

Overview of the Integrated Water Resource Monitoring (IWRM) Network

June 13, 2012



Florida Department of Environmental Protection
Watershed Monitoring Section

Monitoring Team

- Watershed Monitoring Group HQ-Tallahassee
- Monitoring Staff – DEP, WMDs, Counties
- Geographic Information support (Justin Berke, Stephanie Sunderman)
- Data Management (Jay Silvanima, Teresa Bouie)
- Data Analysis (Jay Silvanima, Chris Sedlacek, Rick Copeland)
- Biological Criteria development team (i.e., Stream Condition Index, LVI, periphyton RPS)
- Others involved include: Florida Geological Survey, Groundwater Protection Section

Florida DEP Monitoring History

- No comprehensive design. Monitoring changed with funding and policy. 305 (B) produced with “found” data. Limited waters assessed.
- Mid 90’s, “Ecosystem Management”. DEP tasked with establishing a statewide status and trend monitoring network for both surface and ground water.
- Steering group: EPA, state and other agencies, private industry to establish design.

Don't put all your eggs in one basket!



Many different questions and potential outcomes



Surface Water Trend

- Select sampling sites at lower end of watershed
- Sampling stations also located near the state line on major rivers entering Florida from Georgia and Alabama;
- Collect flow data at or near sampling sites (recorder station or staff gauge).

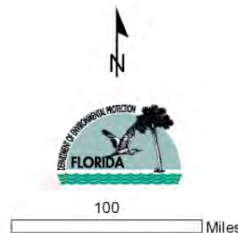
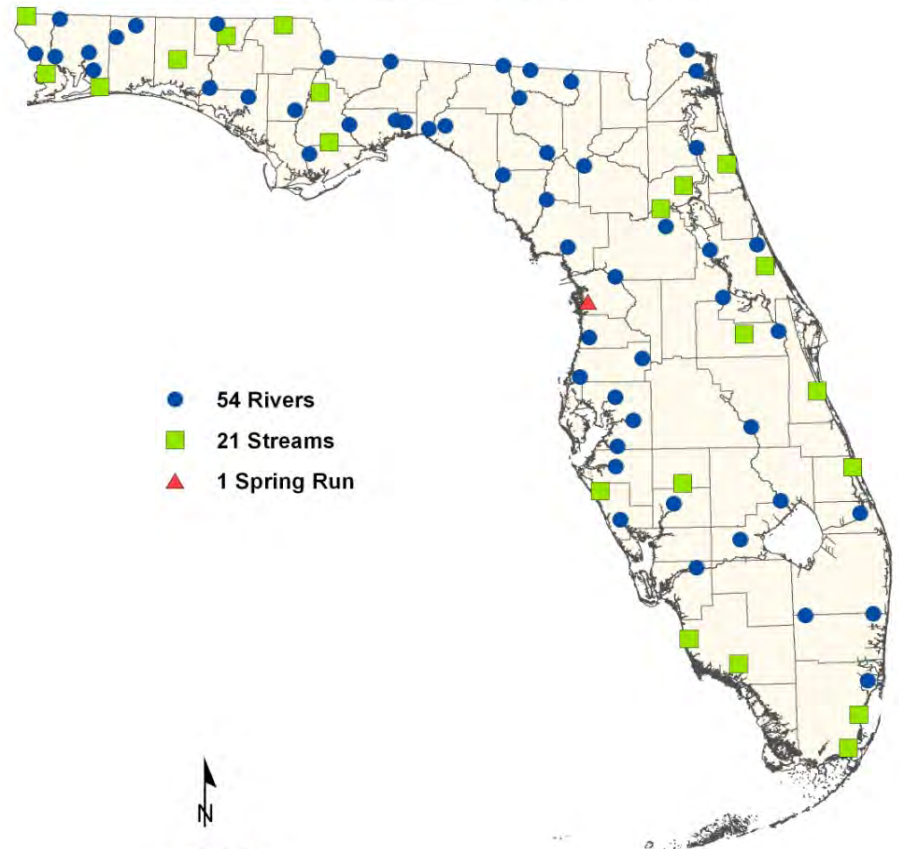
Surface Water Trend

- **Collect suite of standard analytes at rivers and streams throughout the state.**
- **Stream Condition Index (SCI) on an annual basis for applicable river and stream sites.**
- **Have added Sucralose as a tracer**

Surface Water Trend Network

76 surface
water fixed
sites
sampled on
a monthly
basis

2009 Watershed Monitoring Surface Water Trend Stations



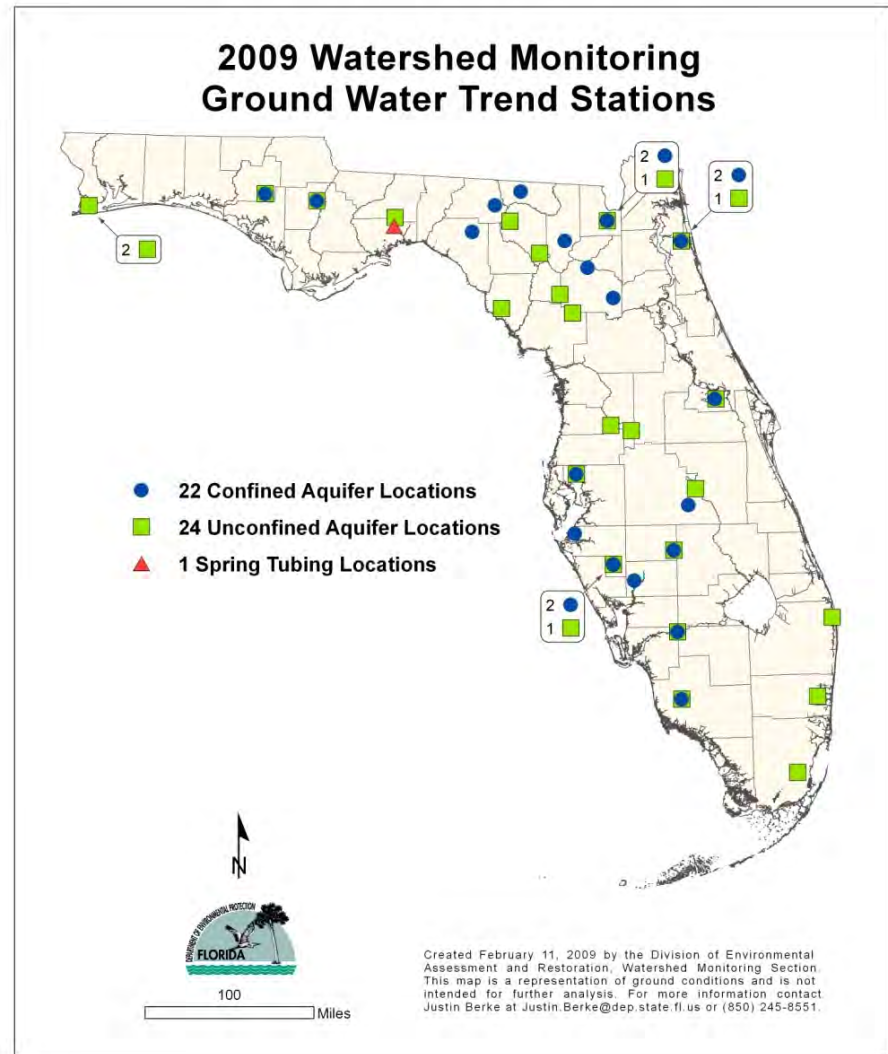
Created February 11, 2009 by the Division of Environmental Assessment and Restoration, Watershed Monitoring Section. This map is a representation of ground conditions and is not intended for further analysis. For more information contact Justin Berke at Justin.Berke@dep.state.fl.us or (850) 245-8551.

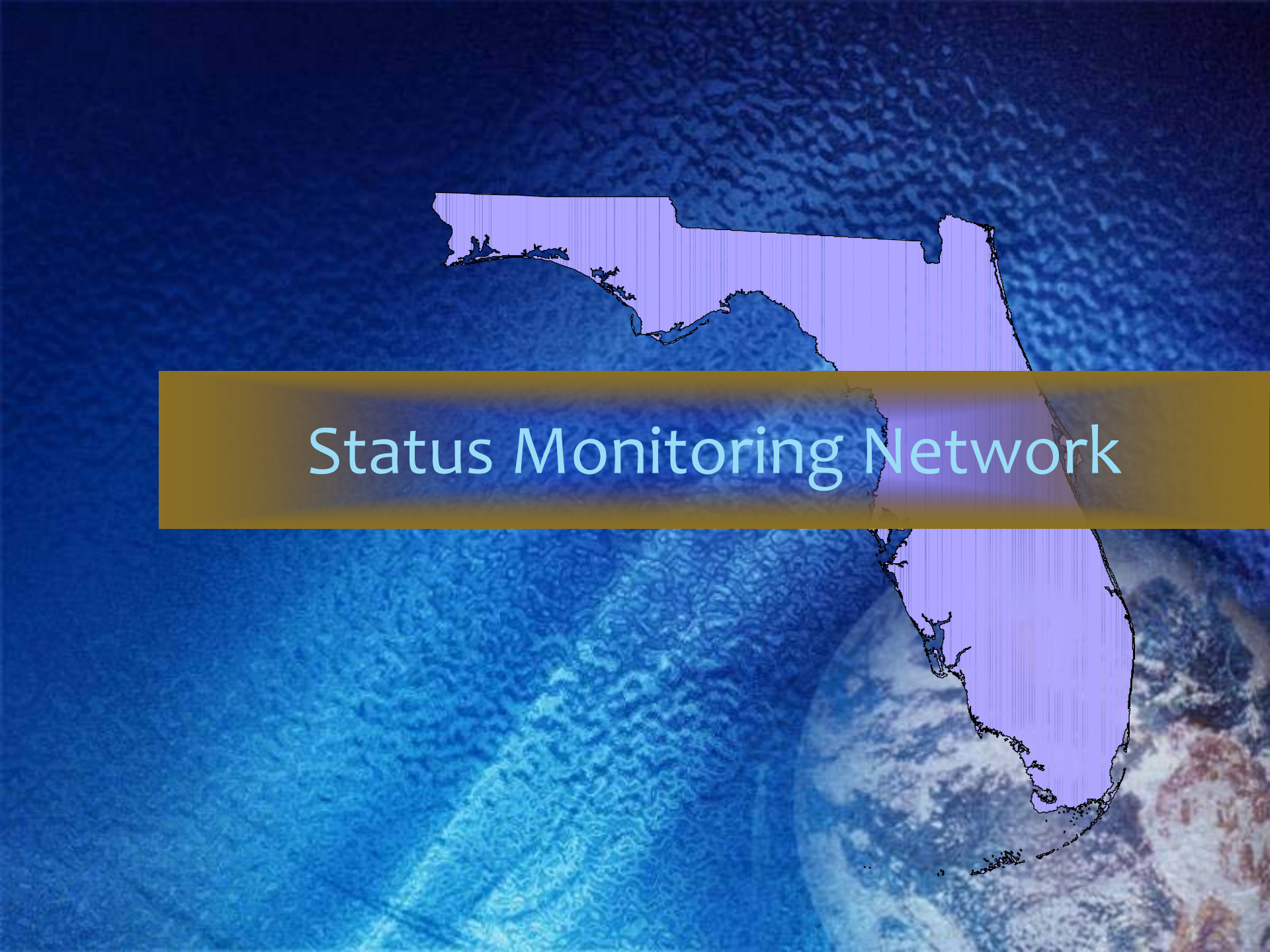
Ground Water Trend

- Collect suite of standard analytes
- Have added isotope tracers to help determine sources of samples with high nitrate levels ($> 1\text{mg/l}$)

Ground Water Trend Network

49 ground
water fixed
sites sampled
on a monthly or
quarterly basis





Status Monitoring Network

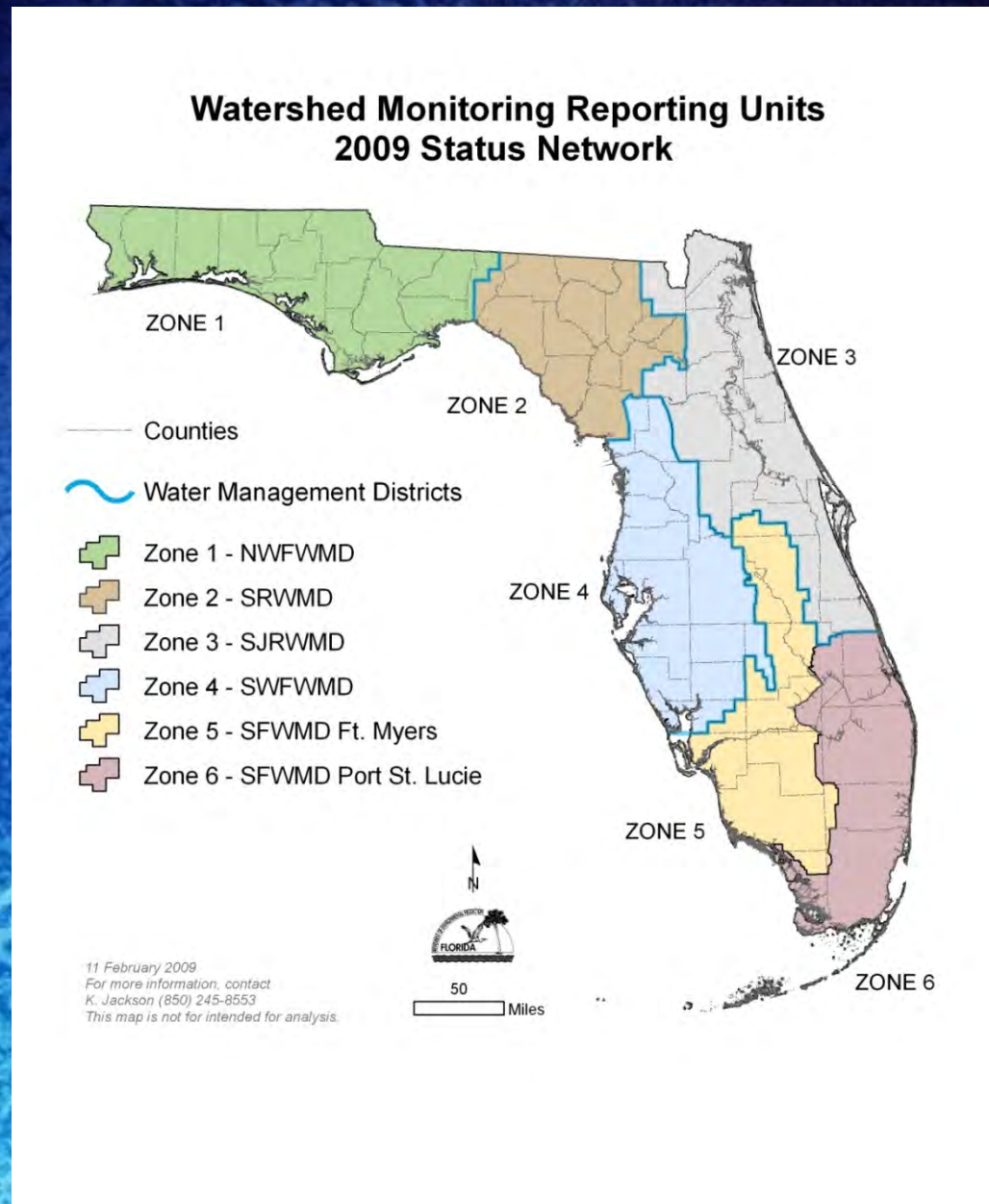
Status Monitoring Network

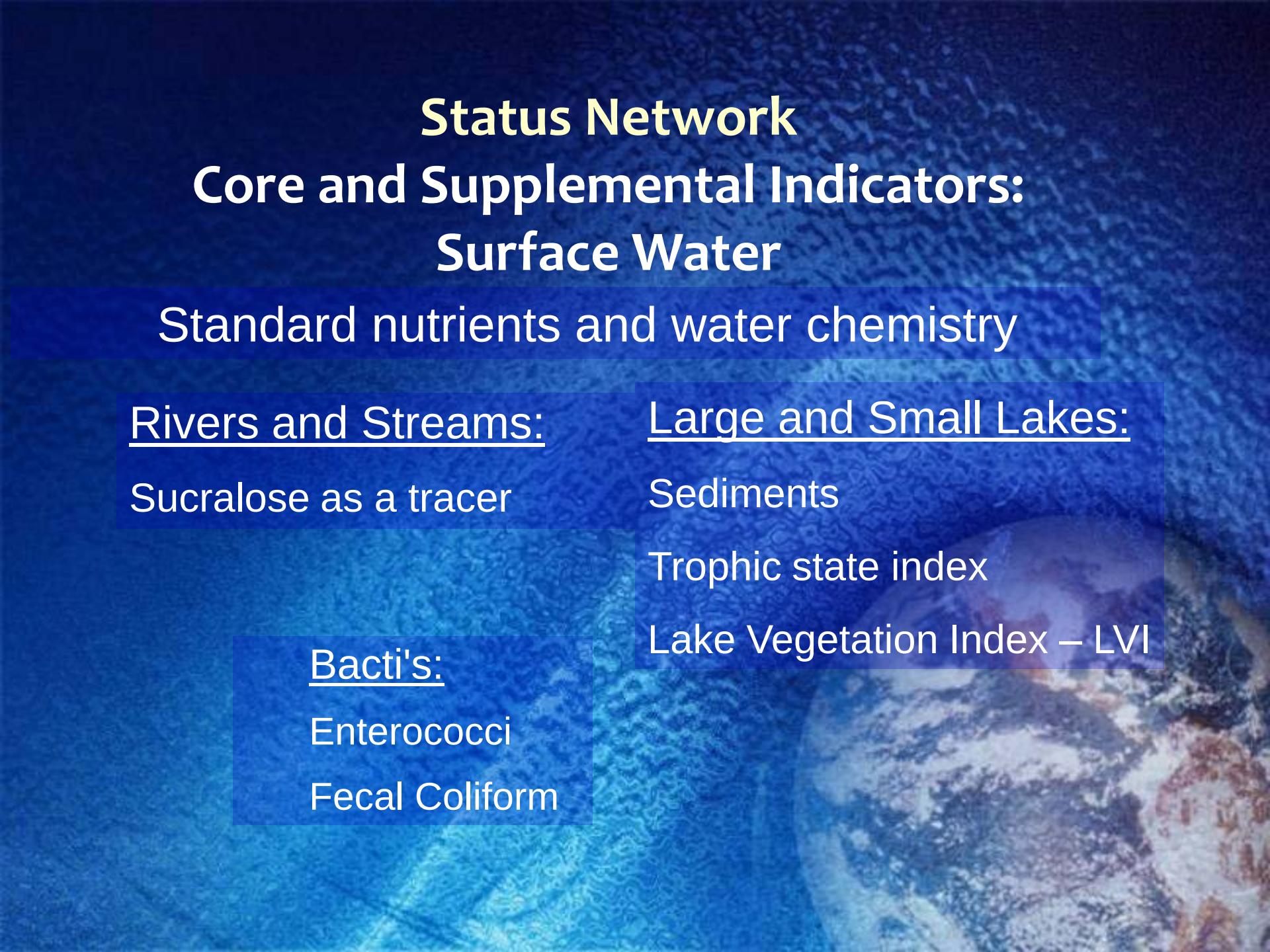
Objectives:

- 1) **Characterize statewide water resource conditions;**
- 2) **Determine percentage of each resource that meets standards or designated use (surface & ground water) using core and supplemental indicators.**

Generalized Random Tessellation Stratified Design (GRTS)

- 6 zones
- 6 resources
- 90 samples per
sw resource type
- 75 samples for
canals
- 120 samples for
gw resources



The background of the slide is a composite image. The upper portion shows a deep blue, textured surface, possibly representing water or a microscopic view. The lower right portion shows a satellite view of Earth, with white clouds and brownish landmasses. The text is overlaid on this background.

Status Network

Core and Supplemental Indicators: Surface Water

Standard nutrients and water chemistry

Rivers and Streams:

Sucralose as a tracer

Large and Small Lakes:

Sediments

Trophic state index

Lake Vegetation Index – LVI

Bacti's:

Enterococci

Fecal Coliform

Core and Supplemental Indicators: Ground Water

Confined/ Unconfined Aquifers

Standard nutrients and water chemistry

Metals: Primary standards

Bacti: Total and Fecal Coliforms

NO FILTERING

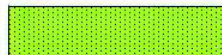
Status Network Sampling Periods

- 90 surface water samples per resource are split equally among 6 sampling groups (15 each); NFWMD, SJRWMD, SRWMD, SR-DEP, SW-DEP, SF-PSL, SF-FTM
- 75 canal water samples are split among 4 sampling groups: (15 each) SJRWMD, SW-DEP, SF-FTM; (30) SF-PSL
- 120 groundwater samples per resource are split equally among 6 sampling groups (20 each): NFWMD, SJRWMD, SR-DEP, SW-DEP, SF-PSL, SF-FTM

Month	Confined Aquifer	Unconfined Aquifer	Streams	Rivers	Large Lakes	Small Lakes	Canals
Jan	120						
Feb							75
Mar							
Apr					90		
May				90			
Jun							
Jul			90				
Aug							
Sep						90	
Oct							
Nov		120					
Dec							



Primary Sampling Period



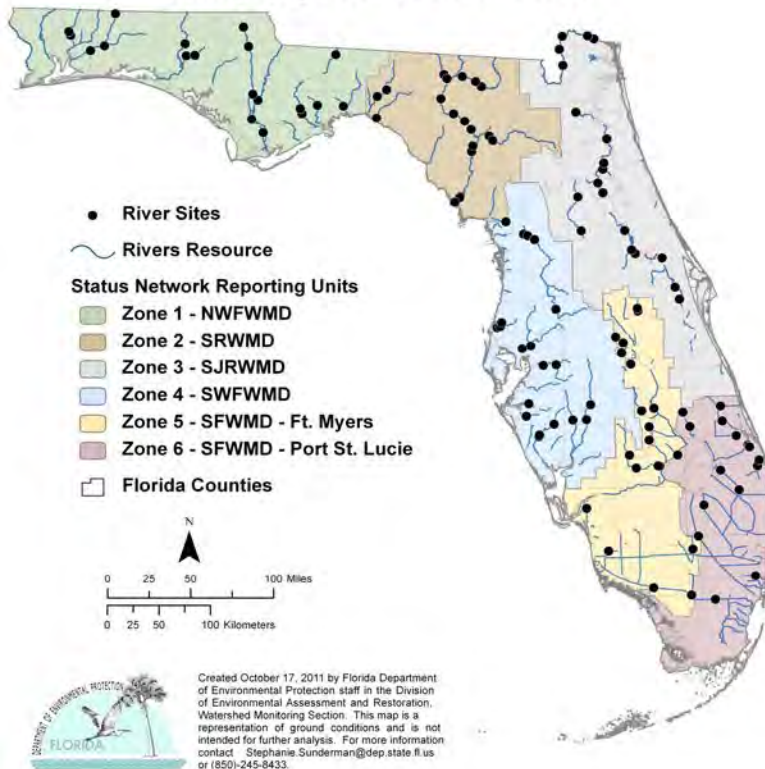
Overflow Sampling Period

* Total does not include QA samples

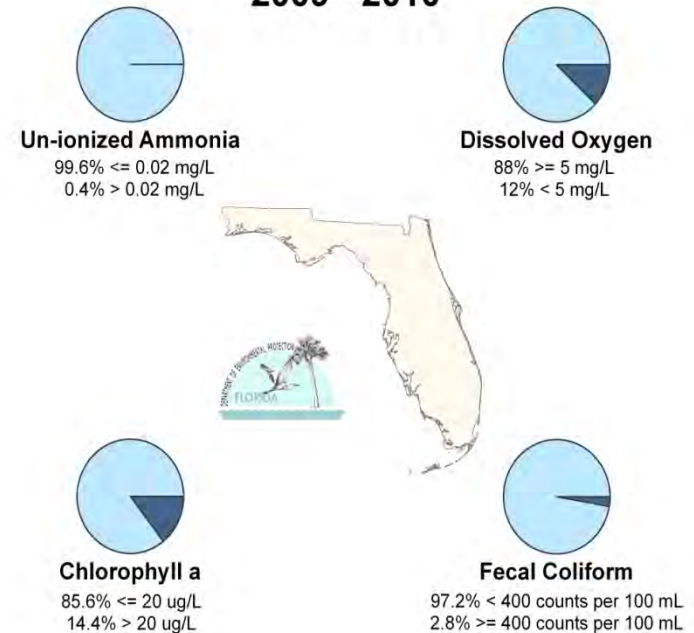
--- Dashed line indicates current Contract Period Start/Finish

Rivers Results 2012 Integrated Report

Rivers Resource Sampling Sites, 2009 - 2010



Rivers Resource Statewide Summary 2009 - 2010



Created October 11, 2011 by Florida Department of Environmental Protection staff in the Division of Environmental Assessment and Restoration, Watershed Monitoring Section. For more information contact Stephanie.Sunderman@dep.state.fl.us or (850)-245-8433.

2012 Integrated Report available at
http://www.dep.state.fl.us/water/docs/2012_integrated_report.pdf

Other Uses of Status and Trend Data

- DEP Nutrient Criterion development
- Biocriteria Development
- Supplies data for TMDL, including mercury
- Data requests for other programs

Gail M. Sloane

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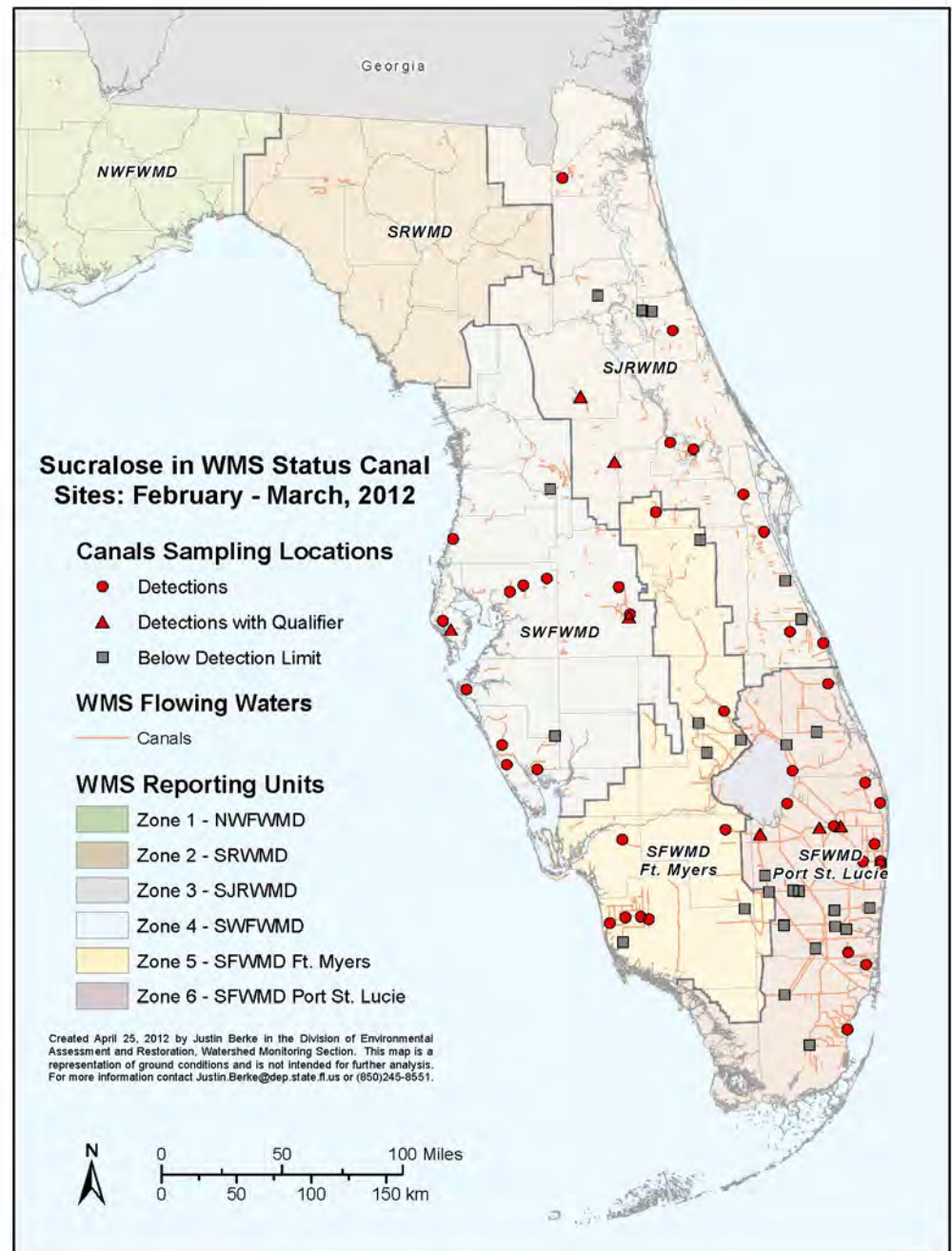


New Analytes for 2012: Wastewater Tracers

Status Network

- Sucralose
- Boron

Map depicts
sucralose
detections (red
points) in Status
Network canal
sampling sites



New Analytes for 2012: Wastewater Tracers

Surface Water Trend Network

- Sucralose
- Boron

Map depicts
sucralose
detections (red
points) in Trend
Network river
sampling sites

Sucralose in WMS Trend River Sites January - April, 2012



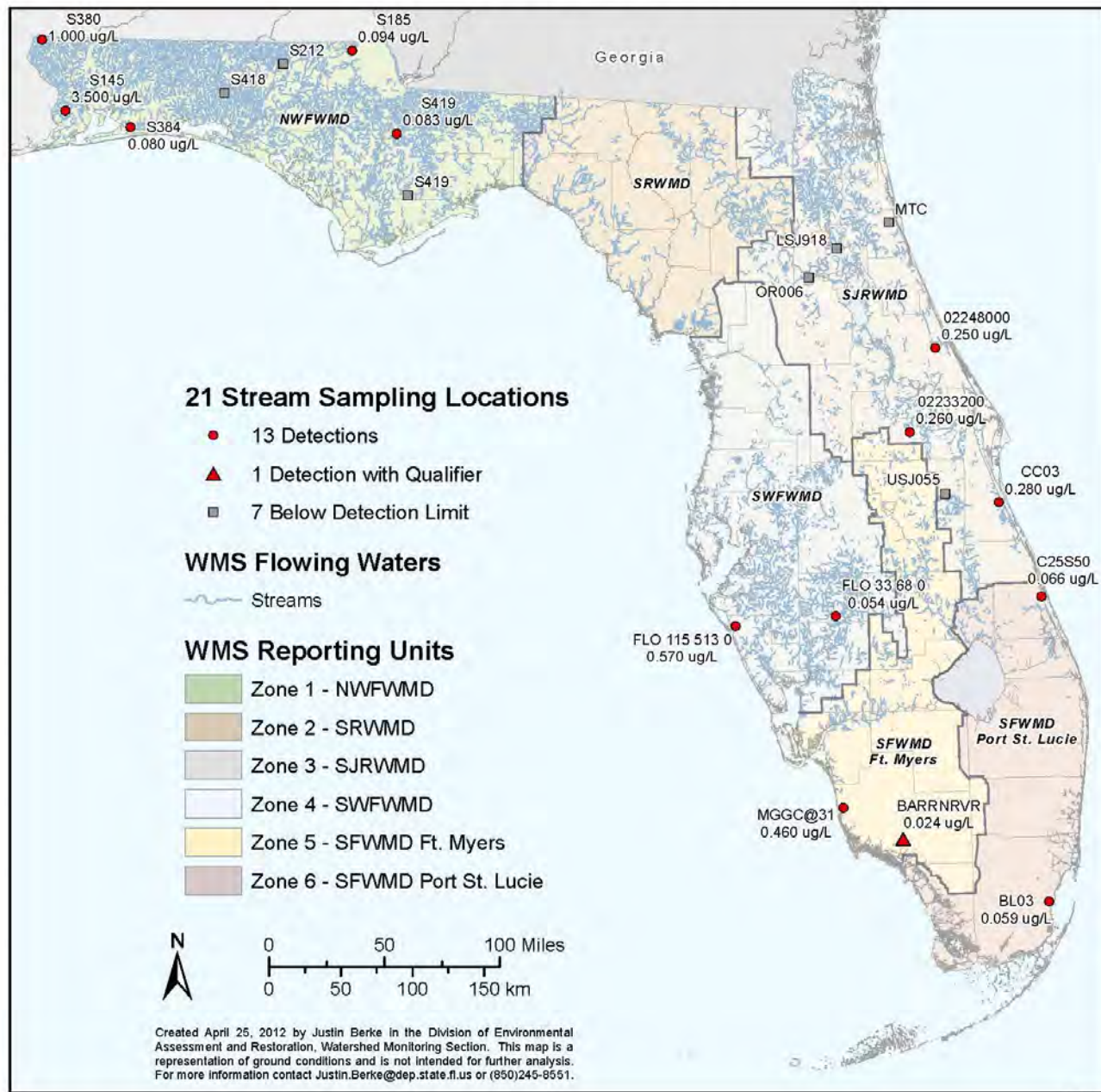
New Analytes for 2012: Wastewater Tracers

Surface Water Trend Network

- Sucralose
- Boron

Map depicts
sucralose
detections (red
points) in Trend
Network stream
sampling sites

Sucralose in WMS Trend Stream Sites January - April, 2012



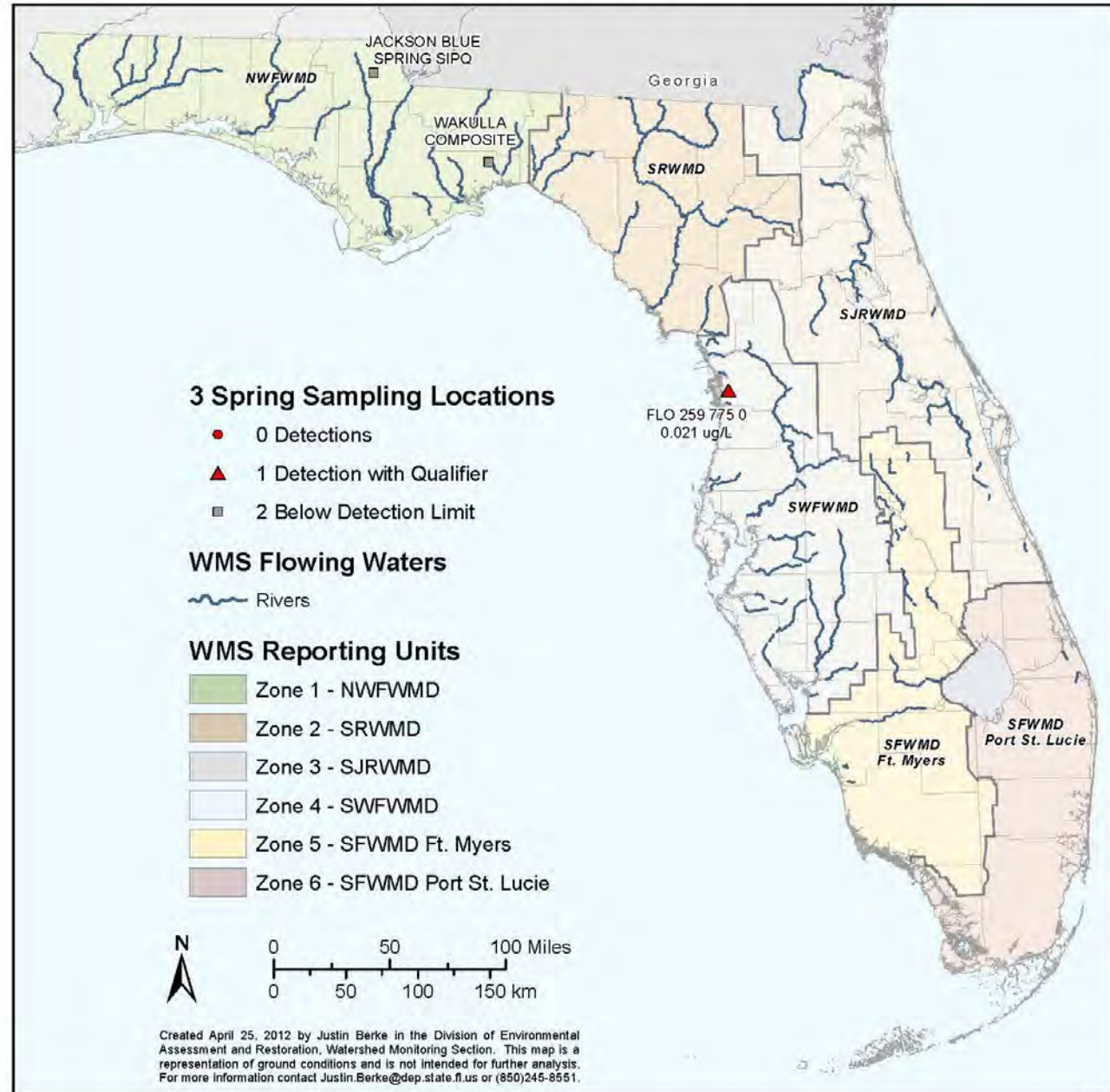
New Analytes for 2012: Wastewater Tracers

Surface Water Trend Network

- Sucralose
- Boron

Map depicts
sucralose
detections (red
points) in Trend
Network spring
sampling sites

Sucralose in WMS Trend Spring Sites January - April, 2012



New Analytes for 2012: Wastewater Tracers

Ground Water Trend Network

- Sucralose
- Boron

Map depicts
sucralose
detections (red
points) in Trend
Network
unconfined
aquifer sampling
sites

Sucralose in WMS Trend Unconfined Aquifer Sites January - April, 2012



New Analytes for 2012: Wastewater Tracers

Ground Water Trend Network

- Sucralose
- Boron

Map depicts
absence of
sucralose
detections
Trend Network
confined
aquifer
sampling sites

Sucralose in WMS Trend Confined Aquifer Sites January - April, 2012



New Analytes for 2012: Wastewater Tracers

Ground Water Trend Network

- Stable Nitrogen Isotope Ratios
- Stable Oxygen Isotope Ratios

Figure: Trend
Network sampling
sites with elevated
nitrate
(> 0.01 mg/L). Isotope
analyses will be
conducted at these

