



Florida Department of Environmental Protection
Division of Environmental Assessment and Restoration

***Upper Wakulla River and Wakulla Springs
Basin Management Action Plan (BMAP)
Onsite Sewage Treatment and Disposal
System (OSTDS) Remediation Plan***

***Moira R. Homann
June 28, 2016***





Agenda

- Welcome and Opening Remarks
- Advisory Committee
 - Introductions
 - Overviews
 - Operating Procedures and Guidance
 - Sunshine Law
- Review of Upper Wakulla River and Wakulla Springs BMAP
- Priority Focus Areas (PFAs) Boundaries
- Identification of Three Main "Prongs" of the OSTDS Remediation Plan
 - Projects
 - Summary of BMAP projects that address OSTDS sources
 - Other projects funded/started since BMAP adoption
 - Scientific Information
 - Data availability and sufficiency
 - Florida Department of Environmental Protection (DEP)
 - Florida Department of Health (FDOH)
 - Research/studies (planned/underway/completed)
 - Education
- Public Comments
- Summary and Action Items
- Adjourn



OSTDS Advisory Committee



Purpose of OSTDS Committee

- OSTDS Remediation Plan for Priority Focus Areas (PFAs).
 - Advise/provide DEP with opinions or direction on Wastewater/OSTDS Remediation Plan.
 - Assist with specialized technical discussions and topics to be researched.
 - Provide information back to community leaders, decision makers, and homeowners.
- Plan needs to:
 - Allow for BMAP revision by July 2018.
 - Include development of 5-year, 10-year, and 15-year goals.
 - Include detailed plan to meet TMDL in 20 years.
 - Include elements of each of the three “prongs”.
 - Projects.
 - Science.
 - Education.

NOTE: Other source categories will be considered outside this committee.



Advisory Committee: Introduction

- OSTDS Advisory Committee members:
 - Represent the sectors that are affected by the OSTDS Remediation Plan.
 - Have expertise to lend to the process and to successful outcomes to reduce nitrogen loadings from OSTDS sources.

Sector	Representative	Entity/Group
DOH **	Alex Mahon/Katherine Davis Floyd Williams	Leon County Wakulla County
County **	Theresa Heiker Sheree Keeler/Melissa Corbett	Leon County Wakulla County
City **	John Buss/Blas Gomez	City of Tallahassee
Private Utilities **	John Hallas	Talquin Electric
Environmental Interest +	Bob Deyle/Bob Henderson	Friends of Wakulla Springs/Wakulla Springs Alliance, etc.
Homeowners +	Curtis Baynes	Property owners
Other interests +	Stan Derzypolski Roxanne Groover Anthony Gaudio	Home Builders Industry Florida Onsite Wastewater Association (FOWA) Community Leader

*Required by Legislation

+ Per the BMAP



Advisory Committee: Background

- OSTDS Advisory Committee will operate under the Sunshine Laws (Article 1, Section 24, Florida Constitution and Section 286.011, F.S.)
- Discussion or any form of communication between committee members on matters reasonably expected to come before the committee is **prohibited** outside of a publicly noticed meeting.
 - Communication includes but not limited to phone calls, writing, texting, and emailing another committee member.
 - Discussion between a committee member and non-committee members, including staff, is permissible.
 - Discussion of committee topics between a committee member and their alternate representative is permissible.



Advisory Committee: Operating Procedures and Guidance

- Purpose:
 - Provide ideas, comments, suggestions and concerns to DEP toward reducing nitrogen loads from on-site treatment and disposal systems (OSTDS) sources through development of an effective and cost-efficient OSTDS Remediation Plan.
- Key Operating Procedures:
 - Members will generally not vote or create recommendations as a group, but will relay the concerns and comments from the individual sectors represented on the committee to DEP.
 - Members are expected to come prepared to share their suggestions and comments during the meetings for the benefit of the other members and for the public in attendance.
 - DEP will give consideration to all comments and recommendations submitted by committee members for inclusion in the plan.



Review of Upper Wakulla River and Wakulla Springs BMAP



Upper Wakulla River Total Maximum Daily Load (TMDL)

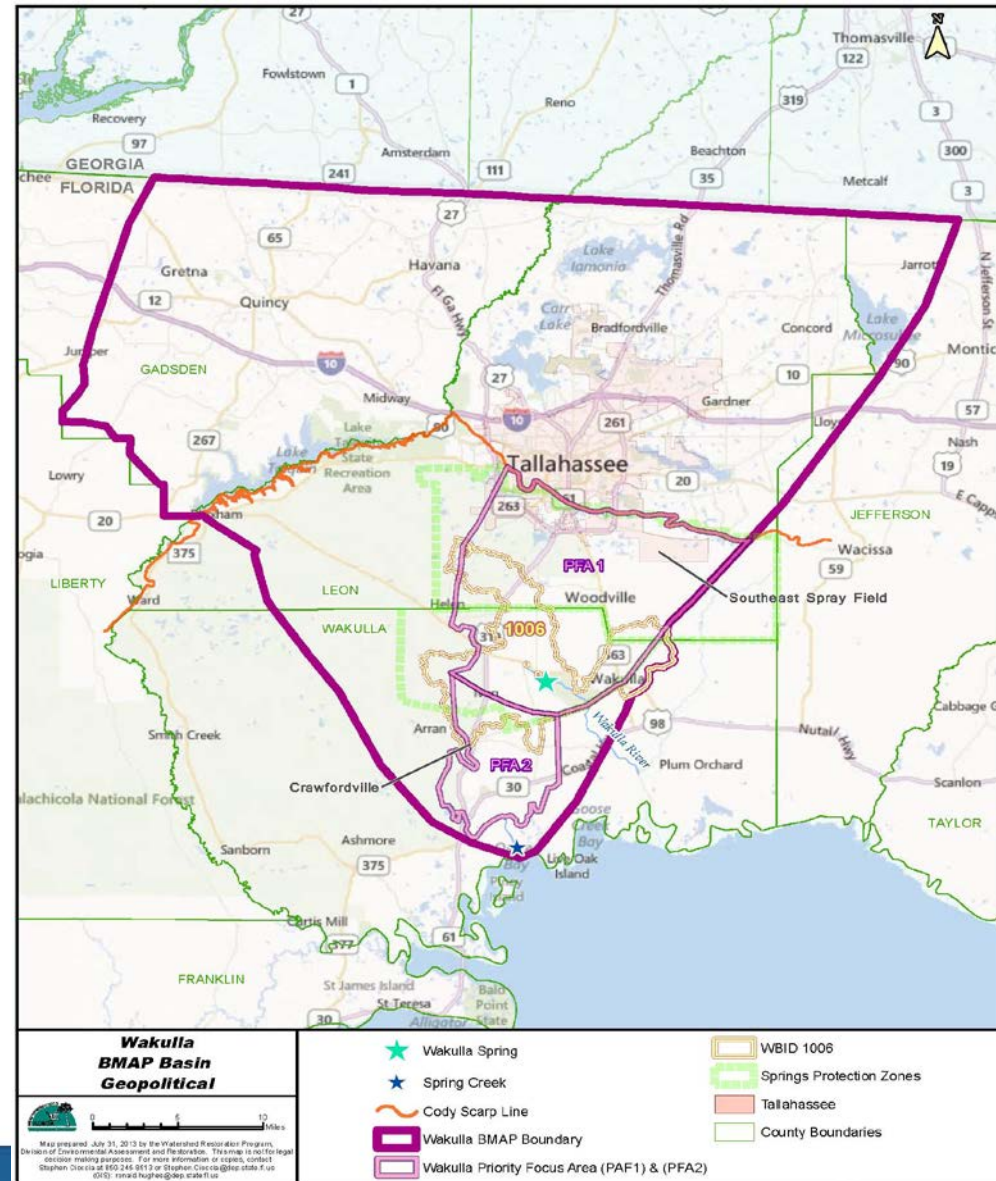
WBID	Parameter	TMDL Target (mg/L)	TMDL % Reduction
Upper Wakulla River (WBID 1006)	Nitrate, as monthly average	0.35	56.2%

- Stream Condition Index (SCI) scores indicated poor biological conditions.
- TMDL analysis determination - Impaired for nitrates.
- Nitrate concentrations in the springshed are elevated as a result of anthropogenic sources.
 - Biological community is affected by excessive algal mats linked to elevated nitrate concentrations.



Upper Wakulla River and Wakulla Springs BMAP

- Adopted October 2015.
 - To implement nitrate reductions to achieve the Upper Wakulla River TMDL.
 - Focuses on addressing nitrate loading from Wastewater Treatment Facilities (WWTFs), OSTDS, fertilizer, livestock, and stormwater.
- BMAP includes:
 - Projects and management strategies
 - A schedule for implementation for the first five-year iteration.
 - Monitoring plan.
- BMAP area encompasses 1,325 square miles/848,445 acres.
- Two Priority Focus Areas (PFAs).
 - PFA 1.
 - PFA 2.
- Includes projects and management strategies located within the PFAs to achieve nitrate reductions.





Summary of Projects

- Stormwater Structural Best Management Practices (BMPs).
 - Stormwater Treatment Systems
 - Stormwater System Rehabilitation
- Agricultural BMPs.
- Special Studies/Planning/Ordinances.
 - FDEP permit updates
 - Florida Department of Transportation (FDOT) fertilizer cessation
- Education and Outreach.
 - Public education coordination
- Stormwater Operation and Maintenance and Street Sweeping.
 - FDOT, City of Tallahassee
- Conservation Land Acquisition.
 - Land Preservation
- Wastewater/OSTDS.
 - Individual system phase out to sewer
- Wastewater Collection System Maintenance.
 - Upgrade to Advanced Wastewater Treatment (AWT)
 - Inspections and maintenance



BMAP Approach

- Phased BMAP.
 - Total reductions addressed in five-year increments.
 - Implementation of management strategies.
 - Simultaneously monitor and conduct studies.
- First BMAP Iteration.
 - Management strategies will focus on the PFAs.
- Future Iterations.
 - Discussions with stakeholders to identify additional management strategies, as needed.
- In 2018 the BMAP will be revised to include requirements set forth in Chapter 2016-1 Laws of Florida.



Nitrogen Source Inventory and Loading Tool (NSILT)

- Planning tool that provides the best available assessment of where nitrogen is currently being applied in the BMAP area.
- Estimates nitrate loads from multiple sources:
 - Atmospheric deposition.
 - Sinking streams.
 - Agricultural and nonagricultural fertilizer.
 - Livestock waste.
 - Septic systems.
 - Wastewater application.
- Developed to accomplish the following:
 - Identify and quantify the most significant contributing nitrogen sources to ground water in springsheds.
 - Assist stakeholders and the department in identifying locations where future projects will have the greatest impact in reducing nitrogen loads.



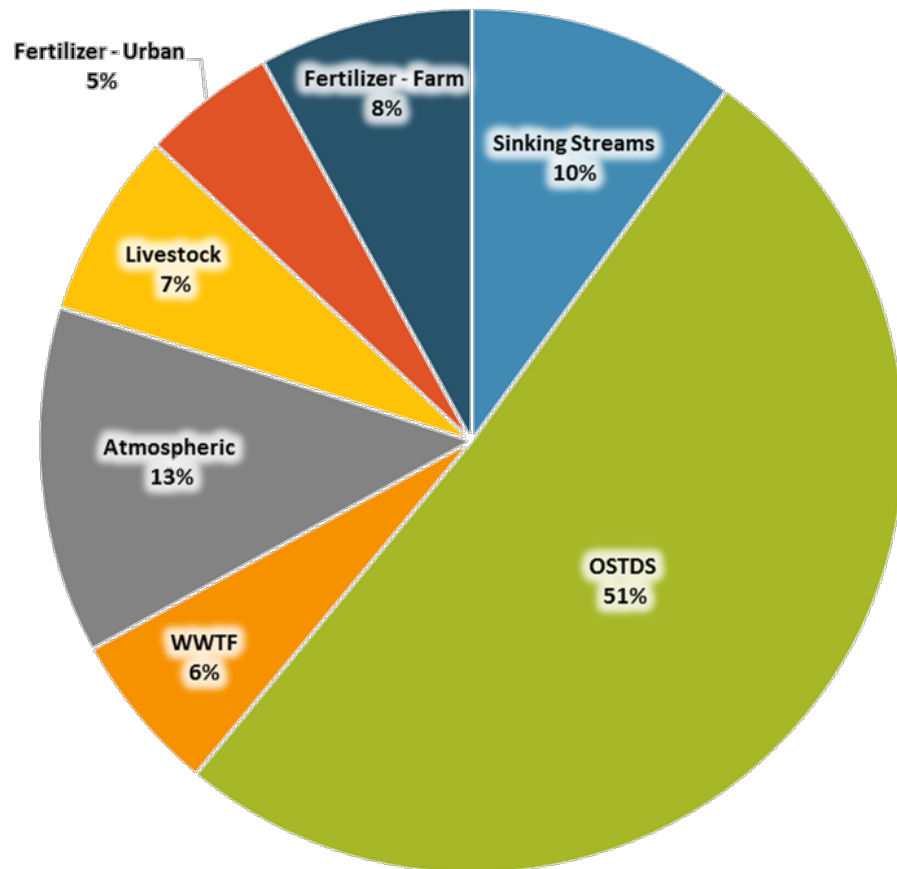
NSILT (cont'd)

- GIS- and spreadsheet-based tool.
 - Provides estimates of the relative contribution of nitrogen from various sources.
 - Identifies areas where nitrogen source reduction efforts could be focused to achieve the most beneficial and cost-effective effect on water quality.
- General approach.
 - Characterize ground water recharge.
 - Identify categories of land use that are potential nitrogen sources.
 - Estimate nitrogen input at the land surface.
 - Calculate the estimated nitrogen load to ground water.



NSILT (cont'd)

- Nitrogen loading estimates to ground water include these considerations:
 - Attenuation factor for each of the source categories.
 - Rate of ground water recharge within the three areas of aquifer confinement (confined, semi-confined, and unconfined).
- Figure shows relative nitrogen **loads to the ground water** contributed from the nitrogen source categories evaluated for the Wakulla Spring and River BMAP area.
- Approximately 342,048 kg/yr of N





Priority Focus Areas (PFAs)



Priority Focus Areas

Requirements of Chapter 2016-1 Laws of Florida

- Priority Focus Area (PFA)
 - Sub-Section 373.802, Chap. 2016-1 Laws of Florida:
 - Definition: Area or areas of a basin where the Floridan Aquifer is generally most vulnerable to pollutant inputs where there is a known connectivity between ground water pathways and an Outstanding Florida Spring (OFS).
 - Sub-Section 373.803, Chap. 2016-1 Laws of Florida:
 - To be delineated considering factors that may lead to degradation of an OFS, such as:
 - Ground water travel time to the spring.
 - Hydrogeology.
 - Nutrient load, etc.
 - Must be completed by July 1, 2018.



Process to Establish Wakulla BMAP PFAs

- Determination of where surface pollutant inputs have the greatest potential to increase nitrate in ground water.
- Review of spatial location(s) of actual or potential pollutant contributing areas, with emphasis on:
 - Where surface pollutant inputs have greatest potential to increase nitrate in ground water, based on the aquifer vulnerability assessments (AVAs).
 - Areas characterized with the fastest ground water travel times to Wakulla Springs.
 - Known connectivity to the springs or direct ground water pathways.
 - Dye tracing studies have been conducted in the basin to identify conduits in the ground water to the springs.



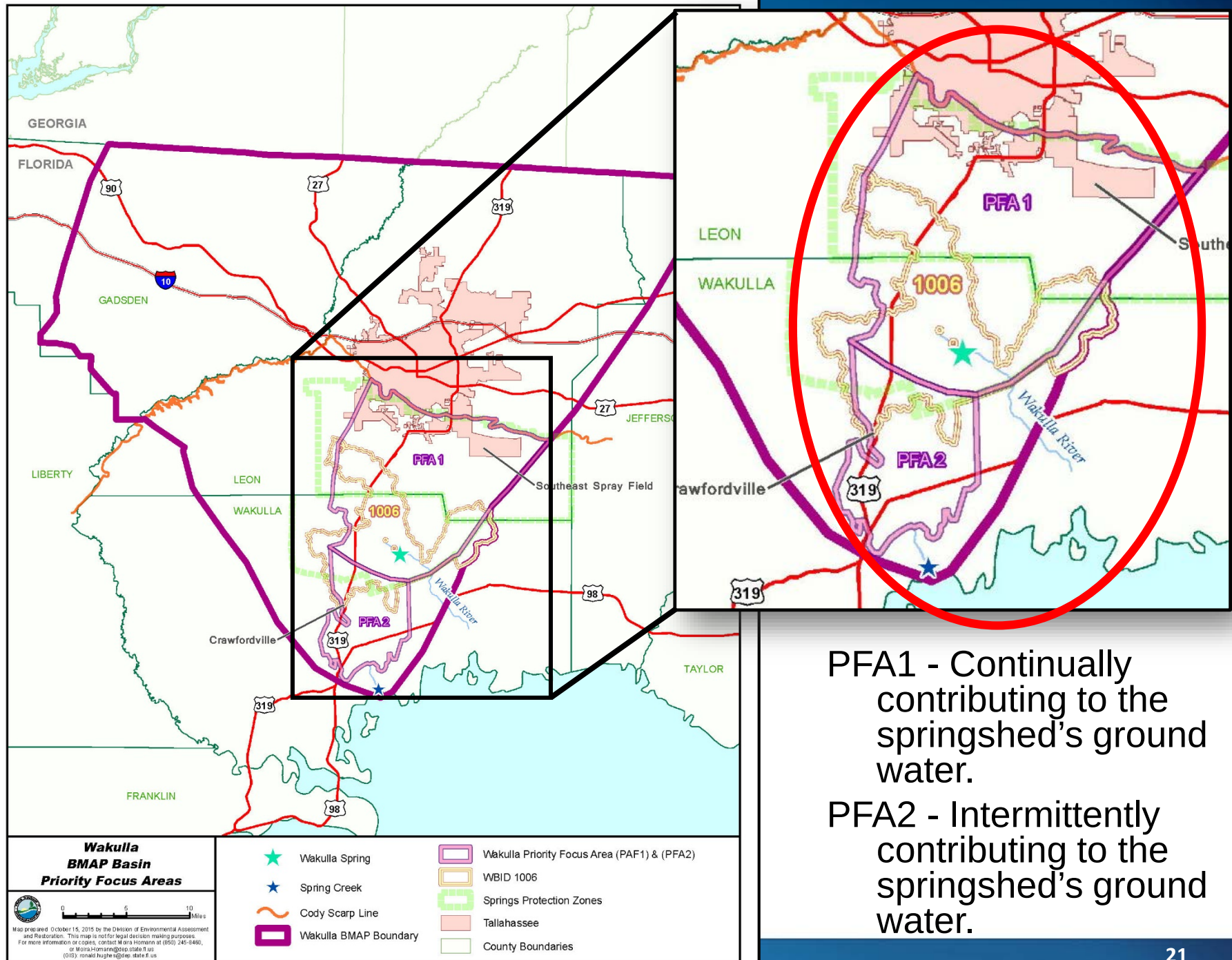
Upper Wakulla BMAP PFAs

- Priority Focus Area 1:
 - Considered as primary level of concern regarding potential to contribute to the impairment.
 - Within Wakulla Springshed delineations.
 - Areas which have been demonstrated, or with the highest probability to be **regularly contributing** to the ground water flows to Wakulla Springs.
 - High vulnerability.
 - Area with the highest probability for surficial infiltration and contribution to the ground water flows per the AVAs.
 - Areas characterized with the most direct and fastest ground water travel times to Wakulla Springs.
 - As demonstrated by dye traces.



Upper Wakulla BMAP PFAs

- Priority Focus Area 2:
 - Considered as secondary level of concern regarding potential to contribute to the impairment.
 - High vulnerability.
 - Areas considered as having a probability for surficial infiltration to the ground water and contribution to Wakulla Springs.
 - Ground water connectivity demonstrated by dye traces.
 - Areas which may be intermittently contributing to the ground water flows to Wakulla Springs.
 - Area where future management strategies would significantly contribute to preventing future pollutant loadings to the ground water.



PFA1 - Continually contributing to the springshed's groundwater.

PFA2 - Intermittently contributing to the springshed's groundwater.



OSTDS Remediation Plan

“Prongs”



OSTDS Remediation Plan

“Prongs”

- Projects/Management Strategies.
 - Summary of projects in the BMAP that address OSTDS/Wastewater sources.
 - Other projects funded/started since BMAP adoption.
 - Identify additional cost-effective and financially feasible projects
- Scientific information.
 - Collect and evaluate credible scientific information on the effect of nutrients, particularly forms of nitrogen, on springs and springs systems
 - Data availability and sufficiency – i.e. what we have and/or what we need.
 - Research/studies (planned/underway/completed).
- Public education.
 - Plan to provide reliable, understandable information about OSTDS and springs.



Projects and Management Strategies Included in BMAP

Lead Entity	Project Number	Project Name	Project Type	Project Status	TN Reduction (kg/yr)	Start Date	Completion Date
City of Tallahassee	COT-1	Wastewater Treatment Facility Upgrade to AWT	Wastewater	Completed	214,939.00	2008	2012
City of Tallahassee	COT-2	Biosolids Application Elimination	Wastewater	Completed	169,347.00	2001	2006
City of Tallahassee	COT-3	Assessment and Rehabilitation of the Sewer Collection System	Wastewater	Ongoing	0.00	2011	-
City of Tallahassee	COT-11/LC-29	Alternatives to Sewer Solutions Study	OSTDS	Planned	0.00	2018	-
Leon County	LC-1	Sewering in PSPZ	OSTDS	Proposed	0.00	2020	-
Leon County	LC-2	Septic Tank Inventory	OSTDS	Proposed	0.00	2013	-
Leon County	LC-3	Septic Tank Repairs	OSTDS	Proposed	0.00	2015	-
Leon County	LC-4	Septic Tank Nitrogen Removal Requirements	OSTDS	Proposed	0.00	2015	-
Leon County	LC-5	Septic Tank Education	OSTDS	Proposed	21.70	2015	
Leon County	LC-19	Lombardo Report	Study	Completed	NA	2010	2013
Leon County	LC-29/COT-11	Alternatives to Sewer Solutions Study	OSTDS	Planned	0.00	2018	-
Wakulla County	WC-1	Comprehensive Plan Infrastructure Policy 1.3.6	Wastewater	Ongoing	0.00	2006	-
Wakulla County	WC-2	Otter Creek WWTP Upgrade and Capacity Expansion	Wastewater	Funded	0.00	2015	-
Wakulla County	WC-3	Public Education on OSTDS	OSTDS	Completed	0.00	2007	2007
Wakulla County	WC-4	Comprehensive Plan Infrastructure Policy 1.3.7	OSTDS	Ongoing	0.00	2012	-
Wakulla County	WC-5	Magnolia Gardens Central Sewer Installation - Phase I	OSTDS	Partially funded	0.00	-	-
Wakulla County	WC-6	Wakulla Gardens Central Sewer Installation - Phase I	OSTDS	Partially funded	0.00	-	-
Wakulla County	WC-7	Greiner's Addition Central Sewer Installation	OSTDS	Not yet funded	0.00	-	-
Wakulla County	WC-8	Wakulla County WWTF - Plantation River Estates	Wastewater	Ongoing	0.00	-	-
Wakulla County	WC-9	Wakulla Springs Watershed – Inspect and repair old, damaged, and failing systems in Wakulla Springs watershed area.	OSTDS	Advanced planning, seeking funding	0.00	2012	-
Wakulla County	WC-10	Crawfordville TIF District	OSTDS	Ongoing	0.00	2012	-



Projects and Management Strategies since BMAP Adoption

- Have any projects/management strategies been proposed/funded/started since the adoption of the BMAP (October 2015)?
- If so, please submit them to the department.
 - [Project collection instructions.](#)
 - Management strategies collection spreadsheet ([Wakulla Springs](#)).
 - Fill out as completely as possible for each project/strategy.



Scientific Information

- Data availability and sufficiency
 - Municipal boundaries.
 - Septic tank locations.
 - Information on new tanks being permitted.
 - Wastewater treatment facility (WWTF) information.
 - Utility lines/utility boundaries.
 - Method of disposal/location of disposal.
 - Soils.
 - Land use.
 - Aquifer vulnerability.
 - Other?
- Research/studies.
 - Planned.
 - Underway.
 - Completed.



Scientific Information (cont'd)

- Please review existing files and upload additional or revised information by **Friday, July 15, 2016.**
- Links
 - [For reviewing files](#)
 - [For uploading files](#) (open in Windows Explorer to upload files)



Scientific Information Department of Health

OSTDS in Area of Basin Management Action Plan

Wakulla BMAP Area 2016
(Parcels with Septic and
Public Drinking Water)



Septic vs. Drinking Water

<all other values>

WW_DW

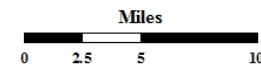
- KnownSepticKnownPublic
- KnownSepticLikelyPublic
- KnownSepticSWLPublic
- LikelySepticKnownPublic
- LikelySepticLikelyPublic
- LikelySepticSWLPublic
- SWLSepticKnownPublic
- SWLSepticLikelyPublic

US Highway

State Road

Wakulla BMAP Boundary

Florida County



1:306,131

Albers Equal Area NAD83 HARN

This map is based on sources of varied accuracy and scale provided by multiple organizations. FDOH assumes no liability for the use of this map and associated data.



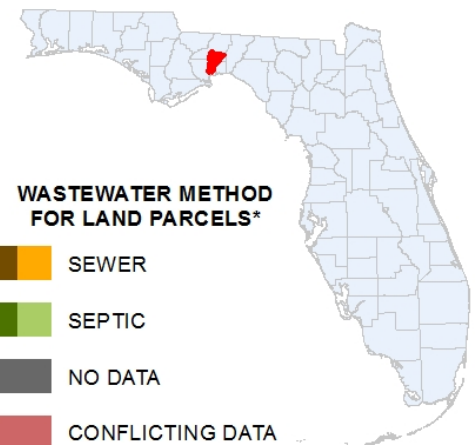
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Scientific Information Department of Health (cont'd)

OSTDS in Area of Basin Management Action Plan

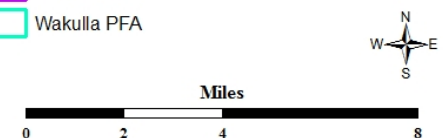
Wakulla Priority Focus Area 2016



WASTEWATER METHOD FOR LAND PARCELS*

- SEWER
- SEPTIC
- NO DATA
- CONFLICTING DATA
- NOT BUILT

- US Highway * Includes parcels with unknown Built status. Percentages do not include parcels where wastewater is not applicable.
- Florida County
- Wakulla PFA



1:146,088
Albers Equal Area NAD83 HARN



This map is based on sources of varied accuracy and scale provided by multiple organizations. FDOH assumes no liability for the use of this map and associated data.

28Mar2016

Sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNR/Airbus DS, USDA, USGS, AeroX, GeoMapping, AeroGRID, IGN, ISP, Swirebird, and the GIS User Community



Scientific Information

Department of Health (cont'd)

Septic System Count Comparison

Compared DOH's Florida Water Management Inventory (FLWMI) #'s to DEP's Nutrient Source Inventory Loading Tool (NSILT) #'s:

	FLWMI	NSILT	Matching parcels
# septic systems (BMAP)	50,601	52,535	45,668 (87%)
# septic systems (PFA)	14,774	13,557	12,066 (89%)

For the ones that don't match, main differences are:

- NSILT septic parcels are on known or likely sewer parcels
- Property is identified as not built





Scientific Information Department of Health (cont'd)

Florida Water Management Inventory

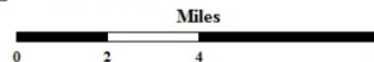
Wakulla Springs PFA Drinking Water 2016

DRINKING WATER SOURCE FOR BUILT PARCELS*



Interstate
US Highway
State Road
County Boundary

* Includes parcels with unknown Built status. Percentages do not include parcels where drinking water is not applicable.



This map is based on sources of varied accuracy and scale provided by multiple organizations. FDOH assumes no liability for the use of this map and associated data.



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Public education

- Inventory of public education components
 - Ongoing education efforts?
 - Education needs?
- Overall goal:
 - What do we need in order to increase public education/awareness about
 - Springs.
 - Local groundwater systems and nutrient connections.
 - Septic tanks, etc.



Possible Topics for Next Meeting

- Start discussions on
 - What we know about wastewater and OSTDS management in these basin.
 - Possible approaches to address septic systems and implications associated with each:
 - Sewering
 - Alternatives to sewerage
 - DOH
 - FOWA
 - Others



Summary and Action Items

- Summary.
 - TMDL needs to be achieved no more than 20 years after adoption of BMAP.
 - Wastewater/OSTDS Remediation Plan will be developed with input from Advisory Committee to help achieve TMDL reduction for these sources within 20 years.
 - Need to update information (data, projects, studies, etc.).
 - Need to start gathering necessary information under three “prongs”.
 - Identify projects to meet the 5-year, 10-year and 15-year targets.
 - Identify what and where scientific information is needed.
 - Identify what public education efforts exist & what needs to be done.
- Action Items.
 - Review existing data files and upload additional or revised information by July 15, 2016.
 - Possible next meeting topics.
- Next meeting date.
 - August 2, 2016 – tentative.

An aerial photograph of a winding river or lake surrounded by a dense, lush green forest. The water is a deep blue color. On the right bank, there is a small, light-colored sandy area with a dock and a boat. The text "Thank you!" is overlaid in the center of the image in a large, white, sans-serif font.

Thank you!