

Salinity Network Workgroup

Webinar/Meeting

November 14, 2018

Water Council Mission

To protect, preserve, manage and restore Florida's water resources by coordinating water resource monitoring among all levels of government, improving data quality and effectiveness, and sharing information widely.

Today's Presenter's

Rick Copeland (RC) (FDEP)

Dan Dourte (DD) (Balmoral Group)

Debra Harrington (DH) FDEP

Chris Sedlacek (CS) FDEP

Agenda (RC)

- Roll Call and Introduction: **DD**
- Status of -
 - Coastal Salinity Monitoring Network: **RC**
 - Water Level - Salinity Analysis Mapper: **RC**
 - GWL Percentile Ranking Index: **RC**
 - Loading GWL data into WIN: **DD**

Possible Revision of GW Sampling Protocols: **RC**

Salinity GW Quality Index

Re-introduction of 3-level Index: **RC**

Alternate Proposal of a Saline GWQ Index: **DH**

- Example of FDEP Estuarine Monitoring: **CS**
 - Suggestions for a new Chairperson of the SNW: **DD**
 - Additional Discussions if needed?: **All**
-
- Next SNW Meeting **May 8, 2019** from 1:00 – 3:00

SNW Meeting Objectives

1. Establish new leadership for the workgroup
2. Consider options for workgroup efforts related to groundwater quality indices and estuarine monitoring

Roll Call

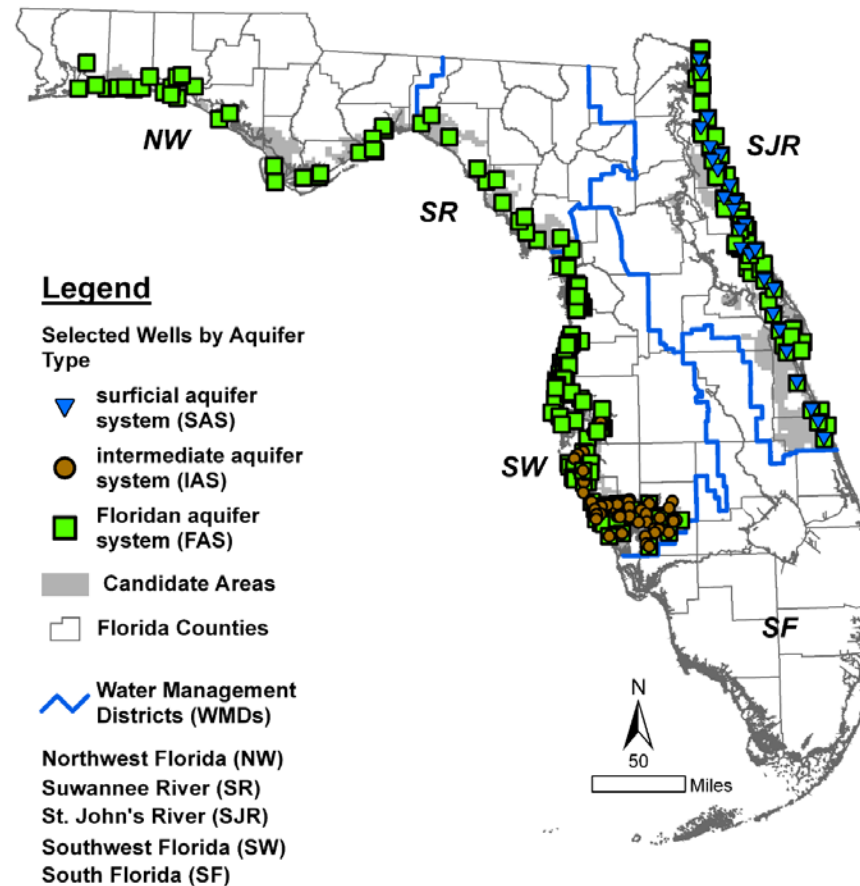
- Dan Dourte, Ph.D.
 - Balmoral Group

ddourte@balmoralgroup.us

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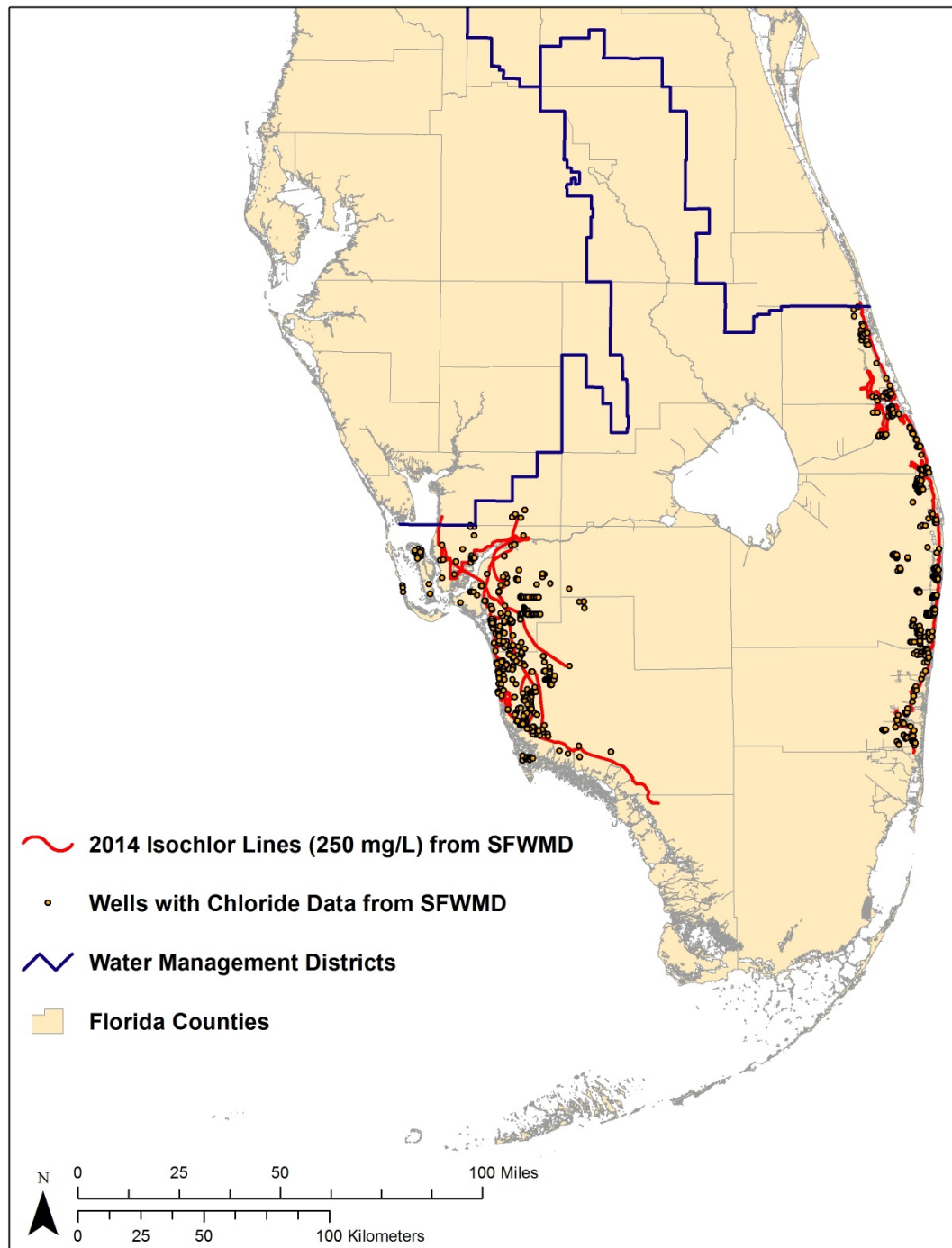
Status - Coastal Salinity Monitoring Network (RC)

Final Selection Coastal Salinity Network Wells Chloride, Specific Conductance, Sulfate, Calculated TDS



Created October 12, 2016 by Andy Woeber, DEAR, DEP.
The map is a cartographic representation and is not
intended for further analysis.

**Example of 250 mg/L
isochlor maps for
various aquifers in
south Florida**



**Example of 250 mg/L
isochlor map, and more,
of Biscayne aquifer in
Miami-Dade County, FL**

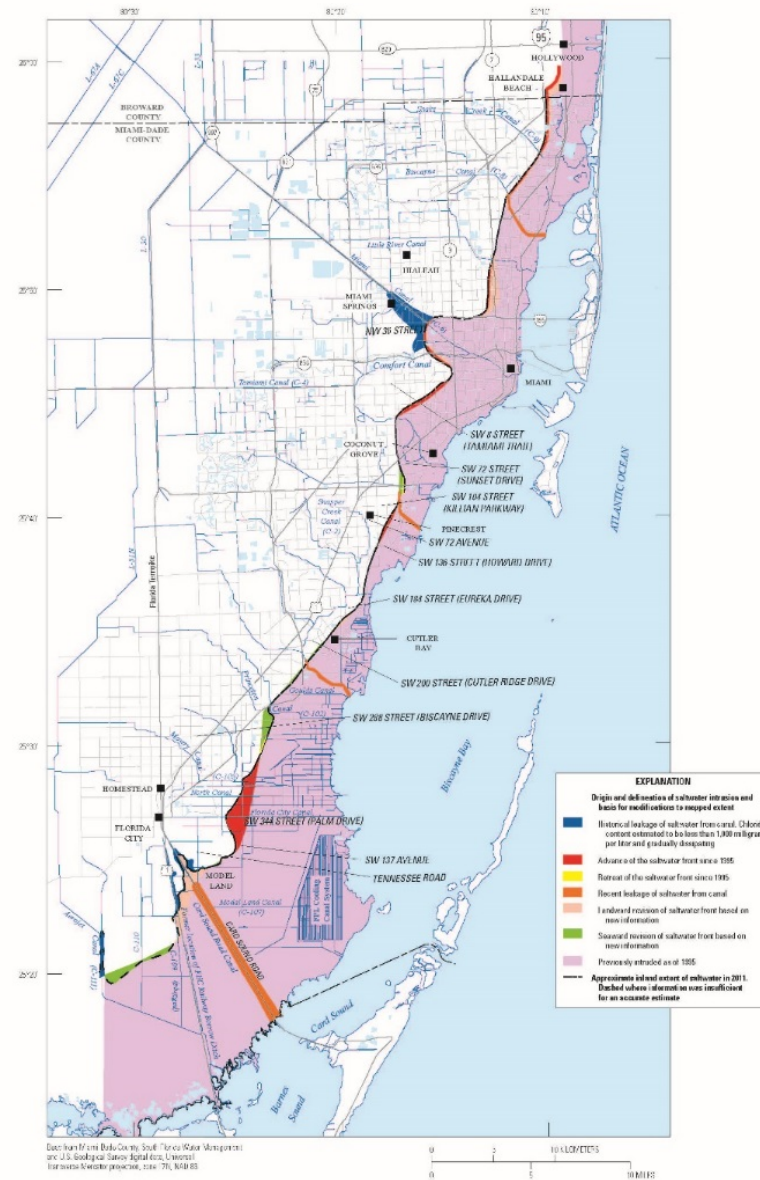


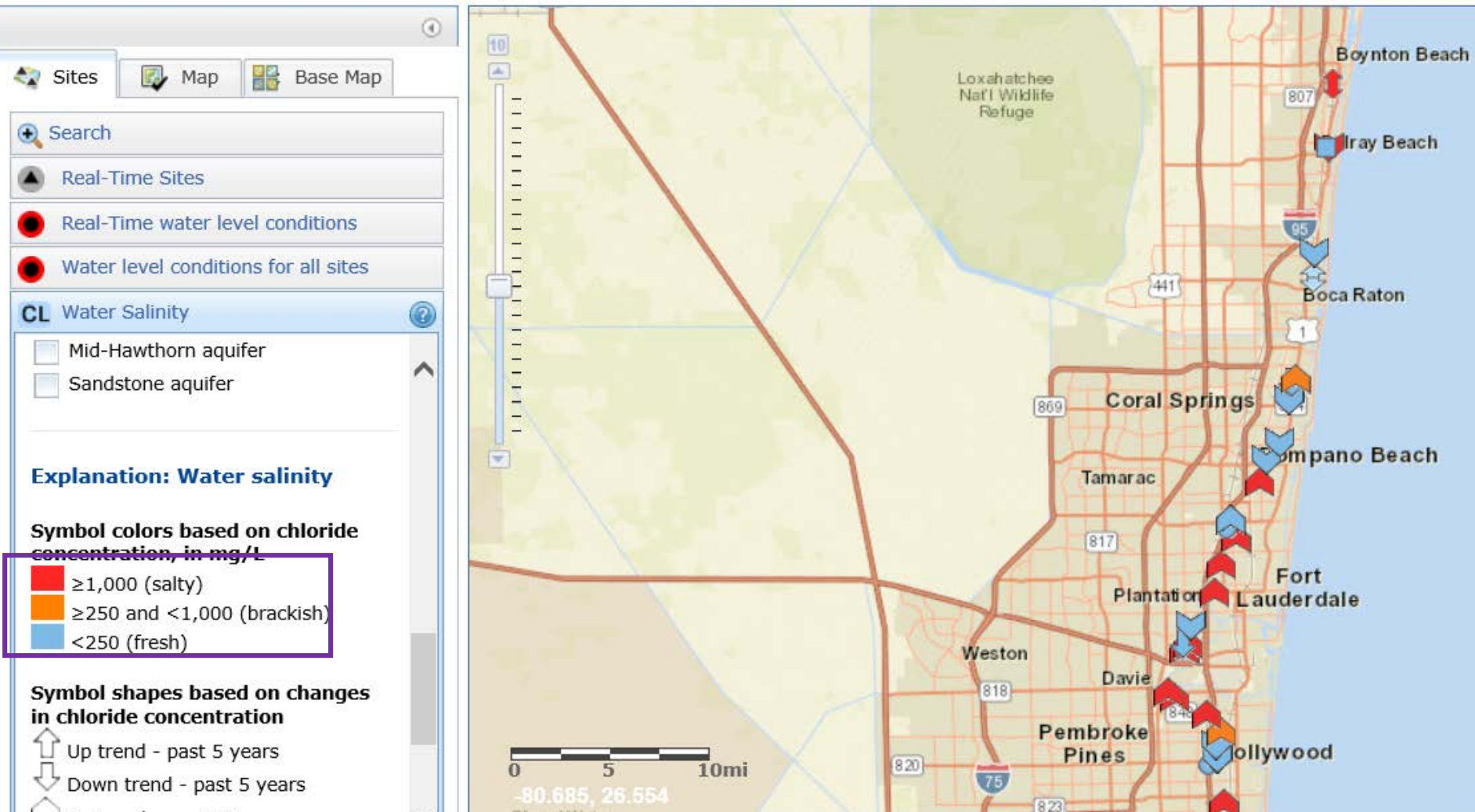
Figure 17. Map showing the origin and delineation of saltwater intrusion in the Biscayne aquifer and the basis for modifications to its mapped extent.

Status - Water Level and Salinity Analysis Mapper (RC)

A USGS DRAFT Webpage

- Many attractive options available to SNW
- Depends on data being uploaded to WIN
- Scott Prinos willing to give demos at future meetings as we progress

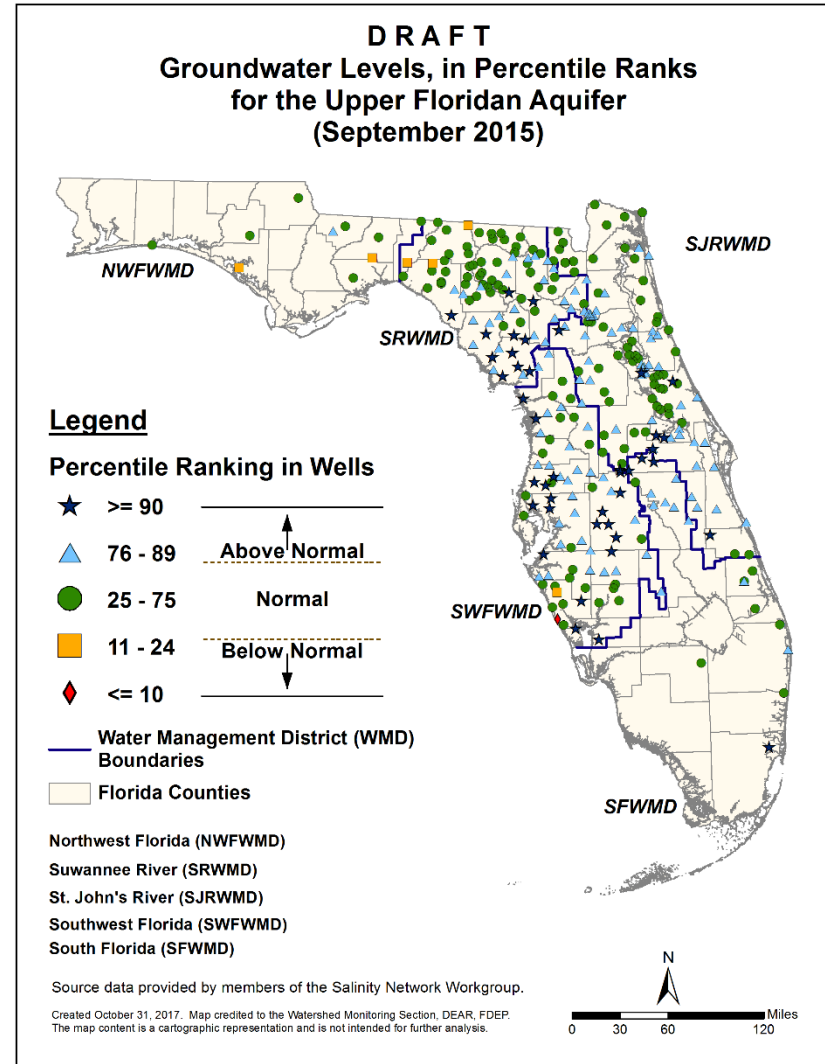
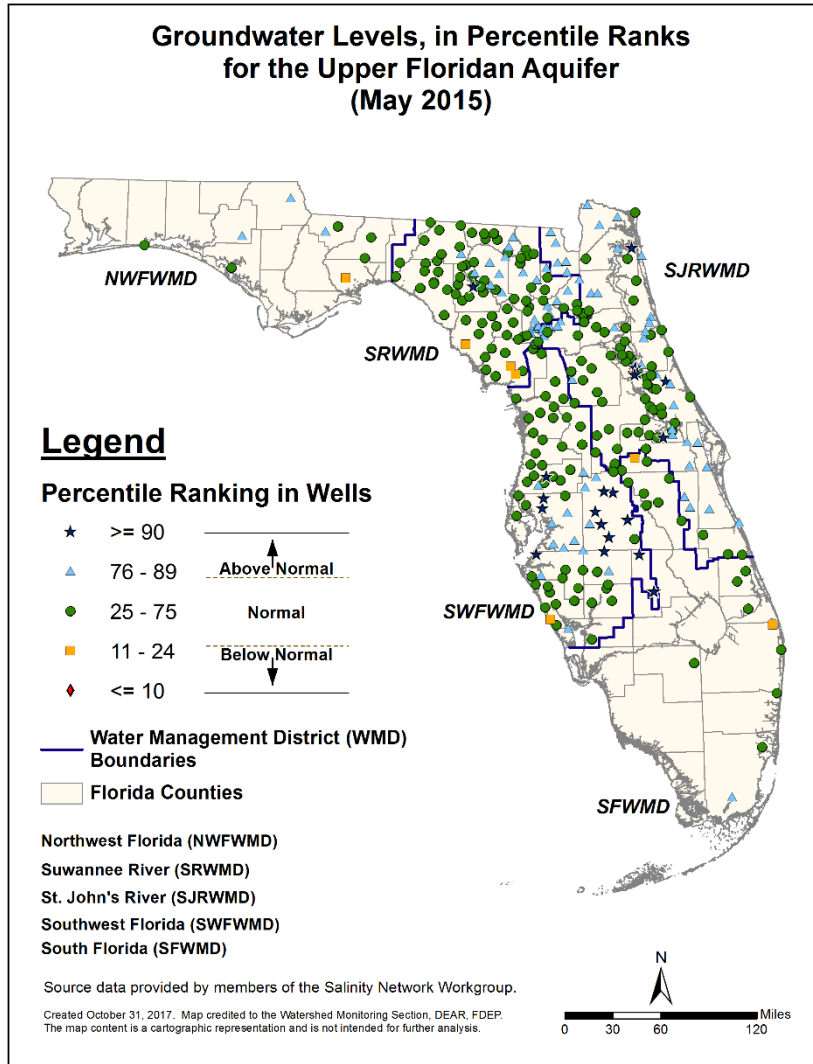
From Mapper Webpage



GWL Percentile Ranking Index Status and Modifications (RC)

- Periodically create **composite** statewide PRI maps, along with explanatory text
- Commence (2015) production twice/year
 - May (LOW GWLs) and September (HIGH GWLs)

Draft PRI maps: May and September 2015



Neither map published

Finally decided on the following methodology

- Seasonally-adjusted procedure
 - Compare each May (and Sept) RMV to all historical May (and Sept) RMVs for each well's period of record.
- RMV definition is inconsistent among entities, but consistent within agencies
 - As long RMV within agency does not change, the effect on the statewide GWL PRI maps is minimal

Methodology

- For each May and September map, FDEP will draft:
 - Description of the methodology
 - Send to SNW entities for review
 - After review – FDP will post document online

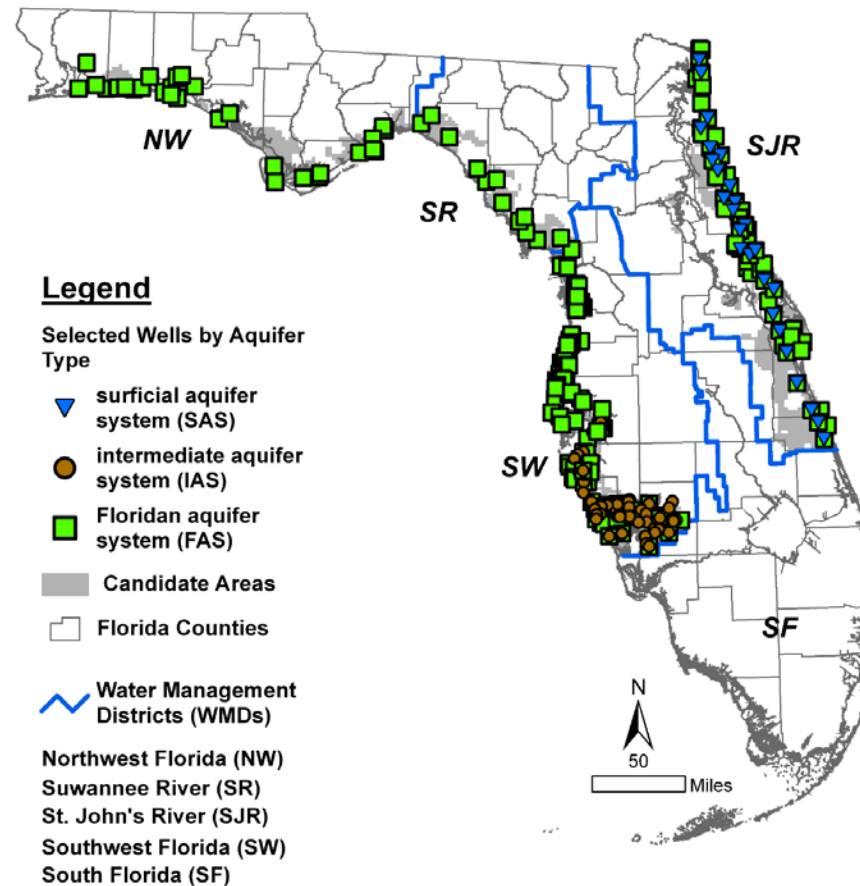
Loading Data into WIN (DD)

Proposed Methods for sampling saltwater/freshwater interface (RC)

- Revisions to FDEP Standard Operating Procedures for Sample Collection
- Only to be used for specific situation

Status - Coastal Salinity Monitoring Network (RC)

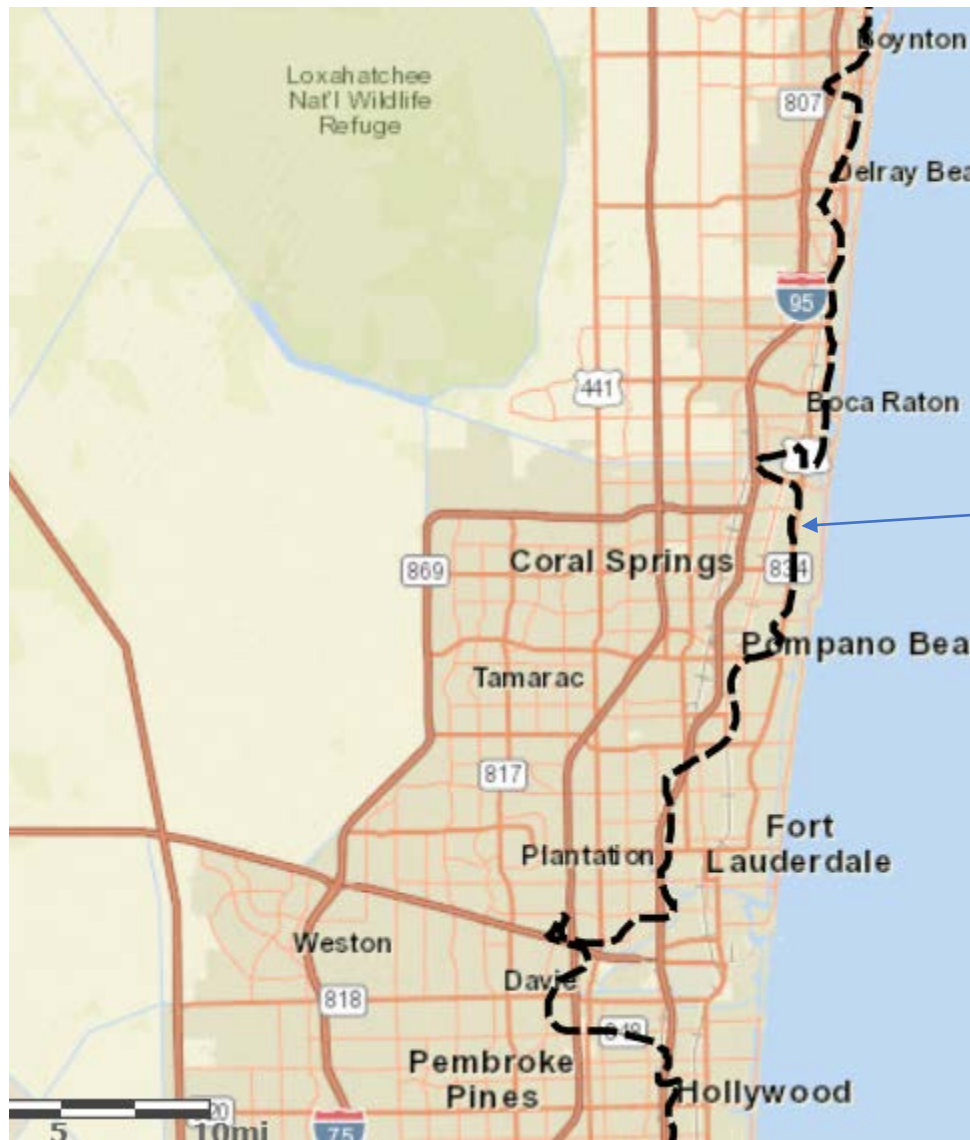
Final Selection Coastal Salinity Network Wells Chloride, Specific Conductance, Sulfate, Calculated TDS



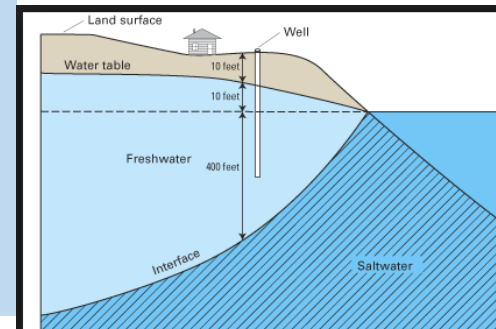
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From
Mapper
Webpage

Need for
special GW
sampling
protocols



250 mg/L
isochlor



Where purpose is to monitor the
Freshwater/Saltwater Interface in wells
completed “close” to the interface

- Want sample of maximum salinity
- Purging may move FW/SW interface position

Current SOPs

- If well has in-place plumbing
 - Use current SOPs
- If well has ≤ 10 ft of screen or open hole
 - Use current SOPs

Proposed changes to SOPs

If well has >10 ft of screen (or open hole)
and no in-place plumbing

- **1.** Micro-purging (low-flow purging)
 - Conduct Specific Conductance (SC) profile down well
 - Afterwards, lower pump
(≤ 2 cm/sec to target depth)
 - Place pump at point of max SC or
 - Within 5 ft of bottom of wells screen (or open hole)
 - Purge < 500 mL/min for a minimum of 1 equip volume
 - Commence stabilization/sampling procedures
 - Use same pump for purging and sampling

Proposed changes to SOPs

If well has >10 ft of screen (or open hole)
and no in-place plumbing

- **2.** No purging: Use non-isokineic thief sampler, such as double check-valve bailer, or Kemmerer sampler

- Conduct SC profile down well
- Afterwards, lower device (≤ 2 cm/sec to target depth)
- Trigger the device to close, according to manufacturer's instructions
- Retrieve sample (≤ 2 cm/sec to surface)

Note sampler may shut at incorrect depth

- Check SC from a small portion of sample
- If it is anomalous from previous data, obtain another sample



Proposed Changes to Rule

- Need comments about proposed rule change by SNW participants before rule revision can proceed
- **Description of Rule change and Questionnaire**
Sent to participating agencies in September
Re-notified agencies in October
- Revisions/comments and responses
Synthesized and forwarded to FDEP staff for possible inclusion as FDEP rule revision

Questions to be Addressed

- (1) Does your agency Sample/Monitor GW quality in wells completed close to the FW/SW interface?
 - (1b) If your agency monitors potential change in the FW/SW interface, do the wells include those which have > 10 ft of screen (or open hole), and no in-place plumbing?
 - If answer to (1b) is yes, what sampling procedures do you follow, and specifics

Questions

- (2) Does your agency support the development of a special DEP-approved SOP for monitoring the FW/SW interface in wells with > 10 ft screen (or open hole) and no in-place plumbing?
- (3) Regarding the proposed SOP, what general concerns do you have, if any, for using the proposed SOP?

Questions

- (4) If the SNW were to proceed further with the development of a special SOP for sampling wells with > 10 ft screen/open hole, and no in-place plumbing, does your agency prefer...
 - a. Develop a “White Paper” to be sent to DEP, outlining the background and the need for the development and inclusion of a special SOP into the DEP Quality Assurance Rule?
 - b. Develop an alternative to the DEP-approved sampling SOP than the one just described?
 - Both a. and b. require presenting data demonstrating that the proposed SOP exceeds the performance of current DEP SOPs

Responses As of November 14, 2018

- Only four agencies have responded:
SNW thanks the agencies for responding

Two agencies had no comments

One agency had good comments, but believe proposed methodology is impractical for their organization

One agency supports concept, but has many questions

With the response, RC interprets that:

- 1. No further action should be taken**
- 2. Possibly re-introduce at a future date**

Salinity GW Quality Index (RC)

From Mapper Webpage

Sites Map Base Map

Search

Real-Time Sites

Real-Time water level conditions

Water level conditions for all sites

CL Water Salinity

☐ Mid-Hawthorn aquifer

☐ Sandstone aquifer

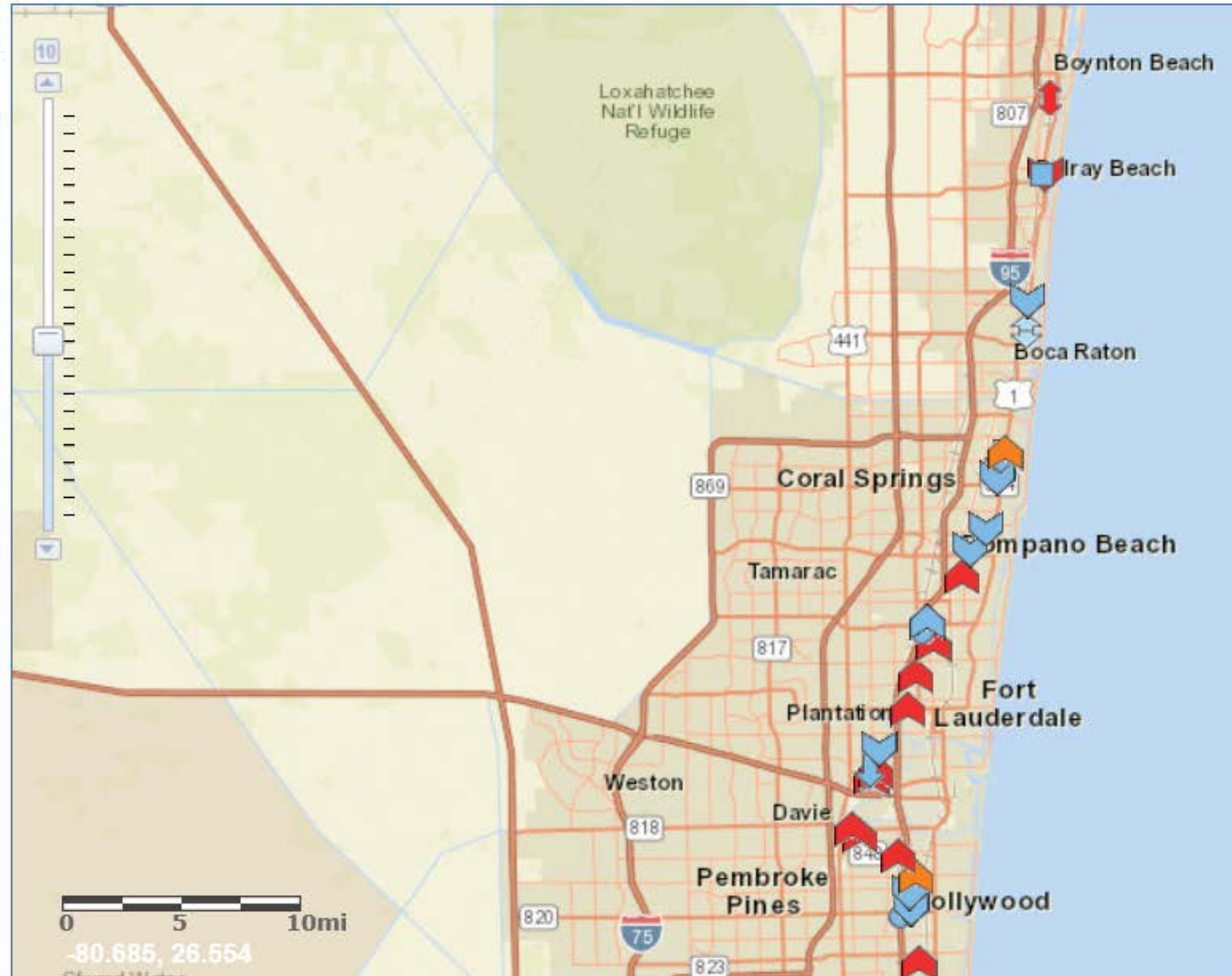
Explanation: Water salinity

Symbol colors based on chloride concentration, in mg/L

Red	≥1,000 (salty)
Orange	≥250 and <1,000 (brackish)
Blue	<250 (fresh)

Symbol shapes based on changes in chloride concentration

Up arrow	Up trend - past 5 years
Down arrow	Down trend - past 5 years



Salinity GW Quality Index

- Suggest SNW develop an index
- Start with **Chloride**

Concentration (mg/L)	Name
< 250	Fresh
≥ 250 – <1,000	Brackish
≥ 1,000	Salty

- Other indicators at another time
- E.G. Na, SO₄, TDS

Alternate Proposal of a Salinity GW Quality index (DH)

Example of DEP Estuarine Monitoring (CS)

The FDEP division leadership requested staff from **WMS** conduct a review of the estuarine data and determine potential trends in nutrients and biological parameters used for categorizing the health of state waters. Using 'found' data from the TMDL group for determination of impaired waters, trend analyses were conducted on the individual WBIDs and for Tampa Bay as a whole. I will discuss the different analyses and results. (CS)

Suggestions for a New Chairperson of the SNW (DD)

General Discussions

- Comment or Questions?

Next SNW Meeting

Wednesday, May 8, 2019 1:00-3:00 PM

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http://publicfiles.dep.state.fl.us/DEAR/DEARweb/FWRMC/FWRMC%20Salnet_document_SNWGWLPRIPIlotFinal_cv%20ada%203-27-15.pdf