



Florida Department of Environmental Protection

Homosassa and Chassahowitzka Basin Management Action Plan (BMAP)

January 17, 2018

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Water Quality Framework

Monitor and report progress annually

Adapt and change – new statewide annual report

Collect data

Analyze and verify

List “impaired” waters

REPEAT

Measure success and adapt

Set water quality standards

Monitor water quality

Determine pollution problems

Develop and implement restoration plans (BMAPs)

Work with community leaders

Establish restoration goals (TMDLs)

Allocate responsibilities

Identify projects

- Infrastructure
- Best Management Practices (BMPs)

Establish schedules

Identify success criteria

Excessive nutrients

Bacteria, Metals, and Other Impairments

Gather additional data

Evaluate water quality

Adopt pollutant reduction targets



Homosassa Spring Group Nitrate Total Maximum Daily Loads (TMDLs)

Waterbody or Spring Name	Waterbody Identification (WBID) Number	Parameter	TMDL (mg/L)
Homosassa #1 Spring	1345G	Nitrate, annual average	0.23
Homosassa #2 Spring	1345G	Nitrate, annual average	0.23
Homosassa #3 Spring	1345G	Nitrate, annual average	0.23
Pumphouse Springs	1345G	Nitrate, annual average	0.23
Trotter Springs	1345G	Nitrate, annual average	0.23
Bluebird Springs	1348A	Nitrate, annual average	0.23
Hidden River Main Spring	1348E	Nitrate, annual average	0.23
Hidden River #2 Spring	1348E	Nitrate, annual average	0.23



Chassahowitzka Spring Group and River Nitrate and TN TMDLs

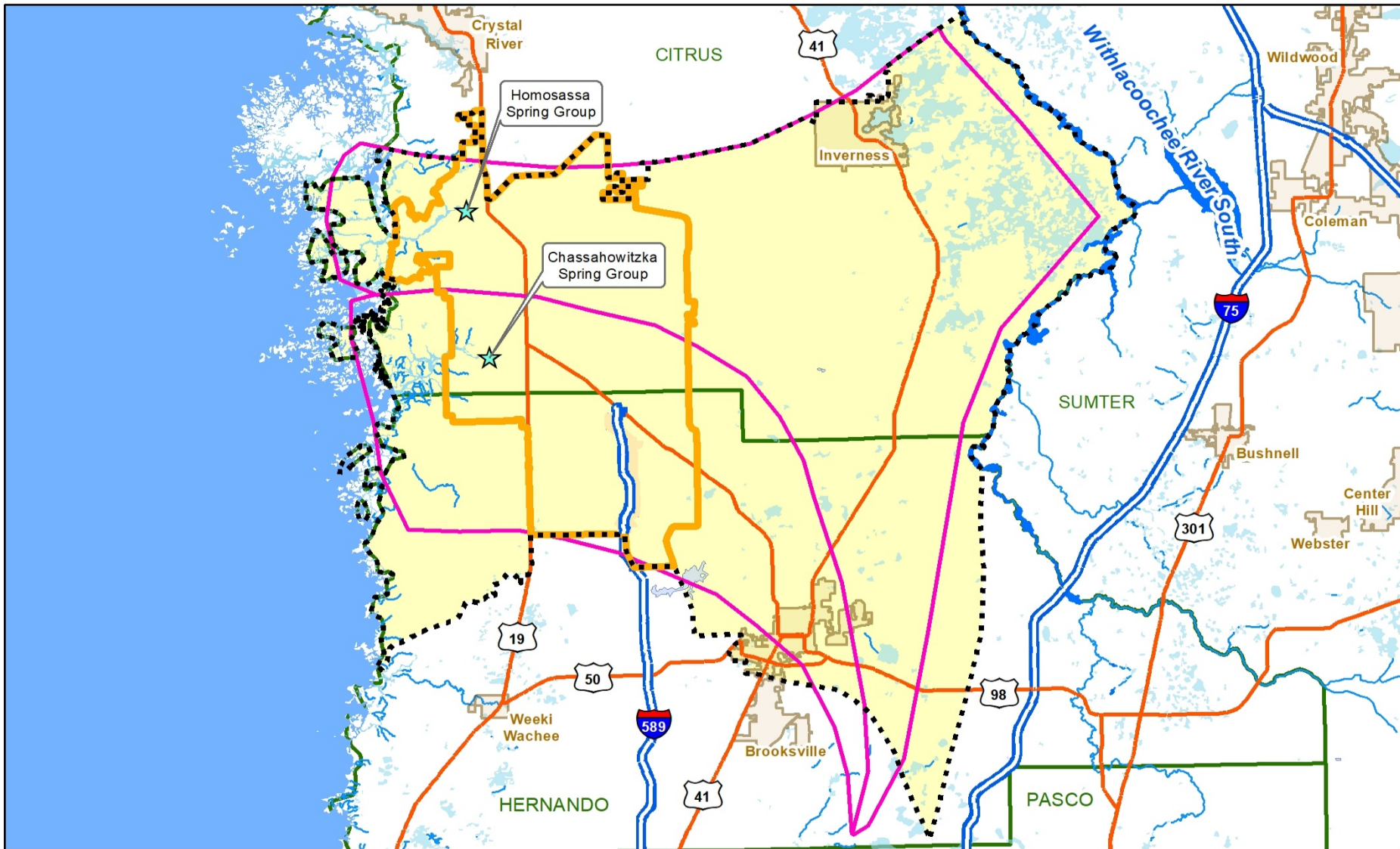
Waterbody or Spring Name	WBID Number	Parameter	TMDL (mg/L)
Chassahowitzka Spring Group			
Chassahowitzka Main Spring	1348Z	Nitrate, annual average	0.23
Chassahowitzka #1 Spring	1348Z	Nitrate, annual average	0.23
Crab Creek Spring	1348Z	Nitrate, annual average	0.23
Baird #1 Spring	1348D	Nitrate, annual average	0.23
Ruth Spring	1348D	Nitrate, annual average	0.23
Beteejay Spring	1361B	Nitrate, annual average	0.23
Chassahowitzka River			
Chassahowitzka River-Baird Creek	1348D	TN, annual average	0.25



Regulatory Framework

The process for preparing BMAPs is found in:

- Section 403.067, Florida Statutes (F.S.), known as the “Florida Watershed Restoration Act”
- The 2016 Florida Springs and Aquifer Protection Act lists requirements for BMAPs for Outstanding Florida Springs (OFS)
- PFA Report and Nitrogen Source Inventory Loading Tool (NSILT) developed by the Florida Department of Environmental Protection (DEP) for the Homosassa and Chassahowitzka Springs Groups



Homosassa & Chassahowitzka BMAP

Map prepared by Division of Environmental Assessment and Restoration.
 This map is not for legal decision making purposes.
 MAP ID: ChassaHom_Overview.mxd
 [BMAP] Terry.Hansen@dep.state.fl.us (850) 245-8561
 [GIS] Talia E Smith (850) 245-8539
 Created: 09-13-17



0 2.5 5 10 Miles

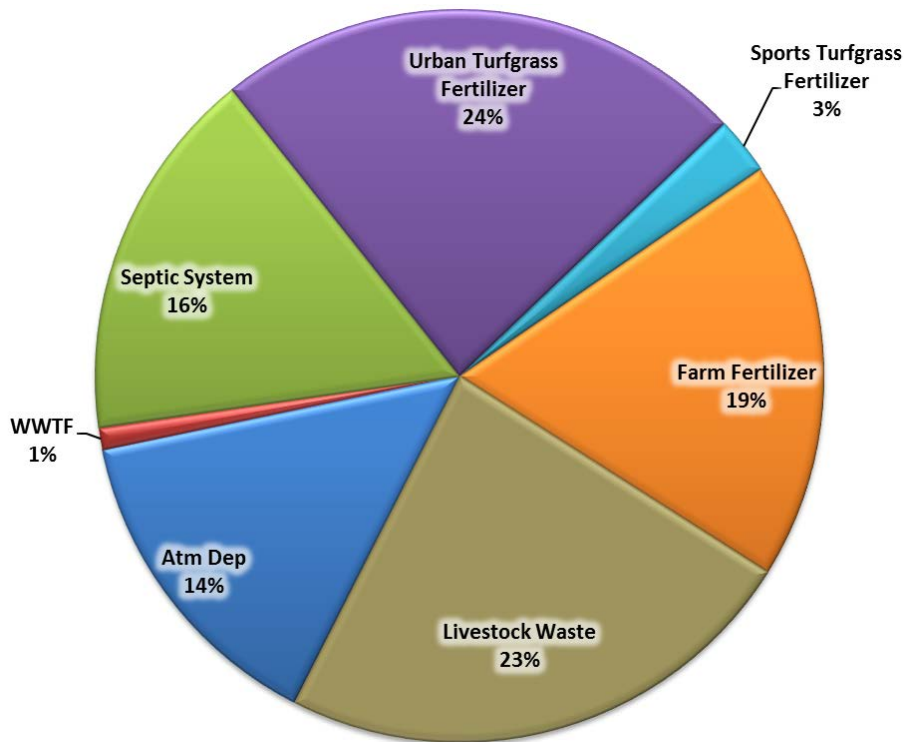
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|--|------------------|--|-------------------------|
| | Springs | | PFA |
| | Springsheds | | Cities |
| | Stream River | | Interstate |
| | Waterbodies | | Primary and US Highways |
| | Florida Counties | | BMAP boundary |





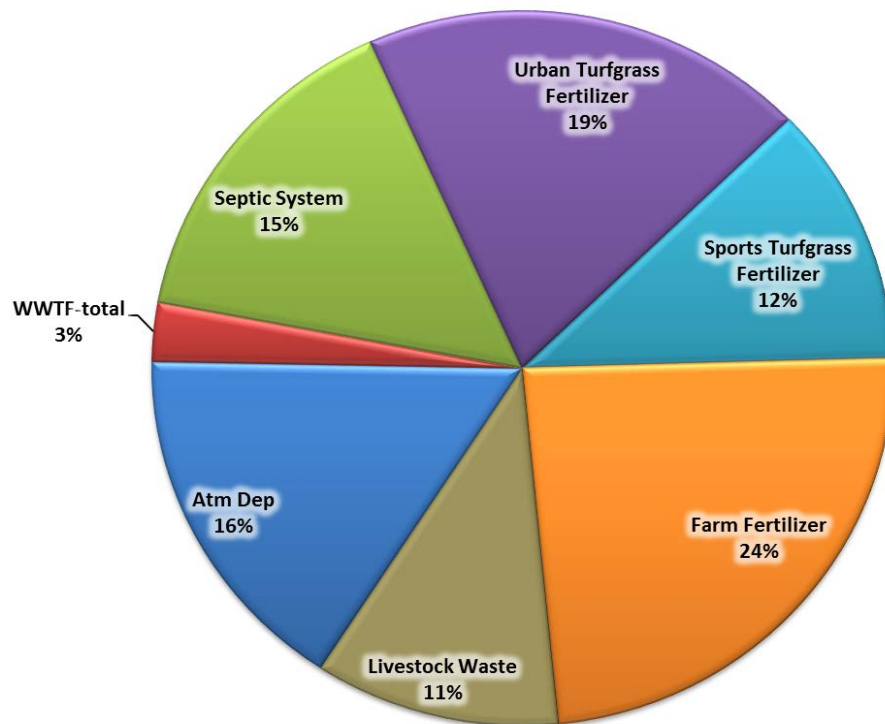
Estimated Annual Average Loading to Groundwater in Springsheds

Homosassa



**582,077 pounds of nitrogen
per year (lb-N/yr)**

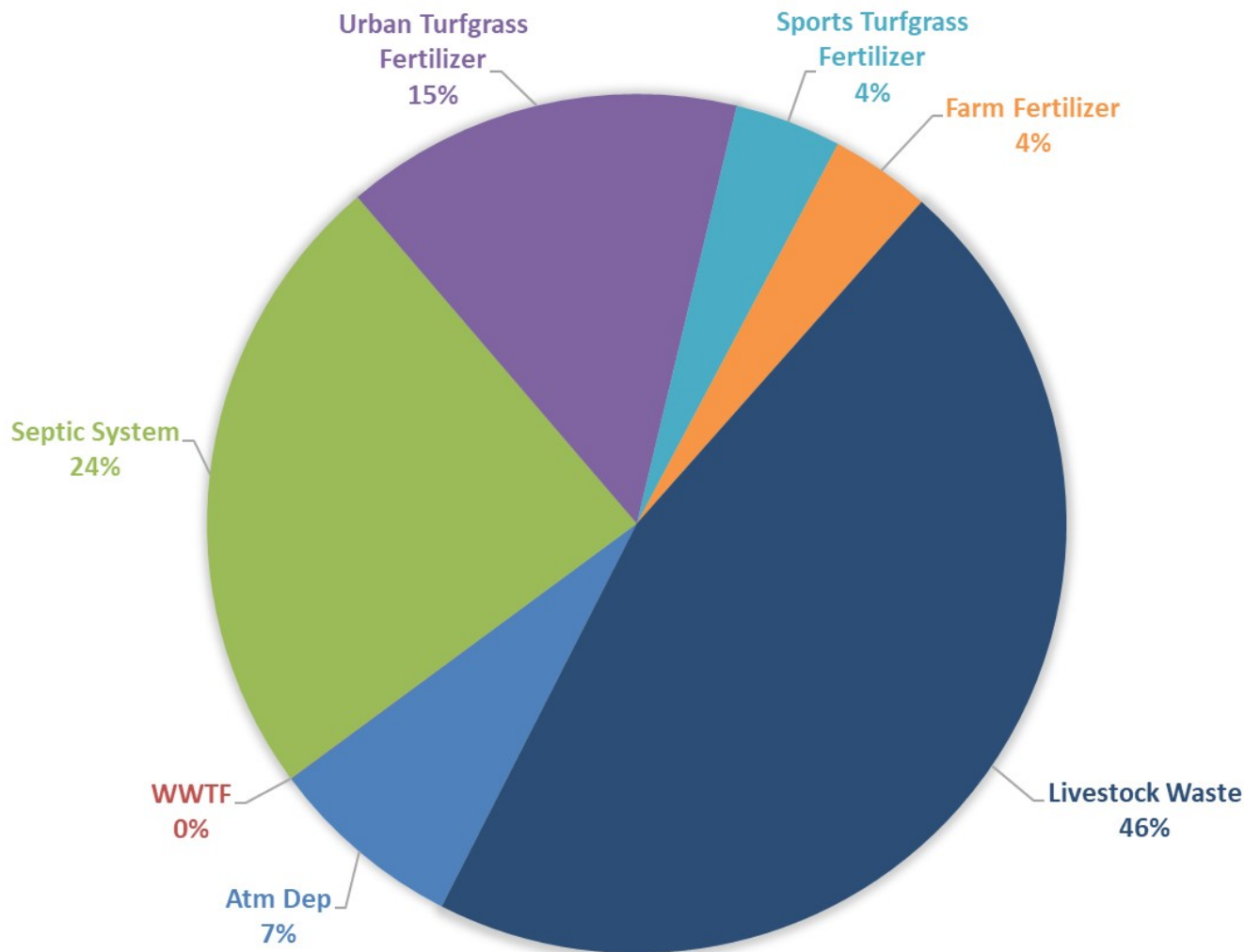
Chassahowitzka



380,463 lb-N/yr



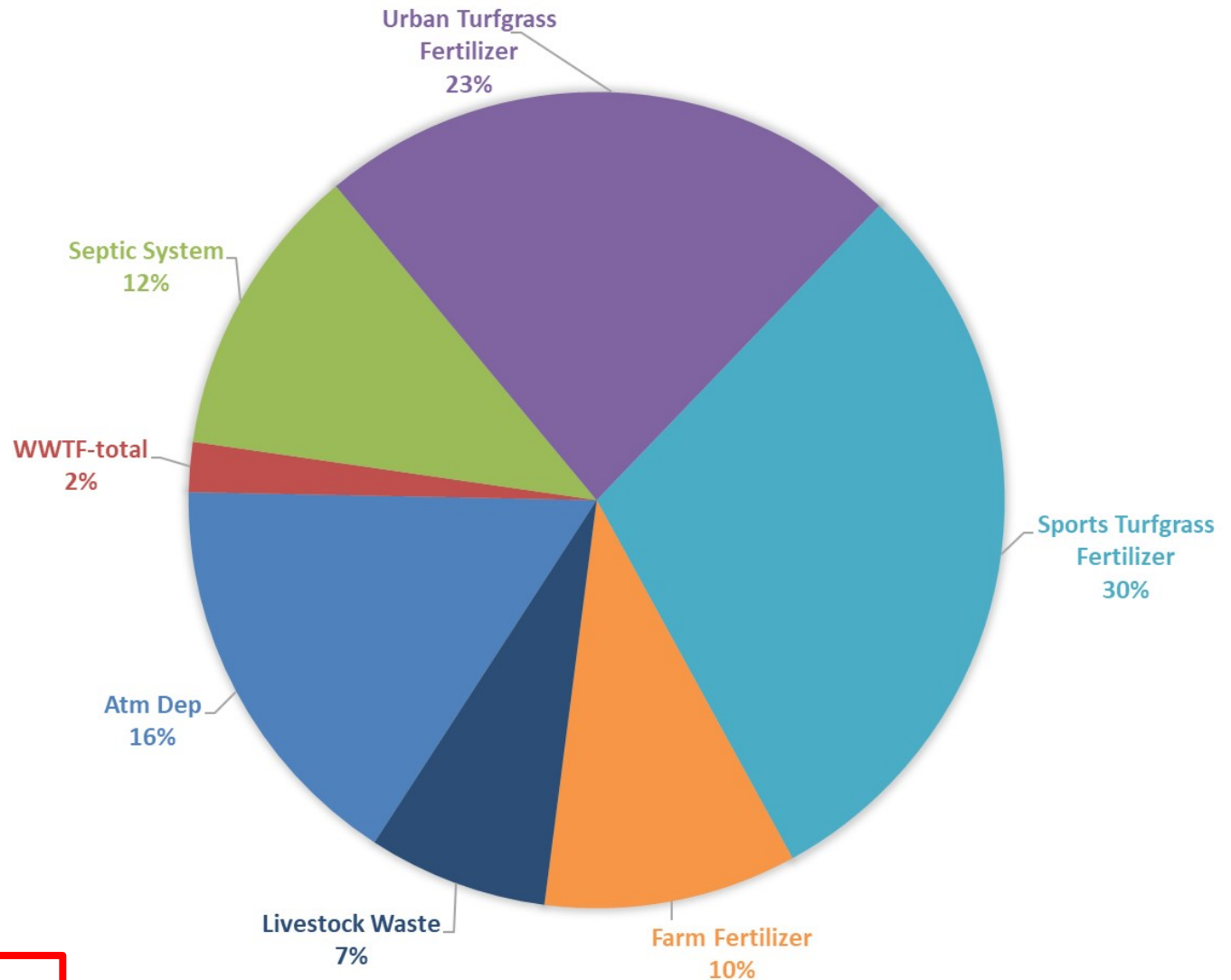
Homosassa Nitrogen Loading to Groundwater in PFA



201,774 lb-N/yr



Chassahowitzka Nitrogen Loading to Groundwater in PFA

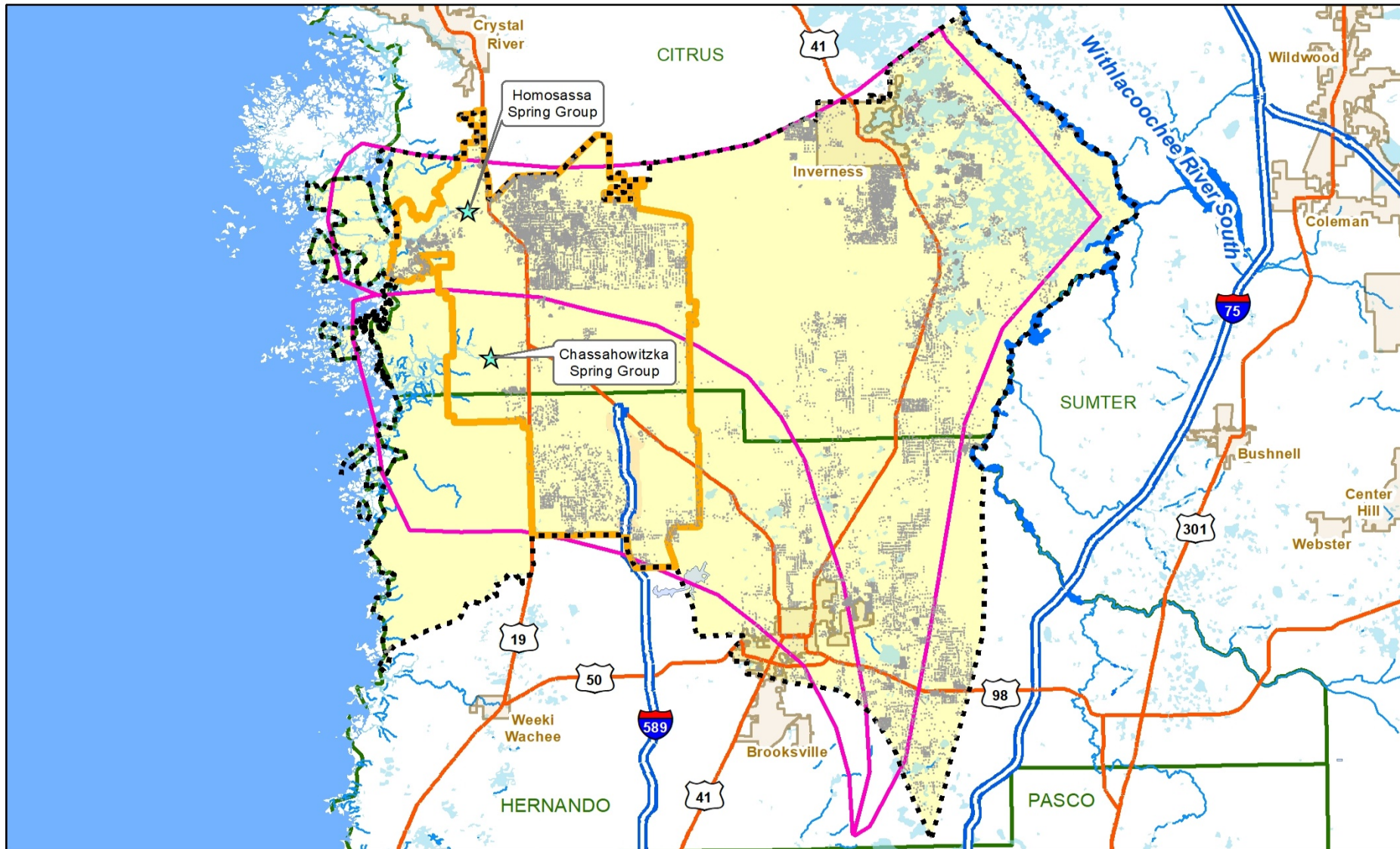


112,133 lb-N/yr



Onsite Sewage Treatment and Disposal System (OSTDS) Remediation Plan

- The Florida Springs and Aquifer Protection Act mandates that a BMAP with OSTDS contributing at least 20 % of nonpoint source load within a PFA include an OSTDS Remediation Plan (24 % in Homosassa; 12 % in Chassahowitzka)
- Homosassa is required to have an OSTDS Remediation Plan
- Chassahowitzka will have an OSTDS Remediation Plan
- Both plans will include:
 - Public education plan
 - Scientific information on effect of nutrients on springs
 - Projects designed to reduce nutrient impacts from OSTDS
- The OSTDS Remediation Plan is included as an appendix in the BMAP



Homosassa & Chassahowitzka BMAP OSTDS

Map prepared by Division of Environmental Assessment and Restoration.
This map is not for legal decision making purposes.
MAP ID: ChassaHom_OSTDS.mxd
[BMAP] Terry.Hansen@dep.state.fl.us (850) 245-8561
[GIS] Talia E Smith (850) 245-8539
Created: 09-13-17



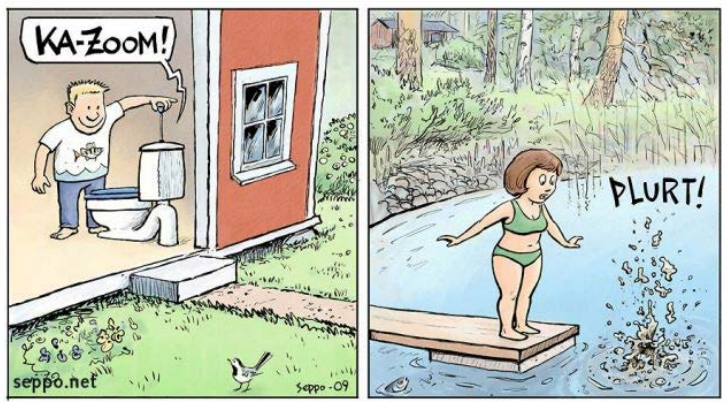
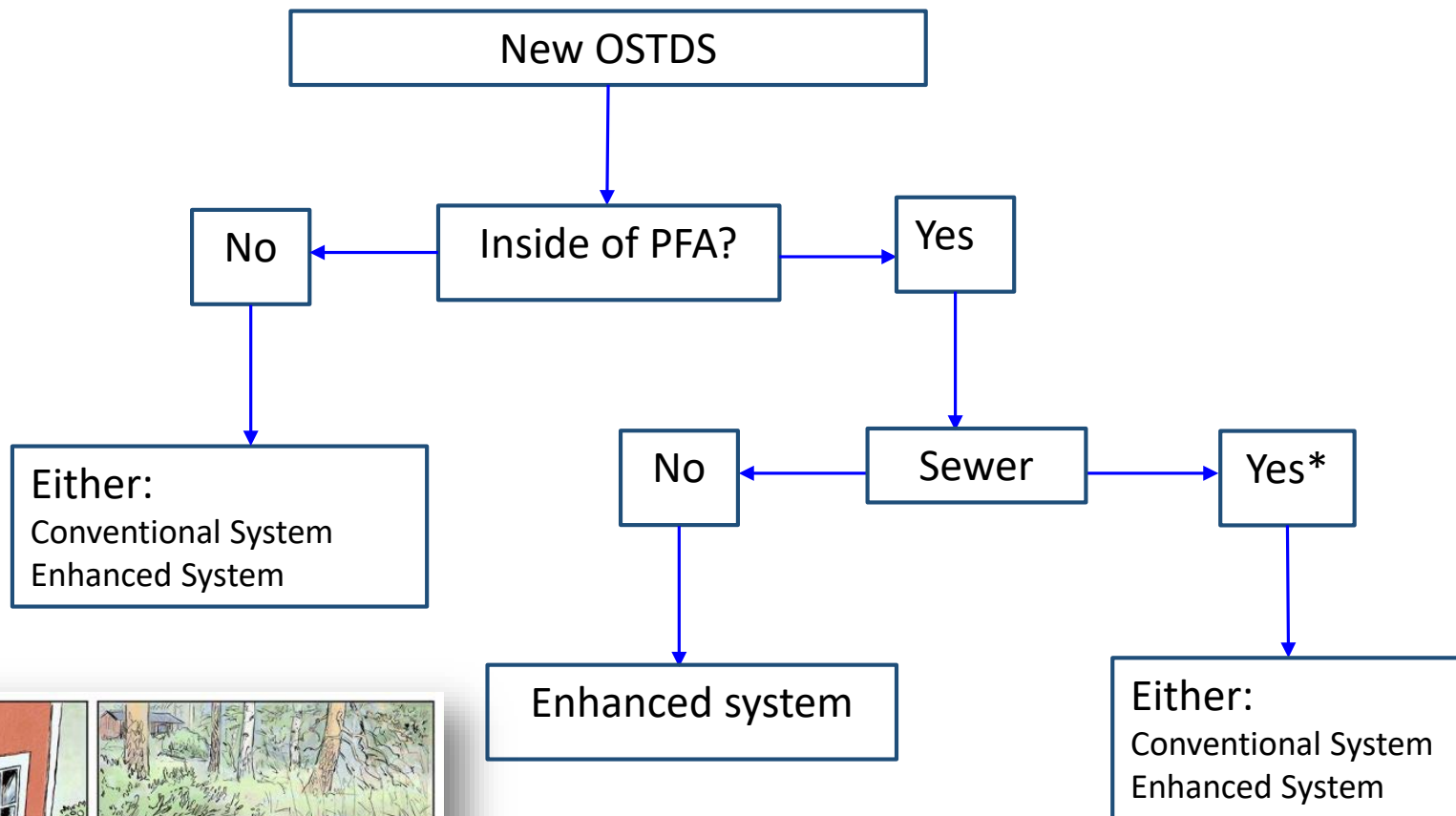
0 2.5 5 10 Miles

- | | | | |
|--|------------------|--|-------------------------|
| | Springs | | OSTDS |
| | Springsheds | | PFA |
| | Stream River | | Cities |
| | Waterbodies | | Interstate |
| | Florida Counties | | Primary and US Highways |
| | | | BMAP boundary |





BMAP Policies – OSTDS



*Must connect to sewer when available



TMDLs / BMAP

- To achieve the TMDLs, BMAP implementation will be a 20-year process
- Plan will define nitrogen reduction milestones:
 - 30% reduction within 5 years
 - 50% reduction within 10 years
 - 20% reduction within 15 years
 - Use last 5 years to finish up and see results





Nitrogen Load to Groundwater (NSILT) in Springsheds

Nitrogen Source	Estimated Total Nitrogen Load to Groundwater (lb-N/yr) Hom. / Chaz	Percent Contribution H / C
OSTDS	96K / 58K	17 / 15
Urban Turfgrass Fertilizer	138K / 74K	24 / 20
Atmospheric Deposition	83K / 61K	14 / 16
Farm Fertilizer	108K / 91K	19 / 24
Sports Turfgrass Fertilizer	15K / 45K	3 / 12
Livestock Waste	137K / 41K	24 / 11
Wastewater Treatment Facilities	6K / 10K	1 / 3
Total	582K / 380K	100%



Nitrogen Load to Groundwater (NSILT) in Springsheds

Nitrogen Source	Estimated Total Nitrogen Load to Groundwater (lb-N/yr)	Percent Contribution
OSTDS	154,473	16%
Urban Turfgrass Fertilizer	211,837	22%
Atmospheric Deposition	144,498	15%
Farm Fertilizer	198,685	21%
Sports Turfgrass Fertilizer	59,583	6%
Livestock Waste	177,691	18%
Wastewater Treatment Facilities	15,773	2%
Total	962,540	100%



Reduction to Meet the TMDLs

H/C Required Reduction to Meet the TMDL		
Description	Nitrogen Loads (lb-N/yr)	Notes Regarding Data Used
Total Load at Spring Vents	245K/197K	95 th % data and flow data from 2012 to 2015 & 2012 to 2017 (195/164 cfs)
TMDL Load	88K/82K	TMDL target is 0.23 mg/L and using the same flow data
Required Reduction	157K/115K	

cfs = cubic feet per second

mg/L = milligrams per liter



Homosassa Chassahowitzka Gap Analysis

Nitrogen Source	Credits Based on Project Tables (lb-N/yr) H/C	Description
OSTDS	10,929 / 0	Credits identified for stakeholder OSTDS projects (enhancement or sewer)
Urban Turf Fertilizer	7,246 / 992	DEP approved credits (up to 6%) for public education activities as well as credits identified for stakeholder stormwater projects
Atmospheric Deposition	–	No reduction
Farm Fertilizer (FF)	16,177 /13,626	15% BMP credit on FF load to groundwater, assuming 100% owner-implemented BMPs on all fertilized lands
Sports Turf Fertilizer (STF)	1,431 / 4,708	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
Livestock	13,688 / 4,081	10% BMP credit on load to groundwater, assuming 100% owner-implemented BMPs at all livestock facilities
Wastewater Treatment Facility	1,176 /6,574	Achieved by BMAP WWTF policy (achieving 3 or 6 mg/L)
Total Credits	50,647 / 29,981	
Required Reduction	157K / 115K	106,485 / 85,720 Load Remaining:



Options to Reduce Remaining Load

Estimated Reduction Credits for Additional OSTDS Enhancement OR Sewer

Recharge Area	BMAP Policy: OSTDS Parcels Less Than One Acre in PFAs	Credit for Enhancement (lb-N/yr)	Credit for Sewer (lb- N/yr)	OSTDS Parcels One Acre and Greater in PFAs	Credit for Enhancement (lb-N/yr))	Credit for Sewer (lb- N/yr)
High	3,942	20,755	30,334	3,310	17,427	25,740
Medium	617	1,805	2,638	143	418	611
Low	156	91	133	80	47	68
Total	4,715	22,651	33,105	3,533	17,982	26,150



Options to Reduce Remaining Load

Potential WWTF Projects that Could Result in Additional Reductions		
Project #	Name/Location	Estimated Reduction (lb-N/yr)
CC-02	Southwest Regional Water Reclamation Facility (SWRWRF)/ Homosassa	13,700
CC-04	Chassahowitzka to SWRWRF Force Main/ Chassahowitzka	9,280
CC-05	Sugarmill Woods Residential Reclaimed Water/ Chassahowitzka	19,852
		42,832



Closing the OSTDS Gap

- BMAP will contain an OSTDS remediation plan.
- DEP & FDOH will work together to implement it.
- To be most successful, local funding needs to be available to homeowners:
 - For example: grant programs for assisting homeowners, with costs administered by county.
 - Best if administered at the local level.
 - State funding for such grant programs is available.



OSTDS Options

- **OSTDS enhancement** (defined as 65+ % nitrogen reduction).
- FDOH approved options in Florida:
 - Aerobic Treatment Units (ATU) meeting the NSF 245 standard.
 - Passive nitrogen-reducing, in-tank systems tested by FDOH study:
Florida Onsite Sewage Passive Nitrogen Reduction Strategies Study
- FDOH innovative system testing process is evaluating more options, such as:
 - Performance based treatment systems (PBTS).
 - Media filter systems
 - <http://www.floridahealth.gov/environmental-health/onsite-sewage/products/documents/pbts-components.pdf>
- **OSTDS sewerage.**
 - BMAP has new wastewater disposal requirements for nitrogen.



OSTDS Remediation Plan

- Which systems must be enhanced or sewerred?
- What is the deadline for enhancing or sewerering?
 - Upon needing a permit for new, modified, or repaired OSTDS.
 - Unless sewer is available or described as becoming available in a BMAP project.
 - Backstop: In areas where enhancement or sewer is required, all OSTDS loads must be reduced no later than 20 years after BMAP adoption.
- When does this start?
 - As soon as the BMAP is adopted.
 - By law, BMAP must be adopted before July 1, 2018.



Ag Options to Reduce Remaining Load

Estimated Reduction Credits for Advanced Agricultural Practices

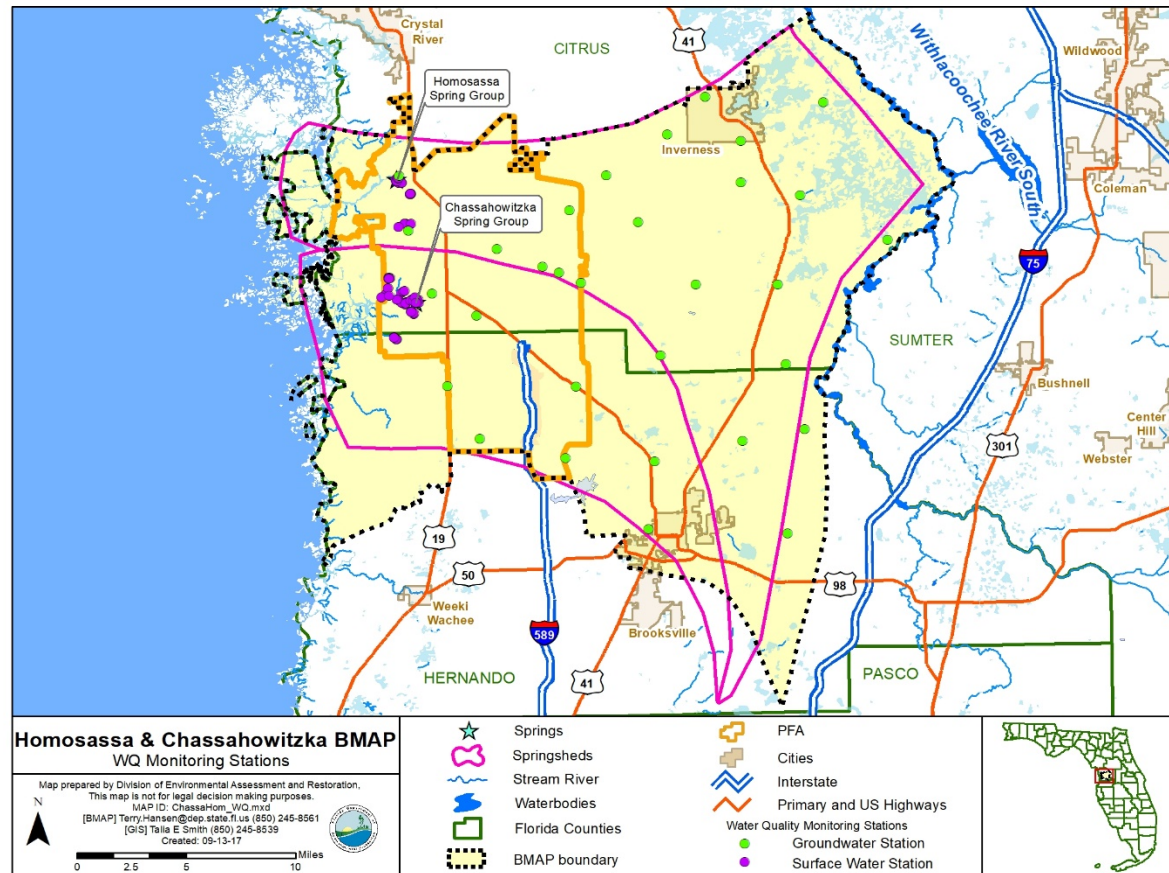
Action	Estimated Reduction Credit (lb-N/yr) High Recharge	Estimated Reduction Credit (lb-N/yr) Medium Recharge
Precision Irrigation	673	374
Soil Moisture Probes	1,328	4,772
Controlled Release Fertilizer	700	389
Precision Fertilization	7,701	4,278
Total	10,402	9,813





Next Steps

- Public meeting - January 30, 2018
- BMAP adoption - February 2018





QUESTIONS??



Photo: SWFWMD



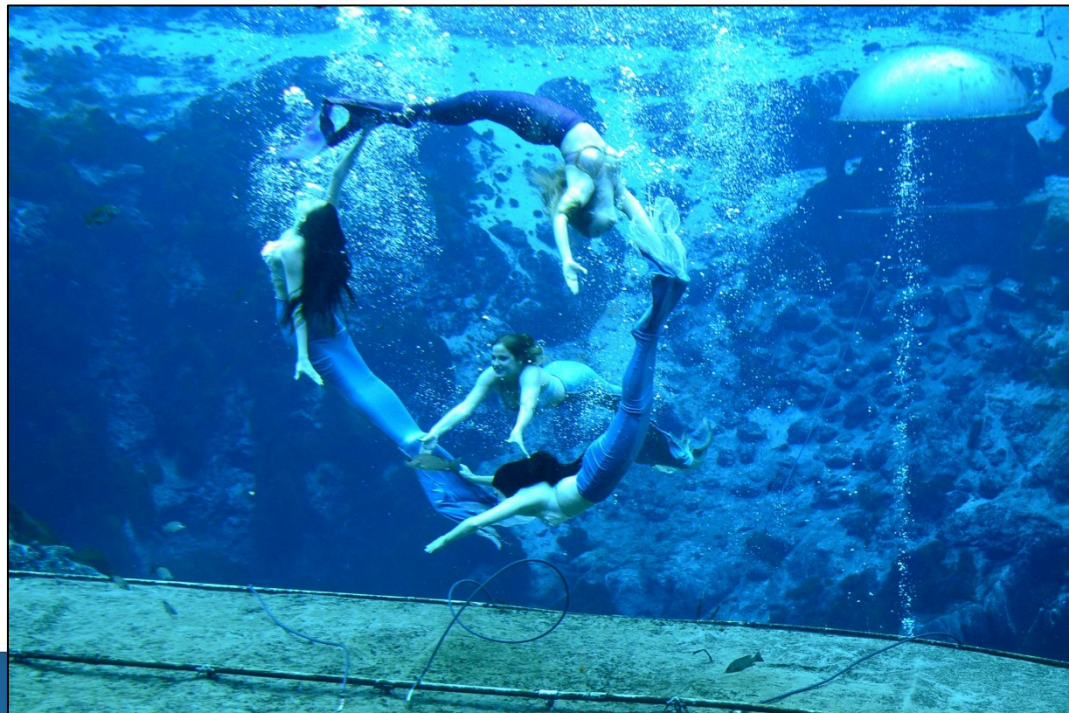
Basin Management Action Plan

Contact: Terry Hansen, P.G.

terry.hansen@dep.state.fl.us

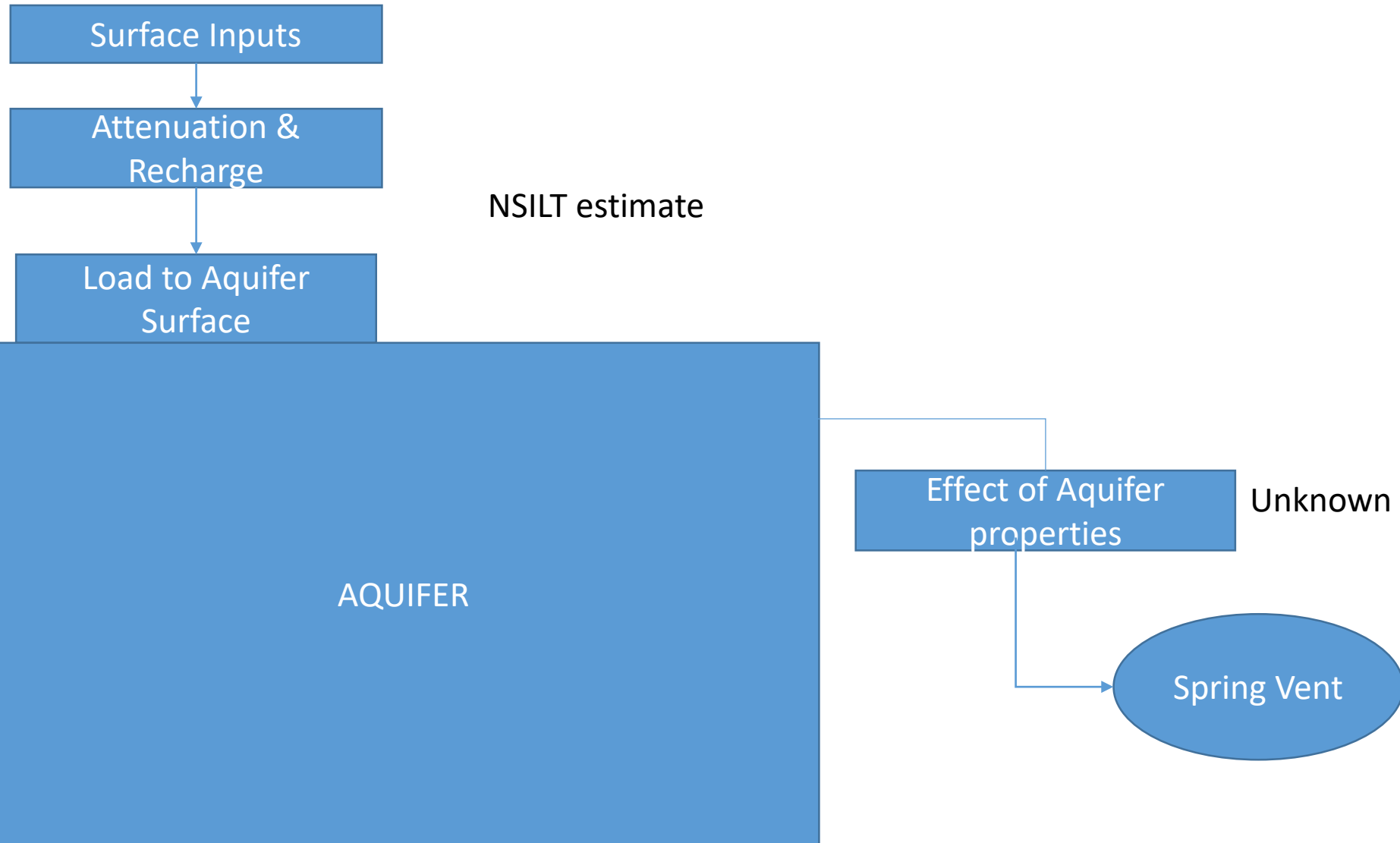
<http://www.dep.state.fl.us/water/>

<http://publicfiles.dep.state.fl.us/DEAR/BMAP/Springs%20Coast/CHAZ%20HOM/>





Groundwater Loading





OSTDS Options Costs

- For ATUs that meet the NSF 245 Standard, PBTS, and media filter systems, the estimated construction cost is about \$13,000. The life cycle (30 years) operation and maintenance cost is about \$12,000, with about \$1,500 for permit and compliance.
- For passive nitrogen-reducing in-tank systems, the estimated construction cost is about \$19,000. The life cycle (30 years) operation and maintenance cost is about \$9,000, with about \$4,000 for permit and compliance.