Data Processing and Analysis Report

Groundwater Data Processing and Analysis for the Loxahatchee River Basin

Sponsoring Agency:
South Florida Water Management District
Coastal Ecosystems Division
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Executive Summary

In January 2008, the South Florida Water management District (SFWMD) contracted with the University of Florida (UF) to perform data processing and analysis for a series of twelve groundwater wells in the Loxahatchee River Basin for the period of June 2005 – December 2007. This report details the data processing methods and analysis of these data. Major project steps are summarized below:

1. Raw (binary) data files were converted to comma separated (.csv) files using the AutoCSV program developed by In-Situ Inc.
2. Major gaps in data were identified. Through conversation with SFWMD and Florida Park Service (FPS) staff, several additional data files were found.
3. Data discontinuities were identified and noted, and where, possible, corrected. Field reconnaissance with FPS staff helped to identify an issue with incorrect cable lengths originally provided for some wells.
4. Probe depth readings were converted to water table elevations and depths based on well elevations, corrected cable lengths, well geometry, and datum information.
5. Temperature data was converted from Fahrenheit to Celsius.
6. Probe EC readings were converted from actual electrical conductivity (EC) the standard EC at 25° C.
7. Time series of water table elevation, depth, groundwater temperature, and groundwater were reviewed for any other issues.
8. Null datasets were created for periods of missing or removed data.
9. Anomalous spikes in temperature data were smoothed using a running average technique.
10. Anomalous electrical conductivity data was modified to remove discontinuities.
11. Anomalous data spikes likely due to measurements during downloads and maintenance were removed and replaced with nulls.
12. Unusable data (such as when water table fell below probe level) were removed and placed with nulls.
13. Since sensors were not regularly maintained, dissolved oxygen data, while reported in the raw (converted) data files, were not used.
14. All data processing and modifications were recorded and are listed in this report.

Results of daily average time series and global, annual, seasonal, and monthly statistics are given in Appendices III and IV. Highlights of the preliminary data analysis include:

1. River stages in the Northwest Fork of the Loxahatchee River (where available) correlate well with groundwater elevations recorded here, both in upriver and tidal locations, further confirming the reliability of the final groundwater datasets

2. On the transitional Transects 7 and 8, a general progression of increasing water table with distance from the river is apparent, with the upland wells exhibiting higher water elevations than bottomland floodplain wells. During the dry seasons of 2006 to 2007, this freshwater head falls sharply, nearly equalizing with the water table elevations in

the floodplain, but always remaining higher. This indicates a variable, but consistently positive flow of freshwater from the uplands towards the river, even in extremely dry seasons.

3. Trends in EC can be observed over individual tidal cycles as well as over longer seasonal and yearly time periods. In general, the EC values recorded were low upstream and increased with proximity to Jupiter Inlet and the Atlantic Ocean.

4. On Transects with multiple wells, observed EC was generally greatest closest to the river and decreased with distance towards the upland.

5. Seasonal variation in groundwater temperature was observed in all twelve groundwater wells. Seasonal amplitude of these variations appears to be greatest at the river and decrease with distance to the river. This trend could be used to explore mixing ratios between groundwater and surface water in the floodplain.

6. Wet/dry season differences in average water table elevation and groundwater EC were also clearly observed in all wells, though the magnitude of this difference was variable across the twelve wells.

7. Relationships between groundwater elevation, groundwater electrical conductivity, soil moisture, and porewater electrical conductivity were explored. While some preliminary relationships were identified, further work is needed to fully elucidate the driving forces behind floodplain hydrology and water quality and their effects on ecology.

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Background

The Loxahatchee River and Estuary are located in southeastern coast of Florida. Historically, the Northwest Fork of the Loxahatchee River was primarily a freshwater system. In 1947, the river inlet at Jupiter was dredged for navigation and has remained permanently open since that time. Drainage patterns within the basin have also been altered significantly due to land development, road construction, such as, Florida Turnpike, and construction of the C-18 and other canals. These anthropogenic activities along with sea level rise have resulted in significant adverse impacts on the ecosystem, including increased saltwater encroachment and undesired vegetation changes in the floodplain. The problem of saltwater intrusion and vegetation degradation in the Loxahatchee River may be partly induced by diminished freshwater input, from both surface water and ground water into the River system.

Finding the characteristics of each hydrologic components and their relationship is important to develop restoration plan for the ecosystem in the Loxahatchee River Basin. In past years, a Loxahatchee floodplain groundwater well network and soil moisture monitoring stations along two transects have been established and the associated data have been collected. The data collected from the wells includes temperature, water pressure, barometric pressure, DO, and electric conductivity (EC) from July 2003 to the end of 2007, which are raw data in binary format. The overall objective of this project is to process and document ground water data to a format for meaningful use, and to conduct hydrologic analysis based on the ground water data together with soil moisture data and river stage (tidal wave) data.

The objectives of this project include:

- Process and document the ground water data collected from 12 wells in Loxahatchee River Basin
- Conduct hydrologic data analysis based on the ground water, soil moisture, and river stage

To achieve these objectives, specific tasks and deliverables were developed, which are summarized in Table 1. A project kick-off meeting (**Task 1**) was held on March 12th, 2008 at the offices of the South Florida Water Management District (SFWMD). At this meeting, the University of Florida (UF) introduced the staff needed to complete this work and made a PowerPoint presentation (**Deliverable 1.1**) to the District scientists including a detailed overview of the project objectives, plans, methods, schedule and required deliverables. During this kick-off meeting and discussions, the Consultant and the District agreed on a Project Work Plan that described the objectives for each task in detail, the major questions being addressed by each task, and the rationale for the task.

During the meeting, UF prepared kick-off meeting minutes specifying all points of the project work plan and the main points discussed in the meeting, including all inputs from the District engineers/scientists. These draft minutes were submitted to District staff on March 12th, 2008 and were approved by the district on March 19th, 2008 to serve as the Final Project Work Plan (**Deliverable 1.2)**.

Table 1. Project tasks and deliverables. Bolded items have previously been delivered.

TASK	DELIVERABLE
1. Project Kick-off Meeting and Project Work Plan	**1.1 Power Point Presentation** **1.2 Agreement document with key points of Project Work Plan**
2. Process and Document Ground Water Data	**2.1 Draft of Data Processing Report**
	2.2 Final Data Processing Report
3. Ground Water Data Analysis with Soil Moisture and River Stage	3.1 Draft of Data Analysis Report
	3.2 Final Data Analysis Report

Work on **Task 2** proceeded, and on April 24th, 2008, UF submitted an interim Draft Processing Report (**Deliverable 2.1**), detailing progress made with and issues encountered. Specifically, UF converted all binary files into .csv format; developed a SQL data server and client application for graphical data analysis; identified jumps and discontinuities in datasets; and attempted to resolve and field-verify various issues with the data. UF concluded that the major issue with matching tapedowns to measured probe data was the order of field operations.

Tapedown measurements were taken after probe removal. Since hydraulic conductivity is relatively low (especially in the areas with mucky soils), when the probe was removed and replaced for calibration, battery changes, etc. it took several to tens of minutes for the water level in the well to re-equilibrate with the local water table (which is dynamic in the tidally-influenced wells, making estimates of the actual water table level difficult). Since tapedown measurements were made after probe removal, there was no way of telling whether the tapedown was measuring the equilibrium water table level (which should match probe readings) or a transient level due to probe removal (which could be off by as much as a foot or more, depending on the aquifer properties and the delay between probe removal and tapedown measurement).

An additional issue identified was that many of the probe cable length measurements provided to UF were not currently correct. As field-verified by Rob Rossmanith (Florida Department of Environmental Protection [DEP] Florida Park Service [FPS]), five of the twelve cable lengths provided were off by more than 0.1 feet, and four were off by over 1 foot (the highest difference was 2 feet). Some of these discrepancies were resolved during later data processing (see Task 2 - Process and Document Ground Water Data section below). To proceed with data analysis UF requested:

1. Acceptance by SFWMD that probe data should be considered more reliable (in favor of tapedowns) when discrepancies are found.
2. Acceptance by SFWMD that the probe cable lengths measured by Rob Rossmanith on April 21, 2008 can be used for data processing.

3. Confirmation of the distance between the top of the inside riser (where cable length was measured from) and each well's benchmark.

UF received acceptance and confirmation of these items on April 28th, 2008 and proceeded with data processing and analysis. In the interest of expediting the completion of this contract, this report includes both **Deliverable 2.2 (Final Data Processing Report)** *and* **Deliverable 3.1 (Draft of Data Analysis Report)**.

Final Data Processing Report (Deliverable 2.2)

Introduction

As detailed in the project Scope of Work (SOW), the raw binary groundwater data files were converted to text file and MS Excel spreadsheet format for meaningful use and to provide a data processing report describing the methodology, procedure and results. The raw groundwater data, including temperature, electric conductivity (EC), DO, barometric pressure, and H_2O pressure, were collected using TROLL 9000/9500 (In-Situ Inc.) multi-parameter water quality probe from July 2003 to the end of 2007 along 5 Transects on the Northwest Fork of the Loxahatchee River. Three wells are located along Transect 9, three wells along Transect 8, four wells along Transect 7, one well on Transect 3, and one well on Transect 1 (Fig. 1). A summary of all well parameters is given in Tables 2 and 3.

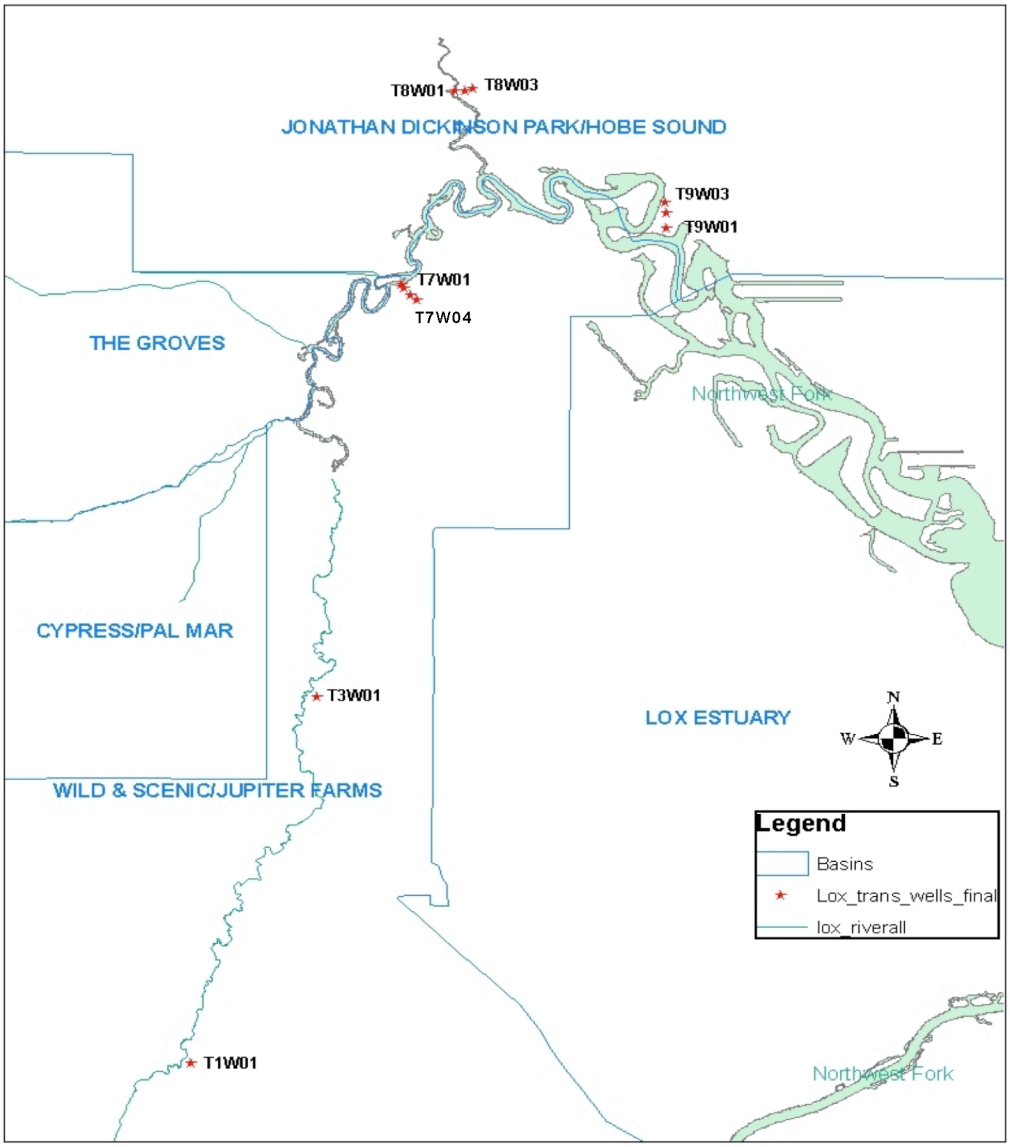

Figure 1. Layout of Transects and wells on the Northwest Fork of the Loxahatchee River.

Table 2. Loxahatchee River well locations and elevations.

Transect	Well	Station Name	Latitude N	Longitude W	Elevation NGVD29[1] (ft)	Elevation NAVD88[1] (ft)	Reference above benchmark (ft)
T1	W01	T1W01	26.940111	80.172228	13.76	12.267	0.000
T3	W01	T3W01	26.961269	80.164725	8.22	6.731	0.000
T7	W01	T7W01	26.985031	80.159627	4.17	2.681	0.000
T7	W02	T7W02	26.984820	80.159439	4.4	2.911	0.000
T7	W03	T7W03	26.984396	80.159041	4.82	3.331	0.000
T7	W04	T7W04	26.984157	80.158714	12.63	11.141	0.000
T8	W01	T8W01	26.996212	80.156393	3.39	1.901	0.000
T8	W02	T8W02	26.996241	80.155790	4.17	2.677	0.000
T8	W03	T8W03	26.996325	80.155365	10.46	8.967	0.026
T9	W01	T9W01	26.988208	80.144160	4.33	2.834	0.026
T9	W02	T9W02	26.989068	80.144158	5.01	3.514	0.027
T9	W03	T9W03	26.989684	80.144171	12.63	11.134	0.036

[1] Conversions from NGVD29 to NADV88 are based on the VERTCON height conversion method (Milbert, 1999; http://www.ngs.noaa.gov/TOOLS/Vertcon/vertcon.html).

Table 3. Summary of well geometry.

Station Name	Well diameter (in)	Well depth to surface (ft)	Riser length (ft)	Drill tip to screen (ft)	Screen slot size (in)	Screen length (ft)	TROLL depth[1] (reported, ft)	TROLL depth[2] (measured on 4/21/08, ft)
T1W01	2	5.82	3	0.5	0.010	2	7.5	6.62
T3W01	2	5.76	3	0.5	0.010	5	7.5	7.49
T7W01	2	6.05'	3	0.5	0.010	2	8	8.08
T7W02	2	5.98'	3	0.5	0.010	2	8	6.29
T7W03	2	5.53'	3	0.5	0.010	2	7.5	5.46
T7W04	2	12.04'	3	0.5	0.010	5	14	14.00
T8W01	2	5.32'	3	0.5	0.010	2	7	6.84
T8W02	2	5.25'	3	0.5	0.010	2	7	6.95
T8W03	2	8.65'	3	0.5	0.010	5	10.5	8.85
T9W01	2	6.09'	3	0.5	0.010	2	8	6.40
T9W02	2	6.09'	3	0.5	0.010	5	8	7.94
T9W03	2	13.92'	3	0.5	0.010	5	15.5	15.63

[1] "Reported" TROLL depths are based on data provided by the SFWMD.
[2] "Measured" TROLL depths are based on April 21st, 2008 field measurements by Rob Rossmanith (DEP FPS).

Water Table Depth and Water Table Elevation Calculations

Raw groundwater data were originally downloaded in binary format by FPS personnel. UF used the AutoCSV program developed by In-Situ Inc. to convert all binary files to comma separated (.csv) files containing the following information: Site – Test Name; Site – Unit Name; Time – Time Stamp; Level/Depth (ft); Temperature (°F); Barometric Pressure (in Hg); Conductivity (mS/cm actual); Clark DO (ug/L); Battery (volts); and Time – Elapsed

(Seconds). Water table depth and elevation were then computed based on recorded water depth above sensor, TROLL 9000/9500 cable length, well elevation, and reference above the benchmark for each well (see Fig. 2).

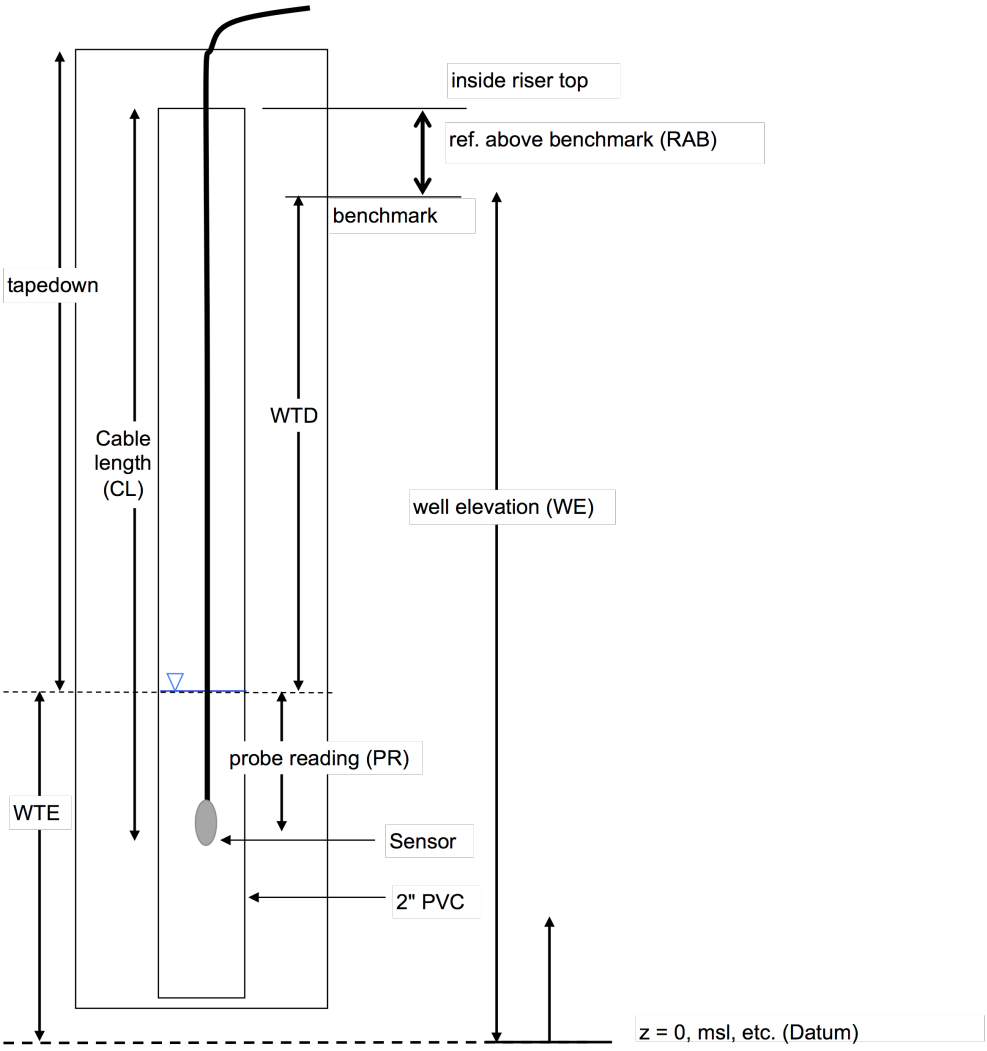

Figure 2. Schematic of well geometry.

Water table depth and water table elevation were computed according to the following relationships:

$$WTD = CL - RAB - PR \quad (1)$$
$$WTE = WE + RAB - CL + PR \quad (2)$$

where WTD is the water table depth, CL is the TROLL 9000/9500 cable length, RAB is the reference above benchmark, PR is the probe reading, WTE is the water table elevation, and WE is the well elevation (in reference to a standard datum—i.e., NGVD29 or NADV88). Water table depths are reported in feet and meters, while water table elevation is reported in feet and meters in both NGVD29 and NAVD88. Note that RAB is only non-zero for four of the twelve wells (T8W3, T9W1, T9W2, and T9W3—see table 2).

Water Table Depth and Water Table Elevation Quality Assurance/Quality Control

Initially calculated water table depth and elevation data were stored to a SQL server database and accessed via a Windows services client custom application for graphical analysis of the data. This tool allowed UF to graphically assess multiple data series at the same time, helping

to review and assess the reliability of the data. Rainfall data from the S-46 structure on the Southwest Fork of the Loxahatchee River (DBHYDRO Dbkey K8679) was also uploaded to this server to evaluate the observed changes in water table elevation in relation to local rainfall and identify potential errors of probe response (Fig. 3).

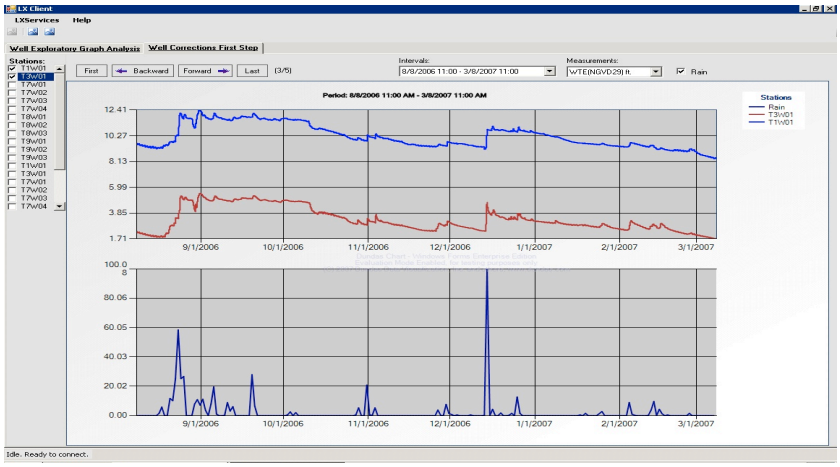

Figure 3. Screen capture of the Loxahatchee groundwater database SQL client used to analyze. Shown are wells T1W1, T3W1 and rainfall for the period 8/8/06 through 3/8/07.

All calculations and notes made during the data review and verification process for each well are summarized in Table 4. For several wells where reported and measured cable lengths were different, two distinct data periods were identified: before and after changes in cable length. For these data series, probe readings were converted to water table depth and elevation in two separate sections as indicated in Table 4. Where made, these adjustments brought two sections of previously disparate data together and were verified by comparing adjusted datasets with one or more datasets without cable length changes. See specific notes on each well's calculations and assessment in Table 4.

Finally, the distance from the well benchmark to the water table that is measured when data is downloaded (called a tapedown), was intended to be used to verify probe measurements, since the cable length could change slightly in the well over the data collection period. However, as discussed above, because all of the tapedown measurements were made after probe removal, they are not useful in confirming water levels measured by the probe as there is no way of ascertaining whether the tapedown was measuring the equilibrium water table level (which should match probe readings) or a transient level due to probe removal (which could be off by as much as a foot or more, depending on the aquifer properties and the delay between probe removal and tapedown measurement). As noted in the April 24th, 2008 interim Data Draft Processing Report, UF suggested a change to the standard operating procedure (SOP) be made so that from that time, tapedowns should be taken first, followed by data collection and other routine maintenance tasks.

Table 4. Summary of well data start and stop dates/times; water table depth and elevation conversion calculations; data gaps; and summary of data review process. Data gaps indicate missing data from the original binary data files. Data ranges removed during QA/QC processing are detailed in the notes.

Transect	Well	Data Start	Data End	Benchmark Elevation (ft, NGVD)	Difference between Benchmark and Top of Riser (ft)	Cable Length (ft)	To convert Probe reading to Water Table Depth (ft), subtract probe reading from this amount	To convert Probe reading to Water Table Elevation (ft, NGVD), add this amount to probe reading (ft)	Data Gaps (>3 hours)	Notes
1	1	6/8/05 10:30	12/13/07 14:59	13.76	0.000	6.62	6.62	7.14	None	Cable length initially given as 7.5 feet. Measured cable length was 6.62 ft on 4/21/08 by Rob Rossmanith. Difference is 0.88 ft (10.56 inches). It is unclear where the difference between initial and final measured cable lengths occurred, but it appears that the actual cable length was 6.62 ft during the entire time period. There may have been a cable slip between 2003 and 2005. No anomalies found; no further corrections. T1W1 and T3W1 found to correspond very well throughout data period, further confirming this dataset.
3	1	6/8/05 10:30	12/13/07 14:00	8.22	0.000	7.49	7.49	0.73	None	Cable length initially given as 7.5 feet. Measured cable length was 7.49 ft on 4/21/08 by Rob Rossmanith. Difference is 0.01 ft (0.12 inches). Difference between initial and final measured cable lengths is small enough (less than 0.1 ft) to be v. difficult to locate and should be considered negligible. An anomalous low reading occurs on 5/30/07 (during data download), which was removed. No other anomalies found; no further corrections. T1W1 and T3W1 found to correspond very well throughout data period, further confirming this dataset.
7	1	6/8/05 10:30	12/13/07 13:00	4.17	0.000	8.083	8.08	-3.91	6/25/06 - 6/29/06 9/27/06 - 10/2/06 12/7/06 - 12/13/06 2/4/07 - 3/14/07	Cable length initially given as 8.0 feet. Measured cable length was 8.083 ft on 4/21/08 by Rob Rossmanith. Difference is 0.083 ft (0.99 inches). Of the three floodplain wells on this Transect, this well's average elevation and variability remain constant, while early data from wells 2 and 3 have jumps in February and March 2006, after which they closely mirror the data from this well, further confirming this dataset. Difference between initial and final measured cable lengths is small enough (less than 0.1 ft) to be v. difficult to locate and should be considered negligible. There may have been a small cable slip any time between 2003 and 2007. Data gaps as noted. No anomalies found; no further corrections.
7	2	6/8/05 10:30	10/28/05 23:59	4.4	0.000	8.000	8.00	-3.60	10/28/2005 - 2/20/2006	Cable length initially given as 8.0 feet. Measured cable length was 6.292 ft on 4/21/08 by Rob Rossmanith. Difference is 1.708 ft. Data from 6/8/2005 - 10/2/2005 appears to be based on a longer cable length than later data. Thus it seems reasonable to assume that this earlier period of data should be converted with the initial cable length of 8 feet. After probe replacement on 2/20/06, the new cable length of 6.292 feet should be used. This adjustment brings the two portions of the dataset closer together and appears reasonable. Data gaps as noted.
		2/20/06 0:00	12/14/11 12:29	4.4	0.000	6.292	6.29	-1.89	12/12/2006 - 12/13/2006	
7	3	6/8/05 10:30	3/23/06 9:29	4.82	0.000	7.5	7.50	-2.68	None	Cable length initially given as 7.5 feet. Measured cable length was 5.485 ft on 4/21/08 by Rob Rossmanith. Difference is 2.042 ft. Data from 6/8/05 - 3/23/06 appears to be based on a longer cable length than later data. Thus it seems reasonable to assume that this earlier period of data should be converted with the initial cable length of 7.5 feet. After data download on 3/23/06, the new cable length of 5.458 feet should be used. This adjustment brings the two portions of the dataset closer together and appears reasonable. Data gaps as noted.
		3/23/06 12:00	12/13/07 11:59	4.82	0.000	5.458	5.46	-0.64		
7	4	6/8/05 10:30	12/2/11 15:00	12.63	0.000	14	14.00	-1.37	12/1/06 - 12/13/06 2/22/07 - 3/14/07 7/27/07- 8/30/07	Cable length initially given as 14.0 feet. Measured cable length was 14.0 ft on 4/21/08 by Rob Rossmanith. Mirrors other upland datasets (T3W1 and T1W1) well, further confirming these datasets. No anomalies found; no further corrections. Data gaps as noted.

Table 4 (continued).

Transect	Well	Data Start	Data End	Benchmark Elevation (ft, NGVD)	Difference between Benchmark and Top of Riser (ft)	Cable Length (ft)	To convert Probe reading to Water Table Depth (ft), subtract probe reading from this amount	To convert Probe reading to Water Table Elevation (ft, NGVD), add this amount to probe reading (ft)	Data Gaps (>3 hours)	Notes
8	1	6/8/05 10:30	12/4/07 12:29	3.39	0.000	6.84	6.84	-3.45	None	Cable length initially given as 7.0 feet. Measured cable length was 6.84 ft on 4/21/08 by Rob Rossmanith. Difference is 0.16 ft (1.92 inches). Data mirrors that from T7W1 very well, further confirming these datasets. It is unclear where the difference between initial and final measured cable lengths occurred, but it appears that the actual cable length was 6.84 ft during the entire time period (there may have been a cable slip between 2003 and 2005). No anomalies found; no further corrections.
8	2	6/8/05 10:30	12/4/07 12:00	4.17	0.000	6.95	6.95	-2.78	None	Cable length initially given as 7.0 feet. Measured cable length was 6.95 ft on 4/21/08 by Rob Rossmanith. Difference is 0.05 ft (0.6 inches). Data mirrors that from T7W3 very well, further confirming these datasets. Difference between initial and final measured cable lengths is small enough (less than 0.1 ft) to be v. difficult to locate and should be considered negligible. There may have also been a small cable slip anytime between 2003 and 2005. No anomalies found; no further corrections.
8	3	6/8/05 10:30 4/21/06 9:30	10/28/05 10:29 12/4/07 12:29	10.46 10.46	0.026 0.026	10.5 8.85	10.474 8.824	-0.014 1.636	10/28/05 - 4/21/06 8/28/07 - 9/7/07	Cable length initially given as 10.5 feet. Measured cable length was 8.85 ft on 4/21/08 by Rob Rossmanith. Difference is 1.65 ft. Data from 6/8/05 - 10/28/05 appears to be based on a longer cable length than later data. Thus it seems reasonable to assume that this earlier period of data should be converted with the initial cable length of 10.5 feet. After probe replacement on 4/21/06, the new cable length of 8.85 feet should be used. This adjustment retains a more consistent comparison between data between T7W4 and this well, further confirming these datasets. Anomalous negative probe values from 3/28/07 14:00 through 3/28/07 20:30; 3/29/07 9:30 through 4/11/07 7:30; and 4/18/07 13:00 through 6/1/07 23:30 were deleted. Probe was likely above water table at these times during the extremely dry season of 2007. Anomalous low value at end of data set (12/4/2007 at 11:59:59 AM)--removed. Data gaps as noted.
9	1	4/21/06 11:30	12/4/07 11:59	4.33	0.026	6.4	6.374	-2.044	6/8/05 - 4/21/06 9/26/06 - 9/27/06	Dataset starts later than others. Cable length initially given as 8.0 feet. Measured cable length was 6.4 ft on 4/21/08 by Rob Rossmanith. Difference is 1.6 ft. It appears that the actual cable length was 6.62 ft during the entire time period (there may have been a cable slip between 2003 and 2005). T9W1, T9W2, and T7W2 all correspond very well throughout data period, further confirming these datasets. Data gaps as noted. No anomalies found; no further corrections.
9	2	6/8/05 10:30	12/10/11 5:30	5.01	0.027	7.94	7.913	-2.903	None	Cable length initially given as 8.0 feet. Measured cable length was 7.94 ft on 4/21/08 by Rob Rossmanith. Difference is 0.06 ft (.72 inches). Difference between initial and final measured cable lengths is small enough (less than 0.1 ft) to be v. difficult to locate and should be considered negligible. There also may have been a small cable slip in the data any time between 2003 and 2007. T9W1, T9W2, and T7W2 all correspond very well throughout data period, further confirming these datasets. Data gaps as noted. No anomalies found; no further corrections.
9	3	8/19/05 9:00	12/14/07 17:30	12.63	0.036	15.63	15.594	-2.964	None	Cable length initially given as 15.5 feet. Measured cable length was 15.63 ft on 4/21/08 by Rob Rossmanith. Difference is 0.13 ft (1.56 inches). Difference between initial and final measured cable lengths is small enough (less than 0.15 ft) to be v. difficult to locate and should be considered negligible. There also may have been a small cable slip in the data any time between 2003 and 2007. Data gaps as noted. No anomalies found; no further corrections.

Electrical Conductivity Data Calculations and Quality Assurance/Quality Control
Electrical conductivity is the ability of a material to conduct an electrical current, and is a function of temperature. Electrical conductivity data from the TROLL 9000/9500 probes were reported in milliSiemens per centimeter (mS/cm) of *actual* conductivity ('AC', not temperature corrected). These data were first converted to electrical conductivity at a temperature of 25° C ('EC'), and then converted into the SI unit Siemens per meter (S/m). To perform these conversions, recorded AC values in mS/cm were converted into microSiemens per centimeter (μS/cm) by multiplying by 1,000. Next, AC in μS/cm was used to EC in μS/cm (at 25° C) using the equation provided in the October 2005 Multi-Parameter TROLL 9500 WQP-100 Operator's Manual:

$$EC = \frac{AC}{[1 + 0.0191 * (Temp. - 25.0)]} \qquad (3)$$

where EC is specific conductance in μS/cm; AC is actual conductance in μS/cm; Temp. is the water temperature in degrees Celsius; and 0.0191 is the temperature coefficient used for seawater. Finally, EC values were converted to the SI unit of S/m by dividing the specific conductance in μS/cm by 10,000.

In addition to these calculations, EC data from each well were reviewed, its reliability assessed, and any necessary changes made. For example, EC data from periods where water table fell below probe depth at Well T8W3 were removed from the dataset. See specific notes on each well's assessment and any changes in Table 5. Corrections made to EC data for each well are listed in the Modified_Data_Reports subdirectory on the enclosed data CD.

Table 5. Summary of EC data review process and modifications

Transect	Well	Notes
1	1	Range of values and direction of trends in wells T1W1 and T3W1 correspond well. No changes.
3	1	Anomalous low value on 5/30 or 5/31/07 deleted. Range of values and direction of trends in wells T1W1 and T3W1 correspond well. No other changes.
7	1	No changes.
7	2	No changes.
7	3	No changes.
7	4	Anomalous high value on 12/1/2007 at 3:00:00 PM deleted. Values are very low, as seen in the deep porewater samples in the UF station close to this well, further confirming this dataset. No other changes.
8	1	Data discontinuity from 10/28/2005 12:00 through 1/24/06 13:00, where EC values are unrealistically low. It appears that they change by a factor of 10 during after download. This was due to calibration with the wrong standard, as confirmed by Rob Rossmanith at the 8/29/08 final data meeting. This period of data was multiplied by 10 to bring the dataset back into line. This data should be flagged as modified. No other changes.
8	2	No changes. General agreement with values and trends seen in other sandy well T1W1.
8	3	Anomalous negative probe values from 3/28/07 14:00 through 3/28/07 20:30; 3/29/07 9:30 through 4/11/07 7:30; and 4/18/07 13:00 through 6/1/07 23:30 were deleted. Probe was likely above water table at these times during the extremely dry season of 2007. Anomalous high value on 8/28/2007 at 12:45:16 AM and low value on 12/4/2007 at 11:59:59 AM also deleted.
9	1	Anomalous high value on 12/9/2007 at 5:30:00 AM deleted. T9W1 and T9W2 correspond well, further confirming these datasets. No other changes.
9	2	T9W1 and T9W2 correspond well, further confirming these datasets. No changes.
9	3	No changes.

Temperature Data

In general, temperature data appeared relatively stable across all wells throughout the monitoring period. However, there were a large number of anomalous spikes in temperature data that spikes were likely due to lighting, since adjacent wells displayed the outliers at the same times. These spikes were replaced by moving average calculations using the previous and next step at both sides of the anomalous data. This had to be done by hand for the large dataset and was

extremely important, as accurate temperatures were required to calculate specific conductance from measured "actual" EC as described above. Corrections made to temperature data for each well are listed in the Modified_Data_Reports subdirectory on the enclosed data CD.

Dissolved Oxygen Data

Since dissolved oxygen (DO) sensors were not regularly maintained, DO data, while reported in the raw (converted) data files, were not used. These data were was converted from binary to ASCII format and are delivered as part of this task with no modifications. These data should be flagged as unreliable in future uses.

Null Values and Data Flags

Database calculation of accurate well statistics requires the inclusion of null values during data gaps (rather than missing values in the datasets). For each data time series (depth, elevation, temperature, EC), 30-minute null data sets were created and added in place of missing or removed data. Null datasets are provided in the Modified_Data_Reports subdirectory on the enclosed data CD.

Missing, deleted, and modified data may be flagged as deemed appropriate by the SFWMD. A summary of all data requiring flagging for any reason is given below and in the ReadMe.txt file on the data CD. The files in the Modified_Data_Reports subdirectory detail these data in several files:

1. Gaps in delivered data that were replaced with nulls (summarized in electronic Excel file "Nulls_From_Missing_Data.xls" on data CD). Flag as missing.

2. Temperature modifications (in deg. Fahrenheit). Summarized in electronic Excel file "Temperature_Modifications.xls" on data CD. Flag as modified

3. Modifications (in mS/cm actual EC). Summarized in electronic Excel file "EC_Modifications.xls" on data CD. Flag as modified.

4. Other data presumed unreliable (spikes; probe out of water; water table below probe; etc.) were removed and replaced with nulls every 30 minutes as summarized in Table 4 of the Data Processing and Analysis Report. Flag as removed.

Draft of Data Analysis Report (Deliverable 3.1)

Introduction

As specified in the project Scope of Work, this task is to conduct ground water assessment, including water table, DO, and salinity dynamics at several locations and distance from the river along flood plain. The following statistics for ground water elevation and EC data were calculated: mean annual, mean wet season, mean dry season, and average monthly distribution. These statistics are compared to similar statistics of soil moisture and river stage during the same period. Finally, UF provides some preliminary discussion of observed trends and relationships identified.

Methods

After all data processing, calculation, converting, and correction steps, UF uploaded all Loxahatchee River groundwater data to its hydrological database (HydroBase). HydroBase is a web-based information system for hydrological data storage, maintenance and mining. Based on industry standard Microsoft SQL server, .NET asp web services, and Java, the application contains powerful on-line web-based graphing, statistical analysis, and reporting capabilities as well as project maintenance and administration. Hydrobase is capable of quick graphical analysis and calculation of daily, weekly, monthly, quarterly, yearly, and entire period statistics including minima, maxima, mean, sum, variance, and standard deviation. See Appendix II for more information on HydroBase.

Mean annual and mean wet and dry season groundwater statistics for the Loxahatchee River were calculated using HydroBase. For this report, wet season was defined as June 1st through October 31st and the dry season was defined as November 1st through May 31st (SFWMD, 2006). Water table depths are available in feet and meters while water table elevations are available in NGVD29 and NAVD88 in both feet and meters in the electronic and online data reports. Data reported in this section of the report are listed in ft NADV88 as requested in the project scope of work.

Results and Discussion

Timelines of average daily water table elevation, water table depth (below benchmark), temperature, and EC are given in Appendix III. Within Appendix III, figures 1 – 12 show average daily water table elevation (in ft, NAVD88); figures 13 – 24 show average daily water table depth below benchmark (in feet); figures 25 – 36 show average daily groundwater temperature (in degrees Celsius); and figures 37 – 48 show average daily EC (in S/m). Summary statistics, including global, annual, and wet/dry season means, minima, maxima, variances, and standard deviations are given in tables 2 – 10 of Appendix IV. Wet and dry season statistics were calculated for each year's wet and dry seasons from monthly data, with overall wet/dry season means calculated using all wet/dry months in the period of record.

In general, recorded water table elevations, depths, groundwater temperatures, and EC values were variable across wells and transects, as well as over seasons and years. For example, water table elevations ranged from a maximum of 12.462 ft in the upstream well on Transect 1 (T1-W01) to a minimum of -2.871 ft in the tidal floodplain of Transect 8 (T8-W01). EC values ranged from near zero in many upland wells to a maximum of 3.733 S/m in well T9-W01 during

the dry season of 2007. Some major trends are apparent, however.

Correlation with Surface Water Measurements

River stages in the Northwest Fork of the Loxahatchee River (where available) correlate well with groundwater elevations recorded here, both in upriver and tidal locations, further confirming the reliability of the final groundwater datasets. For example, river stage measured at Lainhart Dam (close to Transect 1) corresponds well with groundwater elevation at T1-W01 (Fig. 4) and river stage measured at RM 9.1 (close to transect 7) corresponds with the tidal wells T7-W01, T7-W02, and T7-W03 (Fig. 5).

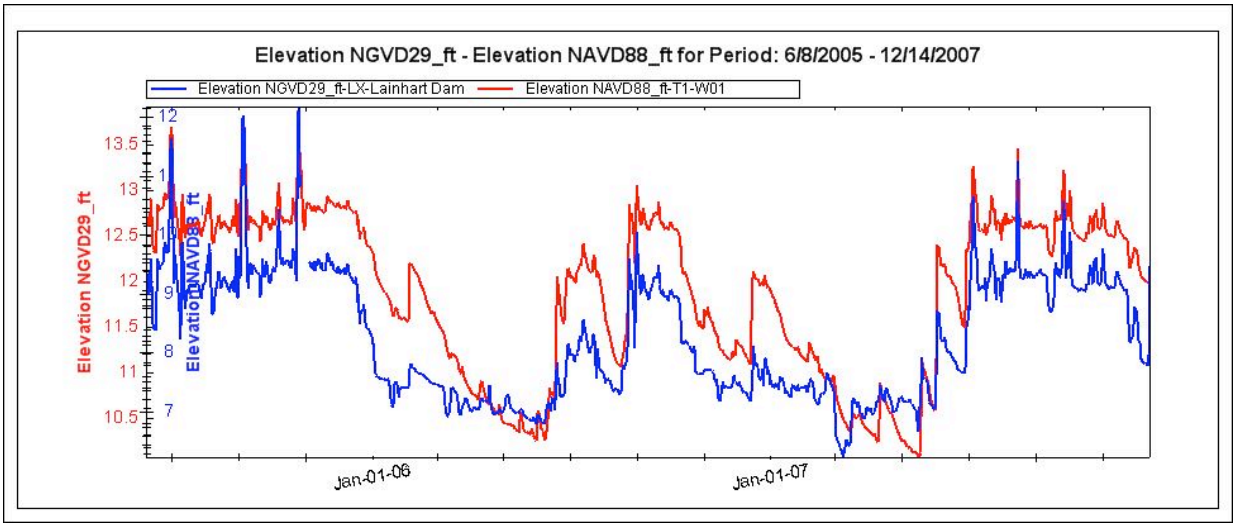

Figure 4. Average daily river stage at Lainhart Dam (blue) and average daily groundwater elevation at well T1-W01 (red). Note: different y-axis scales.

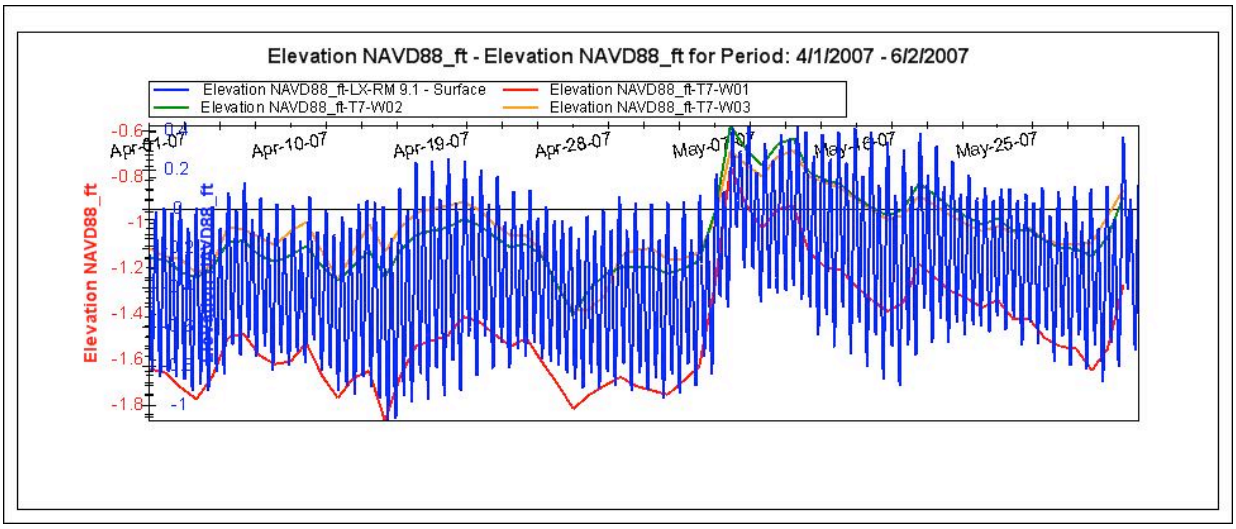

Figure 5. 15-minute river stage at RM 9.1 (blue) and average daily groundwater elevation at wells in the floodplain of Transect 7 (red, green, yellow). Note: different y-axis scales.

Water Table Elevation

Water table elevations were highest in upriver wells (T1-W01; T3-W01) and downriver upland wells (T7-W04; T8-W03) (Fig. 6). In general, lowest groundwater elevation levels were seen in 2006 (highest groundwater EC values were seen in 2007, however—see below). In the tidal floodplain, average annual water table elevation was below the datum zero level for many wells.

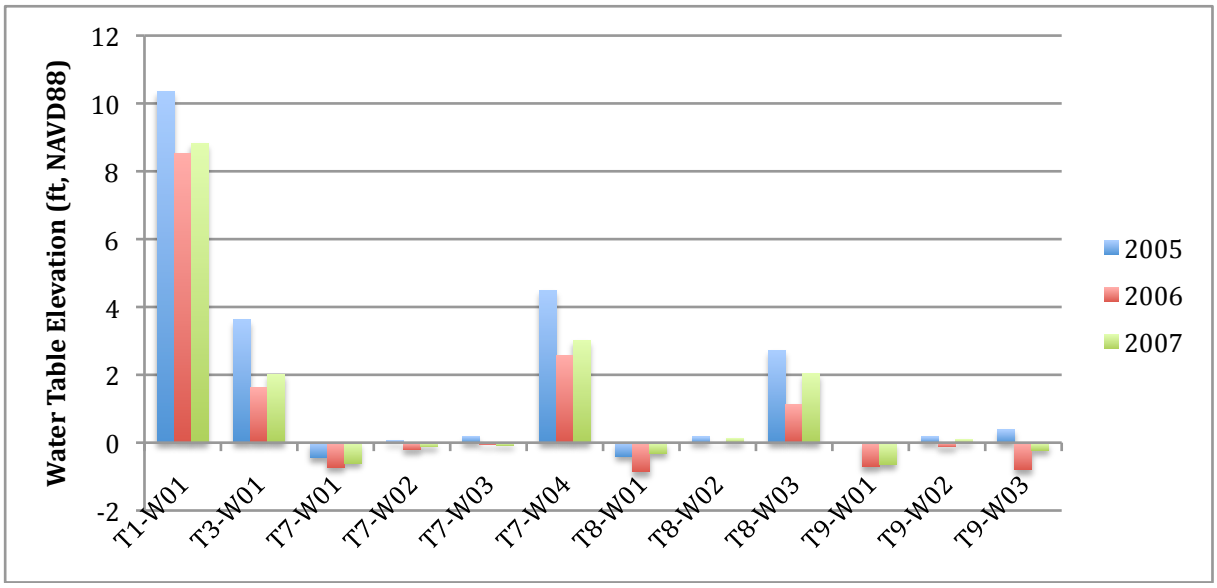

Figure 6. Annual average water table elevation (ft, NAVD88) for all 12 wells in the project.

Water table elevations in higher elevation wells further from the river (T1-W01, T3-W01, T7-W04, T8-W03, and T9-W03) correlate well, showing similar responses to the wet and dry season rainfall patterns (Fig. 7). For example, the impacts of late season rains in 2005 and dry summer in 2006 and 2007 on the water table elevations are apparent across all these wells.

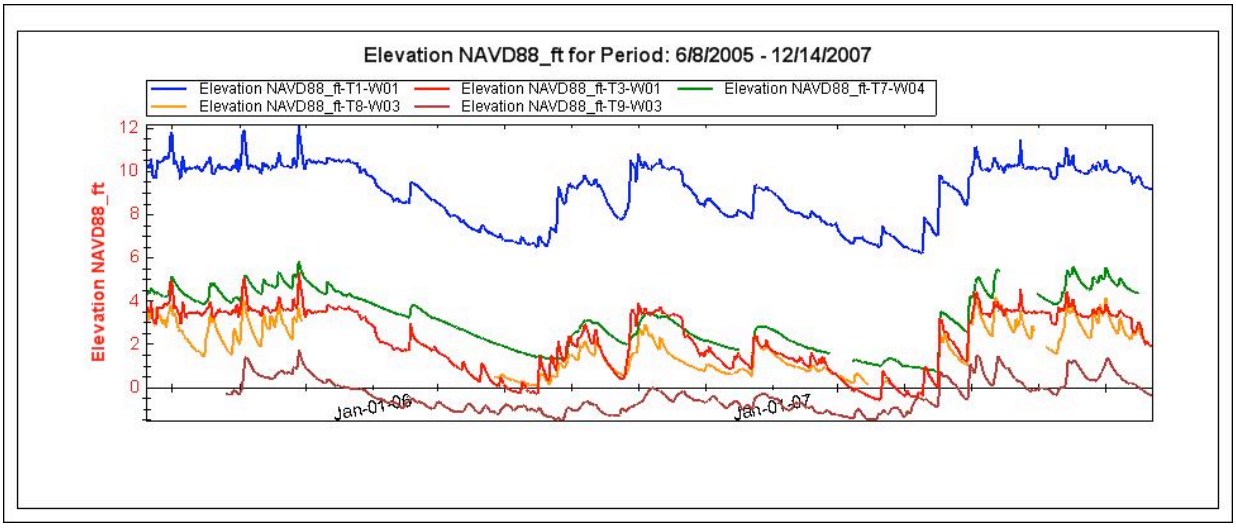

Figure 7. Average daily water table elevation (ft, NAVD88) in higher elevation wells over the period of record.

Water table elevations in lower elevation wells closer to the river are more influenced by daily tidal flooding with elevations often below mean sea level (Fig. 8). Some seasonal wet/dry

patterns are still apparent, but much less so, as their signal is damped by daily and monthly tidal fluctuations. The lowest water table observed in well T8-W01 in early 2006 were compared with surface water measurements at RM 9.1. The two series corresponded well, indicating that this section of data should be deemed reliable.

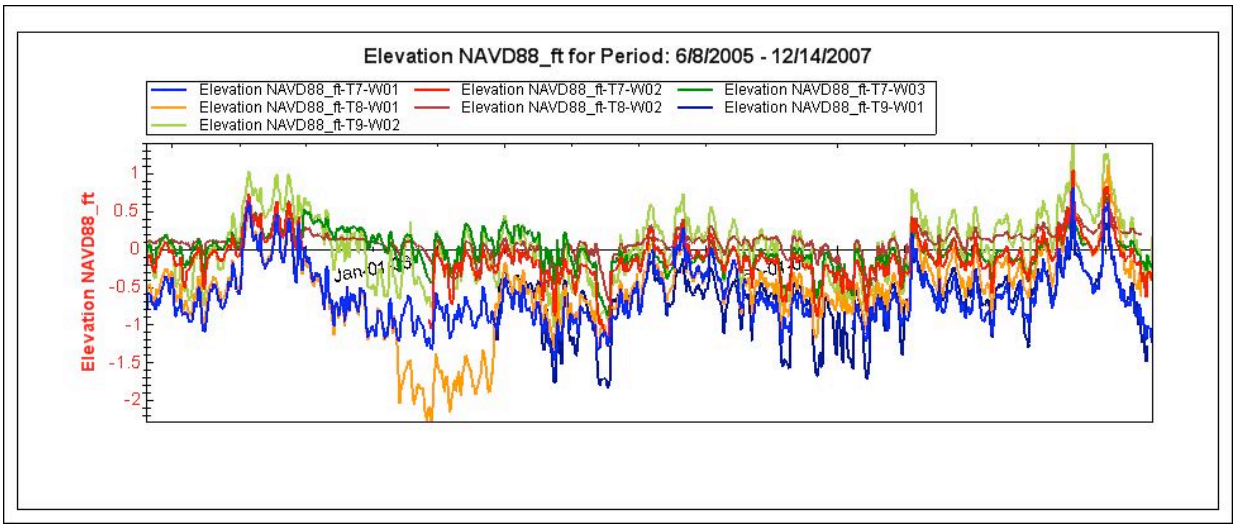

Figure 8. Average daily water table elevation (ft, NAVD88) in lower elevation wells over the period of record.

Other trends become apparent when looking across specific transects. For example, Figs. 9 and 10 show water table elevations from wells on Transects 7 and 8. On Transect 7, the general progression of increasing water table with distance from the river is apparent, with the upland well (T7-W04) showing the maintenance of a high water table head (of freshwater, as discussed below) in the upland. During the dry seasons of 2006 to 2007, this freshwater head falls precipitously, nearly equalizing with the water table elevations in the floodplain, but always remaining higher. This indicates a variable flow of freshwater from the uplands towards the river, even in extremely dry seasons.

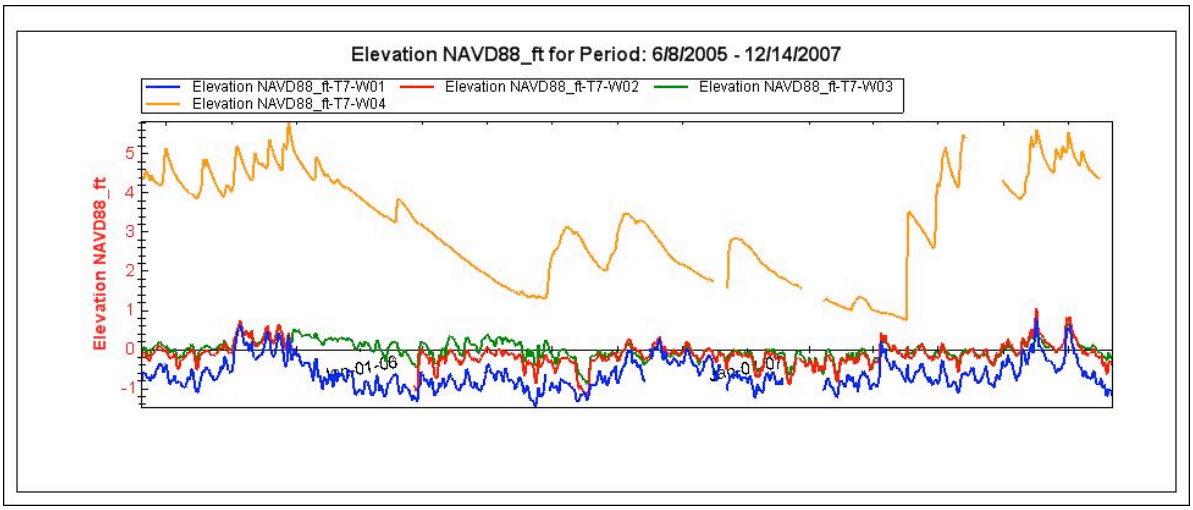

Figure 9. Average daily water table elevation (ft, NAVD88) of wells on Transect 7. Note maintenance of large freshwater head in upland well (T7-W04).

The same pattern is apparent on Transect 8, with higher water table elevations maintained in well

T8-W03, except for the dry seasons of 2006 and 2007, when the groundwater levels in T8-W02 and T8-W03 meet during an extreme water table drawdown. Water table elevation in well T8-W03 may fall below that of T8-W02 during this time, as probe readings from this period were negative, indicating water table fell blow the probe in this well. At Transect 9, which has the river on two sides, these patterns are not as apparent (Fig. 11).

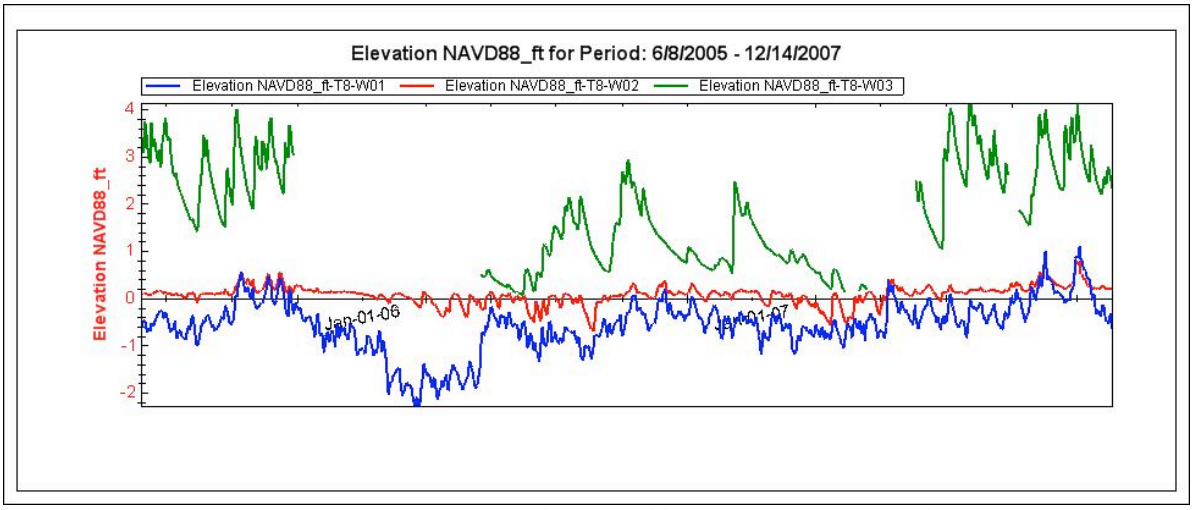

Figure 10. Average daily water table elevation (ft, NAVD88) of wells on Transect 8. Note maintenance of higher head in upland well (T8-W03). Data gap in 2007 is due to water table falling below probe level.

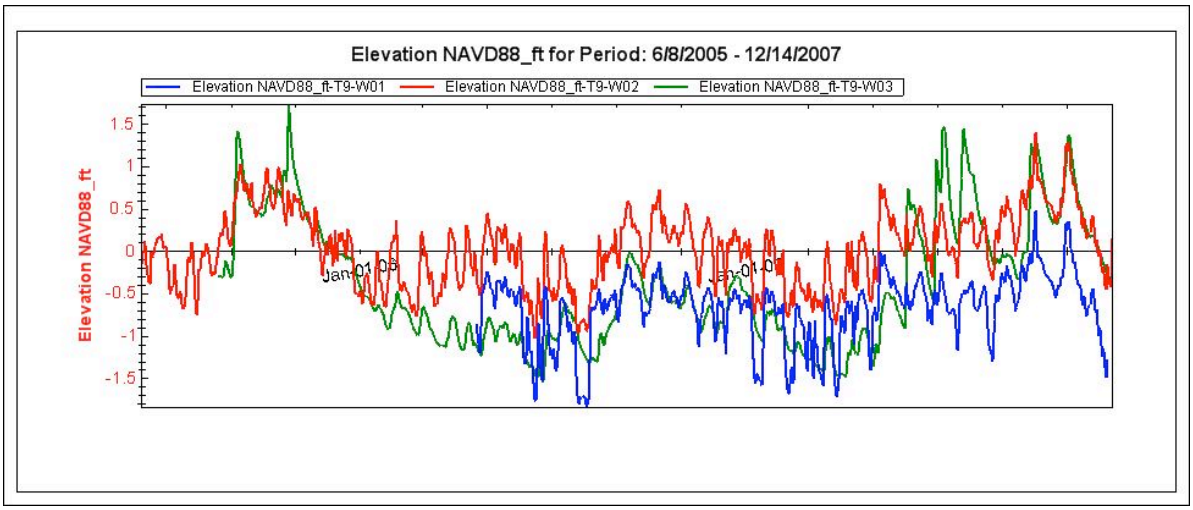

Figure 11. Average daily water table elevation (ft, NAVD88) of wells on Transect 9.

Electrical Conductivity

Trends in EC can be observed over individual tidal cycles as well as over longer seasonal and yearly time periods. In general, the EC values recorded were low upstream and increased with proximity to Jupiter Inlet and the Atlantic Ocean (Fig. 12). The global average EC at well T1-W01 was 0.071 S/m, with very little variation in this value between wet and dry seasons. On the other hand, the average groundwater EC at well T9-W02 was 2.109 S/m (over 30 times greater than T1-W01) and varied significantly between wet and dry seasons. The lowest average

groundwater EC was observed in well T7-W04. The extremely fresh nature of this water, combined with the maintenance of a high water table elevation in this location likely play a large role in maintaining the floodplain salinity on Transect 7 below critical threshold for bald cypress health (2 ppt or 0.3125 S/m). The highest annual average EC values were observed in wells T9-W01 and T9-W02 (by one to two orders of magnitude). Highest annual average EC values were in 2007 for nearly all wells, even though lowest groundwater levels were seen in 2006 (see above). Average annual river EC near Transects 1 and 7 are similar to annual average groundwater EC measured in wells at these Transects. However, daily average river EC at Transect 7 far exceeds that seen in the groundwater at all wells at that Transect (Fig. 13).

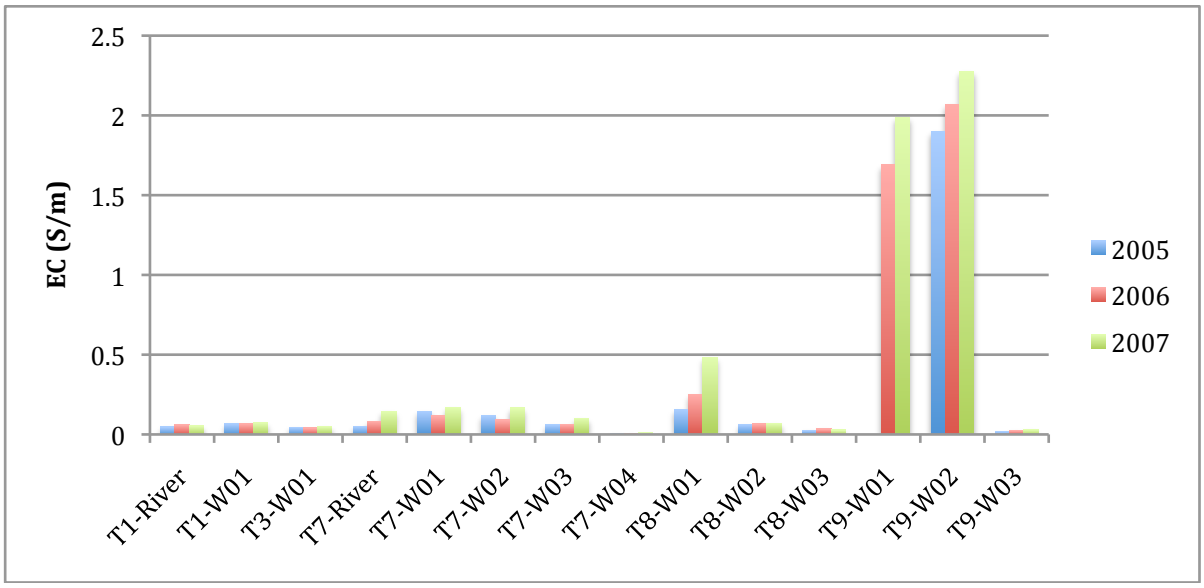

Figure 12. Annual average EC (S/m) for all 12 wells in the project and river EC near Transects 1 and 7.

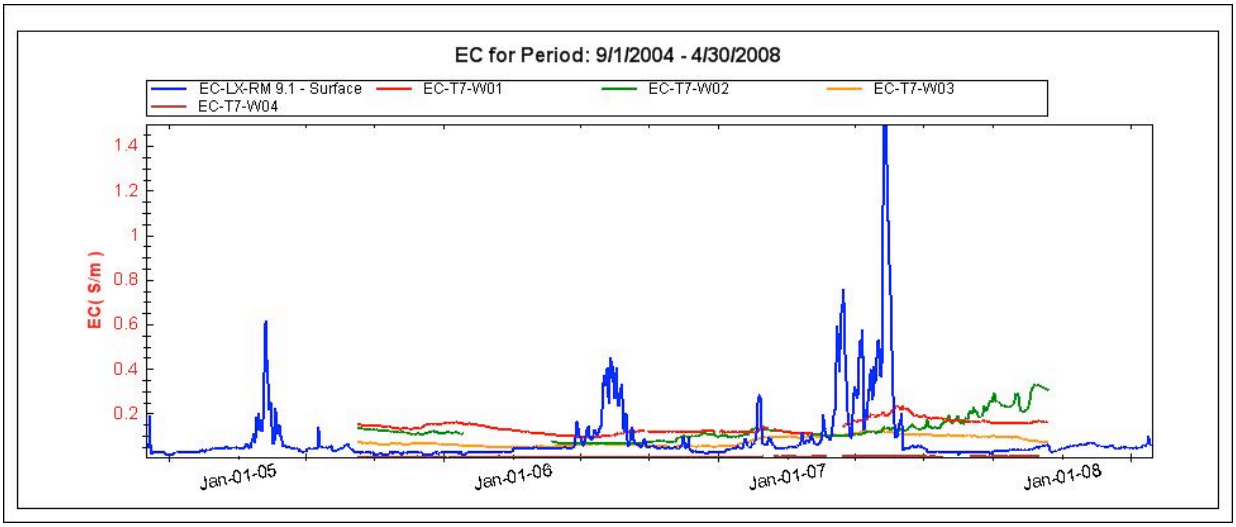

Figure 13. Daily average EC (S/m) in the river at RM 9.1 (near Transect 7) and in the 4 wells on that Transect. Note river salinity far exceeds groundwater salinity in dry seasons.

On Transects with multiple wells, observed EC was generally greatest closest to the river and decreased with distance towards the upland. On Transect 7, this trend reversed in 2007, when the EC in well T7-W02 surpassed that of well T7-W01 and remained significantly higher for the duration of the year (Fig. 14). On Transect 8, the well closest to the river (T8-W01) experiences EC values several orders of magnitude above the wells further from the river (Fig. 15). This pattern is again complicated on Transect 9, which has the river on both sides of the Transect. Here, wells T9-W01 and T9-W02 have the highest EC of any wells in the project, while EC in well T9-W03 is two orders of magnitude lower (Fig. 16).

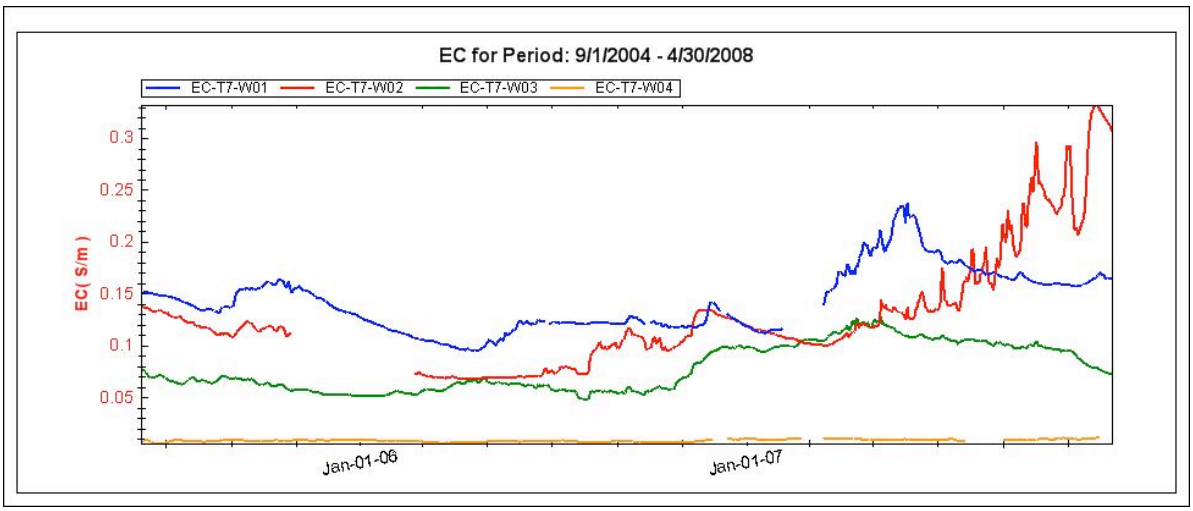

Figure 14. Average daily EC (S/m) for 4 wells on Transect 7.

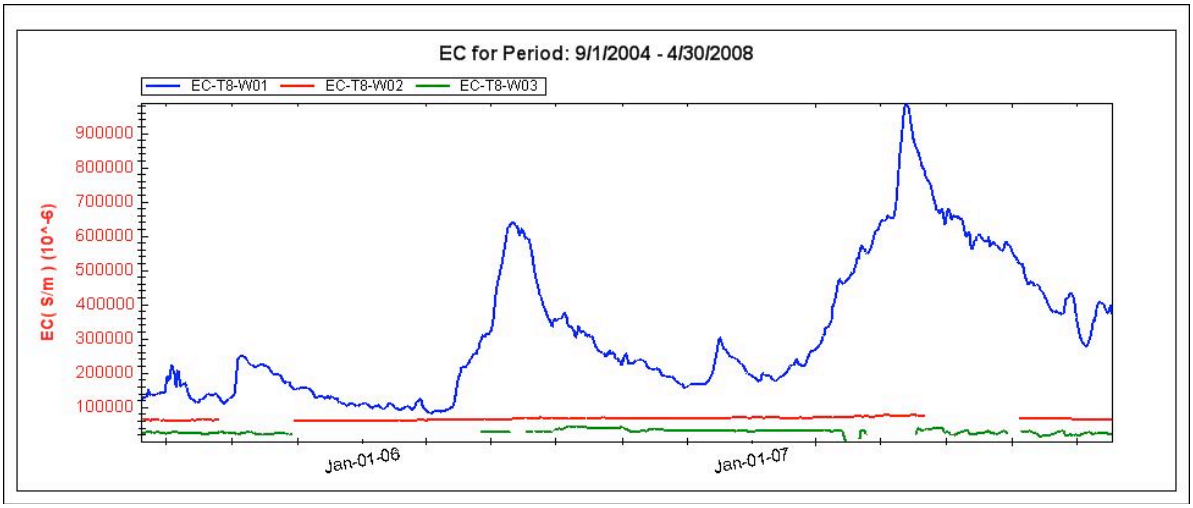

Figure 15. Average daily EC (S/m) for 3 wells on Transect 8.

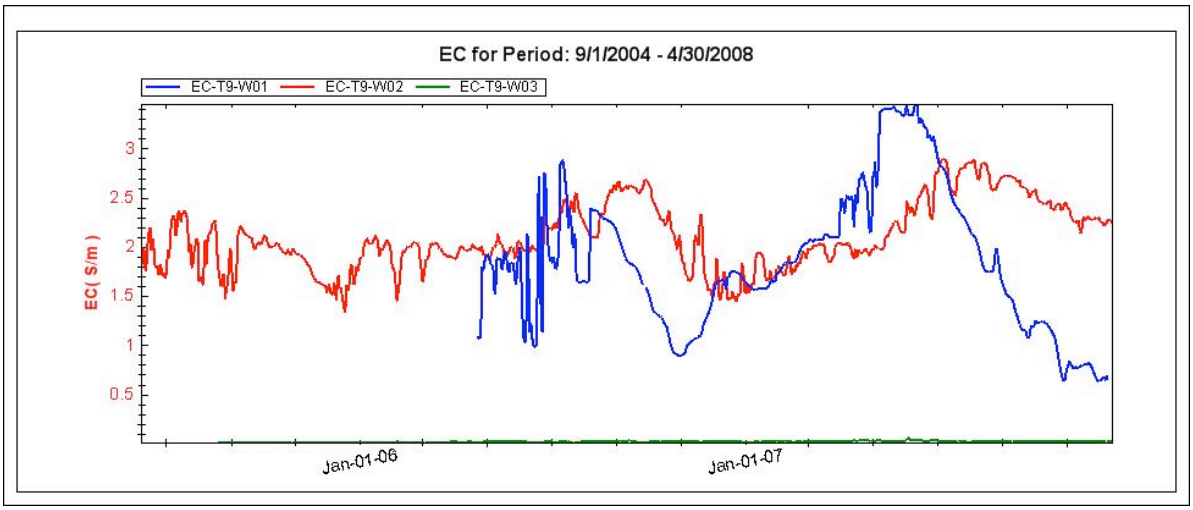

Figure 16. Average daily EC (S/m) for 3 wells on Transect 9.

Temperature

Seasonal variation in groundwater temperature was observed in all twelve groundwater wells (Fig. 17). Seasonal amplitude of these variations appears to be greatest at the river and decease with distance to the river (Fig. 18). This trend could be used to explore mixing ratios between groundwater and surface water in the floodplain. Diurnal variations were also observed in all wells, though tidal wells showed a much greater range of diurnal variation (Fig. 19).

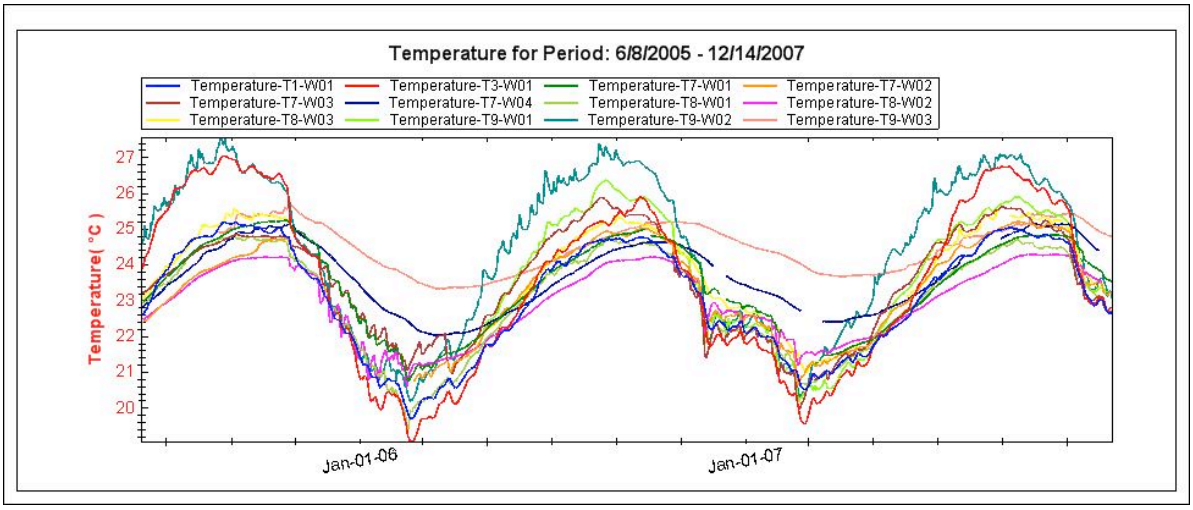

Figure 17. Average daily groundwater temperature (degrees C) for all 12 wells in the project.

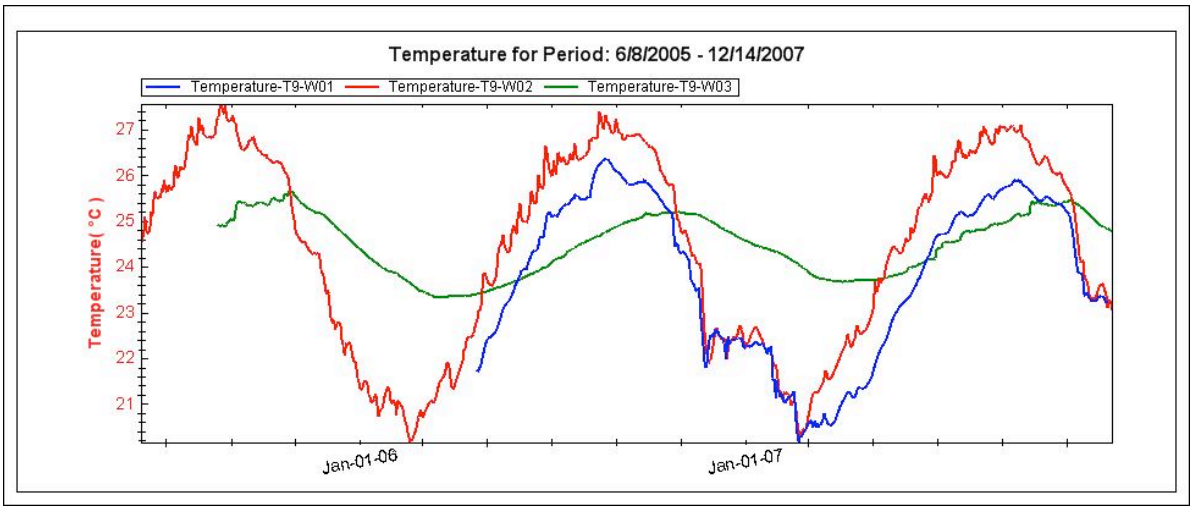

Figure 18. Average daily groundwater temperature (degrees C) wells on Transect 9.

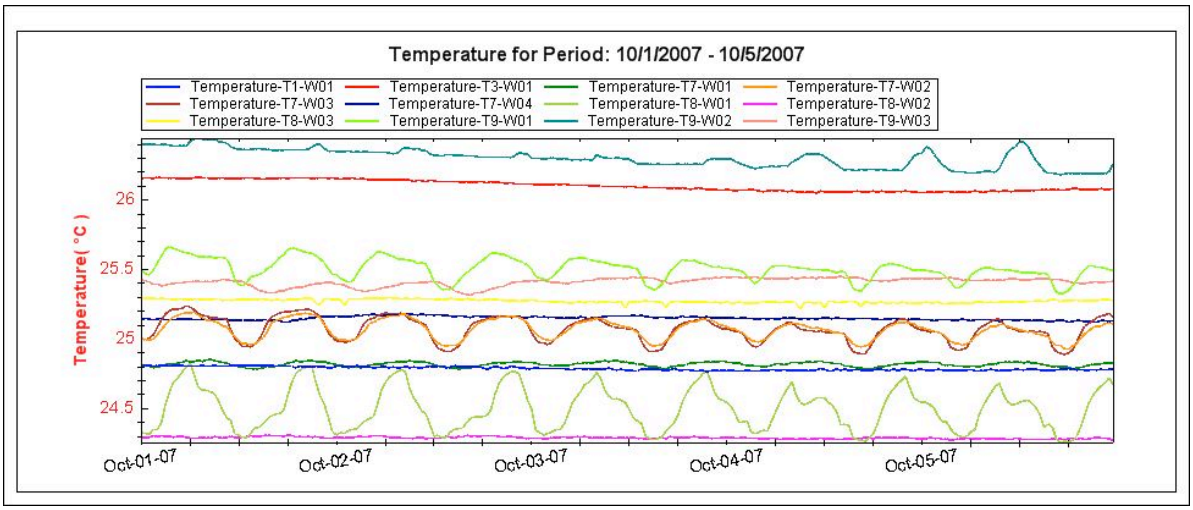

Figure 19. 30-minute groundwater temperature (degrees C) for all 12 wells in the project over a five-day period. Note diurnal variation in temperature.

Wet/Dry Seasonality

Figure 20 shows the sum of rainfall recorded at the S-46 gauging station (in mm) during the wet and dry seasons of 2005 – 2007. Wet season rainfall was significantly higher than dry season rainfall for all years. This is in agreement with previous seasonal rainfall observations in the Loxahatchee River Basin, which have shown that two-thirds of yearly rain falls during the wet season (Dent, 1997).

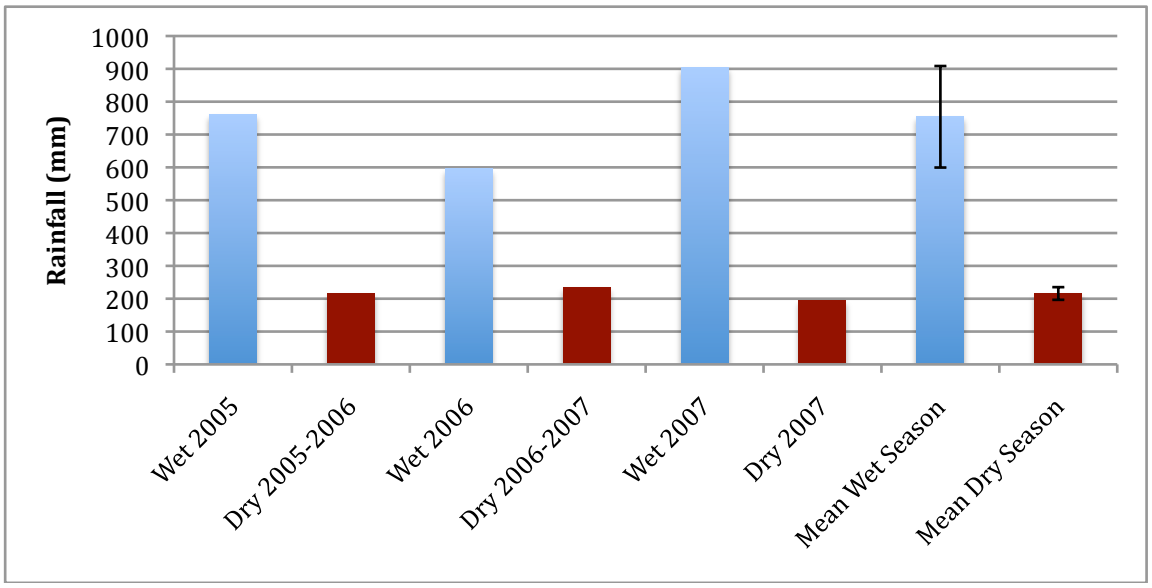

Figure 20. Seasonal rainfall totals recorded at the S-46 gauging station on the Southwest Fork of the Loxahatchee River. Error bars indicate plus/minus one standard deviation.

Wet/dry season differences in average water table elevation, depth, and groundwater EC were also observed in all wells, though the magnitude of this difference was variable across the twelve wells and was small. Average wet season water table elevations were higher than dry season elevations by an average of 0.44 ft, with a range of 0.05 to 1.00 ft. The greatest seasonal differences in water table elevation were seen in wells T1-W01, T3-W01 and T8-W03 (Fig. 21). Water table depth below ground (Fig. 22) was estimated by subtracting 3 ft from the water table depth below benchmark to observe the seasonal trends in groundwater movement in and near the plant root zone. Seasonal changes in groundwater depth impact soil moisture profiles and water availability, and can have an impact on the type of vegetation seen in the area of each well.

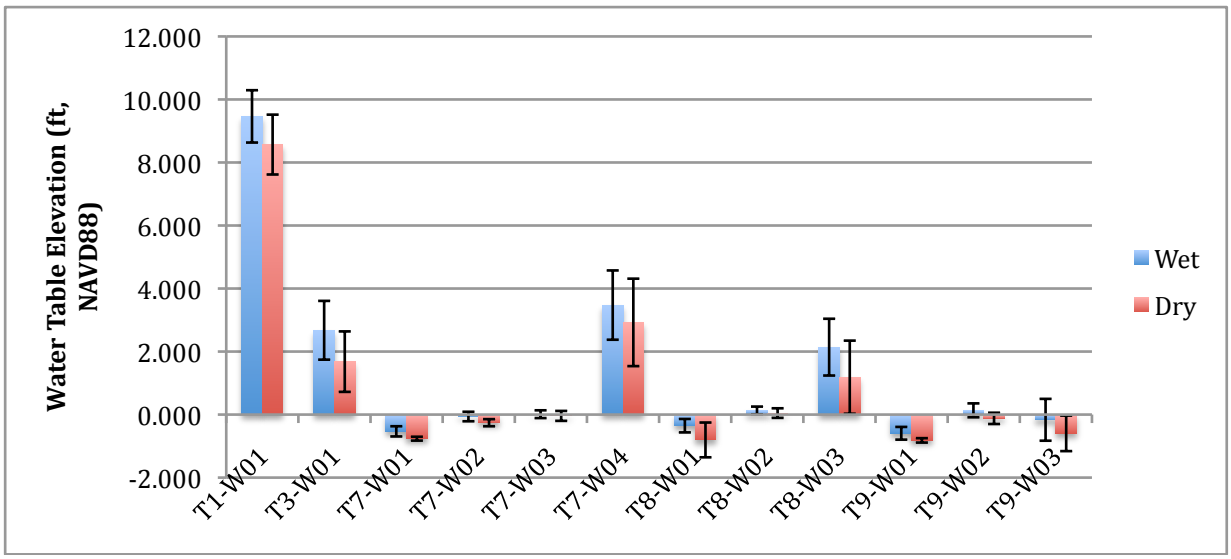

Figure 21. Average wet/dry season water table elevation (ft, NAVD88). Error bars indicate plus/minus one standard deviation.

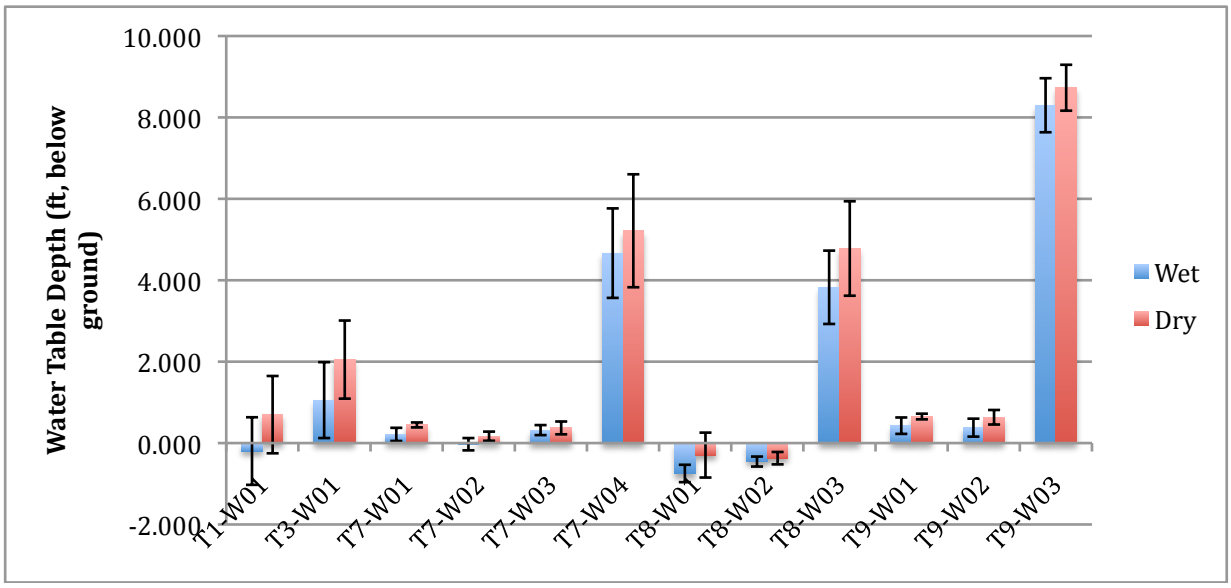

Figure 22. Average wet/dry season water table depth (ft, below ground). Ground level is assumed to be 3 ft below benchmark. Positive values on this figure indicate water table below ground. Error bars indicate plus/minus one standard deviation.

Wet season groundwater EC was lower than dry season EC in some wells and higher in others (range of -0.472 to 0.007 S/m difference between wet and dry seasons). The greatest seasonal differences in EC were seen in T8-W01, T9-W01, T9-W02 (Fig. 23), where wet season EC was higher than dry season EC by an average 0.329 S/m.

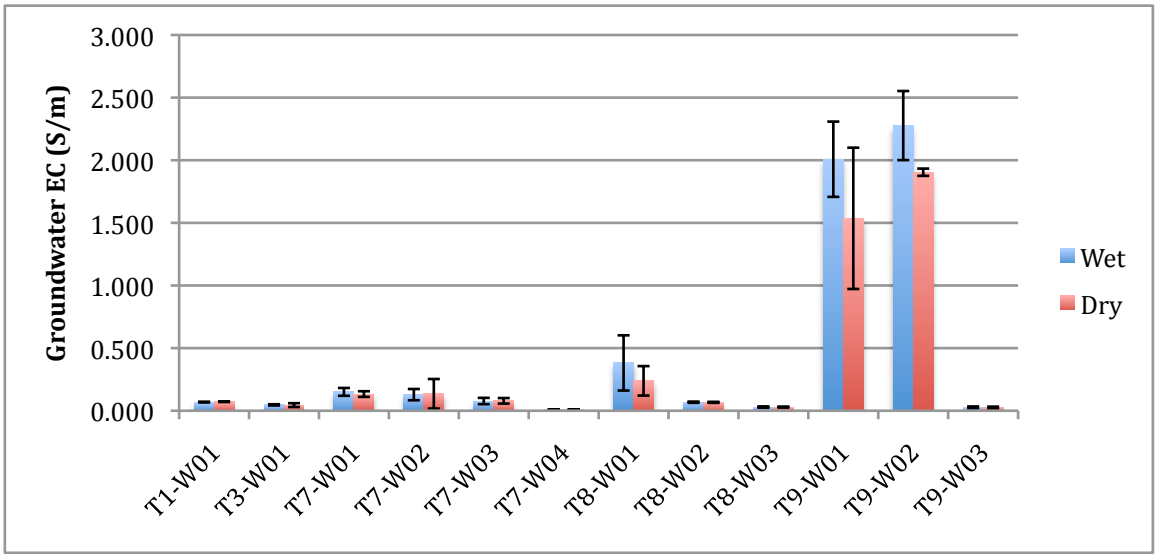

Figure 23. Average wet/dry season groundwater EC (S/m). Error bars indicate plus/minus one standard deviation.

Although dividing the year into wet (May – October) and dry (November – April) seasons is useful for describing the general pattern of rainfall in the Loxahatchee River Basin, it does not work well for identifying seasonal patterns in groundwater elevations or electrical conductivity. This is likely because some of the driest periods of the year are often experienced during the beginning of the "wet" season. Only after the onset of large and regular summer rains does the

"wet" season really begin, and this is often delayed until July or later. Thus, after a long dry season, water table elevations may continue to drop and groundwater EC continue to rise for several months into the wet season. While summing rainfall over the wet and dry months negates this effect and provides a clear division of seasons, averaging other variables over the same time periods masks these seasonal differences. This is likely also the case for surface water, where lowest levels and highest EC values are often seen in the early months of the "wet" season.

Soil Moisture and Porewater Electrical Conductivity

Twenty-four dielectric probes (Stevens Hydra Probe, Beaverton, OR) measuring soil moisture, soil electrical conductivity (EC), and temperature were installed at eight locations and three depths along two transects (T1 and T7) to capture the spatial and temporal variation of hydrological parameters over wet and dry seasons (Fig. 24). Each cluster of three probes was wired to a field data logger (CR-10, Campbell Scientific, Logan, UT), which recorded soil moisture, soil bulk EC, and temperature every 30 minutes. Soil-specific probe calibrations (Mortl, 2006) were used for soil moisture and porewater EC calculations. Five of the eight soil moisture and porewater EC monitoring stations were located in close proximity to one of the groundwater wells installed by the SFWMD (one on Transect 1 and four on Transect 7). Comparison of groundwater elevation and EC with soil moisture and porewater EC revealed some possible relationships, described below. Probe location naming convention is as follows: T1-60 (25 cm) indicates the soil moisture and porewater EC monitoring station located 60 m from the river on Transect 1, and the probe 25 cm below the ground surface.

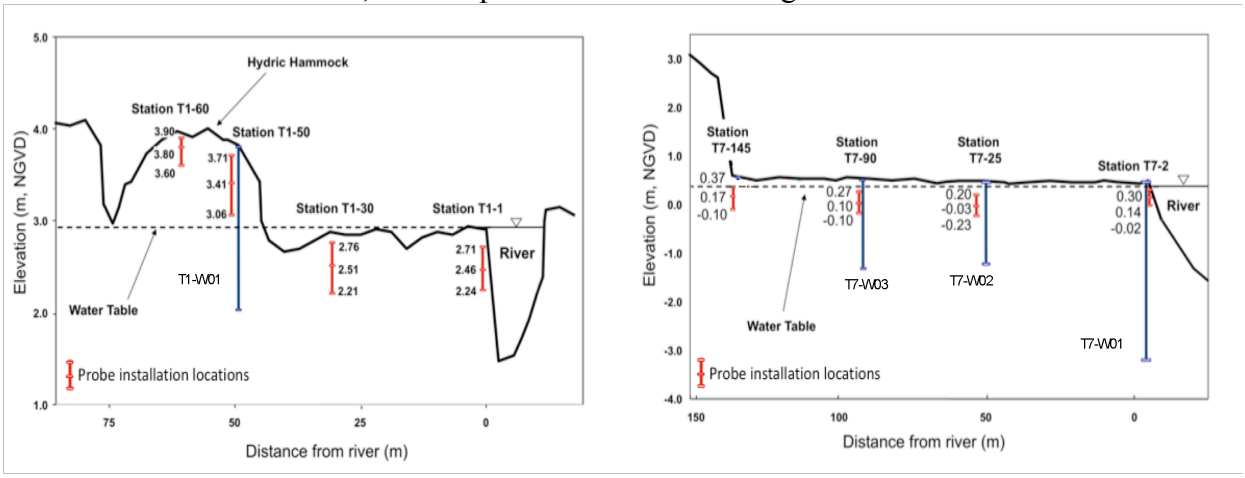

Figure 24. Transect 1 (left) is in an upriver location not impacted by daily tides. Transect 7 (right) is a transitional area that receives daily tidal flooding.

Transect 1 – Groundwater Elevation and Soil Moisture

Groundwater elevation and EC were measured in one well on Transect 1 (T1-W01), which is located in close proximity to soil moisture and porewater EC monitoring stations T1-60 and T1-50 (Fig. 24). Average wet and dry season soil moisture values for these stations are shown in Figure 25. While average wet season soil moisture was higher than dry season soil moisture in all locations, the differences were not significant. As mentioned above, dividing the year into wet (May – October) and dry (November – April) seasons is useful for describing the general pattern of rainfall in the Loxahatchee River Basin, but does not appear to work as well for identifying seasonal patterns in soil moisture.

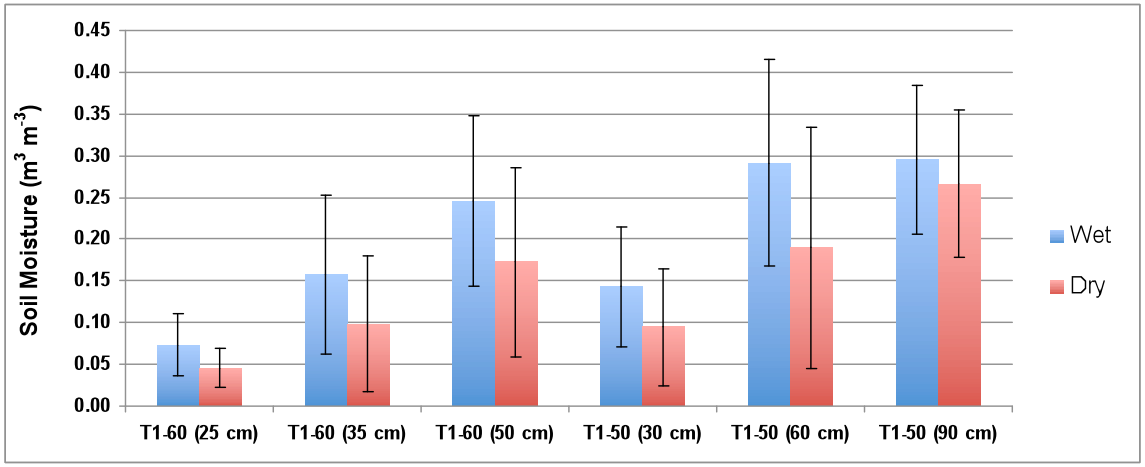

Figure 25. Average wet/dry season soil moisture at stations T1-60 and T1-50 (m^3 m^{-3}). Error bars indicate plus/minus one standard deviation.

Mean monthly groundwater elevations (ft, NAVD88) were compared with mean monthly soil moisture values (m^3 m^{-3}) recorded by each of the six probes from stations T1-60 and T1-50 (Figs. 26 and 27). In all of the following graphs, black triangles represent data from shallow probes; pink squares represent data from middle depth probes; and blue circles represent data from deepest probes. A general relationship showing increasing soil moisture with increasing groundwater elevations is clear, with the deepest probes measuring the highest values of soil moisture. Fitting a general linear relationship between groundwater elevations and soil moisture provides reasonable coefficients of determination ($0.60 < r^2 < 0.86$) (Table 6). Future work relating groundwater elevation to soil moisture profiles in the root zone using daily data and a drained-to-equilibrium assumption is planned.

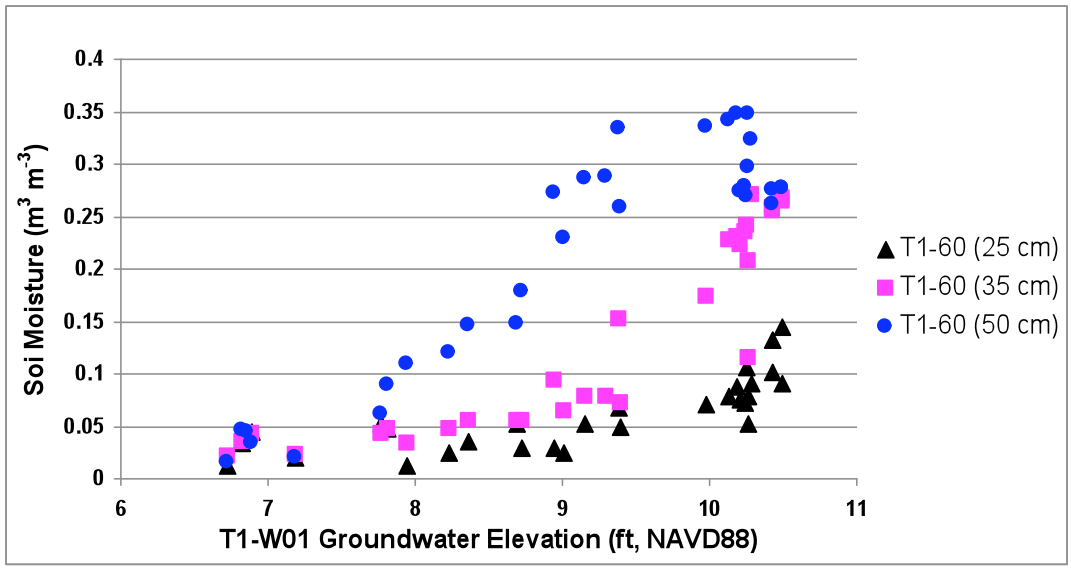

Figure 26. Mean monthly groundwater elevation at well T1-W01 (ft, NAVD88) versus mean monthly soil moisture (m^3 m^{-3}) measured at station T1-60.

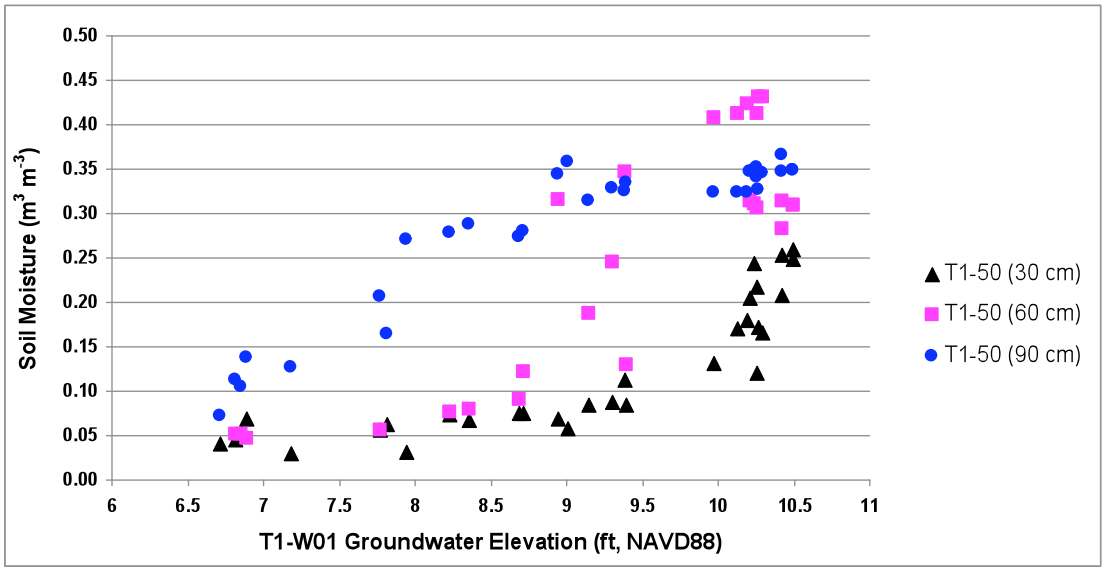

Figure 27. Mean monthly groundwater elevation at well T1-W01 (ft, NAVD88) versus mean monthly soil moisture (m^3 m^{-3}) measured at station T1-50.

Table 6. Linear fits of the form y=mx+b for the regression of groundwater elevation at T1-W01 with soil moisture at stations T1-60 and T1-50.

Probe	m	b	r^2
T1-60 (25 cm)	0.0199	-0.1195	0.5955
T1-60 (35 cm)	0.0661	-0.0471	0.7735
T1-60 (50 cm)	0.081	-0.5212	0.8626
T1-50 (30 cm)	0.0489	-0.322	0.7143
T1-50 (60 cm)	0.0999	-0.6819	0.7363
T1-50 (90 cm)	0.0623	-0.2899	0.8418

Transect 1 – Groundwater and Porewater Electrical Conductivity

Porewater EC is calculated based on measured bulk soil electrical conductivity (the combined conductivity of the soil media and the porewater) and soil moisture. However, when soil moisture falls below 0.10 m^3 m^{-3}, this calculation fails to provide meaningful results. Soil moisture of the sandy soils at stations T1-60 and T1-50 often fall below 0.10 m^3 m^{-3}, making the calculation of porewater EC at these stations difficult. However, bulk soil EC can be used in its place to observe how EC changes over the period of record. In general, bulk soil EC measured at theses stations remains lower than measured groundwater EC. Maximum bulk EC at station T1-60 is 0.005 S/m (Fig. 28), and is, at most, 3% of groundwater EC at T1-W01. Maximum bulk EC at station T1-50 is 0.017 S/m (Fig. 29), and is, at most, 7% of groundwater EC at T1-W01.

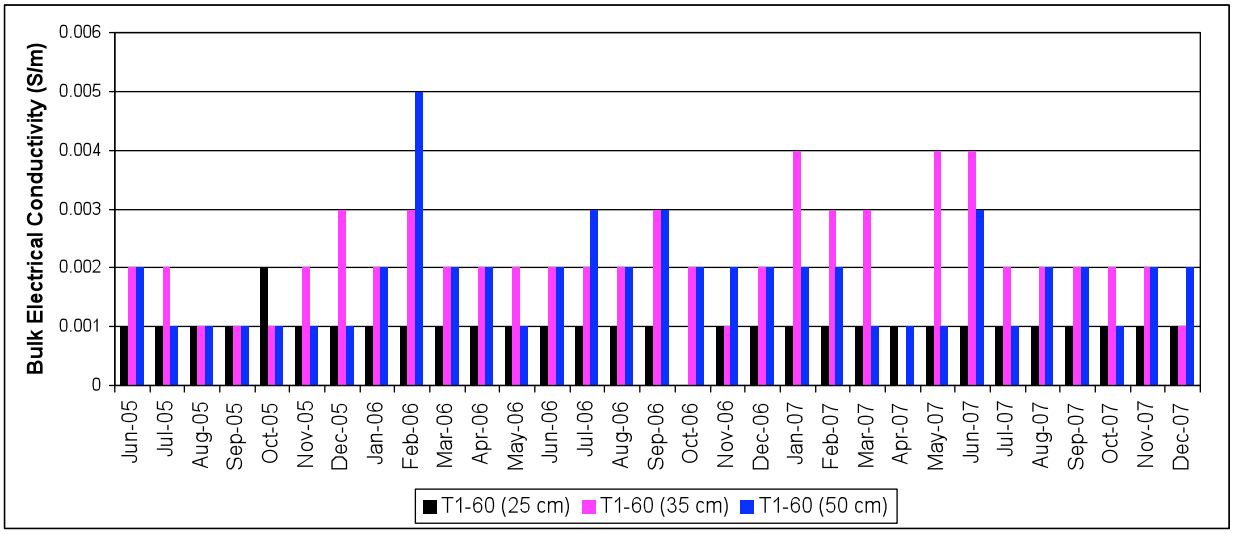

Figure 28. Mean monthly bulk electrical conductivity at station T1-60.

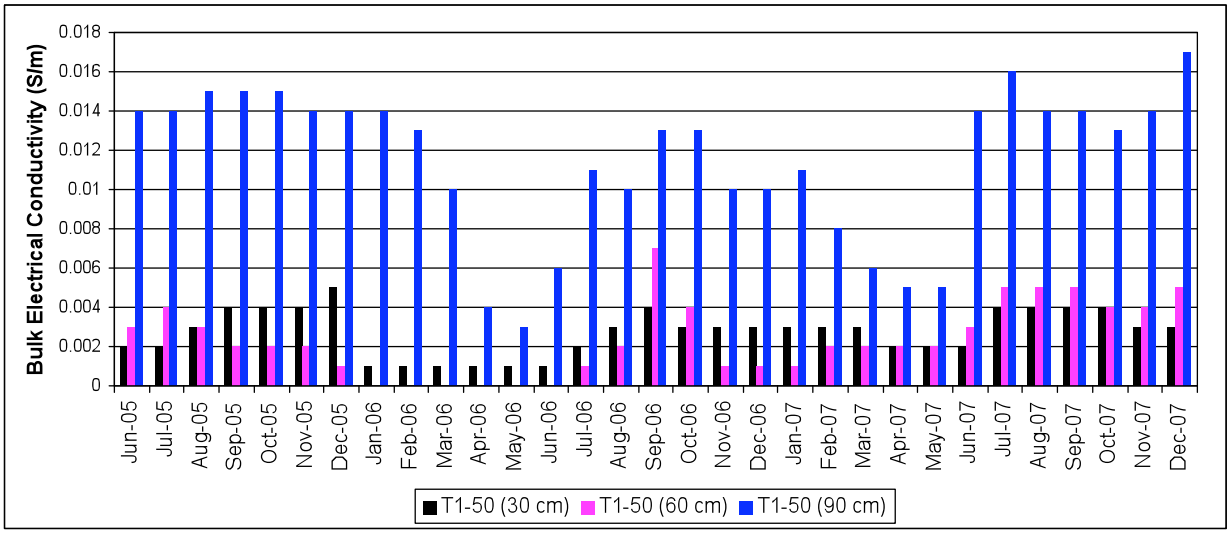

Figure 29. Mean monthly bulk electrical conductivity at station T1-50.

Mean monthly groundwater EC values (S/m) were compared with mean monthly bulk soil conductivity (S/m) recorded by each of the six probes from stations T1-60 and T1-50 (Figs. 30 and 31). No clear relationship between groundwater EC and bulk soil EC is apparent at either of these stations.

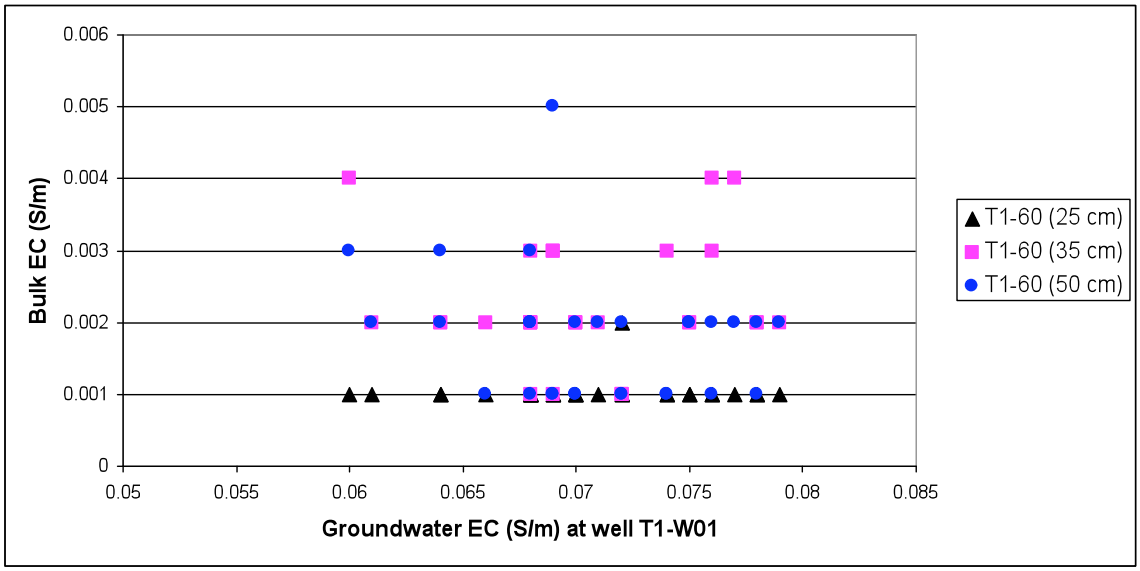

Figure 30. Mean monthly groundwater EC (S/m) at well T1-W01 versus mean monthly bulk soil EC (S/m) bulk electrical conductivity at station T1-60.

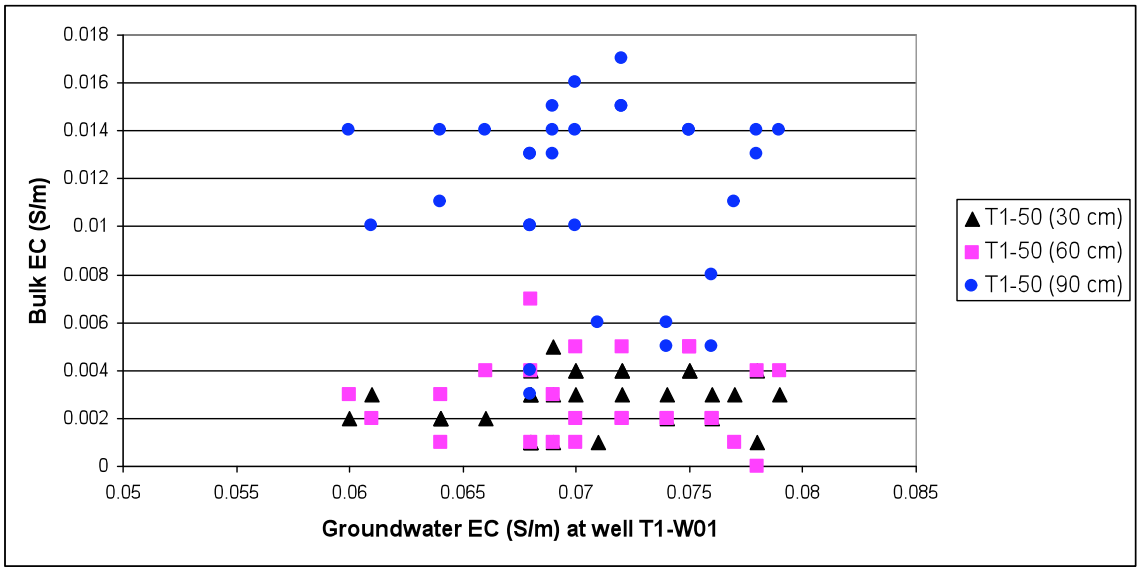

Figure 31. Mean monthly groundwater EC (S/m) at well T1-W01 versus mean monthly bulk soil EC (S/m) bulk electrical conductivity at station T1-50.

Transect 7 – Groundwater Elevation and Soil Moisture

Groundwater elevation and electrical conductivity (EC) were measured in four wells on Transect 7 (T7-W01, T7-W02, T7-W03, and T7-W04). Well T7-W04 is located in the upland, but close to soil moisture and porewater EC monitoring station T7-145, while the remaining three wells are located in the floodplain in close proximity to soil moisture and porewater EC monitoring stations T7-90, T7-50, and T7-2 (Fig. 24). The floodplain of Transect 7 has only slight variation in elevation from hummocks, stumps, and fallen logs and is subject to tidal inundation nearly every day (high tide was below the lowest probe installation elevation on only one day of the study period). Thus, soil moisture values on this transect are nearly constant at or near saturation values.

Again, mean monthly groundwater elevations (ft, NAVD88) from the four wells on Transect 7 were compared with mean monthly soil moisture values (m^3 m^{-3}) from the four stations on this transect. Results are shown comparing upland well (T7-W04) elevations and soil moisture at station T7-145 (Fig. 32) as well as for floodplain well (T7-W03) elevation and soil moisture at station T7-90 (Fig. 33). No correlations were found between groundwater elevation and soil moisture for these or the other stations on T7, due to the relatively constant soil moisture caused by diurnal tidal flooding.

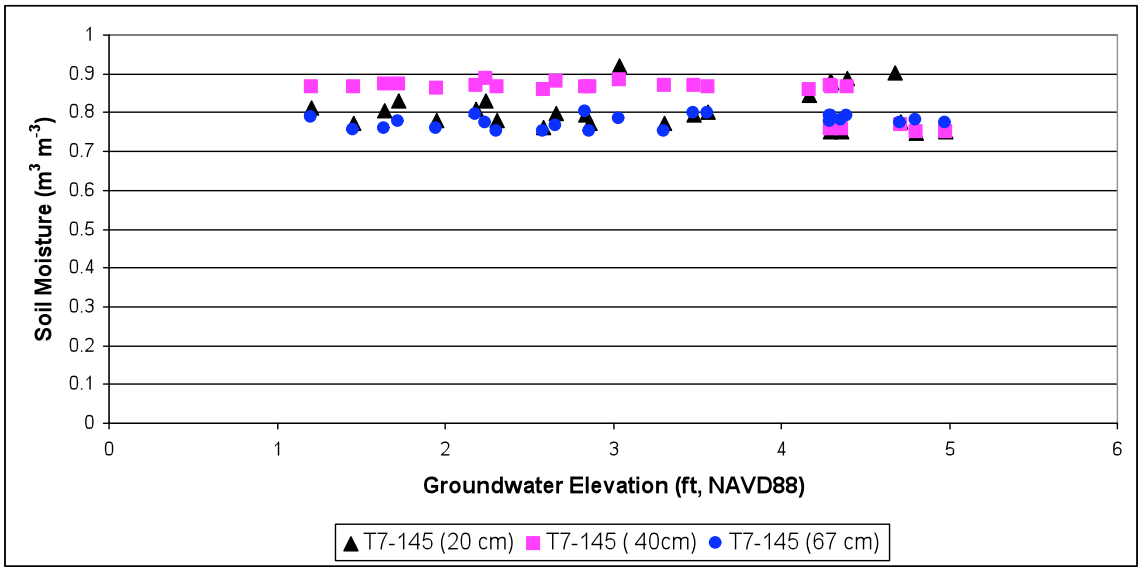

Figure 32. Mean monthly groundwater elevation at well T7-W04 (ft, NAVD88) versus mean monthly soil moisture (m^3 m^{-3}) measured at station T7-145.

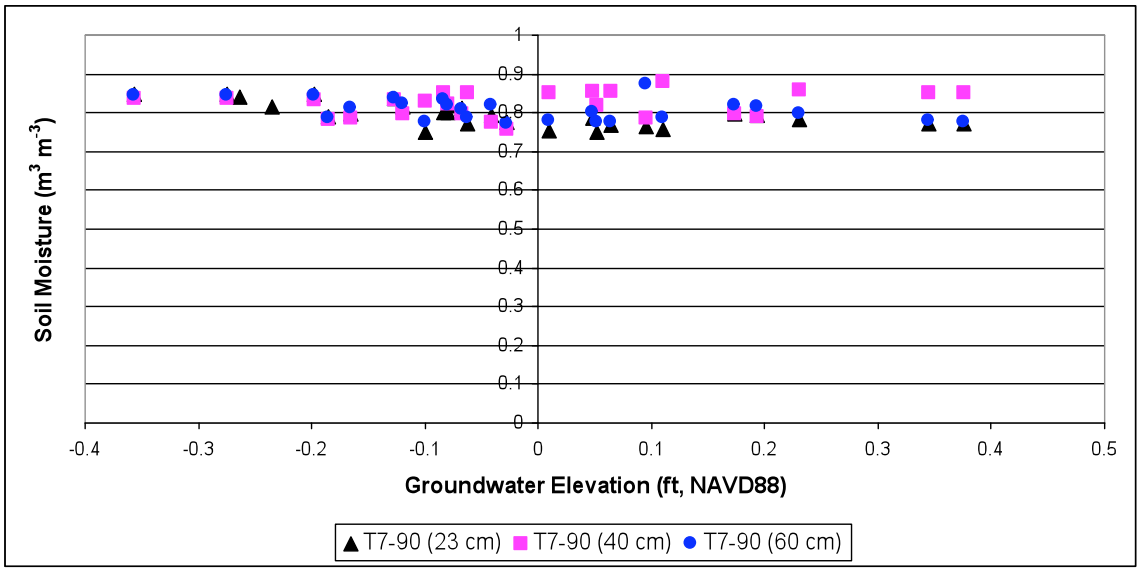

Figure 33. Mean monthly groundwater elevation at well T7-W04 (ft, NAVD88) versus mean monthly soil moisture (m^3 m^{-3}) measured at station T7-145.

On the other hand, small changes in soil moisture have been correlated with surface water elevation. Figure 34 shows a six-day time series of soil moisture for the shallow probe at station

T7-145 (145 m from the river, elevation 0.37 m NGVD). Fourier smoothing of the 30-minute soil moisture and 15-minute river stage data to a 6-hour time series indicates that when mean tide is above the probe elevation, soil moisture and river stage are tightly correlated, with coinciding peaks and valleys corresponding to low and high tides. When mean tide drops below the probe elevation, this relationship breaks down, as the surface soil continues to dry (though only slightly). The total range of variation in soil moisture observed over this time is from 0.795 to 0.805, a change of 1.24%.

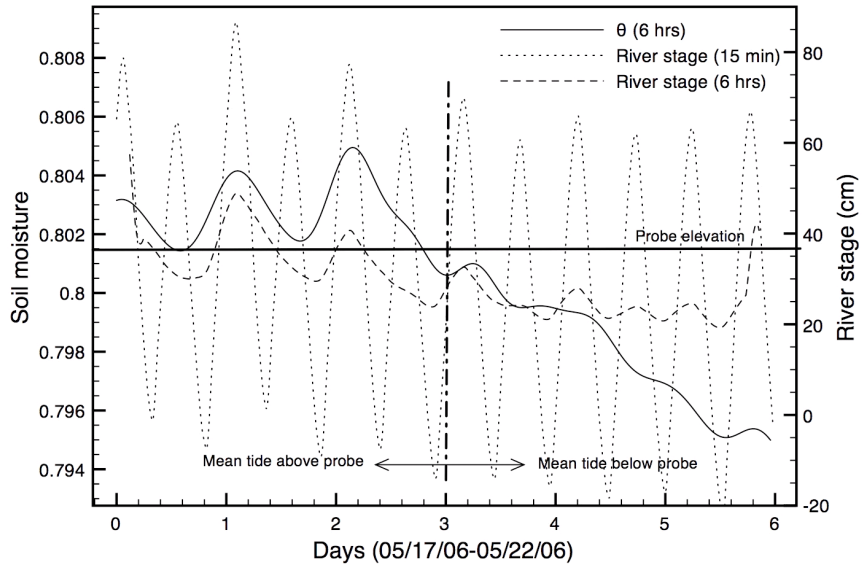

Figure 34. Relationship between river stage and soil moisture observed in the highest elevation probe in the floodplain of on Transect 7.

Transect 7 – Groundwater and Porewater Electrical Conductivity

Mean monthly groundwater and porewater EC values were calculated for each "set" of groundwater wells and soil moisture and porewater EC monitoring stations. In the following graphs, shallow probes are represented with black bars; middle probes with pink bars; deepest probes with blue bars; and groundwater with green bars. At T7-145 and T7-90, porewater EC is always higher than groundwater EC at wells T7-W04 and T7-W03, respectively (Figs. 35 and 36).

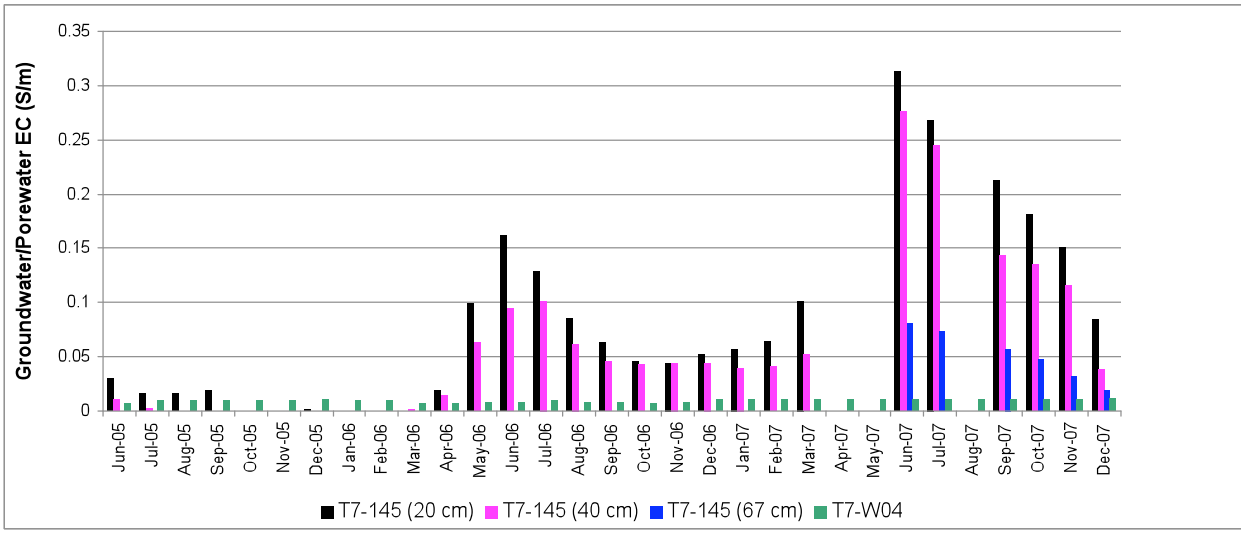

Figure 35. Mean monthly groundwater EC at well T7-W04 and porewater EC at station T7-145. Porewater EC measured at T7-145 (67 cm) is at or near zero from June 2005 – March 2007 (not missing).

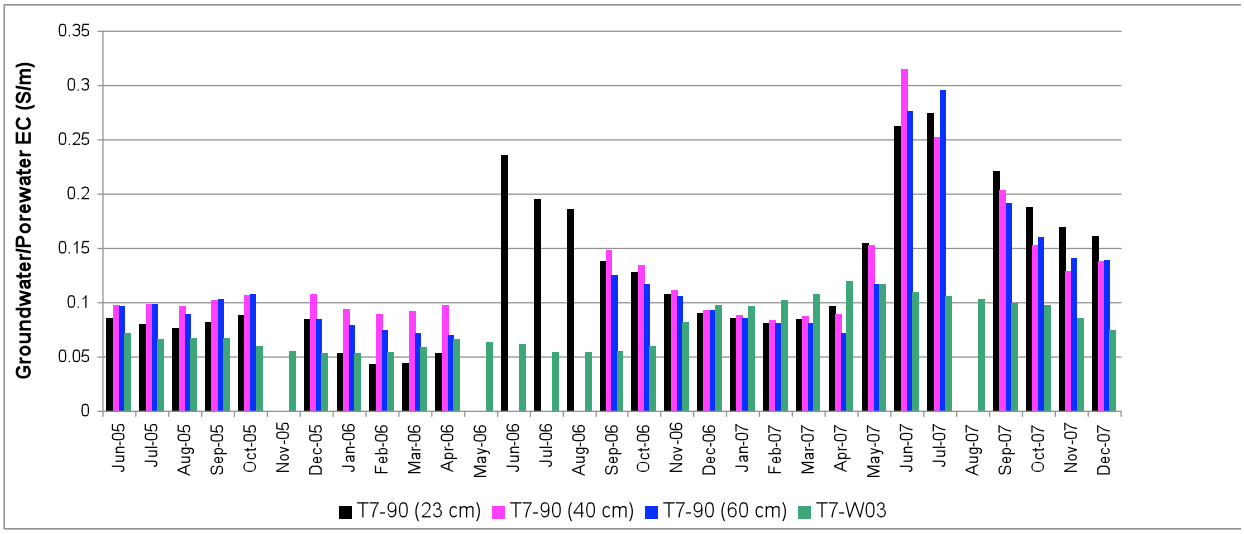

Figure 36. Mean monthly groundwater EC at well T7-W03 and porewater EC at station T7-90.

At station T7-25 (Fig. 37), groundwater EC in well T7-W02 remains higher than porewater EC except during the dry periods of 2006 and 2007 when porewater EC exceeds groundwater EC by nearly four times (400%). At this station, groundwater EC continues to rise into the wet season, while porewater EC falls. At station T7-2 (Fig. 38), groundwater EC generally exceeds porewater EC except in the dry season and through the end of 2007.

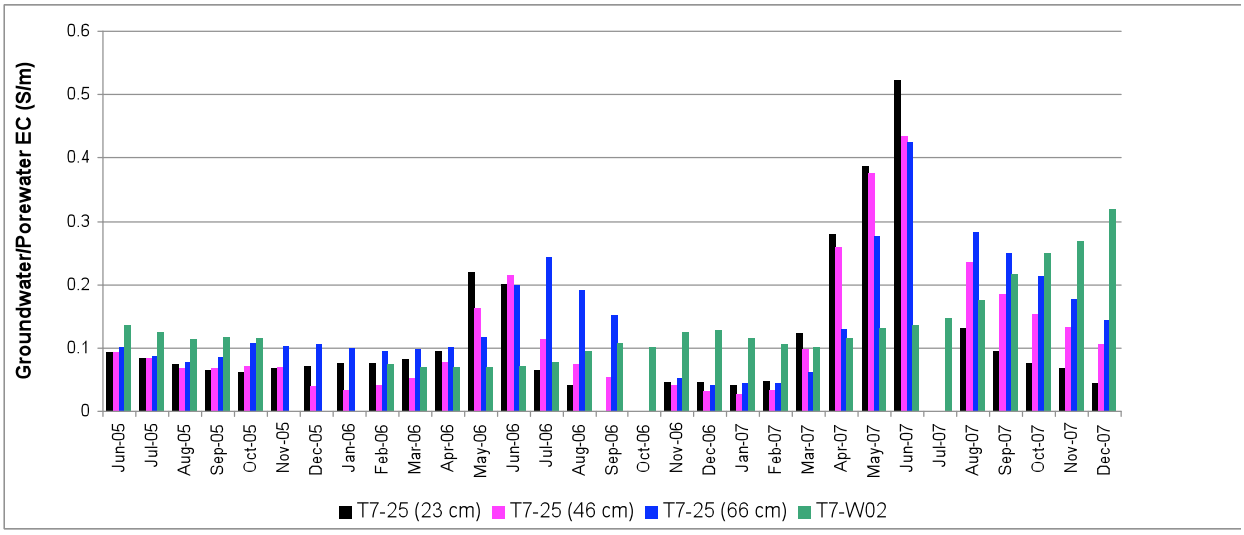

Figure 37. Mean monthly groundwater EC at well T7-W02 and porewater EC at station T7-25.

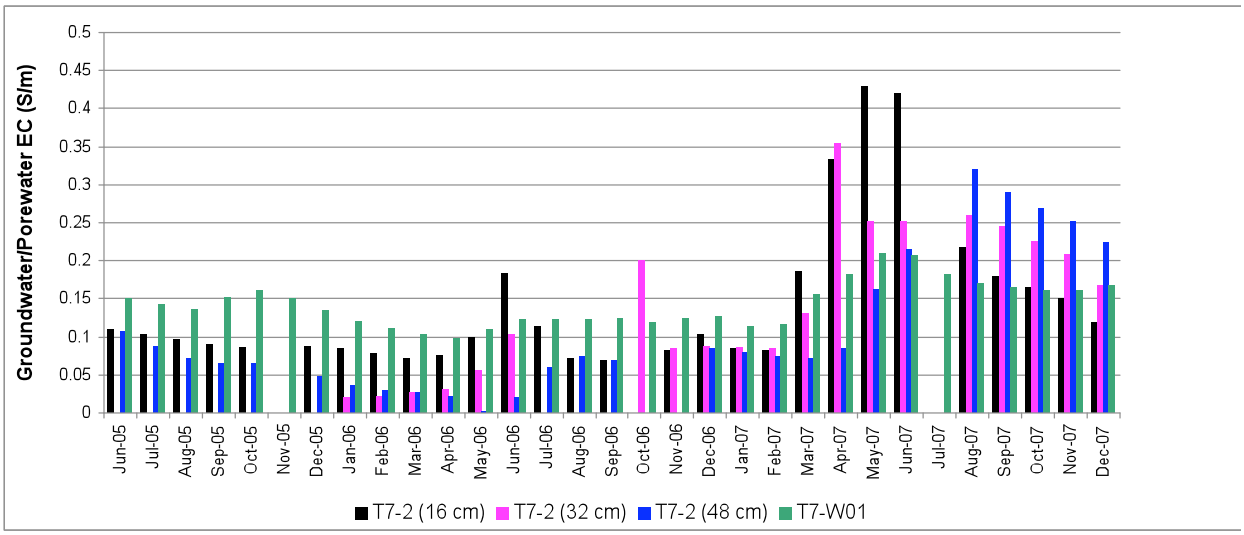

Figure 38. Mean monthly groundwater EC at well T7-W01 and porewater EC at station T7-2.

Mean monthly groundwater EC (S/m) was compared with mean monthly porewater EC (S/m) for each set of groundwater wells and soil moisture and porewater EC monitoring stations (Figs. 39 – 42). In general, higher porewater EC was correlated with increased groundwater EC, except at station T7-25/well T7-W02, where the relationship was less clear. As discussed above, groundwater EC at this station continued to rise well into the wet season while porewater EC quickly falls. Fitting a general linear relationship between groundwater and porewater EC provides only slight correlation, with poor coefficients of determination ($0.026 < r^2 < 0.144$), except at station T7-2/well T7-W01, which showed a stronger relationship ($0.46 < r^2 < 0.74$) (Table 7).

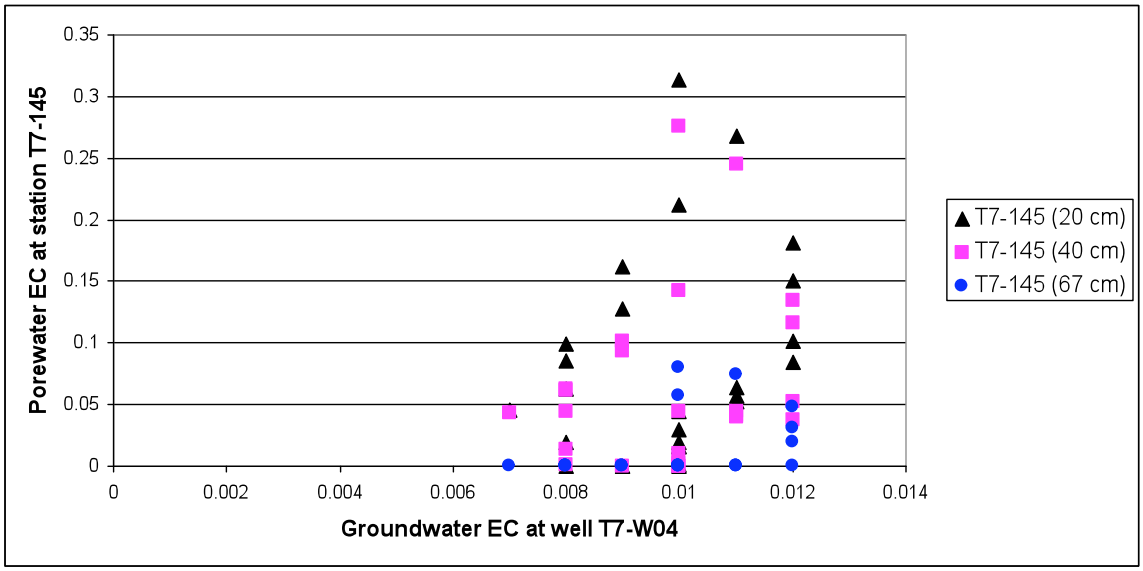

Figure 39. Average monthly groundwater EC at well T7-W04 versus average monthly porewater EC at station T7-145.

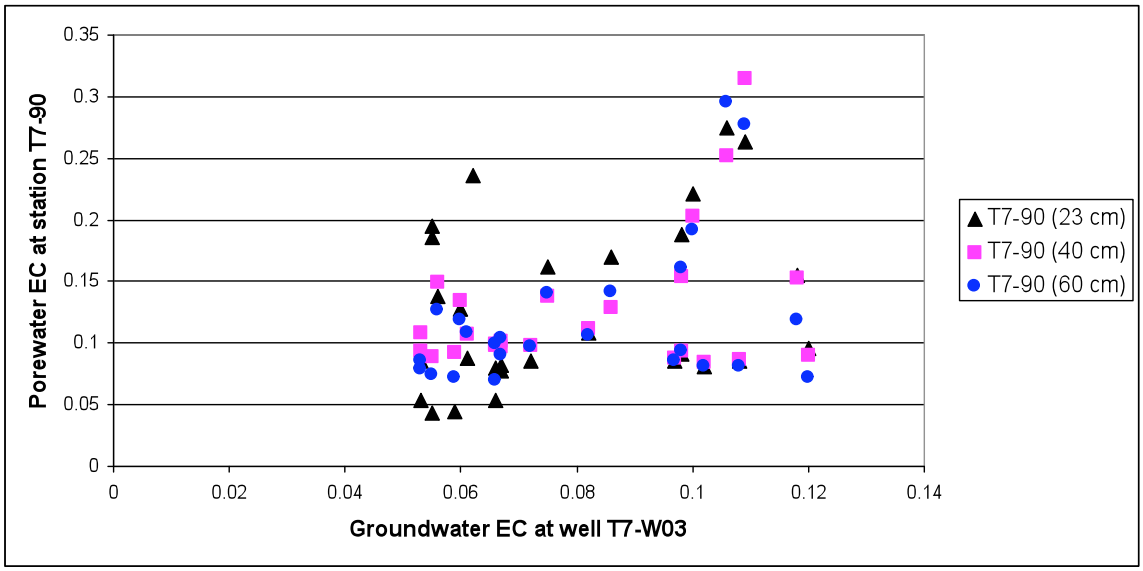

Figure 40. Average monthly groundwater EC at well T7-W03 versus average monthly porewater EC at station T7-90.

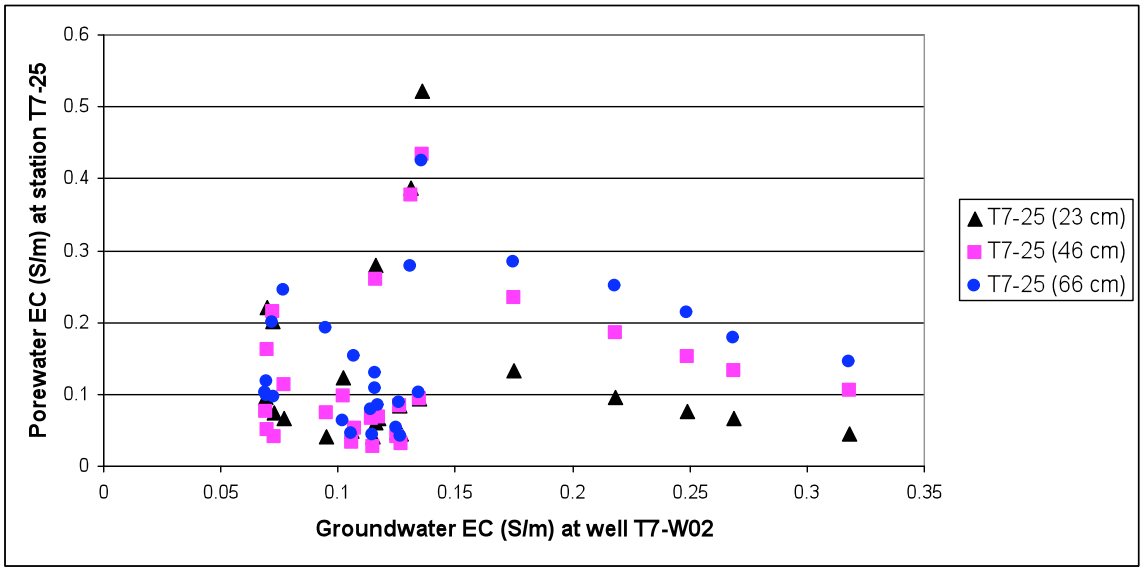

Figure 41. Average monthly groundwater EC at well T7-W02 versus average monthly porewater EC at station T7-25.

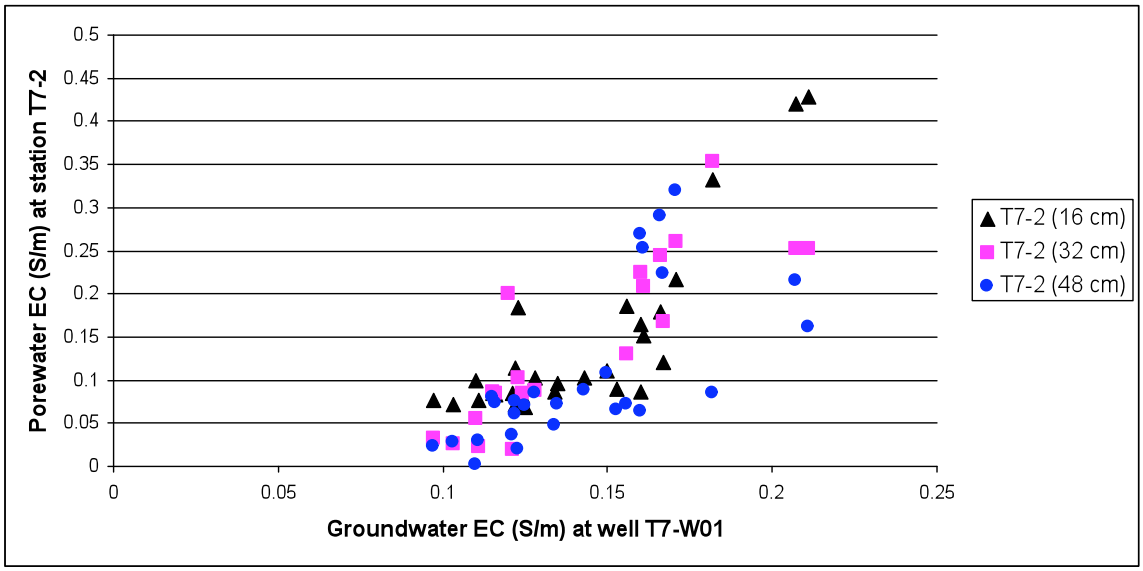

Figure 42. Average monthly groundwater EC at well T7-W01 versus average monthly porewater EC at station T7-2.

Table 7. Linear fits of the form y=mx+b for the regression of groundwater and porewater EC for each "set" of wells and monitoring stations.

Probe	m	b	r2
T7-145 (20 cm)	16.6372507	-0.0796855	0.07961803
T7-145 (40 cm)	12.0015692	-0.0544542	0.05844121
T7-145 (67 cm)	6.24871572	-0.0490074	0.13630281
T7-90 (23 cm)	0.94003283	0.05334927	0.09773462
T7-90 (40 cm)	0.94026275	0.05293553	0.14472791
T7-90 (60 cm)	1.03033702	0.03783487	0.15809507
T7-25 (23 cm)	-0.2059608	0.14422564	0.01337063
T7-25 (46 cm)	0.26757271	0.08310335	0.02690885
T7-25 (66 cm)	0.38060361	0.0916048	0.06921428
T7-2 (16 cm)	2.79269418	-0.2569203	0.69503218
T7-2 (32 cm)	2.47674977	-0.2086861	0.73564304
T7-2 (48 cm)	2.07193505	-0.1879742	0.46393283

Finally, porewater EC at each soil moisture and porewater monitoring station were compared with groundwater elevation at well T7-W04 (upland well) to investigate the correlation of water table elevation in the upland with EC observed in the porewater of the floodplain (Figs. 43 – 46). No clear relationships between groundwater elevation in the upland and porewater EC in the floodplain were found.

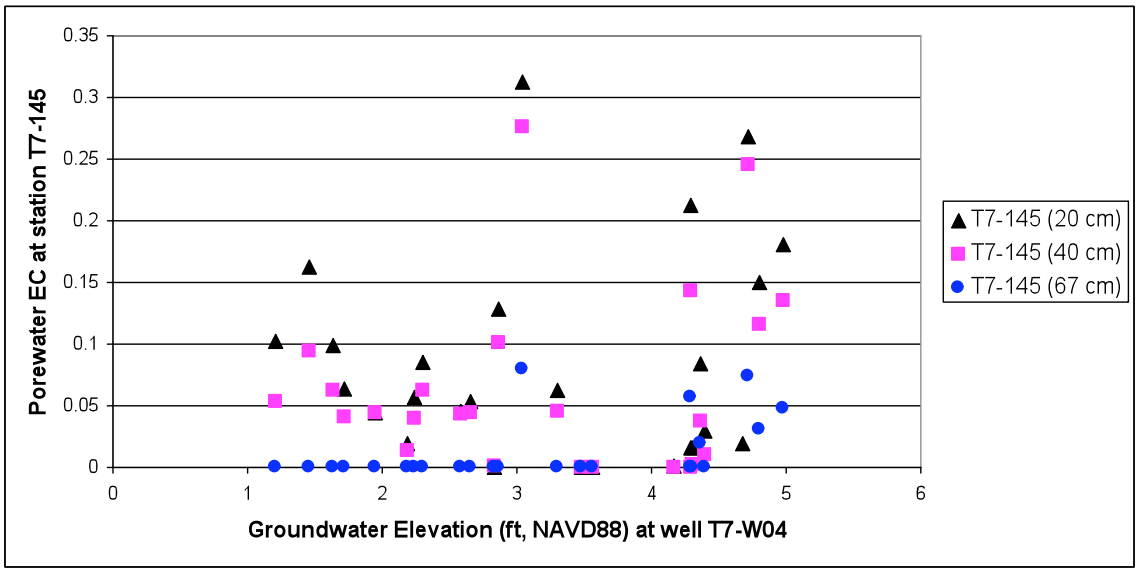

Figure 43. Average monthly groundwater elevation at well T7-W04 versus average monthly porewater EC at station T7-145.

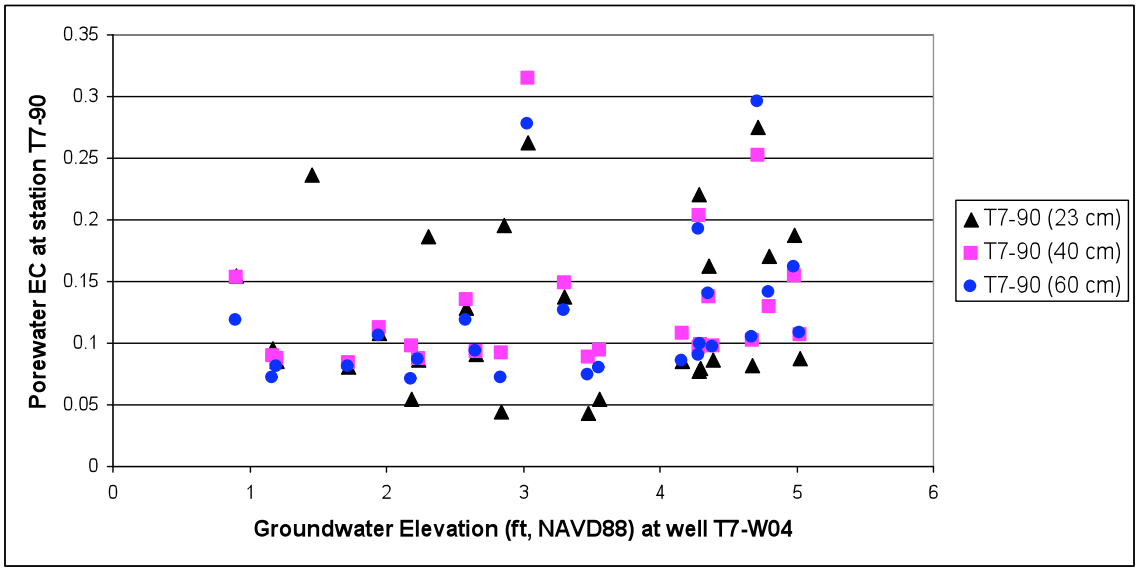

Figure 44. Average monthly groundwater elevation at well T7-W04 versus average monthly porewater EC at station T7-90.

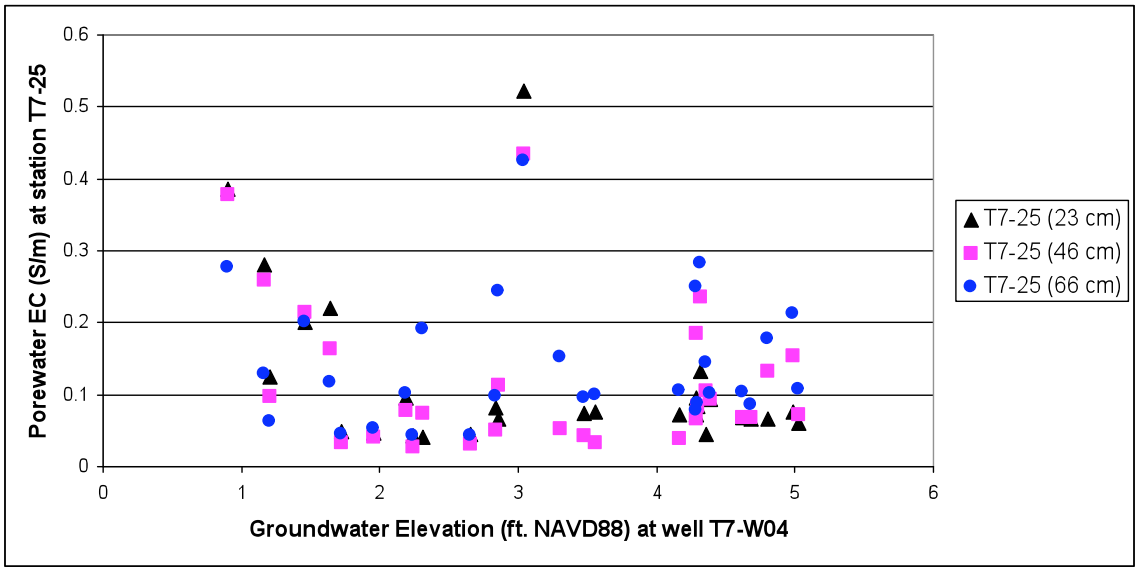

Figure 45. Average monthly groundwater elevation at well T7-W04 versus average monthly porewater EC at station T7-25.

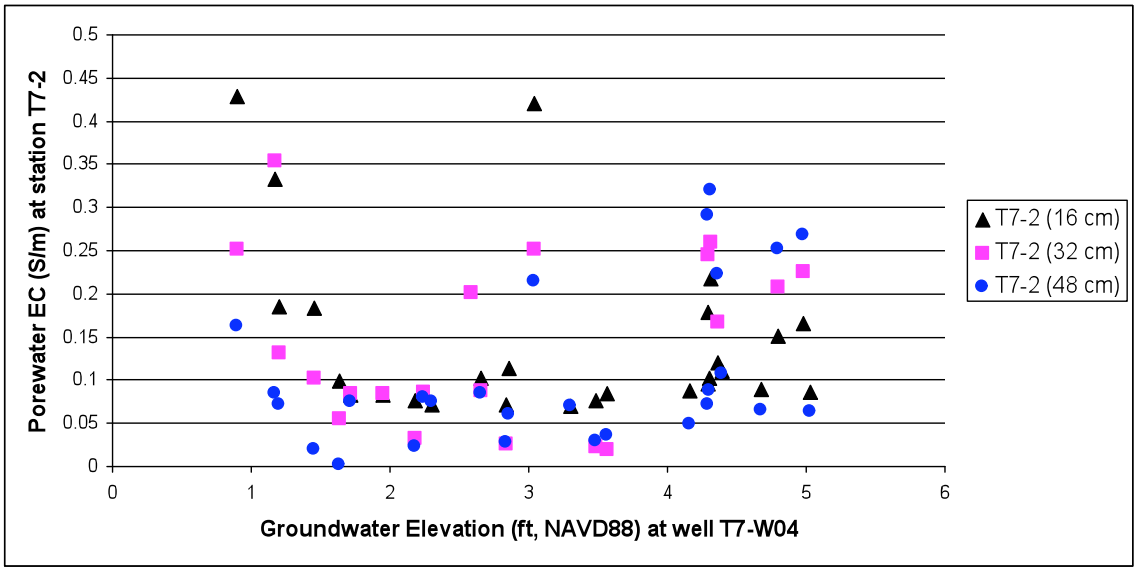

Figure 46. Average monthly groundwater elevation at well T7-W04 versus average monthly porewater EC at station T7-2.

Future Steps

The analysis presented here is a first step towards unraveling the complex processes that drive not only floodplain hydrology, but ecology as well. Future work will aim to synthesize the large amount of groundwater data with other meteorological, surface water, soil moisture, and porewater data from the area. One novel approach for studying multivariate time series is dynamic factor analysis (DFA), originally developed for economic time series interpretation (Geweke, 1977). Classical time series techniques usually require long stationary and regular spaced temporal data sets. However, time series are usually non-stationary and missing values are not infrequent, especially under unattended conditions. Although non-stationarity may be overcome by detrending, patterns may hold fundamental information necessary to explain the temporal dynamics of the investigated variable. Dynamic factor analysis is a dimensionality reduction statistical technique that can handle non-stationary, short time series. Furthermore, it allows for identifying common patterns between multivariate time series, and their relation with selected potential explanatory variables.

Unlike other statistical dimension reduction techniques, such as factor and redundancy analysis, DFA takes into account the time component. Thus, underlying hidden effects driving the temporal variation in observed data may be detected. Such driving effects may be described by common patterns (representing unexplained variability) and/or explanatory variables consisting of other observed time series (Zuur et al., 2003b). Recently, DFA has been successfully applied in hydrology to identify common patterns in groundwater levels (Ritter and Muñoz-Carpena, 2006) and interactions between hydrological variables and groundwater quality trends (Muñoz-Carpena et al., 2005; Ritter et al., 2007). Hence, DFA has been shown to be an effective tool for analyzing time dependent hydrological datasets, for providing information about common patterns and interactions in such hydrological time series, and for determining if the time series are affected by selected explanatory variables. One interesting feature of DFA is that it does not require a priori information about the underlying mechanisms governing the hydrological processes.

After identifying interactions with DFA, these relationships will be used to upscale our understanding of the system to the watershed level and incorporate the response of ecological systems to changing hydrology.

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Zuur, A.F., R.J. Fryer, I.T. Jolliffe, R. Dekker, and J.J. Beukema. 2003b. Estimating common trends in multivariate time series using dynamic factor analysis. Environmetrics 14: 665-685.

LIST OF APPENDICES

Appendix I. Data set in electronic format (CD, enclosed)

Appendix II. Data in Hydrobase

Appendix III. Daily Time Series Graphs

Appendix III-A – Daily time series of Water Table Elevation (ft, NAVD88)

Appendix III-B – Daily time series of Water Table Depth (ft)

Appendix III-C – Daily time series of groundwater temperature (C)

Appendix III-D – Daily time series of groundwater EC (S/m)

Appendix IV. Global, Annual, Monthly, and Wet/Dry Season Statistics Tables

Appendix IV-A – Global Statistics

Appendix IV-B – Yearly Statistics

Appendix IV-C – Wet/Dry Season Statistics

Appendix IV-D – Monthly Statistics

APPENDIX I: Electronic Data on CD

The enclosed CD has four subdirectories: Raw Data; Final Data; Modified Data Reports; and Final Report. The files in these subdirectories are described below:

- **Raw Data** – as per the scope of work, UF converted all raw binary files into .csv format. This converted data is referred to as "raw data" and includes a file header with instrument and download information and the following data columns: Site – Test Name; Site – Unit Name; Time – Time Stamp; Level/Depth (ft); Temperature (F); Barometric Pressure (in Hg); Conductivity (mS/cm actual); Clark DO (ug/L); Battery (volts); and Time – Elapsed (Seconds).

  Raw (converted) data is delivered in this subdirectory, with exactly the same file structure and naming conventions as the delivered data. The only modification to the delivered data structure and naming is the addition of two data files found by Robb Rossmanith after data processing began, which were added to a new subdirectory called "Found_Files_Rob". This structure and naming is summarized in the "Raw Data File Summary.xls" data file on the data CD and in table 1 below.

- **Final Data –** Final data are presented in 12 comma separated value (.csv) files, one for each well in the project. Data in these files have the following format: date/time, Water Table Elevation NGVD29_m, Water Table Elevation NGVD29_ft, Water Table Elevation NAVD88_m, Water Table Elevation NAVD88_ft, Water Table Depth_m, Water Table Depth_ft, groundwater temperature (°C), groundwater electrical conductivity (S/m).

- **Modified Data Reports** - Missing, deleted, and modified data may be flagged as deemed appropriate by the SFWMD. The files in this subdirectory detail these data in several files:

  1. Gaps in delivered data that were replaced with nulls (summarized in electronic Excel file "Nulls_From_Missing_Data.xls" on data CD). Flag as missing.

  2. Temperature modifications (in deg. Fahrenheit). Summarized in electronic Excel file "Temperature_Modifications.xls" on data CD. Flag as modified

  3. Modifications (in mS/cm actual EC). Summarized in electronic Excel file "EC_Modifications.xls" on data CD. Flag as modified.

  4. Other data presumed unreliable (spikes; probe out of water; water table below probe; etc.) were removed and replaced with nulls every 30 minutes as summarized in Table 4 of the Data Processing and Analysis Report. Flag as removed.

- **Final Report** – An electronic copy of this report and appendices

Table 1. Raw data file summary

LIST OF FILES DOWNLOADED AND PROCESSED TO CSV FORMAT					
Directory	**File**	**Transect/Well**	**Probe S/N**	**Time start**	**Time end**
./Tom_Data_Aprol2007/emails and attachments/Rob email 08032005	SN33217 2005-06-08 153000 T1W01.bin.csv	T1W01	SN33217	6/8/05 15:30	8/19/05 16:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 11012005	SN33217 2005-08-19 173000 T1W01.bin.csv	T1W01	SN33217	8/19/05 17:30	10/28/05 16:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 02022006	SN33217 2005-10-28 170000 T1W01.bin.csv	T1W01	SN33217	10/28/05 17:00	1/26/06 12:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 04212006	SN33217 2006-01-26 130000 T1W01.bin.csv	T1W01	SN33217	1/26/06 13:00	4/21/06 12:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 06292006	SN33217 2006-04-21 133000 T1W01.bin.csv	T1W01	SN33217	4/21/06 13:30	6/29/06 11:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 09282006	SN33217 2006-06-29 113000 T1W01.bin.csv	T1W01	SN33217	6/29/06 11:30	9/27/06 16:29
./Tom_Data_Aprol2007/emails and attachments/Rob email 12142006	SN33217 2006-09-27 170000 T1W01.bin.csv	T1W01	SN33217	9/27/06 17:00	12/13/06 16:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 03152007	SN33217 2006-12-13 153000 T1W01.bin.csv	T1W01	SN33217	12/13/06 15:30	3/14/07 12:30
./NewDataFromParkAfterTomDeparture/200703data/Rob email 06012007	SN33217 2007-03-14 143000 T1W01.bin.csv	T1W01	SN33217	3/14/07 14:30	5/30/07 11:00
./NewDataFromParkAfterTomDeparture/200706data/Rob_email_0911	SN33217 2007-05-30 113000 T1W01.bin.csv	T1W01	SN33217	5/30/07 11:30	9/7/07 10:59
./NewDataFromGordon_Dec2007	SN33217 2007-09-07 120000 T1W01.bin.csv	T1W01	SN33217	9/7/07 12:00	12/13/07 14:59
./Tom_Data_Aprol2007/emails and attachments/Rob email 08032005	SN33027 2005-06-08 150000 T3W01.bin.csv	T3W01	SN33027	6/8/05 15:00	8/22/05 11:00
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./Tom_Data_Aprol2007/emails and attachments/Rob email 02022006	SN33027 2005-10-28 160000 T3W01.bin.csv	T3W01	SN33027	10/28/05 16:00	1/24/06 14:59
./Tom_Data_Aprol2007/emails and attachments/Rob email 04212006	SN33027 2006-01-24 160000 T3W01.bin.csv	T3W01	SN33027	1/24/06 16:00	4/21/06 13:59
./Tom_Data_Aprol2007/emails and attachments/Rob email 06292006	SN33027 2006-04-21 143000 T3W01.bin.csv	T3W01	SN33027	4/21/06 14:30	6/29/06 10:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 09282006	SN33027 2006-06-29 103000 T3W01.bin.csv	T3W01	SN33027	6/29/06 10:30	9/27/06 14:59
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./Tom_Data_Aprol2007/emails and attachments/Rob email 08032005	SN31006 2005-06-08 133000 T7W01.bin.csv	T7W01	SN31006	6/8/05 13:30	8/22/05 10:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 11012005	SN31006 2005-08-22 110000 T7W01.bin.csv	T7W01	SN31006	8/22/05 11:00	10/28/05 14:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 02022006	SN31006 2005-10-28 150000 T7W01.bin.csv	T7W01	SN31006	10/28/05 15:00	1/24/06 14:30
./Found_Files_Rob	SN31006 2006-01-24 150000 T7W01.bin.csv	T7W01	SN31006	1/24/06 15:00	3/23/06 13:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 06292006	SN31006 2006-03-23 133000 T7W01.bin.csv	T7W01	SN31006	3/23/06 13:30	6/25/06 16:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 09282006	SN31006 2006-06-29 100000 T7W01.bin.csv	T7W01	SN31006	6/29/06 10:00	9/27/06 13:59
./Tom_Data_Aprol2007/emails and attachments/Rob email 12142006	SN33684 2006-10-02 160000 T7W01.bin.csv	T7W01	SN33684	10/2/06 16:00	12/7/06 15:00
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./Tom_Data_Aprol2007/emails and attachments/Rob email 04212006	SN33751 2006-02-20 170000 T7W02.bin.csv	T7W02	SN33751	2/20/06 17:00	3/23/06 7:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 06292006	SN33751 2006-03-23 100000 T7W02.bin.csv	T7W02	SN33751	3/23/06 10:00	6/29/06 6:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 09282006	SN33751 2006-06-29 093000 T7W02.bin.csv	T7W02	SN33751	6/29/06 9:30	9/27/06 13:59
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./Tom_Data_Aprol2007/emails and attachments/Rob email 03152007	SN33751 2006-12-13 123000 T7W02.bin.csv	T7W02	SN33751	12/13/06 12:30	3/14/07 9:30
./NewDataFromParkAfterTomDeparture/200703data/Rob email 06012007	SN33751 2007-03-14 113000 T7W02.bin.csv	T7W02	SN33751	3/14/07 11:30	5/30/07 13:30
./NewDataFromParkAfterTomDeparture/200706data/Rob_email_0830	SN33751 2007-05-30 143000 T7W02.bin.csv	T7W02	SN33751	5/30/07 14:30	8/30/07 9:30
./NewDataFromGordon_Dec2007	SN33751 2007-08-30 103000 T7W02.bin.csv	T7W02	SN33751	8/30/07 10:30	12/13/07 12:29

Table 1 (continued).

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./Tom_Data_Aprol2007/emails and attachments/Rob email 11012005	SN30966 2005-08-22 100000 T7W03.bin.csv	T7W03	SN30966	8/22/05 10:00	10/28/05 13:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 02022006	SN30966 2005-10-28 140000 T7W03.bin.csv	T7W03	SN30966	10/28/05 14:00	1/24/06 13:59
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./Tom_Data_Aprol2007/emails and attachments/Rob email 09282006	SN31527 2006-06-29 093000 T7W03.bin.csv	T7W03	SN31527	6/29/06 9:30	9/27/06 13:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 12142006	SN31527 2006-09-27 140000 T7W03.bin.csv	T7W03	SN31527	9/27/06 14:00	12/13/06 12:29
./Tom_Data_Aprol2007/emails and attachments/Rob email 03152007	SN31527 2006-12-13 123000 T7W03.bin.csv	T7W03	SN31527	12/13/06 12:30	3/14/07 9:00
./NewDataFromParkAfterTomDeparture/200703data/Rob email 06012007	SN31527 2007-03-14 110000 T7W03.bin.csv	T7W03	SN31527	3/14/07 11:00	5/30/07 13:29
./NewDataFromParkAfterTomDeparture/200706data/Rob_email_0830	SN31527 2007-05-30 140000 T7W03.bin.csv	T7W03	SN31527	5/30/07 14:00	8/30/07 9:29
./NewDataFromGordon_Dec2007	SN31527 2007-08-30 100000 T7W03.bin.csv	T7W03	SN31527	8/30/07 10:00	12/13/07 11:59
./Tom_Data_Aprol2007/emails and attachments/Rob email 08032005	SN33037 2005-06-08 123000 T7W04.bin.csv	T7W04	SN33037	6/8/05 12:30	8/22/05 8:29
./Tom_Data_Aprol2007/emails and attachments/Rob email 11012005	SN33037 2005-08-22 093000 T7W04.bin.csv	T7W04	SN33037	8/22/05 9:30	10/28/05 13:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 02022006	SN33037 2005-10-28 140000 T7W04.bin.csv	T7W04	SN33037	10/28/05 14:00	1/24/06 13:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 04212006	SN33037 2006-01-24 150000 T7W04.bin.csv	T7W04	SN33037	1/24/06 15:00	3/23/06 9:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 06292006	SN33037 2006-03-23 100000 T7W04.bin.csv	T7W04	SN33037	3/23/06 10:00	6/29/06 8:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 09282006	SN33037 2006-06-29 090000 T7W04.bin.csv	T7W04	SN33037	6/29/06 9:00	9/27/06 13:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 12142006	SN33037 2006-09-27 140000 T7W04.bin.csv	T7W04	SN33037	9/27/06 14:00	12/1/06 10:29
./Tom_Data_Aprol2007/emails and attachments/Rob email 03152007	SN33037 2006-12-13 120000 T7W04.bin.csv	T7W04	SN33037	12/13/06 12:00	2/22/07 17:30
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./NewDataFromParkAfterTomDeparture/200706data/Rob_email_0830	SN33037 2007-05-30 133000 T7W04.bin.csv	T7W04	SN33037	5/30/07 13:30	7/27/07 21:30
./NewDataFromGordon_Dec2007	SN33037 2007-08-30 113000 T7W04.bin.csv	T7W04	SN33037	8/30/07 11:30	12/1/07 15:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 08032005	SN33118 2005-06-08 113000 T8W01.bin.csv	T8W01	SN33118	6/8/05 11:30	8/19/05 15:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 11012005	SN33118 2005-08-19 153000 T8W01.bin.csv	T8W01	SN33118	8/19/05 15:30	10/28/05 11:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 02022006	SN33118 2005-10-28 120000 T8W01.bin.csv	T8W01	SN33118	10/28/05 12:00	1/24/06 12:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 04212006	SN33118 2006-01-24 130000 T8W01.bin.csv	T8W01	SN33118	1/24/06 13:00	4/21/06 9:29
./Tom_Data_Aprol2007/emails and attachments/Rob email 06292006	SN33118 2006-04-21 100000 T8W01.bin.csv	T8W01	SN33118	4/21/06 10:00	6/26/06 11:30
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./Tom_Data_Aprol2007/emails and attachments/Rob email 12142006	SN33118 2006-09-27 113000 T8W01.bin.csv	T8W01	SN33118	9/27/06 11:30	12/13/06 10:29
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./NewDataFromParkAfterTomDeparture/200706data/Rob_email_0911	SN33118 2007-06-11 170000 T8W01.bin.csv	T8W01	SN33118	6/11/07 17:00	9/7/07 16:00
./NewDataFromGordon_Dec2007	SN33118 2007-09-07 163000 T8W01.bin.csv	T8W01	SN33118	9/7/07 16:30	12/4/07 12:29
./Tom_Data_Aprol2007/emails and attachments/Rob email 08032005	SN32130 2005-06-08 110000 T8W02.bin.csv	T8W02	SN32130	6/8/05 11:00	8/19/05 14:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 11012005	SN32130 2005-08-19 150000 T8W02.bin.csv	T8W02	SN32130	8/19/05 15:00	10/28/05 11:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 02022006	SN32130 2005-10-28 113000 T8W02.bin.csv	T8W02	SN32130	10/28/05 11:30	1/24/06 11:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 04212006	SN32130 2006-01-24 123000 T8W02.bin.csv	T8W02	SN32130	1/24/06 12:30	4/21/06 9:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 06292006	SN32130 2006-04-21 093000 T8W02.bin.csv	T8W02	SN32130	4/21/06 9:30	6/26/06 10:59
./Tom_Data_Aprol2007/emails and attachments/Rob email 09282006	SN32130 2006-06-26 120000 T8W02.bin.csv	T8W02	SN32130	6/26/06 12:00	9/27/06 10:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 12142006	SN32130 2006-09-27 113000 T8W02.bin.csv	T8W02	SN32130	9/27/06 11:30	12/13/06 10:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 03012007	SN32130 2006-12-13 100000 T8W02.bin.csv	T8W02	SN32130	12/13/06 10:00	3/1/07 15:30
./NewDataFromParkAfterTomDeparture/200703data/Rob email 06132007	SN32130 2007-03-01 160000 T8W02.bin.csv	T8W02	SN32130	3/1/07 16:00	6/11/07 15:00
./NewDataFromParkAfterTomDeparture/200706data/Rob_email_0911	SN32130 2007-06-11 163000 T8W02.bin.csv	T8W02	SN32130	6/11/07 16:30	9/7/07 15:30
./NewDataFromGordon_Dec2007	SN32130 2007-09-07 163000 T8W02.bin.csv	T8W02	SN32130	9/7/07 16:30	12/4/07 12:00

Table 1 (continued).

Table 1 (continued).

./Tom_Data_Aprol2007/emails and attachments/Rob email 08032005	SN30987 2005-06-08 103000 T8W03.bin.csv	T8W03	SN30987	6/8/05 10:30	8/19/05 14:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 11012005	SN30987 2005-08-19 143000 T8W03.bin.csv	T8W03	SN30987	8/19/05 14:30	10/28/05 10:29
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./Tom_Data_Aprol2007/emails and attachments/Rob email 12142006	SN30987 2006-09-27 110000 T8W03.bin.csv	T8W03	SN30987	9/27/06 11:00	12/12/06 12:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 03012007	SN30987 2006-12-12 113000 T8W03.bin.csv	T8W03	SN30987	12/12/06 11:30	3/1/07 15:00
./NewDataFromParkAfterTomDeparture/200703data/Rob email 06132007	SN30987 2007-03-01 153000 T8W03.bin.csv	T8W03	SN30987	3/1/07 15:30	6/11/07 14:30
./NewDataFromParkAfterTomDeparture/200706data/Rob_email_0911	SN30987 2007-06-11 164517 T8W03.bin.csv	T8W03	SN30987	6/11/07 16:45	8/28/07 0:45
./NewDataFromGordon_Dec2007	SN30987 2007-09-07 160000 T8W03.bin.csv	T8W03	SN30987	9/7/07 16:00	12/4/07 11:59
./Tom_Data_Aprol2007/emails and attachments/Rob email 06292006	SN33451 2006-04-21 113000 T9W01.bin.csv	T9W01	SN33451	4/21/06 11:30	6/26/06 10:30
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./Tom_Data_Aprol2007/emails and attachments/Rob email 03012007	SN33451 2006-12-12 110000 T9W01.bin.csv	T9W01	SN33451	12/12/06 11:00	3/1/07 14:29
./NewDataFromParkAfterTomDeparture/200703data/Rob email 06132007	SN33451 2007-03-01 150000 T9W01.bin.csv	T9W01	SN33451	3/1/07 15:00	6/13/07 8:30
./NewDataFromParkAfterTomDeparture/200706data/Rob_email_0924	SN33451 2007-06-13 100000 T9W01.bin.csv	T9W01	SN33451	6/13/07 10:00	9/19/07 14:30
./NewDataFromGordon_Dec2007	SN33451 2007-09-19 153000 T9W01.bin.csv	T9W01	SN33451	9/19/07 15:30	12/9/07 5:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 08032005	SN33053 2005-06-08 100000 T9W02.bin.csv	T9W02	SN33053	6/8/05 10:00	8/19/05 9:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 11012005	SN33053 2005-08-19 100000 T9W02.bin.csv	T9W02	SN33053	8/19/05 10:00	10/28/05 9:30
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./Tom_Data_Aprol2007/emails and attachments/Rob email 06292006	SN33053 2006-04-21 110000 T9W02.bin.csv	T9W02	SN33053	4/21/06 11:00	6/26/06 10:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 09282006	SN33053 2006-06-26 110000 T9W02.bin.csv	T9W02	SN33053	6/26/06 11:00	9/27/06 9:00
./Tom_Data_Aprol2007/emails and attachments/Rob email 12142006	SN33053 2006-09-27 100000 T9W02.bin.csv	T9W02	SN33053	9/27/06 10:00	12/12/06 10:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 03012007	SN33053 2006-12-12 103000 T9W02.bin.csv	T9W02	SN33053	12/12/06 10:30	3/1/07 14:00
./NewDataFromParkAfterTomDeparture/200703data/Rob email 06132007	SN33053 2007-03-01 150000 T9W02.bin.csv	T9W02	SN33053	3/1/07 15:00	6/13/07 7:59
./NewDataFromParkAfterTomDeparture/200706data/Rob_email_0924	SN33053 2007-06-13 093000 T9W02.bin.csv	T9W02	SN33053	6/13/07 9:30	9/19/07 14:30
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./Tom_Data_Aprol2007/emails and attachments/Rob email 02022006	SN33469 2005-10-28 093000 T9W03.bin.csv	T9W03	SN33469	10/28/05 9:30	1/24/06 7:59
./Tom_Data_Aprol2007/emails and attachments/Rob email 04212006	SN33469 2006-01-24 093000 T9W03.bin.csv	T9W03	SN33469	1/24/06 9:30	4/21/06 7:59
./Tom_Data_Aprol2007/emails and attachments/Rob email 06292006	SN33469 2006-04-21 110000 T9W03.bin.csv	T9W03	SN33469	4/21/06 11:00	6/26/06 9:30
./Tom_Data_Aprol2007/emails and attachments/Rob email 09282006	SN33469 2006-06-26 100000 T9W03.bin.csv	T9W03	SN33469	6/26/06 10:00	9/27/06 8:29
./Tom_Data_Aprol2007/emails and attachments/Rob email 12142006	SN33469 2006-09-27 100000 T9W03.bin.csv	T9W03	SN33469	9/27/06 10:00	12/12/06 10:00
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./NewDataFromParkAfterTomDeparture/200706data/Rob_email_0924	SN33469 2007-06-13 093000 T9W03.bin.csv	T9W03	SN33469	6/13/07 9:30	9/19/07 13:59
./NewDataFromGordon_Dec2007	SN33469 2007-09-19 143000 T9W03.bin.csv	T9W03	SN33469	9/19/07 14:30	12/14/07 17:29

APPENDIX II: Electronic Data in Hydrobase

1. Description

The final processed data has been stored and made available to the District at UF-HydroBase, a web-based information system for hydrological data storage, maintenance and mining. HydroBase is based on industry-standard Microsoft SQL server, .NET asp web services, and Java. The application contains powerful on-line web-based graphing, statistical analysis, and reporting capabilities as well as project maintenance and administration. Access to this system allows the District personnel quick analysis of the project data in the form of graphs and statistical tables.

The "project-based" logic model used by HydroBase closely matches research and environmental monitoring environments. Project team members on different roles (PI, collaborator, general public) can remotely assess and administer the on-line database through a complete web interface. Projects can be maintained private (for team members only) or public (open data sources). When users participate in different projects, they can work on specific projects or compare data across projects. A distributed remote Windows client allows project teams to quickly upload and maintain data independently using common Excel coma separated files.

The system, designed to make University of Florida's hydrological/WQ data accessible to specialists and expert stakeholders, provides an ideal platform as a repository for intensive hydrological and water quality monitoring projects.

2. Data types

The current classes of data accessible and downloadable by the user are:

- surface water (stream/canal stage and flow, and runoff)
- groundwater (well stage and temperature, unsaturated zone moisture salinity and temperature)
- weather (rain and detail weather station parameters including measured and estimated ET)
- water quality (flexible classification of analytes) .

Two of the data classes (weather and WQ) are dynamic so new measurement types can be added "on the fly".

3. User roles

The following user types are available in the database:

- General users: see only public projects
- Project users: in addition, they can see private projects they are assigned to
- Team members: in addition, they can upload new data to private projects they are assigned to
- Principal Investigators: in addition, they can create new projects and make their projects public or private
- Administrator: administer users and roles and oversees system operation over all projects

4. Access information

Access to the database is obtained through visiting the website http://carpena.ifas.ufl.edu . and selecting website the "UF-HydroBase" menu item form the main page (horizontal tabs on the top frame of the page). Once clicked, the user information must be entered as follows:

Username: sfwmd1
Password: Loxahatchee

A series of options are then displayed. Data for the "Loxahatchee River" project (including that from our previous research efforts in cooperation with the District) are available at login. In particular, the data for this project (groundwater elevations, depth and temperature are stored under the "Ground Water" class and electrical-conductivity (salinity) under the "Water Quality" class.

Various temporal scales can be selected for a better analysis of data. The UF-HydroBase can perform a series of graphs for each option depicted in the last paragraph.

Appendix III. Daily Time Series Graphs

Timelines of average daily water table elevation, water table depth (below benchmark), temperature, and EC are given below. Figures 1 – 12 show average daily water table elevation (in ft, NAVD88); figures 13 – 24 show average daily water table depth below benchmark (in feet); figures 25 – 36 show average daily groundwater temperature (in degrees Celsius); and figures 37 – 48 show average daily EC (in S/m). **Note: scale on y-axis of individual daily time series graphs is variable.**

Appendix III-A – Daily time series of Water Table Elevation (ft, NAVD88)

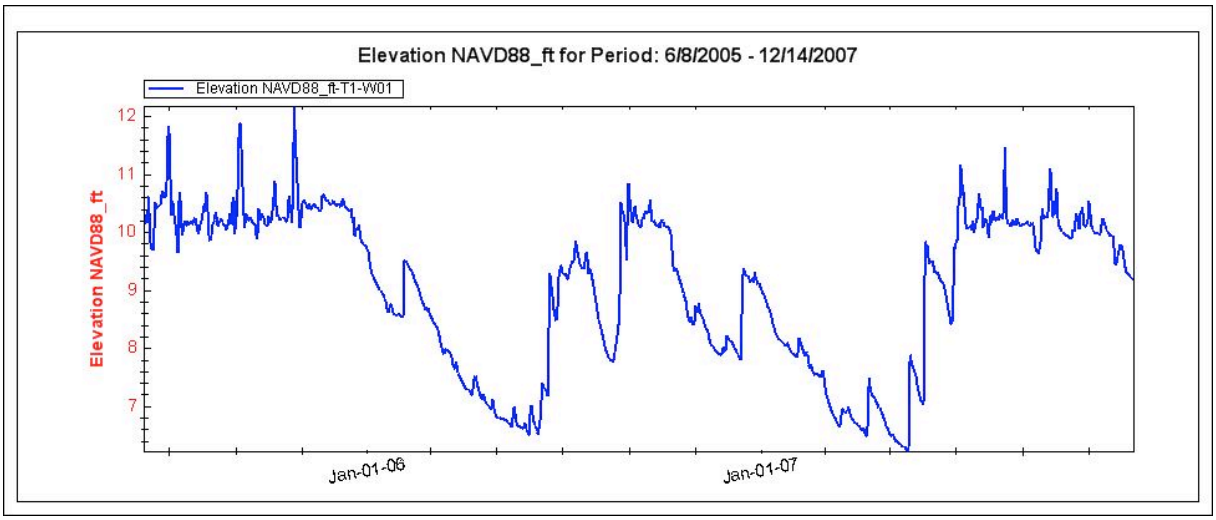

Figure 1. Average daily water table elevation at well 1 on Transect 1.

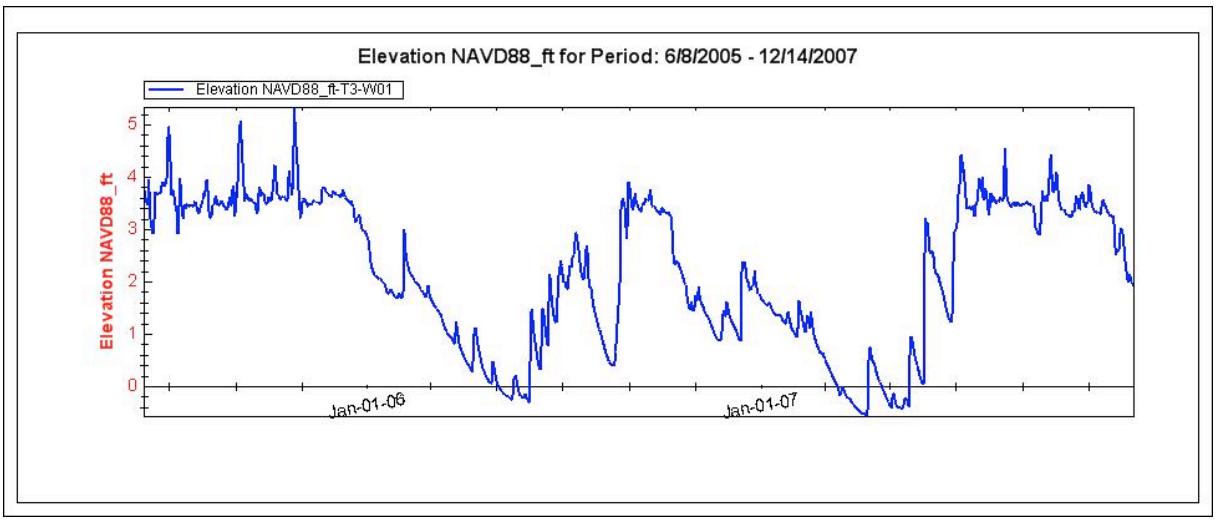

Figure 2. Average daily water table elevation at well 1 on Transect 3.

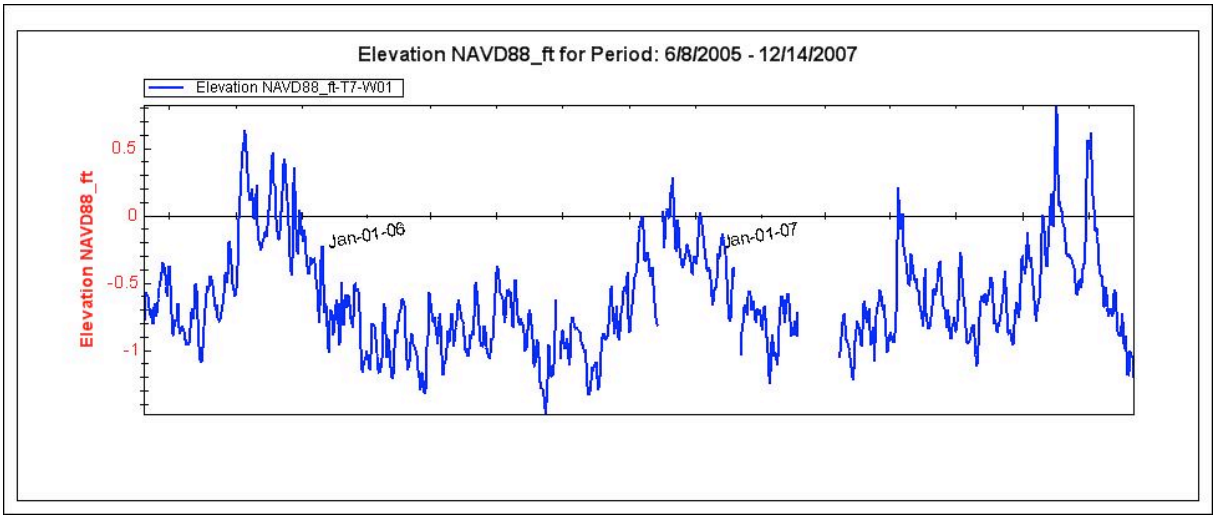

Figure 3. Average daily water table elevation at well 1 on Transect 7.

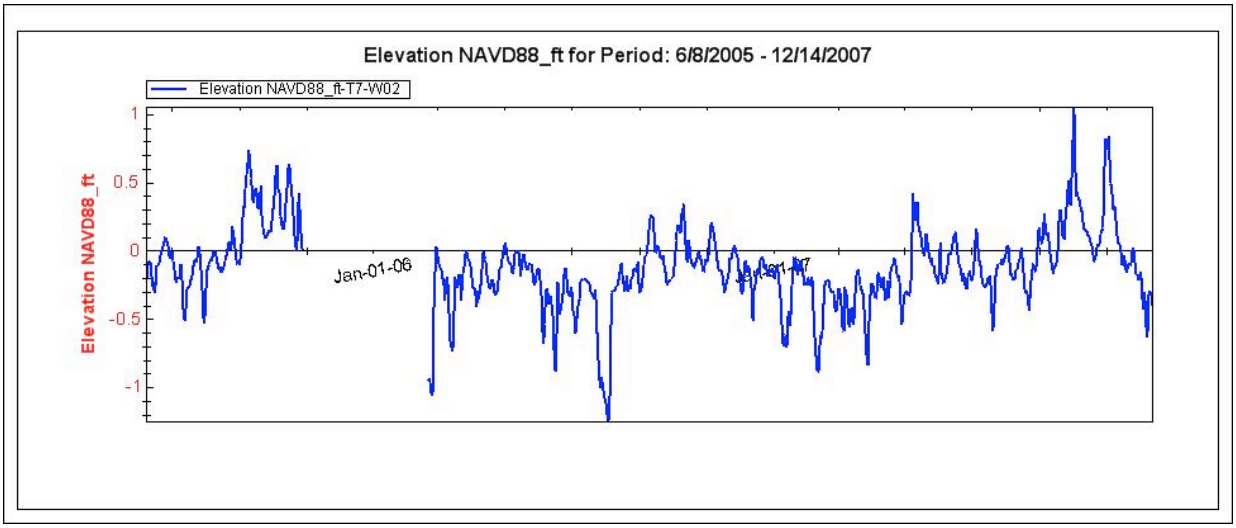

Figure 4. Average daily water table elevation at well 2 on Transect 7.

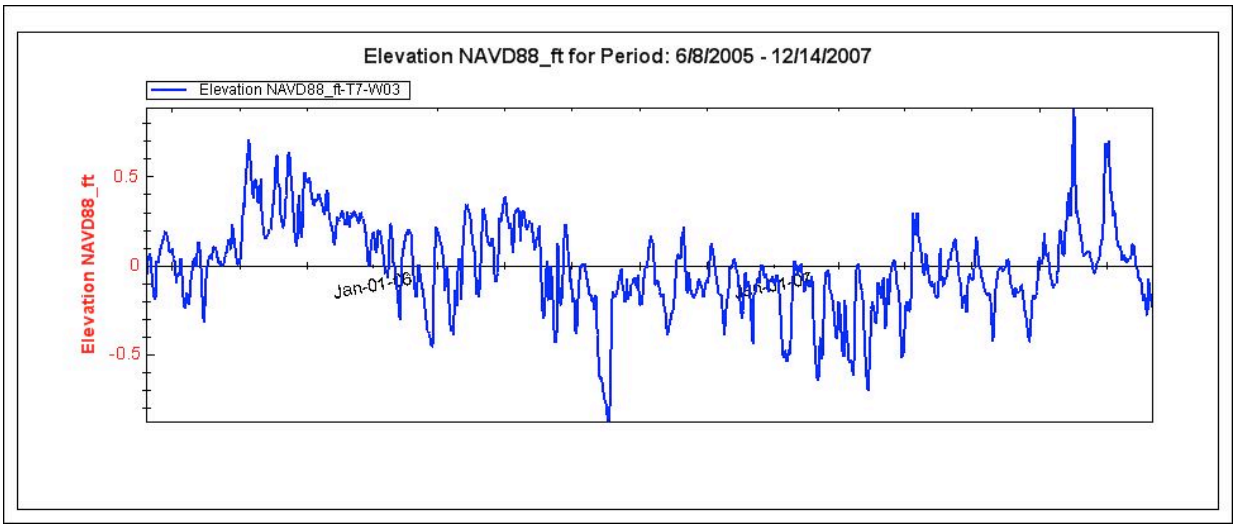

Figure 5. Average daily water table elevation at well 3 on Transect 7.

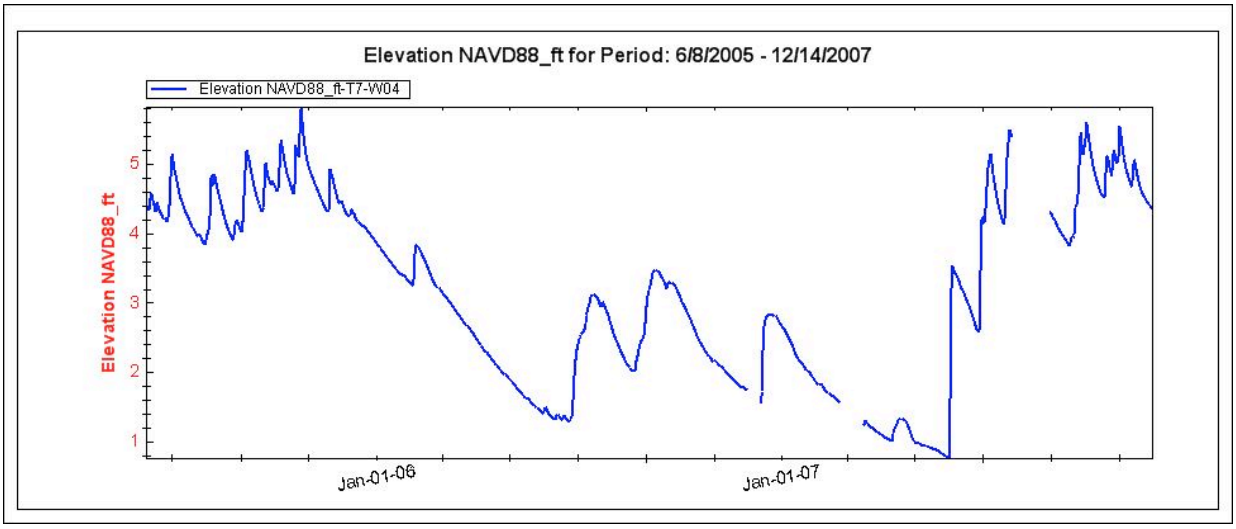

Figure 6. Average daily water table elevation at well 4 on Transect 7.

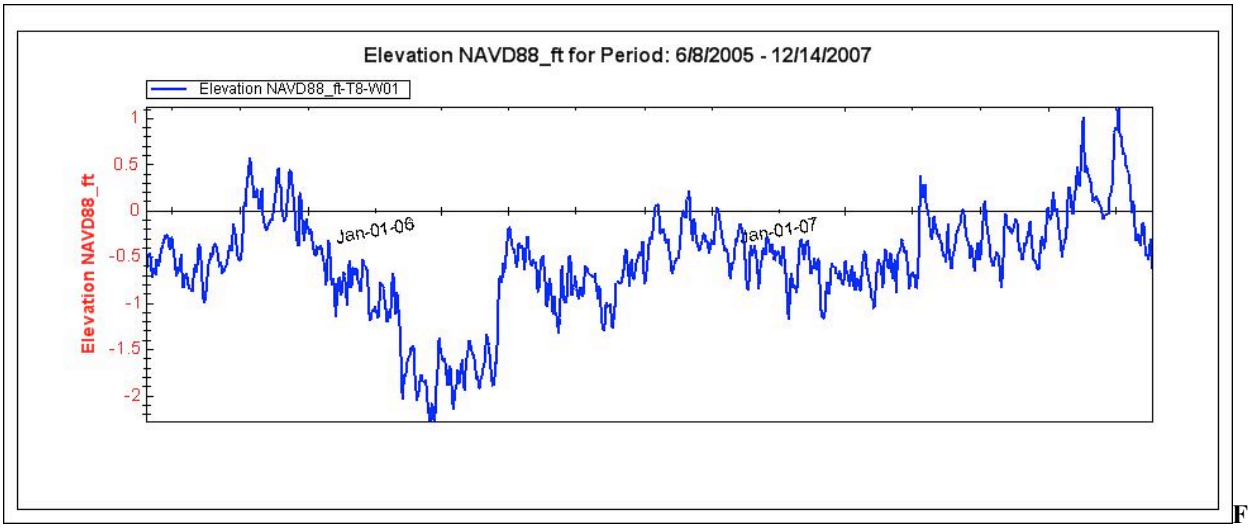

Figure 7. Average daily water table elevation at well 1 on Transect 8.

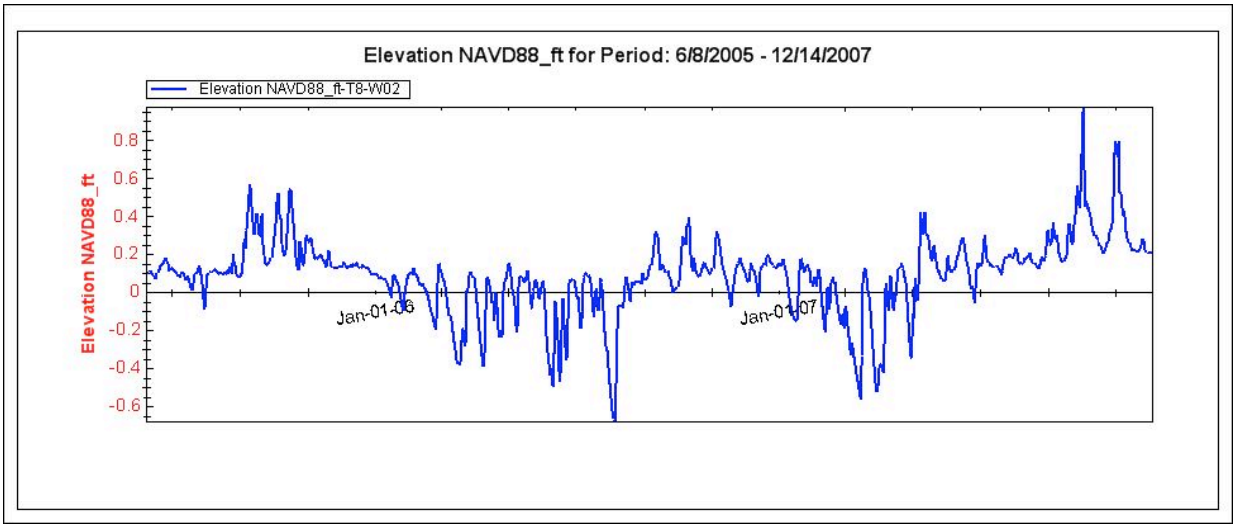

Figure 8. Average daily water table elevation at well 2 on Transect 8.

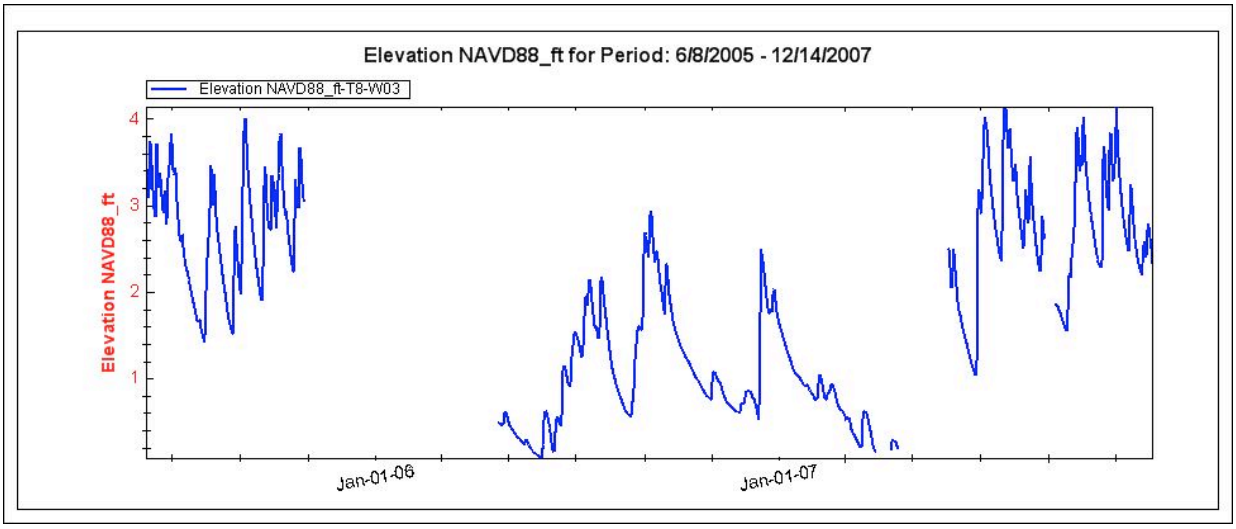

Figure 9. Average daily water table elevation at well 3 on Transect 8.

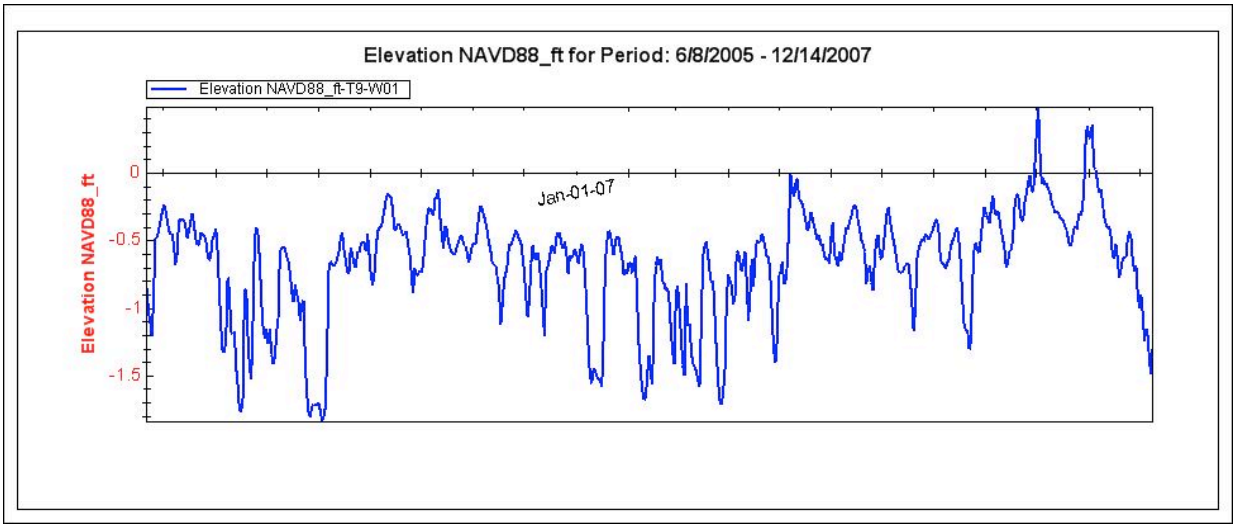

Figure 10. Average daily water table elevation at well 1 on Transect 9.

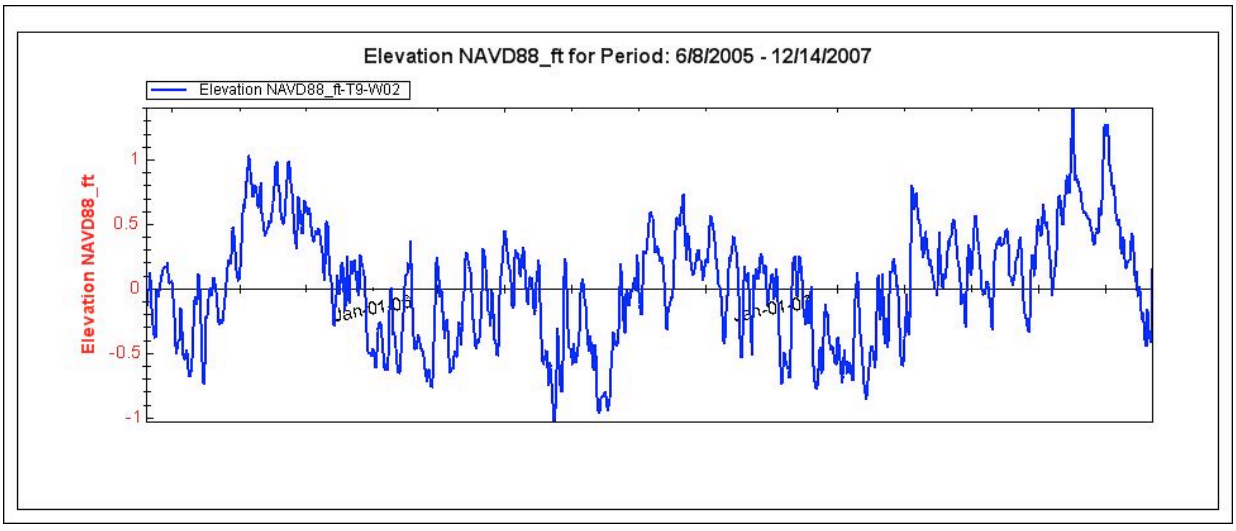

Figure 11. Average daily water table elevation at well 2 on Transect 9.

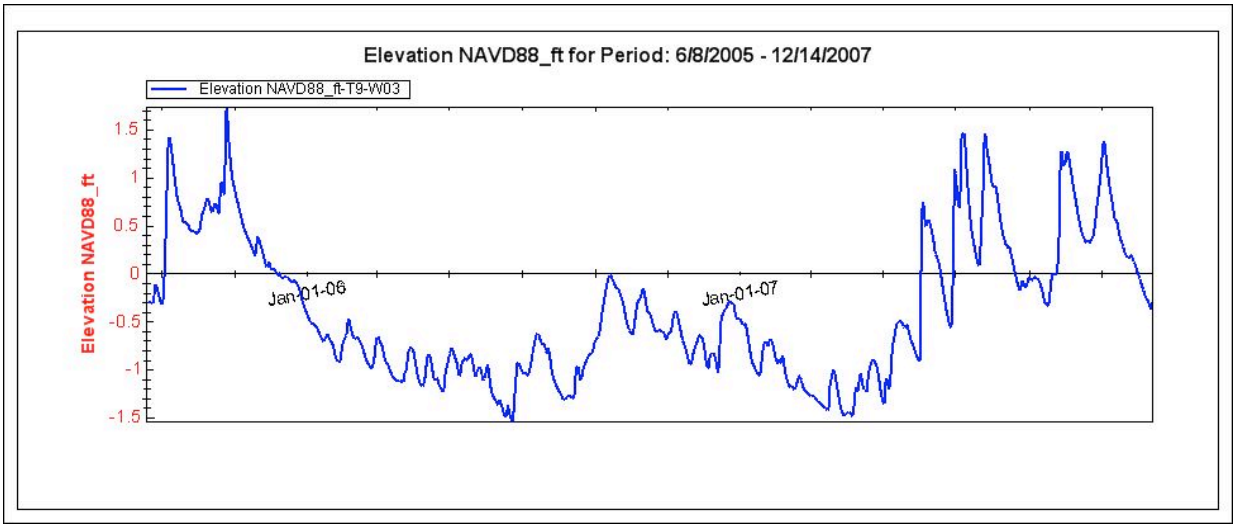

Figure 12. Average daily water table elevation at well 3 on Transect 9.

Appendix III-B – Daily time series of Water Table Depth (ft)

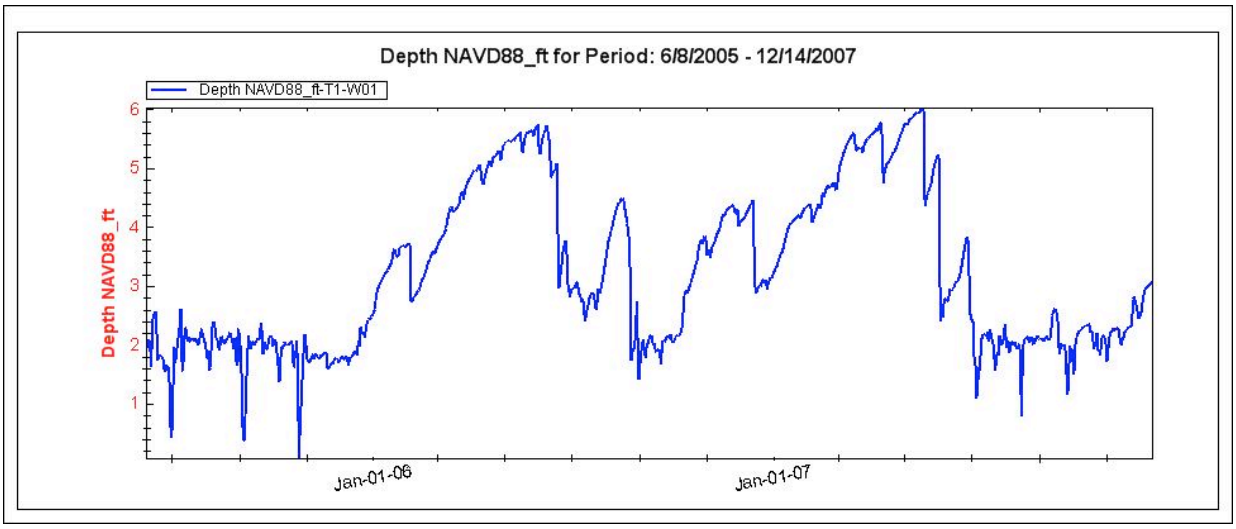

Figure 13. Average daily water table depth at well 1 on Transect 1.

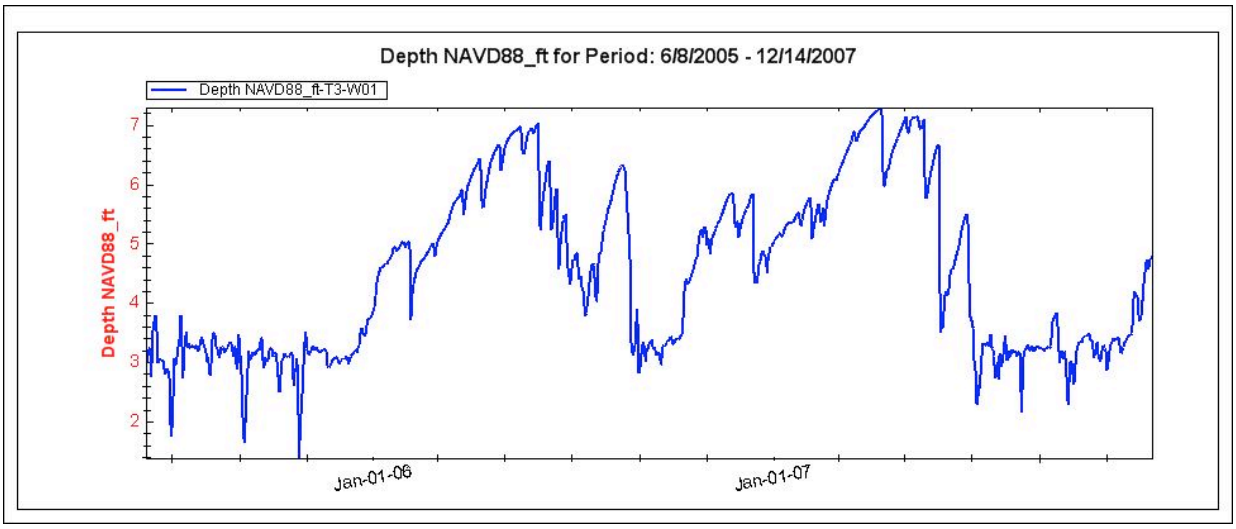

Figure 14. Average daily water table depth at well 1 on Transect 3.

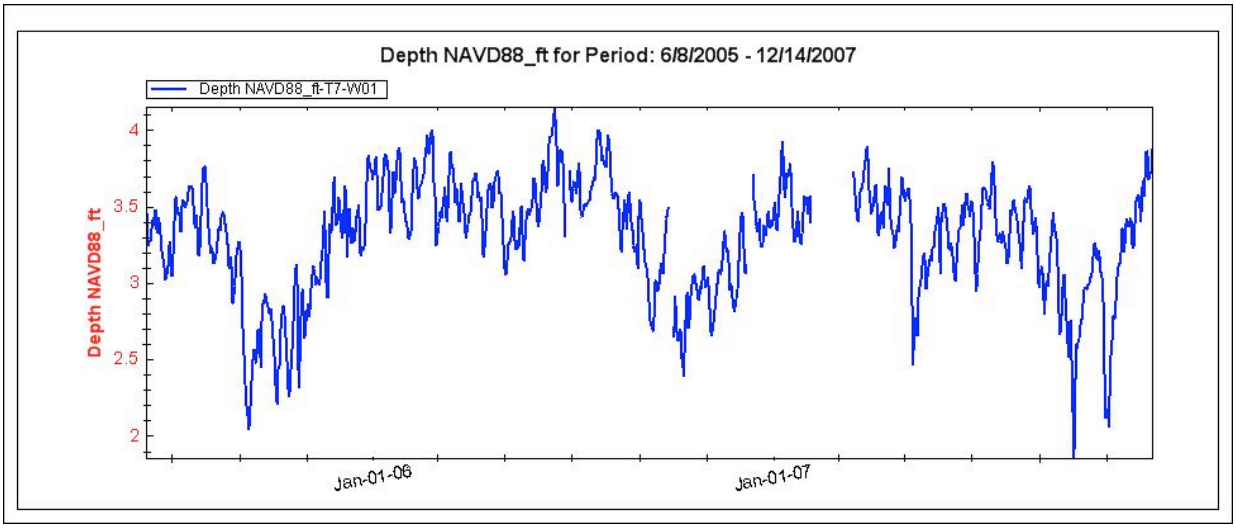

Figure 15. Average daily water table depth at well 1 on Transect 7.

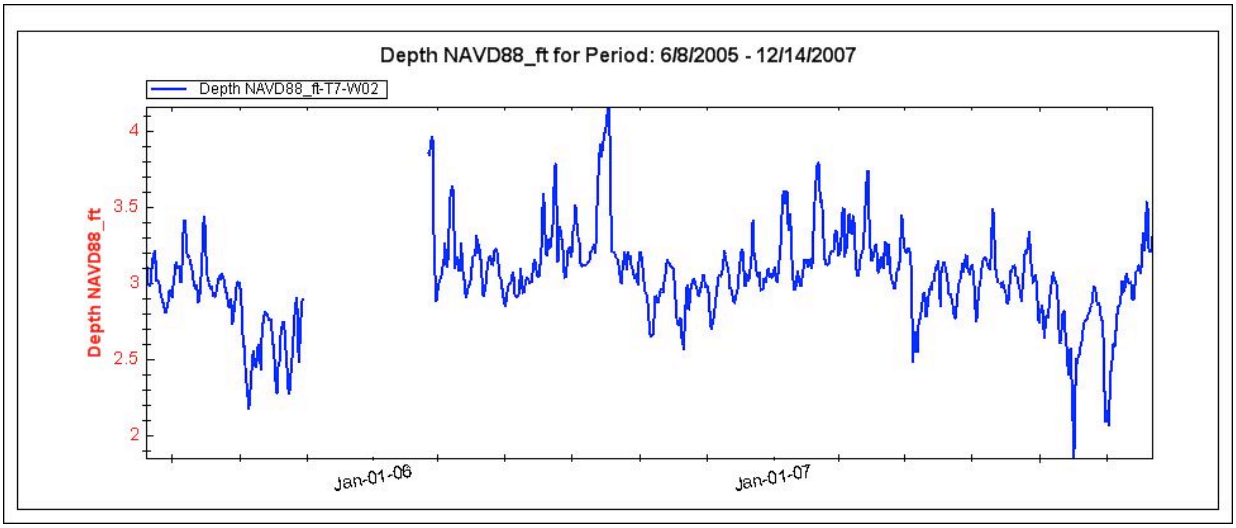

Figure 16. Average daily water table depth at well 2 on Transect 7.

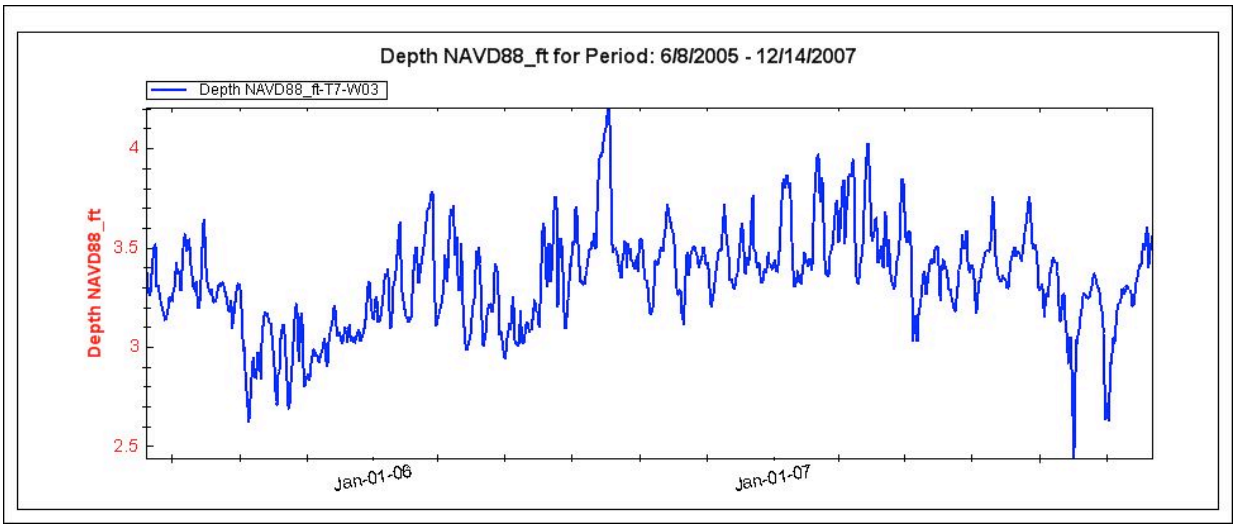

Figure 17. Average daily water table depth at well 3 on Transect 7.

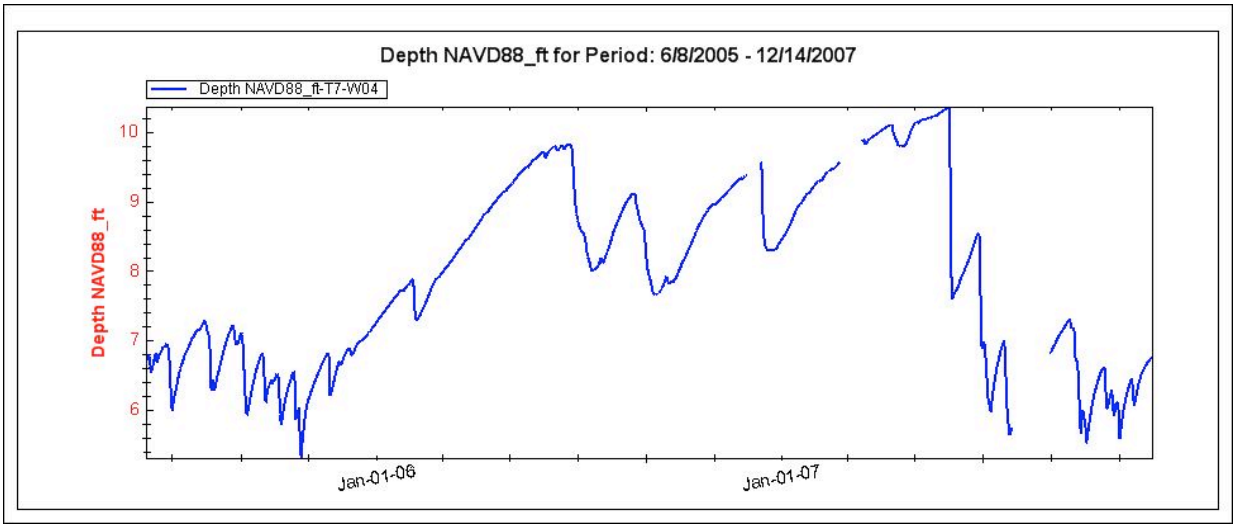

Figure 18. Average daily water table depth at well 4 on Transect 7.

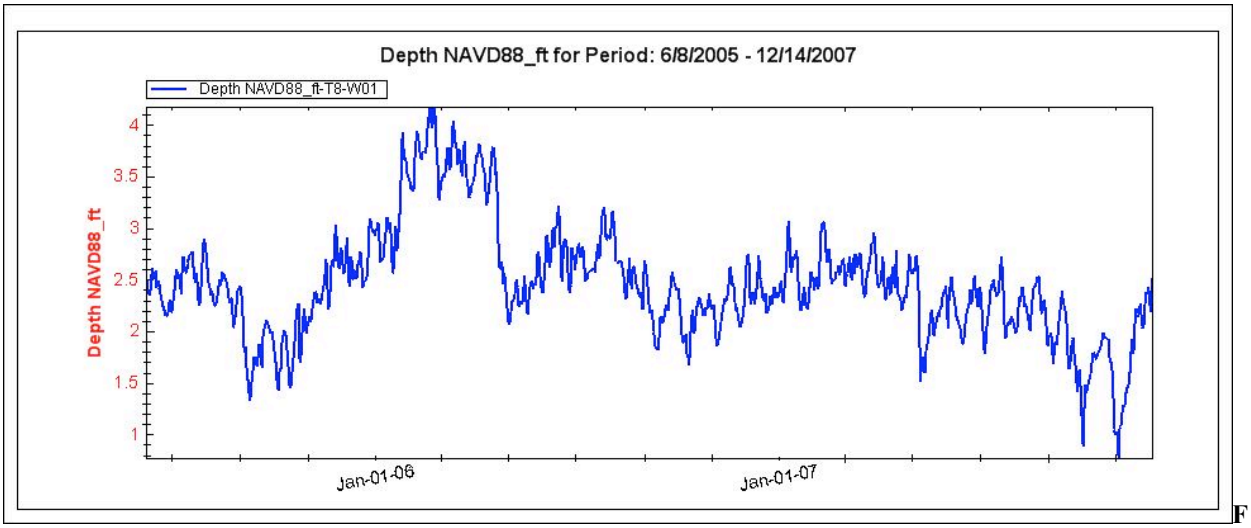

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Figure 19. Average daily water table depth at well 1 on Transect 8.

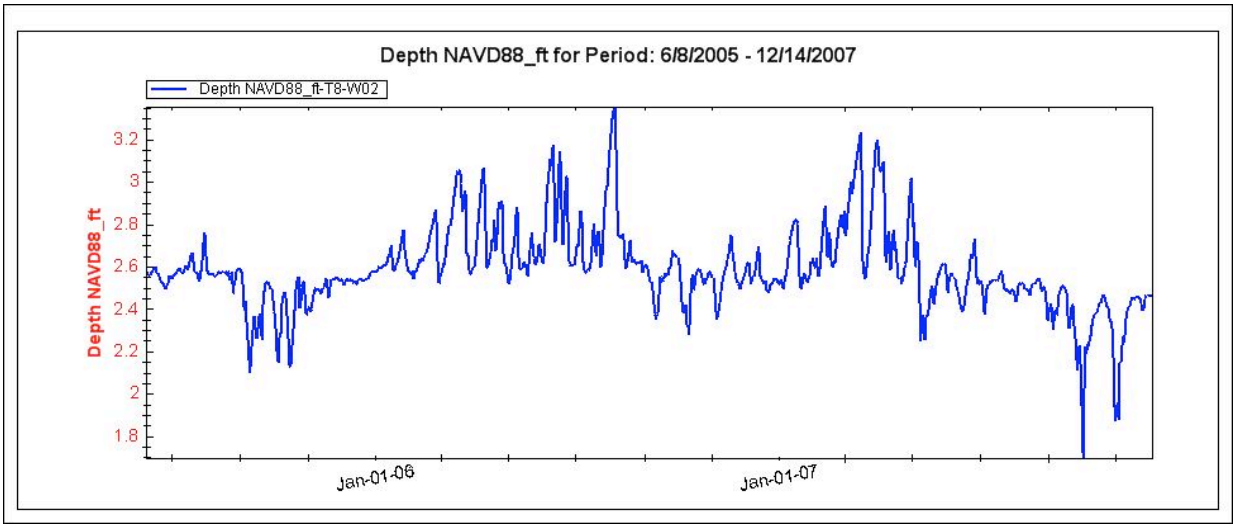

Figure 20. Average daily water table depth at well 2 on Transect 8.

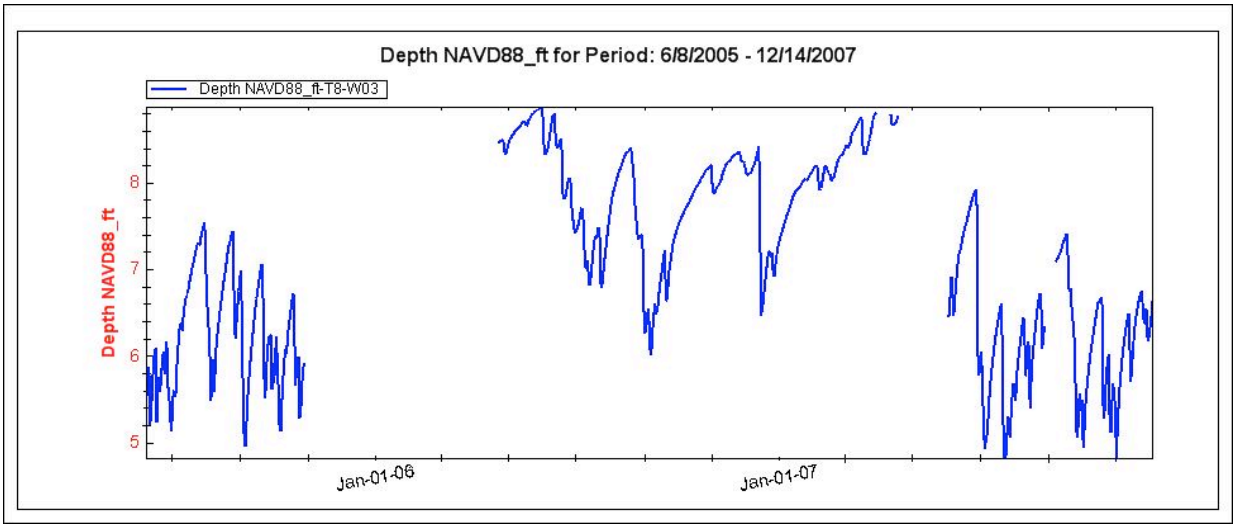

Figure 21. Average daily water table depth at well 3 on Transect 8.

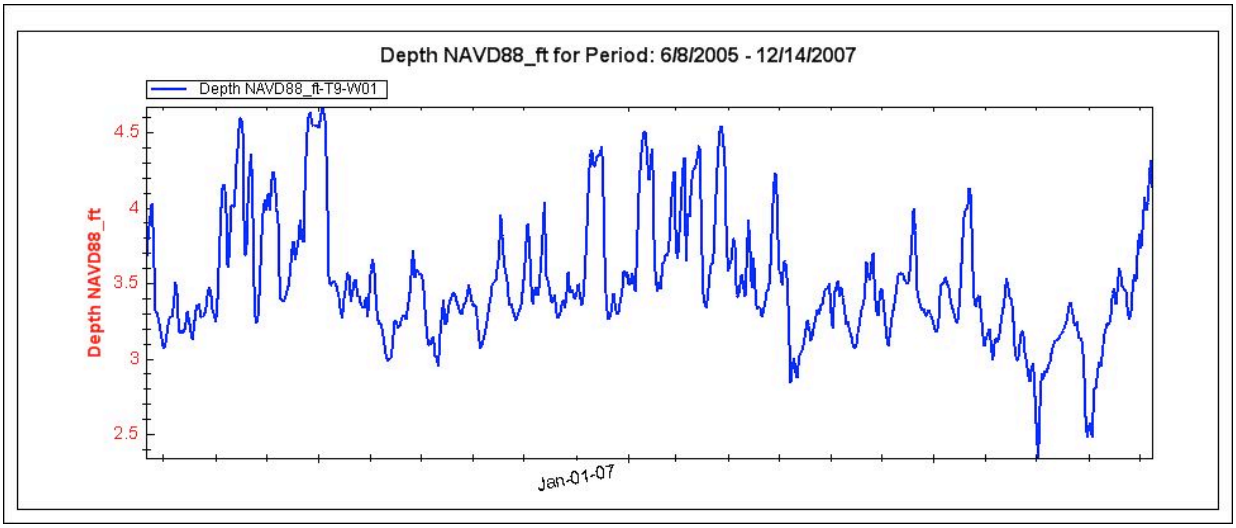

Figure 22. Average daily water table depth at well 1 on Transect 9.

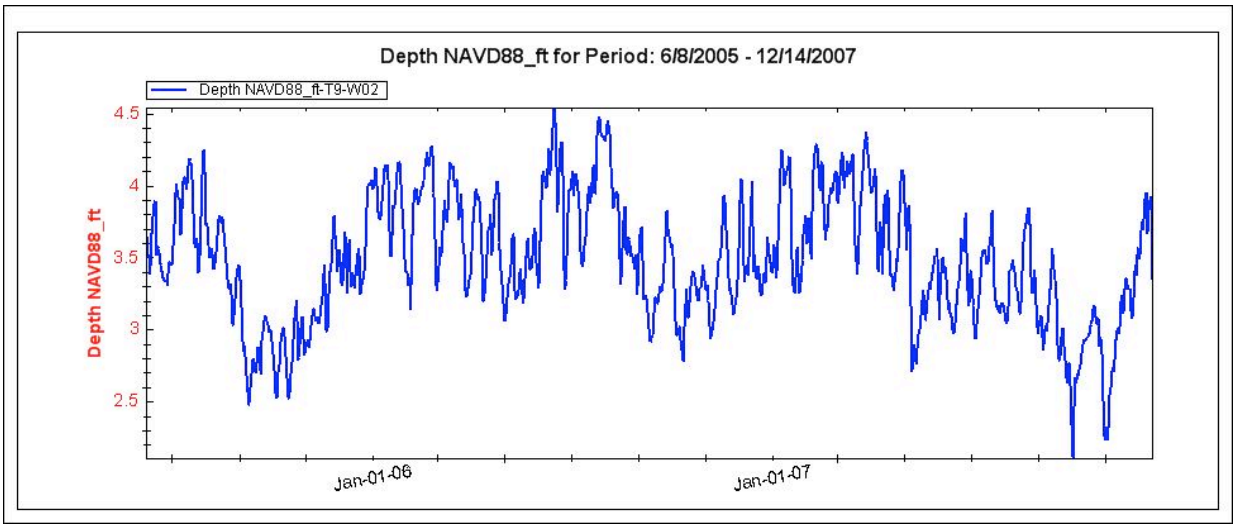

Figure 23. Average daily water table depth at well 2 on Transect 9.

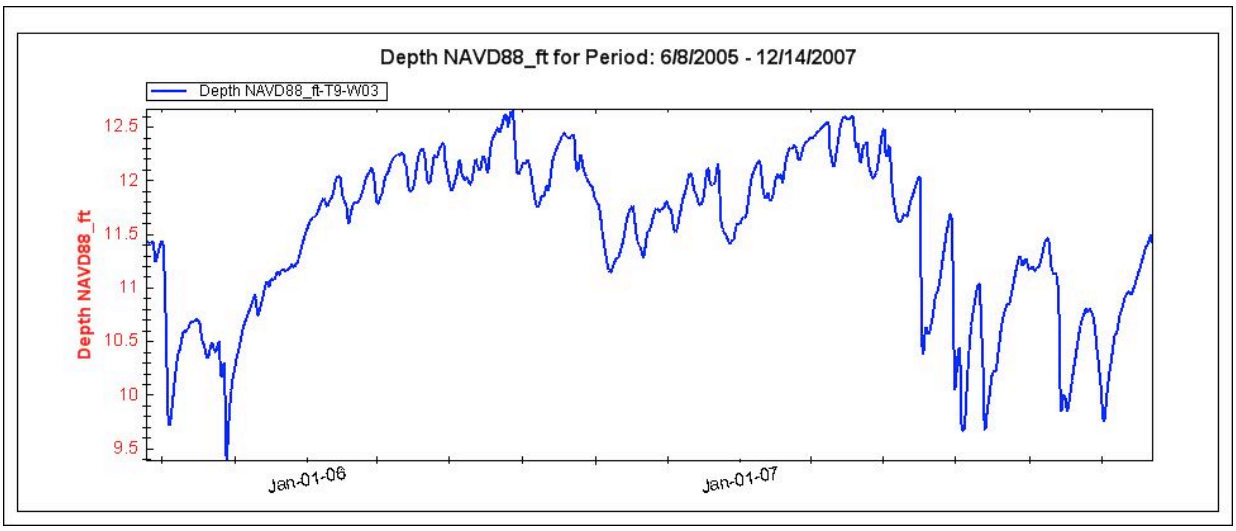

Figure 24. Average daily water table depth at well 3 on Transect 9.

Appendix III-C – Daily time series of groundwater temperature (C)

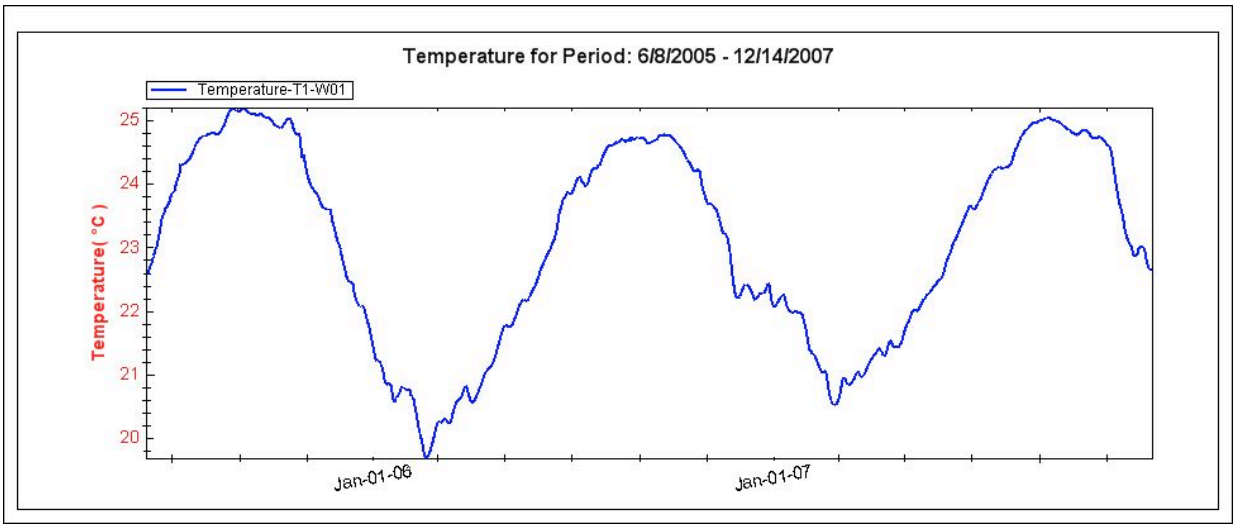

Figure 25. Average daily groundwater temperature at well 1 on Transect 1.

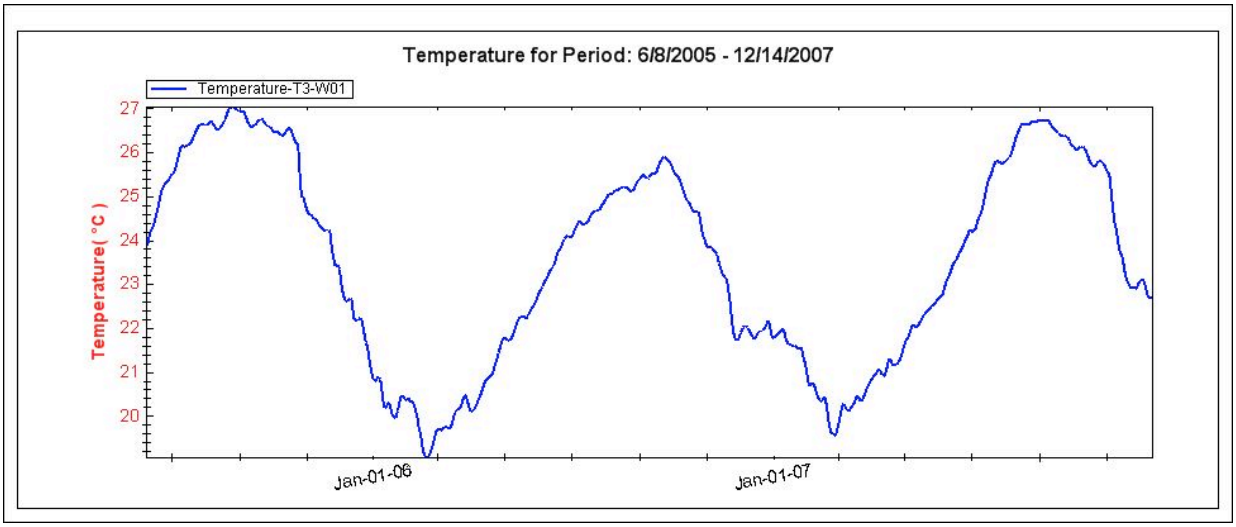

Figure 26. Average daily groundwater temperature at well 1 on Transect 3.

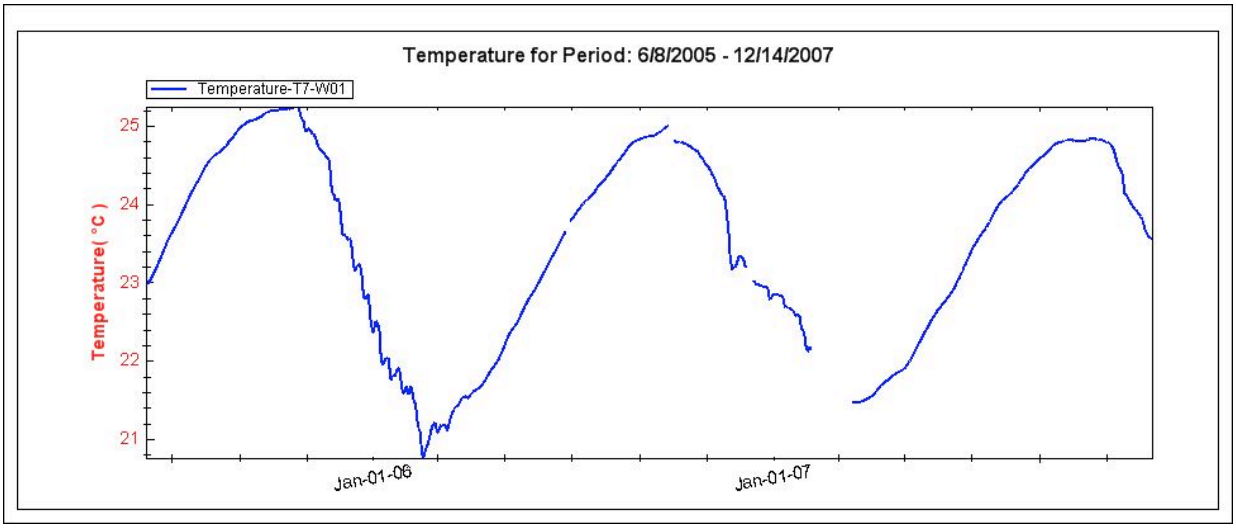

Figure 27. Average daily groundwater temperature at well 1 on Transect 7.

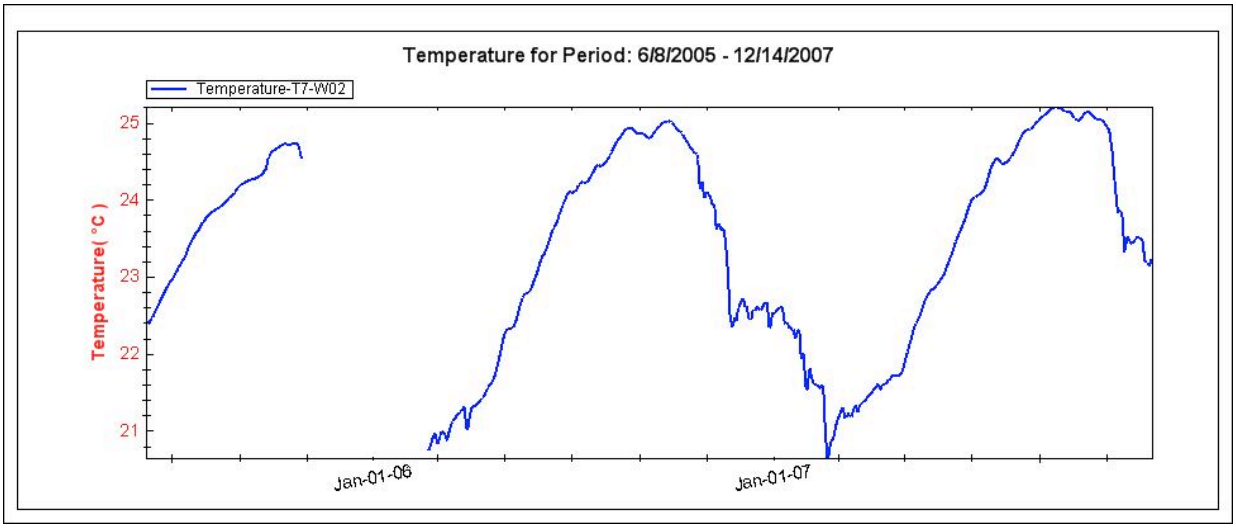

Figure 28. Average daily groundwater temperature at well 2 on Transect 7.

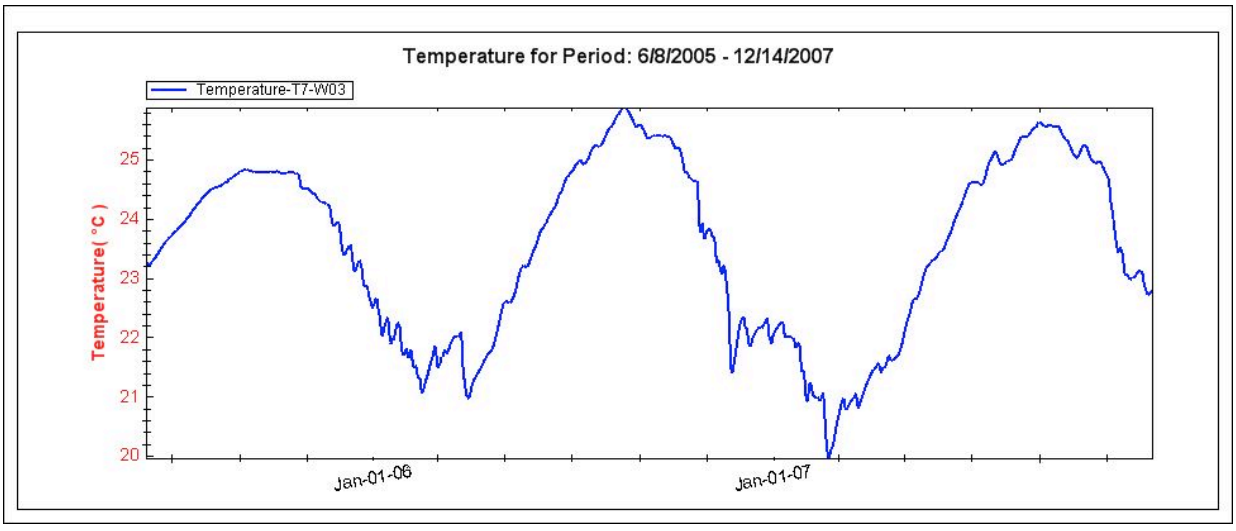

Figure 29. Average daily groundwater temperature at well 3 on Transect 7.

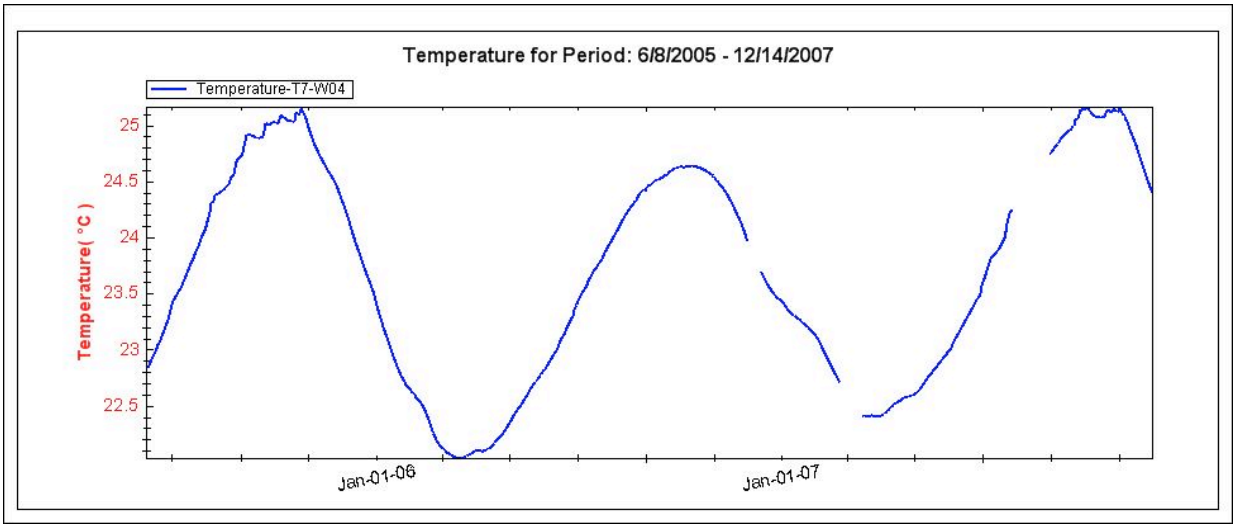

Figure 30. Average daily groundwater temperature at well 4 on Transect 7.

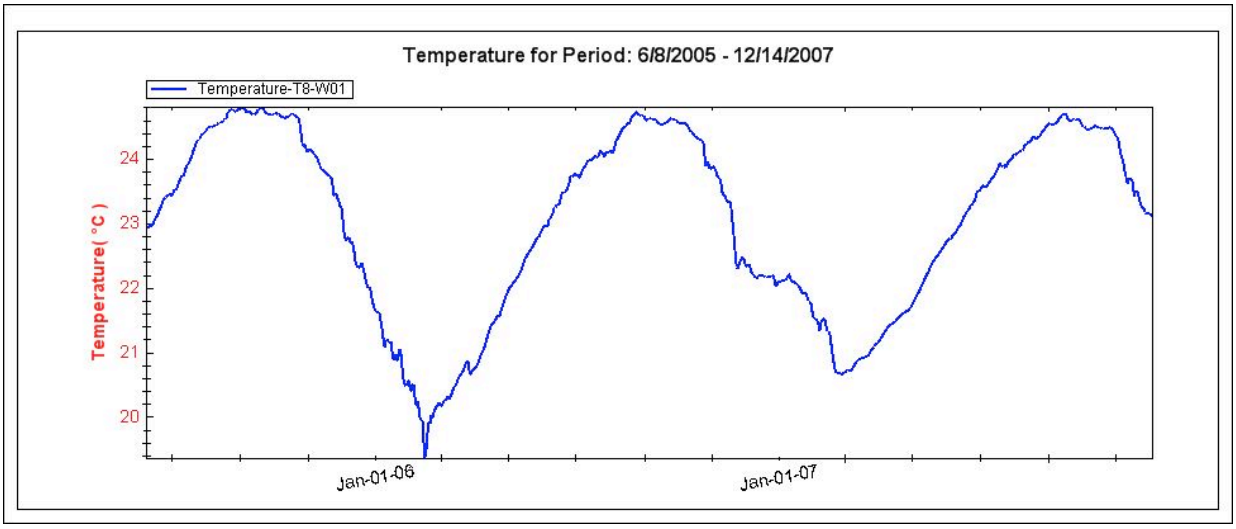

Figure 31. Average daily groundwater temperature at well 1 on Transect 8.

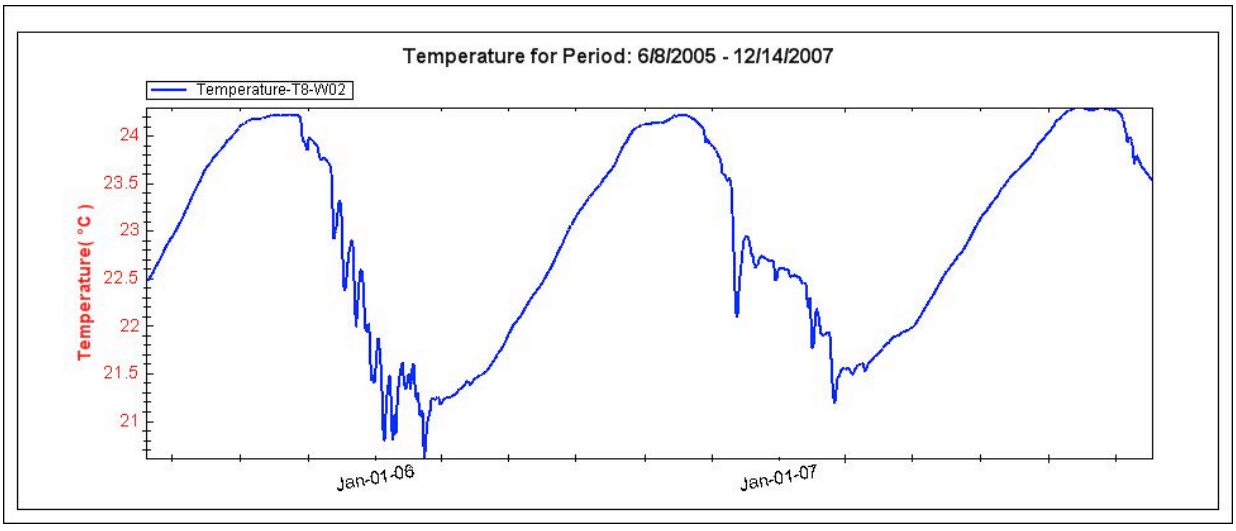

Figure 32. Average daily groundwater temperature at well 2 on Transect 8.

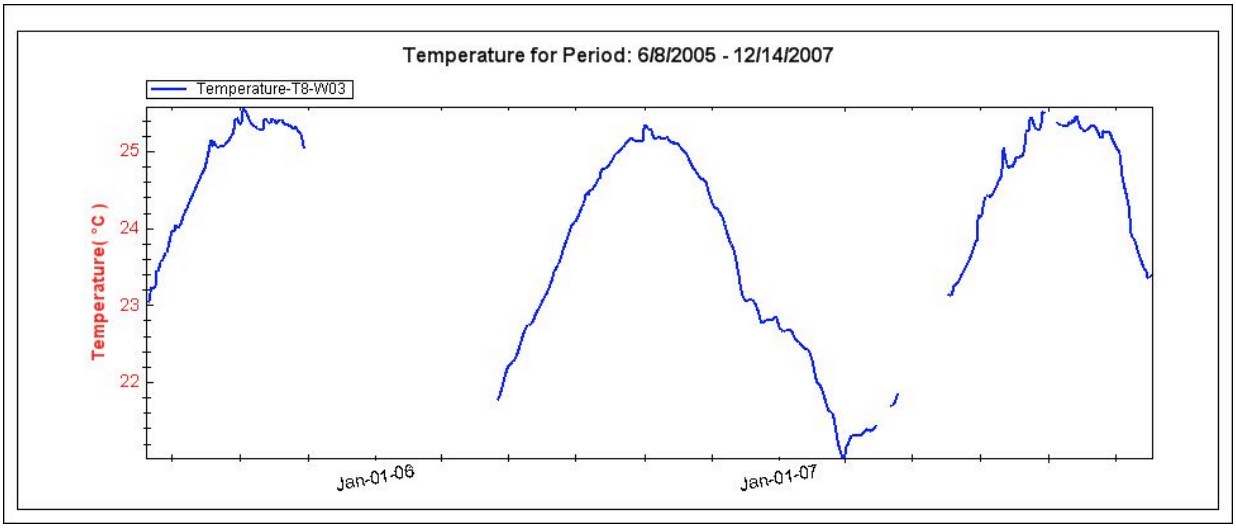

Figure 33. Average daily groundwater temperature at well 3 on Transect 8.

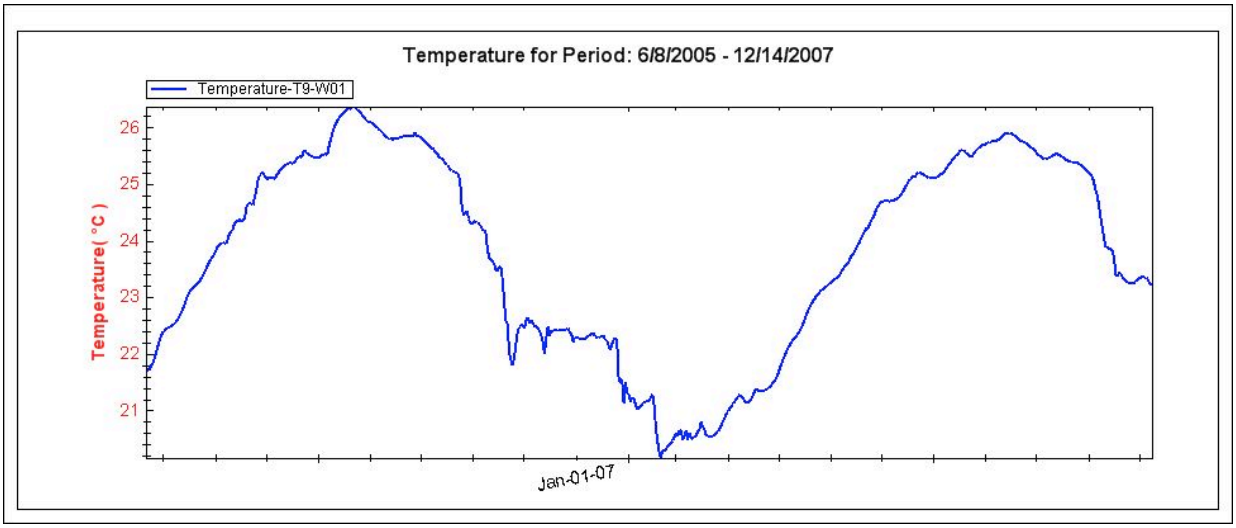

Figure 34. Average daily groundwater temperature at well 1 on Transect 9.

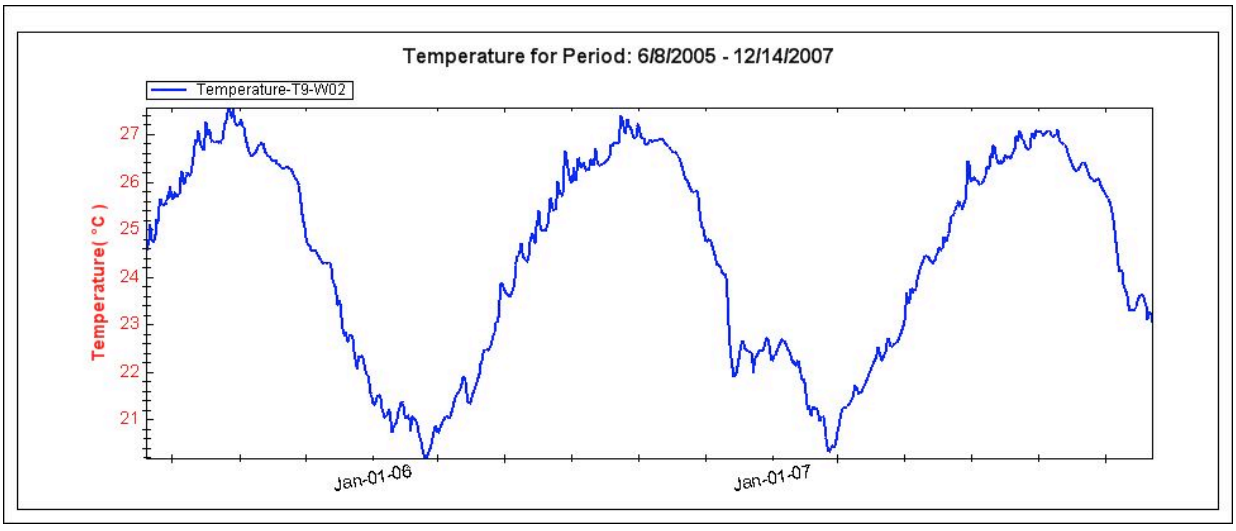

Figure 35. Average daily groundwater temperature at well 2 on Transect 9.

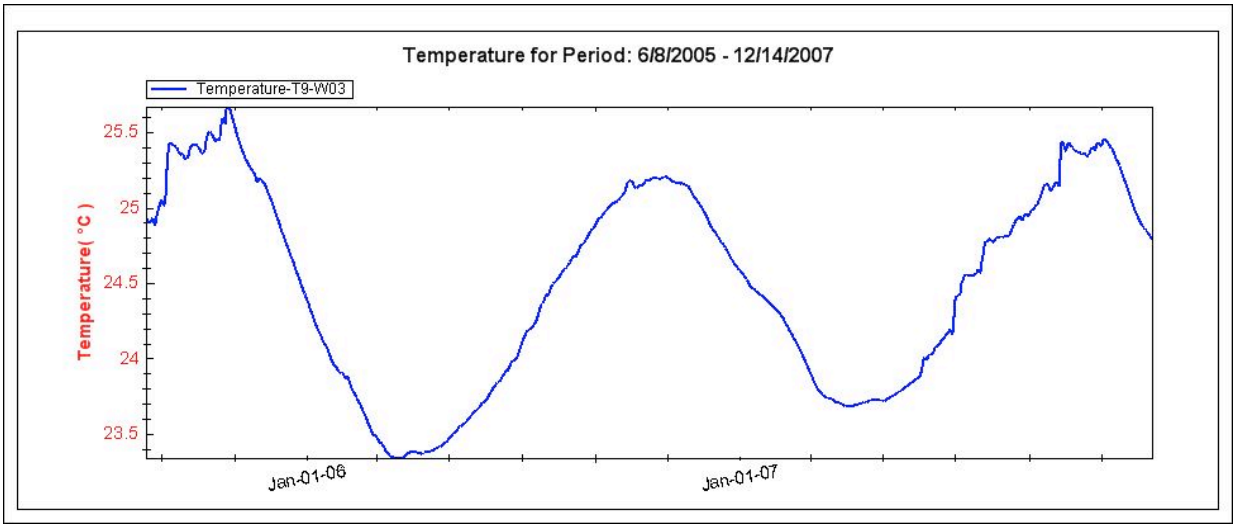

Figure 36. Average daily groundwater temperature at well 3 on Transect 9.

Appendix III-D – Daily time series of groundwater EC (S/m)

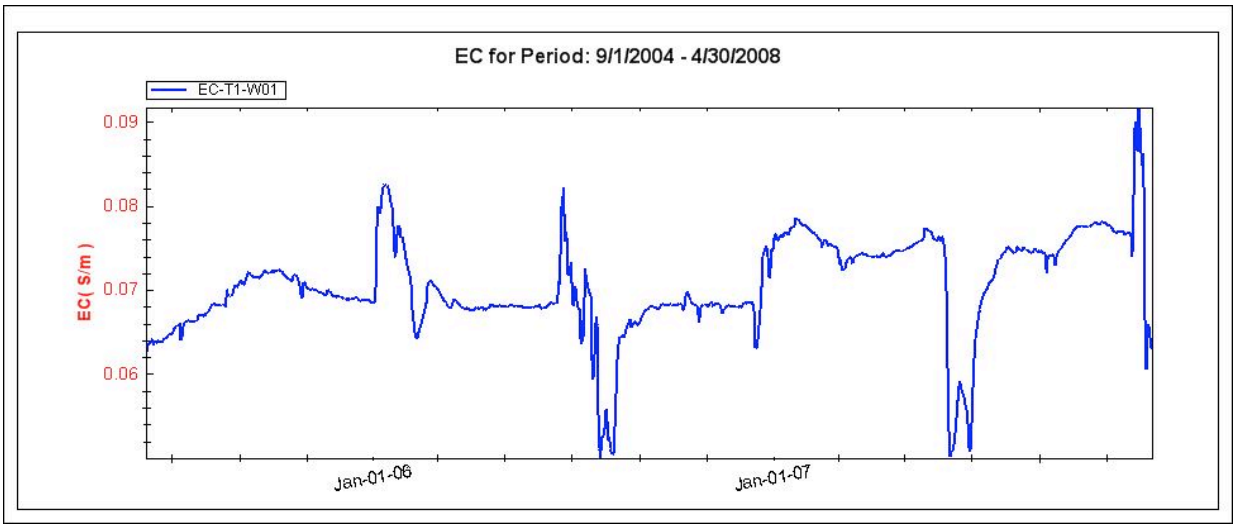

Figure 37. Average daily groundwater EC at well 1 on Transect 1.

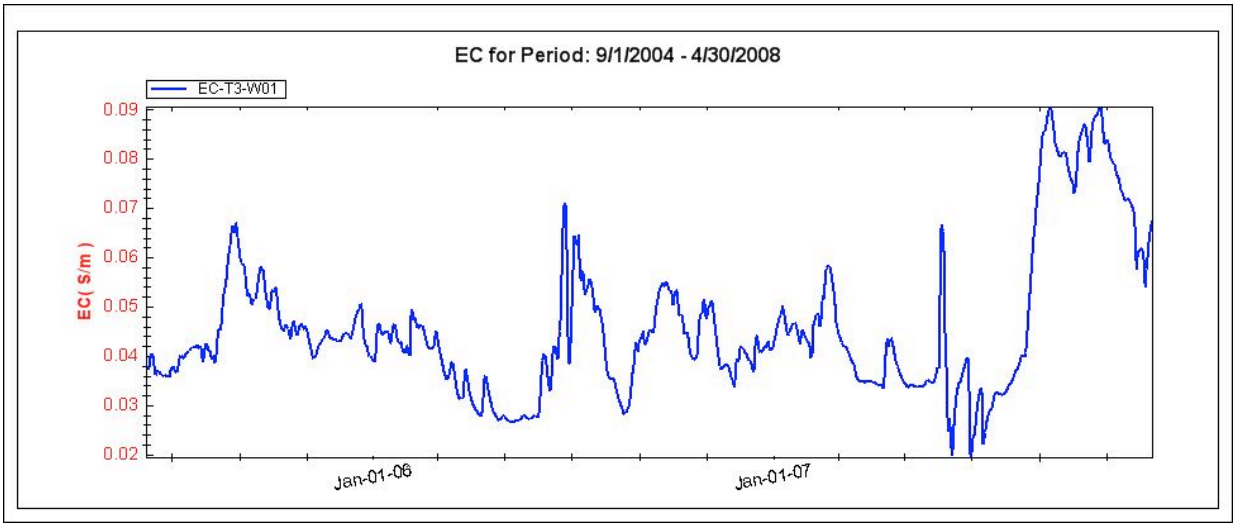

Figure 38. Average daily groundwater EC at well 1 on Transect 3.

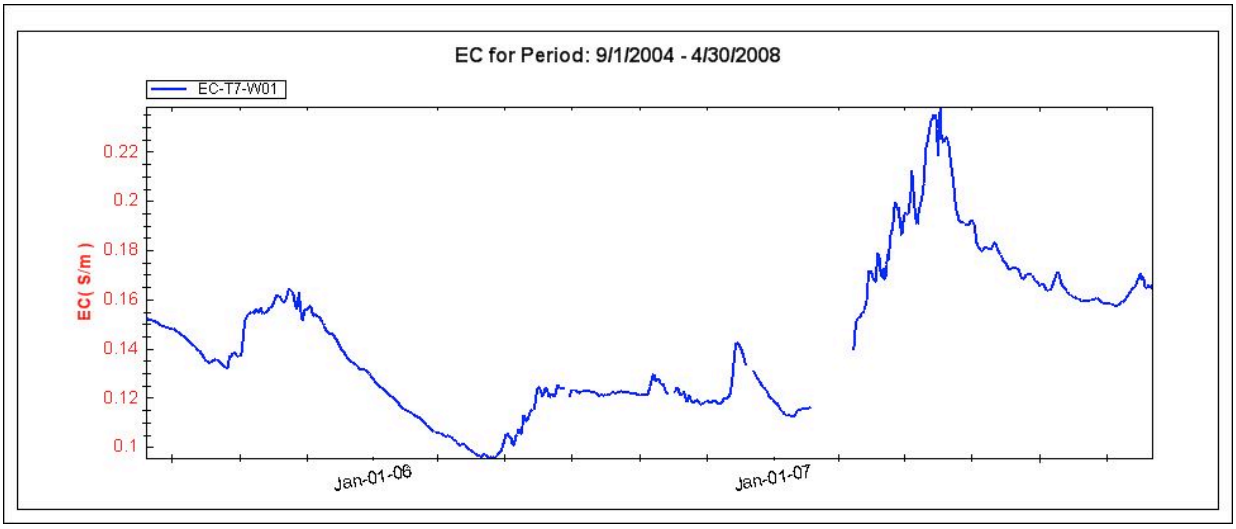

Figure 39. Average daily groundwater EC at well 1 on Transect 7.

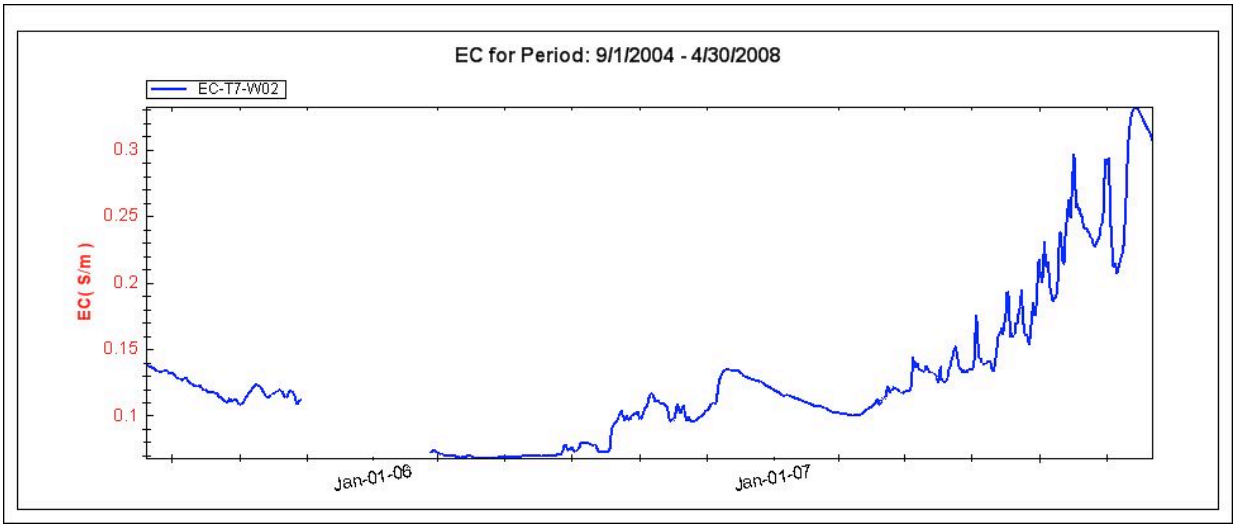

Figure 40. Average daily groundwater EC at well 2 on Transect 7.

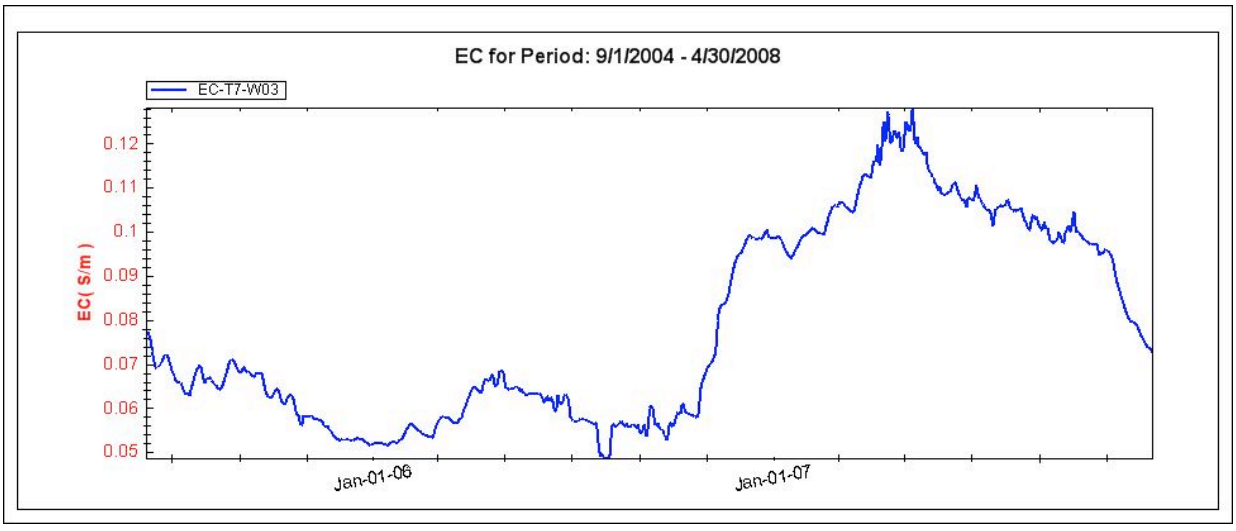

Figure 41. Average daily groundwater EC at well 3 on Transect 7.

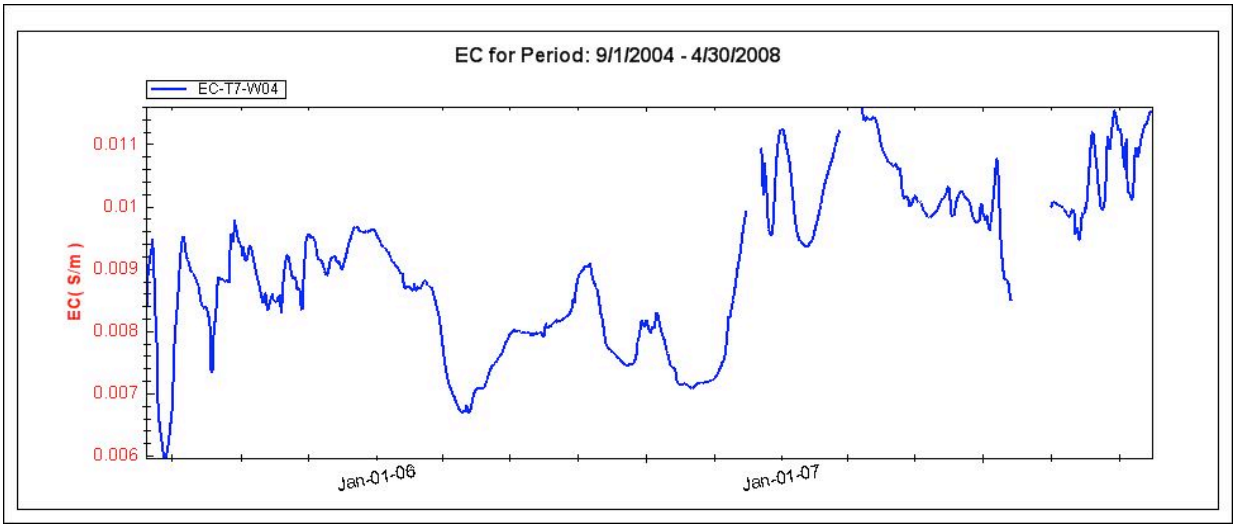

Figure 42. Average daily groundwater EC at well 4 on Transect 7.

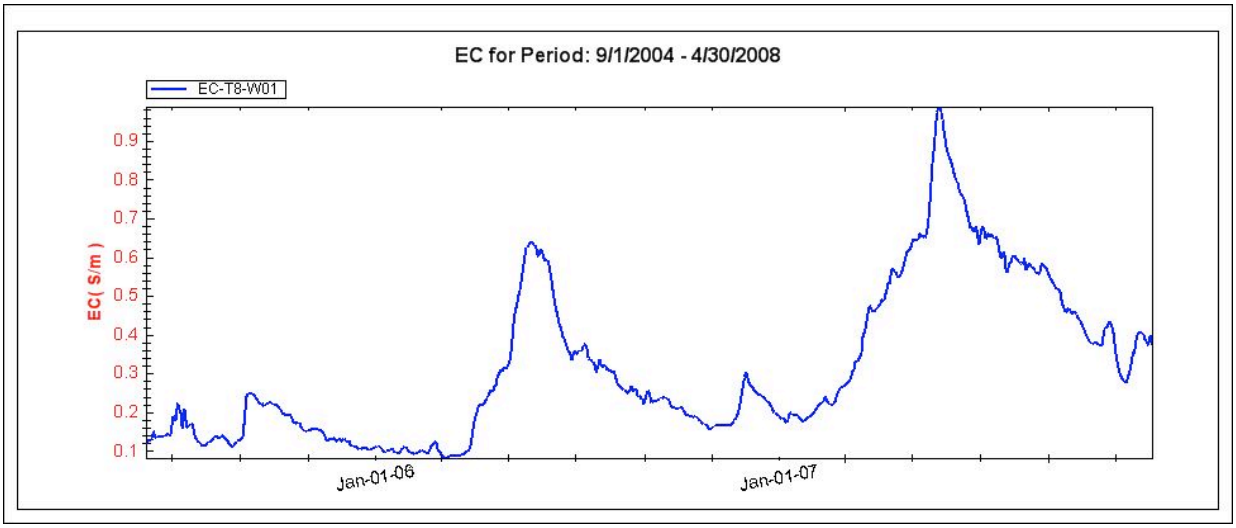

Figure 43. Average daily groundwater EC at well 1 on Transect 8.

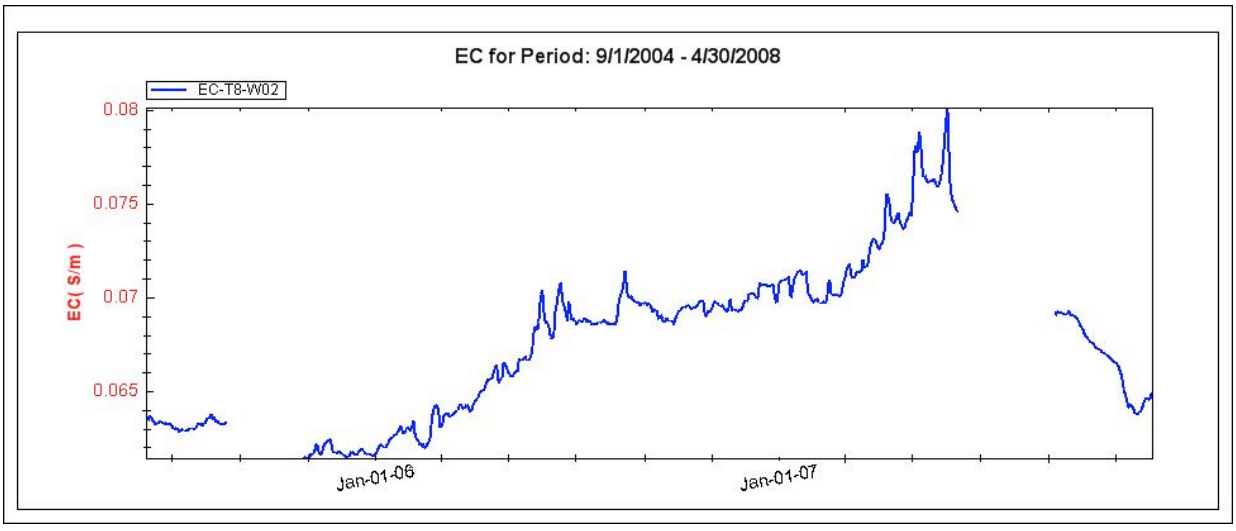

Figure 44. Average daily groundwater EC at well 2 on Transect 8.

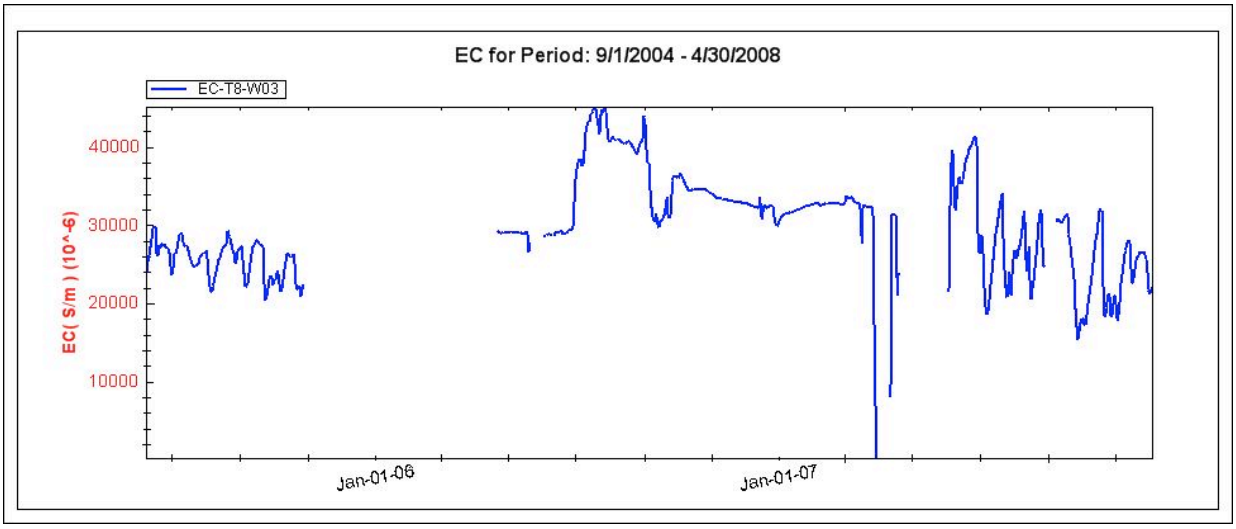

Figure 45. Average daily groundwater EC at well 3 on Transect 8.

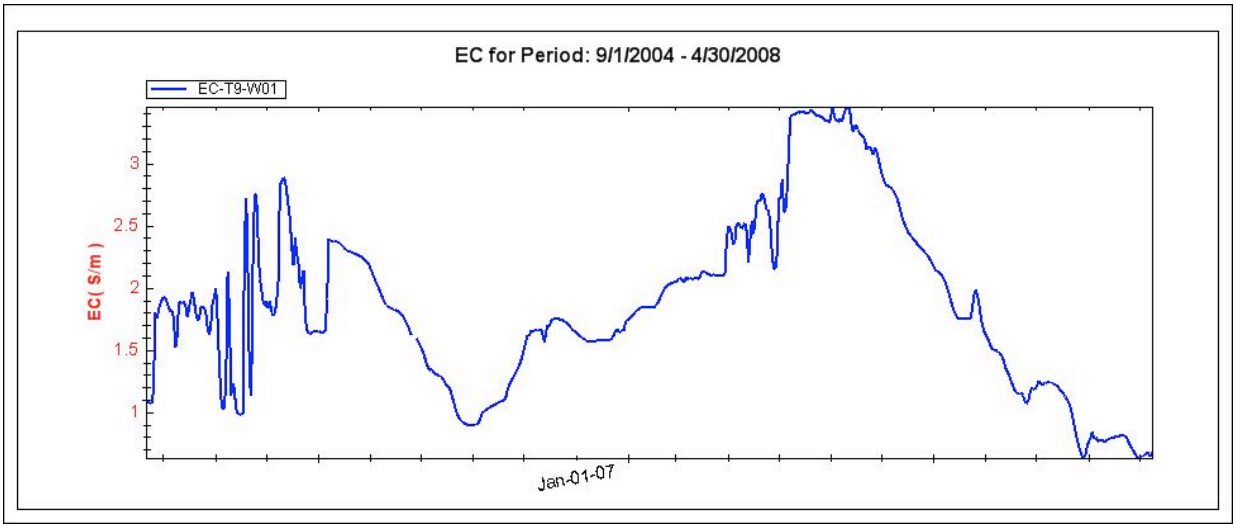

Figure 46. Average daily groundwater EC at well 1 on Transect 9.

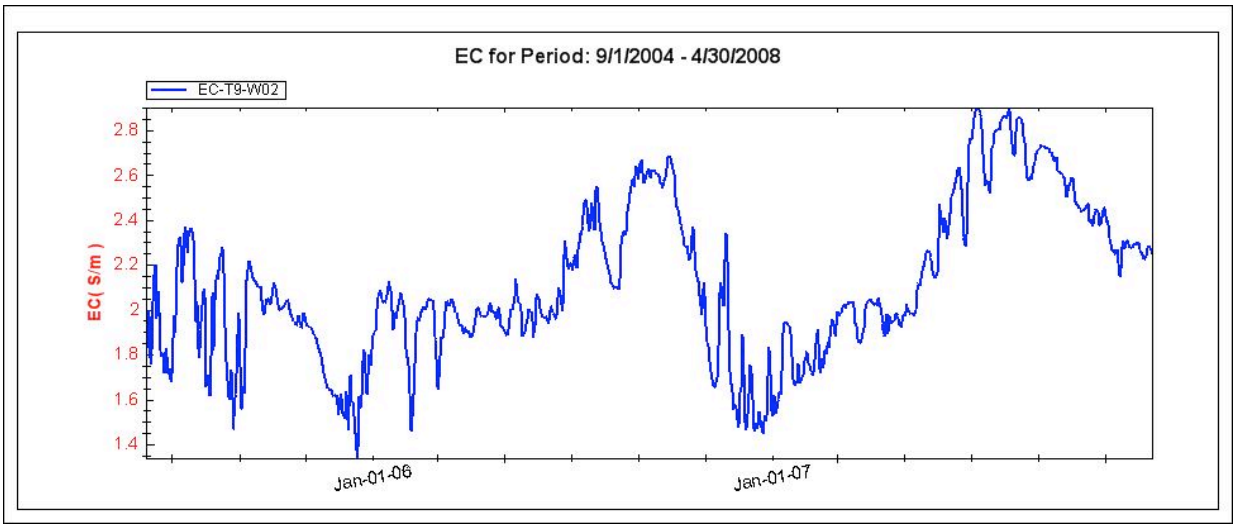

Figure 47. Average daily groundwater EC at well 2 on Transect 9.

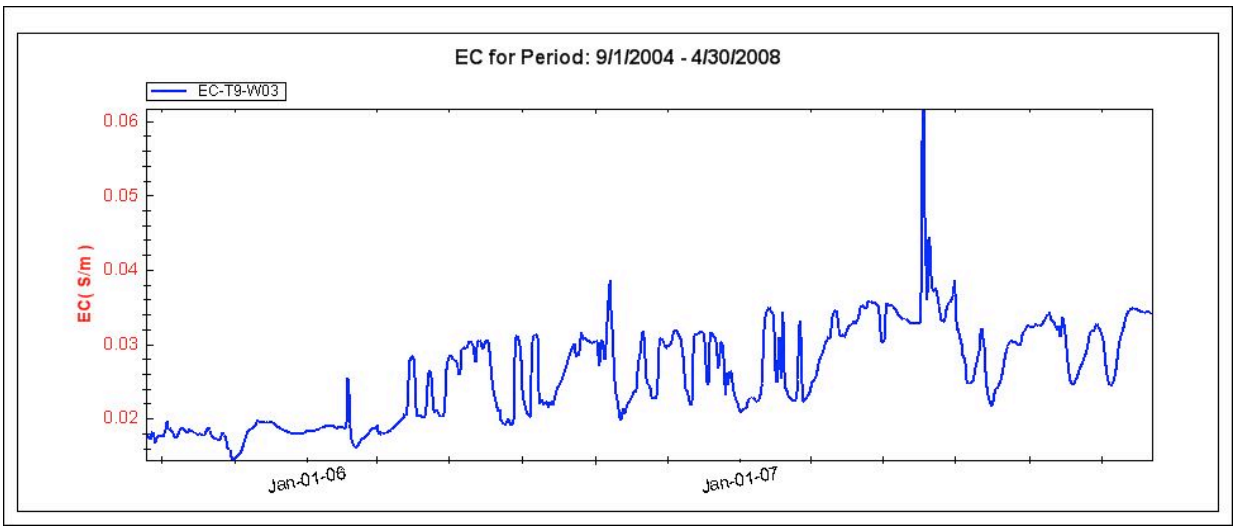

Figure 48. Average daily groundwater EC at well 3 on Transect 9.

Appendix IV. Global, Annual, Monthly, and Wet/Dry Season Statistics Tables

Summary statistics, including global, annual, and wet/dry season means, minima, maxima, variances, and standard deviations are given in tables 2 – 10. Wet and dry season statistics were calculated for each year's wet and dry seasons from monthly data, with overall wet/dry season means calculated across all years' wet/dry months.

Appendix IV-A – Global Statistics

Table 2. Global statistics by station over period of record.

T1-W01	Measurement	Min	Max	Mean	Variance	Std. Dev.
	Elevation NAVD88_ft	6.073	12.463	9.044	1.813	1.347
	Depth NAVD88_ft	-0.196	6.194	3.223	1.813	1.347
	Temperature (C)	19.661	25.217	23.093	2.393	1.547
	EC (S/m)	0.047	0.092	0.071	0	0.006
T3-W01						
	Elevation NAVD88_ft	-0.604	5.482	2.215	1.942	1.394
	Depth NAVD88_ft	1.249	7.335	4.516	1.942	1.394
	Temperature (C)	19.056	27.056	23.53	5.254	2.292
	EC (S/m)	0.017	0.091	0.046	0	0.015
T7-W01						
	Elevation NAVD88_ft	-1.995	1.589	-0.618	0.255	0.505
	Depth NAVD88_ft	1.092	4.676	3.299	0.255	0.505
	Temperature (C)	20.622	25.283	23.514	1.521	1.233
	EC (S/m)	0.094	0.251	0.143	0.001	0.03
T7-W02						
	Elevation NAVD88_ft	-1.411	2.182	-0.124	0.149	0.386
	Depth NAVD88_ft	0.729	4.322	3.035	0.149	0.386
	Temperature (C)	20.306	25.3	23.381	1.724	1.313
	EC (S/m)	0.068	0.348	0.129	0.003	0.059
T7-W03						
	Elevation NAVD88_ft	-0.987	2.051	-0.009	0.099	0.315
	Depth NAVD88_ft	1.28	4.318	3.34	0.099	0.315
	Temperature (C)	19.922	26.006	23.528	2.25	1.5
	EC (S/m)	0.049	0.139	0.079	0.001	0.022
T7-W04						
	Elevation NAVD88_ft	0.761	5.979	3.186	1.71	1.308
	Depth NAVD88_ft	5.162	10.38	7.955	1.71	1.308
	Temperature (C)	22.028	25.183	23.696	0.923	0.961
	EC (S/m)	0.006	0.012	0.009	0	0.001
T8-W01						
	Elevation NAVD88_ft	-2.871	2.116	-0.556	0.468	0.684
	Depth NAVD88_ft	-0.215	4.772	2.457	0.468	0.684
	Temperature (C)	19.2	25.172	23.03	2.036	1.427
	EC (S/m)	0.077	1.012	0.317	0.041	0.201
T8-W02						
	Elevation NAVD88_ft	-0.76	2.13	0.09	0.059	0.244
	Depth NAVD88_ft	0.547	3.437	2.587	0.059	0.244
	Temperature (C)	20.461	24.422	22.961	1.052	1.025
	EC (S/m)	0.061	0.081	0.068	0	0.004

Table 2 (continued).

T8-W03						
	Elevation NAVD88_ft	0.068	4.855	1.834	1.167	1.08
	Depth NAVD88_ft	4.112	8.899	7.133	1.167	1.08
	Temperature (C)	21	25.728	24.019	1.587	1.26
	EC (S/m)	0	0.046	0.03	0	0.006
T9-W01						
	Elevation NAVD88_ft	-1.999	1.686	-0.67	0.212	0.461
	Depth NAVD88_ft	1.148	4.833	3.504	0.212	0.461
	Temperature (C)	20.05	26.6	23.794	3.099	1.76
	EC (S/m)	0.616	3.733	1.861	0.507	0.712
T9-W02						
	Elevation NAVD88_ft	-1.49	2.596	0.026	0.264	0.514
	Depth NAVD88_ft	0.918	5.004	3.488	0.264	0.514
	Temperature (C)	19.461	28.111	24.432	4.654	2.157
	EC (S/m)	1.246	2.931	2.109	0.124	0.352
T9-W03						
	Elevation NAVD88_ft	-1.551	1.764	-0.377	0.532	0.729
	Depth NAVD88_ft	9.37	12.685	11.511	0.532	0.729
	Temperature (C)	23.328	25.683	24.506	0.445	0.667
	EC (S/m)	0.014	0.077	0.026	0	0.007

Appendix IV-B – Yearly Statistics

Table 3. Water table elevation yearly statistics (ft, NAVD88).

T1-W01	Year	Min	Max	Mean	Variance	Std
	2005	9.595	12.463	10.359	0.157	0.397
	2006	6.338	10.918	8.516	1.185	1.088
	2007	6.073	11.653	8.818	2.087	1.445
T3-W01						
	2005	2.744	5.482	3.618	0.137	0.37
	2006	-0.358	3.993	1.612	1.074	1.036
	2007	-0.604	4.71	2.015	2.337	1.529
T7-W01						
	2005	-1.644	1.333	-0.44	0.286	0.535
	2006	-1.995	1.292	-0.735	0.215	0.464
	2007	-1.669	1.589	-0.605	0.243	0.493
T7-W02						
	2005	-0.756	1.812	0.063	0.167	0.409
	2006	-1.411	1.471	-0.212	0.114	0.337
	2007	-1.056	2.182	-0.12	0.152	0.39
T7-W03						
	2005	-0.485	1.805	0.195	0.094	0.306
	2006	-0.987	1.303	-0.056	0.071	0.267
	2007	-0.75	2.051	-0.081	0.099	0.314
T7-W04						
	2005	3.787	5.979	4.498	0.157	0.396
	2006	1.287	3.881	2.562	0.488	0.699
	2007	0.761	5.713	3.005	2.597	1.612
T8-W01						
	2005	-1.817	1.708	-0.406	0.327	0.572
	2006	-2.871	1.504	-0.864	0.499	0.706
	2007	-1.642	2.116	-0.316	0.348	0.59
T8-W02						
	2005	-0.189	1.608	0.175	0.042	0.204
	2006	-0.76	1.396	0.007	0.041	0.202
	2007	-0.602	2.13	0.128	0.077	0.278
T8-W03						
	2005	1.339	4.564	2.722	0.435	0.659
	2006	0.068	3.032	1.129	0.455	0.675
	2007	0.129	4.855	2.033	1.303	1.141
T9-W01						
	2006	-1.999	1.006	-0.707	0.189	0.434
	2007	-1.855	1.686	-0.642	0.228	0.478
T9-W02						
	2005	-1.259	2.137	0.18	0.252	0.502
	2006	-1.49	1.891	-0.127	0.207	0.455
	2007	-1.248	2.596	0.095	0.288	0.536
T9-W03						
	2005	-0.402	1.764	0.383	0.227	0.476
	2006	-1.551	0.025	-0.802	0.099	0.315
	2007	-1.496	1.519	-0.225	0.669	0.818

Table 4. Water table depth yearly statistics (ft below benchmark).

T1-W01	Year	Min	Max	Mean	Variance	Std
	2005	-0.196	2.672	1.908	0.157	0.397
	2006	1.349	5.929	3.751	1.185	1.088
	2007	0.614	6.194	3.449	2.087	1.445
T3-W01						
	2005	1.249	3.987	3.113	0.137	0.37
	2006	2.738	7.089	5.119	1.074	1.036
	2007	2.021	7.335	4.716	2.337	1.529
T7-W01						
	2005	1.348	4.325	3.121	0.286	0.535
	2006	1.389	4.676	3.416	0.215	0.464
	2007	1.092	4.35	3.286	0.243	0.493
T7-W02						
	2005	1.099	3.667	2.848	0.167	0.409
	2006	1.44	4.322	3.123	0.114	0.337
	2007	0.729	3.967	3.031	0.152	0.39
T7-W03						
	2005	1.526	3.816	3.136	0.094	0.306
	2006	2.028	4.318	3.387	0.071	0.267
	2007	1.28	4.081	3.412	0.099	0.314
T7-W04						
	2005	5.162	7.354	6.643	0.157	0.396
	2006	7.26	9.854	8.579	0.488	0.699
	2007	5.428	10.38	8.136	2.597	1.612
T8-W01						
	2005	0.193	3.718	2.307	0.327	0.572
	2006	0.397	4.772	2.765	0.499	0.706
	2007	-0.215	3.543	2.217	0.348	0.59
T8-W02						
	2005	1.069	2.866	2.502	0.042	0.204
	2006	1.281	3.437	2.67	0.041	0.202
	2007	0.547	3.279	2.549	0.077	0.278
T8-W03						
	2005	4.403	7.628	6.245	0.435	0.659
	2006	5.935	8.899	7.838	0.455	0.675
	2007	4.112	8.838	6.934	1.303	1.141
T9-W01						
	2006	1.828	4.833	3.541	0.189	0.434
	2007	1.148	4.689	3.476	0.228	0.478
T9-W02						
	2005	1.377	4.773	3.334	0.252	0.502
	2006	1.623	5.004	3.641	0.207	0.455
	2007	0.918	4.762	3.419	0.288	0.536
T9-W03						
	2005	9.37	11.536	10.751	0.227	0.476
	2006	11.109	12.685	11.936	0.099	0.315
	2007	9.615	12.63	11.359	0.669	0.818

Table 5. Groundwater temperature yearly statistics (degrees Celsius).

T1-W01	Year	Min	Max	Mean	Variance	Std
	2005	21.439	25.217	24.093	1.046	1.023
	2006	19.661	24.794	22.632	2.623	1.62
	2007	20.517	25.072	22.984	2.123	1.457
T3-W01						
	2005	20.844	27.056	25.312	2.667	1.633
	2006	19.056	25.922	22.677	4.226	2.056
	2007	19.561	26.767	23.368	5.195	2.279
T7-W01						
	2005	22.161	25.283	24.347	0.604	0.777
	2006	20.622	25.028	23.123	1.695	1.302
	2007	21.433	24.867	23.4	1.285	1.133
T7-W02						
	2005	22.372	24.767	23.848	0.487	0.698
	2006	20.589	25.161	23.296	1.833	1.354
	2007	20.306	25.3	23.266	2.024	1.423
T7-W03						
	2005	22.422	24.883	24.186	0.373	0.611
	2006	20.867	26.006	23.369	2.407	1.551
	2007	19.922	25.889	23.305	2.869	1.694
T7-W04						
	2005	22.828	25.161	24.3	0.43	0.656
	2006	22.028	24.661	23.356	0.842	0.918
	2007	22.4	25.183	23.679	0.975	0.988
T8-W01						
	2005	21.194	25.172	23.927	0.725	0.851
	2006	19.2	24.939	22.645	2.414	1.554
	2007	20.261	24.944	22.897	1.758	1.326
T8-W02						
	2005	21.206	24.233	23.475	0.518	0.72
	2006	20.461	24.394	22.679	1.209	1.1
	2007	21.028	24.422	22.953	0.96	0.98
T8-W03						
	2005	23	25.728	24.792	0.515	0.717
	2006	21.761	25.367	23.986	1.025	1.012
	2007	21	25.55	23.643	2.227	1.492
T9-W01						
	2006	21.294	26.6	24.363	2.045	1.43
	2007	20.05	26.122	23.372	3.462	1.861
T9-W02						
	2005	20.7	28.111	25.468	2.643	1.626
	2006	19.522	27.95	24.013	5.219	2.284
	2007	19.461	27.694	24.256	4.403	2.098
T9-W03						
	2005	24.4	25.683	25.188	0.101	0.318
	2006	23.328	25.222	24.273	0.432	0.657
	2007	23.672	25.478	24.487	0.354	0.595

Table 6. Groundwater EC yearly statistics (S/m).

T1-W01	Year	Min	Max	Mean	Variance	Std
	2005	0.062	0.073	0.069	0	0.003
	2006	0.048	0.089	0.068	0	0.005
	2007	0.047	0.092	0.074	0	0.006
T3-W01						
	2005	0.035	0.068	0.046	0	0.007
	2006	0.027	0.072	0.041	0	0.009
	2007	0.017	0.091	0.051	0	0.02
T7-W01						
	2005	0.128	0.169	0.146	0	0.01
	2006	0.094	0.143	0.117	0	0.01
	2007	0.112	0.251	0.171	0.001	0.028
T7-W02						
	2005	0.107	0.14	0.121	0	0.008
	2006	0.068	0.141	0.091	0.001	0.023
	2007	0.1	0.348	0.166	0.005	0.069
T7-W03						
	2005	0.052	0.079	0.063	0	0.007
	2006	0.049	0.101	0.064	0	0.013
	2007	0.073	0.139	0.103	0	0.011
T7-W04						
	2005	0.006	0.01	0.009	0	0.001
	2006	0.007	0.011	0.008	0	0.001
	2007	0.008	0.012	0.01	0	0.001
T8-W01						
	2005	0.095	0.279	0.157	0.002	0.042
	2006	0.077	0.669	0.252	0.02	0.141
	2007	0.167	1.012	0.485	0.038	0.195
T8-W02						
	2005	0.061	0.064	0.063	0	0.001
	2006	0.062	0.072	0.067	0	0.003
	2007	0.064	0.081	0.071	0	0.004
T8-W03						
	2005	0.02	0.03	0.026	0	0.002
	2006	0.021	0.046	0.035	0	0.005
	2007	0	0.042	0.028	0	0.006
T9-W01						
	2006	0.899	3.007	1.691	0.234	0.484
	2007	0.616	3.733	1.987	0.672	0.82
T9-W02						
	2005	1.246	2.466	1.898	0.067	0.258
	2006	1.319	2.762	2.07	0.098	0.313
	2007	1.484	2.931	2.275	0.13	0.36
T9-W03						
	2005	0.014	0.021	0.018	0	0.001
	2006	0.016	0.04	0.025	0	0.005
	2007	0.021	0.077	0.031	0	0.005

Appendix IV-C – Wet/Dry Season Statistics

Table 7. Water table elevation (ft, NAVD88) wet/dry season statistics.

T1-W01

Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	9.751	11.860	10.361	0.190	0.420
Dry 2005-2006	November 2005 - April 2006	8.529	9.489	8.970	0.076	0.258
Wet 2006	May 2006 - October 2006	7.930	9.741	8.702	0.428	0.529
Dry 2006-2007	November 2006 - April 2007	7.295	8.484	7.798	0.124	0.323
Wet 2007	May 2007 - October 2007	8.683	10.559	9.476	0.165	0.381
Dry 2007*	November 2007 - December 2007	9.284	10.190	9.678	0.051	0.225
	Average Wet**	8.731	10.653	9.463	0.265	0.445
	Average Dry**	8.108	9.158	8.569	0.093	0.281

T3-W01

Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	3.017	4.962	3.667	0.151	0.374
Dry 2005-2006	November 2005 - April 2006	1.682	2.794	2.101	0.076	0.266
Wet 2006	May 2006 - October 2006	0.926	2.983	1.802	0.417	0.534
Dry 2006-2007	November 2006 - April 2007	0.370	1.730	0.891	0.119	0.328
Wet 2007	May 2007 - October 2007	1.931	3.781	2.722	0.179	0.386
Dry 2007*	November 2007 - December 2007	2.165	3.475	2.787	0.136	0.368
	Average Wet**	1.896	3.847	2.675	0.255	0.435
	Average Dry**	1.188	2.435	1.680	0.103	0.307

T7-W01

Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	-1.300	0.778	-0.372	0.181	0.420
Dry 2005-2006	November 2005 - April 2006	-1.602	0.158	-0.817	0.123	0.349
Wet 2006	May 2006 - October 2006	-1.567	0.384	-0.693	0.150	0.384
Dry 2006-2007	November 2006 - April 2007	-1.442	0.313	-0.734	0.129	0.357
Wet 2007	May 2007 - October 2007	-1.344	0.848	-0.505	0.197	0.439
Dry 2007*	November 2007 - December 2007	-1.472	0.398	-0.698	0.190	0.412
	Average Wet**	-1.410	0.664	-0.532	0.176	0.414
	Average Dry**	-1.515	0.259	-0.765	0.135	0.361

T7-W02

Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	-0.419	1.295	0.064	0.118	0.322
Dry 2005-2006*	November 2005 - April 2006	-0.876	0.801	-0.342	0.117	0.319
Wet 2006	May 2006 - October 2006	-0.846	0.870	-0.225	0.097	0.306
Dry 2006-2007	November 2006 - April 2007	-0.819	0.722	-0.262	0.064	0.251
Wet 2007	May 2007 - October 2007	-0.528	1.413	-0.002	0.129	0.349
Dry 2007*	November 2007 - December 2007	-0.566	0.913	-0.120	0.109	0.304
	Average Wet**	-0.608	1.187	-0.061	0.114	0.326
	Average Dry**	-0.789	0.778	-0.258	0.087	0.279

T7-W03

Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	-0.235	1.278	0.154	0.083	0.263
Dry 2005-2006	November 2005 - April 2006	-0.256	0.997	0.106	0.040	0.195
Wet 2006	May 2006 - October 2006	-0.573	0.892	-0.089	0.062	0.247
Dry 2006-2007	November 2006 - April 2007	-0.618	0.687	-0.204	0.046	0.213
Wet 2007	May 2007 - October 2007	-0.395	1.301	-0.004	0.083	0.275
Dry 2007*	November 2007 - December 2007	-0.199	0.828	0.004	0.058	0.203
	Average Wet**	-0.410	1.150	0.012	0.075	0.261
	Average Dry**	-0.403	0.840	-0.041	0.045	0.204

* incomplete seasons

** averaged across all wet/dry season months in record

Table 7 (continued). Water table elevation (ft, NAVD88) wet/dry season statistics.

T7-W04						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	4.061	5.318	4.537	0.095	0.302
Dry 2005-2006	November 2005 - April 2006	3.171	3.811	3.474	0.035	0.184
Wet 2006	May 2006 - October 2006	2.009	2.822	2.359	0.045	0.205
Dry 2006-2007	November 2006 - April 2007	1.470	2.051	1.825	0.037	0.165
Wet 2007	May 2007 - October 2007	3.026	4.439	3.706	0.147	0.317
Dry 2007*	November 2007 - December 2007	4.352	4.990	4.582	0.049	0.159
	Average Wet**	2.971	4.127	3.475	0.096	0.273
	Average Dry**	2.611	3.225	2.926	0.038	0.172
T8-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	-1.322	1.143	-0.301	0.238	0.482
Dry 2005-2006	November 2005 - April 2006	-2.377	0.233	-1.246	0.239	0.482
Wet 2006	May 2006 - October 2006	-1.661	0.820	-0.583	0.209	0.456
Dry 2006-2007	November 2006 - April 2007	-1.537	0.745	-0.580	0.173	0.414
Wet 2007	May 2007 - October 2007	-1.177	1.441	-0.164	0.262	0.508
Dry 2007*	November 2007 - December 2007	-1.074	1.108	-0.151	0.266	0.485
	Average Wet**	-1.391	1.134	-0.352	0.236	0.482
	Average Dry**	-1.831	0.577	-0.804	0.214	0.453
T8-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.011	1.084	0.181	0.044	0.173
Dry 2005-2006	November 2005 - April 2006	-0.163	0.641	0.029	0.015	0.112
Wet 2006	May 2006 - October 2006	-0.373	0.783	-0.005	0.038	0.192
Dry 2006-2007	November 2006 - April 2007	-0.269	0.701	-0.008	0.026	0.153
Wet 2007	May 2007 - October 2007	0.024	1.374	0.226	0.049	0.202
Dry 2007*	November 2007 - December 2007	0.203	0.953	0.272	0.038	0.140
	Average Wet**	-0.120	1.080	0.131	0.044	0.190
	Average Dry**	-0.156	0.711	0.048	0.023	0.133
T8-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	1.910	4.208	2.760	0.283	0.520
Dry 2005-2006*	November 2005 - April 2006	0.436	0.682	0.526	0.004	0.066
Wet 2006	May 2006 - October 2006	0.681	1.937	1.166	0.111	0.311
Dry 2006-2007	November 2006 - April 2007	0.451	1.230	0.806	0.088	0.226
Wet 2007*	May 2007 - October 2007	1.682	4.141	2.689	0.351	0.577
Dry 2007*	November 2007 - December 2007	1.153	3.525	2.661	0.131	0.341
	Average Wet**	1.378	3.335	2.140	0.240	0.459
	Average Dry**	0.605	1.679	1.187	0.088	0.233
T9-W01						
Season	Period	Min	Max	Mean	Variance	Std
Dry 2005-2006*	April 2006	-1.331	0.460	-0.709	0.138	0.371
Wet 2006	May 2006 - October 2006	-1.488	0.457	-0.736	0.137	0.360
Dry 2006-2007	November 2006 - April 2007	-1.621	0.290	-0.848	0.129	0.353
Wet 2007	May 2007 - October 2007	-1.147	0.969	-0.451	0.124	0.348
Dry 2007*	November 2007 - December 2007	-1.374	0.256	-0.784	0.119	0.326
	Average Wet**	-1.318	0.713	-0.593	0.131	0.354
	Average Dry**	-1.534	0.301	-0.818	0.128	0.349

* incomplete seasons

** averaged across all wet/dry season months in record

Table 7 (continued). Water table elevation (ft, NAVD88) wet/dry season statistics.

T9-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	-0.617	1.468	0.193	0.128	0.354
Dry 2005-2006	November 2005 - April 2006	-0.975	1.110	-0.136	0.125	0.354
Wet 2006	May 2006 - October 2006	-1.008	1.203	-0.105	0.143	0.376
Dry 2006-2007	November 2006 - April 2007	-1.067	1.054	-0.192	0.131	0.361
Wet 2007	May 2007 - October 2007	-0.562	1.808	0.327	0.158	0.394
Dry 2007*	November 2007 - December 2007	-0.579	1.319	0.142	0.150	0.375
	Average Wet**	-0.736	1.494	0.135	0.144	0.376
	Average Dry**	-0.958	1.116	-0.120	0.131	0.360
T9-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	August 2005 - October 2005	-0.096	1.045	0.416	0.093	0.268
Dry 2005-2006	November 2005 - April 2006	-0.777	-0.210	-0.513	0.024	0.152
Wet 2006	May 2006 - October 2006	-1.112	-0.504	-0.825	0.032	0.175
Dry 2006-2007	November 2006 - April 2007	-1.221	-0.627	-0.936	0.032	0.172
Wet 2007	May 2007 - October 2007	-0.430	0.967	0.204	0.158	0.390
Dry 2007*	November 2007 - December 2007	-0.177	0.740	0.181	0.094	0.269
	Average Wet**	-0.636	0.394	-0.165	0.095	0.279
	Average Dry**	-0.882	-0.253	-0.595	0.037	0.177
* incomplete seasons						
** averaged across all wet/dry season months in record						

Table 8. Water table depth below benchmark (ft) wet/dry season statistics.

T1-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.407	2.516	1.906	0.190	0.420
Dry 2005-2006	November 2005 - April 2006	2.778	3.738	3.297	0.076	0.258
Wet 2006	May 2006 - October 2006	2.527	4.337	3.565	0.428	0.529
Dry 2006-2007	November 2006 - April 2007	3.783	4.972	4.469	0.124	0.323
Wet 2007	May 2007 - October 2007	1.708	3.585	2.792	0.165	0.381
Dry 2007*	November 2007 - December 2007	2.077	2.983	2.589	0.051	0.225
	Average Wet**	1.614	3.536	2.804	0.265	0.445
	Average Dry**	3.109	4.159	3.698	0.093	0.281
T3-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	1.769	3.714	3.064	0.151	0.374
Dry 2005-2006	November 2005 - April 2006	3.937	5.049	4.631	0.076	0.266
Wet 2006	May 2006 - October 2006	3.748	5.805	4.929	0.417	0.534
Dry 2006-2007	November 2006 - April 2007	5.001	6.361	5.840	0.119	0.328
Wet 2007	May 2007 - October 2007	2.950	4.800	4.009	0.179	0.386
Dry 2007*	November 2007 - December 2007	3.256	4.566	3.945	0.136	0.368
	Average Wet**	2.884	4.835	4.056	0.255	0.435
	Average Dry**	4.296	5.543	5.051	0.103	0.307
T7-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	1.903	3.981	3.053	0.181	0.420
Dry 2005-2006	November 2005 - April 2006	2.523	4.283	3.498	0.123	0.349
Wet 2006	May 2006 - October 2006	2.297	4.248	3.374	0.150	0.384
Dry 2006-2007	November 2006 - April 2007	2.368	4.123	3.415	0.129	0.357
Wet 2007	May 2007 - October 2007	1.833	4.025	3.186	0.197	0.439
Dry 2007*	November 2007 - December 2007	2.284	4.153	3.379	0.190	0.412
	Average Wet**	2.017	4.091	3.213	0.176	0.414
	Average Dry**	2.422	4.196	3.446	0.135	0.361
* incomplete seasons						
** averaged across all wet/dry season months in record						

Table 8 (continued). Water table depth below benchmark (ft) wet/ dry season statistics.

T7-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	1.616	3.330	2.847	0.118	0.322
Dry 2005-2006*	November 2005 - April 2006	2.110	3.787	3.253	0.117	0.319
Wet 2006	May 2006 - October 2006	2.041	3.757	3.136	0.097	0.306
Dry 2006-2007	November 2006 - April 2007	2.189	3.730	3.173	0.064	0.251
Wet 2007	May 2007 - October 2007	1.499	3.439	2.913	0.129	0.349
Dry 2007*	November 2007 - December 2007	1.999	3.477	3.031	0.109	0.304
	Average Wet**	1.724	3.519	2.972	0.114	0.326
	Average Dry**	2.133	3.700	3.169	0.087	0.279
T7-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	2.053	3.566	3.177	0.083	0.263
Dry 2005-2006	November 2005 - April 2006	2.335	3.587	3.225	0.040	0.195
Wet 2006	May 2006 - October 2006	2.440	3.904	3.420	0.062	0.247
Dry 2006-2007	November 2006 - April 2007	2.644	3.949	3.535	0.046	0.213
Wet 2007	May 2007 - October 2007	2.031	3.726	3.335	0.083	0.275
Dry 2007*	November 2007 - December 2007	2.503	3.530	3.327	0.058	0.203
	Average Wet**	2.181	3.741	3.319	0.075	0.261
	Average Dry**	2.491	3.734	3.372	0.045	0.204
T7-W04						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	5.823	7.080	6.604	0.095	0.302
Dry 2005-2006	November 2005 - April 2006	7.330	7.971	7.667	0.035	0.184
Wet 2006	May 2006 - October 2006	8.319	9.132	8.782	0.045	0.205
Dry 2006-2007	November 2006 - April 2007	9.090	9.671	9.317	0.037	0.165
Wet 2007	May 2007 - October 2007	6.702	8.115	7.435	0.147	0.317
Dry 2007*	November 2007 - December 2007	6.152	6.789	6.559	0.049	0.159
	Average Wet**	7.014	8.170	7.666	0.096	0.273
	Average Dry**	7.916	8.531	8.216	0.038	0.172
T8-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.758	3.223	2.202	0.238	0.482
Dry 2005-2006	November 2005 - April 2006	1.668	4.278	3.147	0.239	0.482
Wet 2006	May 2006 - October 2006	1.081	3.562	2.484	0.209	0.456
Dry 2006-2007	November 2006 - April 2007	1.156	3.438	2.481	0.173	0.414
Wet 2007	May 2007 - October 2007	0.460	3.078	2.065	0.262	0.508
Dry 2007*	November 2007 - December 2007	0.794	2.975	2.052	0.266	0.485
	Average Wet**	0.767	3.292	2.253	0.236	0.482
	Average Dry**	1.324	3.732	2.705	0.214	0.453
T8-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	1.593	2.666	2.496	0.044	0.173
Dry 2005-2006	November 2005 - April 2006	2.036	2.840	2.648	0.015	0.112
Wet 2006	May 2006 - October 2006	1.894	3.050	2.682	0.038	0.192
Dry 2006-2007	November 2006 - April 2007	1.977	2.946	2.685	0.026	0.153
Wet 2007	May 2007 - October 2007	1.303	2.654	2.451	0.049	0.202
Dry 2007*	November 2007 - December 2007	1.724	2.475	2.405	0.038	0.140
	Average Wet**	1.597	2.797	2.546	0.044	0.190
	Average Dry**	1.966	2.833	2.629	0.023	0.133

* incomplete seasons

** averaged across all wet/dry season months in record

Table 8 (continued). Water table depth below benchmark (ft) wet/ dry season statistics.

T8-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	4.759	7.057	6.207	0.283	0.520
Dry 2005-2006*	November 2005 - April 2006	8.285	8.531	8.441	0.004	0.066
Wet 2006	May 2006 - October 2006	7.030	8.286	7.802	0.111	0.311
Dry 2006-2007	November 2006 - April 2007	7.738	8.517	8.161	0.088	0.226
Wet 2007*	May 2007 - October 2007	4.826	7.285	6.278	0.351	0.577
Dry 2007*	November 2007 - December 2007	5.442	7.815	6.307	0.131	0.341
	Average Wet**	5.632	7.589	6.827	0.240	0.459
	Average Dry**	7.288	8.362	7.780	0.088	0.233
T9-W01						
Season	Period	Min	Max	Mean	Variance	Std
Dry 2005-2006*	April 2006	2.374	4.165	3.543	0.138	0.371
Wet 2006	May 2006 - October 2006	2.377	4.322	3.570	0.137	0.360
Dry 2006-2007	November 2006 - April 2007	2.544	4.455	3.682	0.129	0.353
Wet 2007	May 2007 - October 2007	1.865	3.981	3.285	0.124	0.348
Dry 2007*	November 2007 - December 2007	2.578	4.208	3.618	0.119	0.326
	Average Wet**	2.121	4.152	3.427	0.131	0.354
	Average Dry**	2.533	4.368	3.652	0.128	0.349
T9-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	2.046	4.131	3.321	0.128	0.354
Dry 2005-2006	November 2005 - April 2006	2.405	4.489	3.650	0.125	0.354
Wet 2006	May 2006 - October 2006	2.311	4.522	3.619	0.143	0.376
Dry 2006-2007	November 2006 - April 2007	2.460	4.581	3.706	0.131	0.361
Wet 2007	May 2007 - October 2007	1.707	4.076	3.187	0.158	0.394
Dry 2007*	November 2007 - December 2007	2.196	4.093	3.372	0.150	0.375
	Average Wet**	2.020	4.250	3.379	0.144	0.376
	Average Dry**	2.398	4.472	3.634	0.131	0.360
T9-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	August 2005 - October 2005	10.089	11.230	10.718	0.093	0.268
Dry 2005-2006	November 2005 - April 2006	11.344	11.911	11.647	0.024	0.152
Wet 2006	May 2006 - October 2006	11.638	12.246	11.959	0.032	0.175
Dry 2006-2007	November 2006 - April 2007	11.761	12.355	12.070	0.032	0.172
Wet 2007	May 2007 - October 2007	10.167	11.564	10.930	0.158	0.390
Dry 2007*	November 2007 - December 2007	10.395	11.311	10.953	0.094	0.269
	Average Wet**	10.740	11.770	11.299	0.095	0.279
	Average Dry**	11.387	12.016	11.729	0.037	0.177
* incomplete seasons						
** averaged across all wet/dry season months in record						

Table 9. Groundwater temperature (°C) wet/dry season statistics.

T1-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	24.067	24.823	24.499	0.062	0.220
Dry 2005-2006	November 2005 - April 2006	20.913	22.024	21.435	0.099	0.307
Wet 2006	May 2006 - October 2006	23.494	24.222	23.875	0.059	0.200
Dry 2006-2007	November 2006 - April 2007	21.376	22.177	21.820	0.071	0.217
Wet 2007	May 2007 - October 2007	23.566	24.247	23.946	0.053	0.202
Dry 2007*	November 2007 - December 2007	22.747	23.842	23.222	0.204	0.389
	Average Wet**	23.688	24.408	24.084	0.058	0.206
	Average Dry**	21.373	22.349	21.855	0.102	0.280
* incomplete seasons						
** averaged across all wet/dry season months in record						

Table 9 (continued). Groundwater temperature (°C) wet/dry season statistics.

T3-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	25.433	26.555	26.130	0.151	0.347
Dry 2005-2006	November 2005 - April 2006	20.503	21.961	21.231	0.194	0.424
Wet 2006	May 2006 - October 2006	23.790	24.812	24.320	0.098	0.282
Dry 2006-2007	November 2006 - April 2007	20.758	21.923	21.402	0.156	0.327
Wet 2007	May 2007 - October 2007	24.336	25.438	24.963	0.138	0.338
Dry 2007*	November 2007 - December 2007	22.783	24.375	23.355	0.432	0.546
	Average Wet**	24.466	25.546	25.080	0.128	0.321
	Average Dry**	20.938	22.290	21.607	0.212	0.400
T7-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	24.126	24.731	24.472	0.027	0.148
Dry 2005-2006	November 2005 - April 2006	21.795	22.893	22.366	0.082	0.275
Wet 2006	May 2006 - October 2006	23.762	24.322	24.050	0.026	0.148
Dry 2006-2007	November 2006 - April 2007	22.116	22.761	22.500	0.052	0.171
Wet 2007	May 2007 - October 2007	23.550	24.113	23.827	0.029	0.151
Dry 2007*	November 2007 - December 2007	23.650	24.353	24.010	0.061	0.224
	Average Wet**	23.794	24.369	24.095	0.027	0.149
	Average Dry**	22.198	23.045	22.658	0.066	0.223
T7-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	23.532	24.076	23.804	0.025	0.143
Dry 2005-2006*	November 2005 - April 2006	20.833	21.576	21.201	0.034	0.167
Wet 2006	May 2006 - October 2006	23.710	24.498	24.161	0.049	0.203
Dry 2006-2007	November 2006 - April 2007	21.313	22.475	22.081	0.111	0.267
Wet 2007	May 2007 - October 2007	23.788	24.565	24.213	0.047	0.194
Dry 2007*	November 2007 - December 2007	23.092	24.278	23.599	0.158	0.344
	Average Wet**	23.685	24.397	24.074	0.041	0.182
	Average Dry**	21.506	22.558	22.117	0.098	0.254
T7-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	24.104	24.547	24.335	0.018	0.120
Dry 2005-2006	November 2005 - April 2006	21.824	22.995	22.423	0.096	0.301
Wet 2006	May 2006 - October 2006	24.153	25.158	24.696	0.090	0.261
Dry 2006-2007	November 2006 - April 2007	20.962	22.230	21.702	0.175	0.345
Wet 2007	May 2007 - October 2007	24.021	25.096	24.596	0.073	0.251
Dry 2007*	November 2007 - December 2007	22.820	23.975	23.202	0.172	0.360
	Average Wet**	24.092	24.956	24.555	0.063	0.216
	Average Dry**	21.597	22.807	22.225	0.140	0.328
T7-W04						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	23.999	24.492	24.251	0.019	0.127
Dry 2005-2006	November 2005 - April 2006	22.774	23.317	23.029	0.031	0.155
Wet 2006	May 2006 - October 2006	23.583	23.998	23.797	0.016	0.115
Dry 2006-2007	November 2006 - April 2007	23.007	23.358	23.168	0.010	0.089
Wet 2007	May 2007 - October 2007	23.947	24.337	24.134	0.014	0.102
Dry 2007*	November 2007 - December 2007	24.395	24.789	24.607	0.027	0.118
	Average Wet**	23.834	24.263	24.049	0.016	0.114
	Average Dry**	23.106	23.545	23.314	0.021	0.121

* incomplete seasons

** averaged across all wet/dry season months in record

Table 9 (continued). Groundwater temperature (°C) wet/dry season statistics.

T8-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	23.648	24.756	24.224	0.059	0.234
Dry 2005-2006	November 2005 - April 2006	20.761	22.290	21.534	0.118	0.335
Wet 2006	May 2006 - October 2006	23.326	24.336	23.863	0.060	0.236
Dry 2006-2007	November 2006 - April 2007	21.119	22.296	21.818	0.101	0.272
Wet 2007	May 2007 - October 2007	23.333	24.238	23.754	0.045	0.204
Dry 2007*	November 2007 - December 2007	22.942	23.898	23.388	0.077	0.233
	Average Wet**	23.423	24.425	23.931	0.054	0.224
	Average Dry**	21.226	22.522	21.920	0.105	0.294
T8-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	23.361	23.840	23.642	0.020	0.128
Dry 2005-2006	November 2005 - April 2006	21.255	22.397	21.899	0.085	0.259
Wet 2006	May 2006 - October 2006	23.185	23.691	23.434	0.021	0.133
Dry 2006-2007	November 2006 - April 2007	21.651	22.571	22.270	0.084	0.226
Wet 2007	May 2007 - October 2007	23.257	23.681	23.461	0.017	0.117
Dry 2007*	November 2007 - December 2007	23.545	23.931	23.729	0.027	0.125
	Average Wet**	23.262	23.731	23.505	0.019	0.126
	Average Dry**	21.752	22.691	22.320	0.076	0.226
T8-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	24.393	25.098	24.735	0.036	0.168
Dry 2005-2006*	November 2005 - April 2006	21.761	22.222	21.982	0.020	0.141
Wet 2006	May 2006 - October 2006	23.931	24.649	24.299	0.047	0.197
Dry 2006-2007	November 2006 - April 2007	21.947	22.615	22.328	0.053	0.188
Wet 2007*	May 2007 - October 2007	24.470	25.159	24.782	0.037	0.167
Dry 2007*	November 2007 - December 2007	23.206	24.250	23.740	0.155	0.287
	Average Wet**	24.244	24.949	24.586	0.040	0.179
	Average Dry**	22.206	22.934	22.603	0.072	0.205
T9-W01						
Season	Period	Min	Max	Mean	Variance	Std
Dry 2005-2006*	April 2006	21.689	22.433	21.994	0.053	0.229
Wet 2006	May 2006 - October 2006	24.249	25.692	25.002	0.122	0.319
Dry 2006-2007	November 2006 - April 2007	20.812	22.345	21.763	0.183	0.344
Wet 2007	May 2007 - October 2007	24.139	25.139	24.685	0.086	0.251
Dry 2007*	November 2007 - December 2007	23.183	24.342	23.617	0.235	0.372
	Average Wet**	24.194	25.415	24.843	0.104	0.285
	Average Dry**	21.436	22.798	22.200	0.180	0.337
T9-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	25.351	27.415	26.302	0.239	0.477
Dry 2005-2006	November 2005 - April 2006	20.808	23.159	22.078	0.237	0.466
Wet 2006	May 2006 - October 2006	25.158	27.012	26.005	0.202	0.420
Dry 2006-2007	November 2006 - April 2007	20.869	23.001	22.220	0.306	0.457
Wet 2007	May 2007 - October 2007	25.181	26.841	25.913	0.156	0.374
Dry 2007*	November 2007 - December 2007	22.633	24.750	23.837	0.449	0.583
	Average Wet**	25.223	27.070	26.060	0.197	0.420
	Average Dry**	21.095	23.319	22.390	0.297	0.479

* incomplete seasons

** averaged across all wet/dry season months in record

Table 9 (continued). Groundwater temperature (°C) wet/dry season statistics.

T9-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	August 2005 - October 2005	25.026	25.402	25.263	0.009	0.091
Dry 2005-2006	November 2005 - April 2006	23.920	24.322	24.100	0.017	0.112
Wet 2006	May 2006 - October 2006	24.300	24.615	24.458	0.008	0.085
Dry 2006-2007	November 2006 - April 2007	24.190	24.464	24.324	0.007	0.074
Wet 2007	May 2007 - October 2007	24.497	24.831	24.644	0.008	0.081
Dry 2007*	November 2007 - December 2007	24.867	25.220	25.061	0.014	0.103
	Average Wet**	24.524	24.858	24.693	0.008	0.085
	Average Dry**	24.171	24.511	24.333	0.012	0.095
* incomplete seasons						
** averaged across all wet/dry season months in record						

Table 10. Groundwater EC (S/m) wet/dry season statistics.

T1-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.066	0.070	0.069	0.000	0.001
Dry 2005-2006	November 2005 - April 2006	0.067	0.073	0.070	0.000	0.001
Wet 2006	May 2006 - October 2006	0.061	0.073	0.067	0.000	0.003
Dry 2006-2007	November 2006 - April 2007	0.070	0.076	0.073	0.000	0.001
Wet 2007	May 2007 - October 2007	0.065	0.077	0.072	0.000	0.003
Dry 2007*	November 2007 - December 2007	0.062	0.092	0.076	0.000	0.008
	Average Wet**	0.064	0.073	0.069	0.000	0.002
	Average Dry**	0.068	0.077	0.072	0.000	0.002
T3-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.040	0.053	0.046	0.000	0.004
Dry 2005-2006	November 2005 - April 2006	0.036	0.046	0.040	0.000	0.003
Wet 2006	May 2006 - October 2006	0.034	0.054	0.042	0.000	0.005
Dry 2006-2007	November 2006 - April 2007	0.036	0.049	0.042	0.000	0.004
Wet 2007	May 2007 - October 2007	0.042	0.067	0.052	0.000	0.007
Dry 2007*	November 2007 - December 2007	0.054	0.076	0.068	0.000	0.006
	Average Wet**	0.039	0.058	0.047	0.000	0.005
	Average Dry**	0.038	0.052	0.045	0.000	0.004
T7-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.138	0.156	0.148	0.000	0.004
Dry 2005-2006	November 2005 - April 2006	0.114	0.128	0.119	0.000	0.003
Wet 2006	May 2006 - October 2006	0.113	0.129	0.120	0.000	0.003
Dry 2006-2007	November 2006 - April 2007	0.125	0.154	0.137	0.000	0.008
Wet 2007	May 2007 - October 2007	0.170	0.201	0.183	0.000	0.008
Dry 2007*	November 2007 - December 2007	0.159	0.179	0.164	0.000	0.005
	Average Wet**	0.141	0.162	0.151	0.000	0.005
	Average Dry**	0.125	0.146	0.133	0.000	0.006
T7-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.115	0.128	0.122	0.000	0.003
Dry 2005-2006*	November 2005 - April 2006	0.070	0.073	0.071	0.000	0.001
Wet 2006	May 2006 - October 2006	0.078	0.119	0.087	0.000	0.007
Dry 2006-2007	November 2006 - April 2007	0.107	0.126	0.115	0.000	0.005
Wet 2007	May 2007 - October 2007	0.147	0.298	0.176	0.001	0.031
Dry 2007*	November 2007 - December 2007	0.245	0.334	0.294	0.002	0.030
	Average Wet**	0.113	0.185	0.129	0.000	0.014
	Average Dry**	0.122	0.149	0.135	0.000	0.008
* incomplete seasons						
** averaged across all wet/dry season months in record						

Table 10 (continued). Groundwater EC (S/m) wet/dry season statistics.

T7-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.062	0.072	0.067	0.000	0.002
Dry 2005-2006	November 2005 - April 2006	0.055	0.060	0.057	0.000	0.001
Wet 2006	May 2006 - October 2006	0.054	0.072	0.059	0.000	0.003
Dry 2006-2007	November 2006 - April 2007	0.095	0.108	0.101	0.000	0.004
Wet 2007	May 2007 - October 2007	0.099	0.124	0.106	0.000	0.004
Dry 2007*	November 2007 - December 2007	0.076	0.088	0.081	0.000	0.004
	Average Wet**	0.072	0.090	0.078	0.000	0.003
	Average Dry**	0.075	0.085	0.079	0.000	0.003
T7-W04						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.007	0.010	0.009	0.000	0.001
Dry 2005-2006	November 2005 - April 2006	0.008	0.009	0.009	0.000	0.000
Wet 2006	May 2006 - October 2006	0.008	0.008	0.008	0.000	0.000
Dry 2006-2007	November 2006 - April 2007	0.010	0.011	0.010	0.000	0.001
Wet 2007	May 2007 - October 2007	0.010	0.011	0.010	0.000	0.000
Dry 2007*	November 2007 - December 2007	0.011	0.012	0.012	0.000	0.000
	Average Wet**	0.008	0.010	0.009	0.000	0.000
	Average Dry**	0.009	0.010	0.010	0.000	0.000
T8-W01						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.115	0.226	0.167	0.001	0.024
Dry 2005-2006	November 2005 - April 2006	0.101	0.183	0.138	0.001	0.017
Wet 2006	May 2006 - October 2006	0.241	0.419	0.337	0.004	0.046
Dry 2006-2007	November 2006 - April 2007	0.238	0.386	0.297	0.002	0.036
Wet 2007	May 2007 - October 2007	0.509	0.708	0.605	0.004	0.055
Dry 2007*	November 2007 - December 2007	0.307	0.415	0.367	0.001	0.032
	Average Wet**	0.299	0.464	0.382	0.003	0.042
	Average Dry**	0.189	0.303	0.239	0.001	0.027
T8-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.063	0.064	0.063	0.000	0.000
Dry 2005-2006	November 2005 - April 2006	0.062	0.064	0.063	0.000	0.000
Wet 2006	May 2006 - October 2006	0.068	0.071	0.069	0.000	0.001
Dry 2006-2007	November 2006 - April 2007	0.070	0.072	0.071	0.000	0.001
Wet 2007	May 2007 - October 2007	0.071	0.075	0.072	0.000	0.001
Dry 2007*	November 2007 - December 2007	0.064	0.066	0.065	0.000	0.001
	Average Wet**	0.067	0.070	0.068	0.000	0.001
	Average Dry**	0.066	0.068	0.067	0.000	0.000
T8-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	0.022	0.029	0.026	0.000	0.002
Dry 2005-2006*	November 2005 - April 2006	0.029	0.030	0.029	0.000	0.000
Wet 2006	May 2006 - October 2006	0.031	0.040	0.035	0.000	0.002
Dry 2006-2007	November 2006 - April 2007	0.021	0.034	0.031	0.000	0.003
Wet 2007*	May 2007 - October 2007	0.017	0.036	0.027	0.000	0.005
Dry 2007*	November 2007 - December 2007	0.019	0.026	0.024	0.000	0.002
	Average Wet**	0.024	0.035	0.030	0.000	0.003
	Average Dry**	0.021	0.031	0.029	0.000	0.002
* incomplete seasons						
** averaged across all wet/dry season months in record						

Table 10 (continued). Groundwater EC (S/m) wet/dry season statistics.

T9-W01						
Season	Period	Min	Max	Mean	Variance	Std
Dry 2005-2006*	April 2006	1.066	2.135	1.488	0.157	0.396
Wet 2006	May 2006 - October 2006	1.311	2.471	1.796	0.135	0.324
Dry 2006-2007	November 2006 - April 2007	1.643	2.130	1.817	0.014	0.105
Wet 2007	May 2007 - October 2007	1.779	2.621	2.221	0.045	0.206
Dry 2007*	November 2007 - December 2007	0.640	0.932	0.718	0.003	0.047
	Average Wet**	1.545	2.546	2.008	0.090	0.265
	Average Dry**	1.356	1.864	1.536	0.028	0.124
T9-W02						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	June 2005 - October 2005	1.581	2.366	1.980	0.044	0.197
Dry 2005-2006	November 2005 - April 2006	1.542	2.109	1.863	0.021	0.135
Wet 2006	May 2006 - October 2006	2.020	2.575	2.269	0.018	0.125
Dry 2006-2007	November 2006 - April 2007	1.586	2.238	1.822	0.030	0.153
Wet 2007	May 2007 - October 2007	2.298	2.723	2.532	0.012	0.104
Dry 2007*	November 2007 - December 2007	2.163	2.411	2.274	0.005	0.060
	Average Wet**	1.989	2.566	2.277	0.024	0.139
	Average Dry**	1.650	2.207	1.904	0.023	0.132
T9-W03						
Season	Period	Min	Max	Mean	Variance	Std
Wet 2005*	August 2005 - October 2005	0.016	0.020	0.018	0.000	0.000
Dry 2005-2006	November 2005 - April 2006	0.017	0.024	0.020	0.000	0.002
Wet 2006	May 2006 - October 2006	0.022	0.033	0.027	0.000	0.003
Dry 2006-2007	November 2006 - April 2007	0.023	0.034	0.029	0.000	0.003
Wet 2007	May 2007 - October 2007	0.026	0.042	0.032	0.000	0.003
Dry 2007*	November 2007 - December 2007	0.029	0.035	0.032	0.000	0.002
	Average Wet**	0.022	0.034	0.027	0.000	0.003
	Average Dry**	0.022	0.030	0.025	0.000	0.003

* incomplete seasons

** averaged across all wet/dry season months in record

Appendix IV-D – Monthly Statistics

Table 11. Monthly water table elevation (ft, NAVD88) statistics.

T1-W01	Month	Min	Max	Mean	Variance	Std
	Jun-05	9.66	12.032	10.424	0.242	0.492
	Jul-05	9.595	11.818	10.255	0.142	0.377
	Aug-05	9.728	10.796	10.211	0.045	0.211
	Sep-05	9.837	12.193	10.426	0.271	0.52
	Oct-05	9.934	12.463	10.491	0.252	0.502
	Nov-05	10.318	10.734	10.493	0.007	0.081
	Dec-05	9.723	10.628	10.237	0.077	0.277
	Jan-06	8.539	9.732	8.944	0.106	0.325
	Feb-06	8.513	9.675	9.01	0.114	0.338
	Mar-06	7.323	8.573	7.947	0.117	0.342
	Apr-06	6.759	7.591	7.187	0.035	0.186
	May-06	6.35	7.06	6.72	0.021	0.145
	Jun-06	6.338	9.506	7.817	1.114	1.056
	Jul-06	8.816	9.913	9.397	0.044	0.211
	Aug-06	7.703	10.918	8.72	0.972	0.986
	Sep-06	10.027	10.804	10.259	0.023	0.151
	Oct-06	8.346	10.242	9.299	0.391	0.625
	Nov-06	7.843	8.95	8.231	0.087	0.296
	Dec-06	7.664	9.575	8.687	0.367	0.606
	Jan-07	7.888	9.052	8.358	0.125	0.353
	Feb-07	7.45	8.225	7.77	0.043	0.208
	Mar-07	6.557	7.462	6.888	0.032	0.179
	Apr-07	6.368	7.641	6.852	0.087	0.296
	May-07	6.073	7.963	6.821	0.328	0.572
	Jun-07	7.025	10.16	9.151	0.315	0.562
	Jul-07	9.623	11.312	10.29	0.112	0.335
	Aug-07	10.028	11.653	10.269	0.07	0.265
	Sep-07	9.559	11.387	10.192	0.123	0.351
	Oct-07	9.787	10.877	10.13	0.039	0.198
	Nov-07	9.403	10.577	9.973	0.061	0.247
	Dec-07	9.165	9.803	9.383	0.041	0.203
T3-W01						
	Jun-05	2.836	5.089	3.665	0.193	0.439
	Jul-05	2.744	4.865	3.535	0.124	0.352
	Aug-05	3.11	4.155	3.522	0.033	0.182
	Sep-05	3.245	5.218	3.773	0.199	0.446
	Oct-05	3.149	5.482	3.841	0.205	0.452
	Nov-05	3.395	3.828	3.593	0.012	0.109
	Dec-05	2.864	3.785	3.413	0.075	0.274
	Jan-06	1.659	2.867	2.018	0.088	0.296
	Feb-06	1.642	3.382	2.01	0.097	0.311
	Mar-06	0.541	1.72	1.133	0.097	0.312
	Apr-06	-0.011	1.18	0.436	0.086	0.292
	May-06	-0.358	0.26	-0.114	0.021	0.143
	Jun-06	-0.343	2.917	1.288	0.406	0.637
	Jul-06	1.301	3.344	2.195	0.164	0.405
	Aug-06	0.349	3.993	1.531	1.402	1.184
	Sep-06	3.251	3.951	3.49	0.019	0.137
	Oct-06	1.358	3.434	2.424	0.489	0.699
	Nov-06	0.855	2.256	1.318	0.09	0.3
	Dec-06	0.861	3.256	1.656	0.253	0.503
	Jan-07	1.018	1.734	1.397	0.03	0.174
	Feb-07	0.542	1.732	1.053	0.084	0.29
	Mar-07	-0.454	0.562	-0.019	0.077	0.277
	Apr-07	-0.604	0.84	-0.058	0.179	0.423
	May-07	-0.476	1.017	0.01	0.201	0.449
	Jun-07	0.004	3.476	2.088	0.523	0.723
	Jul-07	2.816	4.602	3.65	0.123	0.351
	Aug-07	3.194	4.71	3.584	0.052	0.227

	Sep-07	2.854	4.667	3.516	0.133	0.365
	Oct-07	3.195	4.212	3.484	0.04	0.199
	Nov-07	2.432	3.909	3.263	0.116	0.34
	Dec-07	1.898	3.041	2.31	0.156	0.395
T7-W01						
	Jun-05	-1.392	0.422	-0.583	0.129	0.359
	Jul-05	-1.597	0.147	-0.796	0.122	0.349
	Aug-05	-1.457	0.665	-0.575	0.141	0.376
	Sep-05	-1.053	1.325	0.049	0.254	0.504
	Oct-05	-0.999	1.333	0.047	0.261	0.511
	Nov-05	-1.342	0.811	-0.49	0.194	0.44
	Dec-05	-1.644	0.08	-0.759	0.121	0.348
	Jan-06	-1.665	-0.128	-0.962	0.099	0.315
	Feb-06	-1.821	0.122	-0.98	0.116	0.341
	Mar-06	-1.567	-0.072	-0.849	0.096	0.31
	Apr-06	-1.574	0.134	-0.863	0.114	0.337
	May-06	-1.613	0.302	-0.686	0.137	0.37
	Jun-06	-1.995	-0.093	-1.085	0.126	0.355
	Jul-06	-1.828	-0.03	-0.995	0.114	0.337
	Aug-06	-1.748	0.095	-0.815	0.133	0.365
	Sep-06	-1.294	0.737	-0.419	0.168	0.41
	Oct-06	-0.926	1.292	-0.16	0.22	0.469
	Nov-06	-1.084	1.171	-0.31	0.191	0.437
	Dec-06	-1.426	0.545	-0.679	0.133	0.364
	Jan-07	-1.587	0.216	-0.843	0.132	0.364
	Feb-07	-1.329	-0.145	-0.829	0.093	0.305
	Mar-07	-1.669	-0.09	-0.951	0.113	0.336
	Apr-07	-1.555	0.182	-0.792	0.111	0.333
	May-07	-1.442	0.848	-0.473	0.233	0.483
	Jun-07	-1.4	0.642	-0.675	0.154	0.392
	Jul-07	-1.538	0.411	-0.732	0.141	0.376
	Aug-07	-1.439	0.453	-0.695	0.134	0.367
	Sep-07	-1.19	1.146	-0.3	0.228	0.478
	Oct-07	-1.055	1.589	-0.153	0.292	0.54
	Nov-07	-1.347	1.186	-0.395	0.308	0.555
	Dec-07	-1.597	-0.391	-1.001	0.072	0.268
T7-W02						
	Jun-05	-0.467	1.027	-0.069	0.057	0.239
	Jul-05	-0.756	0.662	-0.207	0.048	0.218
	Aug-05	-0.472	1.167	-0.051	0.047	0.216
	Sep-05	-0.252	1.812	0.313	0.213	0.462
	Oct-05	-0.149	1.809	0.332	0.226	0.475
	Nov-05					
	Dec-05					
	Jan-06					
	Feb-06	-1.198	0.832	-0.577	0.243	0.493
	Mar-06	-0.828	0.623	-0.245	0.063	0.252
	Apr-06	-0.603	0.947	-0.204	0.045	0.212
	May-06	-0.525	0.906	-0.093	0.05	0.224
	Jun-06	-1.042	0.546	-0.381	0.056	0.238
	Jul-06	-1.204	0.502	-0.477	0.106	0.325
	Aug-06	-1.411	0.505	-0.36	0.147	0.384
	Sep-06	-0.491	1.29	-0.047	0.102	0.32
	Oct-06	-0.404	1.471	0.011	0.118	0.343
	Nov-06	-0.534	1.361	-0.056	0.09	0.3
	Dec-06	-0.683	0.771	-0.168	0.046	0.214
	Jan-07	-0.88	0.73	-0.286	0.077	0.277
	Feb-07	-1.056	0.337	-0.414	0.069	0.262
	Mar-07	-1.003	0.42	-0.402	0.056	0.236
	Apr-07	-0.758	0.711	-0.244	0.047	0.216
	May-07	-0.584	1.258	-0.019	0.141	0.375
	Jun-07	-0.527	1.258	-0.104	0.082	0.286
	Jul-07	-0.802	0.982	-0.161	0.071	0.266
	Aug-07	-0.659	1.035	-0.133	0.071	0.266
	Sep-07	-0.33	1.76	0.146	0.172	0.414
	Oct-07	-0.266	2.182	0.261	0.237	0.486
	Nov-07	-0.369	1.748	0.112	0.188	0.434

	Dec-07	-0.763	0.077	-0.351	0.03	0.173
T7-W03						
	Jun-05	-0.367	1.029	0.048	0.035	0.188
	Jul-05	-0.485	0.651	-0.062	0.027	0.165
	Aug-05	-0.238	1.118	0.064	0.023	0.152
	Sep-05	-0.125	1.789	0.345	0.163	0.404
	Oct-05	0.04	1.805	0.376	0.165	0.406
	Nov-05	0.085	1.456	0.333	0.04	0.201
	Dec-05	-0.047	0.859	0.23	0.014	0.117
	Jan-06	-0.352	0.691	0.052	0.025	0.159
	Feb-06	-0.505	0.93	-0.1	0.054	0.233
	Mar-06	-0.441	0.847	0.01	0.061	0.248
	Apr-06	-0.274	1.196	0.11	0.045	0.211
	May-06	-0.15	1.138	0.232	0.034	0.186
	Jun-06	-0.511	0.773	-0.08	0.05	0.225
	Jul-06	-0.841	0.545	-0.264	0.066	0.257
	Aug-06	-0.987	0.451	-0.235	0.079	0.28
	Sep-06	-0.519	1.139	-0.119	0.069	0.262
	Oct-06	-0.427	1.303	-0.067	0.073	0.271
	Nov-06	-0.47	1.199	-0.08	0.056	0.237
	Dec-06	-0.515	0.703	-0.127	0.027	0.164
	Jan-07	-0.595	0.691	-0.198	0.052	0.228
	Feb-07	-0.703	0.353	-0.275	0.046	0.214
	Mar-07	-0.75	0.459	-0.356	0.054	0.233
	Apr-07	-0.677	0.716	-0.185	0.041	0.203
	May-07	-0.468	1.132	-0.028	0.092	0.303
	Jun-07	-0.468	1.216	-0.041	0.049	0.222
	Jul-07	-0.55	0.919	-0.084	0.033	0.182
	Aug-07	-0.539	0.843	-0.161	0.034	0.185
	Sep-07	-0.196	1.642	0.095	0.115	0.339
	Oct-07	-0.147	2.051	0.193	0.173	0.416
	Nov-07	-0.094	1.625	0.173	0.111	0.333
	Dec-07	-0.304	0.031	-0.165	0.005	0.072
T7-W04						
	Jun-05	4.154	5.225	4.392	0.04	0.2
	Jul-05	3.787	5.227	4.298	0.133	0.365
	Aug-05	3.883	4.905	4.29	0.089	0.299
	Sep-05	3.948	5.253	4.68	0.093	0.305
	Oct-05	4.532	5.979	5.026	0.118	0.343
	Nov-05	4.297	4.987	4.617	0.038	0.196
	Dec-05	3.874	4.476	4.166	0.023	0.151
	Jan-06	3.289	3.881	3.562	0.029	0.169
	Feb-06	3.167	3.848	3.48	0.051	0.226
	Mar-06	2.493	3.173	2.836	0.037	0.194
	Apr-06	1.903	2.503	2.185	0.029	0.169
	May-06	1.395	1.922	1.64	0.021	0.145
	Jun-06	1.287	2.353	1.456	0.06	0.246
	Jul-06	2.355	3.156	2.862	0.048	0.22
	Aug-06	1.996	2.88	2.306	0.042	0.205
	Sep-06	2.886	3.493	3.303	0.015	0.122
	Oct-06	2.137	3.127	2.585	0.086	0.293
	Nov-06	1.747	2.191	1.953	0.018	0.135
	Dec-06	1.556	2.857	2.66	0.119	0.345
	Jan-07	1.87	2.686	2.241	0.059	0.244
	Feb-07	1.547	1.876	1.72	0.008	0.09
	Mar-07	1.104	1.337	1.205	0.003	0.059
	Apr-07	0.996	1.361	1.168	0.014	0.119
	May-07	0.761	1.014	0.9	0.004	0.067
	Jun-07	0.762	4.271	3.039	0.359	0.599
	Jul-07	4.068	5.706	4.714	0.2	0.447
	Aug-07	4.287	4.335	4.314	0	0.014
	Sep-07	3.802	5.593	4.289	0.234	0.484
	Oct-07	4.474	5.713	4.982	0.084	0.29
	Nov-07	4.358	5.61	4.801	0.097	0.311
	Dec-07	4.346	4.369	4.363	0	0.006
T8-W01						
	Jun-05	-1.484	0.849	-0.463	0.17	0.413

	Jul-05	-1.696	0.505	-0.668	0.169	0.412
	Aug-05	-1.477	0.959	-0.485	0.18	0.424
	Sep-05	-1.105	1.694	0.054	0.333	0.577
	Oct-05	-0.846	1.708	0.059	0.339	0.582
	Nov-05	-1.508	0.95	-0.554	0.219	0.468
	Dec-05	-1.817	0.367	-0.791	0.167	0.408
	Jan-06	-2.701	0.181	-1.193	0.269	0.519
	Feb-06	-2.871	-0.323	-1.865	0.185	0.43
	Mar-06	-2.664	-0.513	-1.716	0.169	0.411
	Apr-06	-2.699	0.737	-1.355	0.427	0.653
	May-06	-1.664	0.86	-0.486	0.208	0.456
	Jun-06	-2.023	0.493	-0.868	0.199	0.446
	Jul-06	-1.95	0.441	-0.875	0.17	0.412
	Aug-06	-1.884	0.434	-0.702	0.188	0.433
	Sep-06	-1.357	1.189	-0.342	0.239	0.489
	Oct-06	-1.089	1.504	-0.223	0.252	0.502
	Nov-06	-1.261	1.383	-0.318	0.22	0.469
	Dec-06	-1.564	0.758	-0.501	0.163	0.404
	Jan-07	-1.544	0.735	-0.612	0.188	0.434
	Feb-07	-1.605	0.38	-0.758	0.15	0.387
	Mar-07	-1.642	0.468	-0.725	0.151	0.388
	Apr-07	-1.606	0.746	-0.566	0.163	0.403
	May-07	-1.504	1.274	-0.247	0.311	0.558
	Jun-07	-1.349	1.309	-0.339	0.212	0.461
	Jul-07	-1.36	1.043	-0.341	0.193	0.44
	Aug-07	-1.273	1.062	-0.344	0.193	0.439
	Sep-07	-0.912	1.841	0.017	0.311	0.558
	Oct-07	-0.666	2.116	0.268	0.351	0.593
	Nov-07	-0.97	1.943	0.162	0.434	0.659
	Dec-07	-1.178	0.272	-0.463	0.097	0.311
T8-W02						
	Jun-05	0.041	0.84	0.125	0.009	0.093
	Jul-05	-0.189	0.47	0.075	0.005	0.067
	Aug-05	0.042	0.914	0.111	0.005	0.071
	Sep-05	0.06	1.587	0.287	0.096	0.31
	Oct-05	0.099	1.608	0.306	0.105	0.324
	Nov-05	0.122	1.085	0.18	0.016	0.127
	Dec-05	0.091	0.501	0.133	0.001	0.035
	Jan-06	-0.113	0.425	0.044	0.003	0.059
	Feb-06	-0.206	0.669	0.016	0.011	0.106
	Mar-06	-0.438	0.494	-0.107	0.032	0.18
	Apr-06	-0.434	0.673	-0.091	0.027	0.163
	May-06	-0.295	0.827	0.023	0.019	0.138
	Jun-06	-0.56	0.439	-0.179	0.044	0.21
	Jul-06	-0.52	0.421	-0.064	0.024	0.155
	Aug-06	-0.76	0.421	-0.108	0.067	0.258
	Sep-06	-0.058	1.196	0.128	0.032	0.178
	Oct-06	-0.044	1.396	0.168	0.044	0.21
	Nov-06	-0.091	1.324	0.129	0.031	0.176
	Dec-06	-0.047	0.745	0.121	0.007	0.085
	Jan-07	-0.167	0.702	0.056	0.015	0.123
	Feb-07	-0.235	0.298	-0.03	0.011	0.104
	Mar-07	-0.602	0.408	-0.249	0.049	0.221
	Apr-07	-0.469	0.726	-0.076	0.043	0.207
	May-07	-0.254	1.215	0.161	0.061	0.247
	Jun-07	-0.117	1.249	0.143	0.026	0.163
	Jul-07	0.063	0.95	0.167	0.008	0.091
	Aug-07	0.107	0.99	0.181	0.01	0.097
	Sep-07	0.147	1.708	0.309	0.07	0.265
	Oct-07	0.195	2.13	0.395	0.121	0.347
	Nov-07	0.204	1.687	0.335	0.076	0.276
	Dec-07	0.201	0.219	0.209	0	0.003
T8-W03						
	Jun-05	2.719	4.366	3.264	0.112	0.334
	Jul-05	1.339	3.968	2.265	0.414	0.643
	Aug-05	1.497	3.592	2.383	0.296	0.544
	Sep-05	1.876	4.564	2.838	0.37	0.608

	Oct-05	2.12	4.548	3.052	0.221	0.47
	Nov-05					
	Dec-05					
	Jan-06					
	Feb-06					
	Mar-06					
	Apr-06	0.436	0.682	0.526	0.004	0.066
	May-06	0.08	0.547	0.261	0.014	0.117
	Jun-06	0.068	1.564	0.731	0.158	0.397
	Jul-06	1.225	2.235	1.695	0.08	0.283
	Aug-06	0.535	2.747	1.046	0.193	0.44
	Sep-06	1.462	3.032	2.192	0.173	0.416
	Oct-06	0.716	1.497	1.068	0.046	0.215
	Nov-06	0.578	1.118	0.794	0.024	0.156
	Dec-06	0.503	2.536	1.445	0.407	0.638
	Jan-07	0.784	1.636	1.123	0.054	0.232
	Feb-07	0.548	1.081	0.811	0.015	0.124
	Mar-07	0.143	0.669	0.408	0.024	0.154
	Apr-07	0.147	0.337	0.255	0.002	0.05
	May-07					
	Jun-07	0.273	3.557	1.787	0.371	0.609
	Jul-07	2.284	4.855	3.327	0.339	0.582
	Aug-07	2.156	3.705	2.842	0.139	0.372
	Sep-07	1.482	4.243	2.378	0.632	0.795
	Oct-07	2.217	4.344	3.112	0.276	0.525
	Nov-07	2.176	4.339	2.792	0.215	0.464
	Dec-07	0.129	2.711	2.529	0.047	0.217
T9-W01						
	Apr-06	-1.331	0.46	-0.709	0.138	0.371
	May-06	-0.96	0.601	-0.447	0.049	0.221
	Jun-06	-1.966	0.182	-1.082	0.18	0.424
	Jul-06	-1.961	0.046	-1.132	0.183	0.428
	Aug-06	-1.999	0.064	-0.812	0.214	0.462
	Sep-06	-1.061	0.845	-0.48	0.098	0.313
	Oct-06	-0.983	1.006	-0.462	0.099	0.314
	Nov-06	-1.349	0.906	-0.564	0.098	0.313
	Dec-06	-1.41	0.349	-0.671	0.07	0.265
	Jan-07	-1.746	0.352	-0.881	0.204	0.451
	Feb-07	-1.81	-0.177	-1.057	0.157	0.396
	Mar-07	-1.855	-0.037	-1.151	0.156	0.395
	Apr-07	-1.556	0.347	-0.765	0.09	0.299
	May-07	-1.081	0.846	-0.43	0.13	0.36
	Jun-07	-1.164	0.892	-0.524	0.079	0.282
	Jul-07	-1.449	0.513	-0.598	0.08	0.284
	Aug-07	-1.511	0.6	-0.649	0.119	0.345
	Sep-07	-0.926	1.275	-0.308	0.137	0.371
	Oct-07	-0.749	1.686	-0.195	0.199	0.446
	Nov-07	-1.098	1.267	-0.386	0.193	0.44
	Dec-07	-1.65	-0.755	-1.182	0.044	0.211
T9-W02						
	Jun-05	-0.741	1.075	-0.01	0.084	0.29
	Jul-05	-1.259	0.656	-0.357	0.109	0.331
	Aug-05	-0.748	1.391	0.022	0.094	0.306
	Sep-05	-0.283	2.082	0.634	0.176	0.42
	Oct-05	-0.056	2.137	0.674	0.178	0.422
	Nov-05	-0.543	1.596	0.283	0.128	0.358
	Dec-05	-1.039	0.936	-0.022	0.111	0.334
	Jan-06	-1.091	0.823	-0.382	0.1	0.317
	Feb-06	-1.24	1.169	-0.343	0.159	0.399
	Mar-06	-0.979	0.941	-0.211	0.132	0.363
	Apr-06	-0.955	1.192	-0.143	0.122	0.35
	May-06	-0.685	1.337	0.119	0.099	0.315
	Jun-06	-1.49	0.88	-0.476	0.172	0.415
	Jul-06	-1.407	0.724	-0.49	0.141	0.375
	Aug-06	-1.389	0.785	-0.265	0.158	0.397
	Sep-06	-0.635	1.602	0.174	0.144	0.38
	Oct-06	-0.444	1.891	0.311	0.141	0.376

	Nov-06	-0.802	1.775	0.173	0.153	0.392
	Dec-06	-1.044	1.164	-0.007	0.122	0.35
	Jan-07	-1.14	1.153	-0.185	0.17	0.412
	Feb-07	-1.155	0.449	-0.422	0.101	0.318
	Mar-07	-1.248	0.657	-0.508	0.111	0.333
	Apr-07	-1.014	1.127	-0.2	0.131	0.362
	May-07	-0.855	1.623	0.236	0.209	0.457
	Jun-07	-0.689	1.691	0.19	0.12	0.346
	Jul-07	-0.69	1.333	0.189	0.105	0.324
	Aug-07	-0.753	1.422	0.142	0.121	0.348
	Sep-07	-0.375	2.18	0.504	0.181	0.426
	Oct-07	-0.012	2.596	0.699	0.213	0.462
	Nov-07	-0.335	2.182	0.505	0.224	0.474
	Dec-07	-0.822	0.455	-0.221	0.076	0.276
T9-W03						
	Aug-05	-0.342	-0.078	-0.243	0.005	0.073
	Sep-05	-0.348	1.449	0.648	0.174	0.417
	Oct-05	0.402	1.764	0.844	0.099	0.314
	Nov-05	0.056	0.907	0.385	0.049	0.222
	Dec-05	-0.402	0.11	-0.08	0.014	0.12
	Jan-06	-0.928	-0.401	-0.666	0.02	0.14
	Feb-06	-0.995	-0.444	-0.743	0.022	0.147
	Mar-06	-1.147	-0.633	-0.934	0.025	0.157
	Apr-06	-1.246	-0.799	-1.042	0.015	0.123
	May-06	-1.14	-0.74	-0.937	0.009	0.097
	Jun-06	-1.551	-0.895	-1.263	0.04	0.199
	Jul-06	-1.217	-0.607	-0.891	0.03	0.174
	Aug-06	-1.335	-0.687	-1.082	0.038	0.195
	Sep-06	-0.712	0.025	-0.312	0.048	0.22
	Oct-06	-0.716	-0.118	-0.465	0.027	0.163
	Nov-06	-0.953	-0.354	-0.669	0.024	0.156
	Dec-06	-1.061	-0.265	-0.611	0.07	0.264
	Jan-07	-1.061	-0.462	-0.777	0.03	0.172
	Feb-07	-1.276	-0.833	-1.099	0.015	0.122
	Mar-07	-1.481	-0.98	-1.297	0.018	0.135
	Apr-07	-1.496	-0.869	-1.164	0.034	0.184
	May-07	-1.399	-0.436	-0.773	0.07	0.264
	Jun-07	-0.93	1.124	0.121	0.236	0.486
	Jul-07	0.017	1.519	0.833	0.201	0.448
	Aug-07	-0.195	0.951	0.264	0.134	0.366
	Sep-07	-0.362	1.321	0.082	0.206	0.454
	Oct-07	0.291	1.324	0.696	0.102	0.319
	Nov-07	0.036	1.444	0.556	0.172	0.415
	Dec-07	-0.389	0.035	-0.194	0.015	0.122

Table 12. Monthly water table depth (ft below benchmark) statistics.

T1-W01	Month	Min	Max	Mean	Variance	Std
	Jun-05	0.235	2.607	1.843	0.242	0.492
	Jul-05	0.449	2.672	2.012	0.142	0.377
	Aug-05	1.471	2.539	2.056	0.045	0.211
	Sep-05	0.074	2.43	1.841	0.271	0.52
	Oct-05	-0.196	2.333	1.776	0.252	0.502
	Nov-05	1.533	1.949	1.774	0.007	0.081
	Dec-05	1.639	2.544	2.03	0.077	0.277
	Jan-06	2.535	3.728	3.323	0.106	0.325
	Feb-06	2.592	3.754	3.257	0.114	0.338
	Mar-06	3.694	4.944	4.32	0.117	0.342
	Apr-06	4.676	5.508	5.08	0.035	0.186
	May-06	5.207	5.917	5.547	0.021	0.145
	Jun-06	2.761	5.929	4.45	1.114	1.056
	Jul-06	2.354	3.451	2.87	0.044	0.211
	Aug-06	1.349	4.564	3.547	0.972	0.986
	Sep-06	1.463	2.24	2.008	0.023	0.151
	Oct-06	2.025	3.921	2.968	0.391	0.625
	Nov-06	3.317	4.424	4.036	0.087	0.296
	Dec-06	2.692	4.603	3.58	0.367	0.606
	Jan-07	3.215	4.379	3.909	0.125	0.353
	Feb-07	4.042	4.817	4.497	0.043	0.208
	Mar-07	4.805	5.71	5.379	0.032	0.179
	Apr-07	4.626	5.899	5.415	0.087	0.296
	May-07	4.304	6.194	5.446	0.328	0.572
	Jun-07	2.107	5.242	3.116	0.315	0.562
	Jul-07	0.955	2.644	1.977	0.112	0.335
	Aug-07	0.614	2.239	1.998	0.07	0.265
	Sep-07	0.88	2.708	2.075	0.123	0.351
	Oct-07	1.39	2.48	2.137	0.039	0.198
	Nov-07	1.69	2.864	2.294	0.061	0.247
	Dec-07	2.464	3.102	2.884	0.041	0.203
T3-W01						
	Jun-05	1.642	3.895	3.066	0.193	0.439
	Jul-05	1.866	3.987	3.196	0.124	0.352
	Aug-05	2.576	3.621	3.209	0.033	0.182
	Sep-05	1.513	3.486	2.958	0.199	0.446
	Oct-05	1.249	3.582	2.89	0.205	0.452
	Nov-05	2.903	3.336	3.138	0.012	0.109
	Dec-05	2.946	3.867	3.318	0.075	0.274
	Jan-06	3.864	5.072	4.713	0.088	0.296
	Feb-06	3.349	5.089	4.721	0.097	0.311
	Mar-06	5.011	6.19	5.598	0.097	0.312
	Apr-06	5.551	6.742	6.295	0.086	0.292
	May-06	6.471	7.089	6.845	0.021	0.143
	Jun-06	3.814	7.074	5.443	0.406	0.637
	Jul-06	3.387	5.43	4.536	0.164	0.405
	Aug-06	2.738	6.382	5.2	1.402	1.184
	Sep-06	2.78	3.48	3.241	0.019	0.137
	Oct-06	3.297	5.373	4.307	0.489	0.699
	Nov-06	4.475	5.876	5.413	0.09	0.3
	Dec-06	3.475	5.87	5.075	0.253	0.503
	Jan-07	4.997	5.713	5.334	0.03	0.174
	Feb-07	4.999	6.189	5.678	0.084	0.29
	Mar-07	6.169	7.185	6.75	0.077	0.277
	Apr-07	5.891	7.335	6.789	0.179	0.423
	May-07	5.714	7.207	6.721	0.201	0.449
	Jun-07	3.255	6.727	4.643	0.523	0.723
	Jul-07	2.129	3.915	3.081	0.123	0.351
	Aug-07	2.021	3.537	3.147	0.052	0.227
	Sep-07	2.064	3.877	3.215	0.133	0.365
	Oct-07	2.519	3.536	3.247	0.04	0.199
	Nov-07	2.822	4.299	3.468	0.116	0.34
	Dec-07	3.69	4.833	4.421	0.156	0.395
T7-W01						

	Jun-05	2.259	4.073	3.264	0.129	0.359
	Jul-05	2.534	4.278	3.477	0.122	0.349
	Aug-05	2.016	4.138	3.256	0.141	0.376
	Sep-05	1.356	3.734	2.632	0.254	0.504
	Oct-05	1.348	3.68	2.634	0.261	0.511
	Nov-05	1.87	4.023	3.171	0.194	0.44
	Dec-05	2.601	4.325	3.44	0.121	0.348
	Jan-06	2.809	4.346	3.643	0.099	0.315
	Feb-06	2.559	4.502	3.661	0.116	0.341
	Mar-06	2.753	4.248	3.53	0.096	0.31
	Apr-06	2.547	4.255	3.544	0.114	0.337
	May-06	2.379	4.294	3.367	0.137	0.37
	Jun-06	2.774	4.676	3.766	0.126	0.355
	Jul-06	2.711	4.509	3.676	0.114	0.337
	Aug-06	2.586	4.429	3.496	0.133	0.365
	Sep-06	1.944	3.975	3.1	0.168	0.41
	Oct-06	1.389	3.607	2.841	0.22	0.469
	Nov-06	1.51	3.765	2.991	0.191	0.437
	Dec-06	2.136	4.107	3.36	0.133	0.364
	Jan-07	2.465	4.268	3.524	0.132	0.364
	Feb-07	2.826	4.01	3.51	0.093	0.305
	Mar-07	2.771	4.35	3.632	0.113	0.336
	Apr-07	2.499	4.236	3.473	0.111	0.333
	May-07	1.833	4.123	3.154	0.233	0.483
	Jun-07	2.039	4.081	3.356	0.154	0.392
	Jul-07	2.27	4.219	3.413	0.141	0.376
	Aug-07	2.228	4.12	3.376	0.134	0.367
	Sep-07	1.535	3.871	2.981	0.228	0.478
	Oct-07	1.092	3.736	2.834	0.292	0.54
	Nov-07	1.495	4.028	3.076	0.308	0.555
	Dec-07	3.072	4.278	3.682	0.072	0.268
T7-W02						
	Jun-05	1.884	3.378	2.98	0.057	0.239
	Jul-05	2.249	3.667	3.118	0.048	0.218
	Aug-05	1.744	3.383	2.962	0.047	0.216
	Sep-05	1.099	3.163	2.598	0.213	0.462
	Oct-05	1.102	3.06	2.579	0.226	0.475
	Nov-05					
	Dec-05					
	Jan-06					
	Feb-06	2.079	4.109	3.488	0.243	0.493
	Mar-06	2.288	3.739	3.156	0.063	0.252
	Apr-06	1.964	3.514	3.115	0.045	0.212
	May-06	2.005	3.436	3.004	0.05	0.224
	Jun-06	2.365	3.953	3.292	0.056	0.238
	Jul-06	2.409	4.115	3.388	0.106	0.325
	Aug-06	2.406	4.322	3.271	0.147	0.384
	Sep-06	1.621	3.402	2.958	0.102	0.32
	Oct-06	1.44	3.315	2.9	0.118	0.343
	Nov-06	1.55	3.445	2.967	0.09	0.3
	Dec-06	2.14	3.594	3.079	0.046	0.214
	Jan-07	2.181	3.791	3.197	0.077	0.277
	Feb-07	2.574	3.967	3.325	0.069	0.262
	Mar-07	2.491	3.914	3.313	0.056	0.236
	Apr-07	2.2	3.669	3.155	0.047	0.216
	May-07	1.653	3.495	2.93	0.141	0.375
	Jun-07	1.653	3.438	3.015	0.082	0.286
	Jul-07	1.929	3.713	3.072	0.071	0.266
	Aug-07	1.876	3.57	3.044	0.071	0.266
	Sep-07	1.151	3.241	2.765	0.172	0.414
	Oct-07	0.729	3.177	2.65	0.237	0.486
	Nov-07	1.163	3.28	2.799	0.188	0.434
	Dec-07	2.834	3.674	3.262	0.03	0.173
T7-W03						
	Jun-05	2.302	3.698	3.283	0.035	0.188
	Jul-05	2.68	3.816	3.393	0.027	0.165
	Aug-05	2.213	3.569	3.267	0.023	0.152

	Sep-05	1.542	3.456	2.986	0.163	0.404
	Oct-05	1.526	3.291	2.955	0.165	0.406
	Nov-05	1.875	3.246	2.998	0.04	0.201
	Dec-05	2.472	3.378	3.101	0.014	0.117
	Jan-06	2.64	3.683	3.279	0.025	0.159
	Feb-06	2.401	3.836	3.431	0.054	0.233
	Mar-06	2.484	3.772	3.321	0.061	0.248
	Apr-06	2.135	3.605	3.221	0.045	0.211
	May-06	2.193	3.481	3.099	0.034	0.186
	Jun-06	2.558	3.842	3.411	0.05	0.225
	Jul-06	2.786	4.172	3.595	0.066	0.257
	Aug-06	2.88	4.318	3.566	0.079	0.28
	Sep-06	2.192	3.85	3.45	0.069	0.262
	Oct-06	2.028	3.758	3.398	0.073	0.271
	Nov-06	2.132	3.801	3.411	0.056	0.237
	Dec-06	2.628	3.846	3.458	0.027	0.164
	Jan-07	2.64	3.926	3.529	0.052	0.228
	Feb-07	2.978	4.034	3.606	0.046	0.214
	Mar-07	2.872	4.081	3.687	0.054	0.233
	Apr-07	2.615	4.008	3.516	0.041	0.203
	May-07	2.199	3.799	3.359	0.092	0.303
	Jun-07	2.115	3.799	3.372	0.049	0.222
	Jul-07	2.412	3.881	3.415	0.033	0.182
	Aug-07	2.488	3.87	3.492	0.034	0.185
	Sep-07	1.689	3.527	3.236	0.115	0.339
	Oct-07	1.28	3.478	3.138	0.173	0.416
	Nov-07	1.706	3.425	3.158	0.111	0.333
	Dec-07	3.3	3.635	3.496	0.005	0.072
T7-W04						
	Jun-05	5.916	6.987	6.749	0.04	0.2
	Jul-05	5.914	7.354	6.843	0.133	0.365
	Aug-05	6.236	7.258	6.851	0.089	0.299
	Sep-05	5.888	7.193	6.461	0.093	0.305
	Oct-05	5.162	6.609	6.115	0.118	0.343
	Nov-05	6.154	6.844	6.524	0.038	0.196
	Dec-05	6.665	7.267	6.975	0.023	0.151
	Jan-06	7.26	7.852	7.579	0.029	0.169
	Feb-06	7.293	7.974	7.661	0.051	0.226
	Mar-06	7.968	8.648	8.305	0.037	0.194
	Apr-06	8.638	9.238	8.956	0.029	0.169
	May-06	9.219	9.746	9.501	0.021	0.145
	Jun-06	8.788	9.854	9.685	0.06	0.246
	Jul-06	7.985	8.786	8.279	0.048	0.22
	Aug-06	8.261	9.145	8.835	0.042	0.205
	Sep-06	7.648	8.255	7.838	0.015	0.122
	Oct-06	8.014	9.004	8.556	0.086	0.293
	Nov-06	8.95	9.394	9.188	0.018	0.135
	Dec-06	8.284	9.585	8.481	0.119	0.345
	Jan-07	8.455	9.271	8.9	0.059	0.244
	Feb-07	9.265	9.594	9.421	0.008	0.09
	Mar-07	9.804	10.037	9.936	0.003	0.059
	Apr-07	9.78	10.145	9.973	0.014	0.119
	May-07	10.127	10.38	10.241	0.004	0.067
	Jun-07	6.87	10.379	8.102	0.359	0.599
	Jul-07	5.435	7.073	6.427	0.2	0.447
	Aug-07	6.806	6.854	6.827	0	0.014
	Sep-07	5.548	7.339	6.852	0.234	0.484
	Oct-07	5.428	6.667	6.159	0.084	0.29
	Nov-07	5.531	6.783	6.34	0.097	0.311
	Dec-07	6.772	6.795	6.778	0	0.006
T8-W01						
	Jun-05	1.052	3.385	2.364	0.17	0.413
	Jul-05	1.396	3.597	2.569	0.169	0.412
	Aug-05	0.942	3.378	2.386	0.18	0.424
	Sep-05	0.207	3.006	1.847	0.333	0.577
	Oct-05	0.193	2.747	1.842	0.339	0.582
	Nov-05	0.951	3.409	2.455	0.219	0.468

	Dec-05	1.534	3.718	2.692	0.167	0.408
	Jan-06	1.72	4.602	3.094	0.269	0.519
	Feb-06	2.224	4.772	3.766	0.185	0.43
	Mar-06	2.414	4.565	3.617	0.169	0.411
	Apr-06	1.164	4.6	3.256	0.427	0.653
	May-06	1.041	3.565	2.387	0.208	0.456
	Jun-06	1.408	3.924	2.769	0.199	0.446
	Jul-06	1.46	3.851	2.776	0.17	0.412
	Aug-06	1.467	3.785	2.603	0.188	0.433
	Sep-06	0.712	3.258	2.243	0.239	0.489
	Oct-06	0.397	2.99	2.124	0.252	0.502
	Nov-06	0.518	3.162	2.219	0.22	0.469
	Dec-06	1.143	3.465	2.402	0.163	0.404
	Jan-07	1.166	3.445	2.513	0.188	0.434
	Feb-07	1.521	3.506	2.659	0.15	0.387
	Mar-07	1.433	3.543	2.626	0.151	0.388
	Apr-07	1.155	3.507	2.467	0.163	0.403
	May-07	0.627	3.405	2.148	0.311	0.558
	Jun-07	0.592	3.25	2.24	0.212	0.461
	Jul-07	0.858	3.261	2.242	0.193	0.44
	Aug-07	0.839	3.174	2.245	0.193	0.439
	Sep-07	0.06	2.813	1.884	0.311	0.558
	Oct-07	-0.215	2.567	1.633	0.351	0.593
	Nov-07	-0.042	2.871	1.739	0.434	0.659
	Dec-07	1.629	3.079	2.364	0.097	0.311
T8-W02						
	Jun-05	1.837	2.636	2.552	0.009	0.093
	Jul-05	2.207	2.866	2.602	0.005	0.067
	Aug-05	1.763	2.635	2.566	0.005	0.071
	Sep-05	1.09	2.617	2.39	0.096	0.31
	Oct-05	1.069	2.578	2.371	0.105	0.324
	Nov-05	1.592	2.555	2.497	0.016	0.127
	Dec-05	2.176	2.586	2.544	0.001	0.035
	Jan-06	2.252	2.79	2.633	0.003	0.059
	Feb-06	2.008	2.883	2.661	0.011	0.106
	Mar-06	2.183	3.115	2.784	0.032	0.18
	Apr-06	2.004	3.111	2.768	0.027	0.163
	May-06	1.85	2.972	2.654	0.019	0.138
	Jun-06	2.238	3.237	2.856	0.044	0.21
	Jul-06	2.256	3.197	2.741	0.024	0.155
	Aug-06	2.256	3.437	2.785	0.067	0.258
	Sep-06	1.481	2.735	2.549	0.032	0.178
	Oct-06	1.281	2.721	2.509	0.044	0.21
	Nov-06	1.353	2.768	2.548	0.031	0.176
	Dec-06	1.932	2.724	2.556	0.007	0.085
	Jan-07	1.975	2.844	2.621	0.015	0.123
	Feb-07	2.379	2.912	2.707	0.011	0.104
	Mar-07	2.269	3.279	2.926	0.049	0.221
	Apr-07	1.951	3.146	2.753	0.043	0.207
	May-07	1.462	2.931	2.516	0.061	0.247
	Jun-07	1.428	2.794	2.534	0.026	0.163
	Jul-07	1.727	2.614	2.51	0.008	0.091
	Aug-07	1.687	2.57	2.496	0.01	0.097
	Sep-07	0.969	2.53	2.368	0.07	0.265
	Oct-07	0.547	2.482	2.282	0.121	0.347
	Nov-07	0.99	2.473	2.342	0.076	0.276
	Dec-07	2.458	2.476	2.468	0	0.003
T8-W03						
	Jun-05	4.601	6.248	5.703	0.112	0.334
	Jul-05	4.999	7.628	6.702	0.414	0.643
	Aug-05	5.375	7.47	6.584	0.296	0.544
	Sep-05	4.403	7.091	6.129	0.37	0.608
	Oct-05	4.419	6.847	5.915	0.221	0.47
	Nov-05					
	Dec-05					
	Jan-06					
	Feb-06					

	Mar-06					
	Apr-06	8.285	8.531	8.441	0.004	0.066
	May-06	8.42	8.887	8.706	0.014	0.117
	Jun-06	7.403	8.899	8.236	0.158	0.397
	Jul-06	6.732	7.742	7.272	0.08	0.283
	Aug-06	6.22	8.432	7.921	0.193	0.44
	Sep-06	5.935	7.505	6.775	0.173	0.416
	Oct-06	7.47	8.251	7.899	0.046	0.215
	Nov-06	7.849	8.389	8.173	0.024	0.156
	Dec-06	6.431	8.464	7.522	0.407	0.638
	Jan-07	7.331	8.183	7.844	0.054	0.232
	Feb-07	7.886	8.419	8.156	0.015	0.124
	Mar-07	8.298	8.824	8.559	0.024	0.154
	Apr-07	8.63	8.82	8.712	0.002	0.05
	May-07					
	Jun-07	5.41	8.694	7.18	0.371	0.609
	Jul-07	4.112	6.683	5.64	0.339	0.582
	Aug-07	5.262	6.811	6.125	0.139	0.372
	Sep-07	4.724	7.485	6.589	0.632	0.795
	Oct-07	4.623	6.75	5.855	0.276	0.525
	Nov-07	4.628	6.791	6.175	0.215	0.464
	Dec-07	6.256	8.838	6.438	0.047	0.217
T9-W01						
	Apr-06	2.374	4.165	3.543	0.138	0.371
	May-06	2.233	3.794	3.281	0.049	0.221
	Jun-06	2.652	4.8	3.916	0.18	0.424
	Jul-06	2.788	4.795	3.966	0.183	0.428
	Aug-06	2.77	4.833	3.646	0.214	0.462
	Sep-06	1.989	3.895	3.314	0.098	0.313
	Oct-06	1.828	3.817	3.296	0.099	0.314
	Nov-06	1.928	4.183	3.398	0.098	0.313
	Dec-06	2.485	4.244	3.505	0.07	0.265
	Jan-07	2.482	4.58	3.715	0.204	0.451
	Feb-07	3.011	4.644	3.891	0.157	0.396
	Mar-07	2.871	4.689	3.985	0.156	0.395
	Apr-07	2.487	4.39	3.599	0.09	0.299
	May-07	1.988	3.915	3.264	0.13	0.36
	Jun-07	1.942	3.998	3.358	0.079	0.282
	Jul-07	2.321	4.283	3.432	0.08	0.284
	Aug-07	2.234	4.345	3.483	0.119	0.345
	Sep-07	1.559	3.76	3.142	0.137	0.371
	Oct-07	1.148	3.583	3.029	0.199	0.446
	Nov-07	1.567	3.932	3.22	0.193	0.44
	Dec-07	3.589	4.484	4.016	0.044	0.211
T9-W02						
	Jun-05	2.439	4.255	3.524	0.084	0.29
	Jul-05	2.858	4.773	3.871	0.109	0.331
	Aug-05	2.123	4.262	3.492	0.094	0.306
	Sep-05	1.432	3.797	2.88	0.176	0.42
	Oct-05	1.377	3.57	2.84	0.178	0.422
	Nov-05	1.918	4.057	3.231	0.128	0.358
	Dec-05	2.578	4.553	3.536	0.111	0.334
	Jan-06	2.691	4.605	3.896	0.1	0.317
	Feb-06	2.345	4.754	3.857	0.159	0.399
	Mar-06	2.573	4.493	3.725	0.132	0.363
	Apr-06	2.322	4.469	3.657	0.122	0.35
	May-06	2.177	4.199	3.395	0.099	0.315
	Jun-06	2.634	5.004	3.99	0.172	0.415
	Jul-06	2.79	4.921	4.004	0.141	0.375
	Aug-06	2.729	4.903	3.779	0.158	0.397
	Sep-06	1.912	4.149	3.34	0.144	0.38
	Oct-06	1.623	3.958	3.203	0.141	0.376
	Nov-06	1.739	4.316	3.341	0.153	0.392
	Dec-06	2.35	4.558	3.521	0.122	0.35
	Jan-07	2.361	4.654	3.699	0.17	0.412
	Feb-07	3.065	4.669	3.936	0.101	0.318
	Mar-07	2.857	4.762	4.022	0.111	0.333

	Apr-07	2.387	4.528	3.714	0.131	0.362
	May-07	1.891	4.369	3.278	0.209	0.457
	Jun-07	1.823	4.203	3.324	0.12	0.346
	Jul-07	2.181	4.204	3.325	0.105	0.324
	Aug-07	2.092	4.267	3.372	0.121	0.348
	Sep-07	1.334	3.889	3.01	0.181	0.426
	Oct-07	0.918	3.526	2.815	0.213	0.462
	Nov-07	1.332	3.849	3.009	0.224	0.474
	Dec-07	3.059	4.336	3.735	0.076	0.276
T9-W03						
	Aug-05	11.212	11.476	11.377	0.005	0.073
	Sep-05	9.685	11.482	10.486	0.174	0.417
	Oct-05	9.37	10.732	10.29	0.099	0.314
	Nov-05	10.227	11.078	10.749	0.049	0.222
	Dec-05	11.024	11.536	11.214	0.014	0.12
	Jan-06	11.535	12.062	11.8	0.02	0.14
	Feb-06	11.578	12.129	11.877	0.022	0.147
	Mar-06	11.767	12.281	12.068	0.025	0.157
	Apr-06	11.933	12.38	12.176	0.015	0.123
	May-06	11.874	12.274	12.071	0.009	0.097
	Jun-06	12.029	12.685	12.397	0.04	0.199
	Jul-06	11.741	12.351	12.025	0.03	0.174
	Aug-06	11.821	12.469	12.216	0.038	0.195
	Sep-06	11.109	11.846	11.446	0.048	0.22
	Oct-06	11.252	11.85	11.599	0.027	0.163
	Nov-06	11.488	12.087	11.803	0.024	0.156
	Dec-06	11.399	12.195	11.745	0.07	0.264
	Jan-07	11.596	12.195	11.911	0.03	0.172
	Feb-07	11.967	12.41	12.233	0.015	0.122
	Mar-07	12.114	12.615	12.431	0.018	0.135
	Apr-07	12.003	12.63	12.298	0.034	0.184
	May-07	11.57	12.533	11.907	0.07	0.264
	Jun-07	10.01	12.064	11.013	0.236	0.486
	Jul-07	9.615	11.117	10.301	0.201	0.448
	Aug-07	10.183	11.329	10.87	0.134	0.366
	Sep-07	9.813	11.496	11.052	0.206	0.454
	Oct-07	9.81	10.843	10.438	0.102	0.319
	Nov-07	9.69	11.098	10.578	0.172	0.415
	Dec-07	11.099	11.523	11.328	0.015	0.122

Table 13. Monthly groundwater temperature (C) statistics.

T1-W01	Month	Min	Max	Mean	Variance	Std
	Jun-05	22.572	23.856	23.221	0.159	0.398
	Jul-05	23.817	24.789	24.388	0.079	0.281
	Aug-05	24.739	25.211	24.954	0.028	0.167
	Sep-05	24.989	25.217	25.104	0.002	0.049
	Oct-05	24.217	25.044	24.829	0.042	0.204
	Nov-05	23.028	24.233	23.673	0.085	0.292
	Dec-05	21.439	23.056	22.255	0.158	0.397
	Jan-06	20.55	21.439	20.913	0.053	0.231
	Feb-06	19.661	20.789	20.175	0.133	0.364
	Mar-06	20.239	20.839	20.489	0.041	0.203
	Apr-06	20.561	21.789	21.107	0.124	0.352
	May-06	21.75	22.561	22.089	0.056	0.237
	Jun-06	22.494	23.939	23.27	0.195	0.442
	Jul-06	23.85	24.528	24.152	0.028	0.169
	Aug-06	24.528	24.767	24.67	0.003	0.05
	Sep-06	24.633	24.794	24.724	0.002	0.044
	Oct-06	23.711	24.744	24.342	0.068	0.26
	Nov-06	22.194	23.733	23.162	0.265	0.515
	Dec-06	22.078	22.467	22.309	0.008	0.087
	Jan-07	21.617	22.283	22.042	0.019	0.139
	Feb-07	20.517	21.617	21.014	0.104	0.323
	Mar-07	20.589	21.267	20.962	0.02	0.142
	Apr-07	21.261	21.694	21.429	0.009	0.095
	May-07	21.694	22.511	22.135	0.044	0.209
	Jun-07	22.444	23.706	23.103	0.139	0.372
	Jul-07	23.572	24.317	24.005	0.061	0.247
	Aug-07	24.239	25.006	24.697	0.066	0.256
	Sep-07	24.811	25.072	24.967	0.005	0.069
	Oct-07	24.633	24.867	24.77	0.003	0.056
	Nov-07	22.85	24.644	23.602	0.383	0.619
	Dec-07	22.644	23.039	22.841	0.025	0.159
T3-W01						
	Jun-05	23.889	25.506	24.818	0.252	0.502
	Jul-05	25.5	26.667	26.206	0.123	0.35
	Aug-05	26.522	27.056	26.779	0.034	0.184
	Sep-05	26.522	26.972	26.716	0.015	0.123
	Oct-05	24.733	26.572	26.132	0.331	0.575
	Nov-05	23.389	24.722	24.191	0.162	0.402
	Dec-05	20.844	23.411	22.21	0.361	0.6
	Jan-06	19.944	20.911	20.398	0.086	0.293
	Feb-06	19.056	20.422	19.68	0.231	0.48
	Mar-06	19.678	20.494	20.014	0.072	0.269
	Apr-06	20.106	21.806	20.89	0.252	0.502
	May-06	21.717	22.806	22.187	0.092	0.304
	Jun-06	22.717	24.15	23.542	0.188	0.433
	Jul-06	24.089	24.939	24.521	0.044	0.209
	Aug-06	24.928	25.389	25.162	0.009	0.094
	Sep-06	25.389	25.922	25.632	0.031	0.176
	Oct-06	23.9	25.667	24.878	0.224	0.474
	Nov-06	21.717	23.9	23.06	0.589	0.767
	Dec-06	21.717	22.189	21.953	0.012	0.109
	Jan-07	20.944	21.989	21.66	0.053	0.23
	Feb-07	19.561	20.95	20.25	0.192	0.438
	Mar-07	19.756	20.856	20.343	0.056	0.237
	Apr-07	20.85	21.656	21.143	0.033	0.183
	May-07	21.65	22.694	22.22	0.078	0.279
	Jun-07	22.583	24.35	23.494	0.234	0.484
	Jul-07	24.183	25.889	25.178	0.356	0.596
	Aug-07	25.828	26.767	26.448	0.099	0.314
	Sep-07	26.156	26.761	26.524	0.032	0.179
	Oct-07	25.617	26.167	25.916	0.031	0.177
	Nov-07	22.872	25.622	23.807	0.831	0.911
	Dec-07	22.694	23.128	22.902	0.032	0.18
T7-W01						

	Jun-05	22.956	23.639	23.286	0.041	0.202
	Jul-05	23.617	24.511	24.062	0.064	0.253
	Aug-05	24.433	24.994	24.722	0.018	0.132
	Sep-05	24.928	25.228	25.098	0.004	0.066
	Oct-05	24.694	25.283	25.19	0.007	0.085
	Nov-05	23.95	25.056	24.596	0.101	0.318
	Dec-05	22.161	24.1	23.216	0.172	0.415
	Jan-06	21.467	22.628	21.978	0.081	0.284
	Feb-06	20.622	21.739	21.202	0.081	0.285
	Mar-06	21	21.617	21.361	0.028	0.168
	Apr-06	21.572	22.217	21.842	0.031	0.177
	May-06	22.194	23.028	22.617	0.052	0.227
	Jun-06	22.983	23.833	23.36	0.046	0.215
	Jul-06	23.783	24.356	24.082	0.022	0.15
	Aug-06	24.311	24.856	24.618	0.025	0.157
	Sep-06	24.8	25.028	24.905	0.003	0.053
	Oct-06	24.5	24.833	24.717	0.007	0.086
	Nov-06	22.978	24.522	23.92	0.235	0.484
	Dec-06	22.694	23.406	23.031	0.03	0.173
	Jan-07	22.033	22.9	22.644	0.036	0.191
	Feb-07	22.017	22.239	22.15	0.002	0.048
	Mar-07	21.433	21.578	21.5	0.001	0.03
	Apr-07	21.539	21.922	21.756	0.01	0.102
	May-07	21.906	22.783	22.291	0.052	0.228
	Jun-07	22.65	23.428	22.99	0.048	0.22
	Jul-07	23.372	24.122	23.77	0.041	0.203
	Aug-07	24.056	24.617	24.339	0.025	0.157
	Sep-07	24.544	24.861	24.746	0.006	0.079
	Oct-07	24.772	24.867	24.824	0	0.019
	Nov-07	23.85	24.817	24.332	0.107	0.328
	Dec-07	23.45	23.889	23.687	0.014	0.119
T7-W02						
	Jun-05	22.372	22.978	22.664	0.033	0.181
	Jul-05	22.95	23.767	23.372	0.059	0.242
	Aug-05	23.744	24.206	23.958	0.013	0.115
	Sep-05	24.167	24.661	24.332	0.015	0.123
	Oct-05	24.428	24.767	24.696	0.003	0.054
	Nov-05					
	Dec-05					
	Jan-06					
	Feb-06	20.617	21.011	20.879	0.006	0.079
	Mar-06	20.589	21.411	21.097	0.023	0.15
	Apr-06	21.294	22.306	21.628	0.074	0.272
	May-06	22.217	23.167	22.644	0.067	0.259
	Jun-06	23.061	24.156	23.666	0.093	0.304
	Jul-06	24.022	24.5	24.298	0.016	0.127
	Aug-06	24.394	24.989	24.794	0.021	0.144
	Sep-06	24.672	25.161	24.92	0.008	0.089
	Oct-06	23.894	25.017	24.641	0.088	0.296
	Nov-06	21.906	24.144	23.329	0.404	0.635
	Dec-06	22.089	22.761	22.577	0.01	0.102
	Jan-07	21.139	22.628	22.306	0.083	0.288
	Feb-07	20.306	21.922	21.308	0.148	0.384
	Mar-07	21.011	21.517	21.305	0.01	0.102
	Apr-07	21.428	21.878	21.66	0.008	0.089
	May-07	21.889	23.033	22.529	0.094	0.307
	Jun-07	22.839	24.028	23.431	0.105	0.324
	Jul-07	23.878	24.6	24.292	0.041	0.204
	Aug-07	24.361	25.183	24.796	0.033	0.182
	Sep-07	24.878	25.3	25.157	0.006	0.08
	Oct-07	24.883	25.244	25.075	0.004	0.066
	Nov-07	23.156	25.017	23.904	0.295	0.543
	Dec-07	23.028	23.539	23.294	0.021	0.145
T7-W03						
	Jun-05	23.2	23.744	23.462	0.027	0.164
	Jul-05	23.722	24.433	24.058	0.043	0.206
	Aug-05	24.406	24.817	24.604	0.01	0.102

	Sep-05	24.761	24.883	24.808	0.001	0.024
	Oct-05	24.433	24.856	24.741	0.011	0.104
	Nov-05	23.872	24.544	24.251	0.042	0.205
	Dec-05	22.422	23.939	23.196	0.12	0.347
	Jan-06	21.611	22.711	22.151	0.074	0.271
	Feb-06	21	21.911	21.494	0.05	0.223
	Mar-06	20.867	22.161	21.656	0.134	0.367
	Apr-06	21.172	22.706	21.79	0.154	0.392
	May-06	22.522	23.739	23.069	0.119	0.345
	Jun-06	23.656	24.85	24.259	0.109	0.33
	Jul-06	24.717	25.417	25.084	0.027	0.164
	Aug-06	25.222	26.006	25.691	0.02	0.141
	Sep-06	25.2	25.617	25.422	0.006	0.077
	Oct-06	23.6	25.317	24.653	0.257	0.507
	Nov-06	21.278	23.861	22.867	0.68	0.825
	Dec-06	21.828	22.372	22.129	0.022	0.147
	Jan-07	20.822	22.283	21.906	0.113	0.337
	Feb-07	19.922	21.311	20.697	0.175	0.419
	Mar-07	20.628	21.433	20.988	0.033	0.183
	Apr-07	21.294	22.122	21.625	0.026	0.16
	May-07	22.1	23.511	22.891	0.151	0.389
	Jun-07	23.233	24.722	23.997	0.155	0.394
	Jul-07	24.389	25.189	24.837	0.041	0.203
	Aug-07	24.756	25.889	25.317	0.049	0.222
	Sep-07	24.978	25.85	25.491	0.024	0.156
	Oct-07	24.667	25.417	25.045	0.02	0.14
	Nov-07	22.928	24.806	23.511	0.319	0.565
	Dec-07	22.711	23.144	22.892	0.024	0.154
T7-W04						
	Jun-05	22.828	23.411	23.081	0.025	0.159
	Jul-05	23.411	24.106	23.737	0.041	0.204
	Aug-05	24.1	24.733	24.447	0.024	0.154
	Sep-05	24.672	25.05	24.92	0.006	0.079
	Oct-05	24.983	25.161	25.069	0.001	0.039
	Nov-05	24.339	24.983	24.657	0.029	0.171
	Dec-05	23.417	24.35	23.885	0.068	0.261
	Jan-06	22.639	23.417	22.973	0.054	0.232
	Feb-06	22.128	22.656	22.409	0.027	0.165
	Mar-06	22.028	22.139	22.07	0.001	0.027
	Apr-06	22.094	22.356	22.178	0.006	0.076
	May-06	22.344	22.828	22.592	0.019	0.137
	Jun-06	22.806	23.417	23.088	0.03	0.173
	Jul-06	23.411	23.983	23.703	0.025	0.158
	Aug-06	23.972	24.444	24.236	0.019	0.139
	Sep-06	24.428	24.661	24.546	0.003	0.056
	Oct-06	24.539	24.656	24.618	0.001	0.027
	Nov-06	23.972	24.55	24.312	0.026	0.16
	Dec-06	23.433	23.983	23.558	0.01	0.101
	Jan-07	23.122	23.439	23.276	0.007	0.084
	Feb-07	22.706	23.133	22.919	0.015	0.123
	Mar-07	22.4	22.428	22.413	0	0.005
	Apr-07	22.411	22.617	22.529	0.003	0.058
	May-07	22.6	23.022	22.798	0.013	0.115
	Jun-07	22.961	23.6	23.27	0.026	0.161
	Jul-07	23.589	24.283	23.911	0.032	0.18
	Aug-07	24.733	24.767	24.75	0	0.008
	Sep-07	24.75	25.167	24.958	0.013	0.115
	Oct-07	25.05	25.183	25.115	0.001	0.03
	Nov-07	24.4	25.167	24.814	0.053	0.231
	Dec-07	24.389	24.411	24.399	0	0.005
T8-W01						
	Jun-05	22.744	23.689	23.208	0.052	0.228
	Jul-05	23.294	24.728	23.965	0.131	0.362
	Aug-05	24.067	25.139	24.63	0.039	0.198
	Sep-05	24.444	25.172	24.742	0.024	0.155
	Oct-05	23.689	25.05	24.577	0.051	0.227
	Nov-05	23.072	24.228	23.791	0.077	0.278

	Dec-05	21.194	23.428	22.401	0.191	0.437
	Jan-06	20.367	22.083	21.051	0.167	0.408
	Feb-06	19.2	20.839	20.061	0.095	0.308
	Mar-06	20.067	21.006	20.536	0.054	0.233
	Apr-06	20.667	22.156	21.362	0.121	0.347
	May-06	21.856	23.044	22.433	0.088	0.296
	Jun-06	22.744	24.089	23.349	0.093	0.306
	Jul-06	23.461	24.389	23.974	0.038	0.196
	Aug-06	23.856	24.939	24.5	0.064	0.253
	Sep-06	24.356	24.839	24.6	0.014	0.117
	Oct-06	23.683	24.717	24.321	0.061	0.247
	Nov-06	21.744	23.956	23.157	0.337	0.58
	Dec-06	21.861	22.639	22.201	0.02	0.143
	Jan-07	21.306	22.333	22.007	0.037	0.192
	Feb-07	20.261	21.828	21.138	0.162	0.402
	Mar-07	20.4	21.261	20.912	0.027	0.166
	Apr-07	21.144	21.756	21.49	0.023	0.151
	May-07	21.739	22.839	22.267	0.085	0.292
	Jun-07	22.606	23.706	23.086	0.071	0.267
	Jul-07	23.294	24.25	23.792	0.04	0.2
	Aug-07	23.861	24.861	24.284	0.034	0.185
	Sep-07	24.256	24.944	24.612	0.026	0.161
	Oct-07	24.239	24.828	24.482	0.013	0.116
	Nov-07	22.9	24.517	23.636	0.148	0.385
	Dec-07	22.983	23.278	23.139	0.006	0.08
T8-W02						
	Jun-05	22.467	22.944	22.698	0.02	0.142
	Jul-05	22.928	23.678	23.289	0.047	0.217
	Aug-05	23.65	24.117	23.887	0.016	0.127
	Sep-05	24.094	24.228	24.176	0.001	0.03
	Oct-05	23.667	24.233	24.16	0.015	0.122
	Nov-05	22.717	24.017	23.64	0.109	0.33
	Dec-05	21.206	23.306	22.288	0.231	0.48
	Jan-06	20.567	21.989	21.336	0.097	0.312
	Feb-06	20.461	21.633	21.179	0.05	0.224
	Mar-06	21.139	21.461	21.322	0.006	0.075
	Apr-06	21.439	21.978	21.629	0.018	0.134
	May-06	21.906	22.472	22.195	0.025	0.159
	Jun-06	22.461	23.283	22.801	0.042	0.205
	Jul-06	23.139	23.633	23.398	0.019	0.137
	Aug-06	23.622	24.128	23.929	0.025	0.159
	Sep-06	24.111	24.394	24.155	0.001	0.031
	Oct-06	23.872	24.233	24.126	0.012	0.108
	Nov-06	21.783	23.917	23.255	0.345	0.587
	Dec-06	22.35	22.967	22.711	0.014	0.117
	Jan-07	21.611	22.622	22.445	0.048	0.219
	Feb-07	21.028	22.2	21.738	0.087	0.294
	Mar-07	21.422	21.728	21.594	0.004	0.062
	Apr-07	21.711	21.994	21.879	0.006	0.075
	May-07	21.978	22.578	22.269	0.031	0.176
	Jun-07	22.567	23.122	22.824	0.025	0.159
	Jul-07	23.111	23.611	23.369	0.021	0.144
	Aug-07	23.594	24.039	23.808	0.017	0.13
	Sep-07	24.028	24.422	24.212	0.007	0.082
	Oct-07	24.261	24.311	24.283	0	0.011
	Nov-07	23.572	24.272	23.905	0.054	0.231
	Dec-07	23.517	23.589	23.553	0	0.018
T8-W03						
	Jun-05	23	23.983	23.469	0.07	0.265
	Jul-05	23.911	24.872	24.34	0.075	0.273
	Aug-05	24.817	25.461	25.152	0.02	0.14
	Sep-05	25.233	25.728	25.389	0.007	0.082
	Oct-05	25.006	25.444	25.326	0.006	0.08
	Nov-05					
	Dec-05					
	Jan-06					
	Feb-06					

	Mar-06					
	Apr-06	21.761	22.222	21.982	0.02	0.141
	May-06	22.211	23.083	22.627	0.069	0.262
	Jun-06	23.056	24.1	23.586	0.106	0.325
	Jul-06	24.083	24.861	24.525	0.048	0.218
	Aug-06	24.822	25.367	25.078	0.01	0.1
	Sep-06	25.061	25.367	25.197	0.005	0.071
	Oct-06	24.35	25.117	24.778	0.042	0.205
	Nov-06	23.061	24.35	23.833	0.156	0.395
	Dec-06	22.717	23.094	22.903	0.014	0.119
	Jan-07	22.2	22.722	22.545	0.017	0.13
	Feb-07	21	22.2	21.609	0.122	0.349
	Mar-07	21.017	21.461	21.322	0.006	0.08
	Apr-07	21.689	21.861	21.754	0.003	0.056
	May-07					
	Jun-07	23.117	24.283	23.494	0.079	0.281
	Jul-07	24.1	25.122	24.591	0.056	0.237
	Aug-07	24.822	25.55	25.199	0.045	0.212
	Sep-07	25.278	25.478	25.37	0.002	0.041
	Oct-07	25.033	25.361	25.254	0.004	0.066
	Nov-07	23.106	25.072	24.088	0.309	0.556
	Dec-07	23.306	23.428	23.391	0	0.018
T9-W01						
	Apr-06	21.689	22.433	21.994	0.053	0.229
	May-06	22.194	23.828	23.025	0.19	0.436
	Jun-06	23.594	25.811	24.444	0.184	0.429
	Jul-06	24.911	25.639	25.363	0.027	0.163
	Aug-06	25.039	26.417	26.053	0.097	0.312
	Sep-06	25.644	26.6	25.89	0.009	0.095
	Oct-06	24.111	25.856	25.235	0.226	0.476
	Nov-06	21.294	24.428	23.269	0.732	0.856
	Dec-06	21.744	22.767	22.42	0.024	0.154
	Jan-07	20.461	22.411	22.118	0.139	0.373
	Feb-07	20.05	21.617	20.838	0.161	0.401
	Mar-07	20.356	21.194	20.636	0.017	0.129
	Apr-07	20.967	21.65	21.294	0.022	0.148
	May-07	21.65	23.283	22.586	0.228	0.477
	Jun-07	23.1	24.717	23.893	0.192	0.438
	Jul-07	24.506	25.261	24.956	0.042	0.205
	Aug-07	24.95	25.783	25.451	0.037	0.191
	Sep-07	25.478	26.122	25.784	0.01	0.1
	Oct-07	25.15	25.667	25.44	0.009	0.092
	Nov-07	23.172	25.267	23.908	0.466	0.682
	Dec-07	23.194	23.417	23.326	0.004	0.061
T9-W02						
	Jun-05	24.272	26.506	25.269	0.317	0.563
	Jul-05	25.256	27.839	26.278	0.379	0.616
	Aug-05	26.494	28.111	27.118	0.181	0.425
	Sep-05	26.278	27.706	26.763	0.104	0.322
	Oct-05	24.456	26.911	26.083	0.212	0.461
	Nov-05	22.944	25.089	24.291	0.15	0.387
	Dec-05	20.7	23.7	22.426	0.356	0.596
	Jan-06	19.922	22.083	21.182	0.121	0.348
	Feb-06	19.522	21.422	20.686	0.147	0.384
	Mar-06	20.417	22.194	21.309	0.128	0.358
	Apr-06	21.344	24.467	22.572	0.521	0.722
	May-06	23.422	25.783	24.315	0.308	0.555
	Jun-06	24.65	27.089	25.621	0.344	0.587
	Jul-06	25.744	27.194	26.336	0.078	0.28
	Aug-06	26.239	27.95	26.947	0.146	0.382
	Sep-06	26.572	27.261	26.86	0.025	0.157
	Oct-06	24.322	26.794	25.951	0.31	0.557
	Nov-06	20.628	25.067	23.684	1.286	1.134
	Dec-06	21.75	22.872	22.458	0.061	0.248
	Jan-07	20.806	22.756	22.298	0.118	0.343
	Feb-07	19.461	21.9	20.887	0.215	0.464
	Mar-07	20.544	22.156	21.48	0.101	0.318

	Apr-07	22.022	23.256	22.511	0.055	0.235
	May-07	22.872	24.883	24.036	0.215	0.464
	Jun-07	24.272	26.833	25.295	0.361	0.601
	Jul-07	25.633	27.411	26.275	0.137	0.37
	Aug-07	26.156	27.694	26.799	0.114	0.338
	Sep-07	26.394	27.5	26.91	0.07	0.264
	Oct-07	25.756	26.722	26.165	0.041	0.204
	Nov-07	22.733	25.767	24.274	0.834	0.913
	Dec-07	22.533	23.733	23.399	0.064	0.252
T9-W03						
	Aug-05	24.856	25.072	24.945	0.003	0.052
	Sep-05	24.933	25.45	25.341	0.015	0.123
	Oct-05	25.289	25.683	25.504	0.01	0.098
	Nov-05	25.072	25.572	25.279	0.016	0.125
	Dec-05	24.4	25.083	24.735	0.039	0.196
	Jan-06	23.894	24.411	24.108	0.023	0.152
	Feb-06	23.467	23.9	23.693	0.018	0.132
	Mar-06	23.328	23.489	23.38	0.002	0.039
	Apr-06	23.356	23.478	23.402	0.001	0.028
	May-06	23.467	23.733	23.6	0.005	0.073
	Jun-06	23.717	24.106	23.898	0.01	0.098
	Jul-06	24.094	24.544	24.328	0.017	0.132
	Aug-06	24.533	24.889	24.709	0.01	0.101
	Sep-06	24.883	25.194	25.031	0.006	0.08
	Oct-06	25.106	25.222	25.181	0.001	0.026
	Nov-06	24.983	25.206	25.126	0.004	0.061
	Dec-06	24.583	24.994	24.773	0.013	0.115
	Jan-07	24.322	24.594	24.442	0.005	0.073
	Feb-07	23.906	24.333	24.136	0.015	0.122
	Mar-07	23.672	23.917	23.755	0.003	0.058
	Apr-07	23.672	23.739	23.712	0	0.017
	May-07	23.717	23.889	23.796	0.002	0.048
	Jun-07	23.872	24.389	24.086	0.01	0.098
	Jul-07	24.389	24.811	24.594	0.014	0.119
	Aug-07	24.756	24.978	24.864	0.004	0.064
	Sep-07	24.939	25.461	25.134	0.016	0.128
	Oct-07	25.306	25.456	25.39	0.001	0.03
	Nov-07	24.95	25.478	25.258	0.025	0.159
	Dec-07	24.783	24.961	24.864	0.002	0.047

Table 14. Monthly groundwater EC (S/m) statistics.

T1-W01	Month	Min	Max	Mean	Variance	Std
	Jun-05	0.062	0.065	0.064	0	0
	Jul-05	0.063	0.067	0.066	0	0.001
	Aug-05	0.066	0.071	0.069	0	0.001
	Sep-05	0.071	0.073	0.072	0	0
	Oct-05	0.067	0.073	0.072	0	0.001
	Nov-05	0.069	0.07	0.07	0	0
	Dec-05	0.069	0.07	0.069	0	0
	Jan-06	0.068	0.083	0.078	0	0.004
	Feb-06	0.064	0.073	0.069	0	0.003
	Mar-06	0.067	0.07	0.068	0	0.001
	Apr-06	0.067	0.069	0.068	0	0
	May-06	0.068	0.068	0.068	0	0
	Jun-06	0.068	0.089	0.071	0	0.004
	Jul-06	0.048	0.074	0.064	0	0.007
	Aug-06	0.049	0.067	0.061	0	0.006
	Sep-06	0.066	0.069	0.068	0	0.001
	Oct-06	0.066	0.07	0.068	0	0.001
	Nov-06	0.067	0.069	0.068	0	0
	Dec-06	0.062	0.079	0.07	0	0.004
	Jan-07	0.075	0.079	0.077	0	0.001
	Feb-07	0.073	0.078	0.076	0	0.001
	Mar-07	0.071	0.075	0.074	0	0.001
	Apr-07	0.074	0.075	0.074	0	0
	May-07	0.075	0.078	0.076	0	0.001
	Jun-07	0.047	0.077	0.06	0	0.009
	Jul-07	0.052	0.075	0.07	0	0.004
	Aug-07	0.074	0.075	0.075	0	0
	Sep-07	0.064	0.077	0.075	0	0.001
	Oct-07	0.077	0.078	0.078	0	0
	Nov-07	0.063	0.092	0.079	0	0.005
	Dec-07	0.06	0.091	0.072	0	0.011
T3-W01						
	Jun-05	0.035	0.041	0.037	0	0.002
	Jul-05	0.036	0.042	0.04	0	0.002
	Aug-05	0.038	0.068	0.052	0	0.01
	Sep-05	0.049	0.061	0.054	0	0.003
	Oct-05	0.043	0.054	0.047	0	0.003
	Nov-05	0.039	0.046	0.043	0	0.002
	Dec-05	0.039	0.052	0.045	0	0.003
	Jan-06	0.039	0.047	0.044	0	0.002
	Feb-06	0.04	0.05	0.044	0	0.003
	Mar-06	0.03	0.044	0.036	0	0.003
	Apr-06	0.027	0.036	0.03	0	0.003
	May-06	0.027	0.028	0.027	0	0
	Jun-06	0.028	0.072	0.044	0	0.011
	Jul-06	0.04	0.068	0.054	0	0.006
	Aug-06	0.028	0.045	0.034	0	0.004
	Sep-06	0.042	0.056	0.049	0	0.005
	Oct-06	0.039	0.053	0.046	0	0.005
	Nov-06	0.033	0.052	0.041	0	0.006
	Dec-06	0.034	0.044	0.041	0	0.002
	Jan-07	0.042	0.051	0.046	0	0.002
	Feb-07	0.037	0.059	0.05	0	0.006
	Mar-07	0.035	0.045	0.038	0	0.003
	Apr-07	0.033	0.044	0.038	0	0.004
	May-07	0.034	0.038	0.035	0	0.001
	Jun-07	0.017	0.068	0.037	0	0.013
	Jul-07	0.02	0.034	0.029	0	0.004
	Aug-07	0.033	0.078	0.046	0	0.013
	Sep-07	0.075	0.091	0.083	0	0.004
	Oct-07	0.073	0.091	0.084	0	0.005
	Nov-07	0.055	0.084	0.073	0	0.007
	Dec-07	0.053	0.068	0.062	0	0.004
T7-W01						

	Jun-05	0.147	0.152	0.15	0	0.001
	Jul-05	0.135	0.15	0.143	0	0.004
	Aug-05	0.13	0.146	0.135	0	0.003
	Sep-05	0.135	0.162	0.153	0	0.006
	Oct-05	0.143	0.169	0.16	0	0.006
	Nov-05	0.142	0.168	0.15	0	0.005
	Dec-05	0.128	0.142	0.134	0	0.003
	Jan-06	0.115	0.128	0.121	0	0.004
	Feb-06	0.106	0.115	0.111	0	0.003
	Mar-06	0.098	0.106	0.103	0	0.002
	Apr-06	0.094	0.106	0.097	0	0.002
	May-06	0.098	0.131	0.11	0	0.008
	Jun-06	0.111	0.13	0.123	0	0.003
	Jul-06	0.118	0.125	0.122	0	0.001
	Aug-06	0.119	0.123	0.122	0	0.001
	Sep-06	0.12	0.137	0.125	0	0.004
	Oct-06	0.114	0.128	0.12	0	0.003
	Nov-06	0.114	0.143	0.124	0	0.009
	Dec-06	0.119	0.142	0.128	0	0.007
	Jan-07	0.112	0.12	0.115	0	0.002
	Feb-07	0.116	0.117	0.116	0	0
	Mar-07	0.137	0.189	0.156	0	0.014
	Apr-07	0.15	0.213	0.182	0	0.017
	May-07	0.175	0.251	0.211	0	0.018
	Jun-07	0.189	0.248	0.207	0	0.017
	Jul-07	0.174	0.193	0.182	0	0.004
	Aug-07	0.165	0.177	0.171	0	0.003
	Sep-07	0.16	0.176	0.166	0	0.003
	Oct-07	0.156	0.163	0.16	0	0.001
	Nov-07	0.156	0.177	0.161	0	0.004
	Dec-07	0.161	0.181	0.167	0	0.006
T7-W02						
	Jun-05	0.131	0.14	0.135	0	0.002
	Jul-05	0.119	0.134	0.126	0	0.004
	Aug-05	0.108	0.121	0.114	0	0.003
	Sep-05	0.108	0.124	0.117	0	0.005
	Oct-05	0.107	0.12	0.116	0	0.003
	Nov-05					
	Dec-05					
	Jan-06					
	Feb-06	0.072	0.076	0.073	0	0.001
	Mar-06	0.069	0.073	0.07	0	0.001
	Apr-06	0.068	0.071	0.069	0	0
	May-06	0.069	0.075	0.07	0	0
	Jun-06	0.07	0.109	0.072	0	0.004
	Jul-06	0.072	0.12	0.077	0	0.004
	Aug-06	0.073	0.129	0.095	0	0.012
	Sep-06	0.093	0.141	0.107	0	0.01
	Oct-06	0.09	0.141	0.101	0	0.01
	Nov-06	0.104	0.138	0.125	0	0.012
	Dec-06	0.12	0.134	0.127	0	0.003
	Jan-07	0.11	0.12	0.115	0	0.003
	Feb-07	0.102	0.11	0.106	0	0.002
	Mar-07	0.1	0.107	0.102	0	0.002
	Apr-07	0.106	0.146	0.116	0	0.007
	May-07	0.117	0.169	0.131	0	0.011
	Jun-07	0.123	0.245	0.136	0	0.02
	Jul-07	0.129	0.335	0.148	0.001	0.032
	Aug-07	0.141	0.347	0.175	0.001	0.038
	Sep-07	0.161	0.348	0.218	0.003	0.05
	Oct-07	0.213	0.344	0.249	0.001	0.035
	Nov-07	0.185	0.339	0.269	0.003	0.054
	Dec-07	0.305	0.329	0.318	0	0.006
T7-W03						
	Jun-05	0.068	0.079	0.072	0	0.003
	Jul-05	0.063	0.07	0.066	0	0.002
	Aug-05	0.064	0.074	0.067	0	0.002

	Sep-05	0.062	0.07	0.067	0	0.002
	Oct-05	0.055	0.065	0.061	0	0.002
	Nov-05	0.053	0.059	0.056	0	0.002
	Dec-05	0.052	0.053	0.053	0	0
	Jan-06	0.051	0.056	0.053	0	0.001
	Feb-06	0.053	0.058	0.055	0	0.001
	Mar-06	0.056	0.065	0.059	0	0.002
	Apr-06	0.063	0.071	0.066	0	0.002
	May-06	0.063	0.07	0.064	0	0.001
	Jun-06	0.057	0.068	0.062	0	0.002
	Jul-06	0.049	0.06	0.055	0	0.003
	Aug-06	0.049	0.063	0.055	0	0.003
	Sep-06	0.05	0.086	0.056	0	0.005
	Oct-06	0.055	0.085	0.06	0	0.004
	Nov-06	0.069	0.095	0.082	0	0.009
	Dec-06	0.095	0.101	0.098	0	0.001
	Jan-07	0.094	0.1	0.097	0	0.002
	Feb-07	0.099	0.106	0.102	0	0.002
	Mar-07	0.104	0.113	0.108	0	0.003
	Apr-07	0.109	0.135	0.12	0	0.005
	May-07	0.108	0.134	0.118	0	0.006
	Jun-07	0.103	0.139	0.109	0	0.003
	Jul-07	0.098	0.127	0.106	0	0.003
	Aug-07	0.097	0.118	0.104	0	0.003
	Sep-07	0.095	0.115	0.1	0	0.004
	Oct-07	0.094	0.112	0.098	0	0.003
	Nov-07	0.078	0.098	0.086	0	0.006
	Dec-07	0.073	0.078	0.075	0	0.001
T7-W04						
	Jun-05	0.006	0.01	0.007	0	0.001
	Jul-05	0.007	0.01	0.009	0	0.001
	Aug-05	0.007	0.01	0.009	0	0.001
	Sep-05	0.008	0.01	0.009	0	0
	Oct-05	0.008	0.01	0.009	0	0
	Nov-05	0.009	0.01	0.009	0	0
	Dec-05	0.009	0.01	0.01	0	0
	Jan-06	0.009	0.01	0.009	0	0
	Feb-06	0.008	0.009	0.009	0	0
	Mar-06	0.007	0.008	0.007	0	0
	Apr-06	0.007	0.008	0.007	0	0
	May-06	0.008	0.008	0.008	0	0
	Jun-06	0.008	0.009	0.008	0	0
	Jul-06	0.008	0.009	0.009	0	0
	Aug-06	0.007	0.008	0.008	0	0
	Sep-06	0.007	0.008	0.008	0	0
	Oct-06	0.007	0.007	0.007	0	0
	Nov-06	0.007	0.01	0.008	0	0.001
	Dec-06	0.01	0.011	0.01	0	0.001
	Jan-07	0.009	0.011	0.01	0	0.001
	Feb-07	0.01	0.011	0.011	0	0
	Mar-07	0.011	0.012	0.011	0	0
	Apr-07	0.01	0.011	0.01	0	0
	May-07	0.01	0.01	0.01	0	0
	Jun-07	0.01	0.01	0.01	0	0
	Jul-07	0.008	0.011	0.01	0	0.001
	Aug-07	0.01	0.01	0.01	0	0
	Sep-07	0.009	0.01	0.01	0	0
	Oct-07	0.01	0.012	0.011	0	0.001
	Nov-07	0.01	0.012	0.011	0	0
	Dec-07	0.012	0.012	0.012	0	0
T8-W01						
	Jun-05	0.115	0.185	0.138	0	0.01
	Jul-05	0.101	0.279	0.163	0.002	0.039
	Aug-05	0.1	0.175	0.128	0	0.012
	Sep-05	0.115	0.262	0.22	0.001	0.034
	Oct-05	0.146	0.229	0.187	0.001	0.023
	Nov-05	0.119	0.163	0.143	0	0.013

	Dec-05	0.095	0.137	0.114	0	0.009
	Jan-06	0.087	0.118	0.105	0	0.006
	Feb-06	0.088	0.142	0.103	0	0.01
	Mar-06	0.077	0.205	0.099	0.001	0.023
	Apr-06	0.142	0.335	0.261	0.002	0.043
	May-06	0.319	0.669	0.548	0.01	0.101
	Jun-06	0.317	0.635	0.456	0.009	0.094
	Jul-06	0.277	0.398	0.337	0.001	0.025
	Aug-06	0.2	0.316	0.264	0.001	0.025
	Sep-06	0.186	0.267	0.232	0	0.014
	Oct-06	0.148	0.23	0.187	0	0.018
	Nov-06	0.156	0.307	0.187	0.001	0.034
	Dec-06	0.187	0.321	0.241	0.001	0.03
	Jan-07	0.167	0.23	0.188	0	0.008
	Feb-07	0.199	0.278	0.233	0	0.019
	Mar-07	0.262	0.516	0.379	0.006	0.077
	Apr-07	0.457	0.663	0.555	0.002	0.047
	May-07	0.608	1.012	0.784	0.019	0.138
	Jun-07	0.594	0.896	0.752	0.005	0.074
	Jul-07	0.544	0.696	0.629	0.001	0.038
	Aug-07	0.525	0.619	0.579	0	0.017
	Sep-07	0.429	0.57	0.486	0.001	0.038
	Oct-07	0.353	0.453	0.398	0	0.022
	Nov-07	0.275	0.421	0.345	0.002	0.048
	Dec-07	0.339	0.409	0.389	0	0.016
T8-W02						
	Jun-05	0.063	0.064	0.063	0	0
	Jul-05	0.063	0.064	0.063	0	0
	Aug-05	0.063	0.064	0.063	0	0
	Sep-05					
	Oct-05	0.061	0.062	0.061	0	0
	Nov-05	0.061	0.063	0.062	0	0
	Dec-05	0.061	0.062	0.062	0	0
	Jan-06	0.062	0.063	0.063	0	0
	Feb-06	0.062	0.064	0.063	0	0.001
	Mar-06	0.063	0.065	0.064	0	0
	Apr-06	0.064	0.067	0.066	0	0.001
	May-06	0.066	0.071	0.067	0	0.001
	Jun-06	0.068	0.071	0.069	0	0.001
	Jul-06	0.068	0.069	0.069	0	0
	Aug-06	0.068	0.072	0.07	0	0.001
	Sep-06	0.068	0.07	0.069	0	0
	Oct-06	0.069	0.07	0.069	0	0
	Nov-06	0.069	0.07	0.07	0	0
	Dec-06	0.069	0.071	0.07	0	0
	Jan-07	0.07	0.072	0.071	0	0.001
	Feb-07	0.07	0.071	0.07	0	0
	Mar-07	0.071	0.073	0.072	0	0.001
	Apr-07	0.072	0.076	0.074	0	0.001
	May-07	0.075	0.079	0.077	0	0.001
	Jun-07	0.074	0.081	0.076	0	0.002
	Jul-07					
	Aug-07					
	Sep-07	0.068	0.07	0.069	0	0
	Oct-07	0.066	0.069	0.067	0	0.001
	Nov-07	0.064	0.067	0.065	0	0.001
	Dec-07	0.064	0.065	0.065	0	0
T8-W03						
	Jun-05	0.023	0.03	0.027	0	0.002
	Jul-05	0.023	0.029	0.026	0	0.001
	Aug-05	0.021	0.03	0.026	0	0.002
	Sep-05	0.02	0.029	0.025	0	0.003
	Oct-05	0.021	0.027	0.024	0	0.002
	Nov-05					
	Dec-05					
	Jan-06					
	Feb-06					

	Mar-06					
	Apr-06	0.029	0.03	0.029	0	0
	May-06	0.021	0.03	0.029	0	0.001
	Jun-06	0.026	0.036	0.029	0	0.001
	Jul-06	0.036	0.046	0.042	0	0.003
	Aug-06	0.039	0.046	0.041	0	0.001
	Sep-06	0.029	0.045	0.034	0	0.004
	Oct-06	0.034	0.038	0.035	0	0.001
	Nov-06	0.033	0.034	0.033	0	0
	Dec-06	0.029	0.036	0.032	0	0.001
	Jan-07	0.031	0.033	0.032	0	0.001
	Feb-07	0.033	0.033	0.033	0	0
	Mar-07	0	0.034	0.031	0	0.007
	Apr-07	0	0.031	0.027	0	0.01
	May-07					
	Jun-07	0.016	0.042	0.036	0	0.006
	Jul-07	0.018	0.039	0.025	0	0.004
	Aug-07	0.02	0.034	0.027	0	0.003
	Sep-07	0.015	0.032	0.026	0	0.006
	Oct-07	0.017	0.034	0.023	0	0.005
	Nov-07	0.018	0.029	0.025	0	0.003
	Dec-07	0.02	0.022	0.022	0	0
T9-W01						
	Apr-06	1.066	2.135	1.488	0.157	0.396
	May-06	1.201	2.816	1.818	0.052	0.229
	Jun-06	0.984	2.838	1.656	0.426	0.653
	Jul-06	1.625	3.007	2.108	0.202	0.45
	Aug-06	1.628	2.46	2.187	0.065	0.254
	Sep-06	1.528	2.169	1.829	0.026	0.161
	Oct-06	0.899	1.535	1.175	0.039	0.197
	Nov-06	0.903	1.481	1.123	0.024	0.156
	Dec-06	1.481	1.759	1.681	0.004	0.063
	Jan-07	1.569	1.756	1.613	0.002	0.045
	Feb-07	1.74	2.052	1.891	0.008	0.091
	Mar-07	2.037	2.531	2.103	0.004	0.064
	Apr-07	2.129	3.199	2.491	0.044	0.211
	May-07	2.28	3.653	3.257	0.087	0.294
	Jun-07	2.931	3.733	3.263	0.024	0.155
	Jul-07	2.171	2.949	2.534	0.051	0.227
	Aug-07	1.626	2.336	1.895	0.027	0.165
	Sep-07	1.048	1.646	1.316	0.03	0.173
	Oct-07	0.616	1.41	1.058	0.048	0.219
	Nov-07	0.64	1.144	0.777	0.006	0.075
	Dec-07	0.639	0.719	0.659	0	0.018
T9-W02						
	Jun-05	1.607	2.378	1.885	0.034	0.184
	Jul-05	1.604	2.466	2.133	0.053	0.23
	Aug-05	1.386	2.426	1.866	0.082	0.287
	Sep-05	1.419	2.356	2.014	0.048	0.218
	Oct-05	1.891	2.202	2.002	0.004	0.065
	Nov-05	1.514	2.009	1.761	0.016	0.128
	Dec-05	1.246	2.133	1.618	0.043	0.207
	Jan-06	1.651	2.22	2.013	0.014	0.118
	Feb-06	1.402	2.112	1.882	0.04	0.201
	Mar-06	1.596	2.095	1.933	0.011	0.107
	Apr-06	1.845	2.085	1.972	0.002	0.048
	May-06	1.838	2.278	1.976	0.007	0.085
	Jun-06	1.929	2.445	2.052	0.013	0.112
	Jul-06	2.146	2.585	2.361	0.013	0.113
	Aug-06	2.075	2.691	2.324	0.038	0.196
	Sep-06	2.305	2.762	2.615	0.003	0.055
	Oct-06	1.826	2.688	2.288	0.036	0.191
	Nov-06	1.415	2.541	1.824	0.078	0.28
	Dec-06	1.319	2.479	1.59	0.056	0.238
	Jan-07	1.484	2.11	1.739	0.025	0.157
	Feb-07	1.685	2.062	1.824	0.01	0.1
	Mar-07	1.774	2.112	1.981	0.007	0.081

	Apr-07	1.839	2.123	1.975	0.003	0.059
	May-07	1.932	2.314	2.11	0.012	0.108
	Jun-07	2.088	2.798	2.469	0.02	0.141
	Jul-07	2.439	2.931	2.764	0.015	0.123
	Aug-07	2.551	2.931	2.744	0.012	0.11
	Sep-07	2.45	2.755	2.653	0.005	0.073
	Oct-07	2.329	2.608	2.449	0.005	0.071
	Nov-07	2.134	2.495	2.286	0.009	0.093
	Dec-07	2.192	2.327	2.261	0.001	0.026
T9-W03						
	Aug-05	0.016	0.019	0.018	0	0
	Sep-05	0.017	0.021	0.018	0	0
	Oct-05	0.014	0.019	0.017	0	0.001
	Nov-05	0.014	0.02	0.018	0	0.002
	Dec-05	0.018	0.02	0.019	0	0.001
	Jan-06	0.018	0.019	0.019	0	0
	Feb-06	0.016	0.026	0.018	0	0.002
	Mar-06	0.018	0.029	0.02	0	0.003
	Apr-06	0.02	0.029	0.023	0	0.003
	May-06	0.026	0.031	0.029	0	0.001
	Jun-06	0.019	0.031	0.024	0	0.005
	Jul-06	0.02	0.031	0.024	0	0.004
	Aug-06	0.024	0.032	0.029	0	0.002
	Sep-06	0.02	0.04	0.027	0	0.005
	Oct-06	0.023	0.033	0.027	0	0.003
	Nov-06	0.022	0.033	0.029	0	0.003
	Dec-06	0.021	0.032	0.027	0	0.003
	Jan-07	0.021	0.035	0.026	0	0.005
	Feb-07	0.022	0.035	0.025	0	0.004
	Mar-07	0.024	0.035	0.03	0	0.003
	Apr-07	0.03	0.036	0.034	0	0.002
	May-07	0.03	0.036	0.034	0	0.001
	Jun-07	0.031	0.077	0.039	0	0.008
	Jul-07	0.021	0.037	0.028	0	0.003
	Aug-07	0.021	0.033	0.029	0	0.003
	Sep-07	0.03	0.035	0.033	0	0.001
	Oct-07	0.024	0.033	0.029	0	0.003
	Nov-07	0.024	0.035	0.03	0	0.004
	Dec-07	0.034	0.035	0.034	0	0