Florida Water Resources Monitoring Council (FWRMC)
Public Meeting (Webinar) of Salinity Network Workgroup – November 7, 2012

Attendees:

Agency	Name
Florida Department of Environmental Protection (DEP)	Rick Copeland
DEP	Gail Slone
DEP	Stephanie Sunderman
DEP	Jay Silvanima
DEP	Tom Seal
DEP	Terry Frohm
DEP - Florida Geological Survey (FGS)	Paul Hansard
Northwest Florida Water Management District (NWFWMD)	Tony Countryman
St. Johns River Water Management District (SJRWMD)	Don Boniol
SJRWMD	Tom Mirti
Southwest Florida Water Management District (SWFWMD)	Dave DeWitt
SWFWMD	Granville Kinsman
South Florida Water Management District (SFWMD)	Cindy Bevier
SFWMD	Lucia Baldwin
SFWMD	Kim Hanes
United States Geological Survey (USGS)	Scott Prinos
Alachua County (Co.) Environmental Protection Department	Jim Myles
Broward Co. Water Management Division	Francis Henderson
Miami-Dade Co. Department of Regulatory and Economic Resources	Susan Markley
Save the Manatee Club	Courtney Edwards

Welcome / Introductions / Review
Rick Copeland (RC) welcomed everyone to the Salinity Network Workgroup (SNW) meeting and reviewed the agenda, noting that the presentation order has changed slightly from the order listed on the agenda.

Discussion of Miscellaneous Issues:
(Presentation slides can be found in the 2012 archive section of the FWRMC website.)
Potential New SNW Members
At the last SNW meeting, RC indicated that he would prepare letters to invite other counties to participate in the SNW. Currently, RC is about 90% finished compiling a list of contacts at the counties, and a formal letter of invitation has been drafted.

Framework Document
RC indicated the preamble, mission, goals, and objectives were ratified by SNW participants after the last meeting. RC reviewed the ratified elements, and indicated that the group can propose modifications at any time.

- Dave DeWitt (DD) suggested removing the reference to “monitoring quantity” from the SNW objectives because it seems to be outside of the focus of the SNW. RC indicated that the current use of the term “quantity” was referring to monitoring water levels. DD indicated that monitoring water levels / quantity still seems to be beyond the focus on the salinity monitoring network because a different group of participants will need to be involved to address questions related to water quantity. Leaving the reference to “quantity” would also require the group to quantify the loss of fresh water

resources due to saltwater encroachment at the coastal margin. ***RC suggested that DD should write a proposal summarizing the suggested changes and present it at the next meeting,*** since the current versions of the preamble, mission, goals, and objectives have been ratified.

- RC reviewed several potential additional objectives, based on suggestions from Scott Prinos (SP), 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 evaluating 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 standard operating procedures that will be used to implement these advances.

RC reviewed the status of the overall framework document. The ten steps described in EPA's Elements of a State Water Monitoring and Assessment Program (http://www.epa.gov/owow/monitoring/repguid.html) are being used as a guide. The first two steps (Program Strategy and Monitoring Objectives) are complete. The next six steps (Monitoring Design, Indicators, Quality Assurance, Data Management, Data Analysis and Assessment, and Reporting) are dependent on resolving many of the issues addressed by the pilot study, including data transfer. The final two steps (Programmatic Evaluation and General Support and Infrastructure Planning) can be addressed at a later date.

SNW Glossary

DD indicated that the SNW will adopt a glossary of terms and acronyms for inclusion in the framework document. Subsequent SNW products will use the terms, as defined in the glossary.

- Previously submitted terms will be included.
- References and sources for definitions will include USGS studies and reports.
- Will include key definitions to be decided on by the group (e.g. saltwater vs. seawater, intrusion vs. encroachment, and fresh vs. brackish vs. saline water).
- ***DD will forward an expanded list of terms, acronyms, and suggested definitions to the SNW participants for review prior to the next scheduled meeting.***
- ***RC suggested that SNW participants send suggestions for additional terms to be included in the glossary.*** DD clarified that suggestions should be written in easy to understand language, and be limited to terms that are relevant to FL.

Currently, draft glossary terms include:

- Saltwater intrusion: 1. The migration of saltwater into freshwater aquifers under the influence of groundwater development (Freeze and Cherry, 1979). Note this implies that the process is human induced. 2. The migration of saltwater that has entered previously fresh portions of the aquifer regardless of the sources of this saltwater (S. Prinos, U.S. Geological Survey (USGS), personal communications). Note this does not imply a cause for the process.
- Saltwater encroachment: 1. The displacement of fresh groundwater by the advance of saltwater due to its greater density (Neuendorf et al., 2005). 2. The gradual lateral movement of saltwater along the base of the aquifer from the sea as a result of lowered freshwater head in the aquifer or rising sea levels (S. Prinos, U.S. Geological Survey (USGS), personal communications). Note the implication of a gradual process.
- Salinity: The measure of dissolved salts (i.e. sodium, chloride) in water or soil. Measured by weight in parts per thousand or parts per million (milligrams per liter) as total dissolved solids. Measured also by electrical conductivity. The salinity of ocean water is in the range 33-38 parts per thousand (ppt), with an average of 35 ppt (Poucher and Copeland, 2006).
- Specific conductance: The measure of a water's ability to conduct an electrical current expressed in microseimens (micromhos) per centimeter at 25° C. It is related to the amount of dissolved salts (ions) in the water (Field, 2002).
- Freshwater: 1. Water without significant amounts of dissolved salts such as sodium and chloride. Water characteristic of rain, rivers, ponds, and most lakes (Wyman and Stevenson, 2001).
- Saltwater: Water, consisting of, or containing, salts (Modified from http://www.merriam-webster.com/dictionary/saltwater, accessed 09/20/2012)

- Seawater: Water that has a chemical composition similar, or equal, to that found in oceans and seas. If seawater intrudes or encroaches into an aquifer, or if it flows inland up a canal or flowing stream, it becomes mixed with freshwater. As seawater becomes diluted with freshwater, it becomes saltwater (Modified from communications with S. Prinos (USGS)).
- Surface water: All water on the surface of the Earth, including fresh and saltwater, ice, and snow (Jackson, 1997).
- Groundwater: That part of subsurface water in the zone of saturation. Loosely, all subsurface water as distinct from surface water (Jackson, 1997)
- Analyte: A substance or chemical constituent that is undergoing analysis. (http://dictionary.reference.com/browse/analyte. Accessed 09/20/2012). It is sometimes referred to as a parameter.
- Index (Economics): A single number calculated from an array of …quantities.

Potential Development of a Water Quality Index for Saline Indicators

Scott Prinos (SP) presented information on the potential development of a WQ index for Saline Indicators.

- Before developing an index, it is important to define what we are trying to understand. Potential topics / questions include: identifying sources of saltwater intrusion, identifying potential threats to public water supplies, identifying detrimental changes to ecosystems, identifying methods of reducing or preventing detrimental effects of saltwater intrusion, and identifying optimum monitoring strategies.
- Saltwater intrusion is complex in many areas of FL. Droughts, leakage from canals, and movement of the saltwater interface are issues that must be considered. Saltwater infiltration can occur from the ocean through tidal marshes, boat basins, bays and estuaries. Saltwater encroachment can also occur at the base of the aquifer from the ocean. Saltwater leakage can occur between aquifers in areas where the confining unit between them is thin. Wells with long screen intervals or poor / degrading casing can facilitate saltwater intrusion from one aquifer to another. Saltwater leakage into the aquifer can occur from unprotected canals, or in areas around protected canals.
- Geochemistry can be used to evaluate potential sources of saltwater. The age of the water, sources of the water, and the interaction with aquifer materials can be examined. These analyses vary in complexity, depending on the analyte of interest.
- Identifying potential threats to the public water supply is dependent on designing networks (or selecting wells from existing networks) that will provide the optimum monitoring. For example, monitoring wells that are shallower than public supply well intakes, or installed in a different aquifer or confining unit will not be ideal for detecting potential threats to the public water supply.
- Potential detrimental changes to the ecosystem include those related to rising sea-level. If sea levels rises estuaries will face changes in salinity, flow, water level, sedimentation, temperature, wind effects, and storm surge. Monitoring needed to identify these changes in estuaries includes collecting continuous conductivity measurements, and monitoring freshwater flow, water levels, wind direction, wind velocity, and storm surge. For example, current USGS monitoring efforts in select estuaries include monitoring daily temperature at different depths, daily specific conductance at different depths, and daily gauge height.
- In order to effectively choose a management strategy for reducing detrimental effects of saltwater intrusion, it is important to understand the problem that is affecting the well field. Current management practices include installing salinity control structures which increase the freshwater head and block direct inland flow, improving existing structures to reduce leakage around structures, reducing withdrawals from the aquifer to maintain the freshwater head, plugging leaking wells, and implementing water reuse programs.
- Considerations for developing optimum monitoring strategies.
  - Open ended wells may be too shallow to detect changes in the saltwater interface
  - Long screened wells may be broken, preventing measurement of processes in the saltwater interface.
  - Long open interval wells may be partially collapsed or obstructed, preventing measurement of processes in the saltwater interface.
  - Pumping wells immediately before collecting samples may result in collection of samples that are primarily freshwater and not representative of the saltwater front.

  - Need wells that permit sampling of the saltwater interface, such as deep short screened wells or long open interval wells where pumps can be lowered deep enough to sample water from the saltwater interface.
  - Alternative means of measuring salinity and identifying the saltwater front include geophysical methods using probes that measure electromagnetic induction through the PVC casing of the well at any depth.
- Considerations for the parameters / analytes to be included in the monitoring design.
  - Chloride concentration has been collected by USGS for years and EPA has a secondary standard for drinking water for chloride equal to 250 mg/L. However, well design, condition, and sampling method frequently affect the concentration measured, and analysis can be time consuming and conducted using different methods (e.g. Hach kit, silver nitrate titration, ion selective electrode, and ion chromatography), some of which have potential interferences.
  - Specific conductance has been collected by USGS for years and is a very versatile index that generally correlates closely with chloride, though deviation of data from the linear trend increases with increasing chloride concentration. This analyte is relatively easy to measure, can be measured in situ or from a sample, and can be collected as profiles or as a time series. However, well design may affect measurement results, quality of measurement is subject to calibration and equipment limitations, and other constituents may contribute to conductance.
  - Several data providers collect total dissolved solids information, though data availability may not be as widespread as that for other parameters. EPA has a secondary standard for drinking water for total dissolved solids equal to 500 mg/L. However, well design, condition, and sampling method frequently affect the concentration measured, and analysis by labs is generally required.
  - Geophysical methods can be used to identify the saltwater front and can provide more detailed information than any other way of monitoring salinity. Chloride concentrations from samples collected have been shown to correlate well with induction log measurements. This data can potentially be collected without a well, and can provide information in difficult to access areas. For example, induction logs can show both the gradual encroachment of saltwater at the base of the aquifer and shallow short-term influxes of conductive water that may be related to leakage from nearby canals.
  - Geochemistry methods can be used to identify the saltwater source.
  - Regardless of the index selected, it is important to understand several key factors including the effect of well design on the data, the hydrology, and which source of saltwater is being evaluated. It is important to use appropriate SOPs for measurements or sample collection and analysis, to choose monitoring sites carefully based on the goals of the network, and to quality assure results.
- Generally, salinity does not change as rapidly or vary as extensively as water levels do. Therefore, evaluating changes in salinity should not require complex analyses such as frequency analysis. In many instances, the changes follow linear relationships.
- USGS website for evaluating saltwater intrusion in Miami-Dade County (www.envirobase.usgs.gov/flims/index.htm) depicts the landward extent of the saltwater interface and monitoring wells' chloride concentration and associated trends. Maps from different years can be compared to depict movement of the saltwater front.

RC indicated that South FL is ground zero for saltwater intrusion studies in the world. SP added that Silver Bluff was one of the first studies to understand the mechanism for movement of saltwater into the aquifer. Some of the saltwater models that are being used throughout the world were developed for South FL.

Tom Seal (TS) asked SP if his monitoring design diagrams suggest that only unimpacted wells should be used to detect the saltwater front. SP clarified that the diagrams included in several slides were intended to illustrate that the placement of existing monitoring wells may not always be useful for detecting potential threats to the public water supply. Ideally, long before the saltwater interface reaches the well field, several freshwater wells should be identified / installed that fully penetrate the aquifer just ahead of the saltwater interface, along with wells just inside and ahead of the saltwater interface to monitor if it is advancing or retreating. TS asked how that design could be applied to other parts of the state with limited resources for installing new wells. SP indicated that impacted wells still provide valuable information,

including illustrating the need to install additional monitoring wells to fully understand where the saltwater front is. An unfunded network can still serve the valuable function of identifying problems, and relaying information to managers about where additional monitoring resources are needed.

DD indicated that SWFWMD has done analysis of their existing groundwater (GW) monitoring network and realized that there was a need for additional data and monitoring points. There was some reliance on GW modeling in conjunction with installation of numerous sites in the late 1990s and early 2000s, and the evaluation included the entire coastal GW monitoring network and some regulatory (WUP) wells. Currently, there is still a need for more monitoring points to fully characterize the area of concern.

Francis Henderson (FH) commented that the number of wells that have been installed in south FL is incredible. In 1998 Broward County and USGS had a grant from SFWMD to evaluate the condition of existing monitoring wells and develop a network through the county. Many wells that were put in were for special case studies, such as the issues with saltwater intrusion in the southern part of the county, while others were put in under requirements for consumptive use permitting. Data available from the vast number of wells was used to interpret the line between the freshwater and intruded wells. This information was used to inform the installation of 11 new wells including wells at the base of the Biscayne Aquifer. Many new wells were in freshwater for several years, but then saltwater began to move in, and allowed managers to define the location of the saltwater front within ~0.5 miles.

RC invited the following people to give presentations at the next meeting in February

- ***SP - how to differentiate between intrusion and upwelling***
- ***FH - monitoring the saltwater front in Broward County***
- ***DD - monitoring in the Southern Water Use Conservation Area (SWUCA)***

TS asked for additional information about purging wells and taking samples at the top of the water column versus taking deep samples. SP clarified that the decision to purge should relate to well design. If the screen length is short (≤ 5 feet), purging is recommended to get rid of contaminants in stagnant water that may be sitting in the well. If the well is long with an open borehole, purging will result in preferentially recharging with freshwater because it is less dense and flows more readily. Alternatively, long open interval wells can be pumped from the top to purge, but a submersible pump should also be placed at depth to get a more representative sample. FH added that he is currently conducting studies to see if continuous conductivity probes can be used for their monitoring network instead of monthly chloride sample collection. Complications arise in scenarios where wells tap multiple aquifers (e.g. screened interval is in the lower surficial aquifer but well is open to the Biscayne Aquifer).

Status of SNW Pilot Study

RC reviewed the pilot study plan

- Goal is to produce one percentile rank index (PRI) map of GW level during Spring 2010 for the upper Floridan aquifer (UFA)
- Purpose is to see what obstacles are present when attempting to create this product, and to see if the SNW can overcome those obstacles. If the pilot study is successful, the SNW can begin periodically producing percentile rank (PR) maps for all aquifers or other mappable units of interest.
- Possible future projects include producing side-by-side potentiometric maps with PR maps.
- Have collected locations of UFA wells with GW level data with several common periods of record (POR): 1992-2012, 1998-2012, and 2007-2012. The density of wells increases as the POR gets shorter and only includes more recent years (605 wells for 1992-2012, 735 wells for 1998-2012, and 1065 for 2007-2012). Well density is very sparse in areas of the state where UFA is not primarily used (south FL and western panhandle). Despite lower densities, SNW participants have indicated that it is desirable to use the longest POR possible.
- Still need to determine if data from consumptive use permit wells will be of use for this study.
- Still need to determine the typical observation frequency during the selected POR to inform observation frequency used for analysis (e.g. Should data be compiled as monthly means?)
- Still need to select appropriate algorithm for calculating PRs.

Susan Markley (SM) requested that RC update the maps in his presentation to reflect the additional information that she has supplied from Miami-Dade Co. and USGS.

Possible Generation of UFA Potentiometric Maps

RC indicated the generation of statewide potentiometric maps may be of interest to upper management at DEP.

DD indicated that producing potentiometric maps seems beyond of the scope of the SNW's mission.

Granville Kinsman (GK) indicated that staff from SWFWMD, SJRWMD, and SRWMD have been working together to develop potentiometric maps for their regions. This collaboration has led to the development of a uniform potentiometric surface across the three regions. In the future, SRWMD may be able to assist NWFWMD with potentiometric surface generation and expand the surface's coverage to include their district too.

SNW Data Transfer / Storage

RC reviewed the draft set of data elements that had been distributed before the workgroup meeting and proposed that one additional data element, LOCATION_COLLECTION_METHOD (the method or mechanism used to derive the location measurement), be included in the list (see table below). RC clarified that MEASURING_PT_ELEVATION will only be required if WATER_LEVEL_VAL(ft above reference pt) is not supplied. RC also clarified that transferring data for FIELD_SPECIFIC_COND(µS/cm@25 °C)_VAL will not be required for the pilot study.

COLUMN NAME	NORMAL VALUE	DATA TYPE	DATA SIZE
UNIQUE_WELL_ID	Station/Result	VARCHAR2	20
ORGANIZATION_MAINTAINING_WELL	Station/Result	VARCHAR2	50
STATION_NAME	Station	VARCHAR2	100
LATITUDE	Station	FLOAT	9.6
LONGITUDE	Station	FLOAT	9.6
XY_DATUM	Station	VARCHAR2	10
LOCATION_COLLECTION_METHOD	Station	VARCHAR2	4
AQUIFER_TAPPED	Station	VARCHAR2	40
MEASURING_PT_ELEVATION	Sample/Result	FLOAT	7.2
WATER_LEVEL_VAL(ft below MP)	Sample/Result	FLOAT	7.2
WATER_LEVEL_VAL(ft above reference point)	Sample/Result	FLOAT	7.2
Z_DATUM	Sample/Result	VARCHAR2	10
FIELD_SPECIFIC_COND(µS/cm@25 °C)_VAL	Sample/Result	FLOAT	8.1
MEASUREMENT_COLLECTION_DATE	Sample/Result	DATE	
AGENCY_COLLECTING_ DATA	Sample/Result	VARCHAR2	50

RC and Jim Myles (JM) expressed concern that some agencies have switched to using the NAVD 88 datum, while others are still using the NGDV 29 datum. At the agencies that have switched to NAVD 88, wells with long PORs were likely survived in using the NGDV 29 datum and then resurveyed in at the NAVD 88 datum. It will be important to document the method used to convert between the vertical datums.

RC summarized additional concerns that SNW participants had submitted in response to the draft set of data elements to be transferred for the pilot study.

- Does the USGS already have a PRI index? If so, could it be used?
  - RC indicated that the USGS Groundwater Watch (GWW) website (http://groundwaterwatch.usgs.gov/) contains data from USGS and their cooperators. RC asked SP if these data could be used to create the UFA PRI maps, if additional data were supplied to help fill in the current gaps in coverage. SP indicated that the software used for GWW was

developed by a private organization working with USGS, so there could be a cost associated with expanding the project. ***SP and RC will collect additional information by contacting others who were more closely involved in the GWW application / database development.*** SP clarified that all of the data is USGS cooperative data that resided in USGS databases. The GWW software uses that data to determine the percentile classes.

- RC indicated that all data on the GWW website are not from the UFA, and we will need to find out if it is possible to easily generate a table of data for only UFA wells from the information available.
- RC asked if the wells in the USGS databases are different than those in the WMD databases. SP indicated that many wells are in both USGS and WMD databases.
- SM asked if data from additional monitoring locations could be added to the existing data in the GWW database to make an updated map using the methods that already exist in the GWW project. SP suggested that it might be possible for the consulting firm that developed the GWW project's website to use the same framework to create a separate website for the SNW data. ***Gail Sloane (GS) asked SP to find out what the cost for developing and maintaining that effort would be.***
- GK indicated that the GWW map currently includes many sites that have dropped out of the USGS network over the past four years. Currently there are only 18 wells from SWFWMD in the GWW network, so the number of additional monitoring locations that would need to be added to the existing GWW database is quite large.
- Tom Mirti (TM) agreed that the GWW program does not have adequate well coverage in some areas, and expressed concern that GWW allows PR values to be calculated for wells with less frequent sampling than many of the wells of interest for the SNW studies.
- FH shared information on the methodology used to calculate PRs for the GWW project.
  - A more detailed explanation of a percentile is available at http://groundwaterwatch.usgs.gov/help1.htm.
  - GWW percentile statistics are calculated according to the National Institute of Standards and Technology's (NIST) handbook definition of percentile computations. (http://www.itl.nist.gov/div898/handbook/prc/section2/prc252.htm).
  - Percentiles are estimated from N measurements as follows:
    For the pth percentile: set p(N+1) equal to k + d for k an integer, and d, a fraction greater than or equal to 0 and less than 1.
    For $0 < k < N$, $Y(p) = Y[k] + d(Y[k+1] - Y[k])$
    For $k = 0$, $Y(p) = Y[1]$
    For $k = N$, $Y(p) = Y[N]$

- Much data are already in public databases. Can the SNW simply use that data?
  - RC indicated that the data necessary to produce a PRI map for the UFA currently reside in many different databases. In order to produce the map for the pilot study, the SNW will need to transfer data. Similarly, if the SNW wants to produce additional PR maps in the future, we will need to transfer data. Prior to performing analysis, data will need to be converted to a standardized format. Proposed solutions include (1) having each participating agency transfer their data "as is" and then have one person at a central location reformat everyone's data, or (2) having each participating agency reformat their own data to a common format prior to transferring it to a central location. RC and others in the Watershed Monitoring Section estimate that it would take one staff member approximately one week to reformat all data required for the pilot study.
- The effort to convert data to the "Standardized" format requires efforts from other parts / sections of participating organizations. We may not be able to convince them to convert data, due to insufficient resources.

RC indicated that he contacted each of the agencies that would be involved in the pilot study, and asked them if they would be willing to transfer the GW level data for the UFA pilot study.

- NWFWMD, SJRWMD, SFWMD, and Alachua Co. have no objections and are willing to supply the requested data.
- SRWMD indicated that they currently have insufficient resources to dedicate staff to fulfilling the data transfer request.

- SWFWMD were opposed to transferring the GW level data, but proposed having the participating agencies calculate the PR values and then transfer the resulting information.
- USGS indicated that most of their data are already represented in the WMD's databases.
- Other SNW participants may have insufficient resources to dedicate staff to fulfilling the data transfer request.

DD asked the group to consider alternative methods for accomplishing the tasks of data processing and producing the PR maps. RC's current proposal involves mass transfer of large volumes of water level data that are already being housed and maintained in public databases. SWFWMD staff have reservations about creating another database / data warehouse for the purpose of one project, and would like to explore other options that are potentially more efficient. SWFMWD's suggested alternative is to have the data custodians at the participating agencies calculate the PRs, and then provide the PR value for each monitoring station, as well as providing methodology documentation. This would require that the group agree upon the methodology being used or evaluate the suite of methodologies being used to determine which ones are compatible with each other.

DD also reviewed the response that he forwarded to the group on 11/7/2012 in reference to the draft data elements document that RC had sent out on 9/6/2012. SWFWMD has already provided station information for wells used in the analysis. SWFWMD staff are willing to calculate the PR value for the requested UFA sites, and supply that information along with the corresponding fluid specific conductance data. GK added that their concern with transferring a very large quantity of GW level data, is that the transferred copy may quickly become out of sync with the original provisional dataset.

GK indicated that he has spoken with staff from SJRWMD and SRWMD to discuss the PR analyses that all three WMDs are already conducting. If PR data will be combined in a statewide map, it will be important to ensure that all data providers are using the same methodology. The methodology currently used by SWFWMD is almost identical to that used by USGS.

TS asked for clarification regarding whether or not SRWMD currently produces PR maps. RC indicated that they do.

RC indicated that he supports using the most efficient methodology for sharing information, and asked the representatives from each of the participating agencies if they would be willing to calculate PR values and transfer those values instead of the GW level data.

- Tony Countryman indicated that NWFWMD does not currently calculate PRs, and would need to evaluate the methodology to see if they would be able to devote an adequate amount of time to performing the analysis.
- JM indicated that he would be willing to evaluate the methodology, once it has been agreed upon, to see if he would be able to devote an adequate amount of time to performing the analysis for the Alachua Co. data.
- Cindy Bevier and Lucia Baldwin indicated that SFWMD does not currently calculate PRs, but are willing to participate and perform the requested analyses.
- SM suggested using the PRs from the USGS GWW database for any wells included in that project.

TS expressed concern that staff from agencies that are not currently producing PR maps may not be able to secure approval from upper management to devote resources to performing the requested PR calculations. DD clarified that if data providers are not able to calculate PRs, it may be desirable to have their GW level data transferred to DEP for calculation of PR values.

TM asked for clarification regarding the goals of producing the statewide UFA GW level PRI map, and suggested that some of the logistical challenges may be worked out by better defining the goals. TM indicated that SJRWMD currently calculates PRs on a monthly basis to give a quick summary of the status of an important aquifer in their WMD. RC responded that the intent of the SNW pilot study was to see if the methods currently used by three of the WMDs could be used to produce a statewide map for the aquifer with the geographic extent that included the greatest number of data providers (the UFA). If the pilot study was successful and participants were able to agree on the methodology to use for

producing these maps, the methods could be used to produce other maps in the future, for any aquifer desired. These maps could be used to provide a summary of the status of each aquifer. TM indicated that there may not be a need to produce a pilot study map because the group should not have any problem producing statewide maps using the methodology that is already being successfully used at the regional (WMD) scale. RC clarified that the goals and objectives of the SNW include defining indices and producing maps at the statewide scale. Currently only three of the five WMDs are producing PR maps, so one of the goals of the pilot study was to see if the PR map effort could be expanded to the statewide scale and involve additional data providers.

DD suggested that the group should recall the primary focus of the SNW, to monitor salinity. GW levels play a role in this effort because there is interest in examining how GW levels relate to changes in salinity and saltwater intrusion in the coastal margins. TS added that there are many other non-coastal areas in FL where saltwater intrusion issues are also important, including areas along the St. Johns River. SP suggested that long-term trends in water levels may be more useful than GW level percentiles for examining relationships with long-term salinity trends and identifying areas where salinity encroachment is occurring. DD indicated that the group may be currently overemphasizing analyzing the GW level information. RC clarified that GW level analysis was selected as a starting point because it seemed like one of the easier analytes to use as a starting point for developing methodologies for coordination. After methodologies had been developed for sharing information, etc., then the group would be able to focus on water chemistry issues and analysis. .

Closing Issues

RC indicated that he will continue discussions via email regarding some of the logistics issues raised.

RC reminded participants that SNW meetings will be regularly scheduled every three months, on the first Wednesday of the month. ***The next SNW webinar meeting will be held on Wednesday, February 6h from 1:00PM – 3:00PM.*** This meeting will include additional discussions of salinity and water quality monitoring issues.