



Florida Department of Environmental Protection

Springs Coast Basin Management Action Plans (BMAPs)

March 2, 2017

Terry Hansen P.G., Basin Coordinator

850-245-8561

terry.hansen@dep.state.fl.us



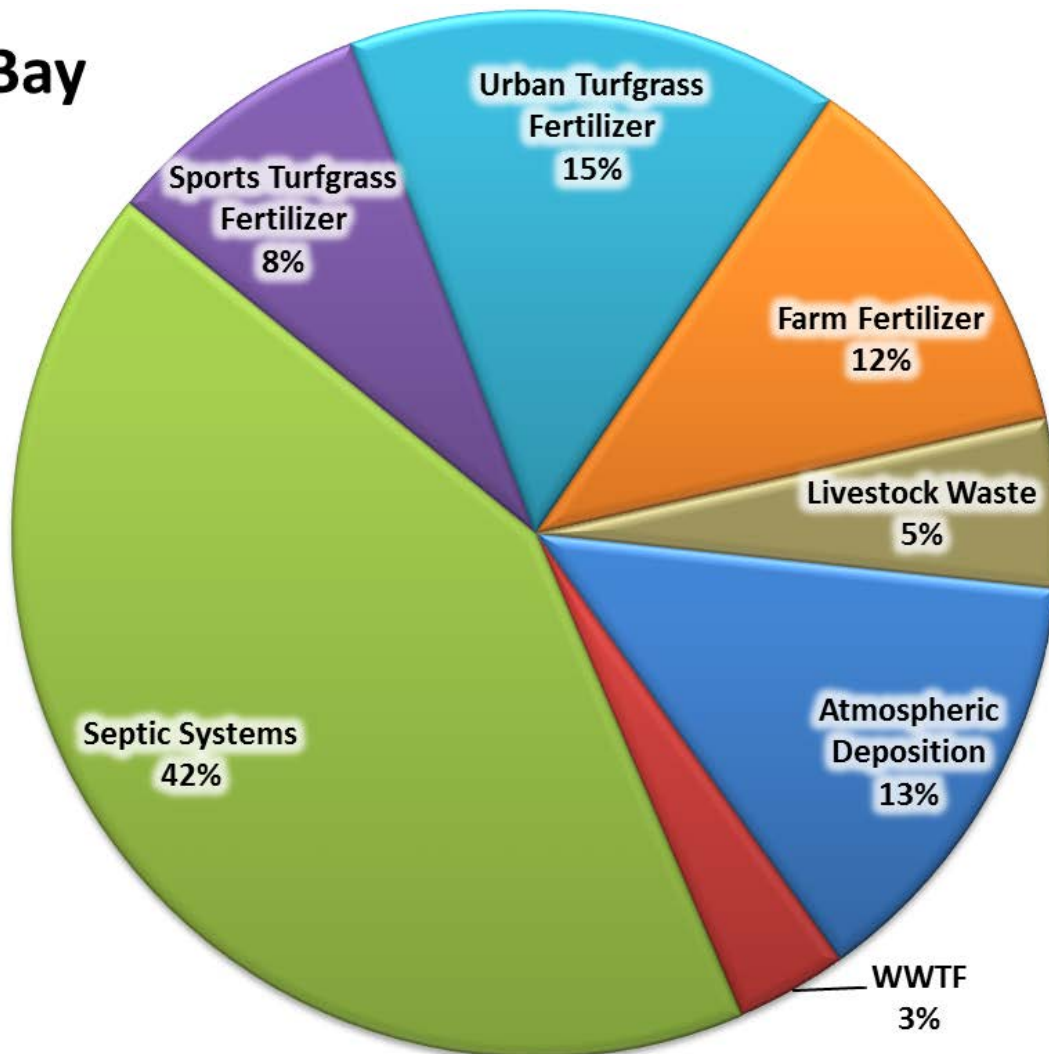


Pollutant Loading and Reduction Milestones



Kings Bay Nitrogen Loading to Groundwater

Kings Bay



Estimated Load to Groundwater: 600,000 lbs-N/yr

Estimated TMDL Load: 200,000 lbs-N/yr



CR/KB Nitrogen Reductions by Source

Source	Estimated Portion of Total Load (%)	Estimated Total Nitrogen Load to Groundwater (pounds of Nitrogen per year [lbs-N/yr])	Estimated Load Reduction (lbs-N/yr) [Groundwater Load – TMDL Load (x) %]
Septic systems	42 %	252,000	168,000
Urban turfgrass fertilizer	15 %	91,500	60,000
Atmospheric deposition	13 %	81,000	56,000
Farm fertilizer	12 %	71,500	48,000
Sports turfgrass fertilizer	8 %	50,500	32,000
Livestock waste	5 %	31,500	20,000
WWTF	4 %	22,000	16,000
Totals	100 %	600,000	400,000

TMDL = Total Maximum Daily Load

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CR/KB Nitrogen Reduction Schedule

Source	5-Year Milestone (30 % of Total) (lbs-N/yr)	10-Year Milestone (50 % of Total) (lbs-N/yr)	15-Year Milestone (20 % of Total) (lbs-N/yr)	Total Nitrogen Reduction (100 %) (lbs-N/yr)
Septic systems	50,400	84,000	33,600	168,000
Urban turfgrass fertilizer	18,000	30,000	12,000	60,000
Atmospheric deposition	*	*	*	56,000
Farm fertilizer	14,400	24,000	9,600	48,000
Sports turfgrass fertilizer	9,600	16,000	6,400	32,000
Livestock waste	6,000	10,000	4,000	20,000
Waste water treatment facility (WWTF)	4,800	8,000	3,200	16,000
Totals	120,000	200,000	80,000	400,000

*Atmospheric deposition is an uncontrollable load, but will likely be reduced through stormwater treatment and WWTF uptake.

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CR/KB 5-Year Reductions

Source	5-Year Milestone (30 % of Total) (lbs-N/yr)	5-Year Documented Reductions		
Septic systems	50,400	Address 25,000 to 30,000 septic systems.		
Urban turfgrass fertilizer	18,000	7,000 to 13,000 lbs-N/yr via ordinance package.		
Atmospheric deposition	16,800	Not addressable; stormwater pond denitrification?		
Farm fertilizer	14,400	9,000 to 11,000 lbs-N/yr via BMP enrollment and verification.		
Sports turfgrass fertilizer	9,600	Ball fields 300 lbs-N/yr; golf course real numbers needed.		
Livestock waste	6,000	??? lbs-N/yr via BMPs and verification.		
Waste water treatment facility (WWTF)	4,800	Achieve advanced wastewater treatment and increase reductions?		
Total	120,000			

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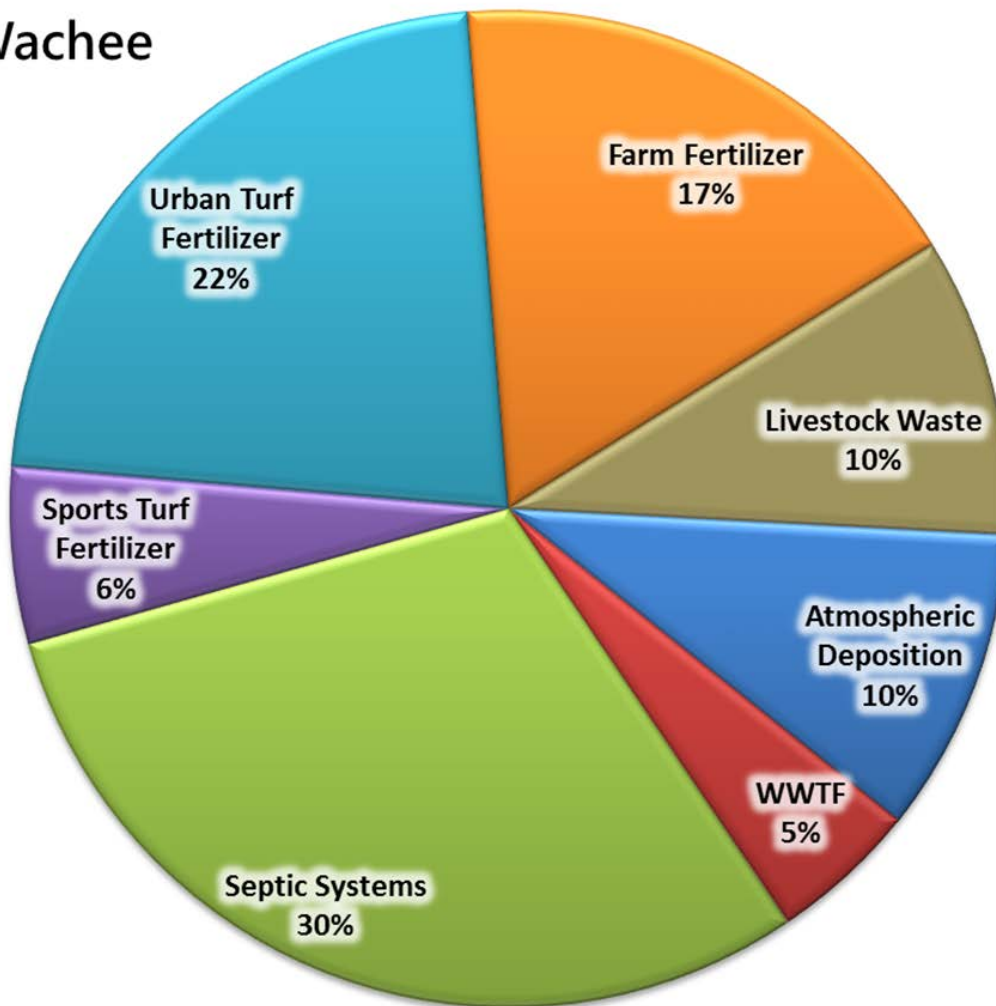
CR/KB Source Category Needs to meet 5-year Reductions

- **Sports Turfgrass – Golf Courses**
 - Identify actual rate of application for golf courses and recalculate load to groundwater.
 - Document relevant BMP implementation.
- **Agriculture – Livestock**
 - Determine % reductions from BMP implementation.
 - Develop and implement additional BMPs.
- **Agriculture – Farm Fertilizer**
 - Document % reductions from BMP implementation.
 - Develop and implement additional BMPs.
- **Urban Turfgrass**
 - Document reductions.
 - Develop additional measures.
- **Septic Systems**
 - FDOH legislation to allow septic tank drain field enhancement.
 - Conversion plan.
- **WWTF**
 - Upgrade plans for facility(ies).



Weeki Wachee Nitrogen Loading to Groundwater

Weeki Wachee



Estimated Load to Groundwater: 940,000 lbs-N/yr

Estimated TMDL Load: 103,000 lbs-N/yr



WW Nitrogen Reductions by Source

Source	Estimated Portion of Total Load (%)	Estimated Total Nitrogen Load to Groundwater (lbs-N/yr)	Estimated Load Reduction (lbs-N/yr) [Groundwater Load – TMDL Load (x) %]
Septic systems	30 %	282,875	251,100
Urban turfgrass fertilizer	22 %	209,689	184,140
Farm fertilizer	17 %	163,935	142,290
Atmospheric deposition	10 %	93,208	83,700
Livestock waste	10 %	91,347	83,700
Sports turfgrass fertilizer	6 %	53,841	50,220
WWTF	5 %	45,105	41,850
Totals	100 %	940,000	837,000

TMDL = Total Maximum Daily Load

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WW Nitrogen Reduction Schedule

Source	5-Year Milestone (30 % of Total) (lbs-N/yr)	10-Year Milestone (50 % of Total) (lbs-N/yr)	15-Year Milestone (20 % of Total) (lbs-N/yr)	Total Nitrogen Reduction (100 %) (lbs-N/yr)
Septic systems	75,330	125,550	50,220	251,100
Urban turfgrass fertilizer	55,242	92,070	36,828	184,140
Farm fertilizer	42,687	71,145	28,458	142,290
Atmospheric deposition	*	*	*	83,700
Livestock waste	25,110	41,850	16,740	83,700
Sports turfgrass fertilizer	15,066	25,110	10,044	50,220
WWTF	12,555	20,925	8,370	41,850
Totals	251,100	418,500	167,400	837,000

*Atmospheric deposition is an uncontrollable load, but will likely be reduced through stormwater treatment and WWTF uptake.

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WW 5-Year Reductions

Source	5-Year Milestone (30 % of Total) (lbs-N/yr)	5-Year Documented Reductions
Septic systems	75,330	Address 44,000 to 55,000 septic systems.
Urban turfgrass fertilizer	55,242	47,000 lbs-N/yr for ordinance package.
Farm fertilizer	42,687	21,000 to 25,000 lbs-N/yr via BMP enrollment and verification.
Atmospheric deposition	25,110	Not addressable; stormwater pond denitrification?
Livestock waste	25,110	??? lbs via BMP enrollment and verification.
Sports turfgrass fertilizer	15,066	231 lbs-N/yr ball fields; golf courses need real numbers.
WWTF	12,555	Achieve advanced wastewater treatment; upgrade poorly performing facilities.
Total	251,100	

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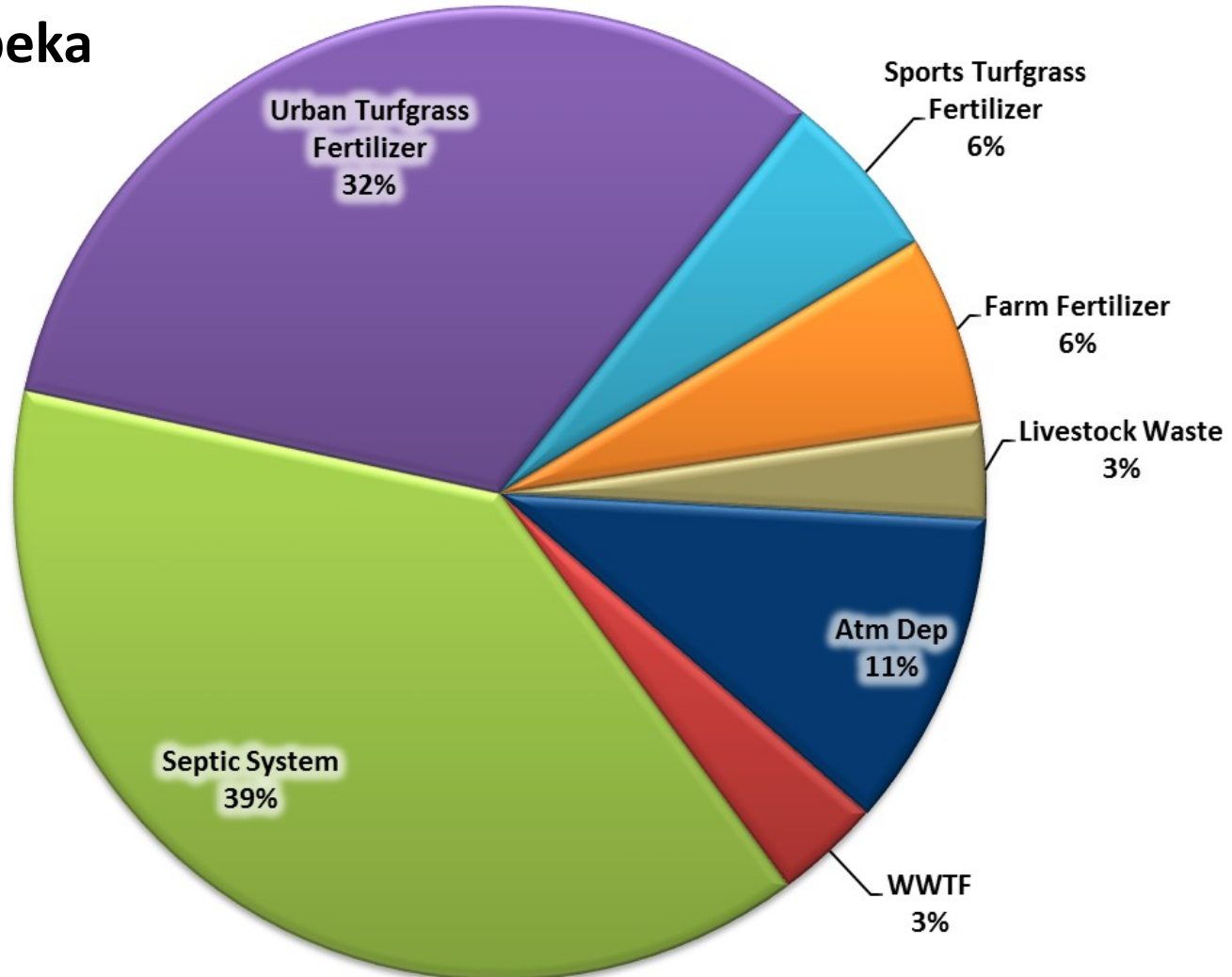
WW Source Category Needs to Meet 5-year Reductions

- **Sports Turfgrass – Golf Courses**
 - Identify actual rate of application for golf courses and recalculate load to groundwater.
 - Document relevant BMP implementation.
- **Agriculture – Livestock**
 - Determine % reductions from BMP implementation.
 - Develop and implement additional BMPs.
- **Agriculture – Farm Fertilizer**
 - Document % reductions from BMP implementation.
 - Develop and implement additional BMPs.
- **Urban Turfgrass**
 - Document reductions.
 - Develop additional measures.
- **Septic Systems**
 - FDOH legislation to allow septic tank drain field enhancement.
 - Conversion plan.
- **WWTF**
 - Upgrade plans for facility(ies).



Magnolia-Aripeka Springs Nitrogen Loading to Groundwater

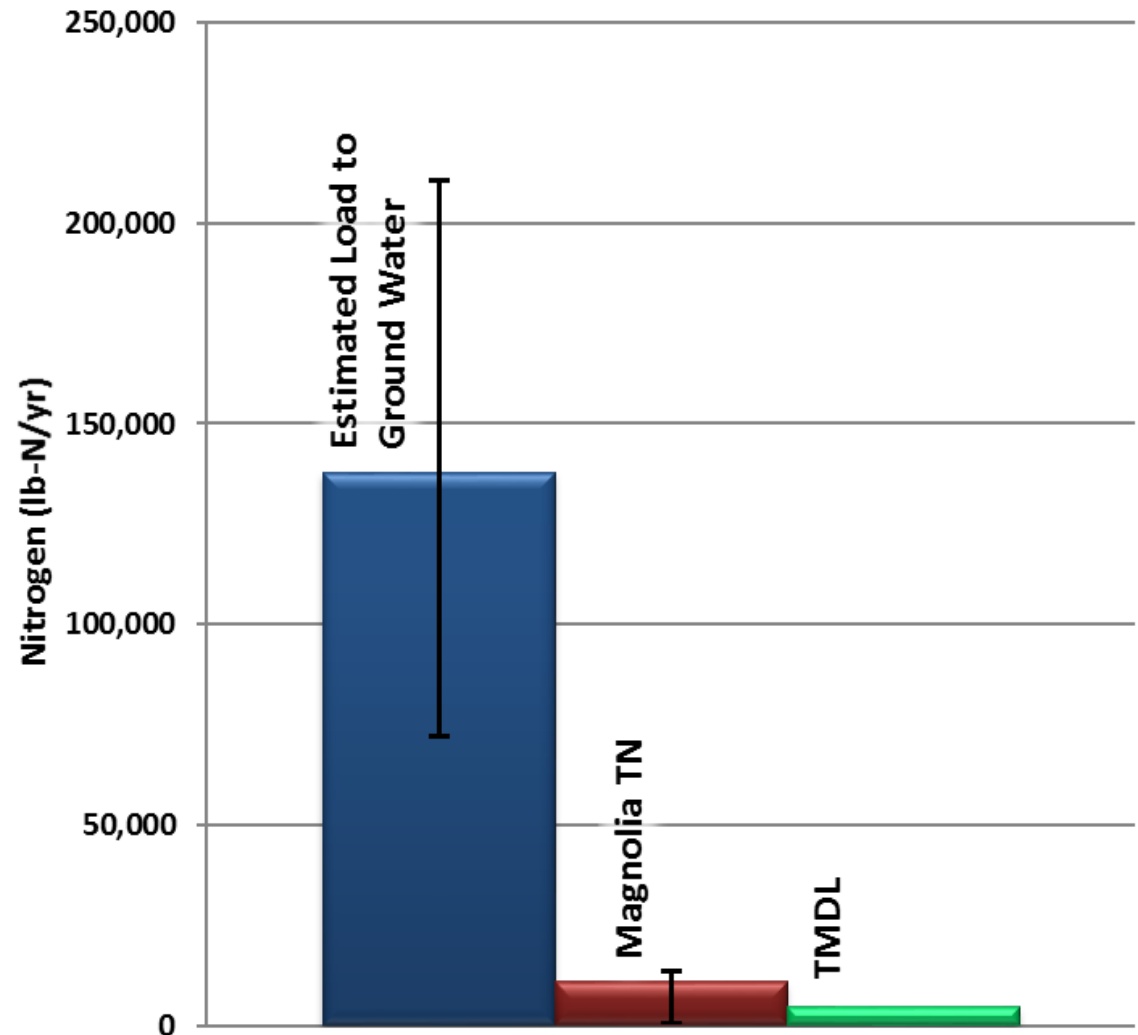
Magnolia-Aripeka Springs



Estimated Load to Groundwater: 138,000 lbs-N/yr



Magnolia-Aripeka Springs Estimated Nitrogen Load to Groundwater



Spring flow is too irregular to accurately calculate TMDL load.



Suggested Magnolia-Aripeka Springs Nitrogen Reduction Guidelines by Source

Source	Estimated Portion of Total Load (%)	Estimated Total Nitrogen Load to Groundwater (lbs-N/yr)
Septic systems	39 %	53,129
Urban turfgrass fertilizer	32 %	43,719
Atmospheric deposition	11 %	14,550
Farm Fertilizer	6 %	8,710
Sports turfgrass fertilizer	6 %	8,710
Livestock Waste	3 %	4,358
WWTF	3 %	4,824
Totals	100 %	138,000

TMDL = Total Maximum Daily Load

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Suggested Magnolia-Aripeka Springs 5-Year Reductions

Source	5-Year Recommended Reductions
Septic systems	Address 7,000 to 20,000 septic systems.
Urban turfgrass fertilizer	10,000 lbs-N/yr for ordinance package.
Atmospheric deposition	Not addressable; stormwater pond denitrification?
Farm Fertilizer	1,000 to 1,500 lbs-N/yr via BMP enrollment and verification.
Sports turfgrass fertilizer	2,000 lbs-N/yr ball fields; golf courses need real numbers.
Livestock Waste	??? lbs-N/yr via BMPs and verification.
WWTF	Achieve advanced wastewater treatment; upgrade poorly performing facilities.

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Draft Basin Management Action Plans

- Overall load reductions based on NSILT estimates.
- 5-, 10-, and 15-year milestones, as discussed.
- PFA designated.
- OSTDS Plan:
 - Policy for one-acre lots.
 - Education strategy.
 - Summary of science considered.
 - OSTDS projects to meet milestones.
- Projects to meet 5-, 10-, and 15- year milestones in other source categories, and to meet TMDLs.
- Monitoring plan.



Basin Management Action Plan

Contact: Terry Hansen, P.G.

terry.hansen@dep.state.fl.us

<http://www.dep.state.fl.us/water/>

[http://publicfiles.dep.state.fl.us/DEAR/BMAP/Springs Coast/BMAPs](http://publicfiles.dep.state.fl.us/DEAR/BMAP/Springs%20Coast/BMAPs)

