

Salinity Network Workgroup Meeting
1:00 – 3:00 PM
August 8, 2012
[Rick Copeland (FDEP)]

“Success is our ability to cooperate.”

**Welcome
and
Introduction**



Today's Scheduled Speakers

(In order of Scheduled Presentation)

- | | |
|------|-----------------------|
| (RC) | Rick Copeland, FDEP |
| (DD) | Dave DeWitt, SWFWMD |
| (MH) | Mark Hoyer, LAKEWATCH |
| (JS) | Jay Silvanima, FDEP |
| (SK) | Sandy Kinnaman, USGS |
| (SP) | Scott Prinos, USGS |

Abridged Outline

- I. Introduction (RC)
- II. Miscellaneous Issues (RC)
 - Decision Process Review/Voting and Non-Voting Members
 - Finalize Preamble, Mission, Goals, & Objectives
 - Additional Objectives?
 - Encroachment Versus Intrusion
 - Potential New SNW Members
 - Monitoring Catalog
- III. Percentile Rank Pilot Study Issues
 - Well Locations, PORs, # observations, Algorithms (RC)
 - Potential Modifications to SNW Pilot Study (DD)
 - Interim Data (MH, JS, RC)
 - Potential Generation of Potentiometric Maps (SK, RC)
- IV. Potential Development of a WQ Index (SP, RC)
- V. Action Items and Adjournment (RC)

SNW Decision Process

- Three levels of Decision Making
 - First – Approval with no objections to the Chair (**Informal**)
 - (To date, all decisions fall into this category)
 - Second – Consensus building (**Formal**)
 - Third – Voting (**Formal**)

Decision Process

- SNW's preferred path is non-formal
 - (All participants are eligible to comment / object)
- Voting is Non-binding, because SalNet has no authority
- RC recommends that if a formal decision is required: (1) we discuss, (2) we define differences, and (3) then delay formal decision making process until next SalNet Meeting

Participating Organizations

- **Voting Members**
- SFWMD (C. Bevier)
- SWFWMD (G. Kinsman)
- SJRWMD (D. Boniol)
- SRWMD (M. Wetherington)
- FL DACS (J. Teem)
- NFWFMD (T. Countryman)
- Ala Co (J. Myles)
- LAKEWATCH (M. Hoyer)
- FDEP (WMS – J. Silvanima)
- **Non Voting Members**
- USGS
- USACE
- Miami-Dade Co
- Escambia Co
- Palm Beach Co

Membership

(RC Proposal)

- To become a member, a representative must attend at least one meeting and indicate interest in becoming a member. Membership becomes effective at next SNW meeting.
- To become a voting member, a representative must attend at least two meetings and then request placement into voting member category. Change becomes effective at next SNW meeting.

Potential New SNW Members

- NW/SR – Leon, Bay
- SJ – Duval, Volusia
- SW – None
- SF – Lee, Collier, Broward Counties
- Cities? Non-government entities?

Lake Worth, Hallandale, Hillsboro Beach, Stuart, Dania, Florida City, Homestead, Ft. Lauderdale, Hollywood , others



Mission, Goals, Objectives **(RC)**

Potential Additional Objectives

(To be considered at a Later Date)

- Improve the quality of salinity sampling throughout the state by: (1) evaluating the best sampling methodologies for saline water given its physical properties, (2) developing standard operating procedures to apply these methodologies, and (3) periodically evaluate the quality of the salinity sampling by reviewing salinity methods used throughout the network.
- Evaluate improvements in the technology used for salinity monitoring, and whenever practical, develop the standard operating procedures that will be used to implement these advances.

Recommendation

(Encroachment versus Intrusion)

- RC recommends that informally the SNW recognize that the two terms **can** be used to represent two concepts
- Intrusion – Relatively rapid movement of saltwater that has entered previously fresh portions of an aquifer. This suggests the mechanism is man-induced.
- Encroachment – Relatively gradual movement of saltwater into an aquifer resulting from the lowering of freshwater head in the aquifer. An example is the landward movement of saltwater along the base of an aquifer resulting from the lowering of the head within an aquifer due to a prolonged drought.

Status of GW Monitoring Catalog

- **First** – Complete search for entities that are monitoring ground water
 - Complete - Federal, State, WMDs, Volunteers
 - Incomplete - Counties, Cities/Utilities
 - SNW is near completion of this search
- **Second** – Under direction of FWRMC (Council), SNW will complete its task
- **Status** – Waiting for Council's instructions

Data that May be Needed in the Future

- Field
 - GWL, SC, Spring Flow, pH, Temp
- Laboratory
 - Na, Cl, TDS, SO₄, Ca, Mg
- Other (as needed)
 - Rainfall (SE Reg. Climate Center)
 - Air Temp (SE Reg. Climate Center)
 - GW withdrawal (pumping) data (where available)
 - Evaporation and ET data (where available)

Status of Pilot Study

- Produce one Percentile Rank index map for Spring 2010 for the Upper Floridan aquifer (UFA)
 - **Purpose** – Can SNW overcome obstacles
 - If so, periodically produce PR maps for aquifers or other mappable units
 - **Possibly** – Produce side-by-side potentiometric maps with PR maps

U.S. Drought Monitor

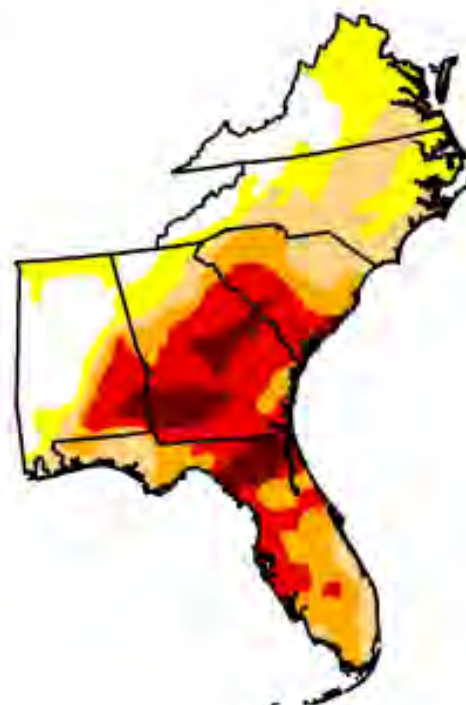
Southeast

April 17, 2012
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	17.04	82.96	63.56	43.54	27.65	7.14
Last Week (04/10/2012 map)	17.84	82.16	63.41	39.97	25.35	5.29
3 Months Ago (01/17/2012 map)	28.63	71.37	52.85	33.73	23.65	1.50
Start of Calendar Year (12/27/2011 map)	40.38	59.62	43.05	28.62	18.71	0.00
Start of Water Year (09/27/2011 map)	42.24	57.76	41.82	31.77	23.48	0.00
One Year Ago (04/12/2011 map)	30.65	69.35	48.75	15.15	4.60	0.00

Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu>



Released Thursday, April 19, 2012

Anthony Artusa, Climate Prediction Center/NCEP/NWS/NOAA

U.S. Drought Monitor

Southeast

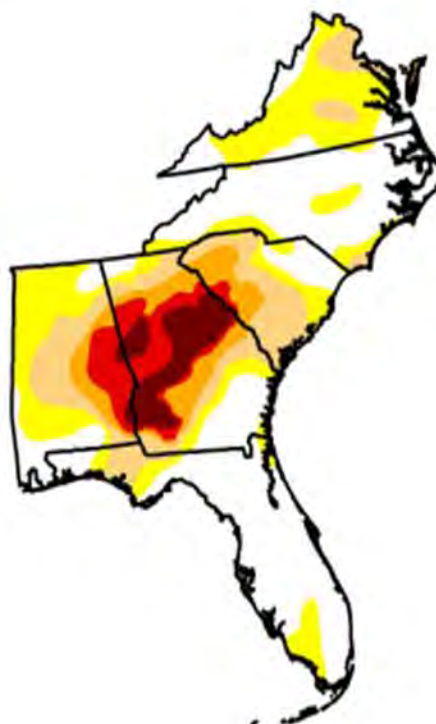
July 31, 2012

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	41.61	58.39	34.15	18.31	11.38	5.35
Last Week (07/24/2012 map)	37.57	62.43	36.90	19.15	11.36	5.10
3 Months Ago (05/01/2012 map)	11.70	88.30	69.25	47.32	30.91	8.41
Start of Calendar Year (12/27/2011 map)	40.38	59.62	43.05	28.62	18.71	0.00
Start of Water Year (09/27/2011 map)	42.24	57.76	41.82	31.77	23.48	0.00
One Year Ago (07/26/2011 map)	23.35	76.65	56.69	38.99	23.37	1.82

Intensity:



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Local conditions may vary. See accompanying text summary
for forecast statements.

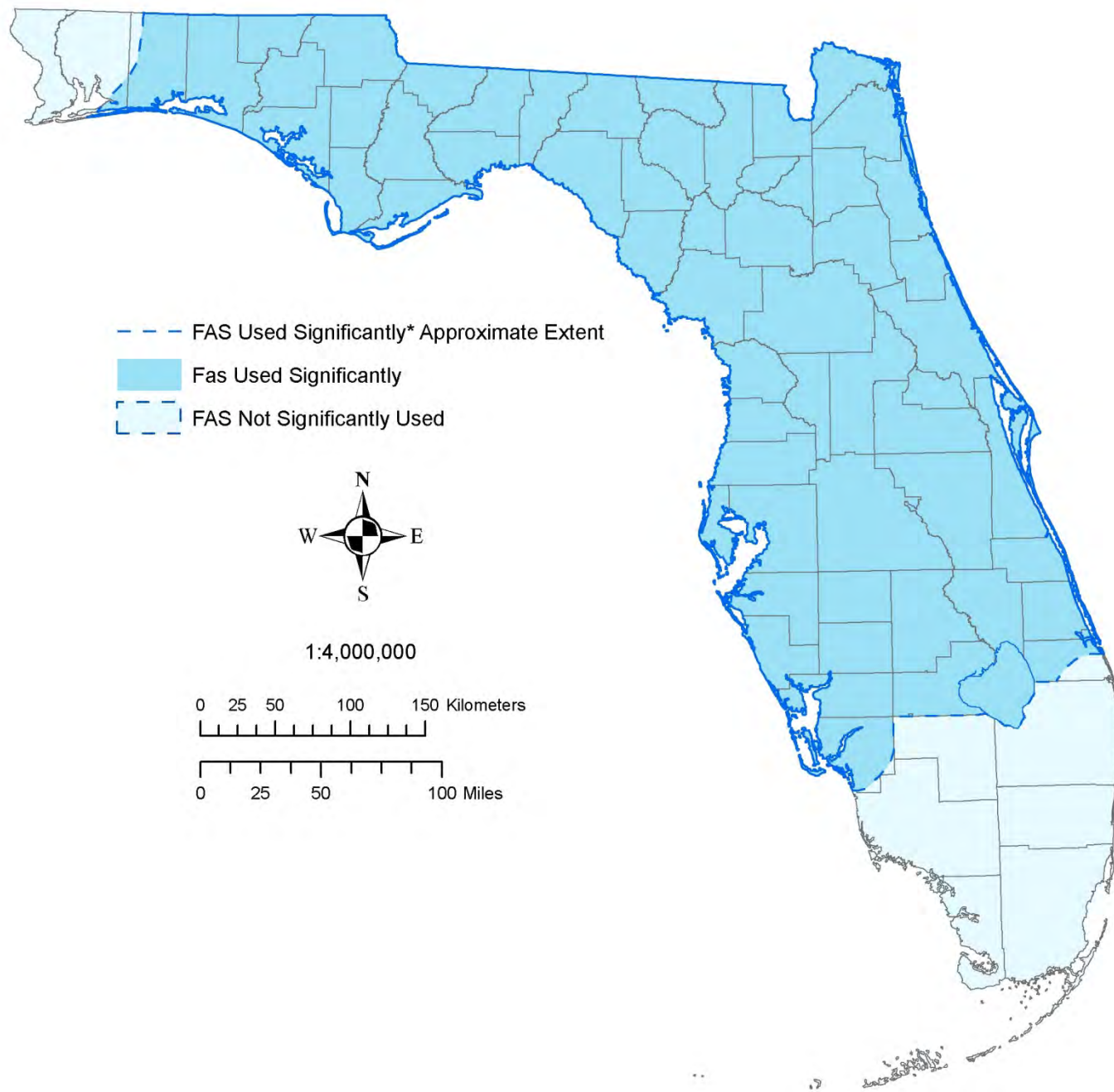
<http://droughtmonitor.unl.edu>



Released Thursday, August 2, 2012
Mark Svoboda, National Drought Mitigation Center

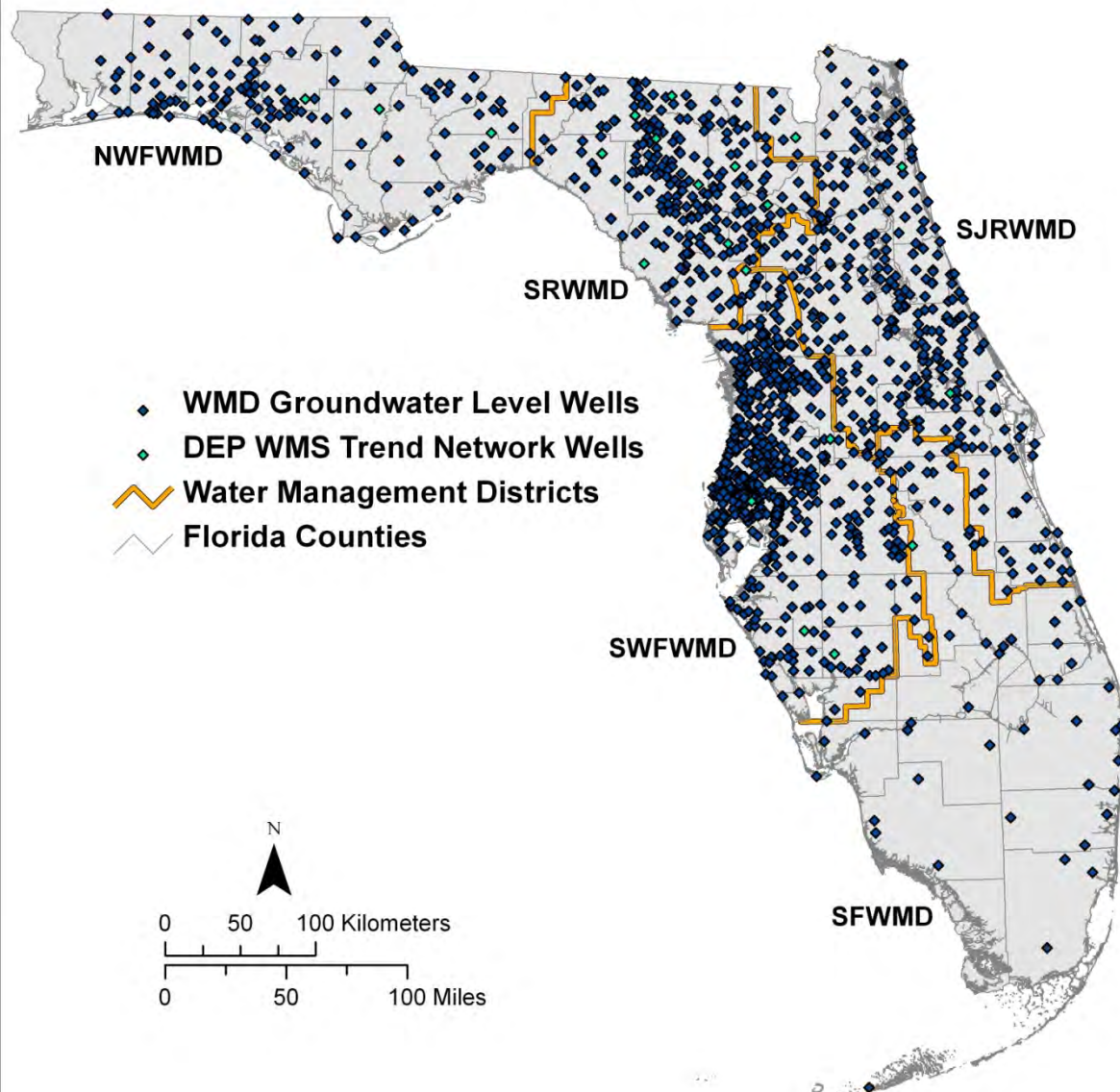
Progress on Pilot Study Issues

- UFA well locations
- Periods of Record (POR)
 - 1992-2012, 1998-2012, 2007-2012
- Number of Obs. /POR
- PR Algorithm



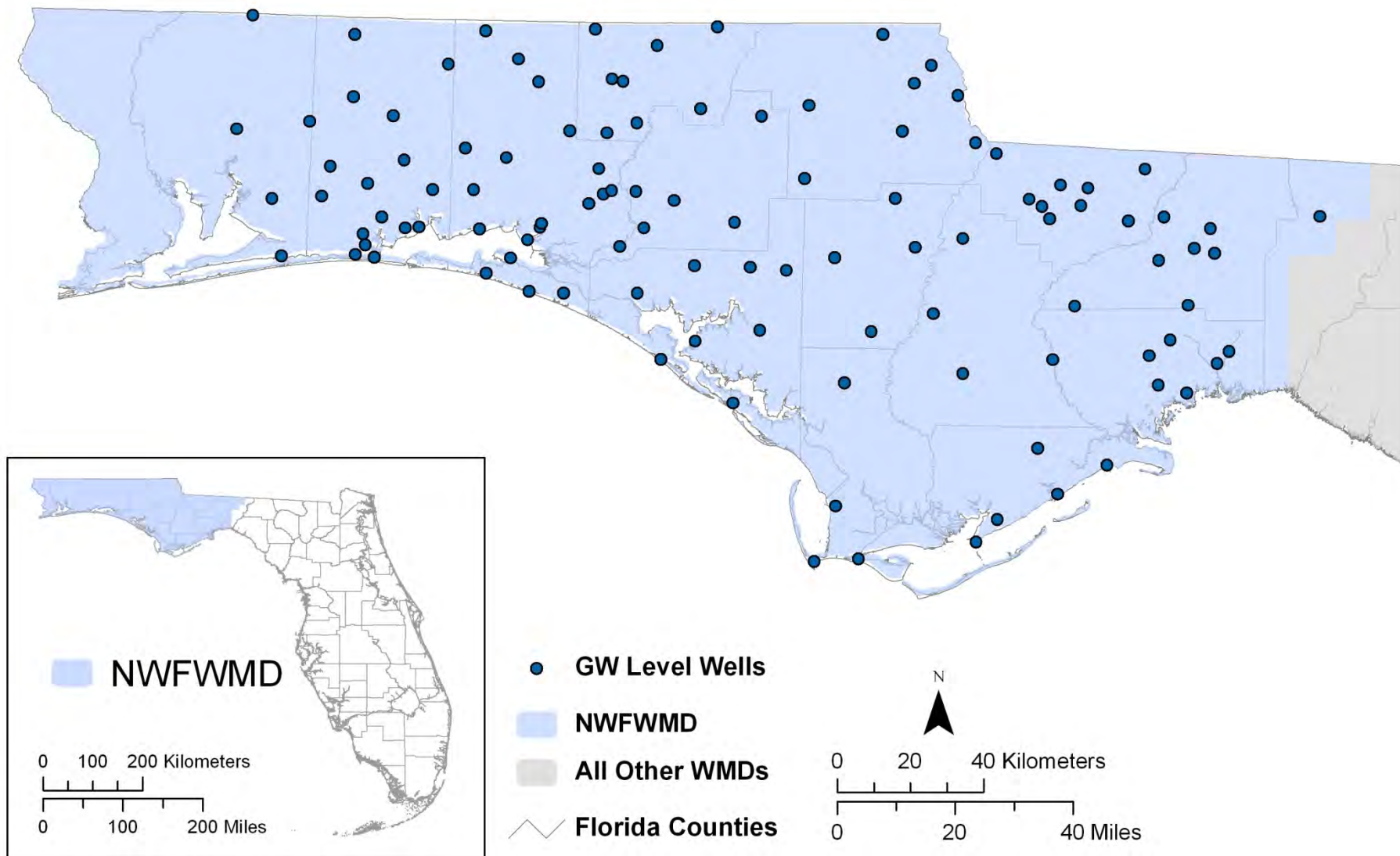
* Significant is greater than 5% of county groundwater use based on 2000 data from Marella and Bendt (2005).

GROUNDWATER LEVEL FLORIDAN AQUIFER SYSTEM



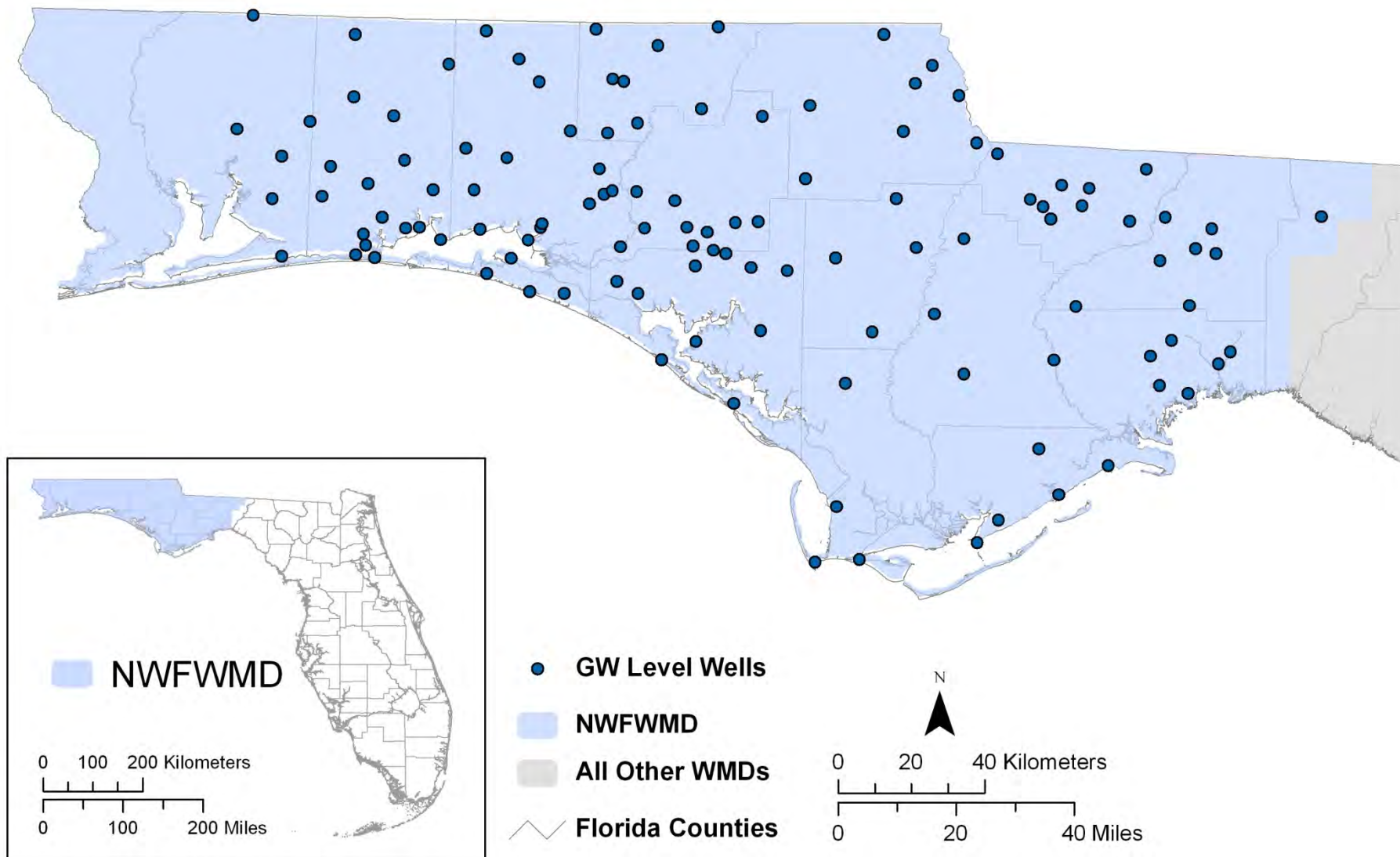
Created January 20, 2012 by Florida Department of Environmental Protection staff in the Division of Environmental Assessment and Restoration, Watershed Monitoring Section. This map is a representation of ground conditions and is not intended for further analysis.

NWFWMD - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 1992 - 2011



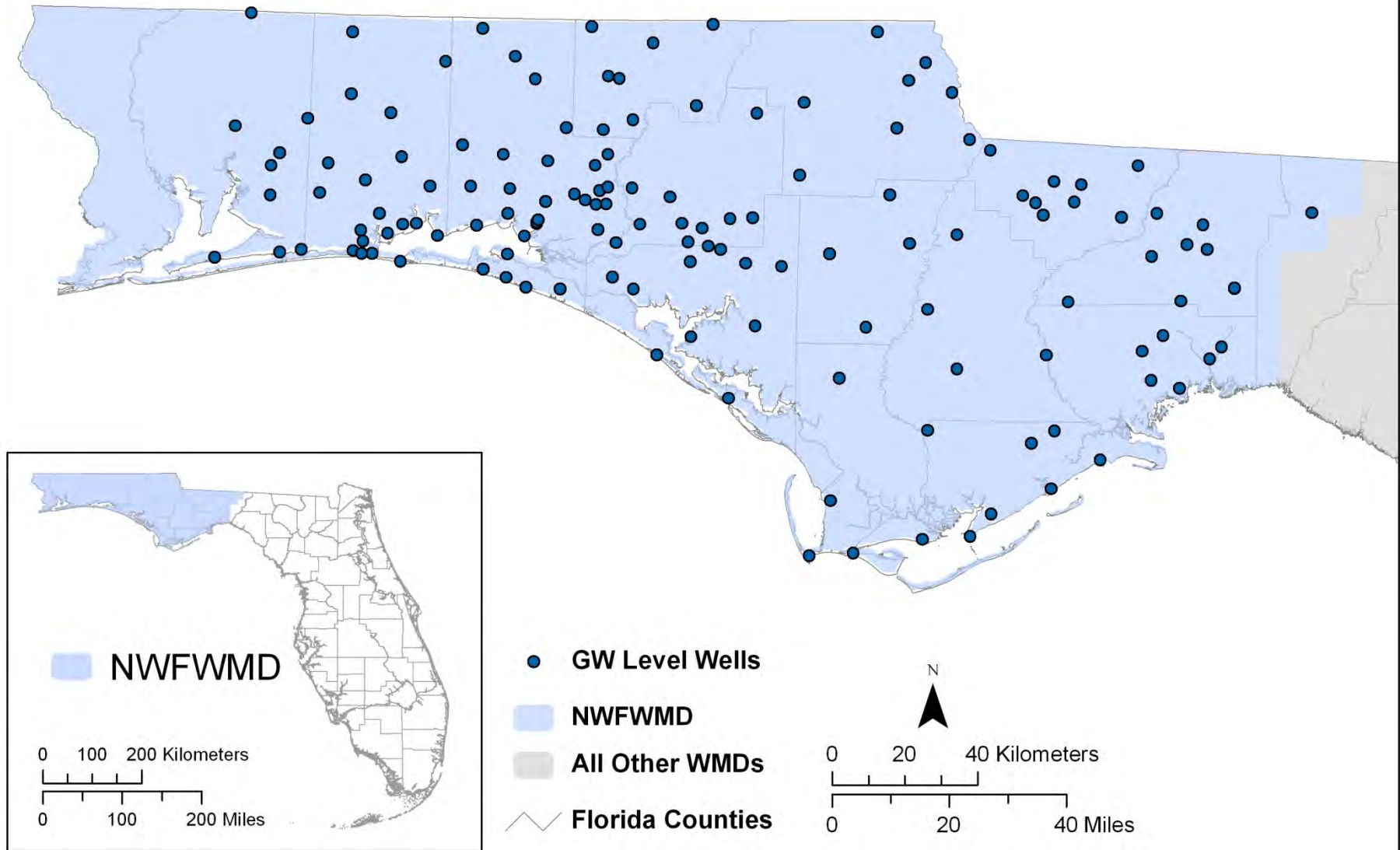
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NWFWMD - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 1998 - 2011



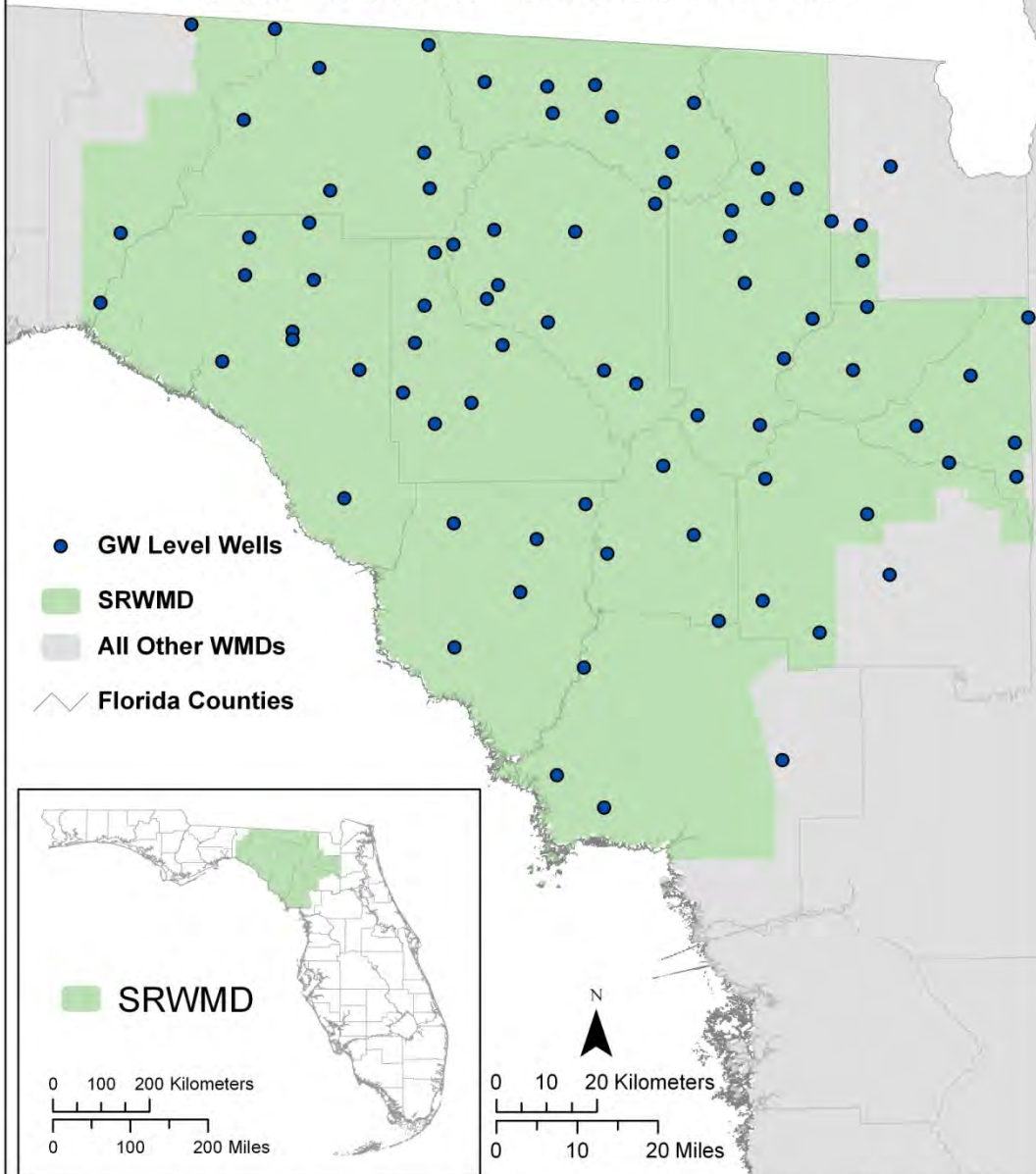
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NWFWMD - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 2007 - 2011



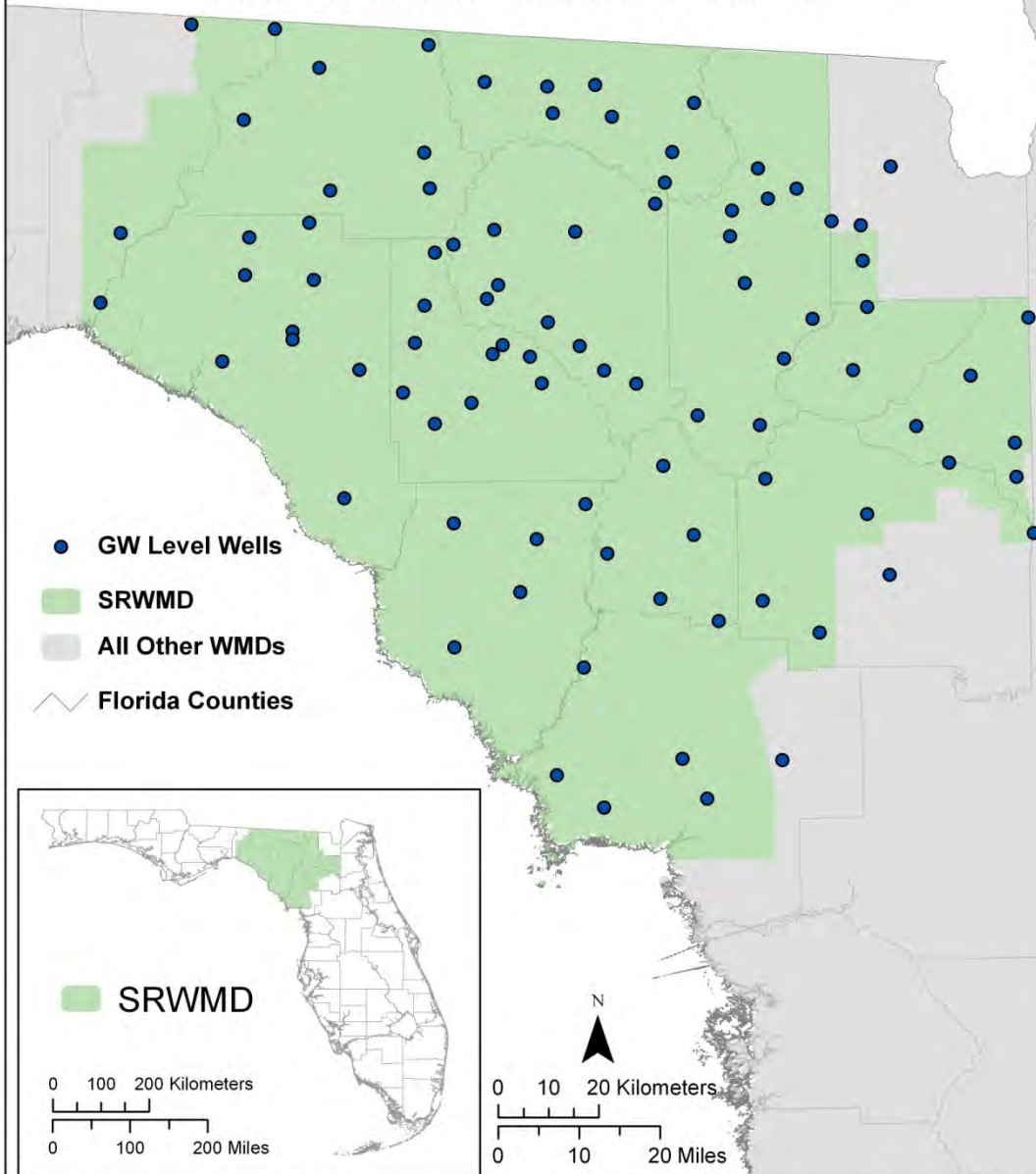
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SRWMD - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 1992 - 2011



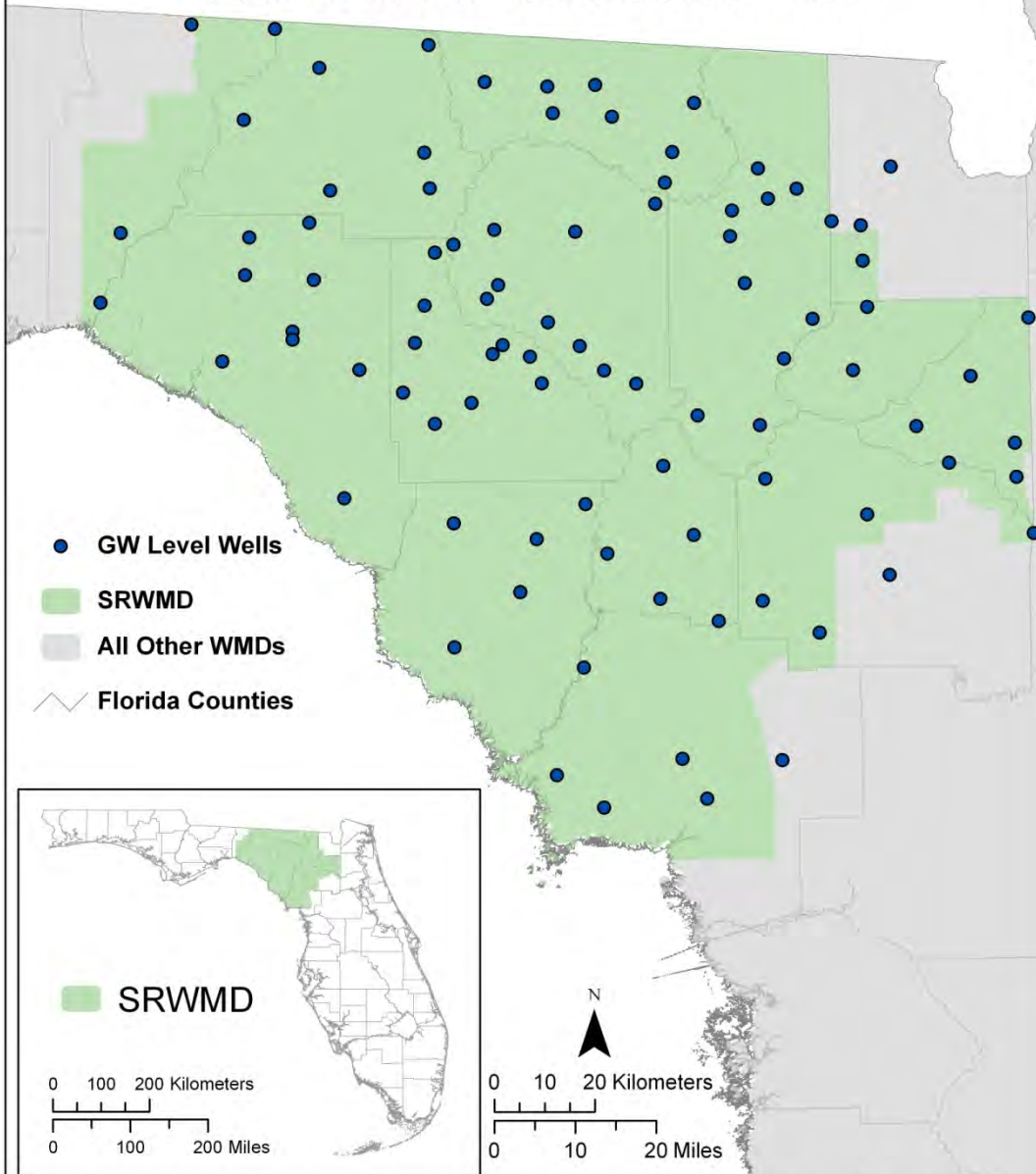
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SRWMD - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 1998 - 2011



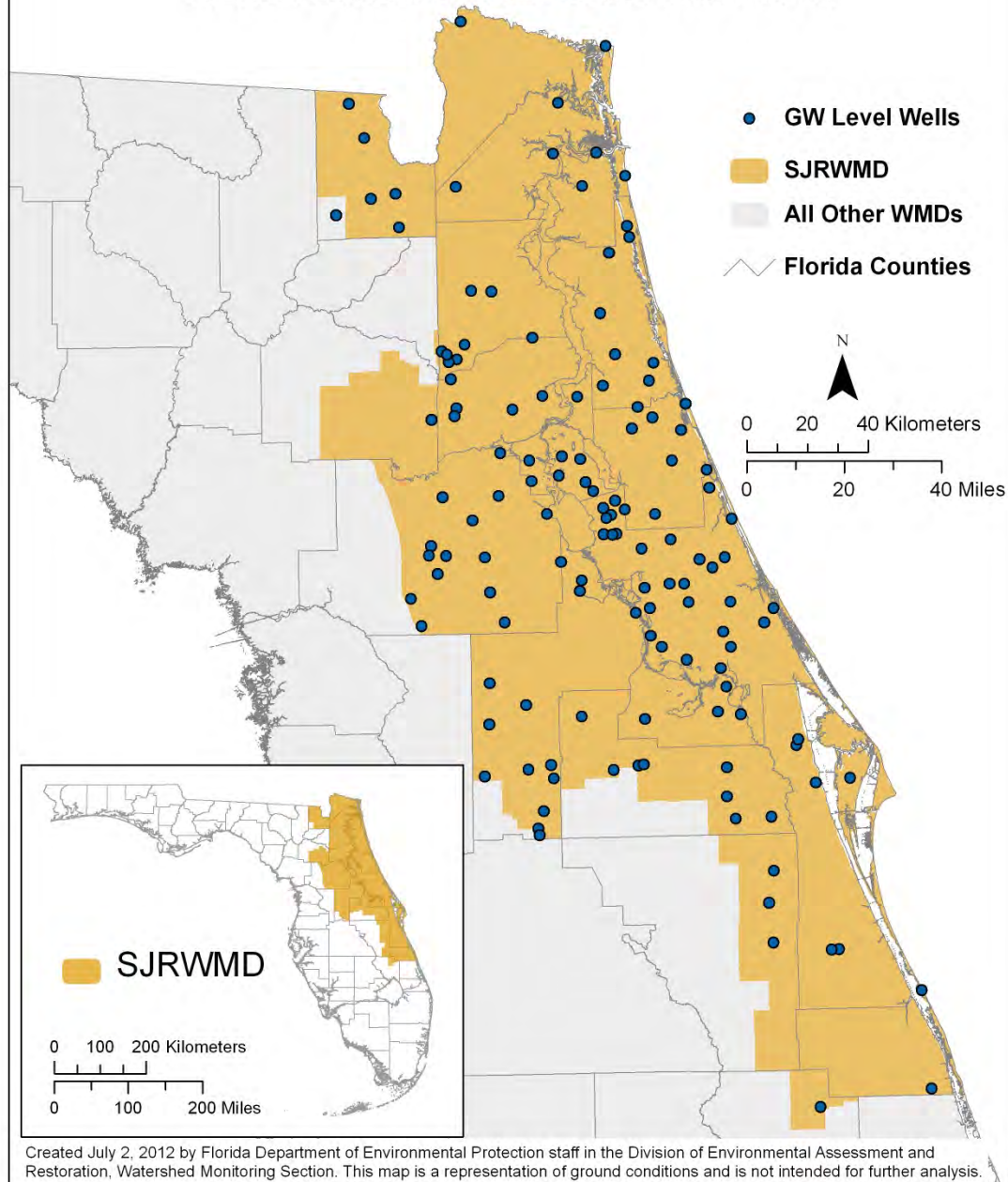
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SRWMD - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 2007 - 2011

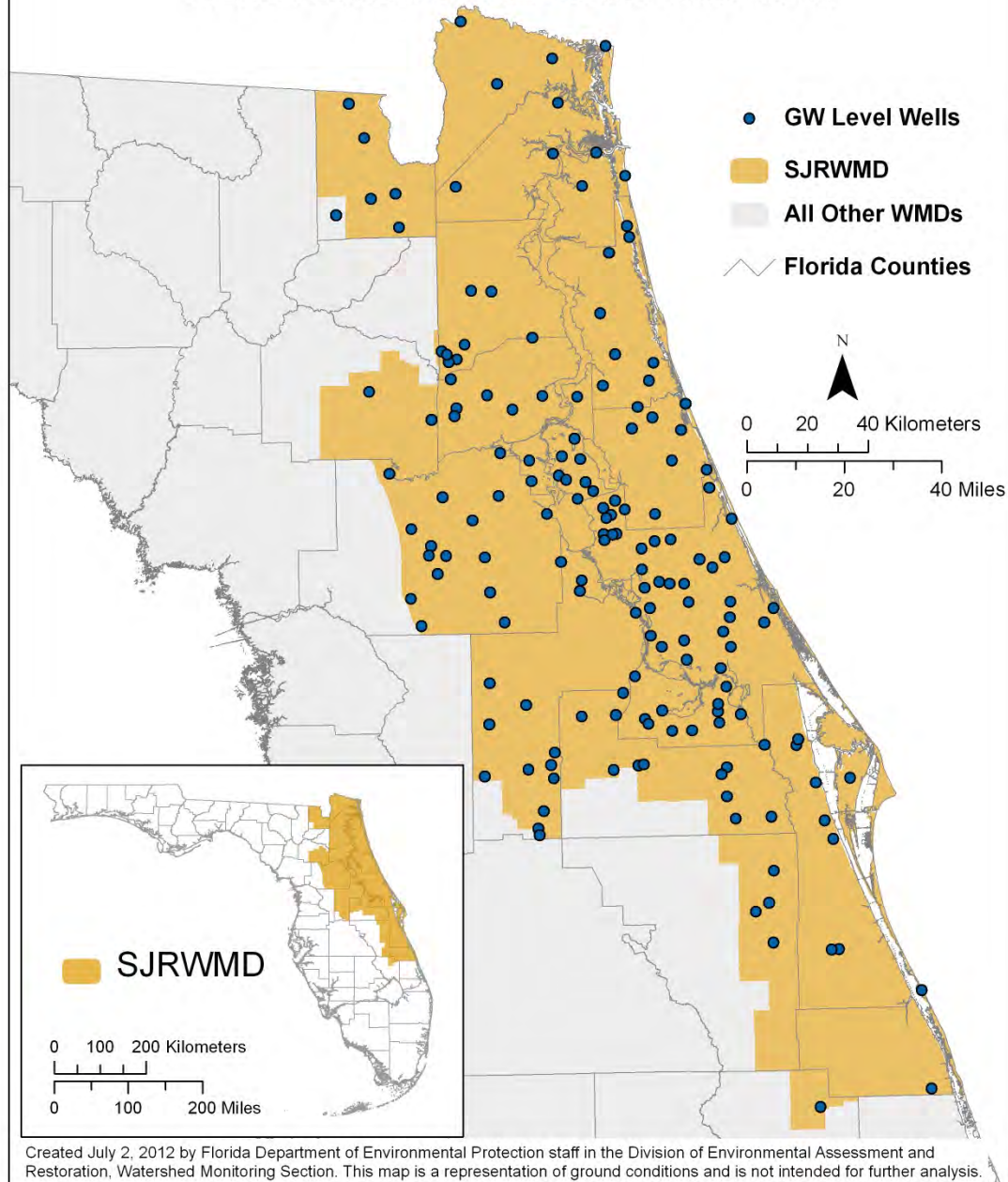


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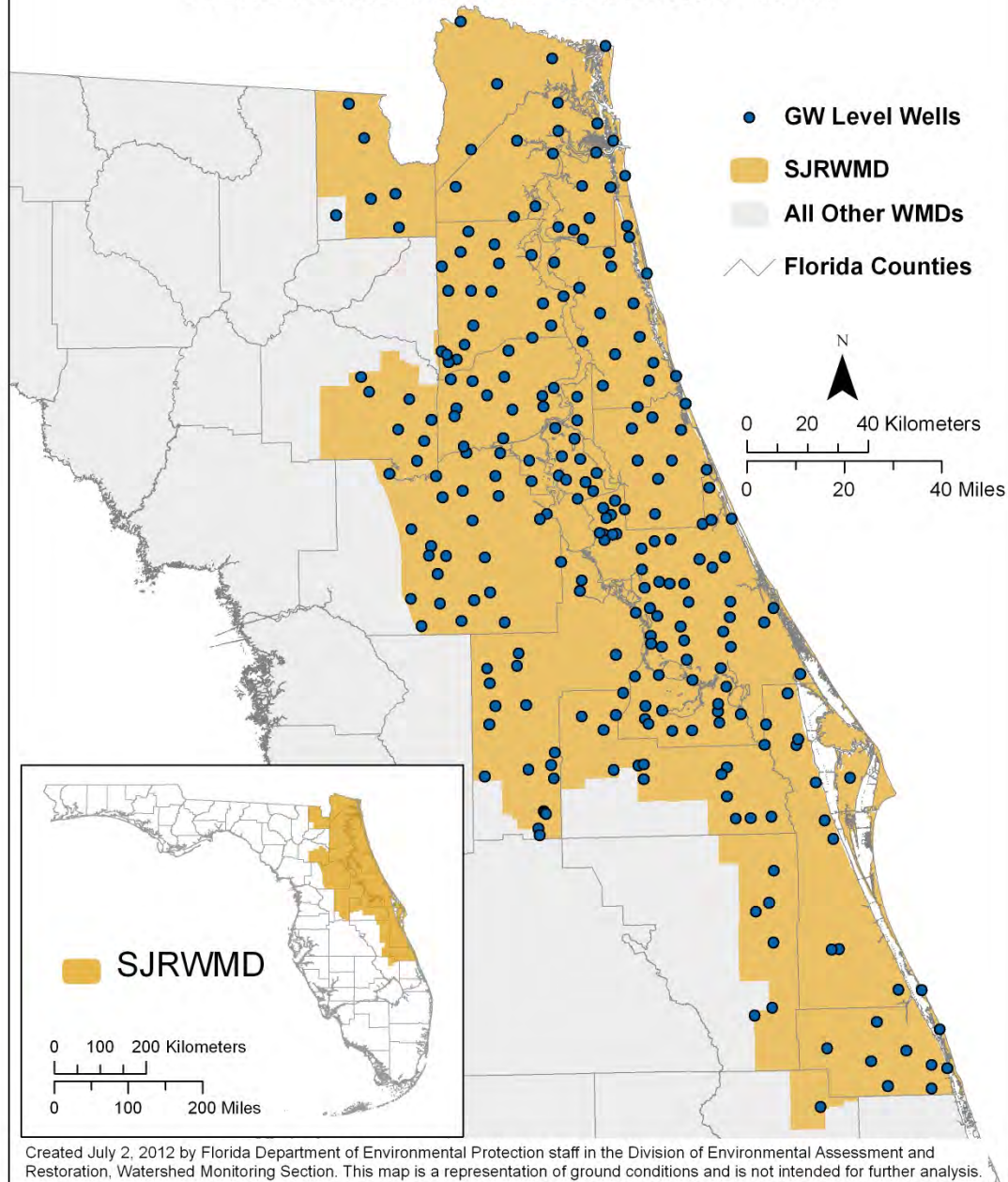
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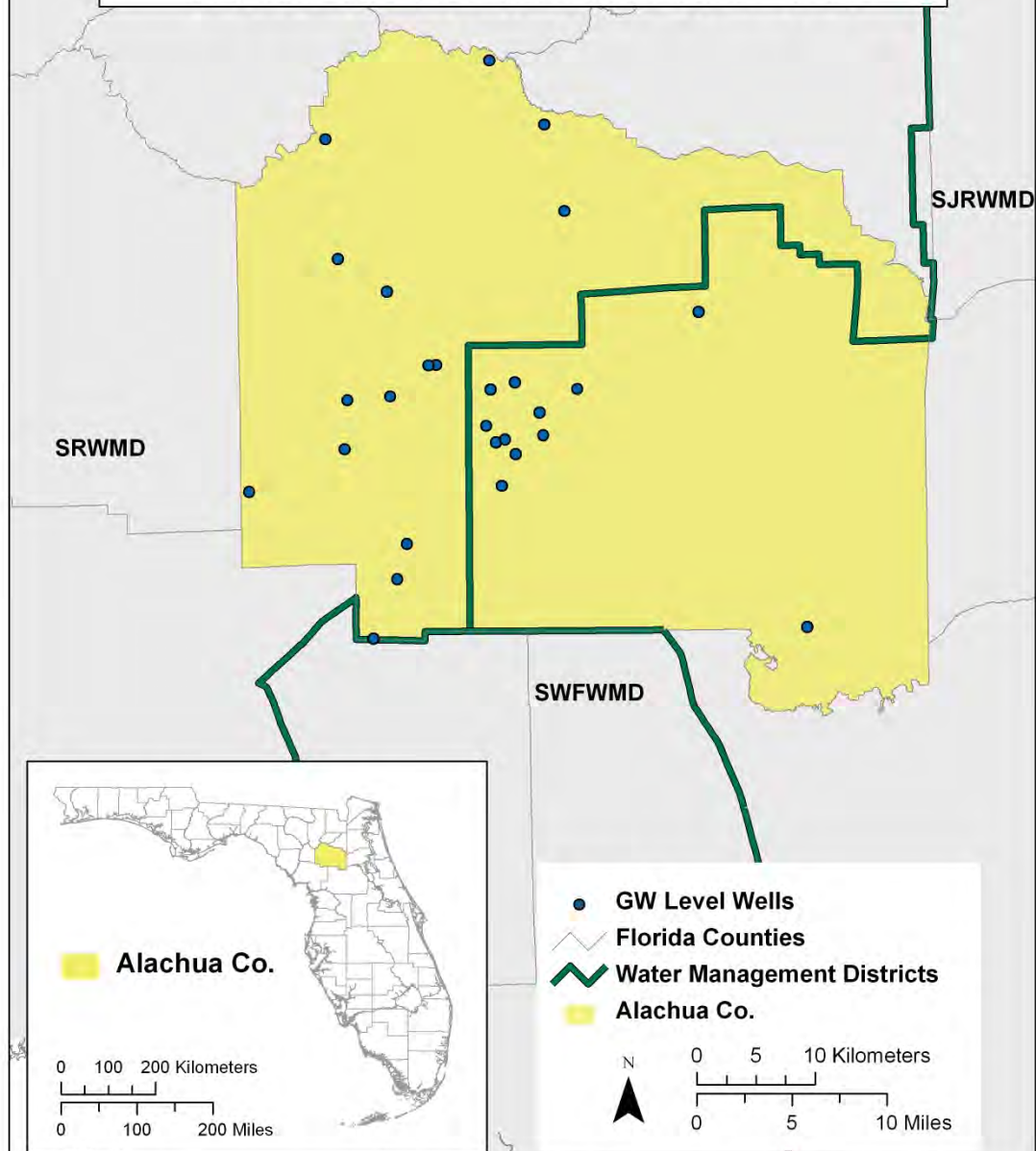
SJRWMD - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 1998 - 2011



SJRWMD - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 2007 - 2011

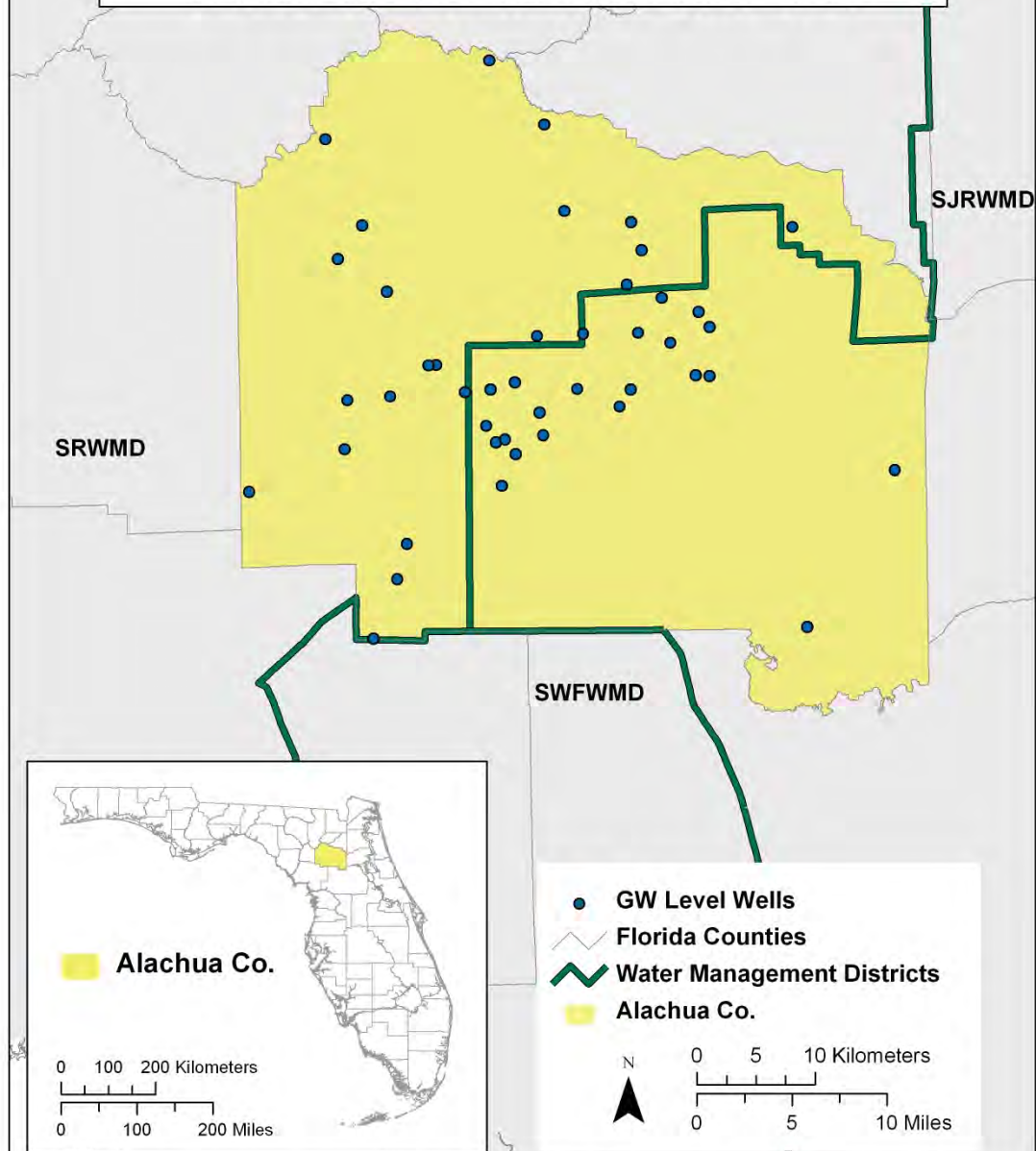


**ALACHUA COUNTY - UPPER FLORIDAN AQUIFER
GROUNDWATER LEVEL
REAL PERIOD OF RECORD: 1992 - 2011**



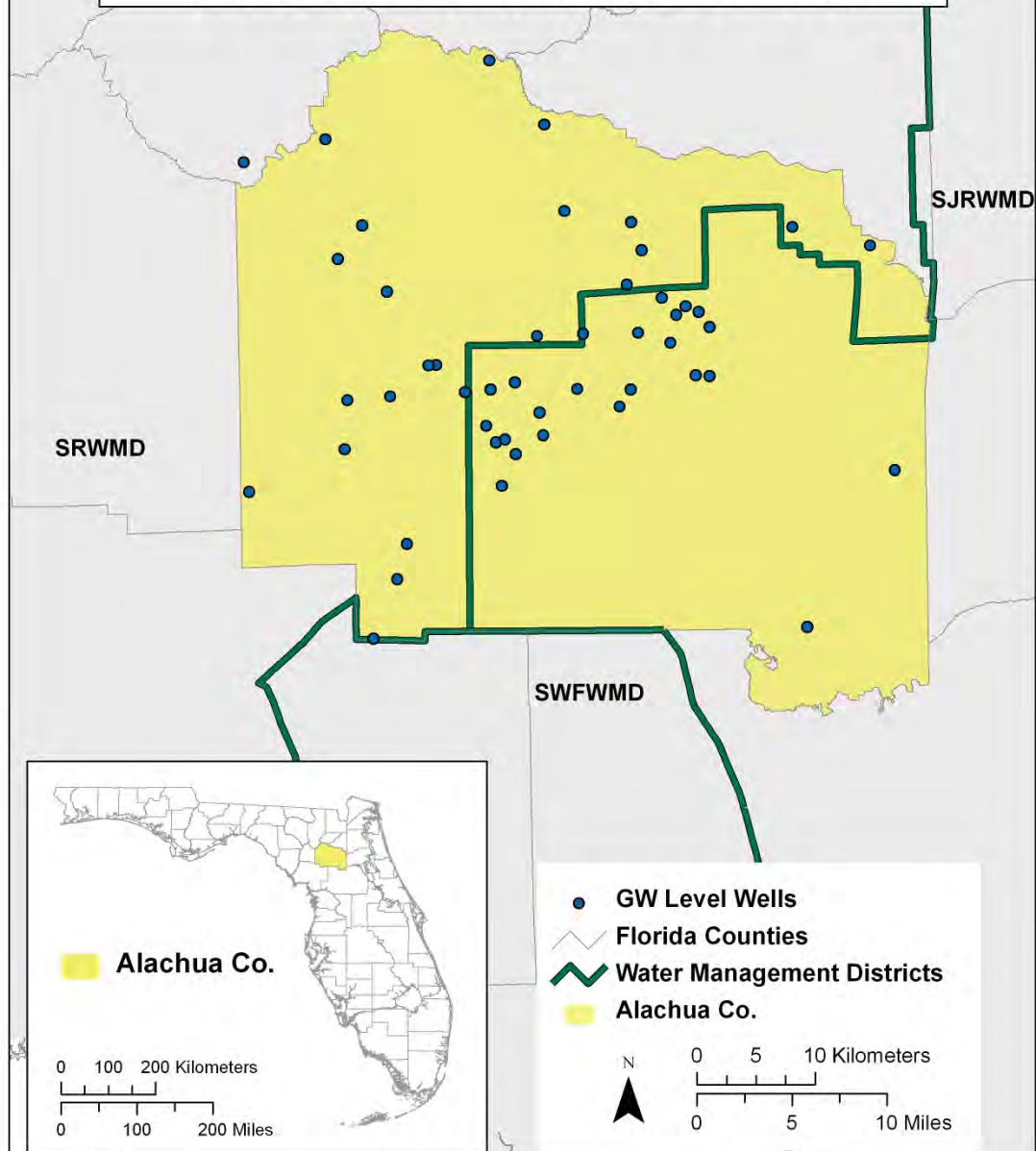
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**ALACHUA COUNTY - UPPER FLORIDAN AQUIFER
GROUNDWATER LEVEL
REAL PERIOD OF RECORD: 1998 - 2011**



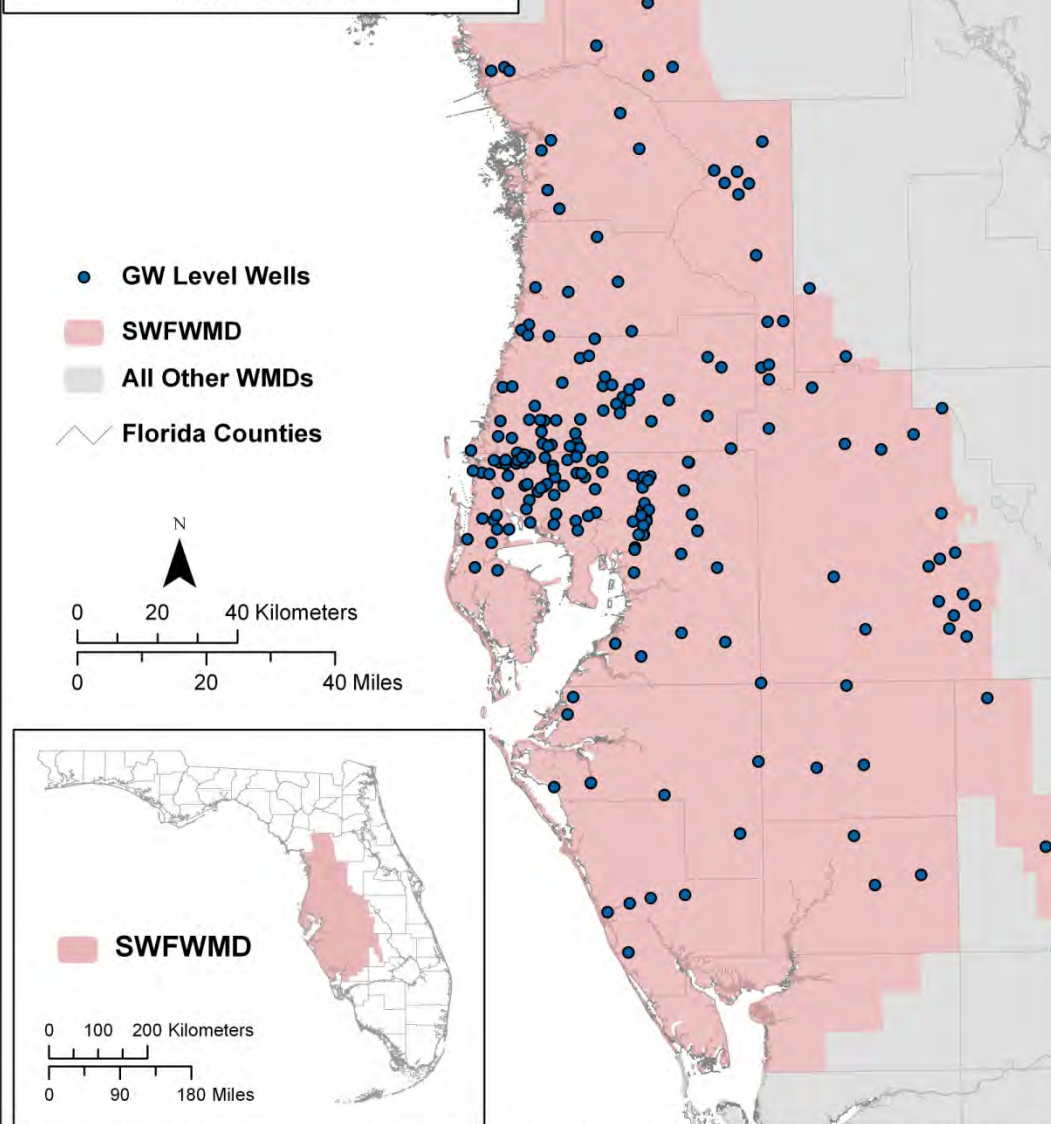
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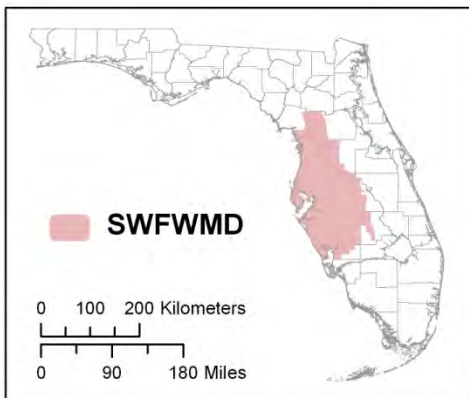
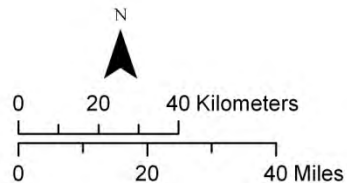
**SWFWMD
UPPER FLORIDAN AQUIFER
GROUNDWATER LEVEL
REAL PERIOD OF RECORD:
1992 - 2011**



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**SWFWMD
UPPER FLORIDAN AQUIFER
GROUNDWATER LEVEL
REAL PERIOD OF RECORD:
1998 - 2011**

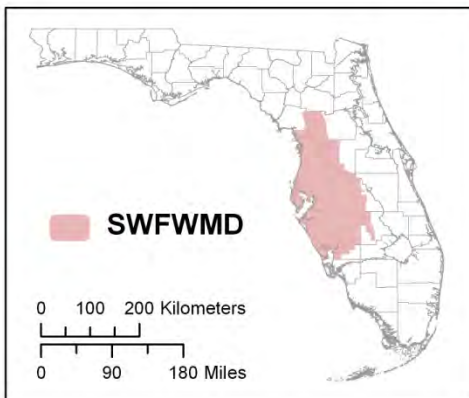
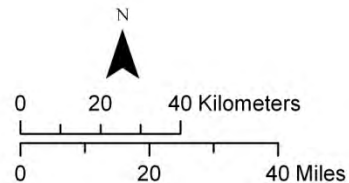
- GW Level Wells
- SWFWMD
- All Other WMDs
- Florida Counties



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**SWFWMD
UPPER FLORIDAN AQUIFER
GROUNDWATER LEVEL
REAL PERIOD OF RECORD:
2007 - 2011**

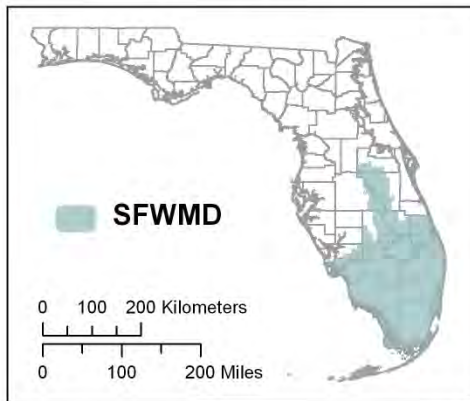
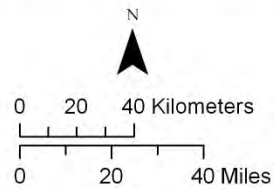
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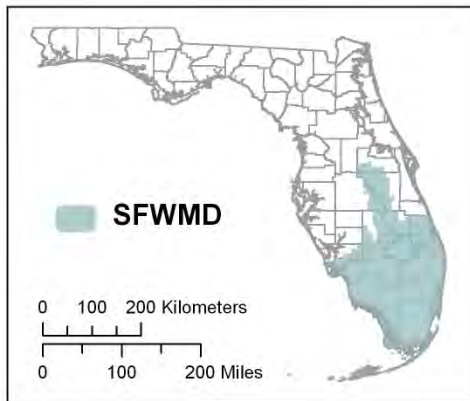
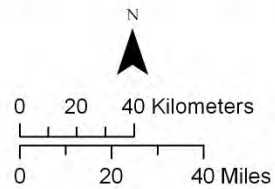
**SFWMD
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REAL PERIOD OF RECORD:
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- GW Level Wells
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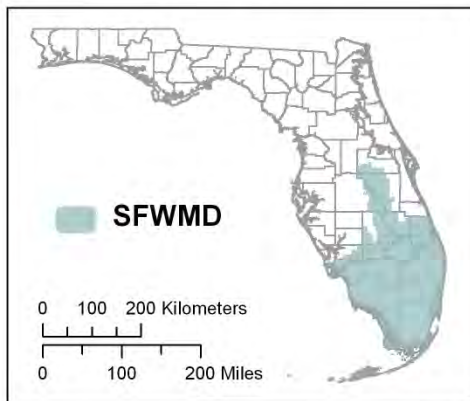
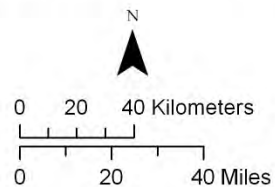
**SFWMD
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GROUNDWATER LEVEL
REAL PERIOD OF RECORD:
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- Florida Counties

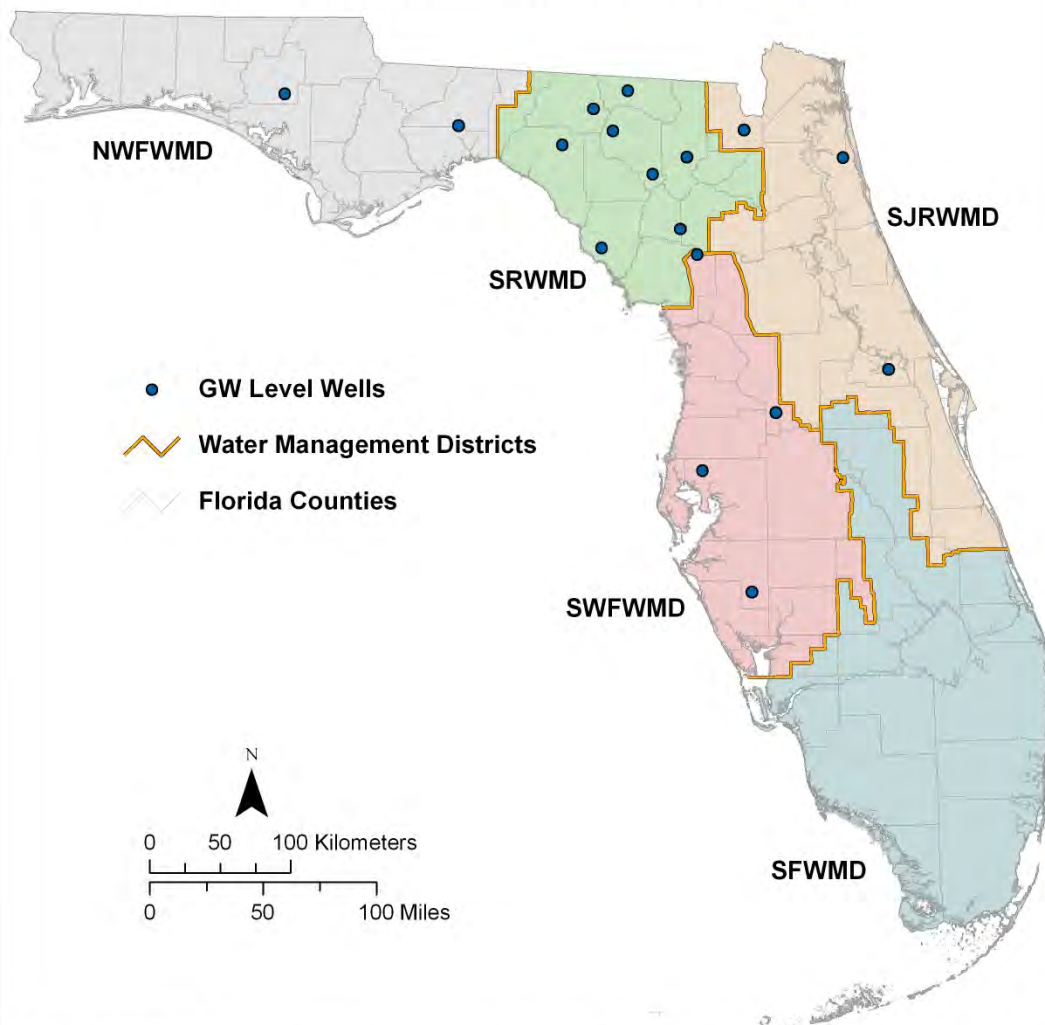


**SFWMD
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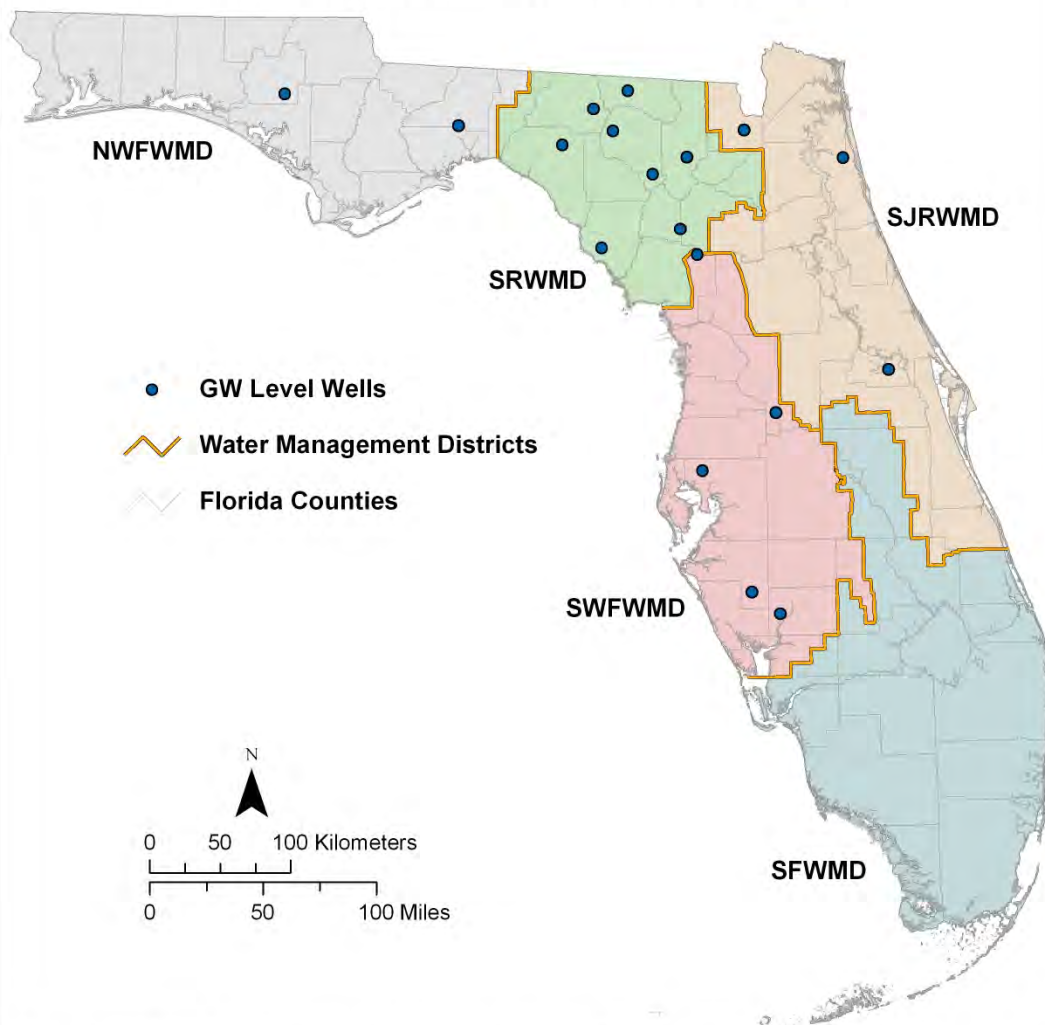


**DEP - UPPER FLORIDAN AQUIFER
GROUNDWATER LEVEL
REAL PERIOD OF RECORD: 1992 - 2011**



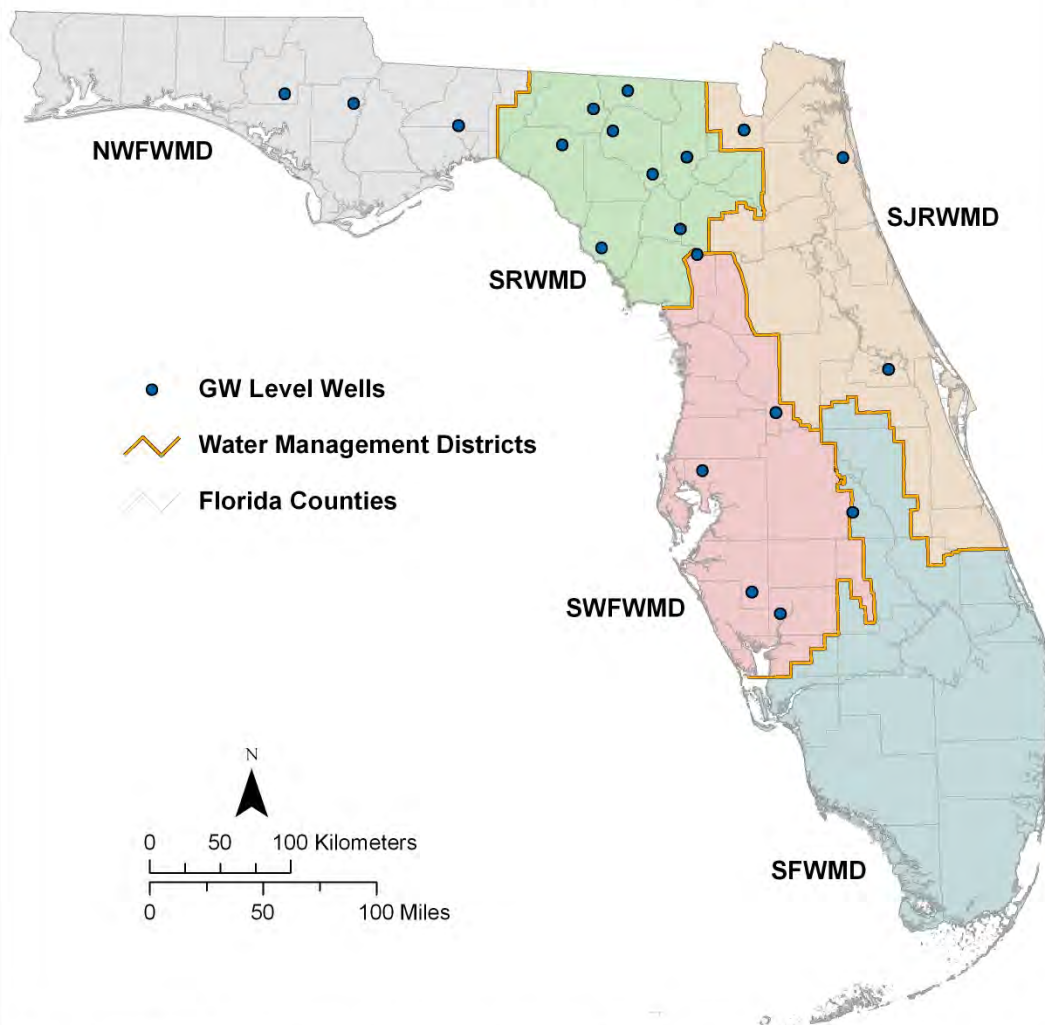
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**DEP - UPPER FLORIDAN AQUIFER
GROUNDWATER LEVEL
REAL PERIOD OF RECORD: 1998 - 2011**



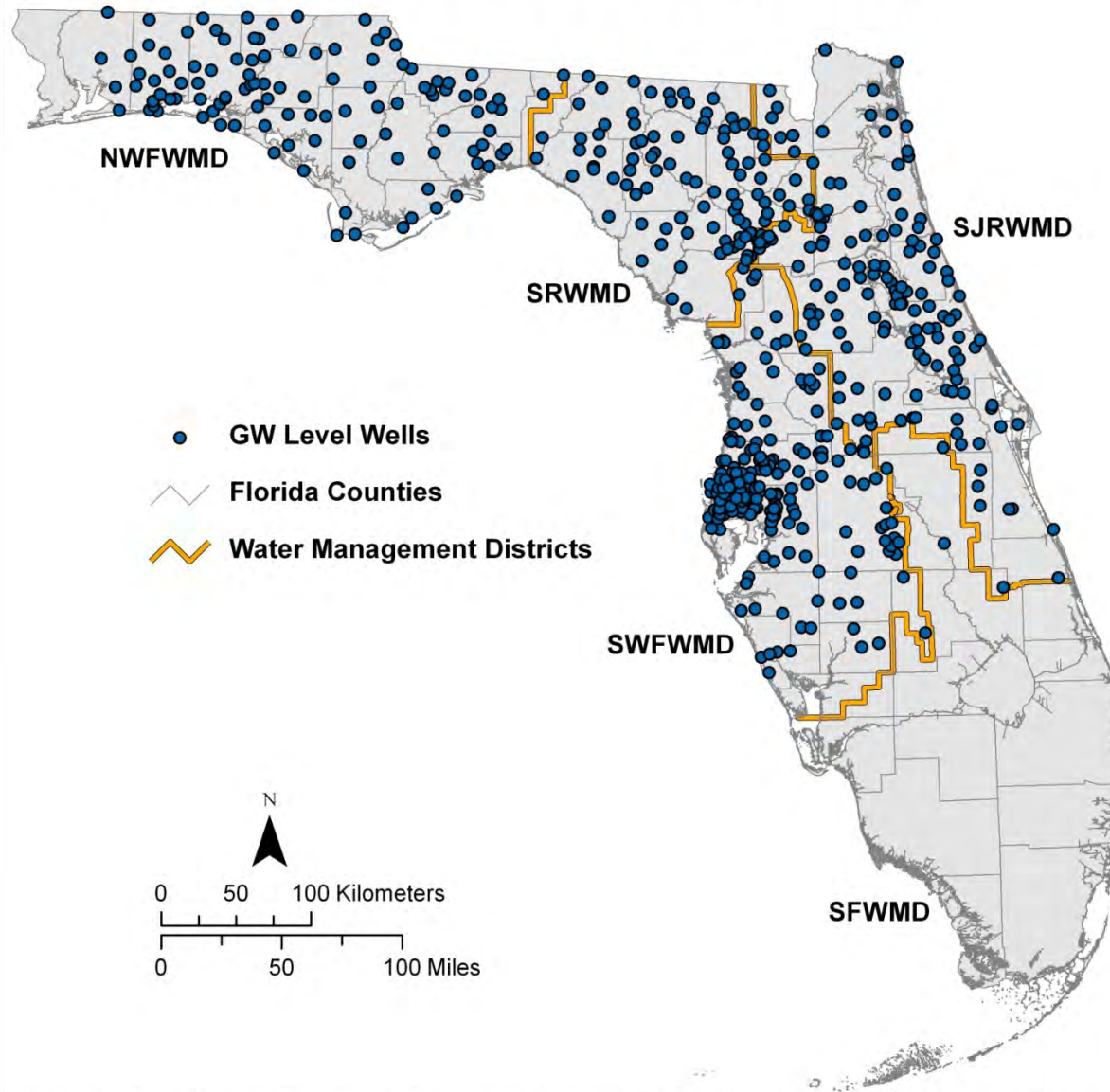
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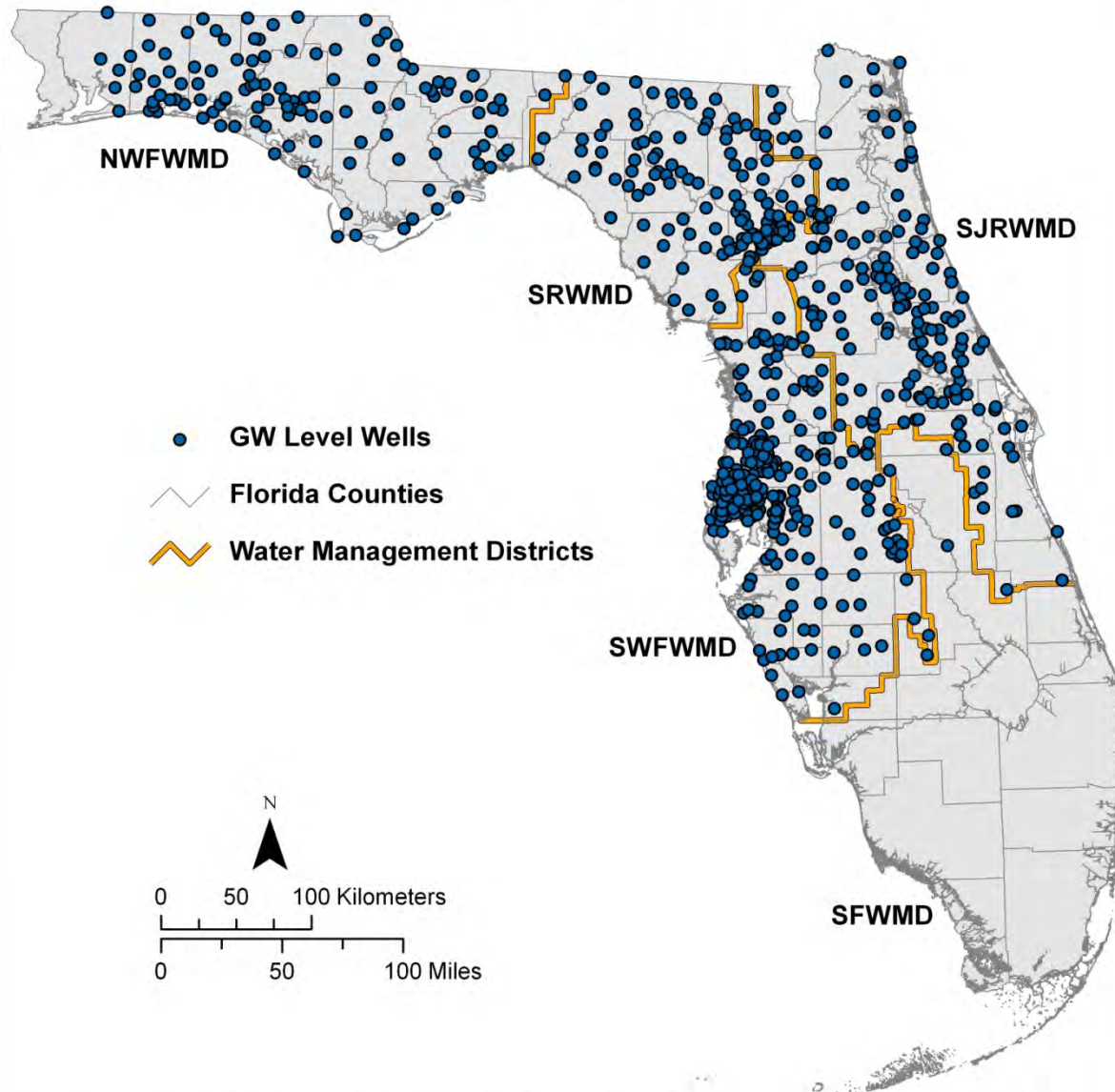
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STATEWIDE - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 1992 - 2011



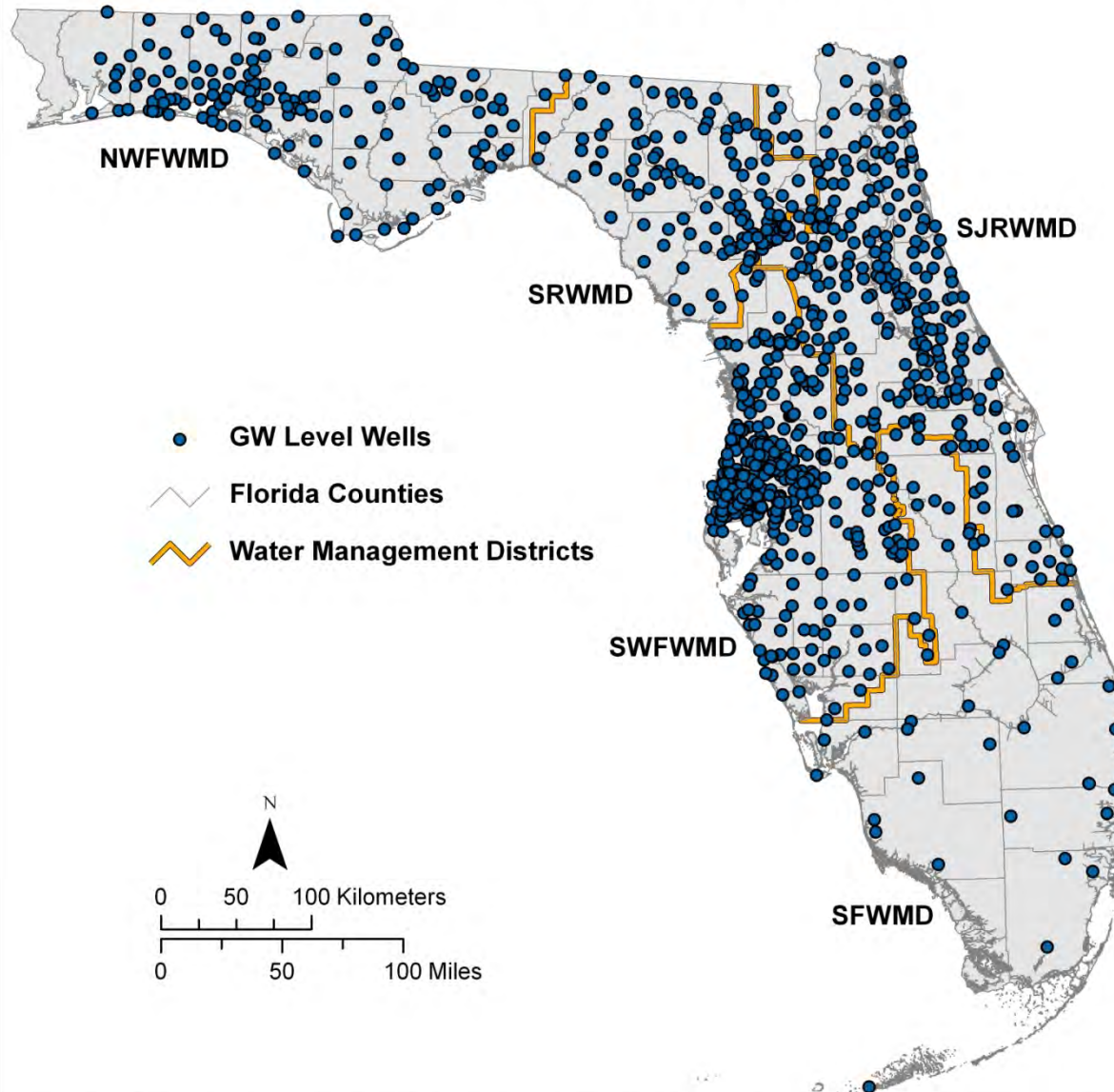
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STATEWIDE - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 1998 - 2011



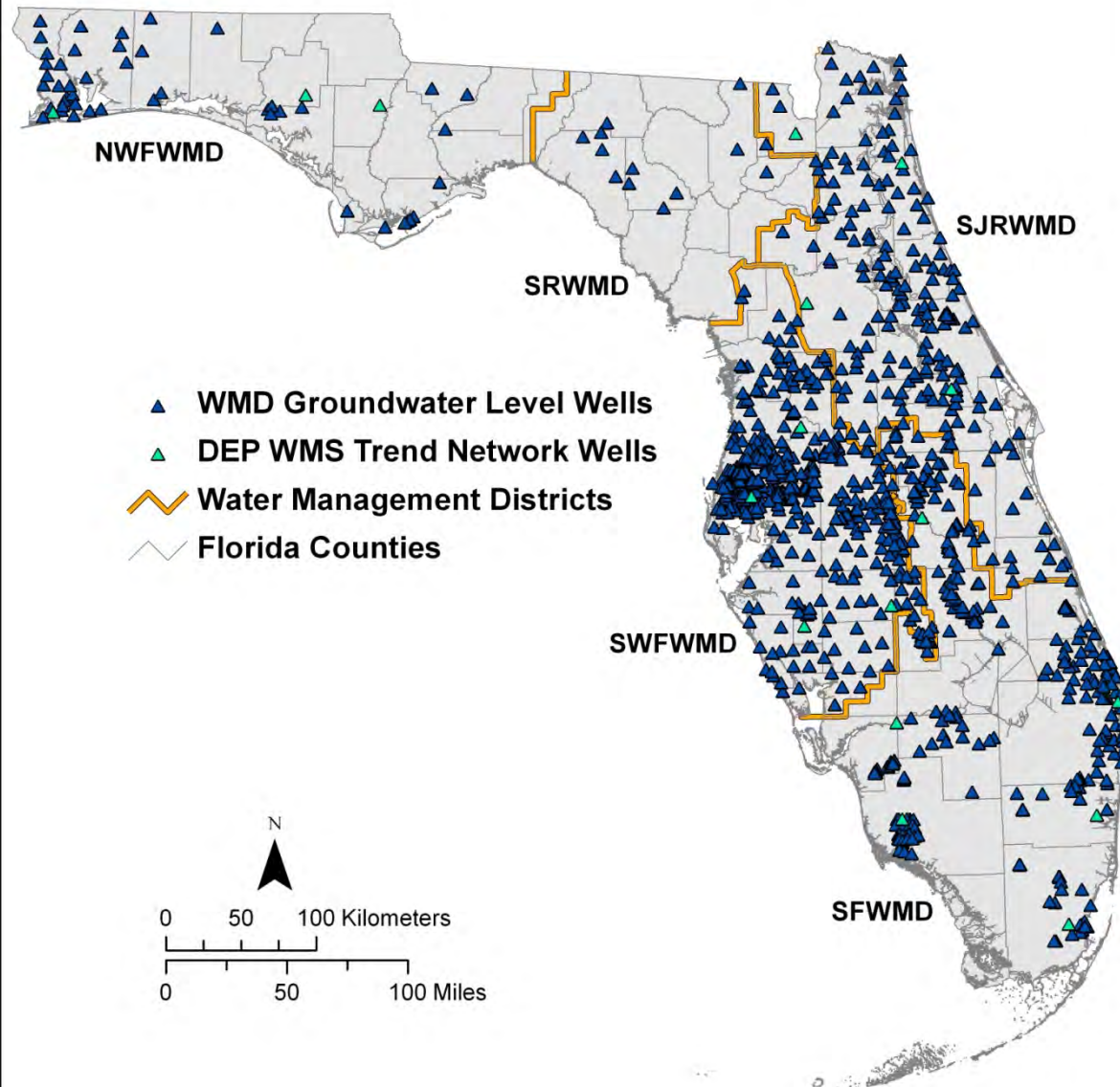
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STATEWIDE - UPPER FLORIDAN AQUIFER GROUNDWATER LEVEL REAL PERIOD OF RECORD: 2007 - 2011



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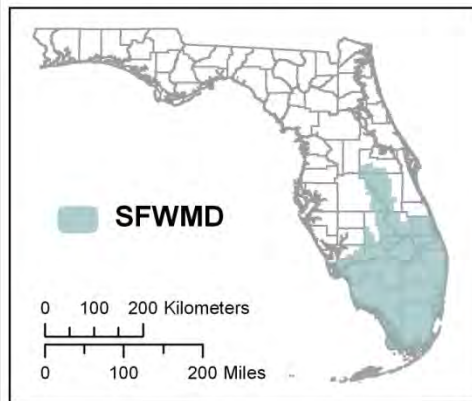
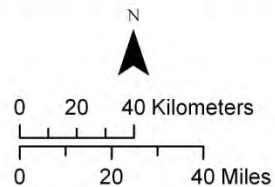
GROUNDWATER LEVEL SURFICIAL AQUIFER SYSTEM



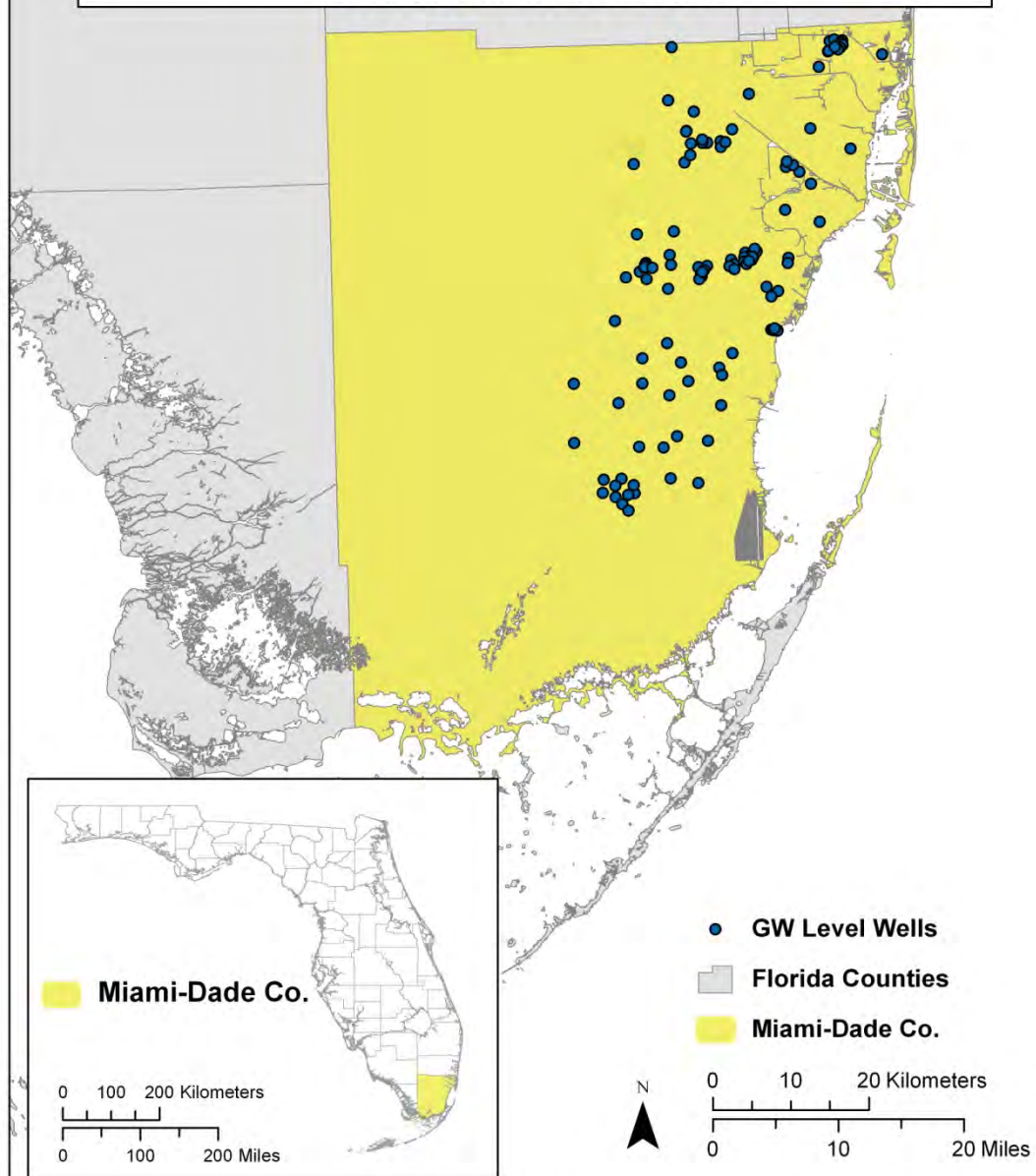
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SFWMD - CONSUMPTIVE USE PERMITS - ALL WELLS

- ◆ CUP Wells
- SFWMD
- All Other WMDs
- Florida Counties



MIAMI-DADE COUNTY BISCAYNE AQUIFER (SURFICIAL AQUIFER SYSTEM) GROUNDWATER LEVEL



Created July 26, 2012 by Florida Department of Environmental Protection staff in 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.

Pilot Study Issues - Continued

- Periods of Record (POR)
 - 1992-2012 (605 wells)
 - 1998-2012 (753 wells)
 - 2007-2012 (1065 wells)
- Number of Observations and Data
- PR Algorithm

One Percentile Rank Definition (There are others)

- (Triola, 1998) The number of observations in a distribution less than x , divided by the total number of obs (n), and then multiplied by 100
- For Example, what is the PR of 51?
 - 1, 5, 9, 11, 13, 24, 32, 32, 33, 34, 46, 48, 48, 48, **51**, 52, 135, 137, 141, 287
 - $PR_{(51)} = [(no\ obs < x) / (n)] \cdot 100$
 - $= [14/20] \cdot 100 = 70$
 - **$PR_{(51)} = 70$**



Potential Modification to Pilot Study (Dave DeWitt)



SNW Data Transfer/Storage

(Mark Hoyer, Jay Silvanima)



Possible Generation UFA Potentiometric Maps (Sandy Kinnaman)



Possible Development of a Water Quality Index for Saline Indicators (Scott Prinos)

Closing Issues (RC)

- Discussion if needed
- Next Meeting and Adjournment
 - Wednesday, Nov. 7 from 1:00 – 3:00 PM ?