendix B
Fertilizer Ordinances and Public Education Activities	1,361
Stormwater Improvements	0
Total Project Credits	1,361
Total Possible Credits	2,332*

*Additional 972 lb-N/yr reduction could be achieved through public education and source control efforts.

Total Estimated Credits So Far:

$11,797 + 2,332 = 14,129$ lb-N/yr

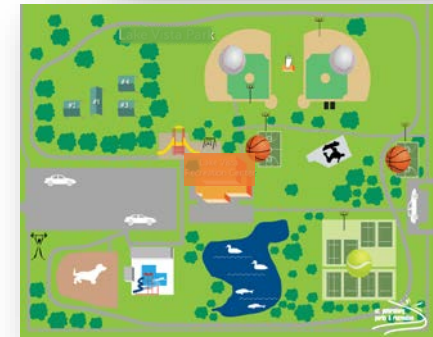
$17,241 + 2,332 = 19,573$ lb-N/yr

**Load reduction
to meet TMDL
17,195 lb-N/yr.**



Potential Credits by Source: STF

STF Source Control Measures	Credit Based on Estimated Load to Groundwater (%)	Possible Nitrogen Credits (lb-N/yr)
Golf Course BMP Implementation	10	NA
Sports Fields BMPs	6	13
Total Possible Credits		13



Total Estimated Credits So Far:

$11,797 + 2,332 + 13 = 14,142$ lb-N/yr

$17,241 + 2,332 + 13 = 19,586$ lb-N/yr

**Load reduction
to meet TMDL
17,195 lb-N/yr.**



Potential Credits by Source: FF and LW

Owner Implemented BMPs	Credit Based on Estimated Load to Groundwater (%)	Possible Nitrogen Credits (lb-N/yr)
Farm Fertilizer	15	16,137
Livestock Waste	10	1,726
Total Possible Credits		17,863

Total Estimated Credits So Far:

$11,797 + 2,332 + 13 + 17,863 = 32,005$ lb-N/yr

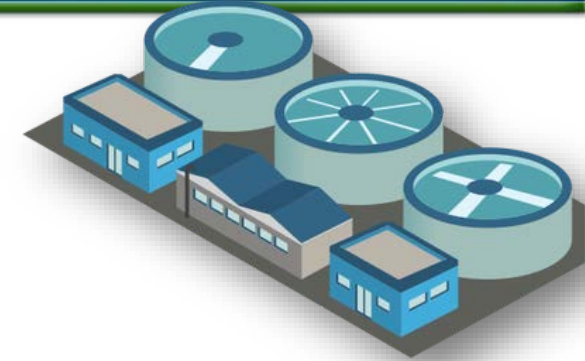
$17,241 + 2,332 + 13 + 17,863 = 37,449$ lb-N/yr

**Load reduction
to meet TMDL
17,195 lb-N/yr.**



Potential Credits by Source: WWTF

95% of the Permitted Capacity (gpd)	TN Concentration Limits for RIBs and Absorption Fields (mg/L)	TN Concentration Limits for All Other Land Disposal Methods (mg/L)
Greater than 100,000	3	3
20,000 to 100,000	3	6
Less than 20,000	6	6



	Possible Nitrogen Credits (lb-N/yr)
Achieved by WWTF policy if implemented in PFA1 and PFA2 (achieving 3 or 6 mg/L)	534
Credits from submitted projects	0
Total Possible Credits	534

Total Estimated Credits So Far:

$$11,797 + 2,332 + 13 + 17,863 + 534 = 32,539 \text{ lb-N/yr}$$

$$17,241 + 2,332 + 13 + 17,863 + 534 = 37,983 \text{ lb-N/yr}$$

**Load reduction
to meet TMDL
17,195 lb-N/yr.**



Potential Credits by Source: Advanced Agricultural Practices and Procedures

	Possible Nitrogen Credits (lb-N/yr)
Low Estimated Reduction Credit	11,584
High Estimated Reduction Credit	20,851

**Load reduction
to meet TMDL
17,195 lb-N/yr.**

Total Estimated Credits So Far:

$$11,797 + 2,332 + 13 + 17,863 + 534 + 11,584 = 44,123 \text{ lb-N/yr}$$

$$17,241 + 2,332 + 13 + 17,863 + 534 + 20,851 = 58,835 \text{ lb-N/yr}$$



DeLeon Spring Current Load Compared to the TMDL

	Loads (lb-N/yr)	Source
Total Load at Spring Vents	31,852	Upper 95% confidence interval - nitrate data and flow data from years 2011 to 2017 (0.61 mg/L and 21.3 cfs)
TMDL Load	14,657	TMDL target is 0.35 mg/L and using the same flow data from years 2011 to 2017
Required Reduction	17,195	

Total Credits from BMAP Policies and Submitted Projects	32,540 – 37,984
Total Credits*	44,123 – 58,835

*Including Advanced Agricultural Practices and Procedures credits



DeLeon Spring Reduction Milestones

- To achieve TMDL, BMAP implementation will be a 20-year process
- DeLeon Spring BMAP will define nitrogen reduction milestones:
 - 30 % reduction within 5 years – 5,159 lb-N/yr
 - 50 % reduction within 10 years – 8,598 lb-N/yr
 - 20 % reduction within 15 years – 3,439 lb-N/yr
 - Total reduction – 17,195 lb-N/yr





OSTDS Remediation Plan – Plan Elements

- DEP and Florida Department of Health (FDOH) will work together to implement the plan.
- Plan Elements.
 - Permits for installation of **NEW** OSTDS.
 - Applies to **lots < 1 acre in the PFAs:**
 - Per statute, new OSTDS on lots of less than one acre are prohibited within PFAs.
 - Conventional systems prohibited unless:
 - System includes enhanced treatment of nitrogen.
 - Sewer connection is available within 5 years (permit applicant must demonstrate).
 - FDOH:
 - Permits the installation of new OSTDS pursuant to Chapter 64E-6, Florida Administrative Code (F.A.C.).
 - Permitting requirements with respect to the definition of "new" or "less than one acre" will be followed for this remediation plan.



OSTDS Remediation Plan – Plan Elements (Con't)

- Plan Elements (continued).
 - **EXISTING** OSTDS.
 - Remediation policy applies to **OSTDS within the PFA on lots of less than one acre.**
 - Requirement for FDOH to issue repair or modification permit.
 - System must include nitrogen reduction enhancements (specified in BMAP), unless sewer connection is available within 5 years (permit applicant must demonstrate)
 - Policy is effective following completion of milestones:
 - Completion of master wastewater treatment feasibility plans
 - Rulemaking
 - Funding
 - ***But no later than 5 years after BMAP adoption***
 - All conventional OSTDS in areas subject to the remediation policy for existing systems are required to adopt enhanced treatment of nitrogen no later than 20 years after BMAP adoption



Monitoring and Reporting – Next Steps

- Monitoring (surface and groundwater) to measure
 - Water quality and biological response in the impaired springs, river, and/or groundwater
- Annual review of project accomplishments and adherence to schedule
- Five-year revisions of BMAP and NSILT (if needed)

