

Florida Onsite Sewage Nitrogen Reduction Strategies Study

Task C.21

GCREC Mound Monitoring Sample Event Report No. 4

Progress Report

October 2011



HAZEN AND SAWYER Environmental Engineers & Scientists In association with



OTIS ENVIRONMENTAL CONSULTANTS, LLC

Florida Onsite Sewage Nitrogen Reduction Strategies Study

TASK C.21 PROGRESS REPORT

GCREC Mound Monitoring Sample Event Report No. 4

Prepared for:

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FDOH Contract CORCL

October 2011

Prepared by:



In Association With:





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1.0 Background

Task C of the Florida Onsite Sewage Nitrogen Reduction Strategies Study includes monitoring at field sites in Florida to evaluate nitrogen reduction in soil and groundwater, to assess groundwater impacts from various onsite wastewater systems, and to provide data for parameter estimation, verification, and validation of models developed in Task D. The existing mound system at the Gulf Coast Research and Education Center (GCREC) is being monitored to serve as a bridge between the controlled GCREC pilot-scale testing conducted within the same type of soils and the uncontrolled monitoring at home sites in different soils throughout the state. The Task C.5 QAPP documents the objectives, monitoring framework, sample frequency and duration, and analytical methods to be used at the GCREC existing mound system site. The Task C.20 Instrumentation of GCREC Mound System and Plume Progress Reports No. 1 and 2 document the test area design, number and location of monitoring points, and preliminary sample collection and analyses.

2.0 Purpose

This sample event report documents data collected from the fourth GCREC mound monitoring and sampling event conducted September 26, 2011 through September 28, 2011. This monitoring event consisted of measurement of flowrates dosed to the system, groundwater elevation measured within the standpipe piezometers, measurement of field parameters, and collection of groundwater samples and their analyses by a NELAC certified laboratory.

3.0 Materials and Methods

3.1 Project Site

The GCREC mound is located at the University of Florida Gulf Coast Research and Education Center (GCREC) in southeast Hillsborough County, Florida. The facility is situated on 475 acres of land that were donated by Hillsborough County government. At the GCREC, wastewater from the research offices and onsite dormitories flow to an existing OSTDS. Lab waste from Facility laboratories is not directed to the OSTDS. This

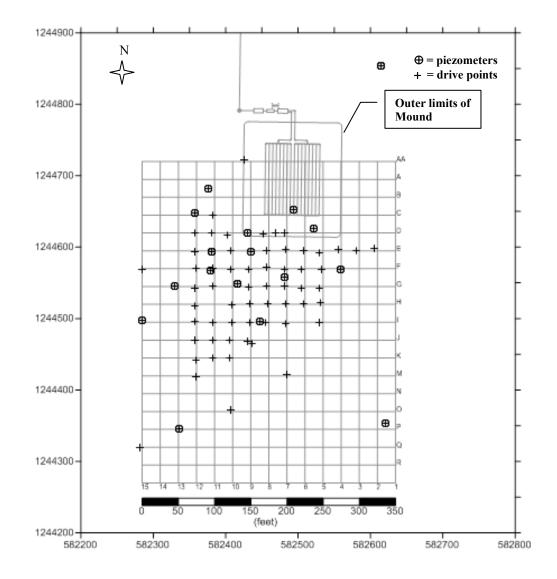
existing OSTDS consists of a pressure dosed mound system designed for 2,850 gallons per day. Two septic tanks (2,500 and 1,250 gallons) provide primary treatment followed by a dosing tank (3,000 gallons). The mound drainfield has 4,351 ft² of infiltrative area (design hydraulic loading rate of 0.65 gpd/ft²) with each half of the drainfield receiving alternating doses. As part of this project, two flow meters were installed to monitor the actual daily flow to the drainfield.

3.2 Monitoring and Sampling Locations and Identification

A sampling grid for groundwater screening was developed downgradient of the soil treatment unit as depicted in Figure 1. A 25-ft by 25-ft grid was staked then locations surveyed (x, y, and z). Transect lines AA through R are parallel to the southern edge of the mound and increase (higher letter identification) moving southward from the mound. Transect lines 1 through 15 (from east to west) are perpendicular to the southern edge of the mound. Groundwater monitoring points were installed in May, June, and November 2010. Two types of monitoring points were installed using either hand or drilling methods: drive point samplers and standpipe piezometers. Drive point samplers consist of a stainless steel drive tip and attached 1-in. long screen with a protective "umbrella" (to prevent soil entering and clogging the screen), and flexible tubing that extends to the ground surface (Figure 2). Standpipe piezometers consist of either ³/₄-in., 1¹/₄-in., or 2-in. diameter PVC with 1-ft, 4-ft, 5-ft, or 10-ft long 0.010 slot PVC screens and PVC riser extending to the ground surface (refer to the Task C QAPP and Task C.20 Progress Reports No. 1 and No. 2 for additional detail).

Each monitoring location has been assigned a unique identification indicating the type of monitoring point (DP = drive point, PZ = standpipe piezometer), grid location (self explanatory), and depth below ground surface (bottom of the drive point or well screen in feet). For example DP-AA9-14 is a drive point sampler located on the grid at AA9 at 14 ft below ground surface. A schematic of the GCREC monitoring network is shown in Figure 1. Figure 3 depicts an installed ³/₄-in. diameter PVC standpipe piezometer. A complete list of all installed drive points and standpipe piezometers is included in Appendix A.

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Figure 2 Stainless Steel Drive Point with Mesh Screen, Umbrella and Tubing



Figure 3 Installed ³/₄" Diameter PVC Standpipe Piezometer

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3.3 Operational Monitoring

Wastewater flow to the mound system is measured via two (2) flow meters located on the dose lines to the mound. The two flow meters were installed in December 2009. Prior to July 16, 2010, the GCREC air conditioning systems were discharging considerable quantities of A/C condensate to the sewer. The PNRS II test facility programmable logic controller (PLC) records flow data from these meters. Appendix B summarizes the recorded wastewater flow data for the GCREC mound pumps since PNRS II test facility start-up.

In addition, a weather station is located at the GCREC facility with weather conditions recorded every minute and stored on a private website. Table 1 provides the recorded meteorological data daily averages leading up to and during the sample event. Appendix C provides summary tables of the average monthly recorded meteorological data.

Date	Temp Avg 60 cm (°F)	Temp Avg 10 m (°F)	Temp Soil Avg -10 cm (°F)	Dewpoint Avg 2m (°F)	Relative Humidity Avg 2m (%)	Rain Total 2m (in)	Wind Speed Avg 10m (mph)	ET (in)			
September 21, 2011	80.44	80.54	81.48	74.34	83	0	6.24	0.15			
September 22, 2011	78.38	78.38	81.47	74.50	88	0.14	5.80	0.12			
September 23, 2011	78.49	78.70	81.08	74.25	88	0.54	4.00	0.14			
September 24, 2011	79.57	79.74	80.70	74.06	84	0	3.51	0.14			
September 25, 2011	75.72	75.96	79.82	73.06	91	0.42	3.52	0.09			
September 26, 2011	76.19	76.00	79.30	73.57	92	0.06	6.33	0.11			
September 27, 2011	78.42	78.43	79.75	73.63	86	0	4.91	0.14			
September 28, 2011	79.12	79.35	79.74	73.22	83	0	4.50	0.14			

 Table 1

 Meteorological Data Daily Averages Measured September 21, 2011 – September 28, 2011

3.4 Soil Characteristics

During the instrumentation of the mound, soil cores were collected to the spodic layer at four locations (CD6.5, E9, F4, and west side of the mound [near A9]), and at one location (G10) a continuous soil core was collected to the confining Hawthorn clay layer. The shallow soil cores will provide information on vadose zone properties, and the deep

soil core will provide a general idea of the soil properties within the aquifer. The information will be used when determining appropriate parameters to be used in model development. During the installation of monitoring points during the summer of 2010, a prominent spodic layer was discovered at approximately 4-6 feet below the ground surface. At several locations the top elevation of this layer was determined with handheld methods during this time. Attempts were also made to determine the top and the thickness of the spodic layer at the remaining monitoring well locations during the November drilling event. Whenever this proved impossible, estimations were made.

3.5 Groundwater Elevation Measurements

Groundwater level measurements are used to determine hydraulic gradients, directions of flow, rates of flow, locations of groundwater recharge and discharge, the amount of water in storage, the change in storage over time, and aquifer hydraulic characteristics. Groundwater levels were measured using a hand-cranked steel tape graduated in feet. Groundwater elevations have been monitored frequently at the site to determine the direction and gradient of flow.

3.6 Water Quality Sample Collection and Analyses

Groundwater and septic tank effluent (STE) were collected September 26, 2011 through September 28, 2011 for water quality analysis. A peristaltic pump was used to collect STE directly into the analysis-specific container supplied by the analytical laboratory. Samples were collected from the existing lift station, which supplies STE to the GCREC mound. Groundwater samples were obtained using a peristaltic pump, which was either attached directly to the drive point tubing or to dedicated standpipe piezometer tubing. Samples were collected into the analysis-specific containers after sufficient purging had occurred. The analysis-specific containers were supplied by the analytical laboratory and contained appropriate preservatives. The analysis-specific containers were labeled, placed in coolers and transported on ice to the analytical laboratory. Each sample container was secured in packing material as appropriate to prevent damage and spills, and was recorded on chain-of-custody forms, provided in Appendix D, supplied by the laboratory.

In addition, equipment blank, field blank, and field sample duplicates were taken. The equipment blank was collected by pumping deionized water (provided by the laboratory) through the cleaned pump tubing. These samples were then analyzed for the same parameters as the GW samples. One field blank was collected by filling sample containers with deionized water that had been transported from the laboratory into the

field along with other sample containers. The field sample duplicates were collected immediately subsequent to the regular samples.

Field parameters (pH, specific conductance, temperature (Temp), and dissolved oxygen (DO)) were measured using portable electronic probes with probe tips placed in a flowcell device as groundwater was being pumped. All samples were analyzed by the laboratory for total alkalinity, chloride, total Kjeldahl nitrogen (TKN-N), ammonia nitrogen (NH₃-N), and nitrate/nitrite nitrogen (NO_X-N). Additionally, at some of the locations with elevated conductivity in previous preliminary sampling, chemical oxygen demand, total phosphorus (TP), anions, cations, total organic carbon (TOC) and dissolved organic carbon (DOC) were included. All analyses were performed by an independent and fully certified analytical laboratory (Southern Analytical Laboratory). Table 2 lists the analytical parameters, analytical methods, and detection limits for these analyses.

Analytical Parameters, Method of Analysis, and Detection Limits									
Analytical Parameter	Method of Analysis	Laboratory Detection Limit (mg/L)							
Total Alkalinity as CaCO ₃	SM 2320B	2 mg/L							
Chemical Oxygen Demand (COD)	EPA 410.4	10 mg/L							
Total Kjeldahl Nitrogen (TKN-N)	EPA 351.2	0.05 mg/L							
Ammonia Nitrogen (NH ₃ -N)	EPA 350.1	0.005 mg/L							
Nitrate/Nitrite Nitrogen (NO _X -N)	EPA 300.0	0.02 mg/L							
Total Phosphorus	SM 4500P-E	0.01 mg/L							
Dissolved Organic Carbon (DOC)	SM 5310B	0.5 mg/L							
Total Organic Carbon (TOC)	SM 5310B	0.5 mg/L							
Anions									
Fluoride	EPA 300.0	0.01 mg/L							
Chloride	EPA 300.0	0.05 mg/L							
Nitrate-N	EPA 300.0	0.01 mg/L							
Nitrite-N	EPA 300.0	0.01 mg/L							
Orthophosphate-P	EPA 300.0	0.01 mg/L							
Sulfate	EPA 300.0	0.20 mg/L							
Cations									
Boron	EPA 200.7	0.05 mg/L							
Calcium	EPA 200.7	0.01 mg/L							
Iron	EPA 200.7	0.02 mg/L							
Magnesium	EPA 200.7	0.01 mg/L							
Manganese	EPA 200.7	0.001 mg/L							
Potassium	EPA 200.7	0.01 mg/L							
Sodium	EPA 200.7	0.01 mg/L							

Table 2 alvtical Parameters Method of Analysis and Detection Limits

4.0 Results

Once analytical results are obtained from the laboratory, GCREC Mound Data Summary Report No. 4 (Task C22) will be prepared describing the results from this sampling event.

4.1 Groundwater Flow, Gradient and Velocity

Groundwater level monitoring has been conducted over a larger area since additional piezometers were installed in November 2010. Although the groundwater elevations have been found to fluctuate due to periods of dry weather and/or heavy precipitation, continuous monitoring of the groundwater elevations indicates that the general flow-path does not change. Table 3 shows the actual measured water levels during this sample event.

Location	Identification	Water Table Elevation (ft) September 26, 2011	Water Table Elevation (ft) October 10, 2011
Bkgd, North	PZ01-BKG-9		124.71
PQ1.75	PZ02-P02-9		120.23
H11	PZ03-H11-6	120.75	121.17
Bkgd, North	PZ04-BKG-9	122.99	123.84
Bkgd, East	PZ05-BKG-9		123.09
Bkgd, NW	PZ06-BKG-12		
D5.5	PZ07-D05-7	121.63	122.47
FG7	PZ08-FG7-6		121.85
18.5	PZ09-108-5		
CD6.5	PZ10-CD6-13		122.61
E9	PZ11-E09-10	121.21	121.85
F4	PZ13-F04-8		122.29
G13	PZ14-G13-7	121.36	120.39
A11	PZ15-A11-6	120.89	121.91
C12	PZ16-C12-28	119.39	121.31
115	PZ17-I15-26	119.38	
R12	PZ18-R12-26	120.7	119.85
G9.75	PZ19-G10-26	120.76	121.25
G9.75	PZ20-G10-15	120.72	121.29
E11	PZ21-E11-26		121.23
E11	PZ22-E11-15		121.22
D9	PZ23-D09-27	122.71	121.82
Bkgd, North	PZ24-BKG-26	122.04	123.47
AA9	PZ25-AA9-13		122.9
	PZ26-EF2-8		
	PZ27		121.96
	PZ28		121.68
	PZ29		125.14
	PZ30		123.41

 Table 3

 Standpipe Piezometer Measured Groundwater Level

Notes: PZ12 abandoned; If blank - no data was collected

4.2 Water Quality Analyses

4.2.1 Field Parameters

Field parameters (temperature, pH, dissolved oxygen (DO), and specific conductivity) were measured at all the sampling locations during the September 2011 sampling event. The complete field parameter data set is included in Appendix E.



Appendix A: GCREC Mound Sample Identification

	Table A.1 GCREC Mound Sample Identification								
	Grid Location	Sample Identification	Notes	Bottom Elevation (ft)					
1	Lift Station	STE PumpTank	Wastewater Sample	N/A					
2	Bkgd, North	PZ01-BKG-9	1 1/4" Standpipe Piezometer, 4' screen	120.33					
3	Bkgd, North	PZ04-BKG-9	1 1/4" Standpipe Piezometer, 4' screen	118.66					
4	Bkgd, North	PZ24-BKG-26	2" Standpipe Piezometer, 5' screen	101.41					
5	Bkgd, East	PZ05-BKG-9	1 1/4" Standpipe Piezometer, 4' screen	117.39					
6	Bkgd, NW	PZ06-BKG-12	1 1/4" Standpipe Piezometer, 4' screen	118.10					
7	AA9	DP-AA9-14	SST Drive Point	110.68					
8	AA9	DP-AA9-22	SST Drive Point	103.08					
9	AA9	DP-AA9-27	SST Drive Point	98.28					
10	A6.5	PZ25-A6.5-10	3/4" Standpipe Piezometer, 3.5' screen	119.62					
11	A11	PZ15-A11-6	3/4" Standpipe Piezometer, 5' screen	118.84					
12	CD6.5	PZ10-CD6-13	3/4" Standpipe Piezometer, 5' screen	116.03					
13	C11	DP-C11-8	SST Drive Point	116.18					
14	C12	PZ16-C12-28	3/4" Standpipe Piezometer, 1' screen	94.75					
15	D5.5	PZ07-D05-7	1 1/4" Standpipe Piezometer, 4' screen	118.89					
16	D7	DP-D07-5	SST Drive Point	120.82					
17	D7	DP-D07-7	SST Drive Point	118.86					
18	D7	DP-D07-9	SST Drive Point	116.79					
19	D7.5	DP-D7.5-14	SST Drive Point	111.24					
20	D7.5	DP-D7.5-20	SST Drive Point	105.31					
21	D7.5	DP-D7.5-26	SST Drive Point	99.24					
22	D8	DP-D08-9	SST Drive Point	116.31					
23	D9	DP-D09-6	SST Drive Point	118.35					
24	D9	DP-D09-8	SST Drive Point	116.45					
25	D9	DP-D09-15	SST Drive Point, taped to PZ riser	109.45					
26	D9	DP-D09-21	SST Drive Point, taped to PZ riser	103.45					
27	D9	DP-D09-27	SST Drive Point, taped to PZ riser	97.45					
28	D9	PZ23-D09-27	2" Standpipe Piezometer, 5' screen	97.41					
29	D10	DP-D10-8	SST Drive Point	116.31					

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	Table A.1 GCREC Mound Sample Identification								
	Grid Location	Sample Identification	Notes	Bottom Elevation (ft)					
30	D11	DP-D11-11	SST Drive Point	113.29					
31	D12	DP-D12-11	SST Drive Point	112.46					
32	E2	DP-E02-6	SST Drive Point	119.55					
33	E2	DP-E02-8	SST Drive Point	117.55					
34	E3	DP-E03-10	SST Drive Point	115.26					
35	E4	DP-E04-6	SST Drive Point	119.71					
36	E4	DP-E04-8	SST Drive Point	117.71					
37	E5	DP-E05-6	SST Drive Point	118.58					
38	E6	DP-E06-6	SST Drive Point	118.86					
39	E6	DP-E06-8	SST Drive Point	116.86					
40	E7	DP-E07-10	SST Drive Point	114.74					
41	E8	DP-E08-6	SST Drive Point	118.41					
42	E8	DP-E08-8	SST Drive Point	116.41					
43	E9	PZ11-E09-10	3/4" Standpipe Piezometer, 5' screen	114.56					
44	E10	DP-E10-6	SST Drive Point	118.21					
45	E11	DP-E11-12	SST Drive Point	111.98					
46	E11	PZ21-E11-26	2" Standpipe Piezometer, 5' screen	111.98					
47	E11	PZ22-E11-15	3/4" Standpipe Piezometer, 10' screen	111.98					
48	E12	DP-E12-10	SST Drive Point	113.22					
49	E12	DP-E12-15	SST Drive Point	107.75					
50	E12	DP-E12-22	SST Drive Point	101.65					
51	E12	DP-E12-28	SST Drive Point	95.80					
52	F3	DP-F03-8	SST Drive Point	116.44					
53	F4	PZ13-F04-8	3/4" Standpipe Piezometer, 5' screen	116.31					
54	F4	DP-F04-17	SST Drive Point	108.06					
55	F4	DP-F04-22	SST Drive Point	102.95					
56	F4	DP-F04-32	SST Drive Point	92.85					
57	F5	DP-F05-5	SST Drive Point	119.94					
58	F5	DP-F05-31	SST Drive Point	93.89					
59	F6	DP-F06-10	SST Drive Point	115.03					
60	F7	DP-F07-6	SST Drive Point	118.25					
61	FG7	PZ08-FG7-6	1 1/4" Standpipe Piezometer, 4' screen	118.25					

Table A.1							
GCREC Mound Sample Identification							

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	Table A.1 GCREC Mound Sample Identification								
	Grid Location	Sample Identification	Notes	Bottom Elevation (ft)					
62	F8	DP-F08-14	SST Drive Point	110.43					
63	F8	DP-F08-20	SST Drive Point	103.96					
64	F8	DP-F08-28	SST Drive Point	96.18					
65	F9	DP-F09-5	SST Drive Point	118.98					
66	F10	DP-F10-11	SST Drive Point	112.93					
67	F11	DP-F11-11	SST Drive Point	112.68					
68	F11	DP-F11-15	SST Drive Point	108.88					
69	F11	DP-F11-18	SST Drive Point	105.73					
70	F11	DP-F11-21	SST Drive Point	102.93					
71	F11	DP-F11-24	SST Drive Point	99.88					
72	F11	DP-F11-27	SST Drive Point	96.73					
73	F12	DP-F12-10	SST Drive Point	112.77					
74	F15	DP-F15-14	SST Drive Point	108.81					
75	F15	DP-F15-20	SST Drive Point	102.84					
76	F15	DP-F15-26	SST Drive Point	97.00					
77	G5	DP-G05-6	SST Drive Point	118.51					
78	G6	DP-G06-7	SST Drive Point	116.95					
79	G7	DP-G07-13	SST Drive Point	111.63					
80	G7	DP-G07-15	SST Drive Point	109.56					
81	G7	DP-G07-17	SST Drive Point	106.76					
82	G7	DP-G07-21	SST Drive Point	103.31					
83	G7	DP-G07-24	SST Drive Point	100.51					
84	G7	DP-G07-27	SST Drive Point	97.61					
85	G8	DP-G08-5	SST Drive Point	119.54					
86	G9	DP-G09-11	SST Drive Point	112.99					
87	G9.75	PZ19-G10-26	2" Standpipe Piezometer, 5' screen	97.55					
88	G9.75	PZ20-G10-15	3/4" Standpipe Piezometer, 10' screen	108.50					
89	G11	DP-G11-8	SST Drive Point	115.27					
90	G12	DP-G12-9	SST Drive Point	114.44					
91	G12	DP-G12-15	SST Drive Point	108.37					
92	G12	DP-G12-18	SST Drive Point	105.27					
93	G12	DP-G12-21	SST Drive Point	102.32					

Table A.1

Table A.1 GCREC Mound Sample Identification								
	Grid Location	Sample Identification	Notes	Bottom Elevation (ft)				
94	G12	DP-G12-24	SST Drive Point	99.72				
95	G12	DP-G12-27	SST Drive Point	96.37				
96	G13	PZ14-G13-7	1 1/4" Standpipe Piezometer, 4' screen	115.11				
97	H5	DP-H05-7	SST Drive Point	117.13				
98	H6	DP-H06-7	SST Drive Point	117.33				
99	H7	DP-H07-8	SST Drive Point	116.32				
100	H8	DP-H08-10	SST Drive Point	113.84				
101	Н9	DP-H09-12	SST Drive Point	111.74				
102	H10	DP-H10-11	SST Drive Point	112.68				
103	H11	PZ03-H11-6	1 1/4" Standpipe Piezometer, 4' screen	121.47				
104	H12	DP-H12-5	SST Drive Point	118.01				
105	16	DP-106-14	SST Drive Point	110.24				
106	16	DP-106-20	SST Drive Point	103.99				
107	16	DP-106-26	SST Drive Point	97.94				
108	17	DP-107-8	SST Drive Point	115.67				
109	18	DP-108-5	SST Drive Point	118.56				
110	18.5	PZ09-108-5	1 1/4" Standpipe Piezometer, 4' screen	118.93				
111	19	DP-109-11	SST Drive Point	112.96				
112	110	DP-I10-6	SST Drive Point	117.72				
113	111	DP-I11-10	SST Drive Point	113.50				
114	112	DP-I12-6	SST Drive Point	117.54				
115	115	PZ17-I15-26	3/4" Standpipe Piezometer,1' screen	97.09				
116	J8	DP-J08-6	SST Drive Point	118.02				
117	J9	DP-J09-12	SST Drive Point	112.05				
118	J9	DP-J09-14	SST Drive Point	109.61				
119	J9	DP-J09-20	SST Drive Point	103.36				
120	J9	DP-J09-26	SST Drive Point	97.11				
121	J10	DP-J10-6	SST Drive Point	117.32				
122	J11	DP-J11-12	SST Drive Point	111.99				
123	J12	DP-J12-13	SST Drive Point	110.44				
124	J12	DP-J12-15	SST Drive Point	108.26				
125	J12	DP-J12-20	SST Drive Point	102.61				

Table A 1

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	Table A.1 GCREC Mound Sample Identification								
	Grid Location	Sample Identification	Notes	Bottom Elevation (ft)					
126	J12	DP-J12-27	SST Drive Point	96.36					
127	K10	DP-K10-7	SST Drive Point	116.41					
128	K11	DP-K11-13	SST Drive Point	110.43					
129	K12	DP-K12-5	SST Drive Point	117.68					
130	M7	DP-M07-15	SST Drive Point	108.98					
131	M7	DP-M07-21	SST Drive Point	102.65					
132	M7	DP-M07-27	SST Drive Point	96.95					
133	M12	DP-M12-10	SST Drive Point	112.79					
134	N12	DP-N12-14	SST Drive Point	108.40					
135	N12	DP-N12-18	SST Drive Point	104.75					
136	N12	DP-N12-21	SST Drive Point	101.73					
137	N12	DP-N12-24	SST Drive Point	98.75					
138	N12	DP-N12-27	SST Drive Point	95.63					
139	O10	DP-010-12	SST Drive Point	110.71					
140	O10	DP-010-18	SST Drive Point	104.56					
141	O10	DP-010-24	SST Drive Point	98.56					
142	PQ1.75	PZ02-P02-9	1 1/4" Standpipe Piezometer, 4' screen	115.24					
143	Q15	DP-Q15-15	SST Drive Point	108.20					
144	Q15	DP-Q15-21	SST Drive Point	102.29					
145	Q15	DP-Q15-26	SST Drive Point	96.40					
146	R12	PZ18-R12-26	3/4" Standpipe Piezometer, 1' screen	96.56					

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Appendix B: GCREC Mound Wastewater Flow Data

GCREC Mound Metered Wastewater Flow Data										
Flow Meter Totalized Pump 1 to GCREC Mound (avg. gpd)	Flow Meter Totalized Pump 2 to GCREC Mound (avg. gpd)	Total Recorded Flow (avg. gpd)								
ate Diversion										
1,650	591	2,241								
e Diversion	•									
1,147	1,463	2,610								
	GCREC Mound Metered Flow Meter Totalized Pump 1 to GCREC Mound (avg. gpd) sate Diversion 1,650 te Diversion	Flow Meter Totalized Pump 1 to GCREC Mound (avg. gpd)Flow Meter Totalized Pump 2 to GCREC Mound (avg. gpd)sate Diversion1,650591te Diversion591								

outilitially of Daily Wastewater Hows (i Lo Recorded)										
	Date Range	Average Recorded Flow	Std. Dev.	MIN	MAX					
	Date Mange	(gpd)	Stu. Dev.	(gpd)	(gpd)					
Before A/C Condensate Diversion										
Pump 1 to Mound		5,422	1,565	3,013	9,117					
Pump 2 to Mound	6/14/10 – 7/16/10	-	-	-	-					
Sum of Both Pumps		5,422	1,565	3,013	9,117					
After A/C Condensa	te Diversion									
Pump 1 to Mound		1,186	749	0	3,548					
Pump 2 to Mound	7/16/10 – 10/05/11	1,462	925	0	5,326					
Sum of Both Pumps		2,554	1,207	584	5,888					

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October 2011

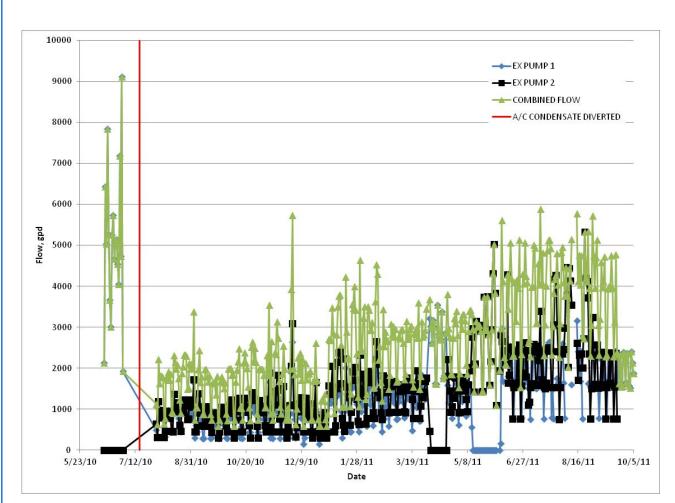


Figure B.1 PLC Recorded Daily Wastewater Flows (6/14/10 – 10/05/11)

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FLORIDA DEPARTMENT OF HEALTH GCREC MOUND MONITORING SAMPLE EVENT REPORT NO. 4 PAGE B-2 HAZEN AND SAWYER, P.C.



Appendix C: GCREC Weather Station Data

FLORIDA ONSITE SEWAGE NITROGEN REDUCTION STRATEGIES STUDY GCREC MOUND MONITORING SAMPLE EVENT REPORT NO. 4

PAGE C-1 HAZEN AND SAWYER, P.C.

Period	60cm T avg (°F)	60cm T min (°F)	60cm T max (°F)	Tsoil avg - 10cm (°F)	Tsoil min(avg) -10cm (°F)	Tsoil max(avg) -10cm (°F)	2m DewPt avg (°F)	Relative Humidity avg 2m (%)	2m Rain total (in)	2m Rain max over 15min (in)	10m Wind avg (mph)	10m Wind max (mph)	WDir avg 10m (deg)	ET avg (in)
Jan-10	53.10	23.97	82.38	59.67	51.13	66.63	44.57	76	3.19	0.57	7.60	32.80	348	0.05
Feb-10	53.75	30.84	78.96	59.86	54.32	65.75	43.97	74	2.22	0.47	7.85	36.13	348	0.07
Mar-10	59.24	32.89	82.26	62.09	55.31	68.11	48.75	73	6.15	0.44	8.25	38.27	289	0.10
Apr-10	69.78	44.74	88.54	70.78	63.00	75.72	59.50	74	2.79	0.52	7.46	44.17	94	0.15
May-10	77.78	62.37	93.63	79.11	73.17	83.97	68.62	77	0.89	0.13	6.75	31.10	126	0.18
Jun-10	80.91	65.84	99.09	82.32	76.69	88.63	72.87	80	8.25	1.30	5.85	50.47	116	0.19
Jul-10	80.67	68.00	96.21	82.58	77.49	87.03	74.05	82	7.30	0.48	5.95	35.37	103	0.18
Aug-10	80.54	70.59	96.87	82.63	79.11	87.85	75.03	85	13.51	1.74	5.78	43.53	154	0.16
Sep-10	78.91	63.43	95.88	80.83	78.17	83.39	72.11	82	3.42	0.55	6.33	41.60	84	0.16
Oct-10	71.98	51.24	93.00	74.97	71.83	78.62	61.55	73	0.01	0.01	5.56	32.00	31	0.11
Nov-10	65.75	39.95	86.77	69.47	64.33	75.34	56.97	76	1.24	0.16	6.52	30.53	55	0.07
Dec-10	50.64	22.86	78.37	60.71	54.61	71.33	39.83	71	0.50	0.05	7.33	36.77	354	0.04
Jan-11	57.65	29.23	79.54	61.34	56.86	65.07	49.01	77	4.13	0.49	7.08	44.07	319	0.06
Feb-11	62.95	34.76	85.21	63.94	57.76	69.58	54.40	78	0.47	0.07	6.38	35.57	75	0.09
Mar-11	66.56	39.12	88.66	68.35	61.45	73.83	56.59	75	6.89	0.47	7.41	44.13	82	0.12
Apr-11	73.3	46.33	93.02	74.09	66.49	79.99	62.81	73	0.94	0.31	6.67	26.67	2877	0.17
May-11	76.07	50.68	96.04	78.67	73.58	84.22	64.22	71	1.05	0.28	6.61	44.47	2976	0.19
Jun-11	79.5	63.07	98.83	81.83	76.96	87.12	69.97	76	4.86	0.43	6.08	37.53	2880	0.18
Jul-11	79.99	67.69	95.81	81.75	76.95	86.11	73.58	83	9.1	1.1	4.94	34.03	2976	0.17
Aug-11	80.86	70.93	96.66	83.11	79.95	86.43	75.37	84	8.78	0.7	5.49	44.5	2964	0.16
Sep-11	78.55	65.46	94.33	80.78	78.64	83.43	72.56	83	2.5	0.29	5.24	33.17	2877	0.14

Table C.1Monthly Recorded Meteorological Data

FLORIDA ONSITE SEWAGE NITROGEN REDUCTION STRATEGIES STUDY GCREC MOUND MONITORING SAMPLE EVENT REPORT NO. 4

PAGE C-2 HAZEN AND SAWYER, P.C.



Appendix D: Chain of Custody Forms

FLORIDA ONSITE SEWAGE NITROGEN REDUCTION STRATEGIES STUDY GCREC MOUND MONITORING SAMPLE EVENT REPORT NO. 4

PAGE D-1 HAZEN AND SAWYER, P.C.

SOUTHERN ANALYTICAL LABORATORIES, INC. 110 BAYVIEW BOULEVARD, OLDSMAR, FL. 34677 813-865-1844 fex 813-865-2218

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Project Name / Location	9														
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100AYVEWBOULEVAPD, OLDSMAR, FL 34677 813-855-1844 fax 813-855-2216		813-855-1844 fax 813-855-2218	844 fax 81	3-855-22	8										
Client Name									<u>ŏ</u>	Contact / Phone:	ē			:	
	Hazen	Hazen and Sawyer							+-						
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SAL Project No.

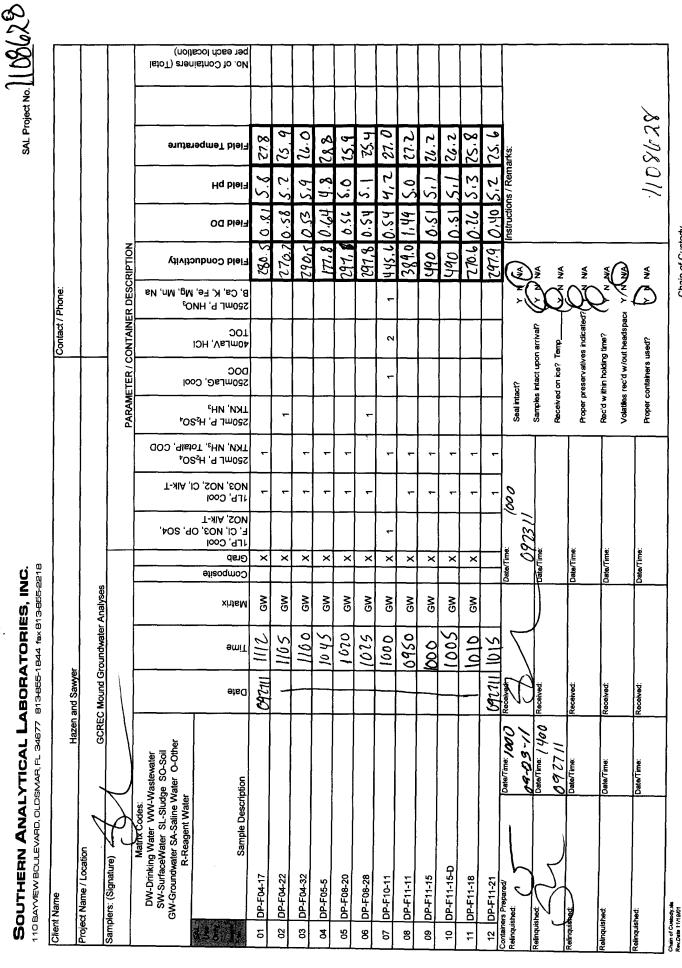
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Project 1	Project Name / Location																	
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SOUTHERN ANALYTICAL LABORATORIES, INC. 110 BAYVIEW BOLLEVARD, OLDSMAR, FL 34677 B134655-1844 fax 8134655-2218

SAL Project No. 1109624

Client Name											Contact / Phone:	one:) 			
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SOUTHERN ANALYTICAL LABORATORIES, INC.

SAL Project No. 11 08644

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6	DP-G07-13		092711	1135	GW	×		4		-			-	2239	0.79	Siz	29,8	
02	DP-G07-15			1150	GW	×		~	-		-	`		753.7 (O.68	۲.۲	20.7	
03	DP-G07-17			1200	MO	×		-		-			•	299.6 1	0,38	4.8	0'72	
8	DP-G07-21			1205	δ	×	-		-		-	~	-	15.42	0.37	4 / 6	25.3	
05	DP-G07-24			1215	GW	×		-		-				1 9'66 1	0.64	4.7	9 'SZ	
8	DP-G07-27			1225	GW	×		+		1				3 00,3	17	4.7	7S.7	
20	DP-G08-5			1155	ω	×	٦		٢		1	2	1	13.8	1.03	5,7	1.82	
80	DP-G09-11			11 45	GW	×		1	+					12.22	1.39	5.6	28,3	
60	DP-G11-8			1135	GW	×		-	1				·'		0.68	1'r 1	2.17	
10	DP-G12-15			1050	GW	×	1				1	2	+	4 S .0 L	0.37	S.1	76.2	
7	DP-G12-18			1105	GW	×	٦		-		۲	2	-	1 h'h92	0.56	5.3	<i>8</i> .52	
12	DP-G12-21		111790	1115	ΒW	×		٣	+					5	94.0	S.S	۲۶.5	
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	Z	11220						;		Received	Received on ice? Temp	due	Ź	NA NA				
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		Deto (Time:	Doceited:			Date Time				Rec'd w it	Rec'd w ithin holding time?	time?	Ć	MA MA				
Deusinbuikeu	ushed.				<u> </u>					Volatijes r	ec'd w/out	Volaties rec'd w /out headspace	$\mathcal{Y}($					
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Chain of Custody

Chain of Cuetody.xls Rev.Date 11/19/01

SOUTHERN ANALYTICAL LABORATORIES, INC.

110 BAYNEW BOULEVARD, OLDSMAR, FL 34677 B13-855-1844 fax B13-855-2218

Client Name										Cont	Contact / Phone:	ë				
	Hazen a	Hazen and Sawyer								+						
Project Name / Location																
V	GCREC	Mound Gr	GCREC Mound Groundwater Analyses	Analyses						_						
Samplers: (Signature)		(· ·			٩d	RAMETE	R / CONT	AINER DE	PARAMETER / CONTAINER DESCRIPTION	z			
Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	Wastewater Ige SO-Soil Nater O-Other		1		1	,402,94		otaip, COD		l:	NO ³	, Mg, Mn, Va			erature	ainers (Total
Sample Description	ription	Date	əmiT	xintsM	Composite Grab	1LP, Cool F, Cl, NO3, C NO2, Alk-T	360ml B H NO3' NO3' C	520 ^{שר} 6' H ³ בנאא' אל ^{3י} דע בנסשר 6' H ⁵	250mLaG, C TKN, NH ₃	40mLaV, HC DOC	250mL P, HI	B, Ca, K, Fe, Field Condu	Field DO	Hq bleif	oqmə⊺ bləi'l	No. of Conta Per each loc
13 DP-G12-24		09711	1120	ß	×		-					301.8	0.38	2.2	75.4	
-			1125	GW	×		-	-				289.3	5	Sil	75.3	
			IOUS	GW	×		-	-				363.6	5 3'rb	5.0	8.45	
T																
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Containers Prepared/ Relinquished:	Date/Time: 200 9/23\	Received:		/	Date/Time	P 23/1	0721		Seal intact?		× (Instruction	Instructions / Remarks:	arks:	
Relinquis heat	non	Received			Date/Time			<i>"</i>	samples m deceived o	Samples intact upon arrivar/ Received on ice? Temp		≨ ≨ ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
Retinquished.	Date/Time:	Received:			Date/Time:				roper pres	Proper preservatives indicated	dicated	<u>ء</u> ک				
Reinquisted:	Date/Time:	Received:			Date/Time				tec'd withi /olatiles re	Rec'd w ithin holding time? Volatiles rec'd w/out headspace	adspace	\$ \$				
Reinquished:	Date/Time:	Received:			Date/Time:				roper cont	Proper containers used?		ANA		1108	1108044	
Chain of Cuetody vie Rev.Deta 11/19/01												Chain of Custody	ustody			

SOUTHERN ANALYTICAL LABORATORIES, INC. 110BAMEWBOULEVARD, OLDSMAR, FL 34677 B134656-1844 fax 8134656-2218

Client Name	Haten an	Hazen and Sawver								LO CO	Contact / Phone:	Je:					
Deviced Name / Location																	
	GCRECI	Mound Gro	GCREC Mound Groundwater Analyses	Analyses	ľ												
Samplers: (Signature)								æ	ARAMET	PARAMETER / CONTAINER DESCRIPTION	TAINER D	ESCRIPT	NOI				
Marrix Codes: DW-Drinking Water Xcodes: SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	water 60-Soil 0-Other					ʻ v osʻdo		otalP, COD				ы , nM , gM , t	(1141)00			erature	iners (Total
Sample Description		∋tsC	əmiT	XittsM	Composite Grab	NOS' AIK-T F, CI, NO3, C 1LP, Cool	NO3' NO3' (1Fb' Cool		דאא, אוץ, ב60mL P, H	40mLaV, H(DOC 250mLaG, (250ml P, H TOC	B, Ca, K, Fé		Field DO		qməT blai7	No. of Conts
		047.61	0735	GW	×		-	1				2	46.3 cl.	.24 S	2 8,	22.S	
_		>	SUTUS	ß	×			-				고	247.9 D.	5 hb.0	2	25.9	
71																	
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Containers Prepared Da Relinquished:	Date/Time: 1318	Received			Date/Time:	913	8181.		Seal intact?	LI:		N Z X		tructions	Instructions / Remarks:	6	
Relinquished	Date/Time: 14/5	Received:			Date/Tim	Date/Time:			Samples Received	Samples intact upon arrival? Received on ice? Temp							
Da Relinquished:	Off Time:	Received:			Date/Time:	į		T	Proper pr	Proper preservatives indicated?	ndicated?	§ S					
Refinquished:	Date/Time:	Received:			Date/Time:	ģ			Rec'd wi Volatiles	Rec'd w Ithin holding time? Volatiles rec'd w/out headspace	ne? (₹ ₹ ₹ , (₹)					
Da Relinquished:	Date/Time:	Received:			Date/Time:	iej			Proper c.	Proper containers used?	¢.	Y N NA		1	1081	1108045	

Chain of Custody

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SAL Project No. 1100045

SOUTHERN ANALYTICAL LABORATORIES, INC. 110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 B13465-1844 fax B13465-2218

SAL Project No. 110864 6

Client Name	lame											Contact / Phone:	hone:						
Project	Project Name / Location	PIATEL	nazeri aru sawyer								$\left \right $								Τ
		, GCREC	Mound Gr	GCREC Mound Groundwater	Analyses														
Sample	Samplers: (Signature)	AA							-	PARAMETER / CONTAINER DESCRIPTION	TER / CO	NTAINEF	DESCR	PTION					
	Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	/astewater je SO-Soil ater O-Other					ʻ≁OSʻd0	сі, Аік-Т	ODD, 'Alisto	*0S			, nM , QM , SU , nM , QM ,	nctivity			פופנערפ	iners (Total	
	Sample Description	ption	Date	əmiT	xinteM	Composite Grab	102, Alk-T F, CI, NO3, (12, Cool	иОЗ, ИО2, (1LP, Cool	דאא, או _ז , ד 250mL P, H	דאא, אא _ז 250mL P, H	DOC S20mLaG, C	40mLaV, HC TOC	B, Ca, K, Fe 250mL P, Hi	Pield Cond	Field DO	Hq bləi7	iqməT blaiT	No. of Conta	ber each loc
0	DP-106-14		072811	0750	ß	×	-		-		1	2	-	2/9.5 0	0.53	5.1	25.4		
1	DP-106-20		-	0805	ß	×	-		.		1	2	+	3 30.3 0	6.39	5.1	24.8		
	DP-106-26		-	0840	GW	×		-		-				244.90	0.34	5.0	24.6		
	DP-112-6		_	0440	ВW	×		۲	-		_		<u> </u>	95.i (0.56	5.1	2ú. 2		
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Relinquished:	shed:	Date/Time: 14/5	Received:		>	Date/Tir				Raceived	Sainples madd upoil and Received on ice? Temp			<u> </u>					
Relinquished:	shedd	Date/Time:	Received:			Date/Time:	le:			Proper pr	Proper preservatives indicated? 🚫 N NA	s indicated	× Ø						
Relinquished:	:bed:	Date/Time:	Received:			Date/Time:	ë			Rec'd w it Volatiles	Rec'd w ithin holding time? Volatiles rec'd w /out headspace	time? theadspace		\$ (3					
Relinquished:	ished:	Date/Time:	Received:			Date/Time:	ne:			Proper cc	Proper containers used?	sed?	vn v Ø	۲,		1108046	,46		
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SOUTHERN ANALYTICAL LABORATORIES, INC. 110 BAYVIEW BOLLEVARD, OLDSMAR, FL 34677 8134655-1844 fax 8134655-218

SAL Project No. 1100UM

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	Client Name		30.5								Contact	Contact / Phote:						
	Project Name / Location	Lazen ar	Hazen and Sawyer															
	10	GCRECI	Mound Gro	GCREC Mound Groundwater Analyses	nalyses													
	Samplers: (Signature)						1		PAR	AMETER	PARAMETER / CONTAINER DESCRIPTION	IER DESC	RIPTION			ŀ	Ī	
	Matrix Codes: DW-Drinking Water VW-Wastewater SW-Surface/Water SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	ewater SO-Soil r O-Other					'+08 ' 40	*OS ^z	SO₄	1000	cı	eN ,nM ,eM ,e	Inctivity			perature		isiners (Total sation)
	Samole Description		Date	əmiT	XitteM	Composite Grab	1LP, Cool NO2, Alk-T F, CI, NO3,	250ml P, H NO3, NO2,	1 'a 1wosz	250mlaG, (250mlaG, (тос 40mLaV, H тос	B' C ^{שי} K' בי 520שר ה' ו-	pnoO bleif	Field DO	Hq bisif	məT bləif		No. of Cont No. of Cont
	01 DP-108-6		N2(I	DEV	МЭ	×]				1	
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				0755 BI		×		-	-				170.9	0.86	S Ó	212		
				0800	NO	×		+					-210.5	0.41	>0	7.92		
			118/00	18	Ŋ	×		1					319.9	0,36	5.0	ZS. S		
١	00 DE-100 / 71 / 11 CLANLA		24281		St GW	×			-				178.4	9.8	रे	243	3	
	DD 110 10		18102	1935	NG NG	×							206.1	0.29	1.9	1/2		
			11100	0180	; M		$\left \right $					 	265.2	0.52	4.4	8.25		
	_		118100	2000					-				326.9	0.41	S. L	<i>L</i> 'S2		
			0 11 0 1 0 V	46	MC NO	; ×	╞			-		 	281.7	0.39	4,9	24.9		
	10 DP-J12-27		11/10	200								 						
							╞		+	-	 							
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	Å	7/23/11	Ŋ			15260	ES.		~~~	amples inta	Samples intact upon arrival?	e a)¥	× ×	\$	ł	ło	5
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	Relinquished:	Date/Time:	Received:			Date/Time:			*	oper prese	Proper preservatives indicated?) S	v Z		66	0	Ŧ	
	Relinquished:	Date/Time:	Received:		T	Date/Time:			~ >	sc'd within	Rec'd w ithin holding time?	÷ ₹			A.	- 26-	t	
			Decement			Date/Time:						C			-		1	
	Relinquished:	Date/ Ime:	Keceiveu.						£	oper conta	Proper containers used?	Ð			1105	108047	N.	
Ŏ	Chan of Controly via Chan of Controly via Control 7: MC			۶h	l S S	go	{	Temp				ö	Chain of Custody	stody				
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SOUTHERN ANALYTICAL LABORATORIES, INC. 11084/WEMBOULEVARD, OLDSIMAR, FL. 34677 813855-1944 fex 813855-2218

									<u>ĕ</u>	Contact / Phone:	ione:					1
Client Name Haze	Hazen and Sawver	L	1													
Project Name / Location																
	GCREC Mound Groundwarer Analyses	innowater	Alialyses	ſ												T
Samplers: (Signature)								PARAME	PARAMETER / CONTAINER DESCRIPTION	ITAINER	DESCRI	NOIL	+	ł	ł	
/\				-							e					
Matry Cores. DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sudge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water					, 5O2, 9C	CI, AIK-T	SO4 otalP, COD	*O\$ ^z			N (NM, QM, K	nctivity			ອາມຸງຄາອອ	letoT) atenie ation)
	9)6(əmi ⁻	xitisA	Somposite Srab	402, Alk-T 5, Cl, NO3, C 12, Cool	NO3' NO3' (176' Cool	דגא, או ₃ , ד 250mL P, H	 גגמי מא נפסשר ג' א	250mLaG, (40mLaV, H(B, Ca, K, Fe 250mL P, H	Fleid Cond		Hq blai ^च	qməT bləi'l	No. of Conta
States and	19/07	12	MS	+	1)		-								1	
- T	UCLOU	1	GW	×		-	-					0.02	0.64 5	¢.	27.5	
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Containers Prepared Date/Time, 200 Refinquished: (1) 65 - 23 - 11	0	\mathbf{i}		Date/Time:	09281	1300		Seal intact? Samples int	Seal intact? Samples intact upon arrival?	arrival?					ġ	
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Relinquistred.	Received:			Date/Time:	ē			Proper p	Proper preservatives indicated	s indicated'	Ś					
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Relinquished: Date/Time:	Received:			Date/Time	ie ie			Proper c	Proper containers used?	sed?		AN A		1108648	Sh	
Chain of Cuandy 26 Rev.Data 1111901											Chair	Chain of Custody	ž		1	

SAL Project No. 1108648

PARAMETER / Contact / Phone: Contact / Phone: Contact / Phone: 1 TKU, NH3 250mLaV, HCI 1 100C 1 100C </th
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SOUTHERN ANALYTICAL LABORATORIES, INC. 110BAWEW SOULEVARD, OLDSMAR, FL 34677 B13855-1844 fex 813-855-2218

O & SS
SAL Project No.

Client Name	Hazen a	Hazen and Sawver								0	Contact / Phone:	hone:					
Project Name / location																	
	A CREC	Mound G	CREC Mound Groundwater Analyses	Analyses													
Samplers: (Signature)	HA								PARAMETER / CONTAINER DESCRIPTION	TER / COI	NTAINER	t DESCR	IPTION				
Matrix Codes: DW-Drinking Water WW-Wastewater SW-SufaceWater SL-Sludge SO-Soil GW-GroLidwater SA-Saline Water O-Other R-Reagent Water	Vastewater ge SO-Soil Vater O-Other r					'≠OSʻdC	גי אוג-ד), אוג-ד		*os			NO₃ Mn, Mn, QM	ıctivity			อามระเ	
Sample Description	ption	Date	əmiT	Matrix	Composite Grab	1LP, Cool F, CI, NO3, C NO2, AIK-T	иОЗ, ИО2, C 1LP, Cool	דאא, או _ז , דע 250mL P, H ₂	דאא, אא ₃ 260mL P, H ₂	DOC 520mLaG, C	40mLaV, HC тос	B, Ca, K, Fe, 250mL P, HI	nbroʻo bisi T	Field DO	Hq bleif	eqməT bləiT	 No. of Contai
01 DP-N12-4		0928/1	0915	ß	×	-		٦		-	2	1	81.3	0.32	5.0	26.5	
1		-	0625	GW	×		-	-					2742	ه.45	2: 1	7.69	
T			0935	GW	×	-		-		-	2	,	315. 9 (613	5, ک	26.0	
04 DP-N12-14			0545	ß	×	+		4		+	2	-	359.4	0.23	5.2	25.9	
			0475	ß	×	+				1	2	+	723.7	16.0	5.1	25.9	
				,													
Containers Preparead Relinquished:	Date/Time: / 300 ハ	Received:	R		Date/Time:	ы С С О И И	00		Seal intact?	2			= (1) (1)	instructions / Remarks	is / Remai	ks:	
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Relinquished:	Date/Time:	Received:			Date/Time	Ë			Proper pre	Proper preservatives indicated?	indicated?	Ž	NA.				
Reinquished:	Date/Time:	Received:			Date/Time:	ž			Rec'd with Volatiles r	Rec'd w ithin holding time? Volatiles rec'd w/out headspace	ime? headspace	ZZ	¥ (ž)				
Relinquished:	Date/Time:	Received:			Date/Time:				Proper co	Proper containers used?	647	Š) ¥		1108	108455	······
Chain of Cuebody.46 Rev.Date 11/19/01												Chair	Chain of Custody	Ą]

SOUTHERN ANALYTICAL LABORATORIES, INC. 110BAWIEWBOULEVARD, OLDSMAR, FL 34577 B13455-1844 fex 813455-2218

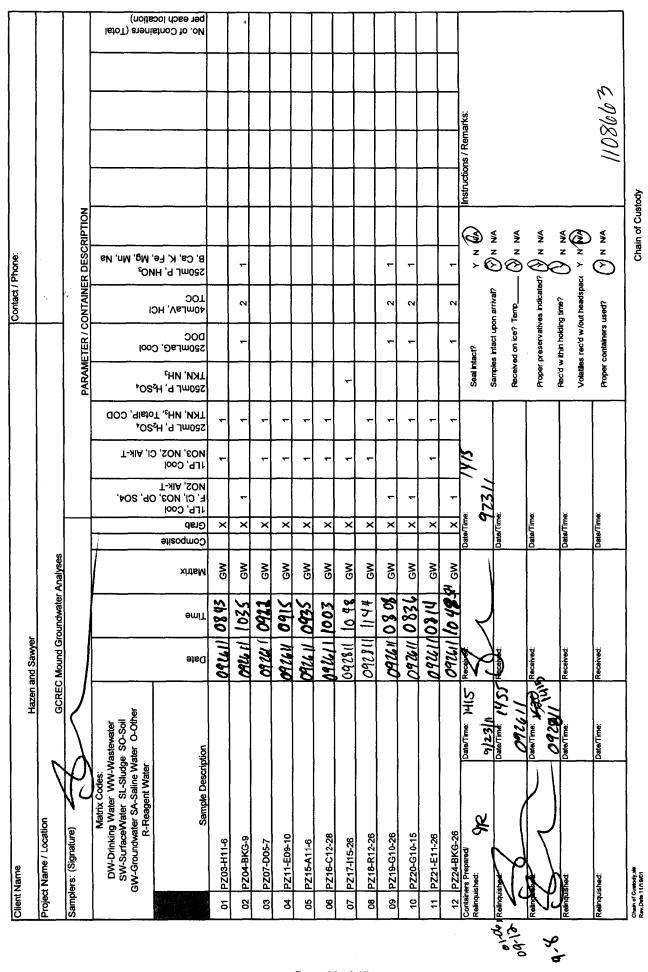
SAL Project No. 100058

Client Name		Hard Counter								<u>ŏ</u>	Contact / Phone:	hone:						
Project Name / Location					}													Γ
	GCREC	Mound G	GCREC Mound Groundwater Analyses	Analyses														T
Samplers: (Signature)	\int			:				-	PARAMET	PARAMETER / CONTAINER DESCRIPTION	ITAINER	DESCE	UDTION					
Matrix Codes: DW-Drinking Water WM-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	Vastewater ge SO-Soil <i>l</i> ater O-Other					,¥OS,9Q	с, АІК-Т	otalp, COD				, Mg, Mn, Va	nctivity			erature		ation) ation)
Sample Description	Iption	Date	əmiT	xitteM	Composite Grab	1LP, Cool 1LP, Cool 1LP, Cool	NO3' NO3' (1Fb' Cool	דאא, או _ז , ד נישר ף, א	דאא, אא ₃ 250mL P, H	DOC SEOMLAG, C	40mLaV, HC TOC	B' C ^g ' K' E6 5000F b' H	ibnoʻ) bleifi	Field DO	Field pH	qməT bləi'l		No. of Conta per each loc
01 DP-010-18		09.79.11	0915	GW	×			-					154.5	6.72	いこ	27.3		
1		_	_	GW	×		-	-					159.5	0.72	4.2	27.3		
			0330	ß	×	-		-			2	۰	279.0	0.60	4.9	8. 22		
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Chain of Cuebody.Me Rev.Date 11/19/01												cha	Chain of Custody	ody				

										<u>ວ</u>	Contact / Phone:	ine:					
Client Name		Counce															
	Hazen ar	Hazen and Sawyer															
Project Name / Location		CCDEC Mound Groundwater Analyses	unchwater /	Analyses													
Samplers: (Signature)									ARAMET	PARAMETER / CONTAINER DESCRIPTION	ITAINER	DESCRIP	NOIT		$\left \right $		
Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	astewater e SO-Soil tter O-Other					0P, SO4,		LotalP, COD	*OS ²			eN ,nM ,gM ,a	inctivity		<u></u>	perature	tainers (Total cation)
Commole Description	ç	əteC	əmiT	xitteM	Composite Grab	1LP, Cool F, CI, NO3, 1LP, Cool	ИО3' ИО3' 1ГЬ' Соо!		тки, ин ₃ 250mL P, H	DOC S20wrse'	TOC 40mLaV, H				Hq bleiq	məT bləi7	No. of Con per each lo
	100	MB1	10.55	ß	×		+		-			M	56.10.7		2 7 7	8.12	
		097811		δ	<u>×</u>				۰	_	-	æ	316.60		5.02	26.6	
02 DP-419-21		N926V	011	δ	×		1		-			Ň		034 5.1		<u>26.8</u>	
			1=	ß	×		-		1			R)	293.4 0	5 75.0	<u>ح</u> ۲۰	26.8	
04 10-40-610-40												-					
														_	-†	_	
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														-			
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Containers Prepared Relinquisted:	Date/Time: 1,215	Received			Date/Time	092\$11	2,118	1215	Seal intact?	Seal intact? cambe intact inon arrival?	arrivaD		~	Instructions / Remarks:	/ Remark	ŝ	
Relinquished:	Date/Time: [4]5	Received:			Date/Time:	.e.			Received	Received on ice? Temp	du	₹ DC	. 4				
Relinquishet	Date/Time:	Received:			Date/Time:	ne:			Proper p	Proper preservatives indicated?	s indicated?	, ©					
Relinquished:	Date/Time:	Received:			DateCime	je:			Rec'd wi Volatiles	Rec'd w ithin holding time? Volatiles rec'd w/out headspace	time? t headspace						
Relinquished:	Date/Time:	Received:			Date/Time:				Proper c	Proper containers used?	sed?	AN (N)	4	1	1108661	101	
Chain of Cuebody #6 Rev.Data 11/1901												Chain	Chain of Custody	Ą			

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813 855-1844 fax 813-855-2218

20102011
Project No.
SAL



SOUTHERN ANALYTICAL LABORATORIES, INC. 1108ayviewboulevard, oldsmar, FL 34577 813455-1844 fax 813455-2218

50663
<u> </u>
1
SAL Project No

	Haze	Hazen and Sawyer			1					+						
Project Name / Location	C CRI	GCRFC Morind Groundwater Analyses	mundwater.	Analvees												
Samplers: (Signature)	X				ł											
	\mathbb{N}			Ī	\mathbf{h}			<u>م</u>	ARAMETE	PARAMETER / CONTAINER DESCRIPTION	NINER DEC	SCRIPTION			ŀ	ŀ
Matrix Codes: DW-Drinking Water WW-Wastewater SW-SurfaceWater SL-Sludge SO-Soil GW-Groundwater SA-Saline Water O-Other R-Reagent Water	codes: WW-Wastewater SL-Sludge SO-Soil tailine Water O-Other tt Water			<u></u> ,		06' 204'		otalP, COD			°0N 80N 					
Sample	Sample Description	Date	əmiT	Matrix	Composite Grab	NOS' AIK-T F, CI, NO3, C 1LP, Cool	NO3' NO3' (1Fb' Cool		250שרשפי כ דצמי מאז 260שר ה' אי	40mLaV, HC	B, Ca, K, Fe 250mL P, HI					
13 PZ24-BKG-26-D		09611	1054	GW	×	1		1		1 2						
14 PZ25-A06-10		119000	0951	GW	×		+	1								\neg
15 Equipment blank		091811	091811 0940	œ	×	-	-	-								-
16 Field Blank - DI		092811	logys	Я	×											
17 Field Blank - Tap		09281	121	R	×		-	1								
			-													
				+	+		+			+-					+	†
				-	╂											<u> </u>
									_	_						-
Containers Prepared Relarquished:	Parentime: 1415	Ĥ	C	2		92311	415		Seal intact?					NIS / Verial	Ż	
B. W. Relinquisport	Date/Time: / 455	Received:			Date/Time:				Samples int Received o	Samples intact upon arrival? Received on ice? Temp		z z Z				
The set of	20	Patronences			Date/Time:	je		1	Proper pres	Proper preservatives indicated?		N NA	<u></u>			
		Received:			Date/Time:	je			Rec'd withi Volatiles re	Rec'd w ithin holding time? Volatiles rec'd w/out headspace	² dspac					
Relinquished:	Date/Time:	Received:			Date/Time:	ĕ			Proper cont	Proper containers used?		Øn MA		1108663	86 63	00
Chain of Custody.via Rev.Date 11/19/01												Chain of Custody	stody			ļ

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

			GR	OUNDW	AIER	SAMPLI	NG LOO				
Client Name:		Hazen & Sawyer		Location:				Contact: Phone:			
Date Sampled	00	12611		SAL Project #	110	8667	3	Project Name	GCREC Mo	und Groundwa	ter Analyses
Well Number		23		Sample ID		01		GPS LAT			
				P	URGING	DATA					
WELL DIAMETER (Inches)	1.25	WELL CAPACITY (gal/ft)	0.06	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	6.40	PURGE PUMP CODE	(PP) GP
TOTAL WELL DEPTH (Feet)		REFERENCE ELEVATION (NGVD)		GROUND ELEVA (REFERENC	ATION CE-STATIC)			TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
Purge Ter	chnique: q Su	Ibmerged Screen	(1,1/4,1/4 Well) q Submer	ged Screen (1	EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	en (1 weil, 3,3	
ONE WELL VOLUME		156	1/4 WELL VOLUME			3 WELL VOLUMES	0.4		5 WELL VOLUMES		
PUMP VOLUME	[EQUIPMENT V	JLUME = PUN TUBING LEGNTH	IP VOLUME +	(TUBING CAI	FLOW CELL) + PLOW CEL	EQUIPMEN T VOLUME		
INITIAL TUBI IN WELL			FINAL TUBI IN WELL			PURGE TIME START	0833	PURGE TIME END	0842	TOTAL PURGED	0.90
INST. ID	\succ	\succ	\succ	\succ	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55-	SAL-SAM- 0_Z	\ge	\ge
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	рН (SU) (∆ <0.2)	ТЕМР (оС) (∆ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
0836	0.30	0.30	6.10	6.52	4.4	26.4	133.8	1.48	13.9	clear	NON
0839	0.30	0.00	0.10		<u>4.4</u>	26.5	134.9	1.39	8.67		
0842	0.40	0.90	0.10		4.4	26.5	136.5	1.36	6.82		
	Well	Capacity (gallons/	foot): 0.75"=0.	.02, 1.25"=(1	1 16, 3"=0.37	, 4"=0.65,	5"=1.02, 6	1	"5.88	I
TUBI		A. CAPACITY (Ga				/4" = 0.0026;	5/16" = 0.004	4; 3/8" = 0.00	6; 1/2" = 0.	010; 5/8" =	0.016
				S	AMPLIN	G DATA	1	1			
	(/ COMPANY INT)	S	AL				LER(S) TURES:	A			
	ERIAL CODE E ONE)	PP PE N	т (<u>т</u>) т		TUBING WELL (FEET)			SAMPLE PL RATE (r			
SAMPLING	0843	SAMPLING ENDED	0843	FIELD CLEANED	Y (N)	CLEANING STEPS	LECTED BY	<u> </u>	SEMILVOLS	COLLECTED	
FIELD FILTERED?	Y (N)	FILTER SIZE		DUPLICATE	Y (N)		E FLOW?	YNN		GH TRAP?	Y N 🕅
	RVATION	Y N N/A		ERVATIVES	 						
	THER ITIONS	cloud	4								
COMM	IENTS										
	TITE		DES: PP=Per	istaltic Pump,	GP≈ Submersi	ible Grundfos I	Pump, IBP= In	-place Bladder	Pump		
	viewea By:		JUDES: PP=1	-oiypropylene,	PE= Polyeth	viene, NP= No		, TL= Teflon Li	ned, TT= Tef	lon	
	ision Date		*		Daga 20		Date:			-	

GROUNDWATER SAMPLING LOG

Client Name:		Hazen & Sawyer		Location:				Contact: Phone:			
Date Sampled	0926	()		SAL Project #	110	866	3	Project Name	GCREC Mo	und Groundwa	ater Analyses
Well Number	1020			Sample ID		02		GPS LAT			
	<u> </u>	1		Р	URGING			GPS LONG			
WELL DIAMETER (Inches)	1.25	WELL CAPACITY (gal/ft)	0.6(e	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	5.94	PURGE PUMP CODE	GP IBP
TOTAL WELL DEPTH (Feet)	7 -	REFERENCE ELEVATION (NGVD)		GROUNE ELEV (REFEREN	ATION CE-STATIC)			TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
		bmerged Screen TAL DEPTH - ST				EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
ONE WELL VOLUME	6.19		1/4 WELL VOLUME			3 WELL VOLUMES	0.55		5 WELL VOLUMES		
		EQUIPMENT V		IP VOLUME +	(TUBING CAI						
PUMP VOLUME	-		TUBING LEGNTH			FLOW CELL VOLUME			EQUIPMEN T VOLUME		
INITIAL TUBIN IN WELL			FINAL TUBII IN WELL			PURGE TIME START	1025	PURGE TIME END	1037	TOTAL PURGED	0.90
INST. ID	\ge	\ge	\ge	\ge	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55-	SAL-SAM- 0	\times	\ge
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (∆ <0.2)	TEMP (oC) (∆ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
1028	0.30	0.30	0.10	6.02	4.98	28.1	117.5	1.74	7.08	CLE4R	NONE
1031	0.30	0.60			5.0	28.3	119.3	1.77	1.75		NONE
1034	0.30	0.90			5.0	28.2	119.9	1.7 h	0.97		NONE
		Capacity (gallons/							"=1.47, 12	"5.88	
TUBIN	NG INSIDE DIA	A. CAPACITY (Ga	l./Ft.): 1/8" =					; 3/8" = 0.000	6; 1/2" = 0.0)10; 5/8" = (0.016
			· · · · ·	S/	AMPLIN	G DATA					
SAMPLED BY (PRII		5	AL				LER(S) TURES:	S			
TUBING MATE (CIRCLE		PP PE NF	р (П) 11		TUBING WELL (FEET)			SAMPLE PL RATE (n			
SAMPLING	1035	SAMPLING ENDED	1035	FIELD CLEANED	Y 🚱	CLEANING STEPS					
FIELD FILTERED?	Y 🔊	FILTER SIZE (µm)		DUPLICATE	Y 🔊	VOC COLL	ECTED BY E FLOW?	Y N 🕅		COLLECTED	YN
PRESER CHECKED			LIST PRESI ADI			-	<u> </u>	• <u>•••</u>			.
WEAT CONDI		Cloudy	(
СОММ	ENTS										
	TILIN		DES: PP=Per	staltic Pump,	GP= Submersi	ble Grundfos I	Pump, IBP= In	-place Bladder I	Pump		
Rev	viewed By:	NG MATERIAL C	ODES: PP=1	-olypropylene,	PE= Polyethy	/lene, NP= No		, TL= Teflon Li	ned, TT= Tef	on	
Rev	Ision Date C	9/25/09			Page 31	of 45	Date:	······································			
					-						

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Client Name:		Hazen & Sawyer		Location:				Contact:			
Date Sampled	0000			SAL Project	112	0117	2	Phone: Project Name	CCREC Ma	und Groundwa	tor Analyzan
	092611			#	112	866	2	GPS LAT			
Well Number	PEOI			Sample ID	2	23		GPS LONG			
			_	Ρ	URGINO	G DATA					_
WELL DIAMETER (Inches)	1.25	WELL CAPACITY (gal/ft)	0.06	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	6.04	PURGE PUMP CODE	(PP) GP IBP
TOTAL WELL DEPTH (Feet)	9.0	REFERENCE ELEVATION (NGVD)		GROUND ELEV/ (REFERENC				TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
Purge Tec	hnique: q Su	bmerged Screen TAL DEPTH - ST	(1,1/4,1/4 Wel) q Submer	rged Screen (1	EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
			1/4 WELL	X WELL CAPI		3 WELL			5 WELL		l
VOLUME	0.17		VOLUME			VOLUMES	0.5-	•	VOLUMES		
		EQUIPMENT V		IP VOLUME +	(TUBING CA			I) + FLOW CEL	I	r	
PUMP VOLUME			TUBING LEGNTH			FLOW CELL VOLUME			EQUIPMEN T VOLUME		,
INITIAL TUBIN IN WELL			FINAL TUBII IN WELL			PURGE TIME START	0912	PURGE TIME END	0921	TOTAL PURGED	0.90
INST. ID	\ge	\ge	\ge	\ge	SAL-SAM-63 	SAL-SAM - 65- <u>04</u>	SAL-SAM-63 <u>04</u>	SAL-SAM-55- <u>ク</u> 4	SAL-SAM- 0 <u>2</u>	\ge	\geq
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (∆ <0.2)	TEMP (oC) (∆ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
0915	0.30	6.30	0.10	609	4.6Z	25.4	375.0	0.80	8.94	CLE4R	NONE
0918	0.30	0.60	0.10)	4.61	25.5	368.4	0.83	8.85	(
0921	6.30	0.90	0.(0		4.60	25.5	360.8	0.86	8.78	V	V
711014		Capacity (gallons/								"5.88	
I UBIN		A. CAPACITY (Ga	ul./Ft.): 1/8" =					4; 3/8" = 0.00	6; 1/2" = 0.	010; 5/8" =	0.016
SAMPLED BY				3/							
(PRI	1	SAL					LER(S) TURES:	K	M		
TUBING MATE (CIRCLE		PP PE NF	n (II) II		TUBING WELL (FEET)			SAMPLE PI RATE (I			
SAMPLING INITIATED	0922	SAMPLING ENDED	0927	FIELD CLEANED	YN	CLEANING STEPS					
FIELD	ÝØ	FILTER SIZE	<u> </u>	DUPLICATE	YO	VOC COLI	ECTED BY	YNNA	SEMI-VOLS	COLLECTED	Y NONA
FILTERED? PRESER		(μm)		ERVATIVES		REVERS	E FLOW?			GH TRAP?	
CHECKED		N N/A		DED				<u> </u>			
WEAT CONDIT		Cloud	/ /								
COMM	ENTS										
		PUMP CO	DES: PP=Peri	staltic Pump, (GP= Submersi	ible Grundfos I	Pump, IBP= In	-place Bladder	Pump		
Rev	TUB /iewed By:	NG MATERIAL C	ODES: PP= F	Polypropylene,	PE= Polyeth	vlene, NP= No	on-inert Plastic	, TL= Teflon Li	ned, TT= Tef	lon	
	Ision Date C	9/25/09			Page 32	of 45	Date:				

Client Name:		Hazen & Sawyer		Location:			-	Contact:			
Date Sample d	00	76.11		SAL Project		1811	7	Phone:	CCREC No	und Groundur	ter Analyzor
Date Sampled	<u> </u>	2611		#		0866	2	Project Name GPS LAT		und Groundwa	
Well Number	P	211		Sample ID		04		GPS LAT			
				P	URGINO	G DATA					
WELL DIAMETER (Inches)	0.75	WELL CAPACITY (gal/ft)	0.02	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	3.0	PURGE PUMP CODE	PP GP
TOTAL WELL DEPTH (Feet)	1. 2	REFERENCE ELEVATION (NGVD)		ELEV (REFEREN	D WATER ATION CE-STATIC)			TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
Purge Teo WELL V	Chnique: q SL	ubmerged Screen DTAL DEPTH - ST	(1,1/4,1/4 Wel	I) q Subme	rged Screen (*	EQ Volume, 3	3, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
ONE WELL	Ø.)		1/4 WELL			3 WELL	~	110.7	5 WELL		L
VOLUME	0.1	EQUIPMENT V				VOLUMES		408	VOLUMES	l	
PUMP		2000 112111 1	TUBING		(TODINO CA	FLOW CELL	Sing LEGNT	I) + FLOW CEL	EQUIPMEN		
VOLUME			LEGNTH		r	VOLUME			TVOLUME		r
INITIAL TUBII IN WELL		<>		NG LEGNTH L (FEET)		PURGE TIME START	0905	PURGE TIME END	0914	TOTAL PURGED	0.90
INST. ID	\ge	\ge	\ge	\ge	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55-	SAL-SAM- 0_2_	\times	\times
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (Δ<0.2)	ТЕМР (oC) (Δ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
09.08	0.30	0.30	0.10	NIA	5.5	25.8	408.1	4.79	13.6	dear	NOM
0911		0.60			5.5	25.9	411.1	4.86	11.1	1	1
6914		0.90			5.7	26.0	4 13.2	5.61	8.74		
		Capacity (gallons/					4"=0.65,	5"=1.02, 6	'=1.47, 12'	5.88	
TUBIN	NG INSIDE DI	A. CAPACITY (Ga	l./Ft.): 1/8" =				5/16" = 0.004	; 3/8" = 0.006	6; 1/2" = 0.(010; 5/8" = 0	0.016
				S/	AMPLIN	G DATA					
SAMPLED BY (PRII		<u>SA</u>	L			SAMPI SIGNAT	LER(S) TURES:	S			
TUBING MATE (CIRCLE		PP PE NF	у (Т) тт		TUBING VELL (FEET)			SAMPLE PU RATE (m			
SAMPLING INITIATED	0915	SAMPLING ENDED	0915	FIELD CLEANED	YN	CLEANING STEPS		·			
FIELD FILTERED?	YN	FILTER SIZE		DUPLICATE	Y	VOC COLL		Y N (N/A)	SEMI-VOLS	COLLECTED	Y N NA
PRESER		(μm) (Υ) Ν Ν/Α	LIST PRESE	RVATIVES		REVERSI	E FLOW?		THROUG	H TRAP?	
CHECKED	IN FIELD?		ADD	DED	·						
WEAT CONDIT	ł	Clou o	ly								
COMME	INTS										
	TUBI	PUMP COD	DES: PP=Peris	staltic Pump, G	P= Submersib	le Grundfos P	ump, IBP= In-p	place Bladder P	ump		
Rev	iewed By:			ovypropylene,	rt= Polyethyl	ene, NP= Nor	n-inert Plastic,	TL= Teflon Line	ed, TT= Teflo	ก	
Revis	sion Date U	9/25/09					Date:				

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

GROUNDWATER	SAMPLING LOG
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Client Name:		Hazen & Sawyer		Location:				Contact: Phone:			
Date Sampled	09	2611		SAL Project #)10	08665	3	Project Name	GCREC Mo	und Groundwa	ater Analyses
Well Number		215		Sample ID		05		GPS LAT GPS LONG		·····	· · · · · · · · · · · · · · · · · · ·
				P	URGING	DATA					
WELL DIAMETER (Inches)	1.25	WELL CAPACITY (gal/ft)	0,06	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	4.91	PURGE PUMP CODE	GP IBP GP
TOTAL WELL DEPTH (Feet)	7.50	REFERENCE ELEVATION (NGVD)		GROUND ELEV/ (REFERENC	ATION			TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
Purge Tec	hnique: q Su	bmerged Screen TAL DEPTH - ST	(1,1/4,1/4 Well) q Submer	rged Screen (1	EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
ONE WELL VOLUME	0.15		1/4 WELL VOLUME			3 WELL VOLUMES		66	5 WELL VOLUMES		
PUMP				AP VOLUME +	(TUBING CA	FLOW CELL	SING LEGNTH) + FLOW CEL			
VOLUME			LEGNTH			VOLUME			T VOLUME		
INITIAL TUBI IN WELL			FINAL TUBII IN WELL			PURGE TIME START	0925	PURGE TIME END	0934	TOTAL PURGED	6.90
INST. ID	\ge	\ge	\ge	\ge	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55- L	SAL-SAM- 0	\ge	\geq
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (∆ <0.2)	ТЕМР (оС) (∆ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
0928	0.30	0.30	0.10	4,99	4.7	27.1	83.7	1.99	19.2	clear	NON
0931	1	0.60	Á	1	4.7	27.1	84.0	1.80	17.4		
0934		0.90			4.8	27.1	84.2	1.66	16.8		
		A	1			, 					
		Capacity (gallons/								*5.88	
TUBI	NG INSIDE DI	A. CAPACITY (Ga	al./Ft.): 1/8" =					4; 3/8" = 0.00	6; 1/2" = 0.9	010; 5/8" =	0.016
SAMPLED BY							LER(S)				
(PRI		S	AL				TURES:	A			
TUBING MAT (CIRCLI		PP PE N			E TUBING WELL (FEET)	·		SAMPLE PI RATE (r			
SAMPLING INITIATED	0935	SAMPLING ENDED	0935	FIELD CLEANED	YN	CLEANING STEPS					
FIELD FILTERED?	ŶΝ	FILTER SIZE (µm)		DUPLICATE	Y N		LECTED BY SE FLOW?	Y N 🗖		COLLECTED	YNN
	IN FIELD?	🖗 N N/A		ERVATIVES DED							
WEA ⁻ CONDI		cloud	4								
COMM	IENTS										
	TUO		DES: PP=Per	istaltic Pump,	GP= Submers	ible Grundfos	Pump, IBP= Ir	-place Bladder	Pump		
Re	viewed By:	ING MATERIAL (JUDES: PP=	Polypropylene	, PE= Polyeth	ylene, NP= N			ned, TT= Tef	lon	
	ision Date (09/25/09			Page 34	4 of 45 🗖	Date:		_		

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110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

GROUNDWATER SAMPLING LOG

Client Name:		Hazen & Sawyer		Location:				Contact: Phone:			
Date Sampled	0	12611		SAL Project #	110	8663	>	Project Name	GCREC Mo	und Groundwa	ater Analyses
Well Number		216		Sample ID)4		GPS LAT	······································		
L	L			P	URGINO			GF3 LONG			
WELL DIAMETER (Inches)	0.75	WELL CAPACITY (gal/ft)	0.02	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	2.62	PURGE PUMP CODE	(PP) GP
TOTAL WELL DEPTH (Feet)	29.0	REFERENCE ELEVATION (NGVD)		ELEV	O WATER ATION CE-STATIC)			TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
Purge Tee	chnique: q Su	bmerged Screen	(1,1/4,1/4 Well	I) q Subme	rged Screen (1	EQ Volume, 3	8, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
ONE WELL VOLUME	0. 3		1/4 WELL VOLUME	0.17	3	3 WELL VOLUMES) + FLOW CEL	5 WELL VOLUMES		·
PUMP VOLUME			TUBING LEGNTH		(1001100)	FLOW CELL VOLUME		,,	EQUIPMEN T VOLUME		
INITIAL TUBI IN WELL	-			NG LEGNTH _ (FEET)		PURGE TIME START	0950	PURGE TIME END	1002	TOTAL PURGED	1.20
INST. ID	\ge		\ge	\ge	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55- <u>U</u>	SAL-SAM- 0	\ge	\geq
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (∆ <0.2) S , Y	ТЕМР (оС) (∆ <0.2)	SP COND (uS/cm) (Δ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
0956	0.60	0.60	0.10	NA	24.8	24.8	309.8	0.46	16.6	clear	Nom
0959	0,30	0.90			Z+5.4	24.8	309.3	0.36	4.63		
1002	0.30	1,20			5.3	24.6	310,9	0.33	7.49		
	· · · · · · · · · · · · · · · · · · ·	·								ι ι 	
ļ	14-14	<u> </u>									
TUBI		Capacity (gallons/ A. CAPACITY (Ga		· · · · · · · · · · · · · · · · · · ·			, 4"=0.65, 5/16" = 0.004			"5.88 010; 5/8" = (0.016
					MPLIN						
SAMPLED BY (PRI		SAL			······		LER(S) TURES:	Aer			
TUBING MAT (CIRCLI		PP PE NF	· 🔂 TT	LEGNTH IN	TUBING WELL (FEET)			SAMPLE PL RATE (n			
SAMPLING INITIATED FIELD FILTERED?	1003 Y (N)	SAMPLING ENDED FILTER SIZE	1003	FIELD CLEANED DUPLICATE	Y (N)		ECTED BY	Y N NA	SEMI-VOLS	COLLECTED	Y N N
PRESER		(μm) (μm) Ν Ν/Α		ERVATIVES DED						511 I KAP (
WEAT CONDIT		cloud	hy								: :
Сомме	INTS				·						
	TUBIN	PUMP CODE G MATERIAL CO	S: PP=Perist	altic Pump, Gi	P= Submersible	e Grundfos Pu	mo IRP- In T	ace Bladder Pul			1
Revie Revisio	wed By: on Date 097.	PUMP CODE G MATERIAL CO 25/09		ypropylene, P	E= Polyethyle/	ne, NP= Non-	nen Plastic, T	ace Bladder Pur L= Teflon Lined	np		7
	-				Page 35	of 45	Date:		r = retion		1

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Client Name:		Hazen & Sawyer		Location:				Contact: Phone:			
Date Sampled	C	92811		SAL Project #	11	6866-	3	Project Name	GCREC Mo	und Groundwa	ter Analyses
Well Number		2-17		Sample ID		07		GPS LAT			
	P	511			URGING	<u> </u>		GPS LONG			
											<u> </u>
WELL DIAMETER (Inches)	0.75	WELL CAPACITY (gal/ft)	0.02	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	7.89	PURGE PUMP CODE	GP IBP
TOTAL WELL DEPTH (Feet)	30.0	REFERENCE ELEVATION (NGVD)		GROUND ELEV (REFEREN				TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
Purge Tec	hnique: g Su	bmerged Screen	(1,1/4,1/4 Wel) q Subme	rged Screen (1	EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
		TAL DEPTH - ST									
ONE WELL VOLUME	0.4	•	1/4 WELL VOLUME	G .1		3 WELL VOLUMES			5 WELL VOLUMES		
		EQUIPMENT V	OLUME = PUN	/IP VOLUME +	(TUBING CA	PACITY X TUE	BING LEGNTH) + FLOW CEL			
PUMP VOLUME			TUBING LEGNTH			FLOW CELL VOLUME			EQUIPMEN T VOLUME		
INITIAL TUBI IN WELL				NG LEGNTH L (FEET)		PURGE TIME START	1030	PURGE TIME END	1047	TOTAL PURGED	1,70
INST. ID	\ge	\ge	\ge	\ge	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55-	SAL-SAM-	\ge	\geq
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (Δ <0.2)	TEMP (oC) (∆ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
1035	0.50	0.50	0.10	NIA	4.9	25,2	-2-79.9	0.51	332	BLOWN	None
1038	0.30	0.80			4.8	25.1	280.2	0.36	ISB.		<u> </u>
1041	0.30	1.10			4.6	25.0	281.5	0.34	57.6		
1044	0.30	1.40			4.8	24,9	283.2	0.27	23.6		
1047	0.30	1.70			4.8	24.9	283.4	0.25	14.2	clear	
		Capacity (gallons/	foot): 0.75"=0	.02, 1.25"=				5"=1.02, 6		*5.88	
TUBI		A. CAPACITY (Ga					5/16" = 0.004	4; 3/8" = 0.00	6; 1/2" = 0.0	010; 5/8" =	0.016
				S	AMPLIN	G DATA					
SAMPLED BY (PR			SAL			SAMP	- LER(S) TURES:	4	$\overline{\langle}$		
	ERIAL CODE	PP PE N	<u>р т</u> т		E TUBING WELL (FEET)			SAMPLE PL RATE (r			
SAMPLING INITIATED	1048	SAMPLING ENDED	1048	FIELD CLEANED	Y (N)	CLEANING STEPS					
FIELD FILTERED?	Y (N)	FILTER SIZE (µm)		DUPLICATE	Y (N)		ECTED BY E FLOW?	Y N NA		COLLECTED	Y NNA
PRESER	IVATION IN FIELD?	(µ//) N N/A		ERVATIVES DED		1					
	THER TIONS	clear	<i>ω</i> ;	rdy							
COMN	IENTS										
		PUMP CC	DES: PP=Pe	ristaltic Pump,	GP= Submer	sible Grundfos	Pump, IBP= I	n-place Bladder	Pump		
	TU	BING MATERIAL	CODES: PP=	Polypropylen	e, PE= Polyet	hylene, NP= N	Ion-inert Plast	ic, TL= Teflon l	ined, TT= Te	flon	
	eviewed By				Baga 26	of 45	Date				
Re	vision Date	09/25/09			Page 36	01 40					
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GROUNDWATER SAMPLING LOG

								<i>.</i>			
Client Name:		Hazen & Sawyer		Location:				Contact: Phone:			
Date Sampled	09	28(1		SAL Project #	1	1086	63	Project Name	GCREC Mo	und Groundwa	ater Analyses
Well Number		2-18		Sample ID	L.	08		GPS LAT			
	P	2-18				08		GPS LONG			
				<u> </u>	URGINO	DAIA					
WELL DIAMETER (Inches)	0.75	WELL CAPACITY (gal/ft)	0.02	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	2.46	PURGE PUMP CODE	
TOTAL WELL DEPTH (Feet)	25.49	REFERENCE ELEVATION (NGVD)		ELEV	OWATER ATION CE-STATIC)			TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
		bmerged Screen			rged Screen (1	EQ Volume, 3	3, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
ONE WELL V	OLUME = (TO	TAL DEPTH - ST	ATIC DEPTH)	X WELL CAP	ICITY =		1				
VOLUME	0.4	4	VOLUME	0.	11	3 WELL VOLUMES			5 WELL VOLUMES		
	<u>`</u>	EQUIPMENT V	OLUME = PUN			PACITY X TUE	BING LEGNTH) + FLOW CEL			
PUMP VOLUME			TUBING LEGNTH			FLOW CELL VOLUME			EQUIPMEN T VOLUME		
INITIAL TUBII IN WELL				NG LEGNTH L (FEET)		PURGE TIME START	1126	PURGE TIME END	1143	TOTAL PURGED	1,70
INST. ID	\ge	\ge	\ge	\ge	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55-	SAL-SAM- 0_Z	\succ	\succ
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (∆ <0.2)	TEMP (oC) (∆ <0.2)	SP COND (uS/cm) (Δ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
1131	0.50	0.50	0.10	NIA	S. I	76.9	721.9	0.35	A Rove D	Brown Hectelle	None
1134	0.30	0.80			5.1	26.4	722.1	0.35	360		
1137	0.30	1.10			5.1	26.4	222.4	0.36	709		
1140	0.30	1,40	4		5.0	26.4	222.5	0.78	137.6		
1143	0.30	1.70	ļ		5.0	26.3	222.6	0.25	79,1	\checkmark	V
		Capacity (gallons/								"5.88	
TUBI	NG INSIDE DIA	A. CAPACITY (Ga	ll./Ft.): 1/8" =					; 3/8" = 0.006	6; 1/2" = 0.0)10; 5/8" = ().016
				SA	AMPLIN	G DATA	۱			1	
SAMPLED BY (PRI		5	AL				LER(S) TURES:	1.	Ħ		
TUBING MATI (CIRCLE		PP PE NF	• (1) 11		TUBING WELL (FEET)	-		SAMPLE PU RATE (n			
SAMPLING INITIATED	1144	SAMPLING ENDED	1144	FIELD CLEANED	YN	CLEANING STEPS					
FIELD FILTERED?	YN	FILTER SIZE (µm)		DUPLICATE	YN	VOC COLL	ECTED BY E FLOW?	Y N NA		COLLECTED	Y N (NA
PRESER CHECKED				ERVATIVES DED							
WEAT CONDI		Sanny	and	breezy							
СОММ	ENTS										
		PUMP CO	DES: PP=Per	ristaltic Pump,	GP= Submers	ible Grundfos	Pump, IBP= In	-place Bladder	Pump		
		ING MATERIAL (CODES: PP=	Polypropylene	, PE= Polyeth	ylene, NP= N		; TL= Teflon Li	ned, TT= Tel	lon	
No. of Concession, Name	viewed By:	0/75/00			Dogo 07		Date:				
, rev	lsion Date (09/20/09			Page 37	01 45					

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110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

GROUNDWAT	ER SAMPL	ING LOG

				Looption				Contact:			
Client Name:		Hazen & Sawyer		Location:				Phone:			
Date Sampled	09	2611		SAL Project #	1108	8663		Project Name	GCREC Mo	und Groundwa	ater Analyses
Well Number	1	1219		Sample ID		09		GPS LAT			
				P	URGING	DATA					
WELL DIAMETER (Inches)	2.0	WELL CAPACITY (gal/ft)	0.16	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	6.96	PURGE PUMP CODE	PP GP
TOTAL WELL DEPTH (Feet)	30.0	REFERENCE ELEVATION (NGVD)		GROUND ELEVA (REFERENC	ATION			TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
		bmerged Screen				EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
ONE WELL VOLUME	3.6		1/4 WELL VOLUME	0.9	ι	3 WELL VOLUMES			5 WELL VOLUMES		
51.045					(TOBING CA	FLOW CELL			EQUIPMEN		
PUMP VOLUME	r		TUBING LEGNTH		·····	VOLUME			T VOLUME		
INITIAL TUBIN IN WELL			FINAL TUBI IN WELL	NG LEGNTH _ (FEET)		PURGE TIME START	0744	PURGE TIME END		TOTAL PURGED	
INST. ID	\times	\ge	\ge	\times	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55-	SAL- <u>SAM</u> - 0	\ge	\ge
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (∆ <0.2)	TEMP (oC) (∆ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
0759	3.75	3.75	0.25	N/R	5.0	24.5	307.6	0.46	19.4	clear	NON
0803	1,00	4.75		1	5.0	24.6	302.Z	0.57	14.3		1
0807	1.00	5.75			5.0	24.6	302.4	0.42	11.6		
		Capacity (gallons/								"5.88	
TUBI	NG INSIDE DIA	A. CAPACITY (Ga	al./Ft.): 1/8" =				5/16" = 0.004	4; 3/8" = 0.00	6; 1/2" = 0.	010; 5/8" =	0.016
				<u> </u>	AMPLIN	G DATA					
SAMPLED BY (PRI		<u>5</u> 4	tL				LER(S) TURES:	Si			
TUBING MAT (CIRCLI		PP PE N	P ΠT	1	E TUBING WELL (FEET)			SAMPLE PI RATE (I			
SAMPLING INITIATED	0808	SAMPLING ENDED	0808	FIELD CLEANED	Y (N)	CLEANING STEPS					
FIELD FILTERED?	Y 🔊	FILTER SIZE (µm)		DUPLICATE	Y (N)		LECTED BY SE FLOW?	Y N NA		COLLECTED	Y N 🚱
PRESER CHECKED	VATION	0 N N/A		ERVATIVES DED							
WEAT CONDI		Dri	2212								
СОММ	ENTS										
	l	PUMP CO	DES: PP=Per	istaltic Pump,	GP= Submers	ible Grundfos	Pump, IBP= In	-place Bladder	Pump		
Ba	TUB viewed By:	ING MATERIAL (CODES: PP=	Polypropylene	, PE= Polyeth	ylene, NP= N			ned, TT= Tel	lon	
	Ision Date (9/25/09			Page 3	8 of 45 🗕	Date:				

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				CONDI				Orntratil			
Client Name:	i	Hazen & Sawyer		Location:				Contact: Phone:		······	
Date Sampled	09	2611		SAL Project #	1108	5663		Project Name	GCREC Mou	Ind Groundwa	iter Analyses
Well Number		220		Sample ID		D		GPS LAT GPS LONG			
				P	URGING	DATA					
WELL DIAMETER (Inches)	0.15	WELL CAPACITY (gal/ft)	0.02	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	<i>(</i> e.96	PURGE PUMP CODE	(PP) GP
TOTAL WELL DEPTH (Feet)	• •	REFERENCE ELEVATION (NGVD)		GROUND ELEV/ (REFEREN)	ATION CE-STATIC)			TUBING DIAMETER (inches)		TUBING CAPACITY (gal/ft)	
Purge Tec WELL V	hnique: q Su OLUME = (TO	bmerged Screen TAL DEPTH - ST	(1,1/4,1/4 Well ATIC DEPTH)	i) q Submei x WELL CAP	rged Screen (1 ICITY =	EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	n (1 Well, 3,3	minutes)
ONE WELL VOLUME	0.2		1/4 WELL VOLUME			3 WELL VOLUMES	0	74	5 WELL VOLUMES		
		EQUIPMENT V	OLUME = PUN	/P VOLUME +	(TUBING CAI	PACITY X TUE	SING LEGNTH	I) + FLOW CEL	L VOLUME		
PUMP VOLUME			TUBING LEGNTH			FLOW CELL VOLUME		······	EQUIPMEN T VOLUME		·
INITIAL TUBI IN WELL				NG LEGNTH L (FEET)		PURGE TIME START	0870	PURGE TIME END	0835	TOTAL PURGED	1.50
INST. ID	\times	\ge	\succ	\ge	SAL-SAM-63	SAL-SAM - 65- <u>4</u>	SAL-SAM-63	SAL-SAM-55-	SAL-SAM- 0_2	\ge	\geq
TIMÉ	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (∆ <0.2)	ТЕМР (оС) (∆ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
0823	0.30	0.30	0.10	NA	5.0	25.5	312.1	0.61	397	BIOWN	Non
0826	0.30	0.60			5.0	25.5	311.6	0.33	391		
0829	0.30	0.90			5.0	25.5	311.1	0.25	384		
0832	6.30	1.20			5.0	75.5	310.8		376		
0835	0.30	1.50		•	4.9	25.6	307.6		370		
TUR		Capacity (gallons A. CAPACITY (G								2"5.88 010; 5/8" =	0.016
					AMPLIN						
	//COMPANY INT)	5	AL				PLER(S) ATURES:	6	~		
-	ERIAL CODE E ONE)		-		E TUBING WELL (FEET))			UMP FLOW mL/min)		
SAMPLING INITIATED	0836	SAMPLING ENDED	0836	FIELD CLEANED	Y (N)	CLEANING STEPS					
FIELD FILTERED?	Y (N)	FILTER SIZE (µm)		DUPLICATE	Y N		LECTED BY SE FLOW?	Y N (N/A)		GH TRAP?	
	RVATION IN FIELD?	() N N/A		SERVATIVES							
1	THER TIONS	cloud	24								
COMM	IENTS										
	7117		DES: PP=Pe	ristaltic Pump,	GP= Submers	ible Grundfos	Pump, IBP= ii	n-place Bladder	Pump	· · · · · · · · · · · · · · · · · · ·	
Re	viewed By:	BING MATERIAL	CODES: PP=	rolypropylene	, PE= Polyeth	ylene, NP= N	on-inert Plasti Date:		ined, TT= Te	flon	
Rev	Ision Date	09/25/09			Page 39	of 45		l			

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Client Name:	ł	Hazen & Sawyer		Location:			ŀ	Contact: Phone:			
Date Sampled				SAL Project	1105	8663		Project Name	GCREC Mou	ind Groundwa	iter Analyses
		2611		#	100	<u>1</u>		GPS LAT			
Well Number	₽-	221		Sample ID	1	1		GPS LONG			
				P	URGING	DAIA		01 / D - H		PURGE	
WELL DIAMETER (Inches)	7.0	WELL CAPACITY (gal/ft)	0.16	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	6.87	PUMP	(PP) GP IBP
TOTAL WELL DEPTH (Feet)	30.0	REFERENCE ELEVATION (NGVD)		GROUND ELEVA (REFERENC	ATION			TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
Purge Te	chnique: a Su	bmerged Screen	(1,1/4,1/4 Wel) q Submer	ged Screen (1	EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	n (1 Well, 3,3	minutes)
WELL V	OLUME = (TO	TAL DEPTH - ST	ATIC DEPTH)	x WELL CAPI	CITY =	3 WELL			5 WELL		
ONE WELL VOLUME	3.7	Ó	1/4 WELL VOLUME	0.0	12	VOLUMES			VOLUMES		
		EQUIPMENT V	OLUME = PUN	IP VOLUME +	(TUBING CA	PACITY X TUE	BING LEGNTH) + FLOW CEL			
PUMP VOLUME			TUBING LEGNTH			FLOW CELL VOLUME			EQUIPMEN T VOLUME	sH	T
INITIAL TUBI IN WELL	NG LEGNTH _ (FEET)			NG LEGNTH L (FEET)		PURGE TIME START	0742	PURGE TIME END	0815	TOTAL PURGED	7.75
INST. ID	\boxtimes	\ge	\succ	\succ	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55-	SAL-SAM- 0	\ge	\geq
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (∆ <0.2)	TEMP (oC) (∆ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
0757	3.75	3.75	0.25	7.03	5.5	24.6	307.9	0.76	142	bian	NON
080 1	1.0	4.75			5.2	24.7	300.3	0.95	76.8		
0805	1.0	5.75			5.2	24.7	300.0	0.91	76.0		┼-┦
0809	1.0	6.75			5.1	24.7	300.2	0.96	72.6		┤
0813	1.0	7.75		1	5.1	24.7	297.6	0.92	73.7	``	
		Capacity (gallons					7, 4"=0.65, 5/16" = 0.00			2"5.88	• 0.016
TUB	ING INSIDE DI	A. CAPACITY (G	al./Ft.): 1/8" =					4, 3/8 - 0.00	<i>J</i> 0, <i>1</i> 72 – 0.	.010, 370 -	0.010
	Y / COMPANY	1		0			PLER(S)	1.			
	RINT)	5A	L				TURES:	5			Reference
	TERIAL CODE LE ONE)	PP PE N			E TUBING WELL (FEET)				UMP FLOW mL/min)		
SAMPLING INITIATED	08060	SAMPLING ENDED	0806	FIELD CLEANED	Y 🔊	CLEANING STEPS					
FIELD FILTERED?	V D	FILTER SIZE (µm)	51	DUPLICATE	Y (N)		LECTED BY SE FLOW?	Y N NA		COLLECTE	^D Y N (N) ^A
PRESE	RVATION D IN FIELD?	() N N/A		SERVATIVES DDED							
	THER	Dri-	rile	-							
СОМ	MENTS										
		LPUMP CO	ODES: PP=Pe	ristaltic Pump	, GP= Submer	sible Grundfos	Pump, IBP= I	n-place Bladder	Pump		· · · · · · · · · · · · · · · · · · ·
		BING MATERIAL	CODES: PP=	Polypropylene	e, PE= Polyeti	hylene, NP= N	Ion-inert Plast	c, TL= Teflon (ined, TT= Te	flon	
	eviewed By: Vision Date				Page 40	of 45	Date	:			
	_				- 3 0	-					\mathbf{i}

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GROUNDWATER SAMPLING LOG

Client Name:	1	Hazen & Sawyer		Location:				Contact: Phone:			
Date Sampled		092611		SAL Project #	110	8662	5	Project Name	GCREC Mo	und Groundwa	ater Analyses
Well Number				Sample ID	<u> </u>	12		GPS LAT			
	- 54	P224		-	URGING			GPS LONG			
				Г	UNGINC						
WELL DIAMETER (Inches)	2.0	WELL CAPACITY (gal/ft)	0.16	Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	8.84	PURGE PUMP CODE	(PP) GP
TOTAL WELL DEPTH (Feet)	30.0	REFERENCE ELEVATION (NGVD)		ELEV	WATER ATION CE-STATIC)			TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
Purge Tec	hnique: q Su	bmerged Screen	(1,1/4,1/4 Wel		rged Screen (1	EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
ONE WELL V		TAL DEPTH - ST	1/4 WELL			3 WELL		· · · · · ·	5 WELL		
	3.'	38	VOLUME	0.8		VOLUMES			VOLUMES		
		EQUIPMENT V	OLUME = PUN	IP VOLUME +	- (TUBING CA	PACITY X TUE	BING LEGNTH	I) + FLOW CEL		· · ·	
PUMP VOLUME			TUBING LEGNTH			FLOW CELL VOLUME			EQUIPMEN T VOLUME	1	
INITIAL TUBI IN WELL				NG LEGNTH _ (FEET)		PURGE TIME START	1025	PURGE TIME END	1047	TOTAL PURGED	5.5
INST. ID	\times	\ge	\ge	\succ	SAL-SAM-63	SAL-SAM - 65 4	SAL-SAM-63	SAL-SAM-55-	SAL-SAM- 0_Z	\ge	\ge
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (Δ <0.2)	ТЕМР (оС) (∆ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
1039	3.5	3.5	0.25	8.92	119	25.6	299.1	0.30	5.92	clear	Non
1043	1.0	4,5			4.9	25.6	298.8	0.33	4.57		1
1047	1.0	5.5			4.8	25.5	299.3	0.36	3.41		
				ļ							
		-									
	Vell (Capacity (gallons/	foot): 0.75"=0	.02, 1.25"=	0.06, 2"=0.4	16, 3"=0.37	, 4"=0.65,	5"=1.02, 6	5"=1.47, 12	."5.88	
TUBI	NG INSIDE DI	A. CAPACITY (Ga	al./Ft.): 1/8" =	0.0006; 3/16	" = 0.0014; 1	/4" = 0.0026;	5/16" = 0.00	4; 3/8" = 0.00	6; 1/2" = 0.	010; 5/8" =	0.016
				S	AMPLIN	G DATA	1				
SAMPLED BY (PR		S	AL				PLER(S) TURES:	4			×
	ERIAL CODE E ONE)	PP PE N	-		E TUBING WELL (FEET)			SAMPLE P			
SAMPLING INITIATED	1049 8	r Sampling Ended	1049	FIELD	Y N	CLEANING STEPS				1	
FIELD FILTERED?	YN	FILTER SIZE		DUPLICATE	08	VOC COL	LECTED BY SE FLOW?	Y N N/À		COLLECTED	Y N NA
	IN FIELD?	Ø N N/A		ERVATIVES DED	SH	077411					<u> </u>
WEA CONDI		clou	dy								
COMM	ENTS										
		PUMP CO	DES: PP=Per	istaltic Pump,	GP= Submers	ible Grundfos	Pump, IBP= In	-place Bladder	Pump	<u>,</u>	
Do	TUB viewed By:	ING MATERIAL (CODES: PP=	Polypropylene	, PE= Polyeth	ylene, NP= N		c, TL= Teflon Li	ned, TT= Tel	lon	
	Ision Date (J9/25/09			Page 41	of 45	Date:				

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		·····									
Client Name:	I	Hazen & Sawyer		Location:				Contact: Phone:			
Date Sampled	092611			SAL Project #	110	866	3	Project Name	GCREC Mou	und Groundwa	ter Analyses
Well Number	A225	-		Sample ID	<u> </u>	14		GPS LAT			
	Pees				URGING			GPS LONG			
WELL DIAMETER (Inches)	0.75	WELL CAPACITY (gal/ft)		Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)	/0.93 093	PURGE PUMP CODE	GP IBP
TOTAL WELL DEPTH (Feet)		REFERENCE ELEVATION (NGVD)		GROUND ELEVA (REFERENC	ATION CE-STATIC)			TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
Purge Tec	hnique: q Sui	bmerged Screen TAL DEPTH - ST	(1,1/4,1/4 Well) q Submer	ged Screen (1	EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	n (1 Well, 3,3	minutes)
ONE WELL VOLUME	0-0	518	1/4 WELL VOLUME			3 WELL VOLUMES	0.155		5 WELL VOLUMES		
		EQUIPMENT V	OLUME = PUN	P VOLUME +	(TUBING CAI		BING LEGNTH	I) + FLOW CEL			
PUMP VOLUME			TUBING LEGNTH			FLOW CELL VOLUME			Equipmen T volume		1
INITIAL TUBI			FINAL TUBII IN WELL			PURGE TIME START	0941	PURGE TIME END	0951	TOTAL PURGED	0.90
INST. ID	\succ	\succ	\times	\succ	SAL-SAM-63 	SAL-SAM - 65- <u>04</u>	SAL-SAM-63 _ <u>04</u>	SAL-SAM-55- <i>の</i> <u>ナ</u>	SAL-SAM- 0 <u>2</u>	\ge	\ge
TIME	VOLUME PURGED (Gallons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	pH (SU) (∆ <0.2)	ТЕМР (оС) (∆ <0.2)	SP COND (uS/cm) (Δ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
0944	0.30	0.30	0.10		6.0	27.4	604	2.26	22.7	(LEAR	NONE
0947	0.30	0.60	0.10		6.0		612	2.23	11.28		
0950	0.70	0.90	0.10		6.0	↓ ↓	608	2.21	5.32	V	V
				i							
TUD		Capacity (gallons/ A. CAPACITY (Gallons)					<u>', 4"=0.65,</u> 5/16" = 0.00			"5.88 010; 5/8" =	0.016
TUBI	NG INSIDE DI	A. CAPACITY (G	al./FL.). 1/0 -					4, 3/0 - 0.00		010, 0/0 -	0.010
	(/ COMPANY INT)	SAL				SAMF	LER(S) TURES:	A	TA -		
	ERIAL CODE E ONE)	PP PE N	р Ютт		E TUBING WELL (FEET)			SAMPLE PI RATE (I			
SAMPLING INITIATED	0951	SAMPLING ENDED	0951	FIELD CLEANED	Y 🔊	CLEANING STEPS		<u>.</u>		1	
FIELD FILTERED?	ΥØ	FILTER SIZE (µm)		DUPLICATE	Y 🕅		LECTED BY SE FLOW?	Y N NA	SEMI-VOLS	COLLECTED	YNN
	RVATION IN FIELD?	🕜 N N/A		ERVATIVES DED							
	THER	Clou	dy								
COMM	IENTS										
		PUMP CC	DES: PP=Per	istaltic Pump,	GP= Submers	ible Grundfos	Pump, IBP= Ir	n-place Bladder	Pump		
Re	viewed By:	ING MATERIAL	UDUES: PP=	Polypropylene	, PE= Polyeth	ylene, NP= N	on-inert Plasti Date:		ined, TT= Te	flon	
	/Ision Date				Page 42	of 45		I			

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								Contact:			
Client Name:		Hazen & Sawyer		Location:				Phone:			
Date Sampled		7911		SAL Project	1	10Bld	2	Project Name	GCREC Mou	und Groundwa	ter Analyses
		2811		#		10866	\sim	GPS LAT			
Well Number	EQ	Blank		Sample ID		15		GPS LONG			
				P	URGING	DATA					
WELL		WELL		Screen			· · · · · · · · · · · · · · · · · · ·	Static Depth		PURGE	(PP) GP
DIAMETER		CAPACITY		Interval	UNK	То	UNK	to Water		PUMP CODE	IBP
(Inches)		(gal/ft)		(Feet)	1			(Feet)	· · · · · · ·	TUBING	
TOTAL WELL		REFERENCE		GROUND	WATER			TUBING DIAMETER		CAPACITY	
DEPTH (Feet)		ELEVATION (NGVD)		(REFEREN				(inches)		(gal/ft)	
Purge Teg	chnique: a Su	bmerged Screen	(1,1/4,1/4 Well) q Subme	rged Screen (1	EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
WELL V	OLUME = (TO	TAL DEPTH - ST	ATIC DEPTH)	X WELL CAP	ICITY =						
ONE WELL			1/4 WELL			3 WELL VOLUMES			5 WELL VOLUMES		
VOLUME		EQUIPMENT V			(TUBING CA		L BING LEGNTH) + FLOW CEL			
		EQUINEIT		I VOLUME	(,	FLOW CELL		· · · · · ·	EQUIPMEN		
PUMP VOLUME			TUBING LEGNTH			VOLUME			T VOLUME		
INITIAL TUBI IN WELL			FINAL TUBI IN WELI	NG LEGNTH _ (FEET)		PURGE TIME START		PURGE TIME END		TOTAL PURGED	
INST. ID	\bigtriangledown	\succ	\succ	\succ	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55- 彑	SAL-SAM- 0	$\left \right>$	$\left \right>$
		TOTAL				ТЕМР	SP COND	DO	TURBIDITY		ľ
ТІМЕ	VOLUME PURGED	VOLUME	PURGE	Depth to Water	pH (SU)	(oC)	(uS/cm)	(mg/L)	(NTUs)	COLOR	ODOR (Describe)
1 1141	(Gallons)	PURGED (Gallons)	RATE (gpm)	(Feet)	(Δ <0.2)	(∆ <0.2)	(∆ <5%)	(% SAT <20)	(<20 NTU)	(Describe)	(Describe)
0940		(Calibrid)			5.6	25.1	1.4	4.61	0.31	dear	NOM
								i 1			
	Well	Capacity (gallons/	foot): 0.75"=0	.02, 1.25"=	0.06, 2"=0.	16, 3"=0.37	' , 4"= 0.65,	5"=1.02, 6	5"=1.47, 12	2"5.88	
TUBI	ING INSIDE DI	A. CAPACITY (G	al./Ft.): 1/8" =	0.0006; 3/16	" = 0.0014; 1	/4" = 0.0026;	5/16" = 0.00	4; 3/8" = 0.00	6; 1/2" = 0.	010; 5/8" =	0.016
				S	AMPLIN	G DATA	Á l				
	Y / COMPANY		AI				PLER(S) TURES:	A	1		
	ERIAL CODE	$\vdash \circ$		CAMPI	E TUBING			SAMPLE PI			
	E ONE)	PP PE N	P(TL)TT		WELL (FEET)			RATE (
SAMPLING INITIATED	1940	SAMPLING ENDED	0940	FIELD CLEANED		CLEANING STEPS	1 TA	XZ			
FIELD		FILTER SIZE					LECTED BY		SEMI-VOLS	COLLECTER	
FILTERED?	Y (N)	(μm)		DUPLICATE		REVERS	SE FLOW?	Y N N/A	THROU	GH TRAP?	Y N (N/A
	RVATION IN FIELD?	N N/A		ERVATIVES							
	THER ITIONS	clea	s /1	vindu	1						
СОММ	IENTS								4/	<u> </u>	
		L. PLIMP.CC		ristaltic Pump	GP= Submer	sible Grundfoo	Pump IPD-	n-place Bladder	Dumo		
	TUE	BING MATERIAL	CODES: PP=	Polypropylene	e, PE= Polyeth	nylene, NP= N	on-inert Plasti	c, TL= Teflon I	ined, TT= Te	flon	<u></u>
	eviewed By:				_		Date				
Re	vision Date	09/25/09			Page 43	of 45		• · · · · · ·			

						-		Contact:			
Client Name:	I	Hazen & Sawyer		Location:				Phone:			
Date Sampled	09	2811 uk - Fé		SAL Project #	l	0860	63	Project Name	GCREC Mou	und Groundwa	ter Analyses
Well Number		1 5		Sample ID		16		GPS LAT	<u> </u>		
Wein Humber	1310	ink - tic	ld	-		DATA		GPS LONG			
		-		P	URGING	DAIA					
WELL		WELL		Screen		Te	UNK	Static Depth to Water		PURGE PUMP	PP GP
DIAMETER (Inches)		CAPACITY (gal/ft)		Interval (Feet)	UNK	То	UNK	(Feet)		CODE	IBP
(REFERENCE		GROUND	WATER			TUBING		TUBING	
TOTAL WELL]	ELEVATION		ELEV				DIAMETER		CAPACITY	
DEPTH (Feet)		(NGVD)		(REFERENC				(inches)		(gal/ft)	
Purge Tec	hnique: q Su	bmerged Screen TAL DEPTH - ST	(1,1/4,1/4 Wel) q Submer	rged Screen (1	EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	n (1 weil, 3,3	minutes)
	OLUME = (10)	TAL DEPTH-SI	1/4 WELL	X WELL CAP		3 WELL			5 WELL		
ONE WELL			VOLUME			VOLUMES			VOLUMES		
VOLOME		EQUIPMENT V		/P VOLUME +	(TUBING CA	PACITY X TUE	BING LEGNTH) + FLOW CELI			
PUMP VOLUME			TUBING LEGNTH			FLOW CELL VOLUME			EQUIPMEN T VOLUME		
INITIAL TUBI IN WELL				L NG LEGNTH L (FEET)		PURGE TIME START		PURGE TIME END		TOTAL PURGED	
INST. ID	\succ	\ge	\times	\succ	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55-	SAL-SAM- 0	\ge	\ge
TIME	VOLUME PURGED	TOTAL VOLUME PURGED	PURGE RATE (gpm)	Depth to Water	pH (SU)	TEMP (oC)	SP COND (uS/cm)	DO (mg/L)	TURBIDITY (NTUs)	COLOR (Describe)	ODOR (Describe)
	(Gallons)	(Gallons)	i vare (gpm)	(Feet)	(∆ <0.2)	(∆ <0.2)	(∆ <5%)	(% SAT <20)	(<20 NTU)		
09115					5.6	75.1	1.4	4.61	0.3	clear	Non
		Capacity (gallons/								"5.88	
TUBI	NG INSIDE DI	A. CAPACITY (Ga	al./Ft.): 1/8" =				5/16" = 0.00	4; 3/8" = 0.00	6; 1/2" = 0.	010; 5/8" =	0.016
				S	AMPLIN	G DATA	1	1			
	Y / COMPANY INT)		SAL				PLER(S) TURES:	10	\sim		
	ERIAL CODE E ONE)	PP PE N			e tubing Well (feet)			SAMPLE PI RATE (I			
SAMPLING	Marik	SAMPLING	ADUC	FIELD	M N	CLEANING	DI	-			
	0740		0945	CLEANED		STEPS			SEMILVOIS	COLLECTED	
FIELD FILTERED?	YN	FILTER SIZE (µm)		DUPLICATE			SE FLOW?	Y N (N/À)		GH TRAP?	Y N (N/A
PRESEF	RVATION IN FIELD?			ERVATIVES DED							
	THER	clea	w / 1	wind	4						
COMM	IENTS										
								n-place Bladder			
			CODES: PP=	Polypropylene	e, PE= Polyeth	nylene, NP= N			ined, TT= Te	flon	
	eviewed By: Vision Date				Page 44	of 45	Date	:		_	

110 BAYVIEW BOULEVARD, OLDSMAR, FL 34677 813-855-1844 FAX 813-855-2218

Client Name:		Hazen & Sawyer		Location:				Contact: Phone:			
Date Sampled	\sim	17211		SAL Project #	1	1086	63	Project Name	GCREC Mo	und Groundwa	iter Analyses
Well Number	1			Sample ID	K-	TI		GPS LAT			
	<u> </u>	- Black					······	GPS LONG			
	\ 				URGINO	JAIA					
WELL DIAMETER (Inches)		WELL CAPACITY (gai/ft)		Screen Interval (Feet)	UNK	То	UNK	Static Depth to Water (Feet)		PURGE PUMP CODE	PP GP IBP
TOTAL WELL DEPTH (Feet)		REFERENCE ELEVATION (NGVD)		ELEV	O WATER ATION CE-STATIC)		<u> </u>	TUBING DIAMETER (Inches)		TUBING CAPACITY (gal/ft)	
		bmerged Screen				EQ Volume, 3	, 3 Minutes)	q Partially Sub	merged Scree	en (1 Well, 3,3	minutes)
	OLUME = (TO	TAL DEPTH - ST		X WELL CAP	ICITY =	0.14/51.1	<u> </u>				L
ONE WELL VOLUME			1/4 WELL VOLUME			3 WELL VOLUMES			5 WELL VOLUMES		
		EQUIPMENT V		IP VOLUME +	· (TUBING CA		L BING LEGNTH) + FLOW CEL			
PUMP VOLUME			TUBING LEGNTH			FLOW CELL VOLUME			EQUIPMEN T VOLUME		
INITIAL TUBI IN WELL				NG LEGNTH _ (FEET)		PURGE TIME START		PURGE TIME END		TOTAL PURGED	
INST. ID	\ge	\ge	\ge	\ge	SAL-SAM-63	SAL-SAM - 65	SAL-SAM-63	SAL-SAM-55- L	SAL-SAM- 0_Z	\times	\ge
TIME	VOLUME PURGED (Gailons)	TOTAL VOLUME PURGED (Gallons)	PURGE RATE (gpm)	Depth to Water (Feet)	рН (SU) (∆ <0.2)	TEMP (oC) (∆ <0.2)	SP COND (uS/cm) (∆ <5%)	DO (mg/L) (% SAT <20)	TURBIDITY (NTUs) (<20 NTU)	COLOR (Describe)	ODOR (Describe)
1215					7.60	29.0	430.0	5.18	1.59	clear	NON
TURI		CAPACITY (gallons/f								5.88	
		A. CAPACITY (Ga						; 3/8" = 0.000	6; 1/2" = 0.()10; 5/8" = 0	.016
	(00101010)				AMPLIN	G DATA					
SAMPLED BY (PRI		<u>SA</u>	1L			SAMPI SIGNAT		A			
TUBING MATE (CIRCLE		PP PE NP	TLTT	SAMPLE LEGNTH IN V	TUBING VELL (FEET)			SAMPLE PU RATE (m			
SAMPLING	1215	SAMPLING ENDED	1215	FIELD CLEANED	Y (N)	CLEANING STEPS				· · · · · · · · · · · · · · · · · · ·	
FIELD FILTERED?	Y(N)	FILTER SIZE		DUPLICATE	YN	VOC COLL REVERS		Y N NÀ	SEMI-VOLS	COLLECTED	YNNÀ
PRESER			LIST PRESE ADD						THROUG	H TRAP?	
		clea	5								
COMM	ENTS										
	TUP		DES: PP≃Peri	staltic Pump, C	GP= Submersi	ble Grundfos P	ump, IBP= In-	place Bladder F	ump		
Rev	/iewed By:	NG MATERIAL C	UDES: PP= F	olypropylene,	PE= Polyethy	lene, NP= No		TL= Teflon Lir	ned, TT= Tefl	on	
	Sion Date 0	9/25/09			/-	-6.45	Date:				
					Page 45	ot 45					



Appendix E: Field Parameter Analyses

Field Parameter Results (September 26 – September 28, 2011)										
	(S Sample Identification	Temperature (°C)	pH	r 28, 2011) Specific Conductance (μS)	Dissolved Oxygen (mg/L)					
1	STE-EX Pump Tank	29.4	7.0	721	0.90					
2	STE-EX Pump Tank-D	29.4	7.0	721	0.90					
3	PZ03-H11-6	26.5	4.4	167	1.36					
4	PZ04-BKG-9	28.2	5.0	120	1.74					
5	PZ07-D05-7	25.5	4.60	361	0.86					
6	PZ11-E09-10	26.0	5.7	413	5.61					
7	PZ15-A11-6	27.1	4.8	84	1.66					
8	PZ16-C12-28	24.6	5.3	311	0.33					
9	PZ17-I15-26	24.9	4.8	283	0.25					
10	PZ18-R12-26	26.3	5.0	223	0.25					
11	PZ19-G10-26	24.6	5.0	302	0.42					
12	PZ20-G10-15	25.6	4.9	308	0.23					
13	PZ21-E11-26	24.7	5.1	298	0.92					
14	PZ24-BKG-26	25.5	4.8	299	0.36					
15	PZ25-BKG-26	27.4	6.0	608	2.21					
16	DP-AA9-14	25.4	4.6	554	1.95					
17	DP-AA9-14-D	25.4	4.6	554	1.95					
18	DP-AA9-22	25.1	5.0	369	0.26					
19	DP-AA9-27	24.9	4.9	267	0.28					
20	DP-D07-5	26.0	5.7	346	1.68					
21	DP-D07-9	25.6	3.7	613	0.81					
22	DP-D08-9	25.3	5.0	449	2.79					
23	DP-D09-15	24.9	4.8	615	1.79					
24	DP-D09-8	25.8	4.6	591	0.48					
25	DP-D11-11	26.0	5.2	442	2.28					

Table E.1

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FLORIDA ONSITE SEWAGE NITROGEN REDUCTION STRATEGIES STUDY GCREC MOUND MONITORING SAMPLE EVENT REPORT NO. 4

PAGE E-1 HAZEN AND SAWYER, P.C.

Appendix E

	Sample Identification	Temperature (°C)	рН	Specific Conductance (µS)	Dissolved Oxygen (mg/L)
26	DP-D12-11	25.7	4.6	486	1.19
27	DP-D7.5-14	24.6	4.9	608	0.22
28	DP-D7.5-14-D	24.6	4.9	608	0.22
29	DP-D7.5-20	24.2	5.1	531	0.47
30	DP-D7.5-28	24.2	5.2	289	0.54
31	DP-E04-8	26.9	4.0	76	0.63
32	DP-E07-10	26.5	4.0	265	1.00
33	DP-E08-8	26.8	4.2	304	0.69
34	DP-E10-6	27.1	3.9	351	0.80
35	DP-E11-12	26.4	5.1	506	0.31
36	DP-E12-10	25.9	5.3	462	0.39
37	DP-E12-15	25.7	5.1	607	1.00
38	DP-E12-22	25.2	5.2	311	0.22
39	DP-E12-28	25.1	5.1	295	0.41
40	DP-E12-28-D	25.1	5.1	295	0.41
41	DP-F04-17	27.8	5.8	281	0.81
42	DP-F04-22	25.9	5.2	270	0.58
43	DP-F04-32	26.0	5.9	291	0.53
44	DP-F05-5	28.8	4.8	178	0.64
45	DP-F08-20	25.9	5.0	298	0.56
46	DP-F08-28	25.4	5.1	298	0.54
47	DP-F10-11	27.0	4.2	446	0.54
48	DP-F11-11	27.2	5.0	389	1.49
49	DP-F11-15	26.2	5.1	490	0.51
50	DP-F11-15-D	26.2	5.1	490	0.51
51	DP-F11-18	25.8	5.3	271	0.26
52	DP-F11-21	25.6	5.2	298	0.40
53	DP-F11-24	25.4	5.1	296	0.56
54	DP-F11-27	25.3	5.2	306	0.37
55	DP-F12-10	26.7	3.8	423	0.64
56	DP-F15-14	26.1	5.0	459	0.43
57	DP-F15-20	25.3	5.0	280	0.39
58	DP-F15-26	25.2	4.9	281	0.28

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FLORIDA DEPARTMENT OF HEALTH GCREC MOUND MONITORING SAMPLE EVENT REPORT NO. 4

Appendix E

	Sample Identification	Temperature (°C)	рН	Specific Conductance (µS)	Dissolved Oxygen (mg/L)
59	DP-F15-26-D	25.2	4.9	281	0.28
60	DP-G07-13	29.8	5.2	224	0.79
61	DP-G07-15	28.7	4.7	254	0.68
62	DP-G07-17	26.0	4.8	300	0.38
63	DP-G07-21	25.3	4.6	275	0.37
64	DP-G07-24	25.6	4.7	300	0.64
65	DP-G07-27	25.7	4.7	300	1.17
66	DP-G08-5	28.1	5.7	174	1.03
67	DP-G09-11	28.3	5.6	229	1.39
68	DP-G11-8	27.2	4.6	319	0.68
69	DP-G12-15	26.2	5.1	415	0.37
70	DP-G12-18	25.8	5.3	264	0.56
71	DP-G12-21	25.5	5.3	271	0.46
72	DP-G12-24	25.4	5.2	302	0.38
73	DP-G12-27	25.3	5.1	289	0.33
74	DP-G12-9	24.8	5.0	363	3.42
75	DP-H06-7	25.5	5.8	140	4.24
76	DP-H09-12	25.9	5.1	248	0.94
77	DP-106-14	25.4	5.1	220	0.53
78	DP-106-20	24.8	5.1	330	0.38
79	DP-106-26	24.6	5.0	295	0.34
80	DP-I12-6	26.2	5.1	95	0.56
81	DP-J09-12	26.2	5.0	171	0.86
82	DP-J09-14	26.1	4.8	211	0.41
83	DP-J09-20	25.5	5.0	320	0.38
84	DP-J09-26	25.4	4.8	292	0.52
85	DP-J12-13	26.1	4.9	206	0.29
86	DP-J12-15	26.8	4.9	265	0.52
87	DP-J12-20	25.7	5.1	327	0.41
88	DP-J12-27	24.9	4.9	282	0.39
89	DP-K12-5	27.5	5.0	70	0.64
90	DP-M07-15	25.9	5.2	274	0.27
91	DP-M07-21	25.3	5.2	351	0.26

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FLORIDA DEPARTMENT OF HEALTH GCREC MOUND MONITORING SAMPLE EVENT REPORT NO. 4

Appendix E

	Sample Identification	Temperature (°C)	рН	Specific Conductance (μS)	Dissolved Oxygen (mg/L)
92	DP-M07-27	25.1	5.1	290	0.25
93	DP-M12-10	26.2	5.6	162	1.78
94	DP-N12-14	26.5	5.0	181	0.32
95	DP-N12-18	26.9	5.1	234	0.45
96	DP-N12-21	26.0	5.3	316	0.33
97	DP-N12-24	25.9	5.2	359	0.23
98	DP-N12-27	25.8	5.1	323	0.31
99	DP-010-18	27.3	4.2	160	0.72
100	DP-010-18-D	27.3	4.2	160	0.72
101	DP-010-24	26.8	4.9	279	0.60
102	DP-Q15-15	27.8	4.6	316	0.73
103	DP-Q15-21	26.6	5.0	317	0.49
104	DP-Q15-26	26.8	5.1	293	0.34
105	DP-Q15-26-D	26.8	5.1	293	0.34
106	Equipment Blank	25.1	5.6	1.4	4.61
107	Field Blank-DI	25.1	5.6	1.4	4.61
108	Field Blank-Tap	29.0	7.6	430	5.18